

Power supply

90...264 VAC, 47-63 Hz, 60 VA, 30 W max.
11...370 VDC, 60 VA, 30 W max.

Display / Screen

6.1" TFT LCD, 640 x 480 pixels, 256 colours

Memory

Basic storage memory: 8 MB
Compact Flash: 16 MB standard - option: 128 MB

Analogue inputs board

Channels: 3 per board
Resolution and polling: 18 bits - 200 ms
Maximum value: -2 VDC min., 12 VDC max. (1 minute max. for mA)
Temperature drift:
 $\pm 1.5 \mu\text{V}/^\circ\text{C}$ except mA inputs; $\pm 3.0 \mu\text{V}/^\circ\text{C}$ for the mA inputs
Influence of line resistance:
TC: $0.2 \mu\text{V}/^\circ\text{C}$; Pt100, 3 wires: $2.6^\circ\text{C}/^\circ\text{C}$ of difference between two branches
Sensor break-induced current: 200 nA
Common mode rejection: 120 dB
Serial mode rejection: 55 dB
Insulation voltage between channels: 430 VAC min.
Detection of sensor failure: sensor open-circuit for TC, Pt100, and mV inputs below 1 mA for the 4-20 input mA, below 0.25 V for the 1-5 V input, not applicable to the other inputs
Response time after a sensor failure:
0.1 s for 4-20 mA and 1-5 V; 10 s for TC, Pt100, and mV

Type	Scale	Precision at 25 °C	Impedance
Analogue inputs board, négative U/I			
-20 + 20 mA	-22 ... +22 mA	$\pm 0.1 \%$	70.5 Ω
-60 + 60 mVdc	-62 ... +62 mVdc	$\pm 0.1 \%$	2.2 m Ω
-2 + 2 Vdc	-2.2 ... +2.2 Vdc	$\pm 0.1 \%$	332 k Ω
-20 + 20 Vdc	-22 ... +22 Vdc	$\pm 0.1 \%$	332 k Ω
Standard analogue inputs board			
mV	-8 ... 70 mV	$\pm 0.05 \%$	2.2 m Ω
mA	-3 ... 27 mA	$\pm 0.05 \%$	70.5 Ω
V	-0.12 ... 1.15 V	$\pm 0.05 \%$	332 k Ω
0/5 V	-1.3 ... 11.5 V	$\pm 0.05 \%$	332 k Ω
1/5 V	-1.3 ... 11.5 V	$\pm 0.05 \%$	332 k Ω
0/10 V	-1.3 ... 11.5 V	$\pm 0.05 \%$	332 k Ω
J*	120 ... 1 000 °C	$\pm 1^\circ\text{C}$	2.2 m Ω
K*	-200 ... 1 370 °C	$\pm 1^\circ\text{C}$	2.2 m Ω
Pt100 (DIN)*	-210 ... 700 °C	$\pm 0.4^\circ\text{C}$	1.3 k Ω

* Other types of T° probes: consult us

Logical inputs board

Channels: 6 per board
Low level: 0 V minimum, 0.8 V maximum
High level: 2 V minimum, 30 V maximum
External pull-down resistance: 1 k Ω maximum
External pull-up resistance: 1.5 M Ω minimum

Relay outputs board

Relays: 6 per board
Type of contact: N.O. (normally open)
Type of relay: 5 A/240 Vac, number of cycles 200 000 (resistive load)

Analogue current outputs board

Measurement inputs transcription board with possibility of multiplication, addition, or subtraction of the inputs

Communication module

Interface/Protocol: RS232, RS422 or RS485 - ModBus RTU
Adress/Rate: 1 to 247 - 0.3 to 38.4 kbits/s
Data Bits: 7 or 8 bits
Parity bit: no parity, even or odd
Stop bit: 1 or 2 bits

Ethernet communication module

Protocol: ModBus TCP/IP, 10 BaseT with automatic polarity correction
Ports: AUI and RJ-45, self-detection capability

Infrared sensor

Detection of human presence up to 2 m (screen saver)

Configuration software

DataManager 1: uploading of historical data to PC
DataManager 2: display of real-time data on PC
Minimum configuration required: 200MHz PC, 64 MB RAM

Dimensions and environmental conditions

Operating temperature: +5 °C to +50 °C
Storage temperature: -25 °C to +60 °C
Relative humidity (without condensation): 20 to 80% RH
Insulation resistance: 20 M Ω min. (at 500 VDC)
Dielectric Rigidity: 3 kVAC, 50/60 Hz, for 1 minute
Vibration resistance: 10-55 Hz, 10 m/s² for 2 hours
Shock resistance: 30 m/s² (3 g) in operation, 100 g during transport
Dimensions (L x H x D): 166 x 144 x 174 (mm), cabinet mounting

Compliance with standards

Safety: UL873 (11th edition, 1994); CSA C22.2 No. 24-93
CE: EN61010-1 (IEC1010-1) voltage overload category II, pollution degree 2
Protection class for indoor use:
IP 30 for front panel of cabinet, IP 20 for wiring
EMC
Emissions: EN50081-1, EN61326 (EN55011 class B, EN61000-3-2, EN61000-3-3)
Immunity: EN50082-2, EN61326 (EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11, EN50204)

To order

ENERTRACE									1	2	3	4	5	6	7	8	9	10	11	12		
1	<u>Alimentation</u>																	Code standard				
	4	90-264 Vac 47-63 Hz /110-370 Vdc																				
	6	11-18 Vdc																				
	7	18-36 Vdc																				
	8	36-72 Vdc																				
2	<u>Analogue inputs</u>																	LR00112-000*				
	0	no analogue input														0 slot						
	3	3 analogue inputs														1 slot						
	6	6 analogue inputs														2 slots						
	A	9 analogue inputs														3 slot						
	B	12 analogue inputs														4 slots						
	C	15 analogue inputs														5 slots						
	D	18 analogue inputs														6 slots						
3	<u>Logical inputs</u>																	LR00113-000*				
	0	no logical input														0 slot						
	1	6 logical inputs														1 slot						
	2	12 logical inputs														2 slots						
4	<u>Relay outputs</u>																	LR00114-000*				
	0	no relay														0 slot						
	1	6 relays														1 slot						
	2	12 relays														2 slots						
5	<u>Communication</u>																					
	0	by Ethernet																standard				
	1	RS232/422/485 (3 in 1) + Ethernet interface																				
6	<u>Configuration software</u>																					
	1	« DataManager 1 »																standard				
7	<u>ENERTRACE software</u>																					
	0	basic																				
	1	calculation, counter, and totalising functions																				
8	<u>Compact Flash</u>																					
	1	16 Mo																standard				
9	<u>ENERTRACE versions</u>																					
	1	version for cabinet mounting																standard				
	2	portable version with carrying handle																				
10	<u>Option</u>																					
	0	no d'option																				
	1	24 VDC PS for transmitters (up to 6) [1 slot]																LR00115-000*				
11	<u>Analogue outputs</u>																	LR00123-000*				
	0	no analogue output																				
	3	3 analogue outputs mA														1 slot						
	6	6 analogue outputs mA														2 slots						
	A	9 analogue outputs mA														3 slots						
12	<u>Negative U/I analogue inputs</u>																	LR00128-000*				
	0	no negative U/I analogue input														0 slot						
	3	3 negative U/I input														1 slot						
	6	6 negative U/I input														2 slots						
	A	9 negative U/I input														3 slots						
	B	12 negative U/I input														4 slots						
	C	15 negative U/I input														5 slots						
	D	18 negative U/I input														6 slots						
ACCESSORIES :		"DataManager 2" software															LR00132-000*					
		Compact Flash memory, 128 MB															LR00121-000*					
		Flash/USB adapter															LR00127-000*					

*Can be sold separately

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ENERTrace

Keep a Trace of your energy



The paperless "plug & play" recorder that meets your traceability needs

- **Large data storage capacity and automatic memory management:** transfer to Compact Flash card (up to 1 GB)
- **Data secured by encryption**
- **Very-high-definition VGA TFT screen:** 6.1", 256 colours
- **Inputs/Outputs that can be configured and extended:** up to 18 analogue measurement channels (mV, V, mA, T°, etc.) or 12 logical inputs, insulated and configurable, and up to 12 relay outputs, according to the combinations
- **High precision:** $\pm 0.1\%$ on analogue U/I inputs
- **Excellent performance in response time and sampling rate:** resolution and polling at 200 ms
- **Auxiliary power supply with large dynamic:** 90 to 264 VAC / 11 to 370 VDC
- **Compact:** can easily replace existing paper recorders
- **Ethernet and RS232/485/422 links** (ModBus TCP/IP and ModBus RTU protocols)
- **PC software provided as standard:** programming, collection and processing of data and of alarms
- **Available in portable version**

APPLICATIONS



Power generation



Power transmission and distribution



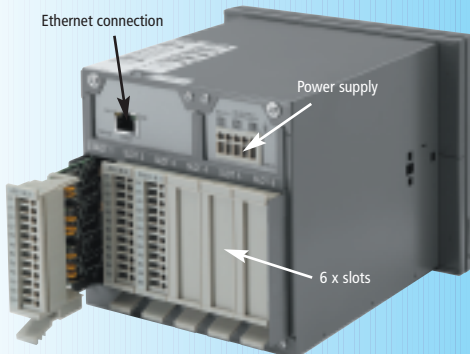
Electrical management of industrial processes

A **paperless "plug & play"** recorder with an **18-bit converter** for **optimum precision**, ENERtrace also has a **VGA screen of outstanding quality**, two **digital communications** modes (RS, Ethernet) and a large **memory capacity** that is ideal for the supervision of power **generation, transmission, and distribution installations**.

PORTABLE VERSION

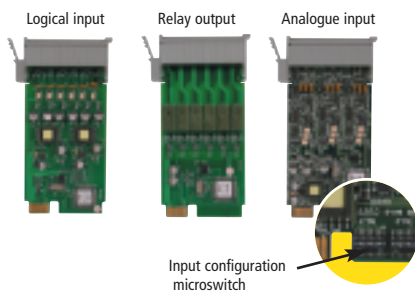


REAR VIEW



6 slots for input/output boards.
Each type of board is recognised individually.
Up to 18 analogue inputs possible (3 inputs x 6 slots).

TYPES OF INPUT/OUTPUT BOARDS



Outstanding performance

Perfectly suited to stand-alone use thanks to its **memory capacity**, its very-high-definition **screen**, and its Windows CE® user **interface**, the new ENERtrace recorder delivers greatly enhanced data analysis and display performance. The use of historical and real-time data **display and processing parameterising software** on a PC is a real benefit for the user.

ENERtrace has **many advantages** over a conventional solution:

- Maintenance simplified by the elimination of wearing parts and spares (paper, pens, etc.)
- Digital precision
- Real-time centralisation and display of data from remote sites and simplified processing on a PC
- Can be configured locally or remotely
- Multiplicity of information available locally thanks to the diversity of display screens
- Easy of processing and storage of the data in digital format
- Portable version allowing spot measurement campaigns

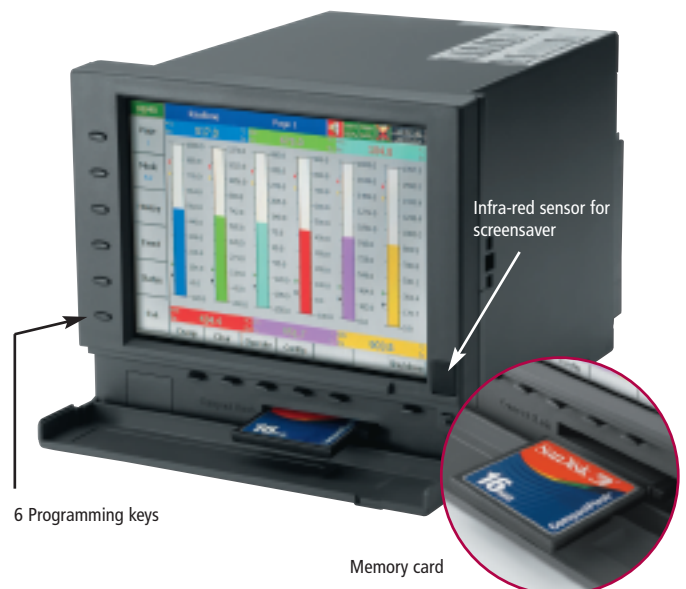
The answer to the most stringent operating constraints

ENERtrace **acquires, records, and displays** all electrical quantities of HV and LV networks **in real time**, through all types of converters (TRIAD, T82 or Modulic of the Enerdis line). **Temperature inputs** also make it possible to **supervise** other parameters relevant to the **performance** and **availability of installations with a single configurable instrument**. For example: the temperature of transformer or generator windings, of the bearings of diesel engines, and of the exhaust gases in the manifolds and in the discharge stacks.

Perfectly secure use

Thanks to the **18 input channels** of the "plug & play" boards, totally **insulated** from one another, and to the **encryption of the files**, making them tamper-proof. In addition, the data recorded in the product's memory are transferred automatically to the "memory card". The data files so secured and backed up can then be viewed on the spot or transferred to a PC via the Compact Flash memory card, an RS232, 422, 485 **field bus** (ModBus RTU protocol), or an **Ethernet** link (ModBus TCP/IP protocol).

FRONT PANEL

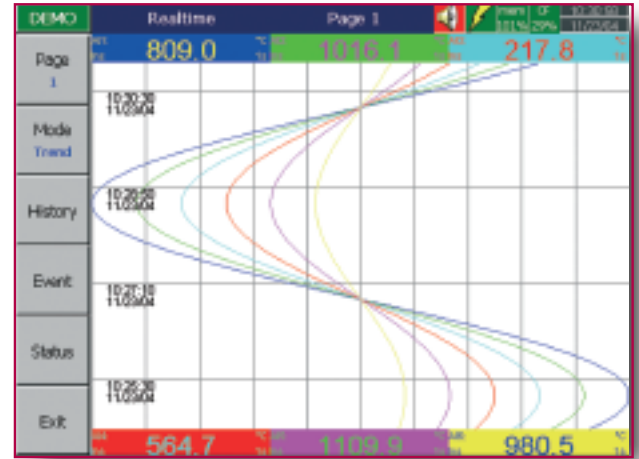


Bar graph mode



- Vertical display of 6 bars
- Scale can be configured for each bar
- Curves identified by colour and process identification
- High and low alarms marked "Hi/Lo"

Graphic curves mode



- Vertical or horizontal display of 6 curves in real time
- Simple switching from one page to another by the "Page" function
- Date and time displayed at all times
- Pictogram displayed if alarm or memory full

Configuration of inputs

No	Type	Setpoint	Job 1	Job 2
1	HI	775.0	Log Alarm	No Action
2	L	104.0	Log Alarm	No Action
3	HI	860.0	Log Alarm	No Action
4	LL	20.0	Log Alarm	No Action

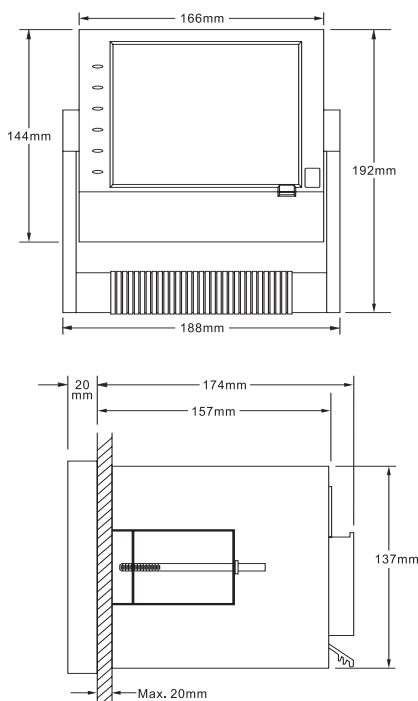
- Configuration of inputs / outputs / name / event
- Configuration of ranges (colours, pens, decimal format, etc.)
- Configuration of the timer
- Configuration of the internal functions (storage memory, display, communication, real-time clock, etc.)

Log of alarms

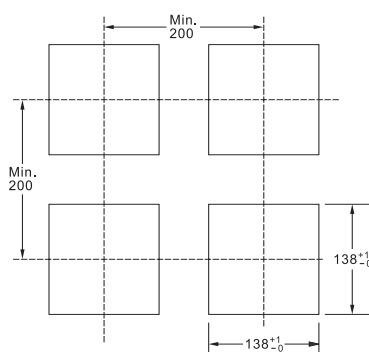
Ack	Type	Source	Active Time	Clear Time	Value
	HiAlarm	AI1	11/23 10:04:39	11/23 10:08:40	765.8
	HiAlarm	AI2	11/23 10:05:09	11/23 10:08:40	1060.0
	HiAlarm	AI1	11/23 10:05:11	11/23 10:08:40	864.7
	HiAlarm	AI2	11/23 10:05:39	11/23 10:08:41	1176.4
	HiAlarm	AI3	11/23 10:05:39	11/23 10:08:41	270.8
	HiAlarm	AI13	11/23 10:05:37	11/23 10:08:41	80.80
	LoAlarm	AI18	11/23 10:05:37	11/23 10:08:41	19.20
	HiAlarm	AI13	11/23 10:05:32	11/23 10:08:41	80.80
	LoAlarm	AI18	11/23 10:05:44	11/23 10:08:41	12.20
	HiAlarm	AI14	11/23 10:05:32	11/23 10:08:41	80.93
	LoAlarm	AI17	11/23 10:05:52	11/23 10:08:41	19.47
	HiAlarm	AI7	11/23 10:05:37	11/23 10:08:41	1436.1
	HiAlarm	AI8	11/23 10:07:09	11/23 10:08:41	1942.1
	HiAlarm	AI7	11/23 10:07:12	11/23 10:08:41	1580.0
	HiAlarm	AI8	11/23 10:07:37	11/23 10:08:41	2154.1
	HiAlarm	AI9	11/23 10:07:37	11/23 10:08:41	526.1
	LoAlarm	AI1	11/23 10:08:39		86.0
	LoAlarm	AI2	11/23 10:08:39		179.5
	LoAlarm	AI1	11/23 10:08:31		15.9
	LoAlarm	AI2	11/23 10:08:40		-6.0
	LoAlarm	AI3	11/23 10:08:40		-120.8

- Log including a list of all date-stamped alarms
- "Browse" list of alarms function to choose those that will be cleared
- Different colours (red or green) for high and low alarms

DIMENSIONS

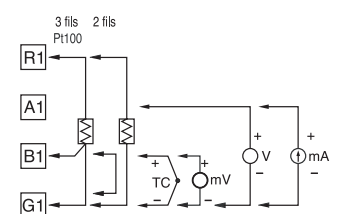


CUT-OUTS IN PANELS

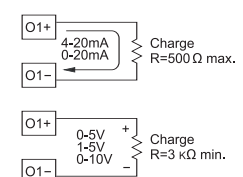


CONNECTION

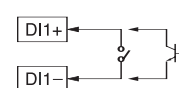
Analogue inputs



Analogue outputs



Logical inputs



Relay outputs

