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2011-1

Special Report
Sustainable development, diagnostics and solutions

Company news

**Trade Fairs
in 2011**

Markets

Nuclear Power

New Products

Electromagnetic
pollution
BIOTEST Testers



n°26



**CHAUVIN
ARNOUX**

**Will 2011 be the year of economic recovery?**

After a difficult year in 2009, 2010 was more clement for the Chauvin Arnoux Group. But is this a real recovery or just a lull in the storm? Opinion is divided. Although some countries are finding it difficult to restart their economy, others have already returned to growth. At Chauvin Arnoux, we have begun 2011 in a spirit of optimism, relying on the consolidation of our positions in France and on our continued international development.

The Chauvin Arnoux Group has many advantages, particularly in terms of brand recognition: Chauvin Arnoux®, Metrix® and Multimetrix® for portable Test and Measurement equipment.

Enerdis for fixed measurement, metering and electrical network monitoring equipment.

Pyro-Contrôle for temperature control and industrial measurement processes.

Manumasure (France only) for metrology and a broad service offering in a wide variety of sectors (management of measurement instrument fleets, atmospheric pollution, biomedical standards, etc.).

In addition to these, there is the AEMC® brand for Test & Measurement equipment in the USA and AMRA® in Italy for relays.

The complementary nature of these different activities helps us to develop comprehensive "transverse" offers, as is the case in the context of energy efficiency, for example, where each entity can propose a relevant response in their specific domain.

Furthermore, Chauvin Arnoux has succeeded in retaining industrial control and maintaining the quality of its products. Four production sites in France, one in Italy, one in the USA and one in China, working with five Engineering Departments, enable us to develop and manufacture a wide range of products matching our customers' requirements while constantly striving to improve the quality of our products and services.

In France, we are seeking to consolidate our leadership. Energy efficiency has been the major theme of the last year in the context of a global corporate strategy.

It is also one of the central themes of this issue of the magazine: solar-panel tester (FTV 100), range of infrared cameras, survey of energy losses, etc.

Similarly, Chauvin Arnoux continues to develop services and measuring instruments to control environmental pollution. Read our article on page 15 about our BioTest® testers for measuring low-frequency electric fields.

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RENAISSANCE PRIZE FOR ECONOMICS

At a special evening event at the Aéro-Club de France, Axel Arnoux, the Chairman of Chauvin Arnoux, was presented with the "Prix renaissance de l'économie" (Renaissance Prize for Economics). Founded in 1981 by Claude Bourillon and now chaired by Michel de Rostolan, this think tank comprising intellectuals, members of parliament, ministers, writers, professional economists and entrepreneurs

seeks to reward personalities from the worlds of culture, politics or industry for their dedication and creativity in shaping the way our society evolves. Axel Arnoux was honoured for his and his family's achievements in industry and for his approach fundamentally in line with the three principles of free-market economics: Liberty, Property and Responsibility. Our congratulations go out to him!

Second Edition!

For the second time, the Chauvin Arnoux Group took part in the EducEco Challenge organized at the Armagnac circuit in Nogaro from 16th to 19th May 2010. The slogan of this event, which brings together students and corporate sponsors to promote creativity in the field of energy-saving, is "The most kilometres with 1 litre of fuel". Backed by the French Ministry of Education, this operation represents an



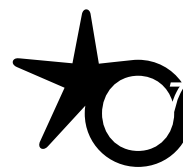
opportunity for Chauvin Arnoux to step up its involvement in high schools, technical colleges and engineering schools. For more information: <http://www.educeco.com/>

New Address FOR OUR AGENCY IN TOULOUSE

To improve its service for customers, the Group's Service brand Manumasure has moved into new premises which will also host the local Enerdis and Test & Measurement sales teams. The new address is: ZI de Thibaud, 31 avenue Jean-François Champollion, 31000 Toulouse, France. Tel : 33 (0)5 61 09 77 47.



"Observateur du design"



observeurdesign

The **Observateur du Design** (Design Observer) is a major national event in France, now extended to the international stage (Seoul World Design Fair), organized to **raise companies' awareness of the importance of design in the innovation process.**

Chauvin Arnoux was involved in the 2010/2011 edition, presenting its C.A 6116 installation tester at the "Cit  des Sciences et de l'Industrie" in La Villette (Paris) from October and February. The judges from the French agency for the promotion of industrial design (APCI - Agence pour la Promotion de la Cr ation Industrielle) had the difficult task of awarding "Design Stars" to companies for their work in reconciling industrial objects and visual aesthetics.

Chauvin Arnoux has already won this prize twice: in 2006 for the MTX Mobile from Metrix® and in 2008 for Enerium from Enerdis®.

35 Years

That's the age of the Chauvin Arnoux Group's third subsidiary founded in Italy in 1975, after Germany and Poland (now closed). **AMRA** is now based in Milan and employs more than 45 people to promote and sell measuring instruments from all the Group's brands. 80% of its revenues still come from its core business of selling relays. www.chauvin-arnoux.it

EXHIBITIONS

CA Subsidiary

Date

Country

HI Industrimesse	CA Scandinavia	6 th September	9 th september	Herning - Denmark
INELTEC	CA Switzerland	13 rd September	16 th September	Basel - Switzerland
ZEROEMISSION	CA Italy	14 th September	16 th September	Rome - Italy
ELEKTROTECHNIK	CA Germany	14 th September	17 th September	Dortmund - Germany
Intelligent Building Systems	CA France	20 th September	21 st September	Paris - France
NUKLEA	CA France	29 th September	30 th September	Paris - France
EFA	CA Germany	12 nd October	14 th October	Leipzig - Germany
ELMIA Subcontractor	CA Scandinavia	8 th November	11 st November	J�nk�ping - Sweden
ENERSOLAR	CA Italy	16 th November	19 th November	Milan - Italy
EDUCATEC	CA France	23 rd November	25 th November	Paris - France
SPS / IPC / DRIVES	CA Germany	22 nd November	24 th November	Nuremberg - Germany



Solar power installations:

Check your efficiency and optimize your return on investment

The GREENTEST FTV100 simultaneously measures all the parameters necessary to check a solar power installation.



Context

Due to the reduced production costs in the last few years and the support provided by the State, photovoltaic technology has now joined the ranks of the major renewable energy sources. Private individuals can now produce and sell solar energy from solar panels installed on the roof of their home. Once the installation is in place, its operation and efficiency need to be checked. **If the efficiency is as specified, payback for the installation will be achieved in the time announced.**

Solution

The **Greentest FTV100 solar power installation tester** analyses the efficiency of installations using solar panels. It is suitable for use in a whole range of situations from **housing to solar power farms**. In the solar power sector, the FTV100 is the ideal instrument for professionals whose work includes making measurements and recordings to check that installations are functioning correctly. The AC and DC voltage, current and power values are measured **instantly and simultaneously**.

The FTV100 simultaneously measures all the temperature and insolation parameters required to calculate the installation's efficiency. These parameters can be measured using a **remote module** for acquisition as close to the solar panels as possible. This module is connected to the FTV100 via a wired link or **Bluetooth** if necessary.

On the inverter output, it can be used on both single-phase and three-phase electrical networks. **The FTV100 can be used for all these measurements simultaneously on 1, 2 or 3 rows of panels set up in parallel.**

Easy to use and set up

Users install their physical measurement sensors, including the pyranometer, and then hook up their AC current clamp for measurements on the distribution network and their DC current clamp for measurements on the output of the solar panel. Users can enter the panel manufacturer's parameters into the instrument to serve as the reference for the tests. The large 5.7" extra-bright colour LCD screen with **anti-reflecting treatment** makes it easy to read the results whatever the circumstances. The FTV100 also offers 1000 V CAT III / 600 V CAT IV electrical safety and IP67 protection.

Processing and analysis

The **GREENTEST Report** software can be used to adjust the instrument and trigger acquisition in real time. The display of the curves enables you to

check at a glance whether the panel is operating correctly or not. Graphic analysis (curve of insolation/power) and **report generation** functions are also available. Its menus are available in several languages, so it can be used without difficulty in a large number of countries.



Reader service no. 1



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Category IV for Even Greater Safety



C.A. 5231



C.A. 5233

For even greater user safety, Chauvin Arnoux has put CATegory IV safety in a compact casing. The new C.A 5231 & C.A 5233 TRMS digital multimeters combine safety and ergonomics.

Ergonomics & design

Their **compact**, rugged, **IP54** casing with built-in shockproofing offers particularly comfortable handling. The simple-to-use **C.A 5231 & C.A 5233** are equipped with a large **6,000-count** backlit display (digit height 8 mm) with 61-segment bargraph.

On both models, the **double OFF position** is quicker and more practical.

To protect users, the switch's **NCV** setting can be used to detect whether a voltage is present even without connection. The single fuse is easily accessible.

For hands-free working, it is supplied with a magnetic multi-position mounting accessory.

Multiple applications

In housing and office construction, the C.A 5231 & C.A 5233 are ideal for the requirements of **electrical installers and electricians**. In the public and private tertiary sector, maintenance staff use them to monitor and repair the equipment installed and to make minor improvements (lighting, etc.).

They can be used to maintain and repair a **set of machines** or for service contracts.

Self-employed plumbers and heating specialists use them when installing underfloor heating, air-conditioning or environmentally-friendly systems (solar power, heat pumps, etc.).

They are also ideal for specialists installing or servicing domestic electrical appliances, giving them 2 multimeters which are both safe and simple to use.

Complementary features

- 600V CAT IV / 1,000V CAT III
- Voltage up to 1,000 V AC or DC
- 60 mV calibre
- Current, resistance, continuity, frequency, capacitance, temperature
- Protection against overloads up to 8 kV
- No-contact voltage detection

Reader service no. 2

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SCOPIX® III: upgrades for the whole range!

After the success of the SCOPIX models in the field, followed by the impressive performance of the SCOPIX® II, the whole SCOPIX® III range is benefiting from new improvements by METRIX® in terms of performance and ergonomics.

Performance

Oscilloscopes, multimeters, FFT analysers, harmonic analysers and recorders: the **SCOPIX® III** models are particularly versatile. These high-performance instruments also offer **bandwidths from 40 MHz to 200 MHz**.

On all the models in the **SCOPIX® III** range, the sampling rate is **2.5 GS/s** per channel in one-shot mode and **100 GS/s** in repetitive mode. Equipped with a **12-bit converter**, they offer a **large dynamic input range** from 156 $\mu\text{V/div}$ to 200 V/div . In oscilloscope and multimeter modes, the **SCOPIX® III** models allow triggering and acquisition according to measurement thresholds. In this way, users can analyse the trigger signal or event, or search for a condition on the automatic measurements (according to the level, duration, etc.).

Communication

The **SCOPENET Ethernet/WEB Server** communication mode offers access to "100 % of the functions" on the SCOPIX III. Users can configure the different measurements required from a PC connected to the same network as the oscilloscope. The available parameter settings include:

- > display of the curves as displayed on the instrument;
- > definition of the vertical/horizontal parameters for each channel;
- > trigger settings;
- > measurements by cursors in relation to a reference curve;
- > automatic measurements (on the samples located between the cursors).

The brand new SCOPEADMIN supervision software can be used to manage multiple SCOPIX oscilloscopes connected to the same network. On a PC, you can view the statuses of the oscilloscopes and configure one or more SCOPIX instruments:

- > IP parameters;
- > printing parameters;
- > configuration parameters (language, standby mode, etc.).



➔ Oscilloscope with 2 to 4 isolated channels.

The **FTP server/client communication mode** is also available on all the models and is very practical in the field for transmitting data to a remote PC.

Ergonomics

Ideal for on-site use, ultra-compact and offering a battery life of up to 4 hours, the casing design has not changed except for the flap protecting access to the **SD card** provided to store up to **2 GB of data**, in addition to the 2 MB internal storage and the 50,000 points per channel available with the Extended Memory Acquisition option. This SD card is now a standard feature on all SCOPIX® III models.

The new **even brighter colour TFT screen** with its **energy-saving LED backlighting** make these models even more comfortable to use. They are also equipped with **PROBIX®** accessories recognized automatically when connected for quick, safe implementation.

Find out all about the Scopix models on our dedicated web-site at www.chauvin-arnoux.com/scopix

Building on its strong reputation, the SCOPIX range of oscilloscopes now has its own website. With their high performance and ergonomic design, these upgradable oscilloscopes offer a wide range of functions which users can discover by browsing this SCOPIX website.

Users can go directly to the home page of the site by entering www.chauvin-arnoux.com/scopix in their browser. An initial horizontal menu gives access to the following sections:



➔ The SCOPIX III models offer a broad range of possibilities, even remotely: configuration, parameter settings, analysis, etc.

Product, Accessories, Software, Downloads, Other ranges, FAQ.

In each of the menus, sub-sections are also available. For example, the "Product" menu presents the performance of the SCOPIX models through their ergonomics, their functions, their multiple communication possibilities, etc.

All the measurement modes are shown. The "Software" section covers the various software products necessary for correct operation or simple upgrading of the SCOPIX models.

Because these upgradable oscilloscopes require regular updating in order to obtain the latest functions. A direct link to the Support Site means that users do not have to exit and then reconnect to access it. The "Downloads" tab can be used to obtain all the technical and sales literature, photos of the products and videos.

The "Contact" tab can be used to find details of the sales contacts for each region, with direct links to send them e-mail.

The FAQ section contains questions and answers. Whatever the subject, users can enter their question and quickly receive a reply by e-mail..

Like the SCOPIX models themselves, the website is upgradable and will be kept up to date with all the new features, applications, etc.

Reader service no. 3

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BioTest a new range for measuring Low-Frequency electric fields

Metrix has launched the new BIOTEST range of compact, economical field testers/meters. They are a response to growing market demand for electromagnetic pollution testing. Sustainable development, environmental issues and, above all, the reduction of such pollution are all aspects which are causing housing and tertiary buildings to evolve.

There are now standards intended to limit the electromagnetic radiation from equipment and protect people from harm. In this context, the science of building biology (or bau-biology as it is also known) indicates the threshold values which must be respected to safeguard people's health. The BIOTEST models anticipate upcoming changes to the standards and have already integrated these recommendations.

Low-frequency fields between 10 Hz and 100 kHz are harmful. There are many sources of this pollution generated by electric fields and most are in our day-to-day environment:

- > electrical power distribution inside housing and offices
- > surge protector power bar; electrical cables, etc.
- > computer, printer, fax
- > lighting
- > high-voltage power line, transformer; railway, etc.



The VX 0100 has a 100 kHz external antenna.



The VX 0003 is equipped with a 3 kHz internal antenna.



During building, installation or renovation work, the **VX 0003** and **VX 0100** can be used to measure LF electric fields by 2 complementary measurement methods:

> the representative method, **taking the user's presence into account**

> the traditional method: field referenced to earth
The measurements and tests are performed **in compliance with current and future standards and directives** (including 1999/519/CE, 2004/40/CE, etc.).

The **VX 0003** is equipped with an internal antenna and can measure from 10 Hz to 3 kHz. The **VX 0100** has an external antenna for measuring from 10 Hz to 100 kHz.

Product features:

- > Hand-held and designed for stand-alone use (60 to 80 hours)
- > Top-quality manufacture, professional instruments with 2-year warranty
- > Audio signal for immediate identification of field levels
- > Detailed manual for measurement, diagnostics and corrective solutions
- > Delivered with socket tester (phase position and presence of earth)

What the Standards say

To limit pollution due to low-frequency fields (between 10 Hz and 100 kHz), standards have been established which are regularly updated. The **VX 0003** and **VX 0100** perform the tests in compliance with the current and even future standards:

- > Recommendations by WHO / ICNIRP (World Health Organization/International Commission on Non-Ionizing Radiation Protection)
- > IEEE C95.6-2002 (International Standard - Public, 0 - 3 kHz range)
- > European Directive 1999/519/CE (Public, 0 - 100 kHz range and beyond)
- > European Directive 2004/40/CE (Workers, 0 - 100 kHz range and beyond)
- > 2010 Draft Standard, EN IEC 62493 (Lighting Systems)
- > EN50366 Standard to be superseded by IEC 62233 in 2012 (Household Electrical Appliances)

Reader service no. 4

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Infrared thermography: a fast-growing market

*The era of sustainable development and energy saving is bringing extensive changes, particularly in the **building sector**. The more stringent standards in terms of energy performance are leading more and more professionals to use infrared thermography.*

Until recently, this technique was mainly used in electrical, electronic and mechanical applications by preventive or predictive maintenance teams.

With the arrival of the **energy performance survey**, professionals in the building industry have quickly learned how to use infrared cameras. This survey is now mandatory when selling or renting out property. Some towns even use aerial thermography to produce a "thermal map" of the area.

New standards and changes to the existing rules have made infrared thermography a crucial technique.

When constructing new buildings, and particularly passive housing, it can be used to detect the slightest insulation defect and to check that the draught-proofing requirements are respected. Thermography is also used during **renovation** work to optimize energy efficiency. This involves two types of operations:

- > preliminary thermographic survey before work has begun;
- > final thermographic survey for acceptance after completion of the work.

Initially, readings are taken with an infrared camera in order to reveal any malfunctions: leaks, thermal bridges, humidity problems, faulty insulation, etc. Infrared thermography can even detect "hidden" faults inside the floor or walls.

By analysing the results, you can then spotlight the areas requiring work: walls, underfloor heating, partitions, doors, windows, radiators or roofing. On the basis of this information, professionals can rank the various operations according to their priority.

NF EN 13187, the application standard for thermographic surveys

This is applicable in France and concerns buildings' thermal performance: qualitative detection of thermal irregularities on building surfaces using the infrared method. This standard defines the approach to follow:

- > determination of the apparent surface temperatures by thermography;
- > checking on the presence of anomalies ;
- > estimation of the type and severity of faults.

The characteristics of the measurements must always be specified:

- > equipment used, with its specifications;
- > specifications of the enclosure, heating and insulants;
- > surface materials;
- > climate and influence of the environment.

Precautions

Other details to be indicated include the precautions necessary for accurate thermographic

"Infrared thermography is a crucial technique for revealing what the naked eye can't see."

analysis of the building. One important point is that there must be a difference of at least 10 °C between the internal and external temperatures to ensure that any insulation faults are clearly visible. For external facade measurements, it is advisable to take the measurements early in the morning, before the walls have been heated by the sun, so that their temperature is stabilized. Measurements in rainy or very humid conditions should be avoided.

Other standards are also applicable:

- > **BP X30-120** for thermal energy surveys in industry
- > **NF P03-310** for thermal surveys of new housing

Reader service no. 5



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From maintenance to building surveys, **Choose the RayCAM that suits you**

*Chauvin Arnoux® is completing its **RayCAM range of thermographic cameras**, which comprises 3 models: the **C.A 1884**, **C.A 1886** and **C.A 1888**.*

*Ergonomic, compact, rugged and accurate, **RayCAM** cameras are also particularly simple to use. Each model has received **CNPP APPROVAL**.*



Major advantages

With a RayCAM, users can carry out a precise thermal analysis which matches reality. This is because the RayCAMs allow you to adjust all the parameters influencing the measurement. The minimum focal distance is 10 cm on all the models, in both infrared and real-image modes.



MixVision function

The **C.A 1886** and **C.A 1888** models offer the **MixVision** function which allows users to choose the required view: real image, infrared or a mix of both.

The transparency can be set from 0 to 100 % so that you can locate the problem area immediately.

New features of the C.A 1886 and C.A 1888

The upper limit of the standard temperature measurement range has been raised to 600 °C and the screen has been enlarged (now 9 cm) to make it easier to read.

It is possible to record up to **1,000 radio-metric images** organized in 250 folders. The **C.A 1886** and **C.A 1888** models are equipped with a **removable SD card** for **more storage capacity**.

The camera automatically searches for the hottest or coldest point and a buzzer or visual alarm can be linked to it. The **C.A 1888** is equipped with a High-Resolution detector (384 x 288) for greater accuracy.

User-friendly software for analyses that match reality

Ergonomic and simple to use, the **RayCAM Report** software can be used to analyse the measurement create customized reports. Users select the thermogram to be analysed from those stored in the instrument and then place it directly in the location of their choice. The toolbar gives direct access to all the software's functions: cursor positioning, thermal profile, colour palette, isotherm analysis, etc.

For precise analyses that match reality, RayCAM Report can be used for area analysis (square or circle), ideal for setting the thermogram parameters to take into account the different emissivity values, which vary depending on

the material. On the **C.A 1886** and **C.A 1888** models, there are also complementary functions: area analysis **using polylines and polygons**, as well as a histograms for studying the temperature distribution across different intervals.



Reader service no. 5



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Thermography: a wide range of applications

*The RayCAM cameras are ideal for **preventive** and even **predictive maintenance**. They provide all the measurements required to draw up comprehensive maintenance reports, whether **electrical**, **electronic**, **mechanical** or focused on **building thermics**.*

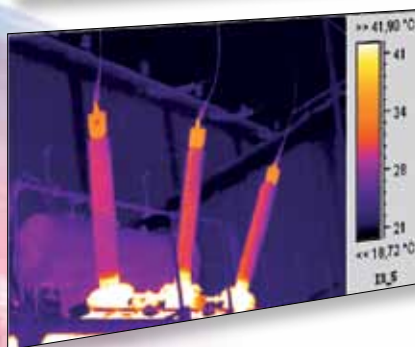
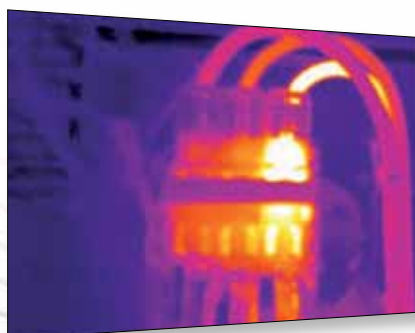
These cameras can also be used in **R&D**, production applications and technical/technological **training**.

The RayCAM models provide in full all the measurements required for **thermal surveys of buildings** in order to assess **energy losses**.

Electrical applications

Thermographic cameras can be used to view **load unbalance**, **connection problems**, etc.

On **circuit-breakers**, these cameras can detect a damaged fuse. They can also instantly check heat dissipation in the generator and identify any faulty areas.



Checking the operation of a transformer.

Mechanical applications

On electric motors, the surface temperature indicates the presence of anomalies or malfunctions on the internal components (bearings, gearbox, etc.).

By detecting them during preventive maintenance, it is thus possible to avoid overheating of the motor.



Thermal applications

Water leaks or energy losses: RayCAM sees everything. Thermography can be used to monitor a building's energy consumption and even to carry out thermal surveys of buildings.

Nothing is hidden with thermography:

- > location of losses (heating, insulation, etc.);
- > detection of water leaks;
- > building insulation;
- > floor heating;
- > humidity.



Heat losses as seen from inside a room. As defined by the scale, you can see all the areas where cold air enters, coloured black and mauve.

Reader service no. 5



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A large memory for small, multi-purpose loggers

Voltage, current, temperature or events, AC or DC: the **Simple Logger II** models record everything. Four new models have now been added to the range:



> The **ML912** AC current logger equipped with *MiniFLEX* flexible sensors, for measurements up to 1,000 A_{AC}. Ideal for monitoring machines, detecting intermittent faults, monitoring current harmonics, etc.

> The **L481** 850 V_{DC} voltage logger. This can be used for voltage monitoring on rail applications, electric vehicles and uninterruptible power supplies, or in the iron and steel industries.

> The **L702** temperature and relative humidity logger. An essential tool! Monitoring of these two quantities is crucial in clean rooms, paper mills, blood banks, wine cellars, etc.

> The **L404** event logger, with a capacity of up to 50,000 events on 4 channels. Ideal for counting and logging events and their duration to determine their scheduling.

Still just as simple to use...

Delivered ready to use (no prior configuration necessary), the Simple Logger II models automatically adapt their sensitivity (measurement calibre) and their acquisition rate to optimize its recordings (up to 240,000 measurements in non-volatile memory).

On the AC models, the measurements indicate TRMS values. They also offer alarm programming and triggering on thresholds or on a predefined range.

The **LEDs on the front panel** enable users to check the logger's status and remaining storage capacity at a glance. As they are compact and battery-powered, these loggers are easy to mount even in an electrical cabinet.

Functions

These loggers can be used to cover wide measurement ranges: AC/DC voltage up to **600 V**, current up to **3,000 A** and temperature from **-250 °C** to **+1,700 °C**!

Depending on the application involved, users can optimize memory management simply by selecting the back-up mode and the sampling rate. XRM™ extended recording mode is included in the functions on each model.

Applications

The Simple Logger® II models offer an effective means of detecting intermittent or random problems on the network. Everything is done to

prevent any disturbances from getting through: **process loop monitoring**, detection of harmonics, monitoring of two-phase loads, machine loads and **temperature** differences. With the data gathered by the Simple Logger® II, users can optimize the sizing of their transformers and meters.

Software

The **DataView®** software, delivered as a standard feature with each logger, can be used to display and analyse the measurements in real time, even during recording! With DataView®, users can also configure the instrument, store data, create reports or synchronize several Simple Logger® II instruments for simultaneous measurements at different points in the installation.

The wide variety of models proposed with the **Dataview®** software enables users to carry out **effective analysis for high-performance diagnostics**.

Reader service no. 6

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Class 0.2S for the new range of Enerdis CTs

These new ERDF-qualified transformers for measuring currents on low-voltage networks are now available in Class 0.2S according to the IEC 60044-1 standard.

For single and three-phase networks, Enerdis now proposes a range adapted specifically to the requirements of ERDF, notably for metering applications. These Class 0.2S current transformers contribute to the performance of the metering measurement line by improving billing accuracy and the dynamic range for measurement. The two or three-calibre models enable the current transformers to adapt to the changing needs on an installation, thus helping to reduce logistical and operating costs.

Range

Available in both single and three-phase versions, with cable or busbar primaries, these Class 0.2S current transformers are proposed with two or three calibres and a transformation ratio of up to 2,000 / 5 A. This product range offers a broad choice of mounting options with clips, brackets or bus supports. A transparent sealable cover is included as a standard feature on all these current transformers to ensure protection of the secondary terminals.

Product Advantages

- Two or three calibres
- Calibres from 100 to 2,000 A
- Single or three-phase
- Precision power values ideal for electronic meters
- Choice of the primary conductor (copper or aluminium up to 400 A) for the three-phase version
- Traceability by serial number on each CT
- Calibration certificate supplied with each CT
- Accuracy classes 0.2S and 0.5



Single-phase
CT with cable
primary.



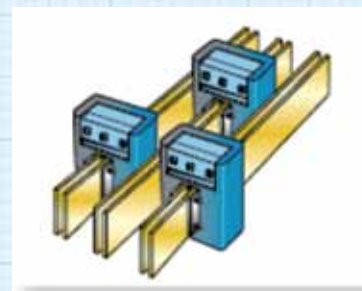
Single-phase
CT with busbar
primary.

How to choose your current transformer

Your choice should be based on the types of cables or busbars on the installation and the levels of the currents flowing in them:



Cable primary
For currents between 100 and 2,000 A



Busbar primary
For currents between 500 and 2,000 A

Reader service no. 7



Tel.: +33 1 75 60 10 30
export@enerdis.fr
www.enerdis.com

Multi-energy management and control software with new functions

*With a new interface and new functions to stay ahead of the changing requirements on a market increasingly interested in energy saving, Version 2 of the **E.online®** software gives further proof of Enerdis's determination to innovate.*

More than ever, **E.online®** remains THE high-performance solution of reference for controlling and measuring energy consumption freely, independently and simply. **E.online®** is a simple, economical solution for allocating, rebilling and checking energy spending and for viewing and mapping consumption. Enerdis is now proposing a new version of this software for effective energy management and control.

More dynamic navigation

The ergonomics of **E.online®** has evolved to comply with the new standards and take advantage of innovations linked to the Web, using the Flash and Ajax technologies (animations, rapid display, etc.). For quicker, more intuitive access to the software functions, the symbols and icons have been redesigned. The menu bars and command bars are now dynamic for more effective use.

Control of the products already in place

E.online® includes generic ModBus/ModBus TCP drivers making it totally compatible with all the products from Enerdis or other brands on the installation (power monitors, meters, measurement transducers, circuit-breakers, etc.), a major advantage in a period when savings are crucial at all levels.

E.online® can also replace software solutions already in place, reusing all the measurement points on the installation.

Alarms linked to consumption

To identify and prevent sources of wasted energy, monitor the energy performance of a process or a building and measure the effects of corrective action, **E.online®** can now be used to program multi-level min. and max. consumption thresholds which must be respected. This function gives companies the possibility of monitoring and adjusting their consumption according to their level of activity and their target values. Overruns are highlighted with a specific colour code in the analyses and a technical description of each overrun is displayed. It is also possible to generate reports on any overruns and distribute them to key actors in the company by e-mail.

A new graphic analysis library

The graphic models have been totally redesigned with high-level functions to ensure optimization of the analyses by means of interactive navigation (zoom, switch from histogram to circular mode, ascending/descending sort options, comparisons, etc.). Other standard features include direct export in .pdf, .xls or .csv format, quick identification of the most energy-hungry measurement points by applying Pareto's law (80/20 law) as well as automatic report generation and distribution.

The first, particularly innovative version of this software was a major success among users. By further extending the functions offered, Version 2 of **E.online®** is strengthening its position on the market for energy management and control software solutions suitable for all sectors of activity, all user profiles and all installation sizes.

A more dynamic interface with interactive graphics.



Reader service no. 8

 **ENERDIS**
CHAUVIN ARNOUX GROUP

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Temperature sensors for nuclear power plants: combining demanding standards and expertise

Pyro-Contrôle, part of the Chauvin Arnoux Group, is a major player in temperature measurement and control for process industries and, since the late 1970s, has developed unique expertise in the manufacture of temperature sensors for nuclear power plants.

More stringent nuclear safety requirements

In the nuclear industry more than in any other industrial sector, temperature measurement and control are crucial parameters for detecting incidents.

With the emergence of the new third-generation "EPR™" (European Pressurized Reactor), the safety requirements in the nuclear sector have become increasingly stringent. Resistance to radiation, earthquakes, extreme temperature and pressure conditions, etc.: the thermal instrumentation of nuclear installations has to deal with them all and pass increasingly severe tests to comply with the design and construction rules specified by the customer.

"Our temperature probes are designed to meet in full all our customers' requirements and imperatives for their nuclear installations. We are capable of complying with extremely rigorous specifications, because all Pyro-Contrôle's know-how is rigorous," explains Guillaume Jacquet, Nuclear Business Engineer at Pyro-Contrôle. "This calls not only for thorough knowledge of product design and manufacturing processes, but also more stringent testing if every link in the chain: qualification and training of the teams, traceability of supplies and materials and structured documentation."

Reliability and performance at the heart of the power plant

"In collaboration with our customers, such as EDF, Areva, Alstom, etc.," he continues, "Pyro-Contrôle has built up a range of qualified sensors positioned at

strategic points in nuclear installations to measure the temperature very reliably in all circumstances."

Fast-response sensors ensure instant, accurate measurements on equipment in the reactor building, even if there is rapid variation. Bearing sensors are used to monitor for overheating in the primary and secondary pumps as well as in the safety and lift pumps. Safety-critical systems such as the safety valves on the pressurizer are fitted with surface sensors to measure the temperatures of the ducts. Other sensors are capable of measuring the ambient temperature. The tanks for storing spent fuel and keeping it safe are also equipped with sensors.

Reader service no. 9



**PYRO
CONTROLE**

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www.pyro-contrôle.com

Did you know?

Pyro-Contrôle's qualified temperature sensors are fitted on 900 MW, 1300 MW and N4 pressurized water reactors (PWRs) and will be installed on the EPR™ currently being built at Flamanville in France. Pyro-Contrôle is also expected to contribute its expertise to the future EPR™ plants planned in Great Britain, France and China in the years up to 2017.



DT 038 Pyro-Contrôle®:
fast-response sensor fitted on
the primary circuit of the reactor
building (photo: Pyro-Contrôle®).



Earth/Ground Measurement Guide

This guide presents the various methods and measuring instruments used for earth/ground measurements. It first examines the theory before moving on to the practical side, sometimes just with simple reminders.

Available in 5 languages.

Reader service no. 10



2011 Multimetrix Catalogue

In the 2011 edition of the Multimetrix® catalogue, you will find all the essential tools at the best prices: testers, multi-meters, environmental measuring instruments, electrical safety equipment and laboratory instruments.

Reader service no. 11



GREENTEST FTV100

Brand new: **the FTV100 solar power installation analyser**

Ergonomics, implementation, specifications: this document presents an overview of its many advantages.

Reader service no. 1



RAYCAM

2 new RayCAm thermographic cameras have been launched, with new functions, new specifications, new accessories, etc.

Reader service no. 5



SCOPIX III

As technology evolves, so does the SCOPIX. This brochure covers all the SCOPIX III oscilloscopes, along with their specifications, operating modes and applications.

Reader service no. 3



2010/2011 Enerdis Relays Catalogue

Whether you are seeking instantaneous, time-delay or function relays, you are bound to find what you're looking for in this brand new industrial relays catalogue. **140 pages** of information and advice, selection guides, products and accessories to cover even the most severe applications.

Reader service no. 12



ENERIUM Multi-energy power minitors

Functions, applications, selection guide, features, and any knowledge of Enerium® power monitors in the new documentation also available in French, Spanish, Italian and German.

Reader service no. 13



C.A 5231 & C.A 5233

Two new compact TRMS multimeters from Chauvin Arnoux for measurements in CAT IV environments.

Reader service no. 2



EONLINE Energy Multi-energy consumption monitoring and allocation

Allocating and controlling energy costs, display and mapping of consumption, with E.online® Energy energy efficiency becomes so simple.

Reader service no. 8

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metrix®

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- Pushbutton measurement selection
- Large graphic LED display

Speed



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- Real-time trend graph

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