

**Sefram**  
Sefram

# 8400

High performance at the right price for a truly multi-purpose recorder.



## Ease of use and designed for use in a wide range of data recording applications

The 8400 recorder can be configured with either four or eight universal measurement channels, together with eight 'logic' channels, and is the ideal instrument for measuring multiple inputs of voltage, current, temperature and RMS voltage.

The instrument's front panel has a real-time LCD screen on which each trace can be displayed as it is measured, and this can also be programmed to analyse signal traces stored in the internal memory.

**Make sure to visit  
our Web site**

<http://www.sefram.fr>

## ➔ Capabilities

- 4 or 8 universal measurement channels
- Recording width 250 mm and paper speed from 1 mm/h to 20 cm/s
- Integrated universal inputs : DC/ACRMS\* Voltage, Current (via shunts\*), Temperature with thermocouples or Pt 100
- 12 kHz bandwidth and 14 bits resolution
- f(t) and XY modes
- Transient acquisition with a max. sampling frequency of 100 kHz
- Mathematic functions
- With its own PC compatible 3.5in disk drive and internal memory data and configurations can be stored
- IEEE 488 and RS 232 interfaces

\* optional

For any further information, please contact us on +33.(0).4.77.59.36.81, in U.K. +44.(0).1384.402731

**Sefram**  
INSTRUMENTS & SYSTEMES

## TECHNICAL SPECIFICATIONS

Channels : 4 or 8 - Logic channels : 8

Types of measurements :

- DC Voltage ranges : 1 mV to 1000 V  
max. offset :  $\pm 5$  ranges (except 1000 V)  
accuracy :  $\pm 0.1\% \pm 3 \mu V + 0.15\%$  offset

- Temperature

Sensor	Using environment	Ranges
Pt100 (4 wires)	-200°C to 850°C	20°C to 1000°C
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

Cold junction compensation accuracy :  $\pm 1^\circ C$

## SAMPLING

Resolution : 14 bits

Sampling frequency :

- direct mode : 5 kHz
- mixed mode : up to 5 kHz
- envelope mode : 50 kHz max.  
peak capture : 50  $\mu s$  for 1 channel, 100  $\mu s$  + 2 channels
- memory mode : min. sampling frequency : 0.2 Hz  
max. sampling frequency : 100 kHz (for 1 or 2 channels); 50 kHz (for 4 channels); 20 kHz (for 8 channels)

Memory length : 128 kwords - Optional : 1, 2 and 4 Mwords

## BANDWIDTH

Bandwidth at -3 dB analog inputs

- range > 50 mV : > 12 kHz
- range 50 mV : > 4 kHz

Bandwidth in direct mode : 1.25 kHz for 4 points/ Period

Programmable filters : 10 kHz, 2.5 kHz, 100 Hz, 10 Hz, 1 Hz

Input impedance : - from 1 mV to 2 V : > 25 M  
- ranges > 2 V : 2 M

Maximum voltage : max. permissible voltages

- between 1 channel and the frame ground :  $\pm 500$  V
- between 2 channels :  $\pm 1000$  V
- between 2 terminals of 1 channel :  $\pm 500$  V

Common mode rejection rate : >140 dB

## LOGIC INPUTS

Channels : 8

Input impedance : 300 k

Resolution : 10 bits (from -5 V to +5 V)

Sampling frequency in direct mode : 500 Hz

Max. permissible voltage :  $\pm 7.5$  V max.

Possible functions :

- triggering acquisition
- 4 to 8 channel paper trace
- triggering on logical words
- acquisition in memory mode

## RECORDINGS AND TRACES

Paper width : 270 mm

- Paper speed :
- direct mode : 1 mm/h up to 200 mm/s
  - mixed mode : 1 mm/h up to 5 mm/s
  - memory transcription : 10 mm/s max.
  - rapid advance : 100 mm/s
  - external control : 15 mm/s max.
  - text mode : 1 line/2 sec. to 1 line/h
  - XY mode : 100 x 100, 200 x 200, 250 x 250 mm

Resolution and accuracy :

- X axis : 8 points per mm
- Y axis : 16 points per mm up to 10 mm/s
- XY mode : 8 points per mm on both axes
- accuracy in relation to graticule : 0.01%

Writing option :

- 5 pre-programmed graticules
- 18 possible diagrams
- user's formats
- entry of channel's names, instantaneous values, name of recording, ranges, date, absolute or relative time

## GENERAL SPECIFICATIONS

Backlit LCD screen

- f(t) and XY functions
- memory mode display
- zoom, cursors

Calculation functions :  $y = ax + b$ ,  $y = a[x] + b$ ,  $y = ax^2 + b$ ,  
 $y = a(x + c) + b$ ,  $y = a \log x + b$ ,  $y = aE^{(x)} + b$

Configuration backup : 7 named

Output alarms : on 2 relays

Storage - option : floppy disk 3" 1/2 (DOS format)

Interfaces : RS 232C and IEEE 488

Power requirements : 85 to 264 VAC, 47 to 440 Hz, 120 to 370 VDC

Max. consumption : 150 W (60 W without trace)

Dimensions & weight : 420 x 335 x 144 mm; 9 kg

Warranty : 1 year

Supplied with : 1 paper roll, 2 banana plugs, 1 Pt 100 plug/ channel, 1 connector 15 male contacts, 1 main cable and 1 user's manual  
Options : please contact us for any recorder options' informations

## OPTIONAL ACCESSORIES, SERVICES AND CONSUMABLES

### ✓ Accessories

- 989007000 - Shunt (0.05 A- 50 - 0.5%)
- 989006000 - Shunt (0.5 A- 1 - 0.1%)
- 207030301 - Shunt (30 A- 0.01 - 0.5%)
- SP 221 - Current transducer (100 mVAC/ 1 AAC, 10 A,  $\emptyset$  15)
- SP 240 - Current transducer (1 mVDC/ 1 AAC, 1200 A,  $\emptyset$  50)
- SP 261 - Current transducer (1 mVAC+DC/ 1 AAC+DC, 1200 A,  $\emptyset$  50)
- SP 270 - Current transducer (1 mVAC/ 1 AAC, 2000 A, diam. 70)
- SP 271 - Flexible current transducer (1-10-100 mVAC/1 AAC, 3000 A,  $\emptyset$  170)
- 84005 - Carrying case
- 84006 - Carrying case with battery and a 12/24 V converter
- 84015 - Carrying case with battery and a 48/72 Vpp converter
- E1019 - Carrying pouch
- 84008 - Rack Kit 19"
- 84012 - Protective cover
- 84009 - RS 232 cable

✓ Services: when ordering, test certificate with or without values, warranty extension

✓ Consumables : details on thermal paper and other consumables available on request

Specification subject to change without notice - FT840000A/98



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For assistance and ordering