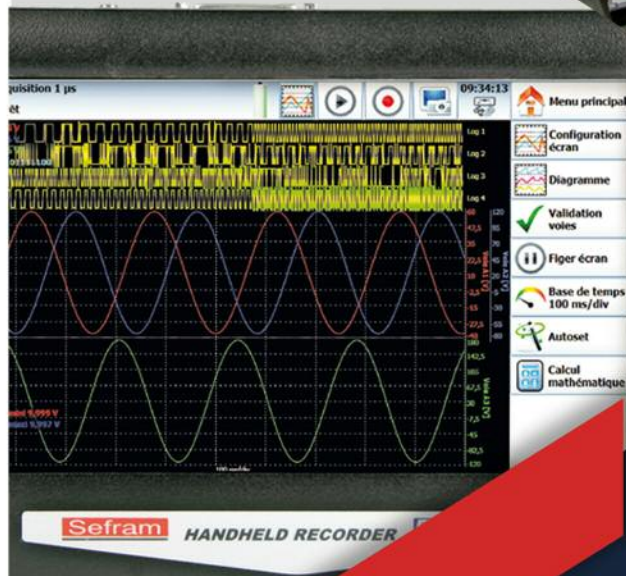


# DATA ACQUISITION SYSTEMS

## Product guide

The best technology  
distilled to give unbeatable  
performance and support

WIRELESS RECORDER



Sefram HANDHELD RECORDER



## Sefram Data acquisition solutions: 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 70 years of research which has seen recorders arriving at this level of technical perfection and simplicity of use.

We are convinced that the new DAS240 series will meet your needs for process applications. These recorders have been designed to measure and record up to 200 analogue channels. The DAS240 can be battery operated (ordering P/N DAS240BAT) and is equipped with a bright and panoramic touch screen. For the industrial maintenance and servicing, the DAS30/50/60 family will fulfill your needs for voltage, current, frequency measurement and record.

For recording specialists, the paper-free DAS1700, 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 multiple-network energy analysis 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.



**DAS220**  
Process recorder  
10 channels



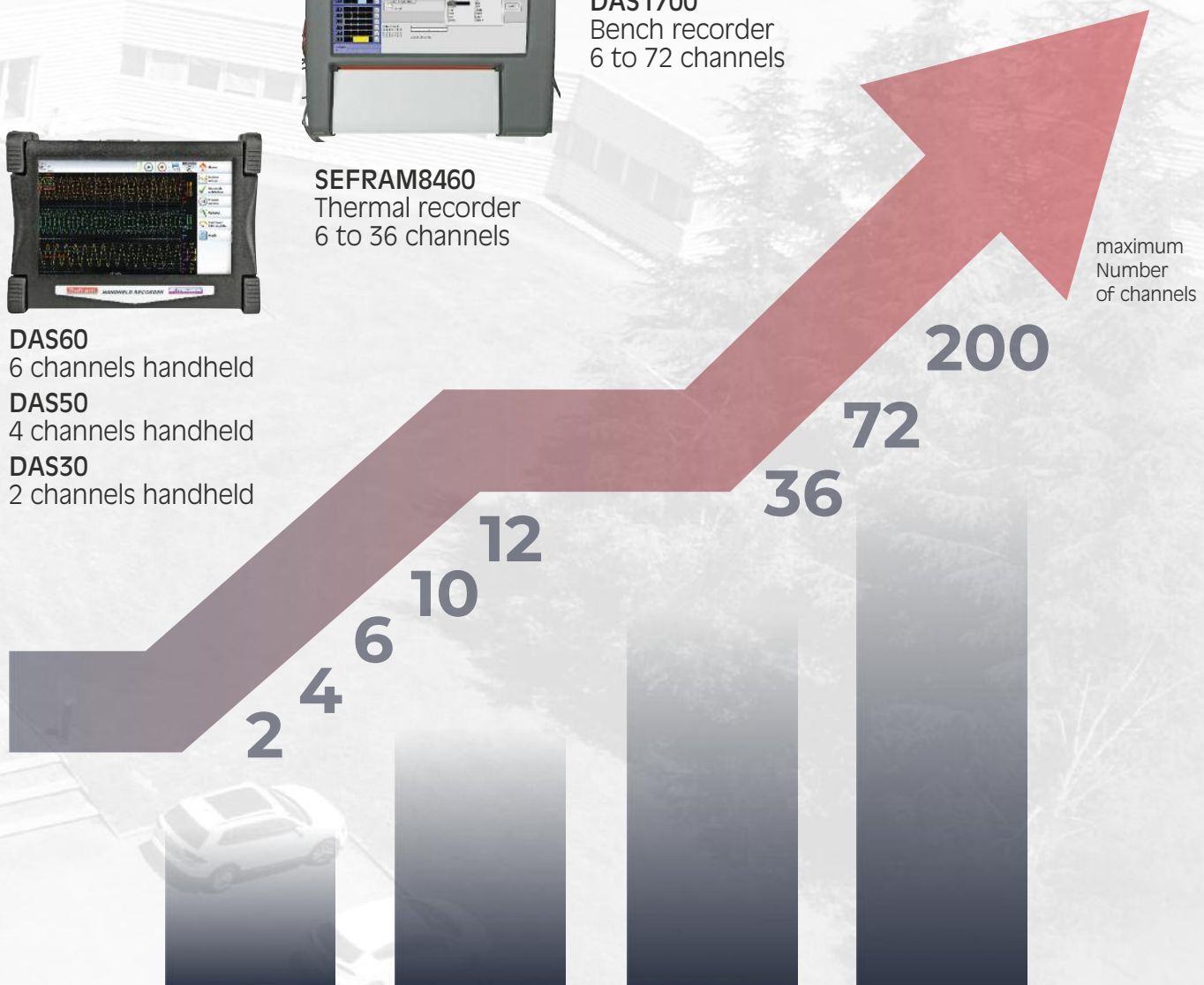
**DAS1700**  
Bench recorder  
6 to 72 channels



**SEFRAM8460**  
Thermal recorder  
6 to 36 channels



**DAS60**  
6 channels handheld  
**DAS50**  
4 channels handheld  
**DAS30**  
2 channels handheld



maximum Number of channels

The new DAS220 and DAS220BAT (with internal battery) are dedicated to process applications with touch screen technology. Like other SEFRAM recorders, we have included our know-how in the data acquisition and data processing applied to instruments. We have designed a very user-friendly interface and a new software named DasLab. With 10 analogue channels, the new DAS220 and DAS220BAT will meet all your requirements.

### Capabilities

- 10 analogue channels
- Input: voltage, thermocouple, Pt100-1000, current (with optional adapter), resistance
- Voltage: from 1mV to 200V ( $\pm 100V$ )
- Temperature: thermocouples (all types), Pt100-1000 (2 or 3 wires)
- 16 Bit vertical resolution
- Max sampling rate: 1ms (1kHz)
- 12 logical channels
- 4 logical function input with counter & frequency meter capability
- 4 alarms (output)
- 10" TFT panoramic touch screen
- Internal hard drive: 32 GB
- Interfaces: USB, Ethernet, WiFi (option)
- Lithium-ion battery (factory option): 15h autonomy
- DasLab software (license free)
- Safety: IEC61010 CAT I 100V
- NI LabView™ driver available on [www.sefram.com](http://www.sefram.com)



### 10 analogue channels board

You can measure and record:

- DC voltage
- DC current (with optional shunt)
- Temperature with thermocouples (all types)
- Temperature with Pt100-1000 sensors
- Resistance
- Pulse counter
- Frequency meter
- PWM measurement
- 0-10V and 4-20mA sensors



P/N : 902408000

### A robust carrying case

With the optional carrying case, you can transport and use your DAS200 in all field applications. With the DAS220BAT, you have 15 hours autonomy.



Cable with male bananas to simplify the connection to your application.  
P/N : 902407100

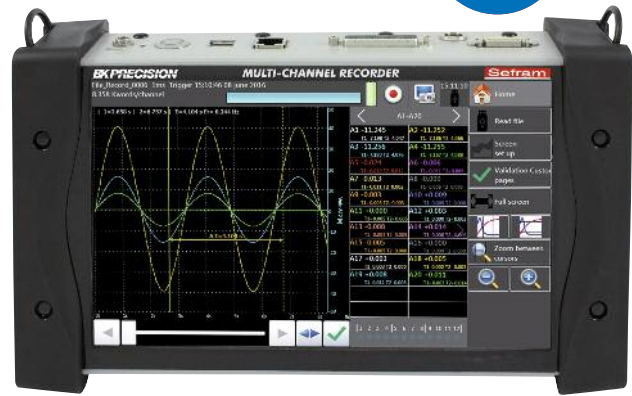
# Multi channel handheld Data acquisition solution 20 to 200 analogue channels

DAS220 / DAS220BAT

The DAS240 and DAS240BAT (with internal battery) are dedicated to process applications with touch screen technology. Like other SEFRAM recorders, we have included our know-how in the data acquisition and data processing applied to instruments. We have designed a very user-friendly interface and a new software named DasLab. From 20 to 200 analogue channels, the new DAS240 and DAS240BAT will meet all your requirements.

### Capabilities

- 20 to 200 analogue channels
  - Input: voltage, thermocouple, Pt100-1000, current (with optional adapter), resistance
  - Voltage: from 1mV to 200V ( $\pm 100V$ )
  - Temperature: thermocouples (all types), Pt100-1000 (2 or 3 wires)
  - 16 Bit vertical resolution
  - Max sampling rate: 1ms (1kHz)
  - 12 logical channels
  - 4 logical function input with counter & frequency meter capability
  - 4 alarms (output)
  - 10" TFT panoramic touch screen
  - Internal hard drive : 32 GB
  - Interfaces: USB, Ethernet, WiFi (option)
  - Lithium-ion battery (factory option): 15h autonomy
  - DasLab software (license free)
  - Safety: IEC61010 CAT I 100V
  - NI LabView™ driver available on [www.sefram.com](http://www.sefram.com)
- \*factory optional



### Supplied with one 20 channelsboard

You can measure and record :

- DC voltage
- DC current (with optional shunt)
- Temperature with thermocouples (all types)
- Temperature with Pt100-1000 sensors
- Resistance
- Pulse counter
- Frequency meter
- PWM measurement
- 0-10V and 4-20mA sensors



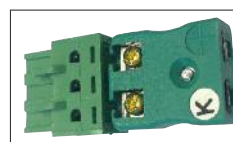
20 analogue channels board P/N: 902401000



DAS240 with 40 measurement channels.

### A flexible solution with the optional 20 channels modules

Your applications needs more measurement channels ? The DAS240 is a flexible and scalable system! Supplied with 20 measurement channels, you can add up to 180 channels, by increment of 20, for reaching a total of 200 channels. 20 channels modules (P/N: 902401000) are all versatile: you can measure voltage, temperature with thermocouples, Pt100-1000 and are supplied with fast connectors and a mechanical system to fix them together.

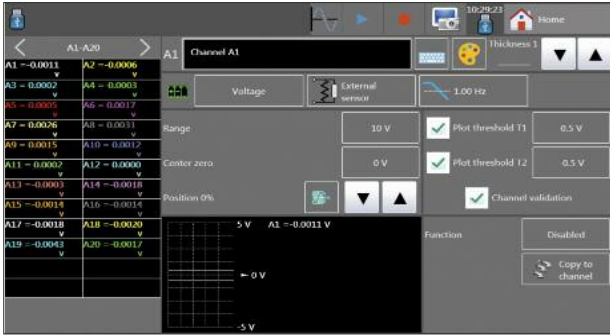


Thermocouple adaptor  
P/N : 902407800



Connector with screws (easy to connect) for DAS220 and DAS240  
P/N : 902406500

Easy-to-use interface with the panoramic touch screen



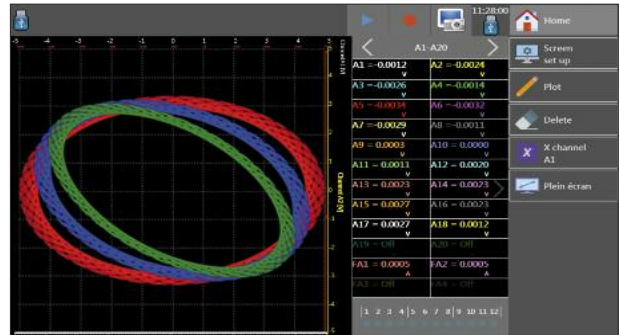
Setup : self-explanatory icons to guide the user.



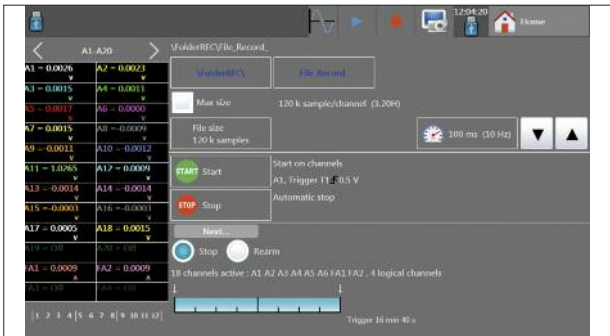
Channels setup: all parameters can be displayed on a single screen.



Numerical display of measurements.



XY mode.



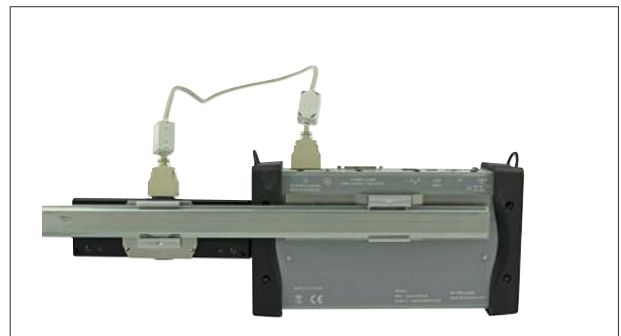
Trigger : multiple choice and combination of threshold, channels and conditions.



Math calculation between channels.



With the rackmount option, you can easily mount your recorder in a test system.  
 P/N : 902209000 for DAS240  
 P/N : 902209000 for DAS220



DIN rail mount kit  
 P/N : 902403000 for DAS240 (60 channels max.)  
 P/N : 902201000 for DAS220

# Multi channel handheld Data acquisition solution 20 to 200 analogue channels

DAS220 / DAS240

## Digital interfaces

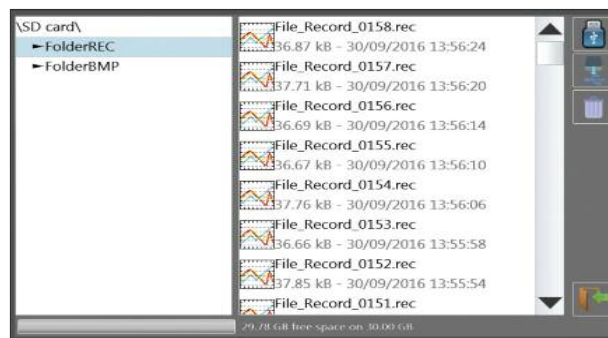
The DAS240 / DAS240BAT are supplied with two USB Host interface and one LAN (Ethernet) interface.



With the 10 inch panoramic touch screen, you can easily perform the signal analysis



Recorded data can be displayed with zoom and cursors.



File management with the DAS240.

## A complete set of accessories and options

- 902403000 DIN rail mount kit
- 902209000 19" rackmount kit
- 902401000 20 channels module
- 902408000 Rugged carrying case
- 902402000 WiFi option (dongle)
- 984405500 16 isolated logical channels
- 902407000 Logical channels patch cord
- 902406500 4-20mA / 50 ohms shunt

## A rugged and waterproof carrying case to protect your instrument (optional)



WiFi communication with the optional WiFi dongle (P/N 902402000)

The VNC application allows you to control all functions of your DAS240.

LabView® driver and plugin for .rec files for National Instruments.



Real vnc™ is trade mark

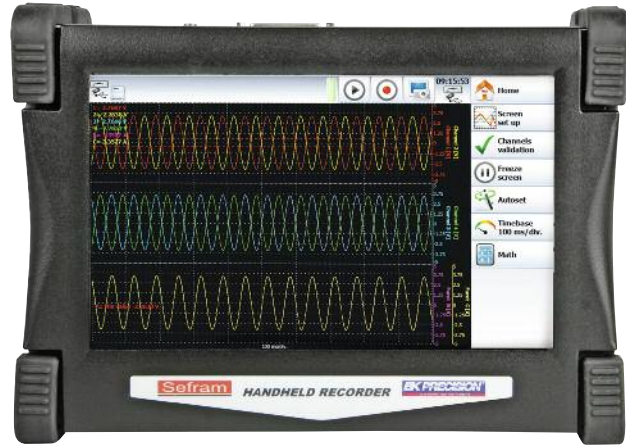
Check for accessories on page 25



Handheld solution for all your data acquisitions

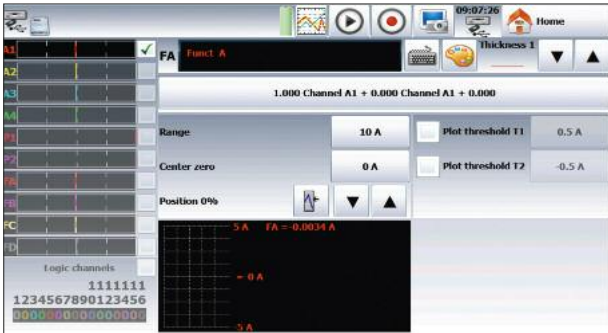
**Capabilities**

- 2 to 6 analogue isolated channels
- Universal input
- DC, RMS AC+DC voltage
- Frequency, thermocouples
- Pt100/Pt1000: option for DAS30/50 and included for DAS60
- 16 logical channels and 2 alarms output
- 14 Bit resolution
- 10 inch LCD coloured touch screen
- Sampling: 1Ms / channel
- Internal 32GB disk (DAS30/50) and 64GB (DAS60)
- Math functions
- Battery operation with 9h30 min 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 DAS30/50/60 are equipped with a 10" touch screen : the user interface become absolutely interactive.



A rugged carrying case

The DAS30/50/60 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.



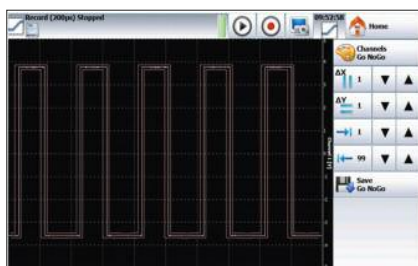


### 110mm thermal printer module

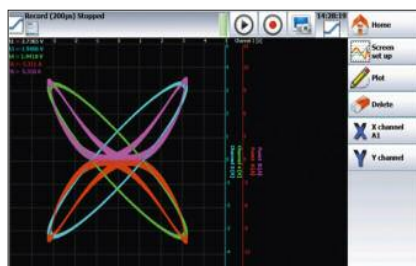
The DAS30/50/60 recorders can be equipped with the compact 110mm thermal printer module (factory option). With this module, you can print very accurately all your acquisitions on thermal paper.



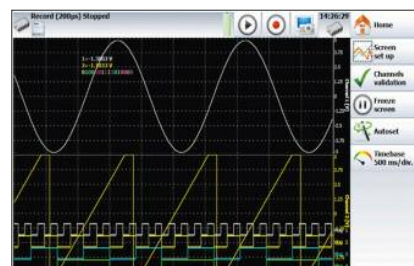
### Flexible records to match your needs



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



XY mode: your recorder 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 three phase 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
- Courant, tension, fréquence.

### Interfaces

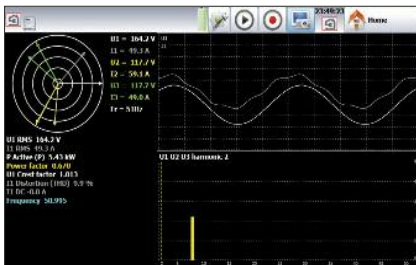
The DAS30/50/60 recorders are equipped with 2 USB interfaces and 1 Ethernet interface.





6 analogue isolated channels  
2 Pt100 input and 16 logical channels.

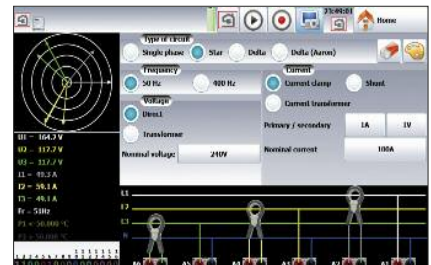
DAS60 : 6 channels Data acquisition solution with complete network analysis up to 400Hz



Graph display and harmonics analysis up to rank 50.



Specific menu to define triggers on selected parameters.



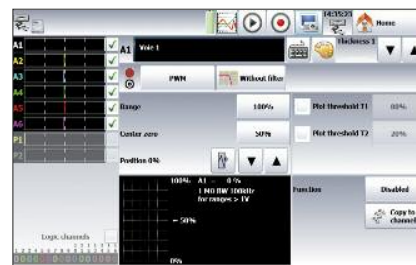
Setup menu with schematics to show how to connect the clamps.

Remote control of your Data Acquisition Solution



Select your WiFi network to remote control your recorder. You can access to all menus and transfer the records (files).

PWM measurements



Measurement on PWM signals is included. Application: motors.



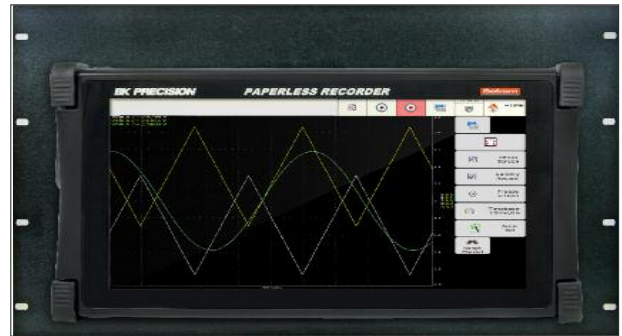
# Paperless Data acquisition solution with 72 analogue channels!

**DAS1700 / DAS1700SV**

The DAS1700 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 DAS1700 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/Pt1000
- 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
- IIRIG, GPS and battery options
- WiFi option
- Co-No-Go mode
- MIL-STD-810G option
- IEC 1010 CAT III 600 V

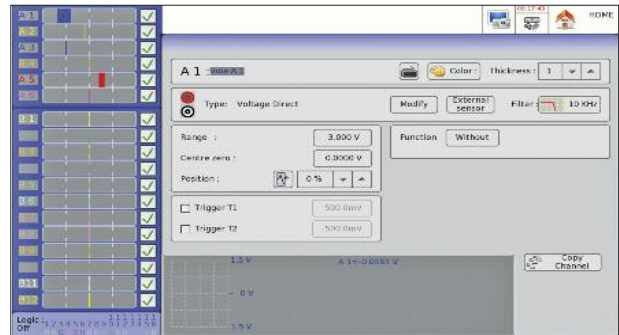


Rack version in option

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

The DAS1700 is equipped with 6 slots which allows the use of combinations and multiples of the following cards :

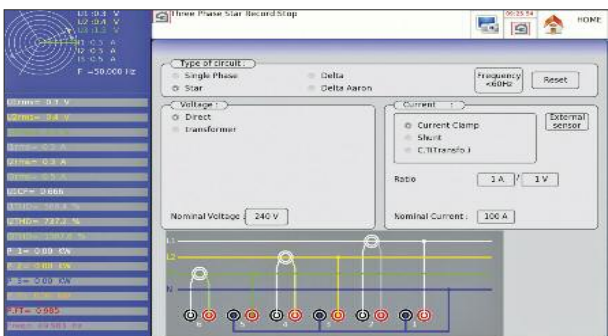
- 6 channel (isolated) universal card, DC, RMS, AC+DC, up to 500VDC/AC
- 12 channel multiplexed card, DC voltage, temperature
- 6 channel isolated strain gauge card, voltage, thermocouple, Pt100/Pt1000
- 6 channel universal isolated card DC, RMS, AC+DC up to 1000V AC/DC (please contact us for details)



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



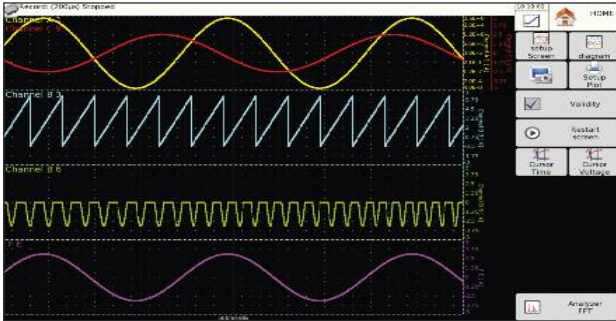
Trigger menu

# Paperless Data acquisition solution with 72 analogue channels!

DAS1700 / DAS1700SV

## Real time acquisition on 500 GB hard disk

To ensure the most accurate measurement recording, the new Sefram family of recorders saves your data directly onto the hard disk - at up to 1MHz for 6 channels simultaneously.



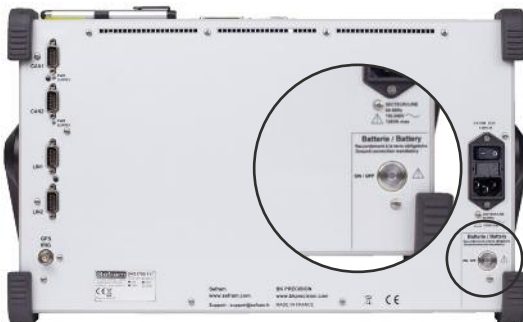
## An IRIG card for greater accuracy of your recordings:

The IRIG option allows you to synchronize the recorder according to a reference time\*  
\*Synchronization via GPS with a coded time signal.



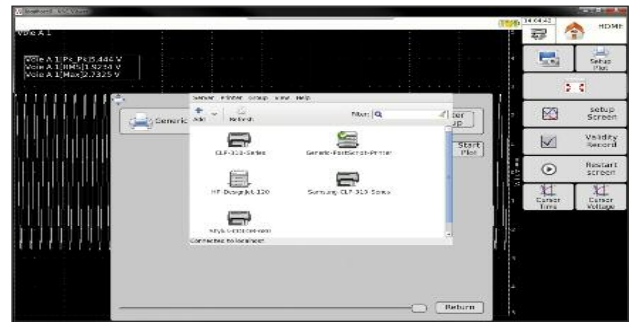
## Operation with battery\* \*optional

Insurance against power cuts - the DAS1700 optional battery provides up to 3 hours battery life to minimize the risk of interruptions to data acquisition.



## Printing

Compatible with all printer (post script)

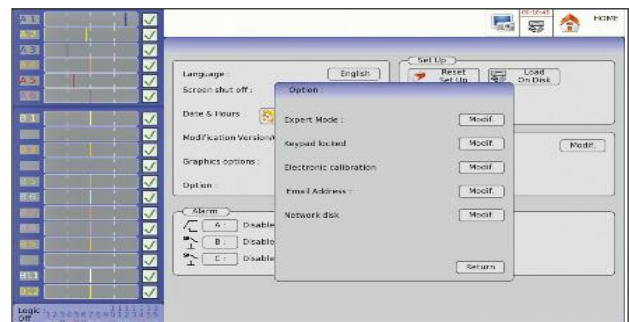


## Simplified data communication and processing

With the Virtual Network Computing software, you can control the DAS1700 simply and effectively via a computer or a compatible tablet.



## Server disk management

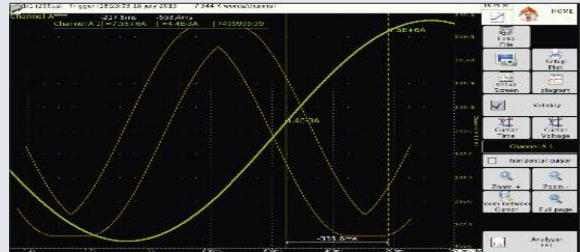
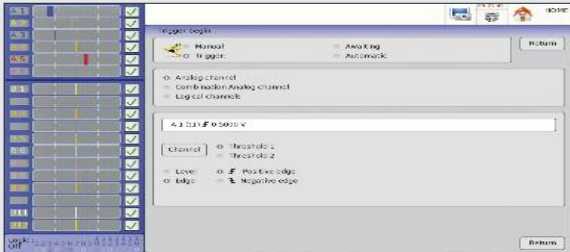


### Sophisticated trigger modes

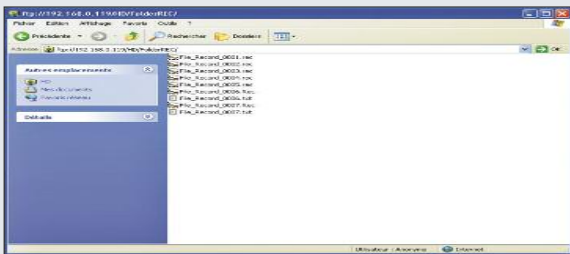
The DAS1700 allows all kinds of trigger :

- On rising or falling edge
- Wait and delay time

- Standard Go-No-Go mode
- On external logical signal
- Pre and post trigger



### FTP: easy transfer of records



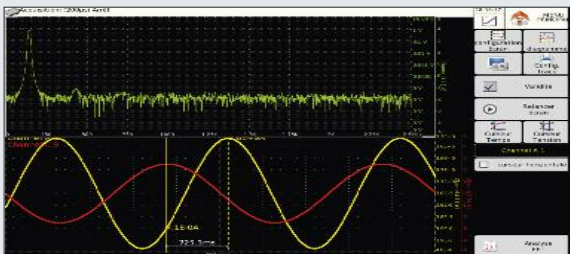
File transfer and display with FTP via TCP-IP network.

### WiFi



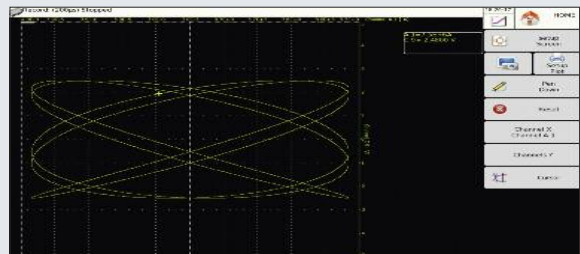
The DAS1700 combines high performance and management simplicity thanks to WiFi. Every recorder application can be remotely controlled.

### FFT analysis



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

### XY mode with "pen up and down" function



Real XY recorder: the DAS1700 will be a good replacement for your analogue graph plotter.

### Digital display

Chan 1 A 1 = -0.8142 V	Chan 2 B 1 = 2.3586 V	Chan 3 C 1 = 0.0002 V
Chan 2 A 2 = -3.8585 V	Chan 3 B 2 = -4.3027 V	Chan 4 C 2 = -2.0828 V
Chan 3 A 3 = -0.2481 V	Chan 4 B 3 = 3.6224 V	Chan 5 C 3 = 4.5448 V
Chan 4 A 4 = -1.4781 V	Chan 5 B 4 = 1.9983 V	Chan 6 C 4 = -5.0000 V
Chan 5 A 5 = -1.4781 V	Chan 6 B 5 = -4.2412 V	Chan 7 C 5 = -5.0000 V
Chan 6 A 6 = 2.7441 V	Chan 7 B 6 = 0.0000 V	Chan 8 C 6 = -1.5903 V

Displays all saved parameters on a single screen for convenience.

### Different operating modes



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



### Zoom Mode Analysis

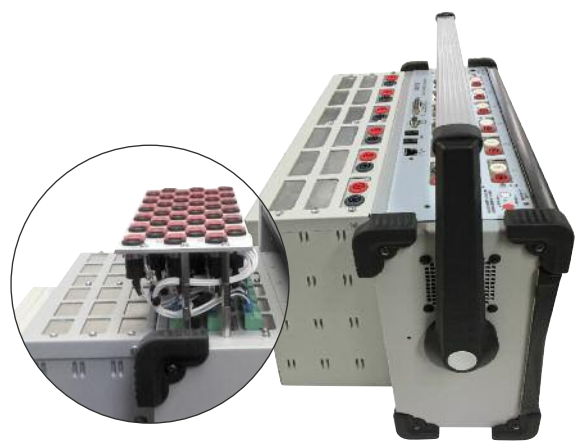
Zoom between two cursors in order to visualize the rising and falling times of specific signals.

# Special functions

## SENT sensors analysis and PWM measurements

P	Valid	Nom	S	Freq	PWM	S	Valid	Nom	S	Tick	CRC
P1	On	Vole G13	1.5V	810.0Hz	70.0%	S1	On	Vole G33	1.5V	3.2us	OK
P2	On	Vole G14	1.5V	811.0Hz	71.0%	S2	On	Vole G34	1.5V	3.2us	OK
P3	On	Vole G15	1.5V	812.0Hz	72.0%	S3	On	Vole G35	1.5V	3.2us	OK
P4	On	Vole G16	1.5V	813.0Hz	73.0%	S4	On	Vole G36	1.5V	3.2us	OK
P5	Off	Vole G17	1.5V			S5	Off	Vole G37	1.5V		
P6	Off	Vole G18	1.5V			S6	Off	Vole G38	1.5V		
P7	Off	Vole G19	1.5V			S7	Off	Vole G39	1.5V		
P8	Off	Vole G20	1.5V			S8	Off	Vole G40	1.5V		
P9	Off	Vole G21	1.5V			S9	Off	Vole G41	1.5V		
P10	Off	Vole G22	1.5V			S10	Off	Vole G42	1.5V		
P11	Off	Vole G23	1.5V			S11	Off	Vole G43	1.5V		
P12	Off	Vole G24	1.5V			S12	Off	Vole G44	1.5V		
P13	Off	Vole G25	1.5V			S13	Off	Vole G45	1.5V		
P14	Off	Vole G26	1.5V			S14	Off	Vole G46	1.5V		
P15	Off	Vole G27	1.5V			S15	Off	Vole G47	1.5V		
P16	Off	Vole G28	1.5V			S16	Off	Vole G48	1.5V		
P17	Off	Vole G29	1.5V			S17	Off	Vole G49	1.5V		
P18	Off	Vole G30	1.5V			S18	Off	Vole G50	1.5V		
P19	Off	Vole G31	1.5V			S19	Off	Vole G51	1.5V		
P20	Off	Vole G32	1.5V			S20	Off	Vole G52	1.5V		

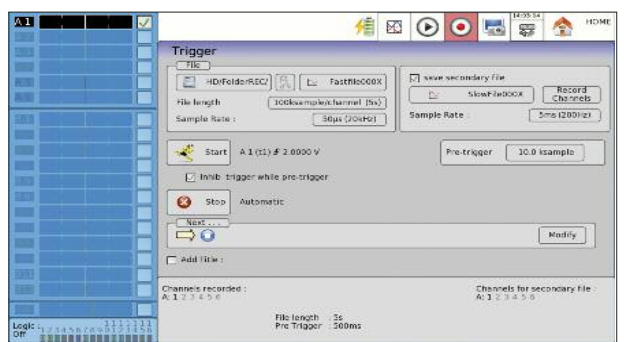
Display of SENT sensors data and PWM measurements.



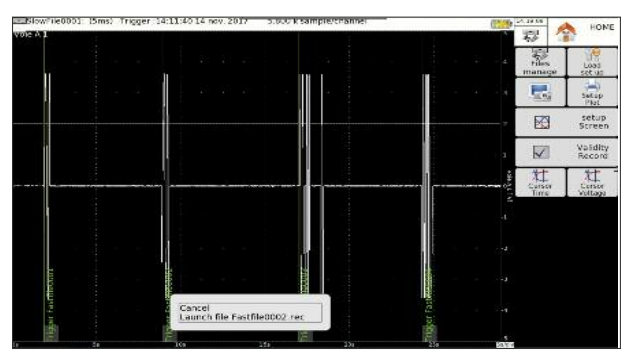
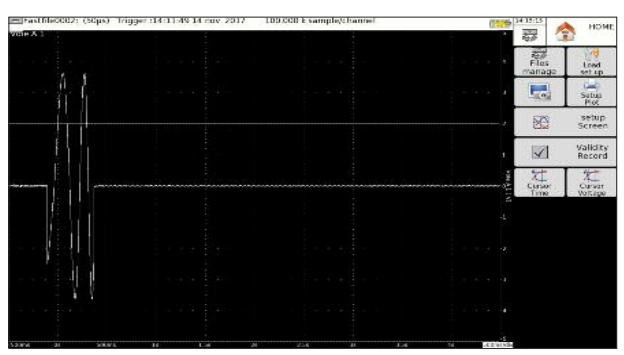
The SENT / PWM factory option is fixed on the back of DAS1700. It provides 20 SENT sensors input and 20 PWM input. P/N : 916009600

## Dual records with different speed

This function allows to record one or more channels with 2 sampling rates and in two separate files. For example: if you record with a trigger, one file will contain the entire signal and the other file will contain the signal after the trigger with the possibility of a different sampling rate. This function is very interesting for a detailed analysis of disturbance.



Trigger menu to define the sampling rates for each records and files.



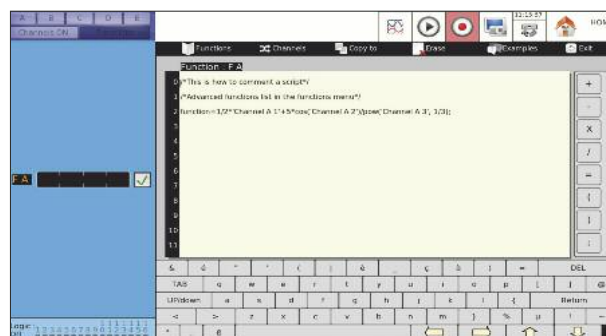
Display of selected events and hard disk saving.





### Script editor to add more calculation features

Use the 24 mathematical functions available in the DAS1700 library to process the calculation you need. These calculations allows you to convert and analyze the data in real time.



### REC type files

Use our .REC data file to develop your dedicated analysis solution of the records. Make the process of analysis automatic with your dedicated software.



### Remote programming and control

Sefram provides the complete set of commands to program and remote control your recorder. You can easily integrate our data acquisition solutions in you test bench or interface them with your ATE equipment.



Thermal Data acquisition solution with 270mm paper width, up to 36 channels and panoramic touch screen

### Capabilities

- 6 to 36 analogue channels
- DC, RMS AC+DC voltage measurements
- Frequency, Thermocouples, Pt100/Pt1000, counter
- Strain gauge board (option)
- 16 logical channels
- 16 bit resolution boards
- Panoramic 15" TFT touch screen
- 270 mm thermal printer
- Maximum sampling rate: 1 Mega sample/s per channel 1Mech /sec par voie
- 100 kHz bandwidth
- Power analysis function
- Memory: 32 Mwords
- Math 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



SEFRAM 8460

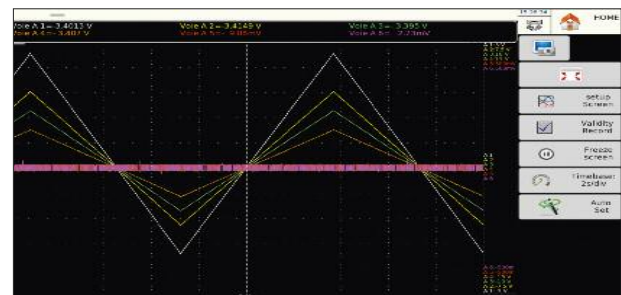


### Highly flexible printing

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



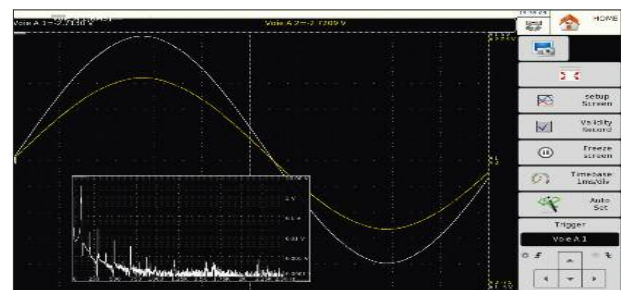
### Data analysis and usage

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.



### Data saving and access

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

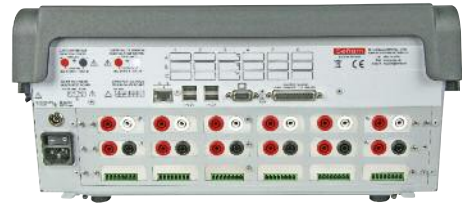


# 6 to 36 Channel Thermal Paper Data Acquisition Solution

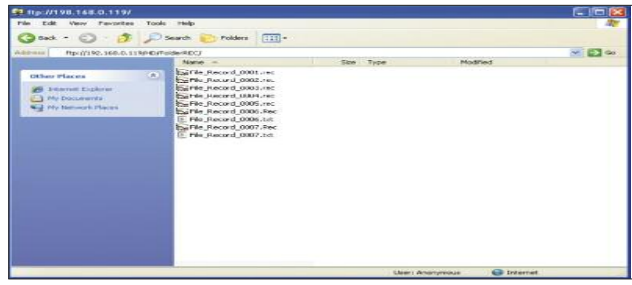
SEFRAM 8460

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.



## FTP: easy transfer of records



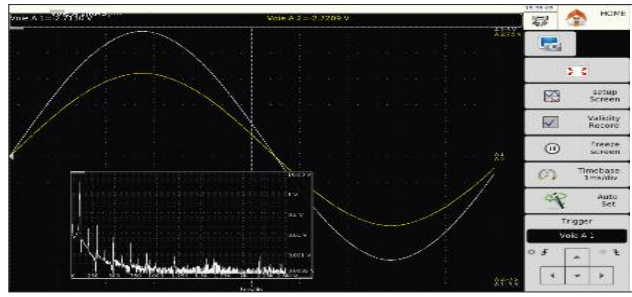
File transfer and display with FTP via TCP-IP network.

## WiFi



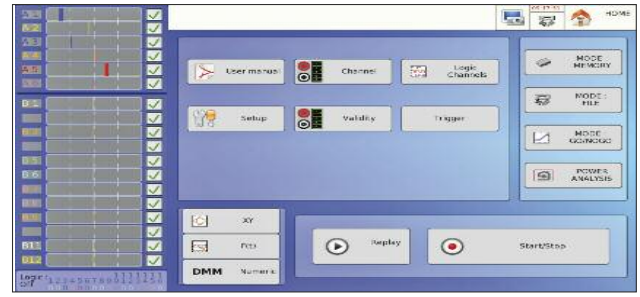
The 8460 combines high performance and management simplicity. Thanks to WiFi: every recorder application can be controlled remotely.

## FFT analysis

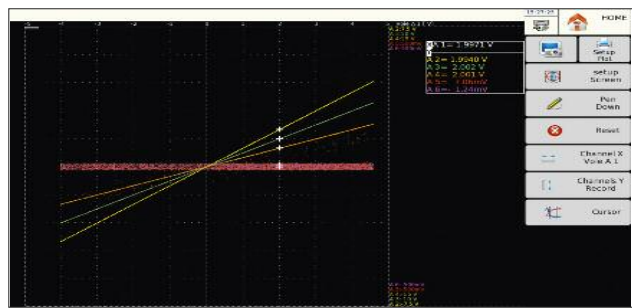


FFT analysis operates in real time. You have easy access to all functions.

## Different operating modes



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



## XY Mode with "pen up and down" function

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

## Choice of 4 input boards :



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.



Set up quickly your recorder to match you application: you can use the measurement boards dedicated to your signals (4 different boards can be plugged in).

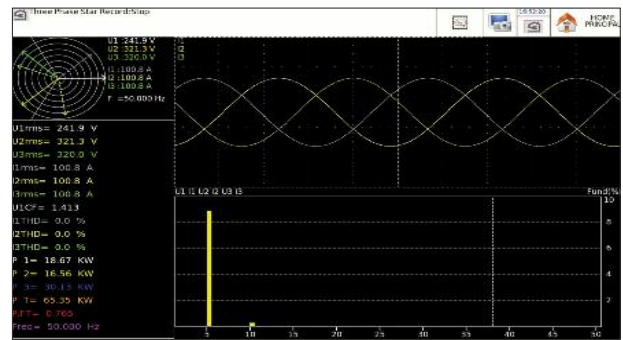
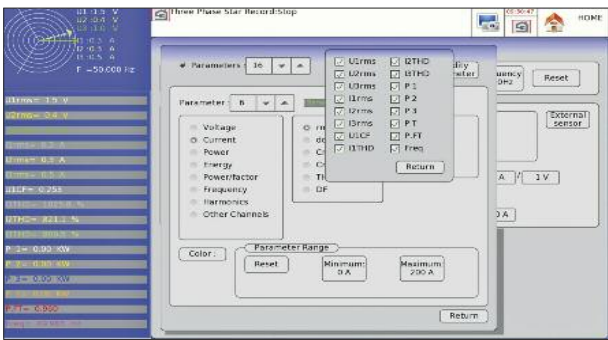
Control your electrical power consumption (networks, motor, ...) Manage your energy spending, monitor your network

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!

**Applications:**

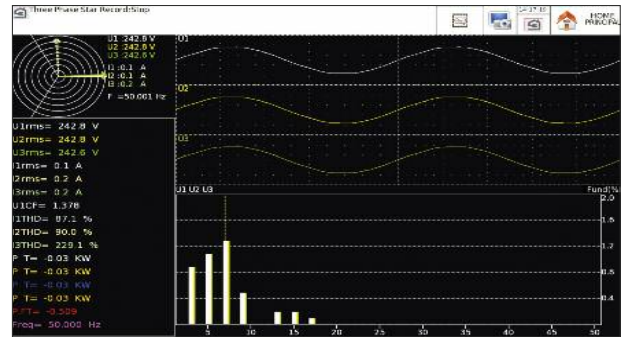
- Real time follow-up and historical analysis, comparison of the power consumptions,
- Preventive and corrective maintenance,
- Measurement and verification of gains from economy improvement schemes

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

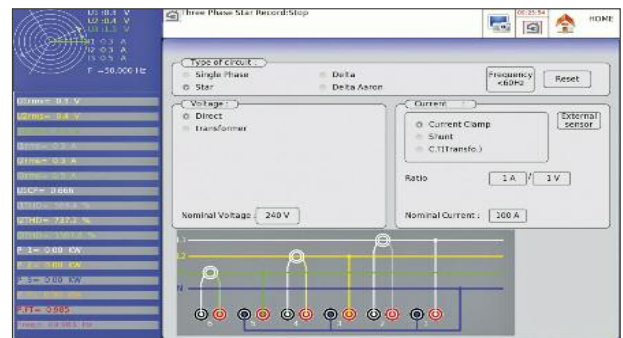


**Capabilities**

- Single-phase, three-phase, networks
- Multiple 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.



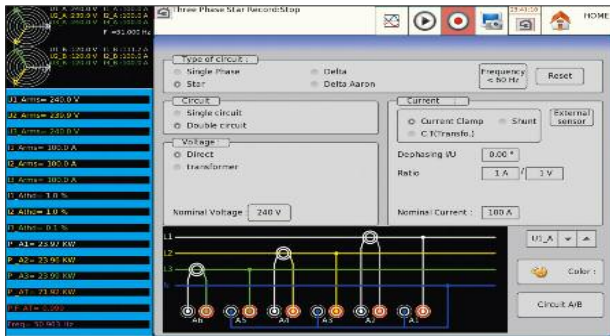
The measurements are operated via current sensors (flexible clamps from 0 to 3000 AAC, or current clamps, or external shunts) and direct voltage inputs (maximum voltage depends on the board used).



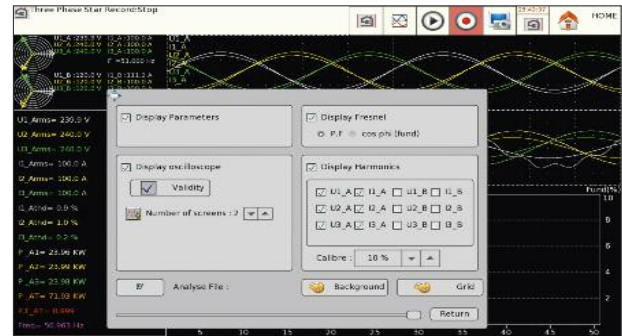
# Network analysis for DAS1700 and 8460

## Network analysis

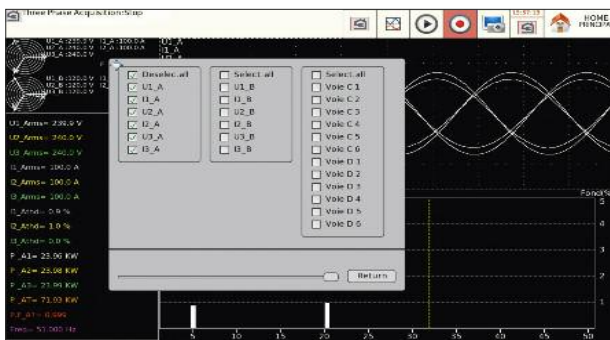
Sefram includes this new feature in both paper and paperless recorders. You can analyse and monitor multiple independent three-phase networks by using our universal input board or the high voltage board, with excellent safety conditions for the user.



View on a single screen all parameters and measurements 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).



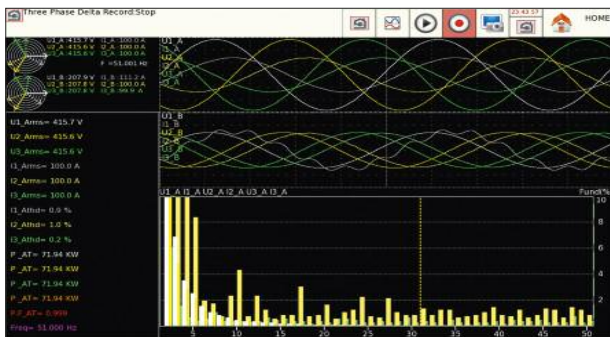
With the setup menu, you can select the parameters you want to measure, display and record.



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.

Mini dataloggers with display

**SeframLOG**

**Capabilities**

- ALCD, 3 digit
- Temperature measurement and record (LOG1601, LOG1620) from -40°C to +85°C
- Relative humidity measurement and record (LOG1620) from 0% to 95%
- Memory: 50,000 measurements
- Programmable alarms
- Built-in hanging system
- Supplied with PC software and USB cord



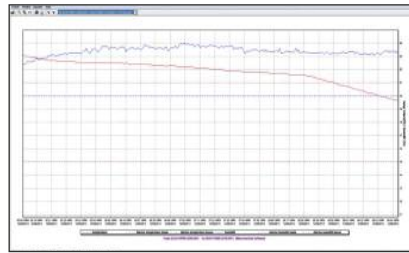
SeframLOG 1620



SeframLOG 1601

**Main functions of the PC software :**

- Set up of SEFRAMLOG 1601 or 1620
- Download of records, erase records
- Display of records, with zoom and cursors
- Export of data to Excel™
- Graph and data printing



Time	Temp (°C)	Humidity (%)
12:00	20.0	65.0
12:05	20.1	65.1
12:10	20.2	65.2
12:15	20.3	65.3
12:20	20.4	65.4
12:25	20.5	65.5
12:30	20.6	65.6
12:35	20.7	65.7
12:40	20.8	65.8
12:45	20.9	65.9
12:50	21.0	66.0
12:55	21.1	66.1
13:00	21.2	66.2
13:05	21.3	66.3
13:10	21.4	66.4
13:15	21.5	66.5
13:20	21.6	66.6
13:25	21.7	66.7
13:30	21.8	66.8
13:35	21.9	66.9
13:40	22.0	67.0
13:45	22.1	67.1
13:50	22.2	67.2
13:55	22.3	67.3
14:00	22.4	67.4
14:05	22.5	67.5
14:10	22.6	67.6
14:15	22.7	67.7
14:20	22.8	67.8
14:25	22.9	67.9
14:30	23.0	68.0
14:35	23.1	68.1
14:40	23.2	68.2
14:45	23.3	68.3
14:50	23.4	68.4
14:55	23.5	68.5
15:00	23.6	68.6
15:05	23.7	68.7
15:10	23.8	68.8
15:15	23.9	68.9
15:20	24.0	69.0
15:25	24.1	69.1
15:30	24.2	69.2
15:35	24.3	69.3
15:40	24.4	69.4
15:45	24.5	69.5
15:50	24.6	69.6
15:55	24.7	69.7
16:00	24.8	69.8
16:05	24.9	69.9
16:10	25.0	70.0
16:15	25.1	70.1
16:20	25.2	70.2
16:25	25.3	70.3
16:30	25.4	70.4
16:35	25.5	70.5
16:40	25.6	70.6
16:45	25.7	70.7
16:50	25.8	70.8
16:55	25.9	70.9
17:00	26.0	71.0
17:05	26.1	71.1
17:10	26.2	71.2
17:15	26.3	71.3
17:20	26.4	71.4
17:25	26.5	71.5
17:30	26.6	71.6
17:35	26.7	71.7
17:40	26.8	71.8
17:45	26.9	71.9
17:50	27.0	72.0
17:55	27.1	72.1
18:00	27.2	72.2
18:05	27.3	72.3
18:10	27.4	72.4
18:15	27.5	72.5
18:20	27.6	72.6
18:25	27.7	72.7
18:30	27.8	72.8
18:35	27.9	72.9
18:40	28.0	73.0
18:45	28.1	73.1
18:50	28.2	73.2
18:55	28.3	73.3
19:00	28.4	73.4
19:05	28.5	73.5
19:10	28.6	73.6
19:15	28.7	73.7
19:20	28.8	73.8
19:25	28.9	73.9
19:30	29.0	74.0
19:35	29.1	74.1
19:40	29.2	74.2
19:45	29.3	74.3
19:50	29.4	74.4
19:55	29.5	74.5
20:00	29.6	74.6
20:05	29.7	74.7
20:10	29.8	74.8
20:15	29.9	74.9
20:20	30.0	75.0
20:25	30.1	75.1
20:30	30.2	75.2
20:35	30.3	75.3
20:40	30.4	75.4
20:45	30.5	75.5
20:50	30.6	75.6
20:55	30.7	75.7
21:00	30.8	75.8
21:05	30.9	75.9
21:10	31.0	76.0
21:15	31.1	76.1
21:20	31.2	76.2
21:25	31.3	76.3
21:30	31.4	76.4
21:35	31.5	76.5
21:40	31.6	76.6
21:45	31.7	76.7
21:50	31.8	76.8
21:55	31.9	76.9
22:00	32.0	77.0
22:05	32.1	77.1
22:10	32.2	77.2
22:15	32.3	77.3
22:20	32.4	77.4
22:25	32.5	77.5
22:30	32.6	77.6
22:35	32.7	77.7
22:40	32.8	77.8
22:45	32.9	77.9
22:50	33.0	78.0
22:55	33.1	78.1
23:00	33.2	78.2
23:05	33.3	78.3
23:10	33.4	78.4
23:15	33.5	78.5
23:20	33.6	78.6
23:25	33.7	78.7
23:30	33.8	78.8
23:35	33.9	78.9
23:40	34.0	79.0
23:45	34.1	79.1
23:50	34.2	79.2
23:55	34.3	79.3
00:00	34.4	79.4
00:05	34.5	79.5
00:10	34.6	79.6
00:15	34.7	79.7
00:20	34.8	79.8
00:25	34.9	79.9
00:30	35.0	80.0
00:35	35.1	80.1
00:40	35.2	80.2
00:45	35.3	80.3
00:50	35.4	80.4
00:55	35.5	80.5
01:00	35.6	80.6
01:05	35.7	80.7
01:10	35.8	80.8
01:15	35.9	80.9
01:20	36.0	81.0
01:25	36.1	81.1
01:30	36.2	81.2
01:35	36.3	81.3
01:40	36.4	81.4
01:45	36.5	81.5
01:50	36.6	81.6
01:55	36.7	81.7
02:00	36.8	81.8
02:05	36.9	81.9
02:10	37.0	82.0
02:15	37.1	82.1
02:20	37.2	82.2
02:25	37.3	82.3
02:30	37.4	82.4
02:35	37.5	82.5
02:40	37.6	82.6
02:45	37.7	82.7
02:50	37.8	82.8
02:55	37.9	82.9
03:00	38.0	83.0
03:05	38.1	83.1
03:10	38.2	83.2
03:15	38.3	83.3
03:20	38.4	83.4
03:25	38.5	83.5
03:30	38.6	83.6
03:35	38.7	83.7
03:40	38.8	83.8
03:45	38.9	83.9
03:50	39.0	84.0
03:55	39.1	84.1
04:00	39.2	84.2
04:05	39.3	84.3
04:10	39.4	84.4
04:15	39.5	84.5
04:20	39.6	84.6
04:25	39.7	84.7
04:30	39.8	84.8
04:35	39.9	84.9
04:40	40.0	85.0
04:45	40.1	85.1
04:50	40.2	85.2
04:55	40.3	85.3
05:00	40.4	85.4
05:05	40.5	85.5
05:10	40.6	85.6
05:15	40.7	85.7
05:20	40.8	85.8
05:25	40.9	85.9
05:30	41.0	86.0
05:35	41.1	86.1
05:40	41.2	86.2
05:45	41.3	86.3
05:50	41.4	86.4
05:55	41.5	86.5
06:00	41.6	86.6
06:05	41.7	86.7
06:10	41.8	86.8
06:15	41.9	86.9
06:20	42.0	87.0
06:25	42.1	87.1
06:30	42.2	87.2
06:35	42.3	87.3
06:40	42.4	87.4
06:45	42.5	87.5
06:50	42.6	87.6
06:55	42.7	87.7
07:00	42.8	87.8
07:05	42.9	87.9
07:10	43.0	88.0
07:15	43.1	88.1
07:20	43.2	88.2
07:25	43.3	88.3
07:30	43.4	88.4
07:35	43.5	88.5
07:40	43.6	88.6
07:45	43.7	88.7
07:50	43.8	88.8
07:55	43.9	88.9
08:00	44.0	89.0
08:05	44.1	89.1
08:10	44.2	89.2
08:15	44.3	89.3
08:20	44.4	89.4
08:25	44.5	89.5
08:30	44.6	89.6
08:35	44.7	89.7
08:40	44.8	89.8
08:45	44.9	89.9
08:50	45.0	90.0
08:55	45.1	90.1
09:00	45.2	90.2
09:05	45.3	90.3
09:10	45.4	90.4
09:15	45.5	90.5
09:20	45.6	90.6
09:25	45.7	90.7
09:30	45.8	90.8
09:35	45.9	90.9
09:40	46.0	91.0
09:45	46.1	91.1
09:50	46.2	91.2
09:55	46.3	91.3
10:00	46.4	91.4
10:05	46.5	91.5
10:10	46.6	91.6
10:15	46.7	91.7
10:20	46.8	91.8
10:25	46.9	91.9
10:30	47.0	92.0
10:35	47.1	92.1
10:40	47.2	92.2
10:45	47.3	92.3
10:50	47.4	92.4
10:55	47.5	92.5
11:00	47.6	92.6
11:05	47.7	92.7
11:10	47.8	92.8
11:15	47.9	92.9
11:20	48.0	93.0
11:25	48.1	93.1
11:30	48.2	93.2
11:35	48.3	93.3
11:40	48.4	93.4
11:45	48.5	93.5
11:50	48.6	93.6
11:55	48.7	93.7
12:00	48.8	93.8
12:05	48.9	93.9
12:10	49.0	94.0
12:15	49.1	94.1
12:20	49.2	94.2
12:25	49.3	94.3
12:30	49.4	94.4
12:35	49.5	94.5
12:40	49.6	94.6
12:45	49.7	94.7
12:50	49.8	94.8
12:55	49.9	94.9
13:00	50.0	95.0

Delivered with: USB cable, software, battery and user manual

**Applications :** Temperature and humidity monitoring, HVAC monitoring, fridge temperature monitoring, heating system monitoring, cold chain,.....



## Current clamp

SP 201 - Current clamp (200 AAC, 10 mV/1A,  $\varnothing$  15 mm)  
 SP 221 - Current clamp (10 AAC, 100 mV/1A,  $\varnothing$  15 mm)  
 SP 230 - Current clamp (1200 AAC, 1 mV/1A,  $\varnothing$  50 mm)  
 SP 261 - Current clamp (1200 AAC+DC, 1 mV/1A,  $\varnothing$  50 mm)  
 SP 270 - Current clamp (2000 AAC, 1 mV/1A,  $\varnothing$  70 mm)  
 A1587 - Flex current clamp (30A / 300A / 3000A) AC

## Shunts

910007100 - 0,01 $\Omega$ , 1%, 3A max, with banana connectors  
 910007200 - 0,1 $\Omega$ , 1%, 1 Amax, with banana connectors  
 989006000 - 1 $\Omega$ , 0,1%, 0.5A max, with banana connectors  
 912008000 - 10 $\Omega$ , 0,5%, 0.15A max, with banana connectors  
 989007000 - 50 $\Omega$ , 0,1%, 50mA max, with banana connectors  
 207030301 - 0,01 $\Omega$ , 0,5%, 30A max, with banana connectors  
 902406500 - 50 $\Omega$ , 0,1%, for DAS240

## Carrying cases

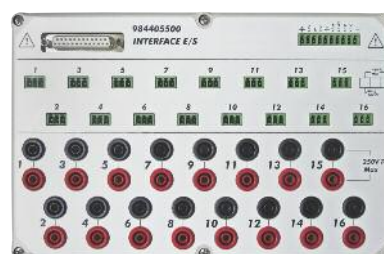
916008000 - carrying case for DAS1700/8460  
 916008500 - carrying case for DAS 1700 with extension  
 984605000 - carrying case for 8460  
 902408000 - carrying case for DAS240

## Logical inputs

902407000 - 16-channel logic cable  
 917008000 - 16-channel logic adapter box



902407000 - 16-channel logic cable



91700800 - 16-channel logic adapter box

**Technical support**

We will answer all your technical questions: :

- Help to start with your instrumen
- Technical information on products
- Software install and setup
- Selection of products for specific applications

**Tél : 00.33.(0)4.77.59.01.01**

**Free software updates for all Sefram products**

Our website provides the latest embedded software for all products. Please browse our website to check the latest updates for your product [www.sefram.com](http://www.sefram.com)

**Sefram's Services :**

- To contact our after-sales department by e-mail: [services@sefram.fr](mailto:services@sefram.fr).
- To ship back material for calibration or repair : SEFRAM - SAV - 32, rue Edouard Martel BP 55 - F42009 SAINT-ETIENNE Cedex 2 - France.
- To ease the receipt, we ask you to download from our website and fill the RMA as indicated on the PDF.
- The RMA filled should be inserted in the parcel with the product returned (one RMA per product).

**Using SEFRAM's services, you will :**

- Get the best price for repair and maintenance
- Get a quote in a very short period of time
- Get a warranty for your repair or upgrade

Specifications subject to change without notice - CAT-ENG-2023 A 00

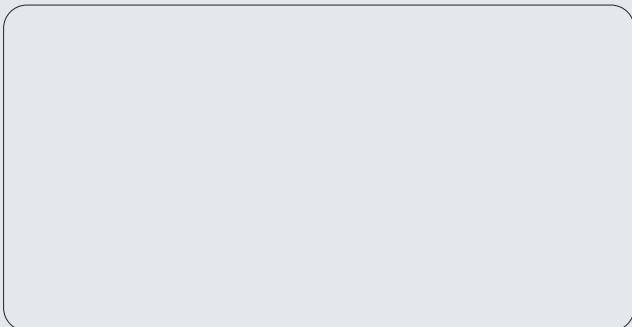


For assistance or ordering



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 Tél. +33 (0) 4.77.59.01.01 / Fax. +33 (0) 4.77.57.23.23  
 Web : [www.sefram.com](http://www.sefram.com) - e-mail : [sales@sefram.com](mailto:sales@sefram.com)

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