The new DAS 1400

family of paperless recorders offers up to 36 analogue inputs to cover all your applications

The DAS1400 are the latest generation of portable paperless recorders, ideal to measure, record and analyse signals up to 100 kHz.
The wide bandwidth, internal hard disk (80Gb) and large LCD screen, together with a new user interface under Linux© offers excellent performance with ease-of-use. Comprehensive interfaces (USB and Ethernet) are built into each recorder.

2 WARANTY YEARS

- Power Energy/Analysis
- Strain Gauge board

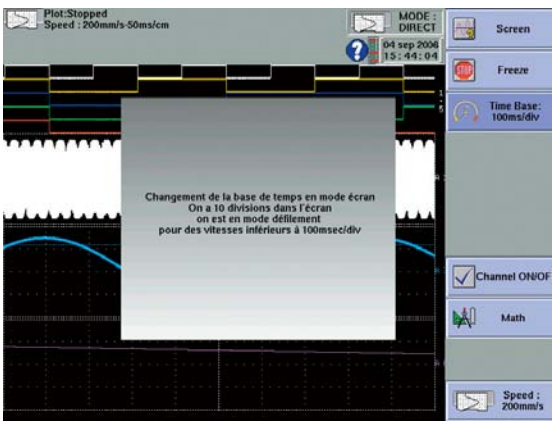
DAS 1400 : New design

Capabilities

- 6 to 36 analogue channels
- Universal input
- DC, AC+DC RMS voltage measurement
- Strain Gauge measurement (option)
- Frequency, thermocouple and PT100 measurement
- 16 logical channels
- 16-bit resolution
- 1Mega sample/s sampling rate
- 100 kHz bandwidth
- 20 automatic measurements
- Power Analysis function
- 12" TFT LCD screen
- 32Mword memory
- 80 Gb internal hard disk
- Interfaces: USB, Ethernet, XGA
- IEC 1010 – Cat III 600V

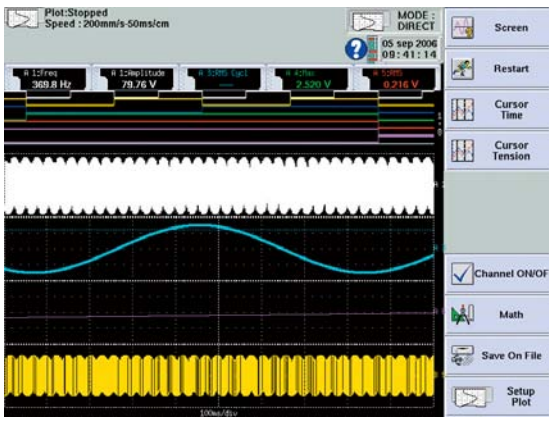
Ease of use

DAS1400 are the easiest to use recorders on the market today. The concept of previous families has been maintained, but now backed by the Linux operating system.
All parameters are displayed on the screen. With the mouse, you can access and change functions and parameters. A help screen is provided for each function..



Panoramic LCD screen

The high resolution LCD screen provides excellent quality real-time graphical display, even in difficult conditions.



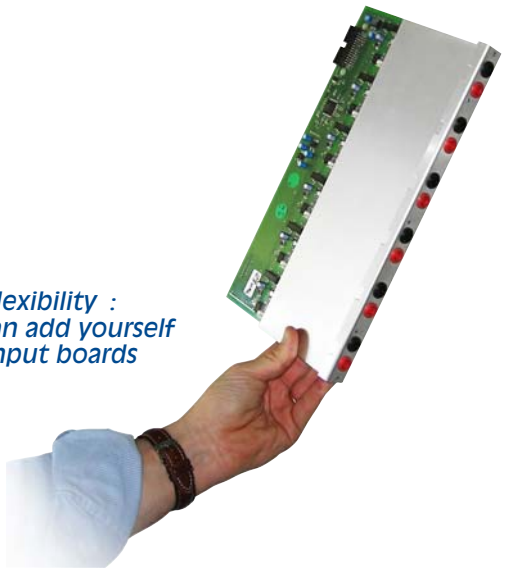
DAS1400

6 to 36 analogue channels

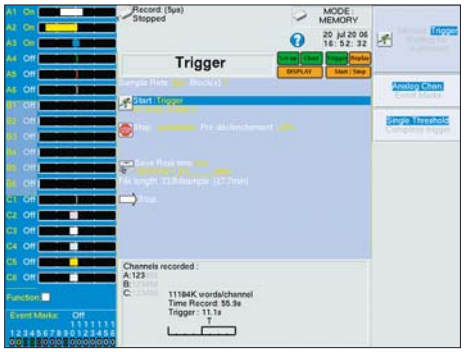
The DAS1400 can be configured with 6, 12, 18, 24, 30 or 36 analogue channels and 16 logical channels. You can choose between two types of input modules :

- 6 universal inputs: Designed for high speed and high voltage applications
- 6 isolated strain gauge input
- 12 multiplexed inputs : designed for temperature and low voltage applications

The DAS1400 is very flexible. The user can configure or upgrade the recorder for particular applications with up to three modules. Modules can be added or exchanged without return to the factory.

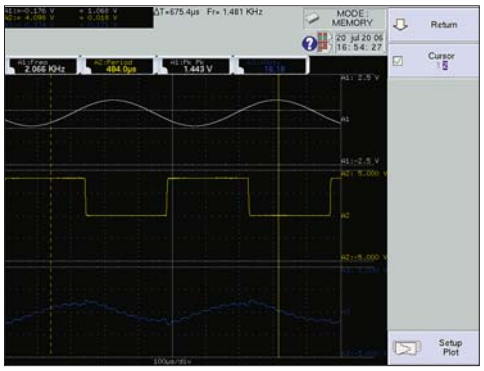


High flexibility : you can add yourself new input boards



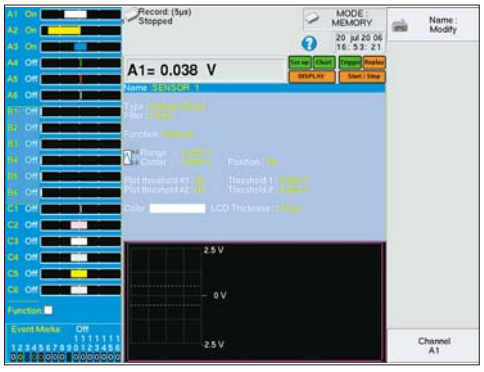
Real time acquisitionon hard disk

For long recording, the DAS1400 provides direct acquisition onto the internal hard disk – up to 100kHz for 6 channels simultaneously.
Various trigger modes simplify the capture of complex signals: edge, date, alarms, Go-No-Go,…



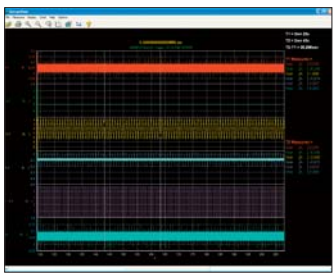
Data analysis

The DAS1400 provides 20 automatic measurements that can be setup to suit your application. The DAS1400 includes a power analysis function (see page 10) that can be used for single phase, dual phases and three phases networks. Cursors can be associated to zoom mode (zoom in and out) to get the best analysis of your graphs, with exceptional accuracy.



Data storage and interface

The DAS1400 offers various storage options: internal hard disk (80Gb), external USB flash memory (USB key), USB storage devices (CD/DVD writer, external hard disk,…). You can save your records and the recorder parameters (setup).
The Ethernet interface provides fast and efficient remote control of the recorder and will allow very fast transfer of data files to personal computers.



Complete software

SEFRAM VIEW and SEFRAM PILOT are supplied with your recorder. SEFRAM VIEW displays graphs on your personal computer as well as export to a spreadsheet (Excel©) or word processor (Word©). SEFRAM PILOT allows you the remote control and the setup of the recorder.

DAS1400

DAS1400

Specifications - Universal input board

Channels : 6 per board

Voltage

DC voltage ranges:	1mV to 1000 V
Max offset:	± 5 ranges (except 1000V)
Accuracy:	± 0,1% ± 10 µV ± 0,2% offset
TRMS AC+DC :	200 mV to 500 V
Bandwidth (-3dB):	5Hz to 500Hz
Crest factor :	2,2

Frequency

Sensitivity	300mV rms min.
Duty cycle	10%
Frequency range	10Hz to 100 kHz
Basic accuracy	0,2% of full scale
Maximum input voltage	± 500VDC or 440V AC (sine)

Temperature

Sensor	Using environnement	Ranges
J	-20°C to 1200°C	20°C to 2000°C
K	-250°C to 1370°C	20°C to 2000°C
T	-200°C to 400°C	20°C to 500°C
S	-50°C to 1760°C	50°C to 2000°C
B	-200°C to 1820°C	50°C to 2000°C
E	-250°Cto 1000°C	20°C to 1000°C
N	-250°C to 1300°C	20°C to 1000°C
W5	0 à 2320°C	50°C to 2000°C
Accuracy	Cold junction compensation : ±1,25°C	

Sampling

Resolution	14 bits
Sampling rate	1M sample/sec per channel
Memory length	32M word in segments of up to 128 Blocks
Triggering	Positive edge, negative edge, on logical input, delay, Go No Go.
Pre trigger	-100% à +100%

Bandwidth

Analog input bandwidth (-3dB)	range ≥ 1V: 100kHz range ≤ 50mV : 20kHz min
Programmable digital filters	10Hz, 100Hz,1kHz,10kHz
Input impedance (DC)	>25MΩ for range <1V 1MΩ for upper ranges
Input capacitance	150pF typ.
Maximum input voltage	between one channel and the frame ground ± 500V between 2 terminals of one channel ± 500V
Isolation between frame ground and channel	>100MΩ at 500VDC

Logic input

Channels	16
TTL - Max voltage	24V
Available functions	triggering acquisition on alarm triggering on logical words acquisition in memory mode 4, 8, 16 channels paper trace
Sensor supply	12 V DC
Alarms	3 (2 TTL , 1 relay)

Strain gauge board

See detailed specifications page 10

Power/Energy Analysis

See detailed specifications page 11

More productivity with the software

Flexpro® sofware* :

Powerful analysis software
with more than 100 functions.

* option

Specifications - Multiplexed board

Channels : 12 per board

Voltage

DC voltage ranges:	1mV to 50 V
Max offset:	± 5 ranges
Accuracy:	± 0,1% ± 10µV ± 0,1% offset
TRMS AC+DC :	200mV to 50V.
Bandwidth (-3dB):	5Hz to 100Hz
Crest factor :	2,2

Temperature

Sensor	Using environnement	Ranges
PT100 (2,3,4 Fils)	-200°C to 850°C	20°C to1000°C
J	-20°C to 1200°C	20°C to 2000°C
K	-250°C to 1370°C	20°C to 2000°C
T	-200°C à 400°C	20°C to 500°C
S	-50°C to1760°C	50°C to 2000°C
B	-200°C to 1820°C	50°C to 2000°C
E	-250°Cto1000°C	20°C to 1000°C
N	-250°C to 1300°C	20°C to 1000°C
W5	0 to 2320°C	50°C to 2000°C
Accuracy	Cold junction compensation: ±1,25°C	

Sampling

Resolution	16 Bits
Sampling rate	200µs maxi. (5K sample/s)
Memory length	32M word in segments of up to 128 Blocks
Triggering	Positive edge, negative edge, on logical input, delay, Go No Go.
Pre trigger	-100% à +100%

Bandwidth

Analog input bandwidth (-3dB)	1kHz à -3dB
Programmable digital filters	0,1Hz, 1Hz,10Hz,100Hz
Input impedance (DC)	2 MΩ ranges >5V
Input capacitance	10MΩ (150pF) for other ranges
Maximum input voltage	between one channel and the frame ground ± 50V between 2 terminals of one channel ± 50V all input are differential, non isolated
Common mode voltage (max.)	± 5V for ranges < 5V ± 50V for ranges > 5V

General Specifications

Display

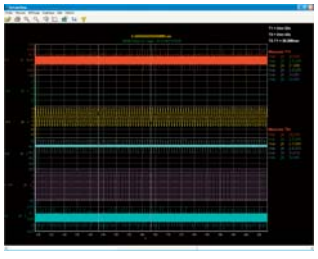
Display	TFT LCD coloured screnn 12 inches
Calculation functions :	f(t) and XY functions Zoom, cursors, dV,dT and zoom between cursors y=ax+b , y=/x/+b, y=a√x+b+c, y=ax²+b, y=(log x)+b, y=ae^(bx+b)+c +, - , x , / between channels
Automatic measurements	20 automatic measurements (F, T, Vpp, Tm…)
Power analysis function	see detailed description page 11

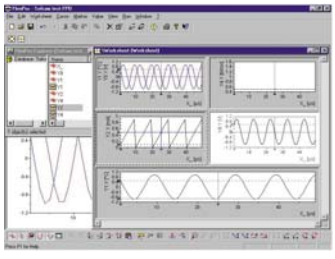
Storage

Setup backup :	16 named in RAM, unlimited on the hard disk
Internal hard disk	80 Gb.
Interfaces	4 USB ports, VGA, Ethernet

Miscellaneous

Power supply	85VAC to 264 VAC, 47Hz to 63 Hz
Max. consumption :	60W
Dimensions & weight	384 x 445 x 195 , 7,5 kg
Operating temperature range	0°C to 40°C
Storage temperature range :	-20°C to 60°C
Max. RH	80% (without condensation)
Warranty period	1 year
Safety	IEC1010 CAT III , 600V





Strain Gauge board

for DAS1400 and 8440

- 6 isolated channels
- Full bridge and half bridge
- Input : 1mV to 50V
- Sampling rate : 100ks/s
- Resolution : 16 bit
- Analogue and digital filters
- Temperature measurement

strain gauge board

Capabilities

Channels	6 (fully isolated)
Measurements	Strain jauge, voltage, thermocouple and current with optional external shunt
Input	differential, fully isolated
Input impedance	2 MΩ for ranges < 1 Volt 1 MΩ for ranges >= 1 Volt
Maximum input voltage (Between one input and ground, or between ground and mechanical chassis)	200V DC
Input voltage	± 50V
Isolation (between channels and mechanical chassis)	>100 MΩ under 500V
Input connectors	Fast plug-in / plug-out, 6 contacts per channel
All accuracies are given with 1Hz filter **Voltage measurement**	
Maximum range	50 V
Lowest range	1 mV
Maximum offset	±50V limited at ± 5 ranges
Accuracy	± 0.1% of full scale ± 10µV ± 0.1% of offset
Resolution	16 bit
Offset drift	100ppm/°C ±1 µV/°C
Sampling rate	100kHz (or 10µs)
Noise	<30µV without filter
Strain Gauge measurements The unit is µSTR (micro strain) - 2000µSTR = 1 mV/V	
Bridge	Full bridge (4 and 6 wires), half bridge
Automatic balancing range	±25000 µSTR
Bridge supply voltages	2V and 5V (symetrical ±1V and ±2.5V)
Gauge rate	2 (ajustable between 1.8 and 2.2)
Maximum range	50 000 µSTR
Minimum range	1000 µSTR
Maximum offset	±50000µSTR
Accuracy	± 0.1% of full scale ± 5µSTR ± 0.1% of offset
Resolution	16 bit
Sampling rate	100kHz (or 10µs)
Offset drift	100ppm/°C ±1 µV/°C
Bandwidth	
3 dB bandwidth	>18 KHz
Analogue filter (low pass 60dB/decade)	1KHz,100Hz, 10Hz
Low pass (digital)	1 Hz, 0.1 Hz, 0.01 Hz, 0.001 Hz

Temperature measurement

Cold junction compensation for J,K,T,S,N,E,W5 thermocouples : ± 1.25 °C

Sensor	Maximum possible range	Range
COUPLE J	-210°C to 1200 °C	20 °C to 2000 °C
COUPLE K	-250°C to 1370 °C	20 °C to 2000 °C
COUPLE T	-200°C to 400 °C	20 °C to 500 °C
COUPLE S	-50°C to 1760 °C	50 °C to 2000 °C
COUPLE B	200°C to 1820 °C	50 °C to 2000 °C
COUPLE E	-250°C to 1000 °C	20 °C to 1000 °C
COUPLE N	-250°C to 1300 °C	20 °C to 1000 °C
COUPLE W5	0°C to 2320 °C	50 °C to 2000 °C

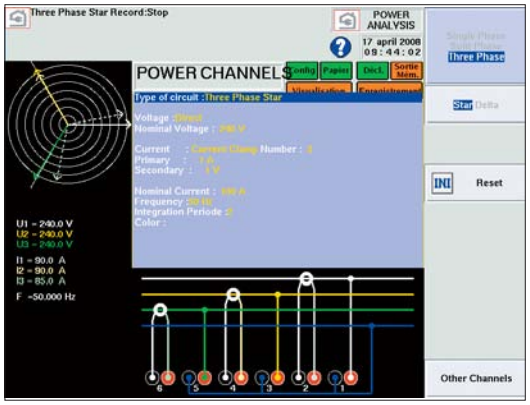
To order
984402500

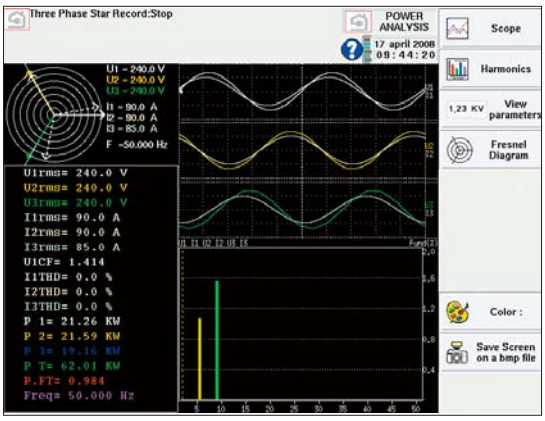
This optional board can be added to your DAS1400 or 8440 without factory return.
Your recorder must have an updated firmware. The firmware update is free of charge from our website. If assistance is needed, please contact our technical support.

Energy / Power Analysis

for DAS600 / DAS1400 and 8440

- Single phase, dual phases, three phases networks
- Fresnel Diagram
- Oscilloscope mode
- Harmonics up to rank 50
- Memorization of harmonics
- Calculated values : mean value, RMS value, peak value, crest factor, THD, DF, active power, apparent power, reactive power, power factor (cos Φ).





New applications for your recorder

The new Power /Energy analysis function allows new applications for your SEFRAM recorder. Graphical display will ease the diagnostic and trouble shooting of your electrical networks: you will save time and energy !
This feature can be added by upgrading the embedded software. The new software release is free of charge and can be downloaded from our website. Please contact our technical support if assistance is needed.

Performance and simplicity
to suit numerous applications.

These graphical recorders aresimple to configure and easyto use. The 8210 & 8211 two channel models feature :single function per key, rapidacquisition and display on thegraphic screen (8211), recall of the zero position,... For portable applications, either model can be suppliedwith a carrying case and protective cover. Also available as rack

- 2 synchronised universal input channels
- Colour pen plotting
- Selectable paper speed or external clock control
- Adjustable trace offset
- Selectable noise filters
- RS 232 Interface
- Portable or rack mounting

SEFRAM 8211 features :

- Portable or rack mounting
- XY Mode
- Transient Signal capture
- Parameter printout
- Alarms (2 relays)
- Back lit display

SEFRAM	8210	8211
Channels	2 synchronised	
Voltage Inputs	1 mV to 100 V (0.25% FS ±10 µV)	
Current Inputs	with shunts*	
Temperature	thermocouples(J, K, T, S, B, E, N, W5)and Pt 100 sensors	
Resolution	12 bits	
Resolution	-	2 x 7 kwords
Bandwidth	5 Hz	
Input Impedance	> 25 MΩ (range.≤ 2V) /2Ω (range.> 2V)	
Transient Sampling Period	-	50µs À 1s
Filters	0,02/ 0,07/ 0,25 /0,5 /1Hz	
Paper width	250 mm	
Paper Speed	1cm/h à 5cm/s + horloge externe	
Pen Speed	1,5 m/s maxi	
f(t) and XY Modes	-	yes
Digital plotting	-	yes
Interface	RS 232	
Power supply	85 à 264 VAC	
Dimensions & weight	450 (L) X 220 (P) X 150 (H) mm ; 5 kg	
Warranty	1 year	

Supplied with a paper roll, two pens, a power cord and a user's manual
Add value to your recorder by using our accessories.

** optional*

For protection during transportation or storage, we recommend the use of the rigid shock-resistant transport case.

Power Analysis

Design and manufacturing center in Saint-Etienne / France

Technical support

Our technical support team will provide all necessary information for getting the best performance from our products.

Please contact us : +33 4 77 59 36 97

E-mail : support@sefram.fr

Product updates

Software revisions can be downloaded free from our website. Do not hesitate to visit it frequently to check for available updates. **www.sefram.fr**

Product service

Our service department can provide the best support for your products: periodic maintenance, product upgrades and repair.

Please do not hesitate to contact us for :

- periodic maintenance
- warranty extension
- traceable calibration reports
- spare parts
- repair

ACCESSORIES FOR RECORDER

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 adapters BNC/Ban.; 3 test leads; 3 power supplies and a carrying pouch

ELD.1054 700 V Kit, 1 phase

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

ELD.1055 1500 V Kit, 1 phase

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

CONNECTION KITS

ELD.1060 6 channels connection Kit

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

ELD.1061 Universal 6 channels connection Kit

Contains: 12 Test leads/ Ban./Ban. (2 m), 12 mini-clip leads, 12 flexible Grabbers, 12 Alligator clips and a carrying pouch

ELD.1062 12 channels low voltage connection Kit

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

ELD.1063 Coaxial Kit

Contains : 6 cables BNC/ 2 x ban.-(50 Ω-2 m) and a carrying pouch

ELD.1057 Connection Kit for Power and Energy Analysis

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

CURRENT CLAMPS

SP 201 Current clamp (200 AAC, 10 mV/1A, ø 15 mm)
SP 221 Current clamp (100 AAC, 100 mV/1A, ø 15 mm)
SP 230 Current clamp (1200 AAC, 10 mV/1A, ø 50 mm)
SP 261 Current clamp (1200 AAC+DC, 1 mV/1A, ø 50 mm)
SP 270 Current clamp (2000 AAC, 1 mV/1A, ø 70 mm)

SHUNTS

910007100 0,01Ω, 1%, 10 Amax., safety banana plugs
910007200 0,01Ω, 1%, 3 Amax., safety banana plugs
989007000 50Ω, 0,5% 50 Amax., safety banana plugs
207030301 0,01Ω, 0,5%, 30 Amax., screw terminals
207030500 0,01Ω, 0,5%, 50 Amax., screw terminals
989006000 1Ω, 0,5%, 0,5 Amax., safety banana plugs

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Sefram
INSTRUMENTS & SYSTEMES

AFAQ ISO 9001 AFAQ N°1997/7001

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