



# SELECTED PRODUCTS **2024**

# ABOUT

## Chauvin Arnoux Energy

**Chauvin Arnoux Energy**, a company in the Chauvin Arnoux Group, is specialized in fixed equipment for measurement and supervision of electrical networks to meet the requirements of cutting-edge industries for intensive use in harsh environments.

### Our key sectors



#### ELECTRICAL POWER GENERATION

Chauvin Arnoux Energy meets the specific needs of the nuclear sector by contributing expertise developed and acknowledged for more than thirty years.



#### ELECTRICAL POWER TRANSMISSION AND DISTRIBUTION

Chauvin Arnoux Energy proposes solutions for energy billing and network balancing for the players in the power transmission and distribution sectors.



#### RAILWAYS

A major partner of the rail market, Chauvin Arnoux Energy designs automation relays for the rolling stock and substations.



#### NAVAL

Chauvin Arnoux Energy develops tailored solutions for navigation and control in the context of naval applications.



### A French brand with integrated production

Chauvin Arnoux Energy, a French company which is part of the Chauvin Arnoux Group, handles all the aspects of manufacturing for its products, from design through to final inspection of the equipment. Our experience, qualified teams guarantee the quality and reliability of the instruments supplied and their availability for several decades.

### A long-term offering

Complete mastery of our industrial know-how in our factories in France and our ability to keep up with the changes in the markets (materials used in our instruments) enable us to guarantee constant quality and long-term availability for our products.

# POWER MONITORS



## For monitoring LV, MV and HV electrical networks

### MEMO

- Easy-to-read, all-in-one screen
- Easy to set up and operate
- Managed inventory covering your main requirements

### ENERIUM

- Accuracy suitable for the most critical MV/LV measurements
- The operating history and diagnostic tools to understand your electrical feeder
- Unique on the market, up to 8 totally-integrated inputs/outputs (on-off or analog)
- Qualimetry at the heart of a power monitor

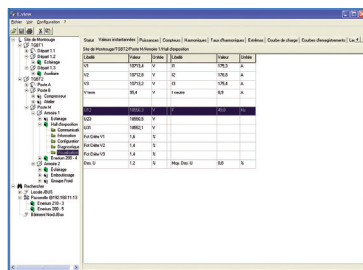
		MEMO	ENERIUM				
		Flush-mounting 96 x 96 mm			Flush-mounting 144 x 144 mm		
		Memo P200	Enerium 50	Enerium 150	Enerium 100	Enerium 200	Enerium 300
		ELECTRICAL ENERGY			MULTI-ENERGY		QUALIMETRY
Functional specifications	Accuracy class (as per IEC 61557-12)	0.5	0.5	0.5	0.5	0.5 or 0.2	0.2
	Version without display				Enerium 110	Enerium 210	Enerium 310
Recording functions	8 load curves						
	4 trend curves						
Alarms	Number of alarms		16	16	16	16	16
	Time/date-stamped events recorded		64	64	64	64	64
Power quality	THD / PF / Tan φ						
	Max. harmonic orders		25	50	25	50	50
	Qualimetry as per EN50160						
	Capture of V, U, I & In waveforms						16
Storage of the last 1,024 time/date-stamped events (dips, outages, overvoltages)							
Inputs / Outputs	Max. number of inputs / outputs	1	2	2	8	8	8
Inputs (option)	On-off (pulse or alarm mode)		0,1 or 2	0,1 or 2	0, 2, 4, 6 or 8	0, 2, 4, 6 or 8	0, 2, 4, 6 or 8
	Analog						
Outputs (option)	On-off (pulse or alarm mode)	1 (pulse)	0,1 or 2	0,1 or 2	0, 2, 4, 6 or 8	0, 2, 4, 6 or 8	0, 2, 4, 6 or 8
	Analog		0 or 2	0 or 2	0, 2 or 4	0, 2 or 4	0, 2 or 4
Graphics	Fresnel						
	Gauges						
	Harmonic-order histograms						
Communication interface	Optical USB		Front	Front	Front or rear	Front or rear	Front or rear
	Ethernet or RS485	RS485 only					
	Metrological LED						
Programming	Front panel						
	Software						

Mounting on DIN rail possible with mounting kit

		MEMO	ENERIUM				
		Flush-mounting 96 x 96 mm			Flush-mounting 144 x 144 mm		
		Memo P200	Enerium 50	Enerium 150	Enerium 100	Enerium 200	Enerium 300
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Graphics	Fresnel						
	Gauges						
	Harmonic-order histograms						
Communication interface	Optical USB		Front	Front	Front or rear	Front or rear	Front or rear
	Ethernet or RS485	RS485 only					
	Metrological LED						
Programming	Front panel						
	Software						

### RELATED SOFTWARE

- **E.VIEW:** Configuration, diagnostic, installation and display software dedicated to the ENERIUM range of power monitors.



For your IEC 61850 networks, don't forget to use ENERIUM with the ELINK communication gateway:

- It modernizes the protocol of your measuring equipment without calling into question your choice of power monitors
- Up to 10 power monitors
- DNV.GL-certified





Tertiary



Industry

## For simple metering functions

			MEMO MD32	MEMO MD65	MEMO TD80
			Single-phase		Three-phase
Strengths			1 module	2 modules	4 modules
<b>Rating</b>			32 A	65 A	80 A
<b>Installation mounting</b>			1 module	2 modules	4 modules
			direct	direct	direct
<b>Energy metering &amp; management</b>			kWh	kWh total and partial	kWh total and partial
<b>Output(s)</b>			1	1	1
<b>Accuracy class</b>			IEC Class 1	IEC Class 1	IEC Class 1
<b>To order</b>			P01330740	P01330741	P01330745

### MEMO MD32

- Direct connection up to 32 A
- Single-phase
- Class 1 as per IEC 62053-21



### MEMO MD65

- Direct connection up to 65 A
- Single-phase
- Class 1 as per IEC 62053-21



### MEMO TD80

- Direct connection up to 80 A
- Three-phase
- Class 1 as per IEC 62053-21



## For advanced metering functions

### ULYS MD45-M ULYS MD45-M MODBUS

- Direct connection up to 45 A
- Single-phase
- MID Class B
- Integrated RS485 Modbus communication (ULYS MD45-M Modbus model)



### ULYS TDA80-M

- Direct connection up to 80 A
- Three-phase
- MID Class B



### ULYS TD80-M

- Direct connection up to 80 A
- Three-phase
- MID Class B
- Integrated communication depending on model: Modbus, Ethernet



### ULYS MD100-M ULYS MD100-M MODBUS

- Direct connection up to 100 A
- Single-phase
- MID Class B
- Integrated RS485 Modbus communication (ULYS MD100-M Modbus model)



### ULYS TTA-M

- Connection on CT
- Three-phase
- IEC Class 1 / MID Class B



### ULYS TT-M

- Connection on CT
- Three-phase
- MID Class B
- Integrated communication depending on model: Modbus, Ethernet



			ULYS MD45-M ULYS MD45-M Modbus	ULYS MD100-M ULYS MD100-M Modbus	ULYS TDA80-M	ULYS TTA-M	ULYS TD80-M	ULYS TT-M
			Single-phase		Three-phase			
Strengths			Multiple measurements Integration communication - MID version		Multiprotocol communication Multiple measurements - MID version		Multiprotocol communication Multiple measurements - MID version	
<b>Rating</b>			45 A	100 A	80 A	Sur TC 1 / 5 A	80 A	Sur TC 1 / 5 A
<b>Installation</b>			1 module	2 modules	4 modules			
			direct		direct	Sur TC	direct	Sur TC
<b>Energy metering and management</b>			kWh, kVAh		kWh, kVAh, kVAh total			
			kWh		kWh, kVAh, kVAh			
<b>Multiple measurements</b>			V, I, P, Q, F, FP		V, U, I, P, Q, F, FP, ΣP, ΣQ, ΣS			
<b>Output(s) /Inputs</b>			1	2	2	2	1	1
			Pulse output(s)		1	1	1 (sauf modèle Ethernet)	
			Tariff change input		1	1	1 (sauf modèle Ethernet)	
<b>Accuracy class / MID certification</b>			MID Class B		MID Class B		MID Class B	
<b>To order</b>			Without		Without		Without	
			RS485 Modbus		RS485 Modbus		RS485 Modbus	
			Ethernet		Ethernet		Ethernet	

\* Depending on model

## For electric vehicle metering functions

### ULYS MD45-M EV

- Direct connection up to 45 A
- Single-phase
- MID Class B
- Integrated communication



### ULYS TD100-M EV

- Direct connection up to 100 A
- Three-phase
- MID Class B
- Integrated communication



	ULYS MD45-M	ULYS TD100-M
<b>Technical specifications</b>	Single-phase grid	Three-phase grid
<b>Maximum rated current (Imax)</b>	45A	100A
<b>Voltage input</b>	230 VAC (-15/+10%)	
<b>Communication</b>	RS485 Modbus	
<b>Accuracy class</b>	MID (Class 1)	

### ULYS MD45-M | ULYS TD100-M

Multi-measurement	
<b>Active energy</b>	Total, partial, import, export
<b>Reactive energy</b>	Total, import, export
<b>Multi-measurement</b>	P, Q, S, V, I, PF, F
<b>Bidirectional</b>	Yes
Environnement	
<b>Operating temperature</b>	-40°C to +70°C
<b>Usage</b>	Indoors
<b>Ingress Protection</b>	IP51



# ULYS MCM MULTI-CHANNEL METER



Industry



Energy - Generation, Transmission & Distribution

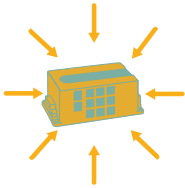
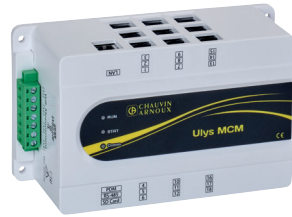


Energy efficiency

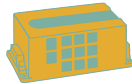
## DESCRIPTION

Ulys MCM is the innovative solution for centralizing the measurement of multiple electrical feeders.

- Compact: 18 meters in one!
- Quick implementation
- Wide range of sensors for all types of conductors and current values
- Comprehensive measurement of all the electrical parameters
- Flexible communication



■ 18 meters in one



■ Compact size

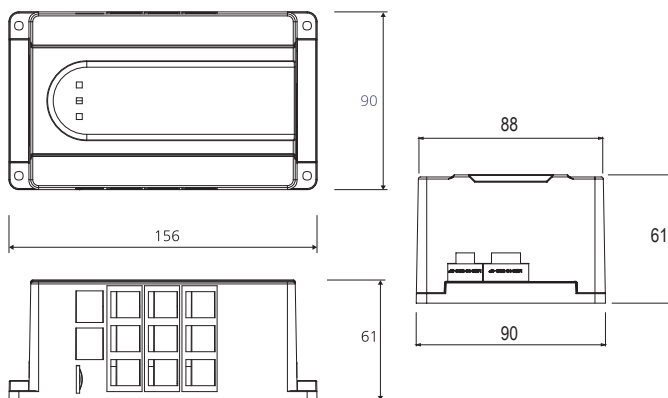


■ Compatible with a large number of sensors

## TECHNICAL SPECIFICATIONS

Feature	Specification	
<b>Electrical system</b>	1P2F, 3P3F, 3P4F	
<b>Nominal specifications of inputs</b>	<b>Voltage (Umin - Umax)</b>	43-690 V~ between phases
	<b>Voltage (Vmin - Vmax)</b>	25-400 V~ between phases and neutral
	<b>Measurement category</b>	600 V Cat III
	<b>Frequency</b>	45-65 Hz
	<b>Current</b>	0-333 mV (max. 0.5 V p-p)   Impedance : 20 kΩ
	<b>On-off (DI)</b>	1 point, 80-250 V~, external power supply
	<b>Temperature CTN</b>	25°C, 10 kΩ, (β(25/85)=3,970°K)
<b>Auxiliary power supply</b>	<b>Voltage</b>	100-240 V~
	<b>Frequency</b>	50-60 Hz
	<b>Max. voltage (L-N)</b>	Short term: 1,440 V~ - Long term: 490 V~
	<b>Consumption</b>	0.05-0.08 A
	<b>Overvoltage category</b>	300 V Cat II
<b>Communication</b>		Modbus RS485
		Modbus TCP
		RS232
<b>On-off output contact (DO)</b>	1 NO (normally open) SPST (single-pole single-throw)	

## INSTALLATION CONDITIONS



## TO ORDER

Model	Reference
ULYS-MCM9	P01 331 062
ULYS-MCM18	P01 331 064

The Ulys MCM is available in **9 or 18-channel** versions or three-phase measurement.

## ACCESSORIES

### Sensors



Model	Rogowski coil		Current transformer					
	Openable, flexible		Openable, rigid					
<b>Type of sensor</b>	Openable, flexible		Openable, rigid					
<b>Models</b>	MF300	MF3000	TCC V 105	TCC V 1050	TCC V 161	TCC V 242	TCC V 364	TCC V 366
<b>Rated current</b>	600 A	3,000 A	5 A	50 A	100 A	250 A	400 A	600 A
<b>Clamping diameter</b>	70 mm	200 mm	10 mm	10 mm	16 mm	24 mm	36 mm	36 mm
<b>Weight of pack of 3</b>	195 g	210 g	190 g	190 g	320 g	625 g	1,150 g	1,260 g
<b>Dimensions of sensor alone (h x w x d)</b>	130 x 80 x 12 mm	270 x 220 x 12 mm	41.4 x 24 x 26.5 mm	41.4 x 24 x 26.5 mm	51.7 x 30 x 31.5 mm	71 x 44 x 39.2 mm	84 x 5 x 41 mm	84 x 57 x 41 mm

Our sensors are delivered in packs of 3 directly connected to the connection adapter (P01379643)

### WHAT SENSORS DO YOU WANT?

	Ratio	Diameter	
<b>Rigid sensors</b>			
<b>PACK 3 TCC V 105</b>	5A / 333mV	10mm	P01 379 616
<b>PACK 3 TCC V 1050</b>	50A / 333mV	10mm	P0 1379 626
<b>PACK 3 TCC V 161</b>	100A / 333mV	16mm	P01 379 618
<b>PACK 3 TCC V 242</b>	250A / 333mV	24mm	P01 379 620
<b>PACK 3 TCC V 364</b>	400A / 333mV	36mm	P01 379 622
<b>PACK 3 TCC V 366</b>	600A / 333mV	36mm	P01 379 624
<b>Flexible sensors</b>			
<b>PACK 3 MF300</b>	600A / (39,1µV/A)	70mm	P01 379 631
<b>PACK 3 MF3000</b>	3000A / (39,1µV/A)	200mm	P01 379 633

### WHAT IS THE DISTANCE BETWEEN YOUR ULYS MCM AND YOUR SENSORS

<b>RJ12M-RJ12M M</b>	3 meters	P01 379 641
<b>RJ12M-RJ12M L</b>	9 meters	P01 379 642

### Screen

The remote screen allows you to view the data measured by your Ulys MCM.



### DO YOU WANT TO EQUIP YOUR ULYS MCM WITH A SCREEN?

Model		Reference
<b>ULYS MCM D</b>	Screen	P01 331 065
<b>RJ45M-RJ45M M</b>	Connection cable*	P01 379 640

\*Cable essential for screen connection

# MEASUREMENT TRANSDUCERS



Energy - Generation, Transmission & Distribution



Nuclear

## A complete range covering all your measurement requirements

- Analog and digital
- Communication with all systems (4-20 mA, Modbus, IEC 61850)
- 40 years of experience
- Designed and manufactured in France



### Analog transducers

**T82N**

For harsh environments



### Digital transducers

**TRIAD 2**

For general applications

Measurements		T82N	TRIAD 2
Iac		■	■
Vac		■	■
Uac			■
P		■	■
Q		■	■
S			■
F		■	■
PF		■	■
CosΦ			■
TanΦ			■
φ			■
φ (U' - U'')			■
Options		T82N	TRIAD 2
Number of analog outputs		1	4
RS485			■
Ethernet			■
Relay output			■
Programmable			■
Plug-in version			
Self-powered		■ Depending on model	■ (1)

(1) By looping the input voltage

# MEASUREMENT TRANSDUCERS



Energy - Generation, Transmission & Distribution Nuclear

## For general applications



- For single-phase or balanced three-phase networks
- 1 analog output

- For all electrical networks
- 4 analog outputs



## TRIAD 2

- Accuracy class 0.1 as per IEC 60688
- Reinforced range for IEC 61000-4-5 substations
- Compatible with IEC 61850 via ELINK (communication gateway) and digital output available as an option (Ethernet / RS485)
- Configured when ordering or configurable using the Triadjust 2 software



For your IEC 61850 networks, don't forget to use TRIAD 2 with the ELINK communication gateway

- Modernizes the protocol of your measuring equipment without calling into question your choice of a transducer
- Up to 20 transducers
- DNV.GL-certified



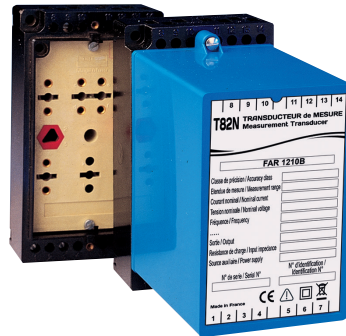
## For harsh environments



**IAR 1210B**  
RMS AC current



**QAR 1232B**  
Reactive power



**FAR 1210B**  
Frequency



**JAR 1211B**  
Phase angle

**UAR 1210B**  
RMS AC voltage

**PAR 1232B**  
Active power

- Socket for plug-in unit



Model	Socket	
	Type	Reference
UAR 1210B	5	EMBB 4005
IAR 1210B	4	EMBB 4004
PAR 1232B	3	EMBB 4003
QAR 1232B	3	EMBB 4003
FAR 1210B	5	EMBB 4005
JAR 1211B	4	EMBB 4004

- Mounting on DIN rail for fixed or plug-in unit



Model	Reference
Mounting on symmetrical DIN rail	PDIN SYME
Mounting on asymmetrical DIN rail	PDIN ASYM

# POWER QUALITY ANALYZERS



Industry



Energy - Generation, Transmission & Distribution



For 24/7 analysis of all the electrical characteristics of LV, MV and HV networks

## MAP RANGE

- Compliant with the IEC 61000-4-30 Class A standard
- Data processing according to the EN 50160 standard
- Detection of the direction (upstream/downstream) of events
- Analysis of brief transients



Permanent analyzers



Non-intrusive analyzers

		MAP COMPACT	MAP 620	MAP 640	MAP 620-NI	MAP 607
<b>Strengths</b>		Predefined report as per the EN50160 standard. Compliance with the template calculated in the product. Immediate indication of compliance with the template by LED on front panel. Possibility of managing the whole MAP600 range with the same set of software.				Recovery of the measurements via USB 2.0 port. Plug & play system.
<b>Installation</b>	<b>Network</b>	Three-phase 400 V / 230 V	Three-phase 690 V / 400 V			Single-phase 230 V
	<b>Number of voltage channels</b>	3	3	3	3	1
	<b>Number of current channels</b>	3	4	4	4	
<b>Sampling</b>	<b>Number of 0 - 20 mA inputs</b>		4	4		
	<b>Sampling frequency</b>	12.8 kHz	12.8 kHz	12.8 kHz	12.8 kHz	12.8 kHz
<b>Communication</b>	<b>Frequency for fast transients</b>			2 MHz		
	<b>Mini-USB</b>					
	<b>Built-in Ethernet port (Modbus TCP/IP available)</b>	option	option	option	option	
	<b>Port RS232</b>					
<b>Data storage</b>	<b>Capacity</b>	64 MB	128 MB	128 MB	128 MB	64 MB
<b>Power supply and connection</b>	<b>Internal operating reserve</b>	1 s	10 s	10 s	10 s	1 s
	<b>Power supply voltage</b>	175 Vac to 255 Vac	85 - 264 Vac / 110 - 375 Vdc or 36 - 72 Vdc			230 Vac
	<b>Voltage connections</b>	screw-on	screw-on	screw-on	4 mm banana	Standardized connector
<b>Calculated parameters</b>	<b>Current connections</b>	screw-on	screw-on	screw-on	¼ turn	
	<b>Voltage, frequency, unbalance, THD</b>					
	<b>Harmonics (up to 50th order)</b>					
	<b>Flicker pst (10 min), Plt (2 h) and Lft (inst.)</b>					
	<b>Remote control signals</b>					
	<b>Power harmonics</b>					
<b>Voltage events</b>	<b>P, Q and S power values</b>					
	<b>Power factors, tangents</b>					
	<b>Dips</b>					
	<b>Interruption / outage</b>					
	<b>Transients</b>					
	<b>Fast variations</b>					
<b>Capture and recording of events</b>	<b>Events log</b>					
	<b>HF transients</b>					
	<b>Signature</b>					
<b>Connection</b>	<b>Waveforms</b>					
	<b>Customizable qualimetry template</b>					
<b>Quick / non-intrusive connection</b>						
<b>Software</b>	<b>Qual SRT</b>	Qual SRT				Qual SRTc
	<b>E.Qual-Premium</b>					
	<b>E.Qual-Premium-Server</b>					(import)



**E.Qual-Premium Server** is the single, user-friendly solution for managing a fleet of power quality analyzers comprising 10 to several hundred products.

- All the data retrievals are performed automatically by a high-performance remote data-retrieval engine
- A history since commissioning of the equipment fleet for benchmarking of all the power quality analyzers
- Tools for summarizing all the measurements and sharing the information concisely with decision-makers and operators.



# MANAGEMENT AND ANALYSIS SOFTWARE .....



## Analysis and report generation modules for network analyzers in the MAP range

### E. QUAL-PREMIUM

**E.Qual-Premium** can be used to generate various views corresponding to the different parameters present in the measurement campaign recovered, including:

- views of the events
- views of the transients
- views of the trend curves
- views of the measurement campaign summaries
- reports generated directly in MS Word® format

The most extensive and critical electrical networks require special supervision of energy quality at the points of connection.

### E.QUAL-PREMIUM SERVER

**E.Qual-Premium Server** is a unique, user-friendly solution for managing from ten to several hundred network analyzers.

**E.Qual-Premium Server** also includes E.Qual-Premium:

- graphical multi-equipment views
- multi-equipment event logs
- statistical views

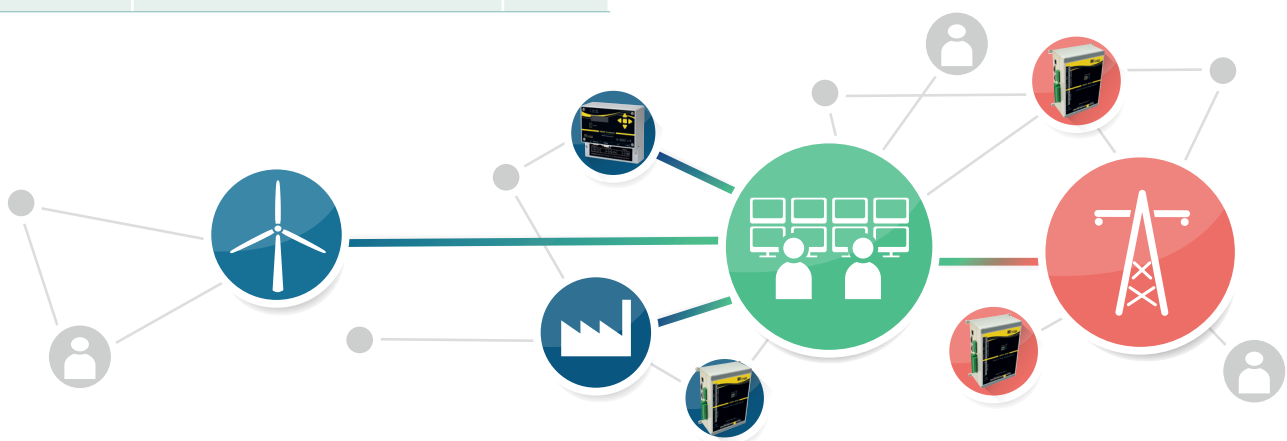
**Peace of mind:** all the data retrievals are performed automatically by a high-performance remote data-retrieval engine

**Complete:** a history from the moment the equipment fleet was commissioned, allowing benchmarking of all the analyzers

**Analysis:** special tools for summarizing the measurements on the fleet of analyzers and sharing the information in concise form with the decision-makers and operators

Model	Description	Number of licenses
E.Qual-Premium	Configuration, display and analysis software	1
E.Qual-Premium Server	Configuration, remote data retrieval, display, administration and analysis software	5
E.Qual-Premium Server	Configuration, remote data retrieval, display, administration and analysis software	20

	E.Qual-Premium	E.Qual-Premium Server
<b>Architecture</b>		
Point to point	■	■
Multi-equipment by successive targeting	■	■
Management of measurements in database		■
Multi-site / multi-equipment		■
Client / server architecture		■
<b>Data transfer</b>		
Manual	■	■
Selective transfer	■	■
Automatic transfer		■
Communication log		■
<b>Measurement display</b>		
Real-time waveform and vectorial	■	■
Recorded curves	■	■
Curves with multi-equipment parameters		■
Global measurement campaign		■
<b>Event display</b>		
List of events	■	■
Waveform and fast RMS	■	■
Sorted views		■
Statistical views of events		■
<b>Report generation</b>		
Standard report covering one week	■	■
Report covering customizable period		■



# SURVEILLANCE RÉSEAUX BASSE TENSION



## SOLUTION FOR SUPERVISION OF LV INSTALLATIONS

**A tailored solution**  
based on integration of the  
Ulys MCM multichannel meter



**ANTICIPATE  
AGING OF THE  
TRANSFORMER AND  
INSTALLATIONS**

Optimized scheduling and reduced  
maintenance costs



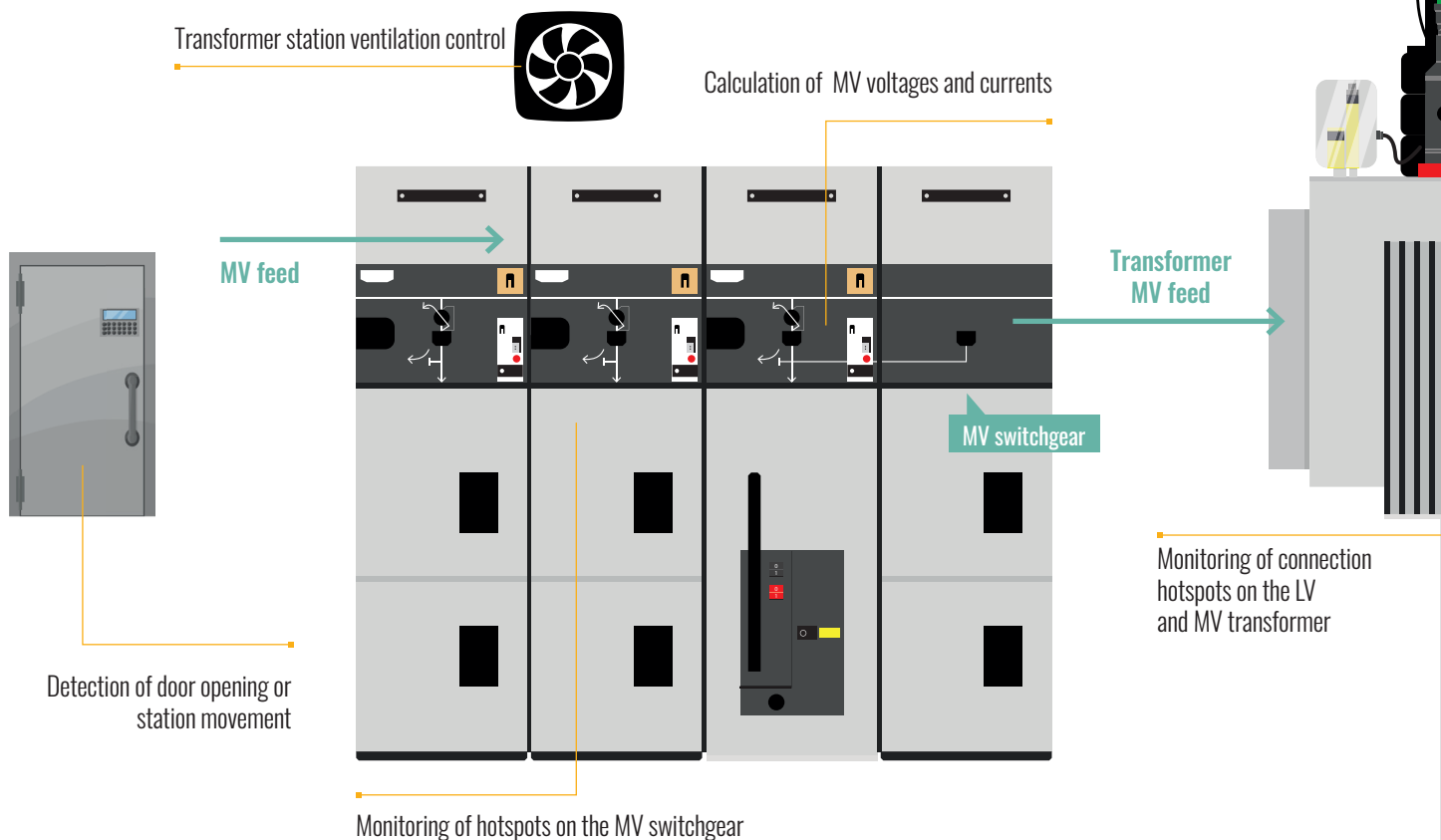
**TRACK AND  
SECURE  
THE ENERGY  
FLOWS**

Reduced technical and  
non-technical losses



**OPTIMIZE  
THE INSTALLATIONS  
AND NEW  
CONNECTIONS**

Assessment of the available  
reserve or the effective  
overload on the feeders or  
transformers





Industry

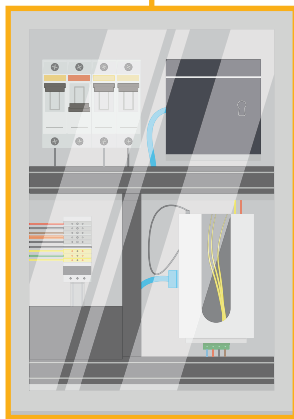


Energy - Generation, Transmission & Distribution

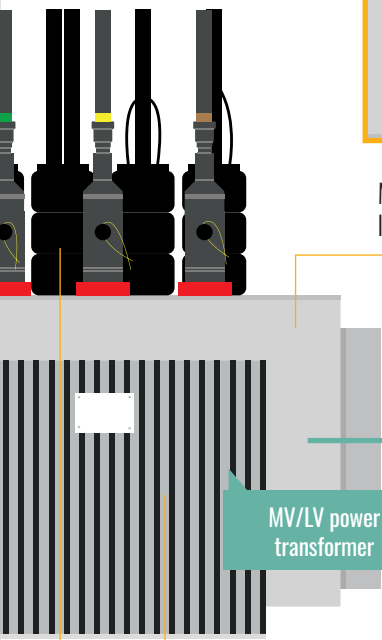


Nuclear

## GridWatch measurement kit



Measurement of transformer load factor and unbalance

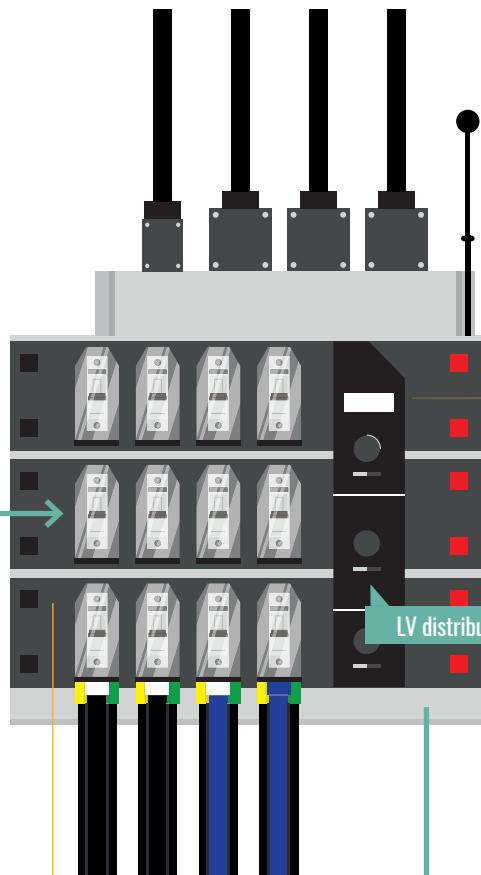


MV/LV power transformer

Monitoring of transformer surface temperature

Transformer station temperature and humidity measurement

LV transformer general feeder



Measurement of current and power values on each LV feeder

LV distribution switchboard

Detection of fuse blowout on LV feeder

LV distribution

Flood detection – transformer station water level

# SURVEILLANCE RÉSEAUX BASSE TENSION

## Strengths

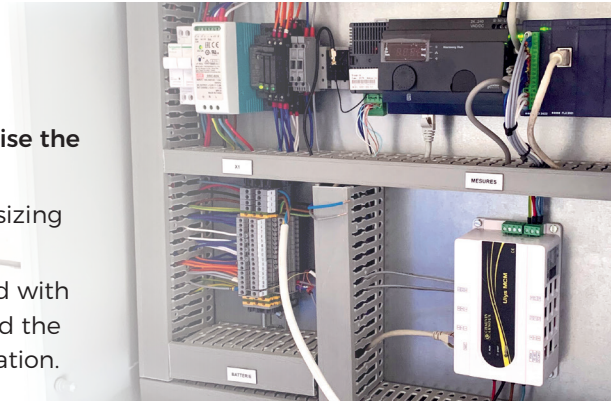


### Complete and upgradable

GridWatch includes all the sensors needed to supervise the critical points in the MV/LV transformer station.

Available in various versions, it can be adapted to the sizing and the available budget for **optimum roll-out**.

Moving forward, GridWatch can be gradually equipped with sensors to instrument the transformer and then extend the analysis to the electrical feeders on the transformer station.



### Quick roll-out

To reduce unavailability of the transformer station during commissioning of the system, **GridWatch has been designed for quick installation and roll-out:** split-core current sensors connected with a single click, prewired environmental measuring sensors, preconfigured wireless hotspot sensors, etc.

## Interface our solution with your teams



Communication modes for everything from the demonstrator to high-volume roll-outs

SMS/Email alerts

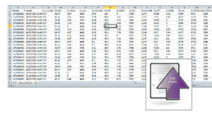
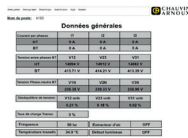
WEB pages

Recording and FTP Push of .csv data

MQTT alarms log

Real-time viewing

VPN service for remote access



M2Web API  
HTTPS web services  
OPC UA  
Modbus TCP





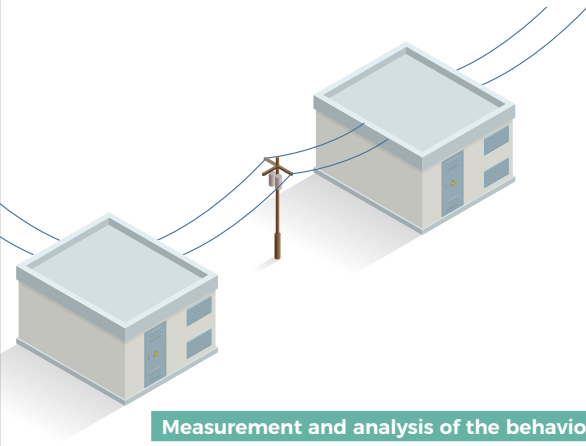
Industry



Energy - Generation, Transmission & Distribution



Nuclear



### GridWatch C100



**ANALYZE** the load factor of the transformer and feeders to optimize the connection of new equipment

### GridWatch C200



**ANALYZE** the load factor of the transformer and feeders to optimize the connection of new equipment

- + **ANTICIPATE** failures and aging on electrical installations
- + **STEER** maintenance of the transformer stations

### Measurement and analysis of the behavior of cabin station equipment

<b>Transformer monitoring:</b> Electrical measurement and metering on the secondary of the general MV/LV transformer	<ul style="list-style-type: none"> <li>• 3P+N voltage socket on feed terminal strip</li> <li>• Quick-install current socket for Rogowski sensor (diameter 200mm)               <ul style="list-style-type: none"> <li>• Quantities measured: V, U, I, F, P, Q, S, Phase, Ea, Eq, Es</li> <li>• MV quantities calculated: U, I</li> </ul> </li> </ul>
<b>Monitoring of the low-voltage electrical feeders:</b> Electrical measurement and metering	<ul style="list-style-type: none"> <li>• Quick-install current socket for split-core CTs (up to 8 feeders)</li> <li>• Quantities measured: V, U, I, F, P, Q, S, Phase, Ea, Eq, Es</li> </ul>
Measurement of neutral currents (general and low-voltage feeders)	- / Yes
Measurement of connection hotspot temperatures on the LV and MV transformer	- / Yes
Transformer surface temperature measurement	- / Yes
Measurement of the ambient temperature of the kit and the ambient temperature and humidity of the transformer station	- / Yes
Interfacing with the other elements in the transformer station	- / Analog inputs and on-off inputs/outputs available

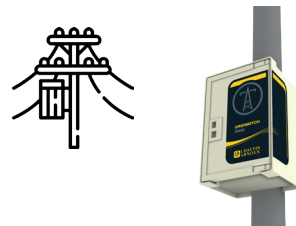
### Communication and data management

Communication mode	3G/4G communication and associated remote antenna
Data viewing	Remote web pages
Management of alarms and recordings	<ul style="list-style-type: none"> <li>• Overrun alarms and timeout with transmission of an SMS text or email, recording in alarms log</li> <li>• Recording of all the quantities and variables</li> </ul>
Protocols used simultaneously	<ul style="list-style-type: none"> <li>• Modbus TCP: access to all the electrical and physical quantities in real time (1s)               <ul style="list-style-type: none"> <li>• MQTT: Publisher mode on alarm / Subscriber mode</li> </ul> </li> <li>• HTTP: Access to all the electrical and physical quantities in real time, as well as historized data               <ul style="list-style-type: none"> <li>• FTP Push: file sent to FTP server</li> </ul> </li> </ul>
Remote administration	Updating - Parameter Settings - Fleet management

### General specifications

Local data viewing screen	- / Yes
Use	Indoor
Operating temperature	-10°C - +55°C
Installation	Wall mounting or mounting on stand
Standards	IEC 61439-1 / IEC 61439-5
Battery operation in the event of power outage	- / Yes

**Tailored product:** Contact Chauvin Arnoux Energy for details of the GridWatch P100 solution adapted for monitoring H61 pole-mounted electrical transformer stations!



Ask us for a quotation to equip your transformer station monitoring projects!

# ANALOG PANEL METERS



Industry



Energy - Generation, Transmission & Distribution

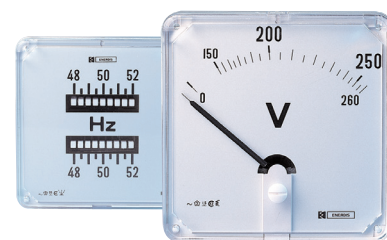


Nuclear

With round barrel for severe operating constraints

## NORMEUROPE RANGE

- EDF-certified range, usable onboard sea-going vessels, ideal for power generators and distributors
- Large choice of functions, formats, measurement ratings and options



Front panel (round barrel) Format	48 x 48	72 x 72	96 x 96	COHO 48 x 48
<b>Standard functions</b>				
AC ammeter	90°		250°	
AC voltmeter	90°		250°	
Pointer dial frequency meter		90°	250°	
Vibrating reed frequency meter		1 to 9 reeds		
Wattmeter / varmeter				
Phasemeter		90°	250°	
DC ammeter	90°		250°	
DC voltmeter	90°		250°	
Hour meter				
<b>Synchronization equipment</b>				
Double vibrating reed frequency meter		2 x 9 reeds		
Differential voltmeter		90°	250°	
Advantages	NORMEUROPE, the industry reference for the generation, transmission and distribution of electrical energy for severe operating constraints.			

## MECHANICAL PRESENTATION

Deflection	90°			250°		
Format	48 x 48	72 x 72	96 x 96	48 x 48	72 x 72	96 x 96
<b>Fixation et étanchéité de façade hors standard (1)</b>						
Standard Indicateur : IP 40 façade Boîtier : IP 20 Indicateurs 360° toujours 4 goujons	2 x M2.5 studs	2 x M4 studs	2 x M4 studs	2 x M2.5 studs	2 x M4 studs	2 x M4 studs
Option Ring fastening IP 40 front panel	drilling 48 mm	drilling 58 mm	drilling 88 mm	drilling 48 mm	drilling 58 mm	drilling 88 mm
Option Reinforced fastening + seal IP 52 front panel	4 x M2.5 studs	4 x M4 studs	4 x M4 studs	4 x M2.5 studs	4 x M4 studs	4 x M4 studs
Option Watertight (zero reset, front) + IP54 front panel seal		4 x M4 studs	4 x M4 studs	4 x M2.5 studs	4 x M4 studs	4 x M4 studs
Option Watertight (zero reset, front-rear) + IP55 product seal		4 x M4 studs	4 x M4 studs	4 x M2.5 studs	4 x M4 studs	4 x M4 studs
<b>Production of non-standard dials (after feasibility approval)</b>						
Dial markings on request	■	■	■	■	■	■
Color markings	■	■	■	■	■	■
Color areas	■	■	■	■	■	■
Black background with white markings	■	■	■	■	■	■
Double scale		■	■	■	■	■

(1) IPXY where X is the level of protection against penetration by solid bodies and Y is the level of protection against penetration by liquids.

A large number of references are available in our 2022 Catalog and on our website at [https://catalog.chauvin-arnoux-energy.com/enerdis\\_en/produits/enerdis/panel-meters/indicateurs-analogiques](https://catalog.chauvin-arnoux-energy.com/enerdis_en/produits/enerdis/panel-meters/indicateurs-analogiques)

# DIGITAL PANEL METERS



Industry



Energy - Generation, Transmission & Distribution



Nuclear

## For the industrial sector

- Instant mounting without tools
- Quick, simple programming
- Compact design
- Digital processing of the data makes it possible to connect the panel meters to external measuring or supervision systems
- Totally programmable



	μDIGI1	μDIGI2	CA 2150	
	Economical programmable range for industrial use		Programmable range for universal use	
<b>Front panel format (mm)</b>	24 x 48	48 x 96	48 x 96	
<b>Display range (in counts)</b>	-1999/+9999	-1999/+9999	-19999/+19999	
<b>Measurement functions</b>	<b>AC ammeter</b>	μDIGI1 E	CA 2150-E	
	<b>AC voltmeter</b>	μDIGI1 E	CA 2150-E	
	<b>DC ammeter</b>	μDIGI1 E	CA 2150-E	
	<b>DC voltmeter</b>	μDIGI1 E	CA 2150-E	
	<b>Process signals</b>	μDIGI P/LP	μDIGI2 P	CA 2150-M
	<b>Thermocouple thermometer</b>		μDIGI2 P	CA 2150-M
	<b>Pt 100 thermometer</b>		μDIGI2 P	CA 2150-M
	<b>Potentiometer</b>		μDIGI2 P	CA 2150-M
	<b>Load cell</b>			CA 2150-M
	<b>Frequency meter</b>			CA 2150-D
	<b>Tachometer</b>			CA 2150-D
	<b>Counter</b>			CA 2150-D
<b>Chronometer</b>			CA 2150-D	
<b>Special functions</b>	<b>MIN/MAX</b>		CA 2150-E/D/M	
<b>Output(s)</b>	<b>Analog output</b>		Option	
	<b>RS232 output</b>		Option	
	<b>RS485 output</b>		Option	
	<b>Threshold output(s)</b>	Option	Option	
<b>User-programmable</b>				

## TO ORDER ▼

### μDIGI1

Model	Power supply	Reference
μDIGI1-LP	Self-powered (active loop)	P01 330 000
μDIGI1-P	85 - 265 Vac & 100 - 300 Vdc	P01 330 031
	22 - 53 Vac & 10,5 - 70 Vdc	P01 330 032
μDIGI1-E	85 - 265 Vac & 100 - 300 Vdc	P01 330 011
	22 - 53 Vac & 10,5 - 70 Vdc	P01 330 012

### μDIGI2

Model	Power supply	Reference
μDIGI2-E	85 - 265 Vac & 11 - 265 Vdc	P01 330 081
μDIGI2-P	85 - 265 Vac & 11 - 265 Vdc	P01 330 080

### CA 2150

Model	Power supply	Reference
CA 2150-E	85 - 265 Vac & 100 - 300 Vdc	P01 308 005
	22 - 53 Vac & 10,5 - 70 Vdc	P01 308 006
CA 2150-M	85 - 265 Vac & 100 - 300 Vdc	P01 308 001
	22 - 53 Vac & 10,5 - 70 Vdc	P01 308 002
CA 2150-D	85 - 265 Vac & 100 - 300 Vdc	P01 308 003
	22 - 53 Vac & 10,5 - 70 Vdc	P01 308 004

Option boards	μDIGI1	μDIGI2	CA 2150
<b>2-relay alarm</b>		P01 319 301	P01 319 301
<b>4-relay alarm</b>			P01 319 303
<b>Com RS 485</b>			P01 319 307
<b>Com RS 232</b>			P01 319 306
<b>4-20 mA output</b>			P01 319 311
<b>0-10 Vdc output</b>			P01 319 310

# CURRENT TRANSFORMERS



Industry



Energy - Transmission & distribution

## For tariff metering



JVR 86



JVO 40-100



JVO 40-100 S



J3R 80B



JVO 90-160 S

		Core - Single-phase				
Type of connection	Wound primary	Ø M8/M10 > 75 A				
	Cable primary (mm)		Ø 42	Ø 40	Ø 66	Ø 90
Accuracy	Accuracy class	0.5	0.5	0.2s	0.5	0.2s
	Accuracy power (VA)	20	7.5 (bi-rating) / 15	7.5	15 (5 for 300 A 10 for 400 A)	7.5
Rating	Single-rating					
	Bi-rating		200 - 500 A	200 - 500 A		
	Tri-rating					500 - 1,000 - 2,000 A
Primary	5 / 5 A	■				
	20 / 5 A	■				
	40 / 5 A	■				
	50 / 5 A					
	60 / 5 A	■				
	75 / 5 A					
	100 / 5 A	■				
	150 / 5 A					
	200 / 5 A					
	250 / 5 A					
	300 / 5 A				■	
	400 / 5 A				■	
	500 / 5 A				■	
	600 / 5 A				■	
	750 / 5 A				■	
	1,000 / 5 A				■	
1,200 / 5 A						
1,250 / 5 A						
1,500 / 5 A						
2,000 / 5 A						

■ Also available with 1A secondary. Please contact us.

Tailored version of the the JVR86, JR 80B, JVP 1025 and JVP 1045 can be supplied on request.



JVP 1025



JVP 1045



JVP 1045B



JVP 1145 S



TRI 500



TRI 700



TRI 700 S

		Core - Single-phase				Core - Three-phase		
Type of connection	Cable primary (mm)	100 x 20	100 x 40	100 x 40	100 x 12			
	Cable clamp (cross-section in mm <sup>2</sup> )					50 to 240	50 to 240	50 to 240
Accuracy	Accuracy class	0.5	0.5	0.5	0.2s	0.5	0.5	0.2s
	Accuracy power (VA)	15 (30 for 1,250 A)	15 (30 for 1,000 A)	7.5 (bi-rating) / 15	7.5	15	3.75	7.5
Rating	Single-rating							
	Bi-rating			500 - 1,000 A 1,000 - 2,000 A				50 - 100 A 100 - 200 A 200 - 500 A
	Tri-rating				500-1,000-2,000 A		100 - 200 - 500 A	
Primary	50 / 5 A							
	75 / 5 A							
	100 / 5 A							
	150 / 5 A							
	200 / 5 A							
	300 / 5 A							
	400 / 5 A							
	500 / 5 A							
	600 / 5 A							
	1,000 / 5 A							
1,250 / 5 A								
2,000 / 5 A								



# CURRENT TRANSFORMERS



- Primary from 5 to 5,000 A
- Large choice of feedthroughs: cable, busbar

## TCR



## TCR / JVS



		TCR 10	TCR 15	TCR 21	TCR 31	TCR 41 JVS 25B	TCR 51 JVS 26B	TCR 61 JVS 30B	TCR 71 JVS 38B	TCR 75 JVS 39B	TCR 80 JVS 40	TCR 90 JVS 50	TCR 100 JVS 60	
		Wound primary				Cable/busbar primary					Busbar primary			
Type of connection		0.5	0.5	0.5	0.5	0.5 0.2s	0.5 0.2s	0.5 0.2s	0.5 0.2s	0.5 0.2s	0.5 0.2s	0.5 0.2s	0.5 0.2s	
Wound primary (connection)		Aperture 25 x 25	Wire 16 mm <sup>2</sup>											
Cable primary (mm)				Ø 20	Ø 22	Ø 26	Ø 28	Ø 44	Ø 63					
Busbar primary (mm)				15 x 10 20 x 10 25 x 5	20 x 12 25 x 11 30 x 10	20 x 20 25 x 12 30 x 10	20 x 25 30 x 15 40 x 10	50 x 30 60 x 12	50 x 50 60 x 37 80 x 30	3 x 100 x 10	100 x 20	100 x 30	125 x 60	
Primary	5 A	<input type="checkbox"/>	<input type="checkbox"/>											
	10 A	<input type="checkbox"/>	<input type="checkbox"/>											
	15 A	<input type="checkbox"/>	<input type="checkbox"/>											
	20 A	<input type="checkbox"/>	<input type="checkbox"/>											
	25 A	<input type="checkbox"/>	<input type="checkbox"/>											
	30 A	<input type="checkbox"/>	<input type="checkbox"/>											
	40 A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
	50 A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
	60 A	<input type="checkbox"/>		<input type="checkbox"/>										
	75 A	<input type="checkbox"/>		<input type="checkbox"/>										
	100 A	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/>							
	125 A	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
	150 A	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>							
	200 A			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>							
	250 A			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>							
	300 A				<input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>							
	400 A				<input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
	500 A				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
600 A				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
750 A						<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
800 A						<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
1,000 A							<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
1,200 A							<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
1,500 A							<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2,000 A								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2,500 A								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3,000 A								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4,000 A								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5,000 A								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		

TCRO and TC CLIP ranges for insertion on electrical installations without opening the conductor

## TCRO



## TC CLIP



		TCRO 2030	TCRO 5080	TCRO 8080	TCRO 80120	TCRO 80160	TCC 176	TCC 241	TCC 242	TCC 3644	TCC 366	
		Split core					Split core					
Accuracy class		0.5-1-3	0.5-1-3	0.5-1-3	0.5-1-3	0.5-1-3	1	1	1	1	1	
Cable primary (mm)							Ø 17	Ø 24	Ø 24	Ø 36	Ø 36	
Busbar primary (mm)		20 x 30	50 x 80	80 x 80	80 x 120	80 x 160						
Primary	60 A						<input checked="" type="checkbox"/>					
	75 A							<input checked="" type="checkbox"/>				
	100 A	<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>			
	125 A											
	150 A	<input checked="" type="checkbox"/>										
	200 A	<input checked="" type="checkbox"/>										
	250 A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>			
	300 A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							
	400 A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>		
	500 A		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
	600 A		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
	750 A											
	800 A		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
	1,000 A		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
	1,200 A					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
	1,500 A					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
2,000 A						<input checked="" type="checkbox"/>						
2,500 A						<input checked="" type="checkbox"/>						
3,000 A						<input checked="" type="checkbox"/>						
4,000 A						<input checked="" type="checkbox"/>						
5,000 A						<input checked="" type="checkbox"/>						

5 A secondary as standard/ For 1 A, please contact us

1 A secondary on request

5 A secondary only

JVS 5 A secondary

1 A secondary only

# AUXILIARY RELAYS

## DEPENDING ON PRODUCTS



Model	Monostable instantaneous	Bistable (latching)	Forcibly guided contacts	Fast-acting(*)	Time delay	Contacts	In	Notes	Rolling stock equipment (***)	Nuclear
RCM	■					2 CO	10 A	Compact		
RDM	■					4 CO	10 A	Compact		
RGM	■					4 CO	12 A	High breaking capacity (**)		
RMMX	■					8 CO	10 A	Multi-contact, compact		
RMM	■					8-12-20 CO	12 A	High breaking capacity, multi-contact		
POK-POKS	■					2 CO	5-10 A	Compact	🚂	☢️
BIPOK-BIPOKS	■					4 CO	5-10 A	Compact	🚂	☢️
TRIPOK-TRIPOKS	■					6 CO	5-10 A	Compact	🚂	
QUADRIPOK	■					8 CO	10 A	Compact	🚂	
ESAPOK	■					12 CO	10 A	Compact		
OK	■					4-8-12 CO	10 A	High breaking capacity	🚂	
OKB184	■					4 CO	10 A	High breaking capacity, K3-qualified		☢️
RE3000	■					4 CO	10 A	K3-qualified		☢️
FOKB	■					4 CO NC-NO	13 A	High breaking capacity, NF F62-002	🚂	
RCG	■		■			2 CO	10 A	Forcibly guided contacts, type A, EN61810-3	🚂	
RDG	■		■			4 CO	10 A	Forcibly guided contacts, type A, EN61810-3	🚂	
RGG Previous name RGMZX	■		■			4 CO	10 A	High breaking capacity, forcibly guided contacts, type A, EN61810-3	🚂	
RMGX	■		■			8 CO	10 A	High breaking capacity, forcibly guided contacts, type A, EN61810-3	🚂	
RGB		■				3-4 CO	12 A	High breaking capacity		
RMBX		■				7-8 CO	10 A	Multi-contact	🚂	
RMB		■				7-11-19 CO	10 A	High breaking capacity, multi-contact, common negative		
OKBA		■				4-8 CO	10 A	High breaking capacity	🚂	
RGMVX	■			■		4 CO	10 A	Operating time < 8 ms		
RMMV/X	■			■		8-12 CO	10 A	Operating time < 8 ms for 8 CO < 10 ms for 12 CO		
RGR	■			■		2 CO	2 A	Operating time < 3 ms		

# AUXILIARY RELAYS

## DEPENDING ON PRODUCTS

 Power generation	 Nuclear	 Power transmission	 Rolling stock	 Fixed railway installations	 Shipbuilding	 Oil industry	 Heavy industry
	Depending on products		Depending on products				

Model	Monostable instantaneous	Bistable (latching)	Forcibly guided contacts	Fast-acting(*)	Time delay	Contacts	In	Notes	Rolling stock equipment (***)	Nuclear
RGMV	■			■		4 (CO or NC)	10 A	Operating time < 8 ms		
RMMV	■			■		8 (CO or NC)	10 A	Operating time < 6 ms		
RMMZ11/13	■			■		8 CO	10 A	Operating time < 13 ms		
RGBV		■		■		4 CO	10 A	Operating time < 10 ms		
RMBV		■		■		8-12 CO	10 A	Operating time < 10 ms		
RGBZ10/11		■		■		3-4 CO	12 A	Operating time < 12 ms		
RMBZ30		■		■		7 CO	10 A	Operating time < 18 ms		
RV LV16	■			■		6 (NO or NC)	5 A	Operating time < 6 ms		
RDT					■	4 CO	10 A	Time delay on pick-up or drop-out		
RDL - RGL					■	2 CO	10 A	Flasher		
RDTE15/16					■	4 CO	10 A	Delay on drop-out, adjustable duration, no Vaux		
RGTO					■	1 CO	5 A	Delay on drop-out, adjustable duration, no Vaux		
TMM					■	4 CO	10 A	Multifunction relay, 10 functions		
TM - TMS Previous names OK-TMF/S					■	4 CO	5-10 A	Time delay on pick-up or drop-out		
TOK					■	4 CO	10 A	High breaking capacity, time delay on pick-up or drop-out		
OKR					■	4 CO	5 A	Time delay on pick-up or drop-out		
OKT					■	4 CO	5 A	Time delay on pick-up or drop-out		
UTM					■	-	-	Static time delay unit		
TOK-L					■	4 CO	10 A	High breaking capacity, flasher relay		
TOK-FP					■	4 CO	10 A	High breaking capacity, flasher relay		
OKRE-L					■	4 CO	5 A	Flasher		
OKRE-FP					■	4 CO	5 A	Flasher		
CLE					■	4 CO	5 A	Flasher		
RGK			■		■	4 CO	12 A	Forcibly guided contacts, type A, EN61810-3		
MOK-V2	■					2 CO	3 A	Measuring relay, voltage		



Fast-acting monostable or bistable



Logic function



Time-delay with forcibly guided contacts



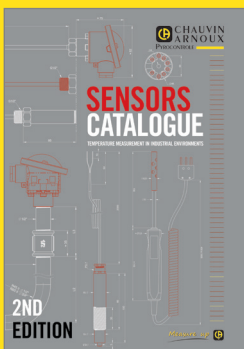
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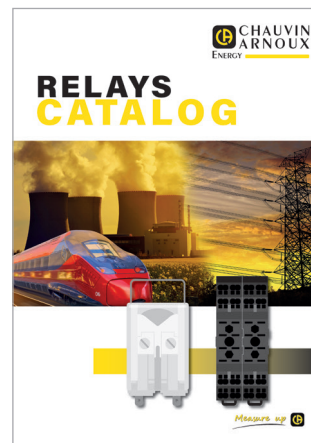
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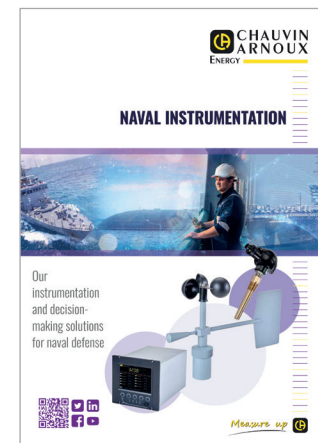
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