

# Products for Nuclear Environments

Relays • Converters • Indicators

- Fully analog
- Guaranteed for extreme conditions
- Qualified K3





## A French signature

Chauvin Arnoux Energy, a French subsidiary of the Chauvin Arnoux Group, meets the specific needs of the nuclear industry by drawing on more than forty years of experience. From design to final inspection of equipment, we entrust the manufacturing

of our products to our teams.

Experienced and qualified, they are a guarantee of quality, reliability and durability. All of our expertise is spread across our three factories in Normandy. The Villedieu-les-Poêles factory manufactures electronic cards. The Vire factory handles plastic injection moulding and machined parts. The Pont-l'Évêque factory handles assembly, adjustment and inspection. An end-of-production report (RFF), which guarantees quality, is issued by our site.



## A sustainable offer

Our full control of industrial know-how in our factories in France and Italy, as well as our ability to reproduce historical technologies in a context of evolving components and materials integrated into our instruments, ensures lasting and consistent quality and availability of our equipment.



## A recognized quality approach

The largest players in the nuclear market (EDF, Electrabel, etc.) trust Chauvin Arnoux Energy thanks to its commitment to:

- Training and qualification of its teams
- Control of manufacturing processes
- Structured documentation



## International presence

As part of the Chauvin Arnoux Group, Chauvin Arnoux Energy ensures a worldwide presence through a network of ten subsidiaries and expert partners in key countries.

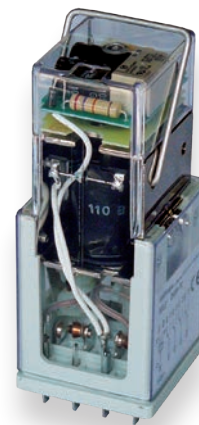
A commercial and technical base in China allows greater responsiveness across Asia. The company is also present in Belgium, South Korea, and South Africa.

## AUXILIARY RELAYS



### RE3000N

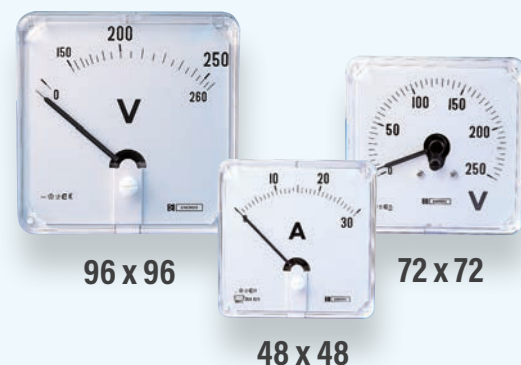
- 4 changeover contact
- Contact test function
- Optional freewheeling



### TOK

- 4 changeover contacts 10 A
- **Electronics without programmable digital components**
- Adjustable time delay setting of 1, 2, 4, 8, 16, 32, 64 seconds or minutes

## ANALOGUE INDICATORS NORMEUR



High breaking capacity

Very high mechanical and electrical service life

## SNAPSHOTS



### OK B184

- 4 changeover contacts 10 A
- Integrated magnetic blowout
- Breaking capacity suitable for inductive loads



### POK / Bi POK

- 2 changeover contacts 10A (POK)
- 4 changeover contacts 10A (Bi POK)
- Reinforced contact pressure
- Integrated magnetic blow-off

## DELAYED ON THE RISE OR ON THE FALL



### OKTA

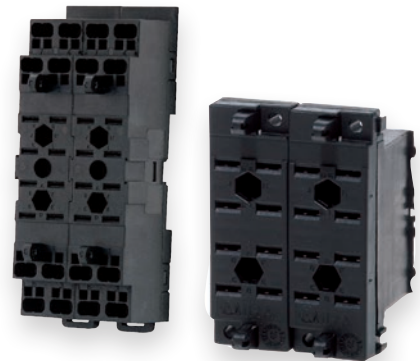
Delayed on the rise

### OKTR

Delayed on the fall

- 4 changeover contacts 10 A
- Electronics **without programmable digital components**
- Customised time delay rating
- Reinforced contact pressure

### A wide selection of associated bases



## ROPE

Enhanced ratings: IP55 - IK08

Customisable indicators (dials, scale, deviation, etc.)



144 x 144

- Accuracy class 1.5
- Small diameter barrel
- Compliant with IEC 60051-1

### Available functions

AAC

VAC

F

AAC max

P

Q

S

AdC

VdC

%



## T82N ANALOGUE CONVERTERS



- Linear transfer curve
- Accuracy class 0.5
- Direct or TC input
- 2 mounting modes: fixed or plug-in via associated bases
- Optional tropicalisation



Electronics without programmable digital components

Fully configurable on demand

Operates up to 60°C

**UAR 1210B**  
AC voltage RMS

**IAR 1210B**  
AC current RMS

**RCL 1220B**  
Temperature

**PAR 1232B**  
Active power

**QAR 1232B**  
Reactive power

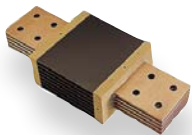
**UCR 1220B / 1420B**  
DC voltage

**FAR 1210B**  
Frequency

**JAR 1211B**  
Phase angle

**ICR 1220B / 1420B**  
DC current

## CURRENT SENSORS



### Measuring Shunts

- Wide range from 1 to 6000 A
- High overload capacity
- Robust and customizable design



### Current Transformers

- Wide choice of primary calibers from 5 to 3000A
- Multiple connection options
- Compatible with all conductor types

## K3 Qualification – 5 Steps

### STEP 1

#### Electrical safety, functional and electromagnetic emission tests

- Electrical safety checks
- Functional checks
- Electromagnetic emission checks

### STEP 2

#### Environmental serviceability limit tests

- Electromagnetic interference
- Temperature influence

### STEP 3

#### Ageing tests

- High temperature
- 2,000 hours

### STEP 4

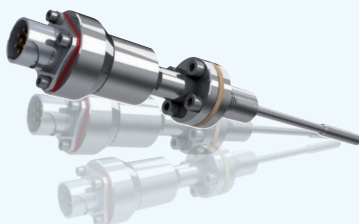
#### Earthquake resistance tests

- Shaking

### STEP 5

#### Technology validation tests

- Whisker growth



PYROCONTROLE has over seventy years of expertise and primarily designs customised temperature sensors for cutting-edge industries such as nuclear power. At every strategic point in a facility, from the reactor building to the control room and auxiliary buildings, the probes designed by PYROCONTROLE are K1, K2, K3 and NC certified to withstand the most extreme conditions of radiation, earthquakes, high temperatures and high pressures.

- Fast response probes
- Surface probes
- Motor bearing or pump body probes
- Pool probes, etc.

FOCUS

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