GENERAL CATALOGUE

contrel elettronica

ITALIAN DESIGN

" ... Your partner for monitoring and electrical safety "

ITALIAN DESIGN

Italian design has always been a trademark: our designers work in the Lodi site, researchers and engineering experts.

INTERNATIONAL PRESENCEE

The presence of Contrel Elettronica in the main world markets is the result of its constant internationalization strategy.

Contrel elettronica together with its foreign branches and its network of importers represent the reference point for the worldwide distribution of its products in over 100 countries.

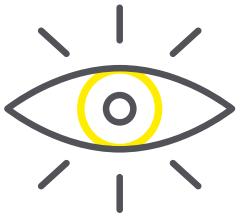
THE COMPONENTS OF A SUCCESS

For nearly four decades, **Contrel Elettronica** has been designing and manufacturing low voltage electrical devices for industrial applications.

Founded in 1985 in Lodi in Italy, **Contrel Elettronica** is a private company and has been managed at the level familiar.

The mission of our company is to create innovative and reliable products, offering services to satisfy customer expectations.

MISSION



VISION

VALUES

PRODUCT LINE

Contrel elettronica has a wide range of products compliant with the most stringent requirements of international standards.

Earth leakage relays, power meters, network analyzers, energy meters, alarm systems, monitoring devices of insulation, current and voltage transformers are just some of the products designed and made by **Contrel elettronica**.

Products intended for the most varied applications and installed all over the world must guarantee high standards of reliability.

INNOVATION

TARGETS

SERVICE

EFFICIENCY

DISTRIBUTION

QUALITY

PRICE

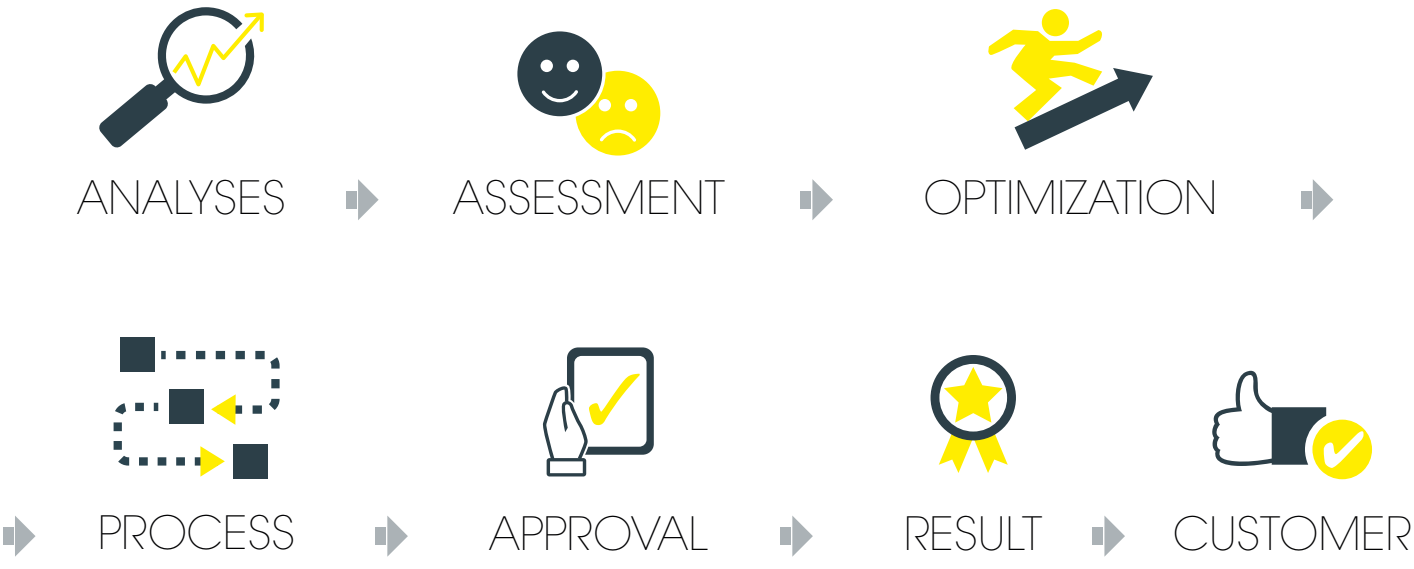
TECHNICAL SUPPORT

Technical assistance supports the **Customer**, supporting him in the choice of products, in their commissioning and after-sales consultancy.

QUALITY

Contrel Elettronica manufactures its products in compliance with the highest quality standards, respecting the environment and protecting the health of its employees.

For us, quality has always been a priority, so much so that since 1997, among the first in Italy, our management system has been certified according to **ISO 9001**.



CERTIFICATIONS AND DIRECTIVES

CERTIFICATO N.
CERTIFICATE N. **9105.CO35**

SI CERTIFICA CHE IL SISTEMA DI GESTIONE PER LA QUALITA' DI
WE HEREBY CERTIFY THAT THE QUALITY MANAGEMENT SYSTEM OPERATED BY

CONTREL ELETTRONICA SRL

VIA S. FEREOLO 9 - 26900 LODI (LO)

UNITA' OPERATIVE / *OPERATIVE UNITS*

VIA S. FEREOLO 9 - 26900 LODI (LO)

E' CONFORME ALLA NORMA / *IS IN COMPLIANCE WITH THE STANDARD*

ISO 9001:2015

PER LE SEGUENTI ATTIVITA' / *FOR THE FOLLOWING ACTIVITIES*

Progettazione e produzione di strumenti elettronici di misura e protezione in bassa tensione per applicazioni industriali
Design and manufacture of electronic measuring and protection devices in low voltage for industrial applications

Ulteriori informazioni riguardanti l'applicabilità dei requisiti ISO 9001:2015 possono essere ottenute consultando l'organizzazione
Further clarifications regarding the applicability of ISO 9001:2015 requirements may be obtained by consulting the organization

IL PRESENTE CERTIFICATO E' SOGGETTO AL RISPETTO DEL REGOLAMENTO PER LA CERTIFICAZIONE DEI SISTEMI DI GESTIONE
THE USE AND THE VALIDITY OF THE CERTIFICATE SHALL SATISFY THE REQUIREMENTS OF THE RULES FOR CERTIFICATION OF MANAGEMENT SYSTEMS

DATE:	PRIMA CERTIFICAZIONE *FIRST CERTIFICATION*	EMISSIONE CORRENTE *CURRENT ISSUE*	SCADENZA *EXPIRY*
	1997-05-15	2021-04-08	2024-04-20

IMQ S.p.A. - VIA QUINTILIANO, 43 - 20138 MILANO (ITALY)
Management Systems Division - Piazza Ornago

IAF: 19

ISO 9001 Quality

Contrel elettronica was among the first companies in Italy to achieve, in 1992, quality management system certification, fulfilling the requirements according to the **ISO 9001:2015 standard.**

RINA TYPE APPROVAL CERTIFICATE

N. ELE196018CS001

RINA certificate

The alarm system Compalarm E is found to be in compliance with the applicable requirement of the **RINA** type approval system.
The **RINA** approval certificate the product for marine applications.

RINA TYPE APPROVAL CERTIFICATE

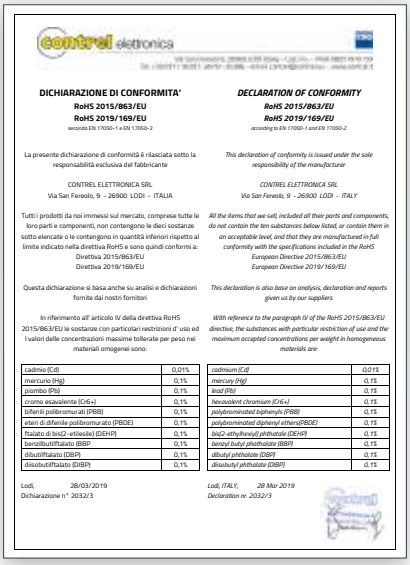
N. ELE196018CS

RINA certificate

The analyzers serie **EMS** and **EMA** are found to be in compliance with the applicable requirement of the **RINA** type approval system.
The **RINA** approval certificate the product for marine applications.

EAC certificate

The EAC is a certification mark to indicate products that conform to all technical regulations of the Eurasian Customs Union.
Contrel Elettronica products have passed all conformity assessment procedures.



contrel elettronica

DICHIARAZIONE DI CONFORMITA'
RoHS 2015/863/EU
RoHS 2019/169/EU
secondo EN 17050-1 e EN 17050-2

La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante

CONTREL ELETTRONICA SRL
Via San Fereolo, 9 - 26900 LODI - ITALIA

Tutti i prodotti da noi immessi sul mercato, comprese tutte le loro parti e componenti, non contengono le dieci sostanze sotto elencate o le contengono in quantità inferiori rispetto al limite indicato nella direttiva RoHS e sono quindi conformi a:
Direttiva 2015/863/EU
Direttiva 2019/169/EU

Questa dichiarazione si basa anche su analisi e dichiarazioni fornite dai nostri fornitori

In riferimento all' articolo IV della direttiva RoHS 2015/863/EU le sostanze con particolari restrizioni d' uso ed i valori delle concentrazioni massime tollerate per peso nei materiali omogenei sono:

cadmio (Cd)	0,01%
mercurio (Hg)	0,1%
piombo (Pb)	0,1%
cromo esavalente (Cr6+)	0,1%
bifenili polibromurati (PBB)	0,1%
eteri di difenile polibromurato (PBDE)	0,1%
ftalato di bis(2-etilesile) (DEHP)	0,1%
benzilbutilftalato (BBP)	0,1%
dibutilftalato (DBP)	0,1%
diisobutilftalato (DIBP)	0,1%

Lodi, 28/03/2019
Dichiarazione n° 2032/3

DECLARATION OF CONFORMITY
RoHS 2015/863/EU
RoHS 2019/169/EU
according to EN 17050-1 and EN 17050-2

This declaration of conformity is issued under the sole responsibility of the manufacturer

CONTREL ELETTRONICA SRL
Via San Fereolo, 9 - 26900 LODI - ITALY

All the items that we sell, included all their parts and components, do not contain the ten substances below listed, or contain them in an acceptable level, and that they are manufactured in full conformity with the specifications included in the RoHS
European Directive 2015/863/EU
European Directive 2019/169/EU

This declaration is also base on analysis, declaration and reports given us by our suppliers

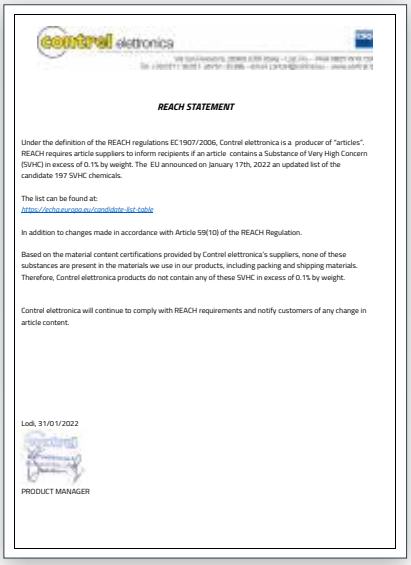
With reference to the paragraph IV of the RoHS 2015/863/EU directive, the substances with particular restriction of use and the maximum accepted concentrations per weight in homogeneous materials are:

cadmium (Cd)	*0,01%*
mercury (Hg)	*0,1%*
lead (Pb)	*0,1%*
hexavalent chromium (Cr6+)	*0,1%*
polybrominated biphenyls (PBB)	*0,1%*
polybrominated diphenyl ethers(PBDE)	*0,1%*
bis(2-ethylhexyl) phthalate (DEHP)	*0,1%*
benzyl butyl phthalate (BBP)	*0,1%*
dibutyl phthalate (DBP)	*0,1%*
diisobutyl phthalate (DIBP)	*0,1%*

Lodi, ITALY, 28 Mar 2019
Declaration nr. 2032/3

RoHS directive

The EU directive 2011/65/EU restricts the use of certain hazardous substances in electrical and electronic equipment.
It regulates the use and placing on the market of hazardous substances in electrical and electronic modules.



contrel elettronica

REACH STATEMENT

Under the definition of the REACH regulations EC1907/2006, Contrel elettronica is a producer of "articles". REACH requires article suppliers to inform recipients if an article contains a Substance of Very High Concern (SVHC) in excess of 0.1% by weight. The EU announced on January 17th, 2022 an updated list of the candidate 197 SVHC chemicals.

The list can be found at:
https://echa.europa.eu/candidate-list-table

In addition to changes made in accordance with Article 59(10) of the REACH Regulation.

Based on the material content certifications provided by Contrel elettronica's suppliers, none of these substances are present in the materials we use in our products, including packing and shipping materials. Therefore, Contrel elettronica products do not contain any of these SVHC in excess of 0.1% by weight.

Contrel elettronica will continue to comply with REACH requirements and notify customers of any change in article content.

Lodi, 31/01/2022

PRODUCT MANAGER

REACH regulation

REACH is a European Union chemicals regulation for Registration, Evaluation, Authorisation and Restriction of Chemicals **(EG No.1907/2006).**
Our products are solely non-chemical and shall not release any substance.

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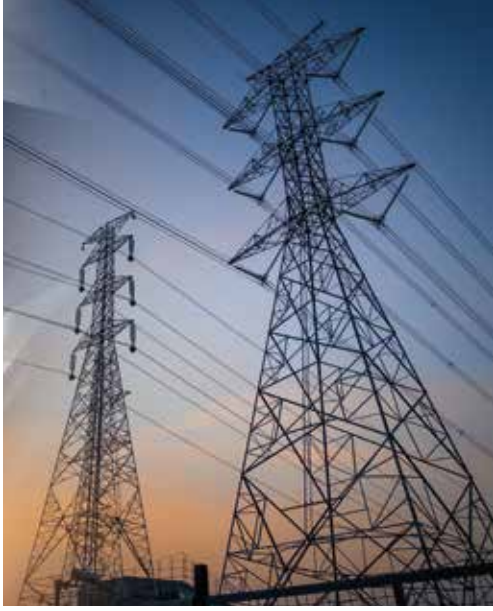
EARTH LEAKAGE RELAY FOR MONITORING AND PROTECTION OF THE LOW VOLTAGE DISTRIBUTION NETWORK

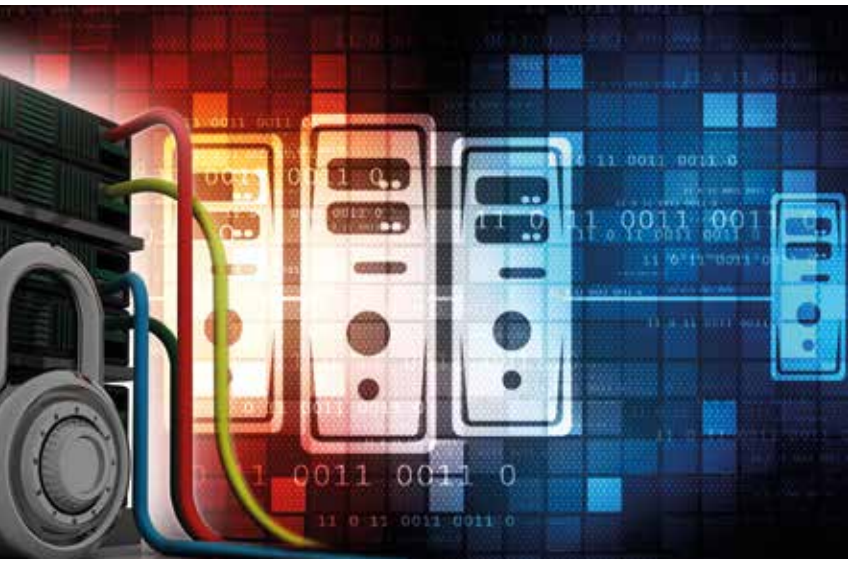
contrel elettronica

ITALIAN DESIGN







The electronic residual current relays allow monitoring and protection of the low voltage distribution network

- Modular, flush and internal panel mount version, with or without flag indicator, configurable prealarm indication and fail safe operation.
- Versions with automatic toroid connection control.
- Choice of supply voltage ranges.
- Adjustable fault current IΔn.
- Adjustment and choice of tripping range for both fault current and delay time.
- Versions with display LCD and communication port.

Index Page

EARTH LEAKAGE RELAYS | WITH 1 OPERATION THRESHOLD

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ELR-7

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELR-7	• Flush mount 48x48 mm • External CT • Configurable fail safe • 3rd harmonic filtering (F option)	110 VAC/DC-240-415 VAC	**3EL50W**	2	1	0,112
		24-48 VAC/DC	**3EL50N**			
		220 VDC	**3EL50H**			

GENERAL CHARACTERISTICS

- Earth leakage relay type A
- Green power LED indicator (ON)
- Red relay tripped LED indicator (TRIP)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Flush mount 48x48mm housing with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS

Configurable tripping set-point (IΔn):
0,025...0,25A | 0,25...2,5A | 2,5...25A | 5...250A (with external multiplier).

Configurable tripping delay time (t): 0,02...0,5s | 0,2...5s.

EARTH LEAKAGE RELAYS | WITH 1 OPERATION THRESHOLD

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ELR-1E

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELR -1E	• Flush mount 96x96 mm • External CT	110 VAC/DC-240-415 VAC	**3EL60Q**	2	1	0,395
		24-48 VAC/DC	**3EL60N**			

GENERAL CHARACTERISTICS

- Earth leakage relay type A
- Green power LED indicator (ON)
- Red relay tripped LED indicator (TRIP)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Flush mount 96x96mm housing with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS

Configurable tripping set-point (IΔn):
0,025...0,25A | 0,25...2,5A | 2,5...25A | 5...250A (with external multiplier).
Configurable tripping delay time (t): 0,02...0,5s | 0,2...5s.

EARTH LEAKAGE RELAYS | WITH 1 OPERATION THRESHOLD

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ELR-3F

ELR-3C

ELRC-B

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELR-3F	• Modular 3 DIN rail mounting • External CT • Fixed tripping set point and time	110 VAC/DC-240-415 VAC	**3EL16Q**	1	1	0,190
		24-48 VAC/DC	**3EL16N**			
ELR-3C	• Modular 3 DIN rail mounting • External CT • 3rd harmonic filtering (F option)	110 VAC/DC-240-415 VAC	**3EL10Q**	1	1	0,190
		24-48 VAC/DC	**3EL10N**			
		12 VAC/DC	**3EL10I**			
ELRC-B	• Modular 6 DIN rail mounting • Ø28mm incorporated CT. • Configurable fail safe.	110 VAC/DC-240-415 VAC	**3EL35Q**	1	1	0,375
		24-48 VAC/DC	**3EL35N**			

GENERAL CHARACTERISTICS

- Earth leakage relay type A
- Configurable fail safe operation for ELRC-B type only
- Green power LED indicator (ON)
- Red relay tripped LED indicator (TRIP)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover.

ADJUSTMENTS

ELR-3F

Configurable tripping set-point (IΔn): 0,3A o 0,5A fisso
Configurable tripping delay time (t): 0,02...0,5s

ELR-3C - ELRC-B

Configurable tripping set-point (IΔn):
0,025...0,25A | 0,25...2,5A | 2,5...25A | 25...250A (with external multiplier)
Configurable tripping delay time (t): 0,02...0,5s | 0,2...5s

EARTH LEAKAGE RELAYS | WITH 1 OPERATION THRESHOLD

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ELR-3E

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELR-3E	• Modular 3 DIN rail mounting • External CT • Fixed tripping set point and time	110 VAC/DC-240-415 VAC	**3EL82Q**	1	1	0,190
		24-48 VAC/DC	**3EL82N**			

GENERAL CHARACTERISTICS

- Earth leakage relay type A
- Green power LED indicator (ON)
- Red relay tripped LED indicator (TRIP)
- Front TEST and RESET buttons
- Manual resetting
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS

Configurable tripping set-point (IΔn): 0,03A | 0,1A | 0,3A | 0,5A | 1A
Configurable tripping delay time (t): 0,02s | 0,2s | 0,5s | 1s | 5s

EARTH LEAKAGE RELAYS | WITH 1 OPERATION THRESHOLD

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ELR-4Mo

ELR-4Mv

ELR-91

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELR-4v	• Flush mount 48x96 mm • External CT	110 VAC/DC-240-415 VAC	**3EL05Q**	2	1	0,390
ELR-4v		24-48 VAC/DC	**3EL05N**			
ELR-4o		110 VAC/DC-240-415 VAC	**3EL07Q**			
ELR-4o		24-48 VA/DC	**3EL07N**			
ELR-4mv	• Flush mount 48x96 mm • External CT • Flag indicator (TRIP MEMORY)	110 VAC/DC-240-415 VAC	**3EL06Q**	2	1	0,390
ELR-4mv		24-48 VAC/DC	**3EL06N**			
ELR-4mo		110 VAC/DC-240-415 VAC	**3EL08Q**			
ELR-4mo		24-48 VAC/DC	**3EL08N**			
ELR-91	• Flush mount 72x72 mm • External CT	110 VAC/DC-240 VAC	**3EL71W**	1	1	0,322
		24-48 VAC/DC	**3EL71N**			

GENERAL CHARACTERISTICS

- Earth leakage relay type A
- Green power LED indicator (ON)
- Red relay tripped LED indicator (TRIP)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Flag indicator (TRIP MEMORY) (ELR-4m only)
- Flush mount 48x96mm (ELR-4o)
- Flush mount 96x48mm (ELR-4v)
- Flush mount 72x72mm (ELR-91)
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS

ELR-4

Selectable tripping set-point (IΔn):
0,025...0,25A | 0,25...2,5A | 2,5...25A | 25...250A (with external multiplier)
Configurable tripping delay time (t): 0,02...0,5s | 0,2...5s.

ELR-91

Selectable tripping set-point (IΔn):
0,025...0,25A | 0,25...2,5A | 2,5...25A | 25...250A (with external multiplier)
Configurable tripping delay time (t): 0,02...0,5s | 0,2...5s.

EARTH LEAKAGE RELAYS | WITH 1 OPERATION THRESHOLD

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ELR-1D

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELR-1D	• Modular 1 DIN rail mounting • External CT	230 VAC	**3EL18G**	1	1	0,190
		110 VAC	**3EL18E**	1		
		48 VAC/DC	**3EL18K**	1		
		24 VAC/DC	**3EL18N**	1		

GENERAL CHARACTERISTICS

- Earth leakage relay type A
- Green power LED indicator (ON)
- Red relay tripped LED indicator (TRIP)
- Front TEST and RESET buttons
- Manual resetting
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover.

ADJUSTMENTS

Selectable tripping set-point (IΔn): 0,03..0,30A | 0,3...3,0A | 3...30A
Configurable tripping delay time (t): 0,02...0,5s | 0,2...5s

EARTH LEAKAGE RELAYS | WITH 1 OPERATION THRESHOLD

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ELRC-1

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELRC-1 35	• 1 operation threshold • Compact panel mount • CT incorporated Ø 35 mm	110 VAC/DC-240-415 VAC	**3EL31Q**	1	1	0,485
		24-48 VAC/DC	**3EL31N**			
ELRC-1 60	• 1 operation threshold • Compact panel mount • CT incorporated Ø 60 mm	110 VAC/DC-240-415 VAC	**3EL32Q**	1	1	0,485
		24-48 VAC/DC	**3EL32N**			
ELRC-1 80	• 1 operation threshold • Compact panel mount • CT incorporated Ø 80 mm	110 VAC/DC-240-415 VAC	**3EL33Q**	1	1	0,485
		24-48 VAC/DC	**3EL33N**			
ELRC-1 110	• 1 operation threshold • Compact panel mount • CT incorporated Ø 110 mm	110 VAC/DC-240-415 VAC	**3EL34Q**	1	1	0,485
		24-48 VAC/DC	**3EL34N**			

GENERAL CHARACTERISTICS

- Earth leakage relay type A
- Green power LED indicator (ON)
- Red relay tripped LED indicator (TRIP)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Degree of protection: IP20 terminals
- 3rd harmonic filtering (F option)

ADJUSTMENTS

Selectable tripping set-point (IΔn):
0,025...0,25A | 0,25...2,5A | 2,5...25A | 25...250A (with external multiplier)
Configurable tripping delay time (t): 0,02...0,5s | 0,2...5s.

EARTH LEAKAGE RELAYS | WITH 1 OPERATION THRESHOLD

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ELRC-2

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELRC-2 35	• 1 operation threshold • 2 output relays • Compact panel mount • CT incorporated Ø 35 mm	240 VAC	**3EL36G**	2	1	0,485
		24-48 VAC/DC	**3EL36N**			
ELRC-2 60	• 1 operation threshold • 2 output relays • Compact panel mount • CT incorporated Ø 60 mm	240 VAC	**3EL36G**	2	1	0,485
		24-48 VAC/DC	**3EL36N**			
ELRC-2 80	• 1 operation threshold • 2 output relays • Compact panel mount • CT incorporated Ø 80 mm.	240 VAC	**3EL33G**	2	1	0,485
		24-48 VAC/DC	**3EL33N**			
ELRC-2 110	• 1 operation threshold • 2 output relays • Compact panel mount • CT incorporated Ø 110 mm	240 VAC	**3EL39G**	2	1	0,485
		24-48 VAC/DC	**3EL39N**			

GENERAL CHARACTERISTICS

- Earth leakage relay type A
- Green power LED indicator (ON)
- Red relay tripped LED indicator (TRIP)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Degree of protection: IP20 terminals

ADJUSTMENTS

Selectable tripping set-point (IΔn):
0,025...0,25A | 0,25...2,5A | 2,5...25A | 25...250A (with external multiplier)
Configurable tripping delay time (t): 0,02...0,5s | 0,2...5s.

EARTH LEAKAGE RELAYS | WITH 1 OPERATION THRESHOLD

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ELR-61

ELR-m61

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELR-61	• 1 operation threshold • Modular 6 DIN rail mounting • External CT • 3rd harmonic filtering (F option) • Configurable fail safe operation (SP option)	110-240-415 VAC	**3EL11P**	2	1	0,390
		24-48 VAC/DC	**3EL11N**			
ELR-m61	• 1 operation threshold • Modular 6 DIN rail mounting • External CT • Flag indicator (TRIP MEMORY) • 3rd harmonic filtering (F option)	110-240-415 VAC	**3EL12P**	2	1	0,390
		24-48 VAC/DC	**3EL12N**			
ELR-61-10	• 1 operation threshold • Modular 6 DIN rail mounting. • External CT • Selectable tripping set-point (IΔn): 0,01...10A • 3rd harmonic filtering (F option) • Configurable fail safe operation (SP option)	110-240-415 VAC	**3EL15P**	2	1	0,390
		24-48 VAC/DC	**3EL15N**			

GENERAL CHARACTERISTICS

- Earth leakage relay type A
- Relay outputs each with 2 changeover contacts, both for trip
- Automatic toroid connection control
- Green power LED indicator (ON)
- Red relay tripped LED indicator (TRIP)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Flag indicator (TRIP MEMORY) (ELR-m61 only)
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS

Selectable tripping set-point (IΔn):
0,025...0,25A | 0,25...2,5A | 2,5...25A | 25...250A (with external multiplier)
Configurable tripping delay time (t): 0,02...0,5s | 0,2...5s

EARTH LEAKAGE RELAYS | WITH 1 OPERATION THRESHOLD

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

FOR LIGHTING SYSTEM UNATTENDED SITES

ELRD-L

ELRC-BL

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELRD-L	• Modular 6 DIN rail mounting. • External CT • Nr. reclosures	240 VAC	**3EL42G**	2	1	0,370
ELRC-BL	• Modular 6 DIN rail mounting. • CT incorporated Ø 28 mm • Nr. reclosures	240 VAC	**3EL45G**	2	1	0,370

GENERAL CHARACTERISTICS

- Earth leakage relay type A
- Output relay with changeover contact
- Automatic toroid connection control
- Green power LED indicator (ON)
- Red tripping pre-alarm LED indicator (ALARM)
- Red relay tripped LED indicator (TRIP)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- **Automatic nr. reclosures**
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover
- For lighting system and unattended sites

ADJUSTMENTS

Selectable tripping set-point (IΔn):
0,025...0,25A | 0,25...2,5A | 2,5...25A | 25...250A (with external multiplier)
Configurable tripping delay time (t): 0,02...0,5s | 0,2...5s

EARTH LEAKAGE RELAYS | WITH 2 OPERATION THRESHOLD

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ELR-2

ELR-2M

ELR-8V
ELR-8tcs
ELR-8mVtcs

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELR-2	• Flush mount 96x96 mm • External CT • 3rd harmonic filtering (F option) • Configurable fail safe operation	110-240-415 VAC	**3EL65P**	2	1	0,395
		24-48 VAC/DC	**3EL65N**			
		110 VDC	**3EL65L**			
ELR-2M	• Flush mount 96x96 mm • External CT • 3rd harmonic filtering (F option) • Configurable fail safe operation • Flag indicator (TRIP MEMORY)	110-240-415 VAC	**3EL66P**	2	1	0,405
		24-48 VAC/DC	**3EL66N**			
		110 VDC	**3EL66I**			
ELR-8V	• Flush mount 96x96 mm • External CT • Configurable fail safe operation • Digital fault current measurement and display with configurable tripping value memory • 3rd harmonic filtering (F option)	110-240-415 VAC	**3EL91P**	2	1	0,570
		24-48 VAC/DC	**3EL91L**			
		110 VDC	**3EL91N**			
ELR-8tcs	• Flush mount 96x96 mm • External CT • Configurable fail safe operation • Digital fault current measurement and display with configurable tripping value memory • 3rd harmonic filtering (F option) • Shunt tripping circuit operating test (TCS)	110-240-415 VAC	**3EL94P**	3	1	0,570
		24-48 VAC/DC	**3EL94L**			
		110 VDC	**3EL94N**			
ELR-8m-Vtcs	• Flush mount 96x96 mm • External CT • Flag indicator (TRIP MEMORY) • Configurable fail safe operation • Digital fault current measurement and display with configurable tripping value memory • 3rd harmonic filtering (F option) • Shunt tripping circuit operating test (TCS)	110-240-415 VAC	**3EL93P**	3	1	0,570
		24-48 VAC/DC	**3EL93L**			
		110 VDC	**3EL93N**			

GENERAL CHARACTERISTICS

- Earth leakage relay type A
- 2 output relays each with changeover contact, configurable as 2 tripping or 1 tripping and 1 alarm
- Configurable fail safe pre-alarm and operation
- Automatic toroid connection control
- Green power LED indicator (ON)
- Red relay tripped LED indicator (TRIP)
- Red tripping pre-alarm LED indicator (ALARM)
- Front TEST button
- Manual resetting by front RESET button or remote contact closing
- Automatic resetting by remote contact closing or rear jumper connection
- Constant toroid-relay circuit control
- Flag indicator (TRIP MEMORY) (ELR-2M, ELR-8MVtcs only)
- Digital fault current measurement and display with configurable tripping value memory (ELR-8 serie only)
- Shunt tripping circuit operating test (TCS) (ELR-8Vtcs, ELR-8MVtcs only)
- Flush mount 96x96mm housing with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover.

ADJUSTMENTS

ELR-2 e ELR-2M

Selectable tripping set-point (IΔn):
0,025...0,25A | 0,25...2,5A | 2,5...25A | 25...250A (with external multiplier)
Pre-alarm set-point: 70% fixed
Configurable tripping delay time (t): 0,02...0,5s | 0,2...5s.

ELR-8V - ELR-8tcs - ELR-8mVtcs

Selectable tripping set-point (IΔn):
0,03...0,30A | 0,30...3,0A | 3...30A | 30...300A (with external multiplier)
Pre-alarm set-point: 70% fixed
Configurable tripping delay time (t): 0,03...0,5s | 0,3...5s.

EARTH LEAKAGE RELAYS | WITH 2 OPERATION THRESHOLD

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ELR-92

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELR-92	• Flush mount 72x72 mm • External CT • Configurable fail safe operation • 3rd harmonic filtering (F option)	110-240-415 VAC	**3EL72P**	2	1	0,322
		24-48 VAC/DC	**3EL72N**			
		110 VDC	**3EL72L**			

GENERAL CHARACTERISTICS

- Earth leakage relay type A
- Output relays each with changeover contact, 1 tripping and 1 alarm
- Configurable fail safe pre-alarm and operation
- Automatic toroid connection control
- Green power LED indicator (ON)
- Red relay tripped LED indicator (TRIP)
- Red tripping pre-alarm LED indicator (ALARM)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Flush mount 72x72mm housing with transparent cover

ADJUSTMENTS

ELR-92

Selectable tripping set-point (IΔn):

0,025...0,25A | 0,25...2,5A | 2,5...25A | 25...250A (with external multiplier)

Pre-alarm set-point: 70% fixed

Configurable tripping delay time (t): 0,02...0,5s | 0,2...5s.

EARTH LEAKAGE RELAYS | WITH 2 OPERATION THRESHOLD

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ELR-62

ELRD-L2m

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELR-62	• Modular 6 DIN • External CT • Flag indicator (ELR-m62 only) • 3rd harmonic filtering (F option)	110-240-415 VAC	**3EL13P**	2	1	0,390
		110 VDC	**3EL13L**			
		24-48 VAC/DC	**3EL13N**			
ELRD-L2m	• Modular 6 DIN • External CT • Flag indicator • Nr. reclosures • **For lighting system and unattended sites**	240 VAC	**3EL43G**	2	1	0,370

GENERAL CHARACTERISTICS

- Earth leakage relay type A
- Output relays each with changeover contact, 1 tripping and 1 alarm
- Automatic toroid connection control
- Green power LED indicator (ON)
- Red relay tripped LED indicator (TRIP)
- Red tripping pre-alarm LED indicator (ALARM)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Nr. reclosures (ELRD-L2m only)
- Flag indicator (TRIP MEMORY) (ELR-m62 only)
- Modular DIN, 6 modules, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover
- For lighting system and unattended sites

ADJUSTMENTS

ELR-62 e ELR-m62 e ELR-L2m

Selectable tripping set-point (IΔn):

0,025...0,25A | 0,25...2,5A | 2,5...25A | 25...250A (with external multiplier)

Pre-alarm set-point: 70% fixed

Configurable tripping delay time (t): 0,02...0,5s | 0,2...5s.

EARTH LEAKAGE RELAYS | WITH 2 OPERATION THRESHOLD

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ELR-D2

ELR-D2-V

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELR-D2	• Modular 2 DIN • External CT • Configurable fail safe operation	230 VAC	**3ED05G**	1	1	0,200
		110 VAC	**3ED05E**			
ELR-D2-V	• Modular 2 DIN • External CT • Fault current measurement. Digital display	230 VAC	**3EL06G**	1	1	0,200
		110 VAC	**3EL06E**			
ELR-D2-V-485	• Modular 2 DIN • External CT • Fault current measurement. Digital display • Configurable fail safe operation • Isolated RS485 interface	230 VAC	**3ED07G**	1	1	0,200
		110 VAC	**3ED07E**			

GENERAL CHARACTERISTICS

- Earth leakage relay type A • Automatic toroid connection control
- Green power LED indicator (ON)
- Yellow tripping pre-alarm LED indicator (ALARM) (ELR-D2 only)
- Yellow tripping pre-alarm LCD indicator (ALARM) (ELR-D2-V only)
- Red tripping alarm LCD indicator (TRIP) (ELR-D2-V only)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Modbus-RTU communication protocol • Modular DIN housing, 2 modules
- Degree of protection: IP20 terminals, IP40 on front with cover
- Grado di protezione: IP20 morsetti; IP40 frontale

ADJUSTMENTS

ELR-D2

Selectable tripping set-point (IΔn): 0,03...30A | 30...300A (with external multiplier)
Pre-alarm set-point: 50...90%
Configurable tripping delay time (t): 0,02...10s.

ELR-D2-V

Selectable tripping set-point (IΔn): 0,03...30A | 30...300A (with external multiplier)
Pre-alarm set-point: 50...90%
Configurable tripping delay time (t): 0,02...10s.

EARTH LEAKAGE RELAYS | WITH 2 OPERATION THRESHOLD

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ELR-3AN

3EDA02
Flush mount
72x72mm
adapter

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELR-3AN	• Modular 3 DIN • External CT • Fault current measurement. Digital display • Configurable fail safe operation	230 VAC	**3ELR3A200010000**	2	1	0,210
		110 VAC	**3ELR3A210010000**			
		24-48 VAC/DC	**3ELR3A240010000**			
		24-250 VAC/DC	**3ELR3A220010000**			
ELR-3AN-485	• Modular 3 DIN • External CT • Fault current measurement. Digital display • Configurable fail safe operation • Isolated RS485 interface	230 VAC	**3ELR3A200011000**	2	1	0,210
		110 VAC	**3ELR3A210011000**			
		24-48 VAC/DC	**3ELR3A240011000**			
		24-250 VAC/DC	**3ELR3A220011000**			

GENERAL CHARACTERISTICS

- Earth leakage relay type A
- 2 output relays each with changeover contact, configurable as 2 tripping or 1 tripping and 1 alarm
- Configurable fail safe pre-alarm and operation
- Automatic toroid connection control
- Green power LED indicator (ON)
- Yellow tripping pre-alarm LED and LCD indicator (ALARM)
- Red tripping alarm LED and LCD indicator (TRIP)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Configurable 3rd harmonic filtering
- Digital fault current measurement and display
- Modbus-RTU communication protocol
- Configurable nr. reclosures
- Modular DIN housing, 3 modules
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS

ELR-3AN

Configurable tripping set-point (IΔn): 0,03...30A | 30...300A (with external multiplier)
Pre-alarm set-point: 50...90%
Configurable tripping delay time (t): 0,02...10s.

EARTH LEAKAGE RELAYS | WITH 2 OPERATION THRESHOLD

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ELR-51AS

ELR-52AS

3EDA02
Flush mount
72x72 mm
adapter

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELR-51AS	• Modular 3 DIN • External CT • Fault current measurement. Digital display • 2 bistable output relays	110-240 VAC	**3ED10V**	2	1	0,210
		24-48 VAC/DC	**3ED10N**			
ELR-51AS-485	• Modular 3 DIN • External CT • Fault current measurement. Digital display • 2 bistable output relays • Isolated RS485 interface	110-240 VAC	**3ED12V**	2	1	0,210
		24-48 VAC/DC	**3ED12N**			
ELR-52AS	• Modular 3 DIN • 2 External CT • Fault current measurement. Digital display • 2 bistable output relays	110-240 VAC	**3ED11V**	2	1	0,210
		24-48 VAC/DC	**3ED11N**			
ELR-52AS-485	• Modular 3 DIN • 2 External CT • Fault current measurement. Digital display • 2 bistable output relays • Isolated RS485 interface	110-240 VAC	**3ED13V**	2	1	0,210
		24-48 VAC/DC	**3ED13N**			

GENERAL CHARACTERISTICS

- Earth leakage relay type A
- 2 bistable output relays each with changeover contact, configurable as 2 tripping or 1 tripping and 1 alarm
- Configurable fail safe pre-alarm and operation
- Automatic toroid connection control
- Green power LED indicator (ON)
- Green LED indicating safe system (OK)
- Red tripping alarm LED and LCD indicator (TRIP)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Configurable 3rd harmonic filtering
- TRIP MEMORY function
- Digital fault current measurement and display
- Modbus-RTU communication protocol
- Modular DIN housing, 3 modules
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS

ELR-51AS - ELR-52AS

Selectable tripping set-point (IΔn): 0,03...5A
Pre-alarm set-point: 50...90%
Configurable tripping delay time (t): 20...500ms

EARTH LEAKAGE RELAYS | MULTICHANNEL WITH 4 INPUTS

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ELR-4C

3EDA02
Flush mount
72x72 mm
adapter

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELR-4C	• Modular 3 DIN • 4 inputs external CT • Fault current measurement. Digital display • Configurable fail safe operation • Configurable nr. reclosures	230 VAC	**3ELR4C000000000**	4	1	0,210
		110 VAC	**3ELR4C010000000**			
		24-48 VAC/DC	**3ELR4C020000000**			
ELR-4C-485	• Modular 3 DIN • 4 inputs external CT • Fault current measurement. Digital display • Configurable fail safe operation • Configurable nr. reclosures • Isolated RS485 interface	230 VAC	**3ELR4C000001000**	4	1	0,210
		110 VAC	**3ELR4C010001000**			
		24-48 VAC/DC	**3ELR4C020001000**			

GENERAL CHARACTERISTICS

- Earth leakage relay type A
- Output relay for each input channel
- Configurable fail safe pre-alarm and operation
- Automatic toroid connection control
- Green power LED indicator (ON)
- Yellow tripping pre-alarm LED and LCD indicator (ALARM)
- Red tripping alarm LED and LCD indicator (TRIP)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Configurable 3rd harmonic filtering
- Digital fault current measurement and display with memorization
- Modbus-RTU communication protocol
- Configurable nr. reclosures
- Modular DIN housing, 3 modules
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS

ELR-4C

Selectable tripping set-point (IΔn): 0,03...30A
Pre-alarm set-point: 50...90%
Configurable tripping delay time (t): 0,02...10s

TYPE B EARTH LEAKAGE RELAYS | WITH 2 OPERATION THRESHOLD

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ELR-3B

3EDA02
Flush mount
72x72mm
adapter

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	OUTPUT CONTACTS	PCS	WT
ELR-3B	• Modular 3 DIN • External CT • Selectable tripping set-point (IΔn) 0,03...3A • Fault current measurement. Digital display • Configurable fail safe operation	230 VAC	**3ED36G**	2	1	0,168
		24-110 VAC/DC	**3ED36T**			
ELR-3B-10	• Modular 3 DIN • External CT • Selectable tripping set-point (Δn) 0,3...10A • Fault current measurement. Digital display • Configurable fail safe operation	230 VAC	**3ED37G**	2	1	0,210
		24-110 VAC/DC	**3ED37T**			

GENERAL CHARACTERISTICS

- Earth leakage relay type B
- Uscite a relè ciascuna con 1 contatto in scambio, 1 per intervento e 1 per preallarme
- Configurable fail safe pre-alarm and operation
- Automatic toroid connection control
- Green power LED indicator (ON)
- Yellow tripping pre-alarm LED indicator (ALARM)
- Red tripping alarm LED and LCD indicator (TRIP)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Modular DIN housing, 3 modules
- Degree of protection: IP20 terminals, IP40 on front with cover .

ADJUSTMENTS

ELR-3B
Selectable tripping set-point (IΔn): 0,03A | 0,1A | 0,3A | 0,5A | 1A | 3A
Pre-alarm set-point: 50...80%
Configurable tripping delay time (t): 0,1...10s

ELR-3B-10
Selectable tripping set-point (IΔn): 0,3A | 0,5A | 1A | 3A | 5A | 10A
Pre-alarm set-point: 50...80%
Configurable tripping delay time (t): 0,1...10s

STATIC RELAY FOR AUTOMATIC MOTORS RESTART AND RE-ACCELERATION

Certification obtained: **EAC | CCompliant with standards: CEI 41.1, IEC 60255-1, EN 61000-6-4**

See dimensions and wiring diagrams at the end of chapter

RSR-72

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
RSR-72	For applications with the control device of the contactor with contact impulsive position	230 VAC	**3RR01G**	1	0,350
		110 VAC	**3RR01E**		
		110 VDC	**3RR01L**		
RSR-72A	For applications with device contactor control with a maintained contact	230 VAC	**3RR02G**	1	0,350
		110 VAC	**3RR02E**		
		110 VDC	**3RR02L**		
RSR-72B	For applications with the control device of the contactor with contact impulsive position with special mode of the memory count.	230 VAC	**3RR03G**	1	0,350
		110 VAC	**3RR03E**		
		110 VDC	**3RR03L**		
ACCESSORIES	Undecal support		**3RRA01**	1	0,100
	Restraint spring for fixing undecal support		**3RRA02**	1	0,050

GENERAL CHARACTERISTICS

The RSR-72 type restart and re-acceleration relay has the function of carrying out the automatic restarting of the motors, after the opening of the control and protection devices caused by the lack or transient decrease of the mains voltage. After the motors have stopped, the RSR-72 relays allow an automatic restart with a correct sequence based on the needs of the manufacturing processes.
The RSR-72 relays are manufactured in a case for panel or projecting recessed mounting or on a 35mm DIN rail on an undecal extractable socket.
On the front there are potentiometers and microswitches for settings and a LED for indicating functional status.

OPERATING

The RSR-72 relay is used in the event that the contactor command must be directly controlled by the RSR-72 output contact. Unlike the RSR-72 model, the RSR-72A type keeps the contact closed after restarting the motor/contactor.

- A memory time from 0.2 to 60 seconds and a delay time from 0.2 to 1000 seconds can be set on the relay.
- In the event of a power failure (or a value below 70% of the rated voltage) and subsequent voltage recovery (at least 90% of the rated voltage) within the set memory time, the motor restart output will be activated after the set delay time.
- If the voltage returns after the memory time, there will be no automatic restart.
- With the F2 function activated, if the voltage returns in less than 0.2 seconds (minimum memory time), the motor will still be accelerated immediately.
- If the F1 re-acceleration function is not activated, automatic restart will occur after the set delay time even if the voltage interruption time is less than 0.2 seconds.

TOROIDAL CURRENT TRANSFORMERS

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

See dimensions and wiring diagrams at the end of chapter

ORDER CODE	Ø [mm]	OPENABLE	PCS	WT
CTD-1/28	28	NO	1	0,200
CTD-2/29	29	NO	1	0,200
CT-1/22	22	NO	1	0,150
CT-1/35	35	NO	1	0,200
CT-1/60	60	NO	1	0,245
CT-1/80	80	NO	1	0,410
CT-1/110	110	NO	1	0,400
CT-1/160	160	NO	1	1,350
CT-1/210	210	NO	1	1,200
CT-1/300	300	NO	1	2,100
CTA-1/110	110	SI	1	0,540
CTA-1/160	160	SI	1	1,600
CTA-1/210	210	SI	1	1,820
CTA-1/300	300	SI	1	2,300
CT-1/280R	280	NO	1	1,700
CT-1/350R	350	NO	1	2,100
CT-1/415R	400	NO	1	8,300

TOROIDAL CURRENT TRANSFORMERS | TYPE B

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

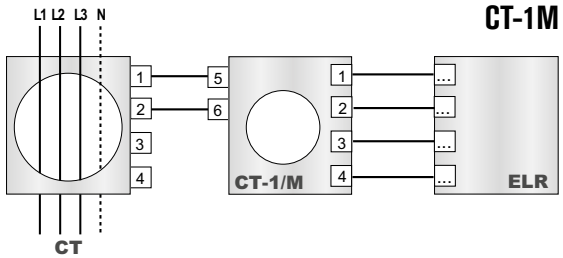
See dimensions and wiring diagrams at the end of chapter

ORDER CODE	Ø [mm]	OPENABLE	PCS	WT
CTB-1/22	22	NO	1	0,150
CTB-1/35	35	NO	1	0,200
CTB-1/60	60	NO	1	0,245
CTB-1/80	80	NO	1	0,410
CTB-1/110	110	NO	1	0,400
CTB-1/160	160	NO	1	1,350
CTB-1/210	210	NO	1	1,200
CTB-1/300	300	NO	1	2,100

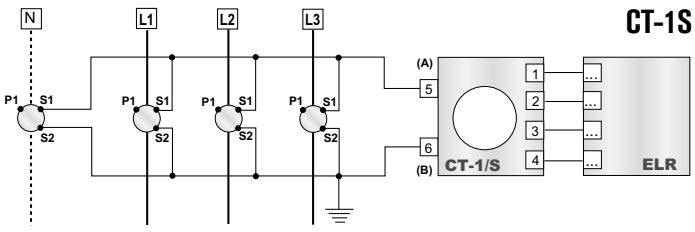
EXTERNAL MUTIPLIER | EXTERNAL ADDER

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

CT-1M



CT-1S



See dimensions and wiring diagrams at the end of chapter

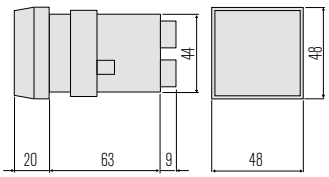
ORDER CODE	OPENABLE	PCS	WT
CT-1M	NO	1	0,150
CT-1S	NO	1	0,200

- **CT-1M** - External multiplier suitable for the whole ELR series to be connected between toroid and relay (multiplies the setting x10)
- **CT-1S** - External adder to be used in cases where the conductors of the system to be protected exceed the internal diameter of the reducer

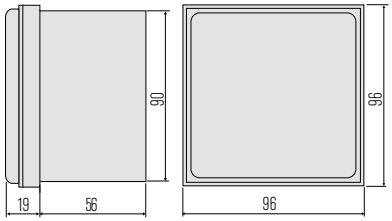
EARTH LEAKAGE RELAYS | dimensions (mm)

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

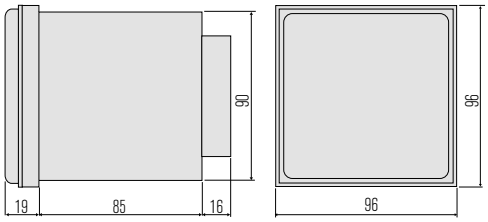
ELR-7



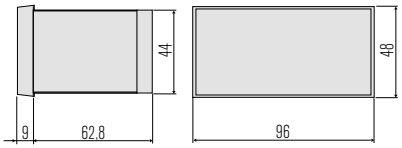
ELR-1E | ELR-2E | ELR-2M



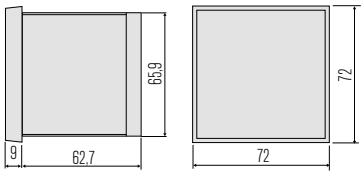
ELR-8v | ELR-8Mtcs | ELR-8tcs



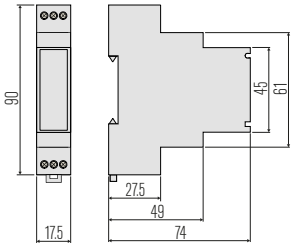
ELR-4v | ELR-4o | ELR-4mv | ELR-4mo



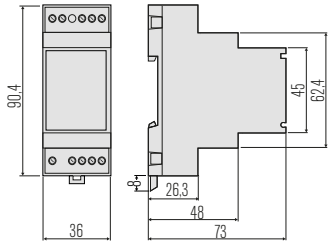
ELR-91 | ELR-92



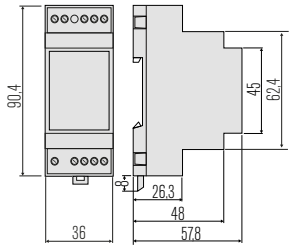
ELR-1D



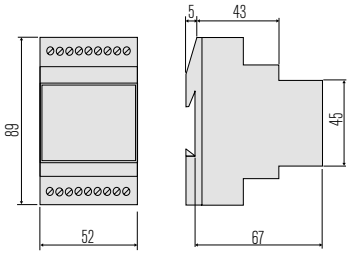
ELR-D2



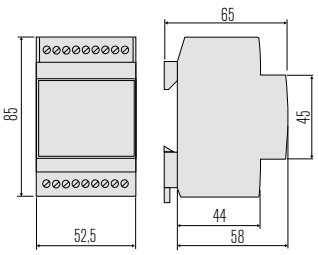
ELR-D2-V



ELR-3C | ELR-3F



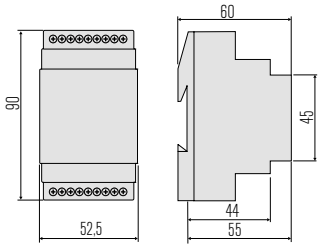
ELR-3E



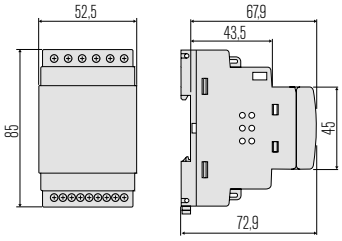
EARTH LEAKAGE RELAYS | dimensions (mm)

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

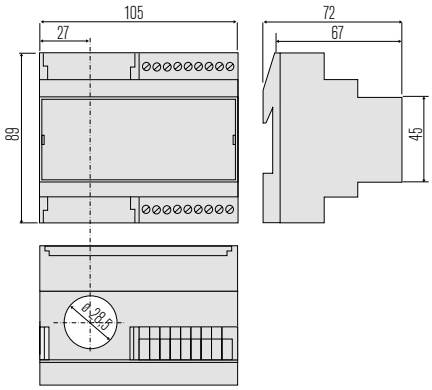
ELR-3AN | ELR-51AS | ELR-52AS | ELR-4C



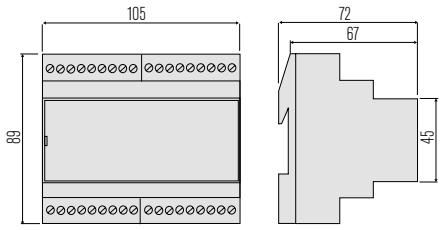
ELR-3B



ELRC-B | ELRC-BL

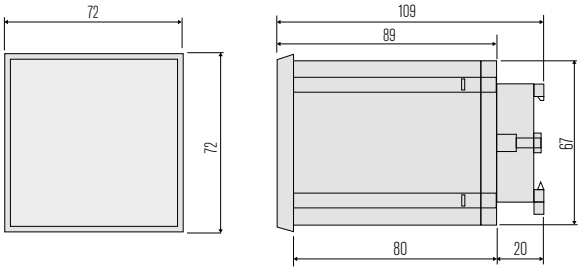


ELR-61 | ELR-62 | ELRD-L | ELRD-L2M



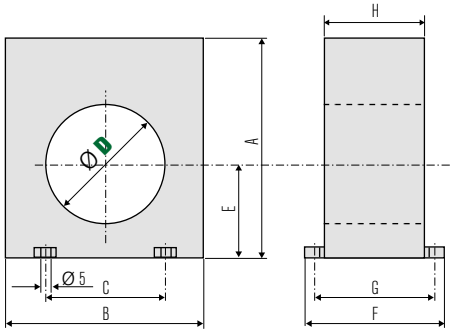
STATIC RELAY FOR AUTOMATIC MOTORS RESTART AND RE-ACCELERATION

RSR-72 | RSR-72A | RSR-72B

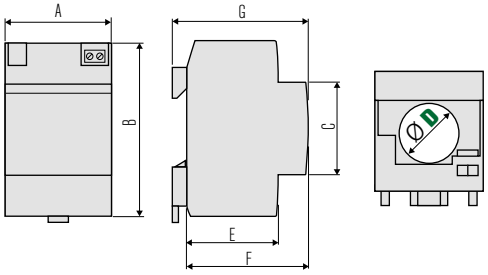


TOROIDAL | dimensions (mm)

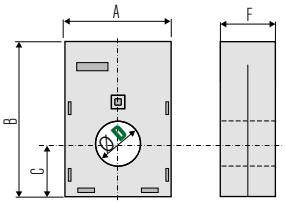
Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**



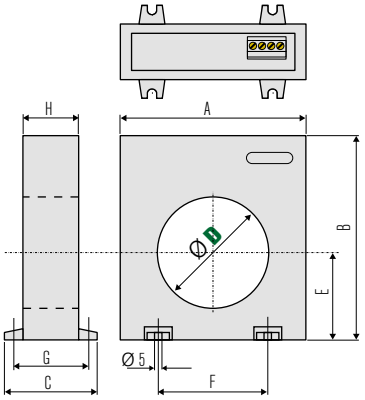
TYPE	A	B	C	D	E	F	G	H
ELRC-1/35 ELRC-2/35	110	100	60	35	47	70	60	50
ELRC-1/60 ELRC-2/60	110	100	60	60	47	70	60	50
ELRC-1/80 ELRC-2/80	160	150	110	80	70	70	60	50
ELRC-1/110 ELRC-2/110	160	150	110	110	70	70	60	50



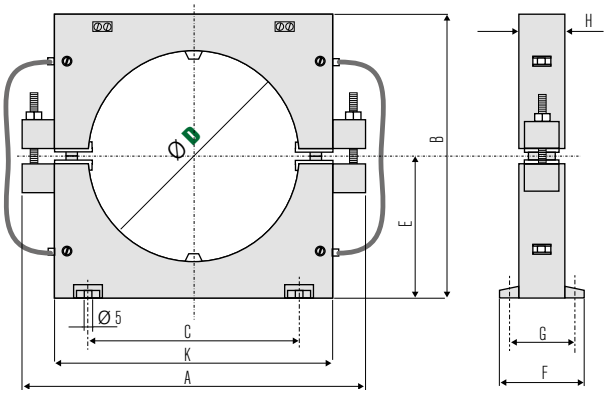
TYPE	A	B	C	D	E	F	G
CTD-1/28	52,5	85,5	45	28	44	58	54



TYPE	A	B	C	D	F
CT-1/22 CTB-1/22	52	65	26	22	27



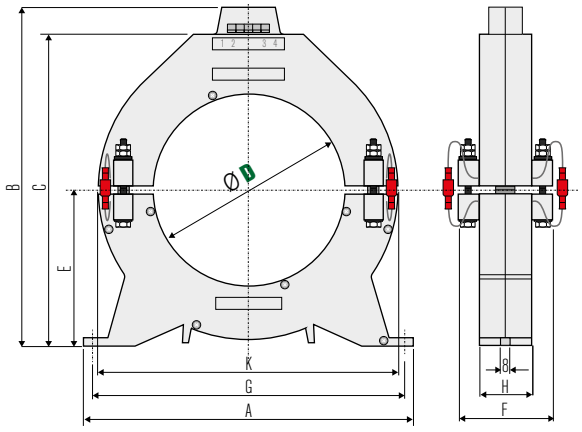
TYPE	A	B	C	D	E	F	G	H
CT-1/35 CTB-1/35	100	110	50	35	47	60	43	30
CT-1/60 CTB-1/60	100	110	50	60	47	60	43	30
CT-1/80 CTB-1/80	150	160	50	80	70	110	43	30
CT-1/110 CTB-1/110	150	160	50	110	70	110	43	30
CT-1/160 CTB-1/160	220	236	64	160	110	156	50	34



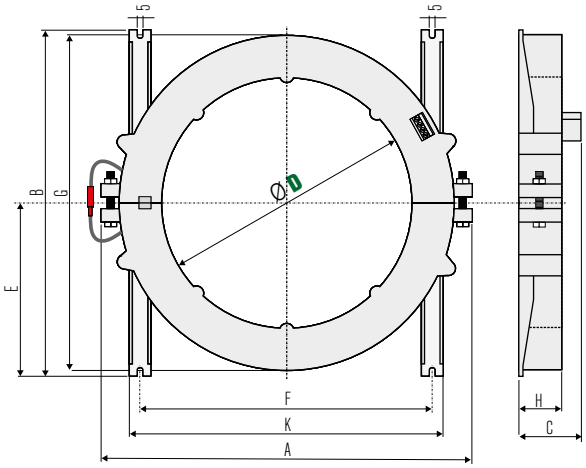
TYPE	A	B	C	D	E	F	G	H	K
CTA-1/110	180	150	110	110	75	45	38	25	145

TOROIDAL | dimensions (mm)

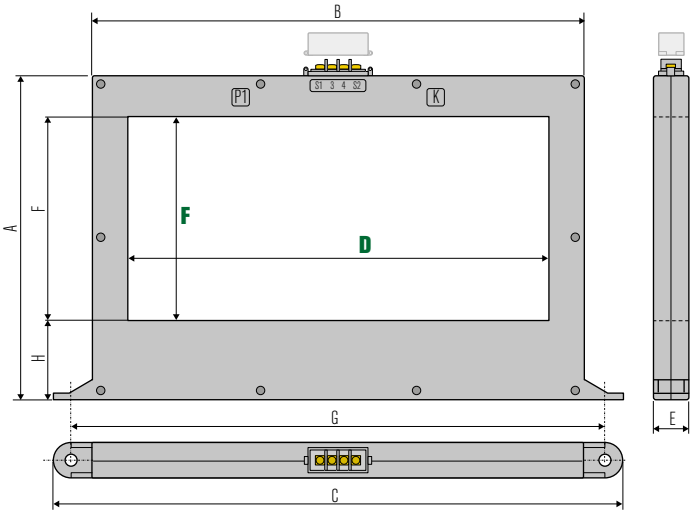
Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**



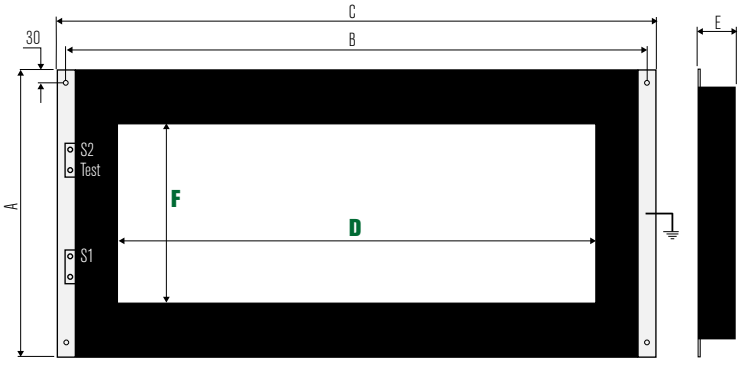
TYPE	A	B	C	D	E	F	G	H	K
CTA-1/160	275	280	260	160	129	75	260	43,5	250



TYPE	A	B	C	D	E	F	G	H	K
CT-1/210 CTB-1/210	310	290	54	210	145	240	280	36	258
CT-1/300 CTB-1/300	416	385	60	300	190	350	365	42	366
CTA-1/210	310	290	54	210	145	240	280	36	258
CTA-1/300	416	385	60	300	190	350	365	42	366



TYPE	A	B	C	D	E	F	G	H
CT-1/280R	223	338	404	281	28	156	370	29
CT-1/350R	270	410	475	351	28	170	463	66

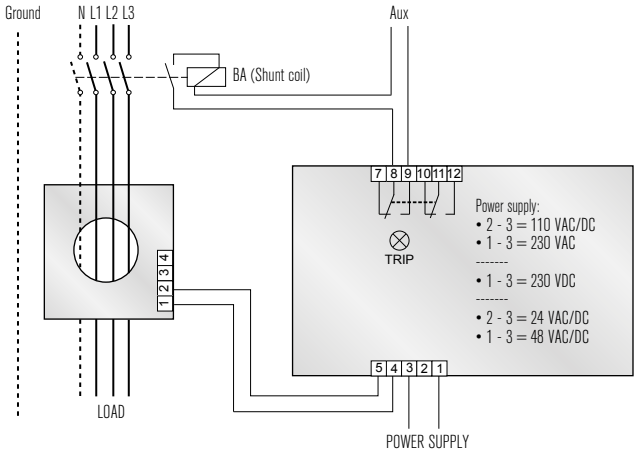


TYPE	A	B	C	D	E	F	G
CT-1/415R	240	520	550	400	50	150	400

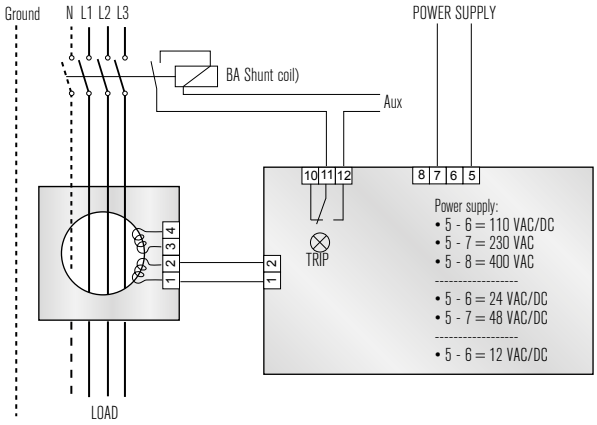
EARTH LEAKAGE RELAYS | wiring diagrams

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

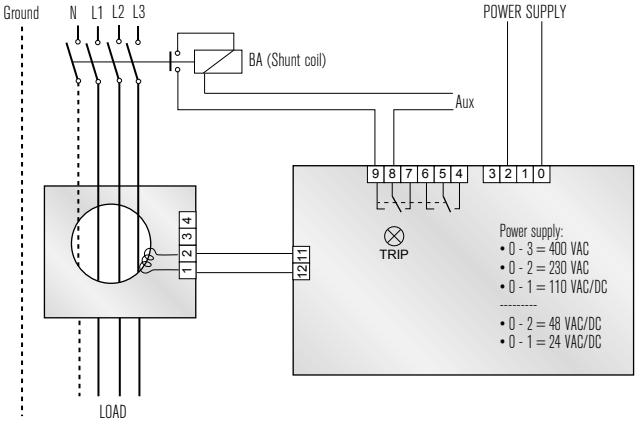
ELR-7



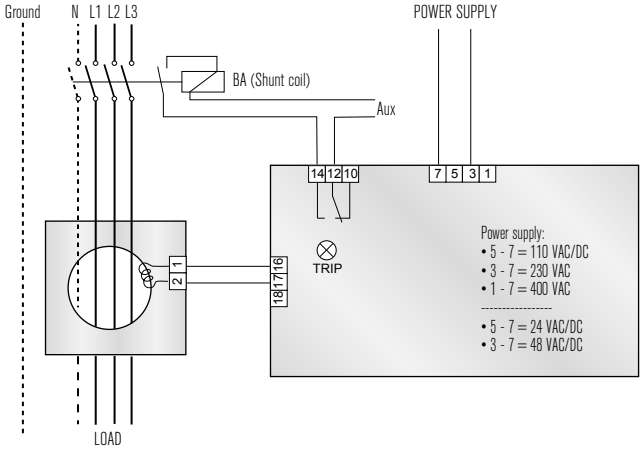
ELR-1E



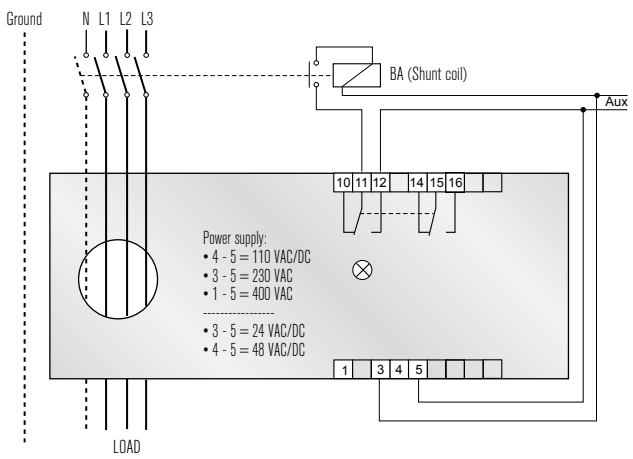
ELR-4v | ELR-4o | ELR-4mv | ELR-4mo



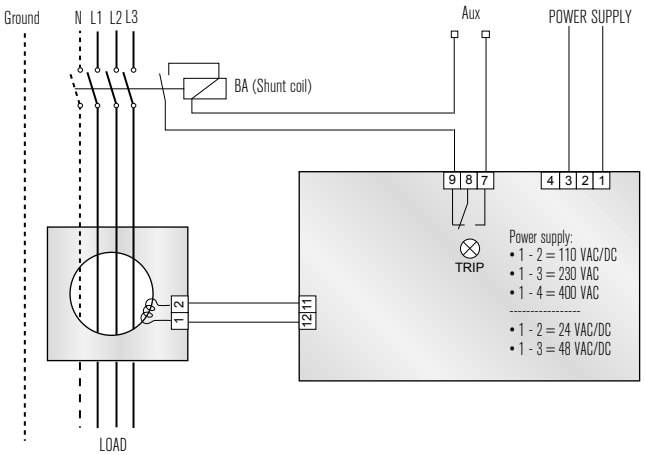
ELR-3C | ELR-3F



ELRC-B



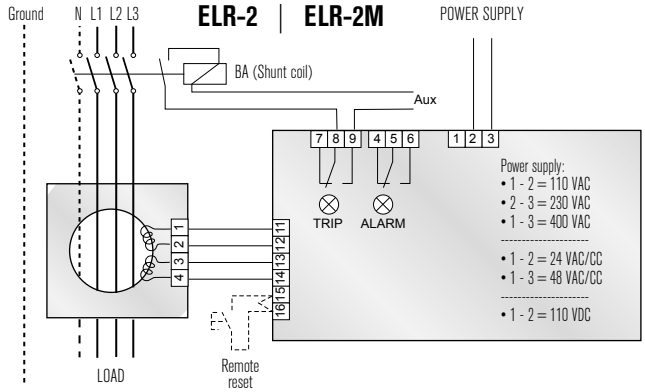
ELR-3E



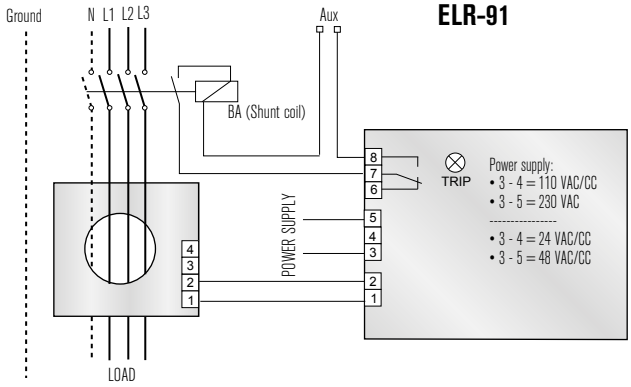
EARTH LEAKAGE RELAYS | wiring diagrams

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

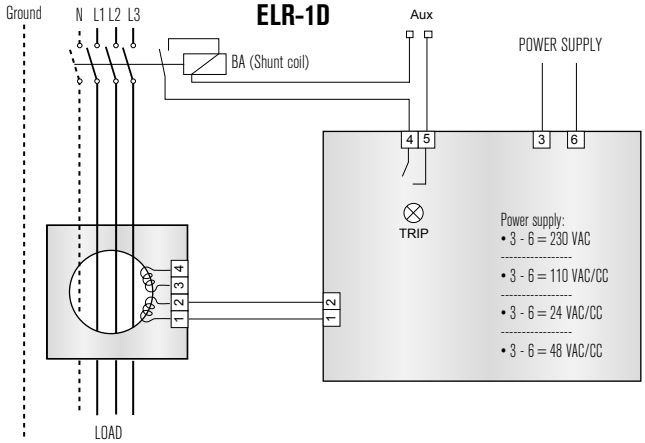
ELR-2 | ELR-2M



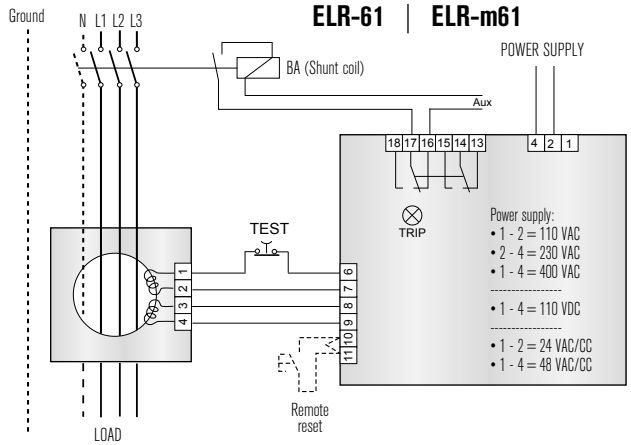
ELR-91



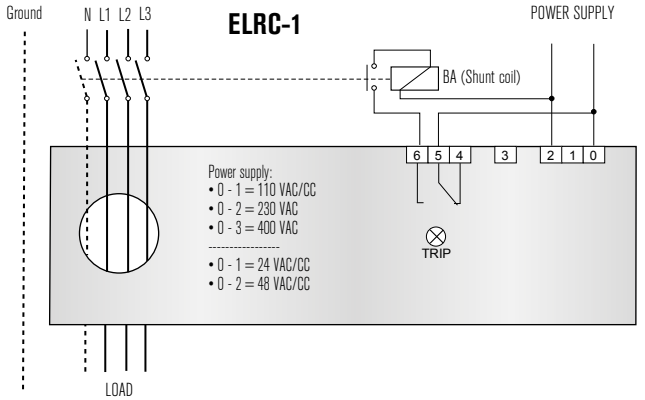
ELR-1D



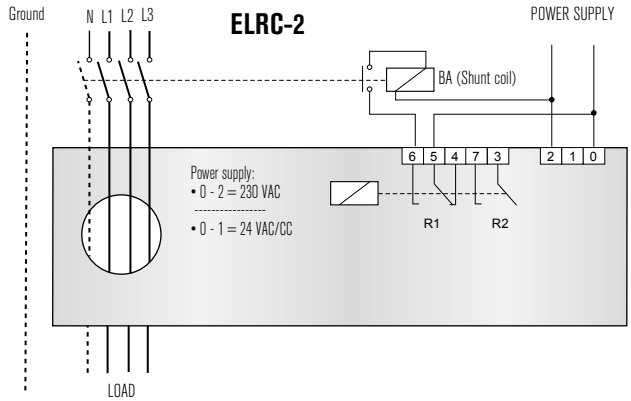
ELR-61 | ELR-m61



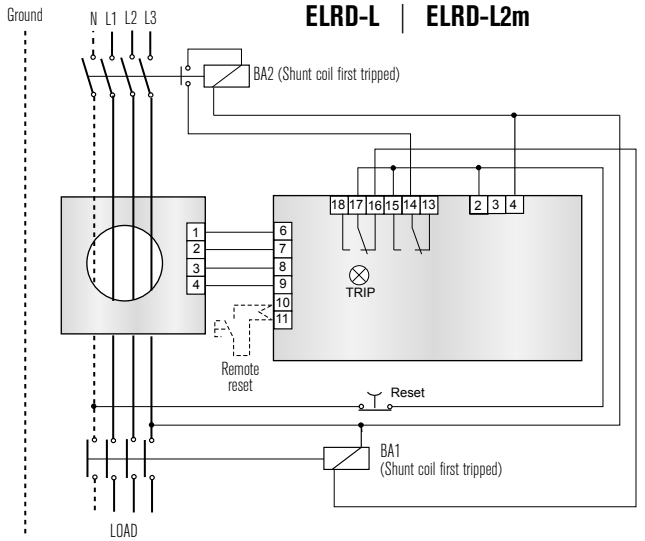
ELRC-1



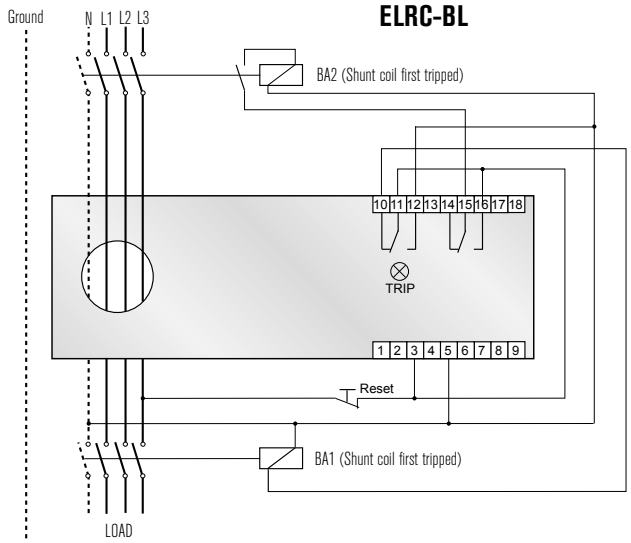
ELRC-2



ELRD-L | ELRD-L2m



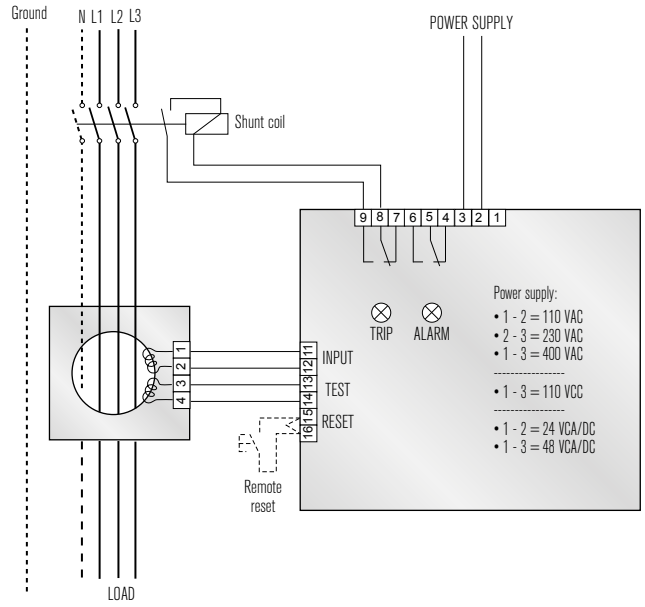
ELRC-BL



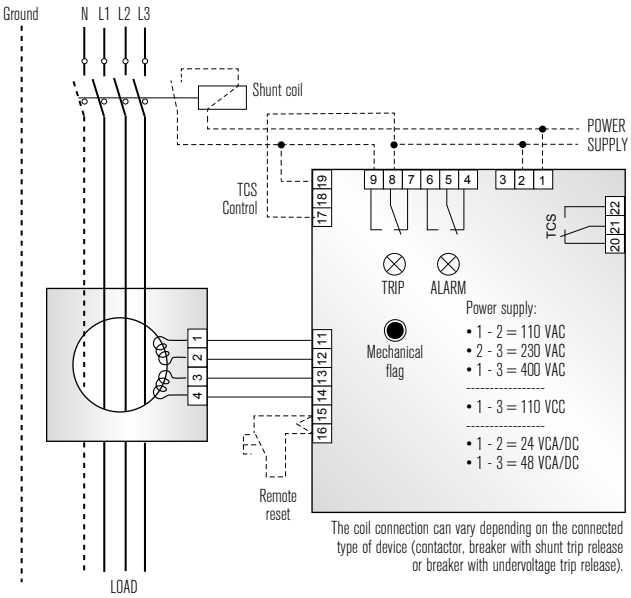
EARTH LEAKAGE RELAYS | wiring diagrams

Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

ELR-8

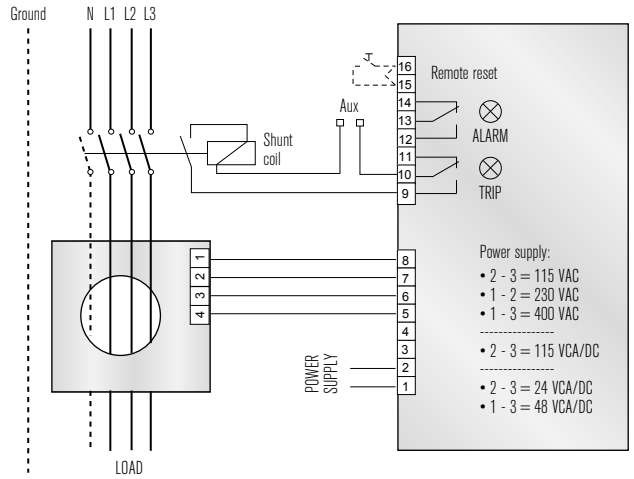


ELR-8tcs | ELR-8mVtcs

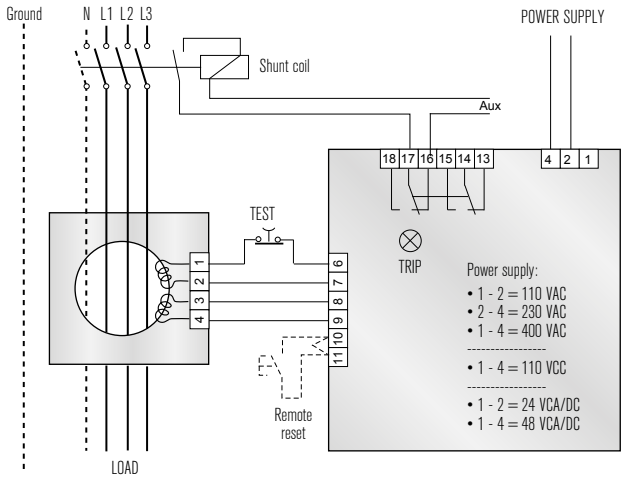


The coil connection can vary depending on the connected type of device (contactor, breaker with shunt trip release or breaker with undervoltage trip release).

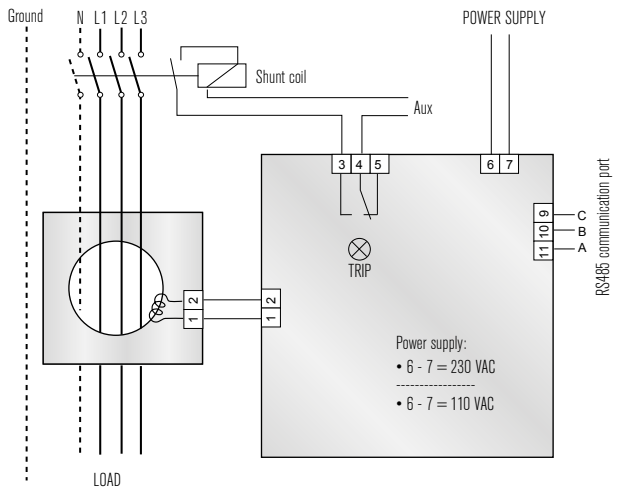
ELR-92



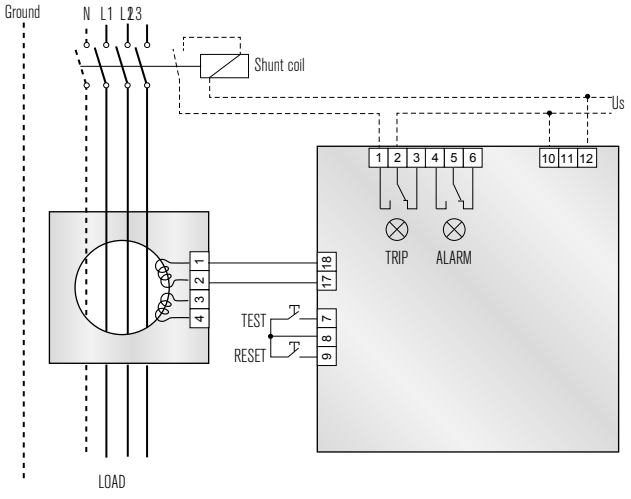
ELR-61 | ELR-m61



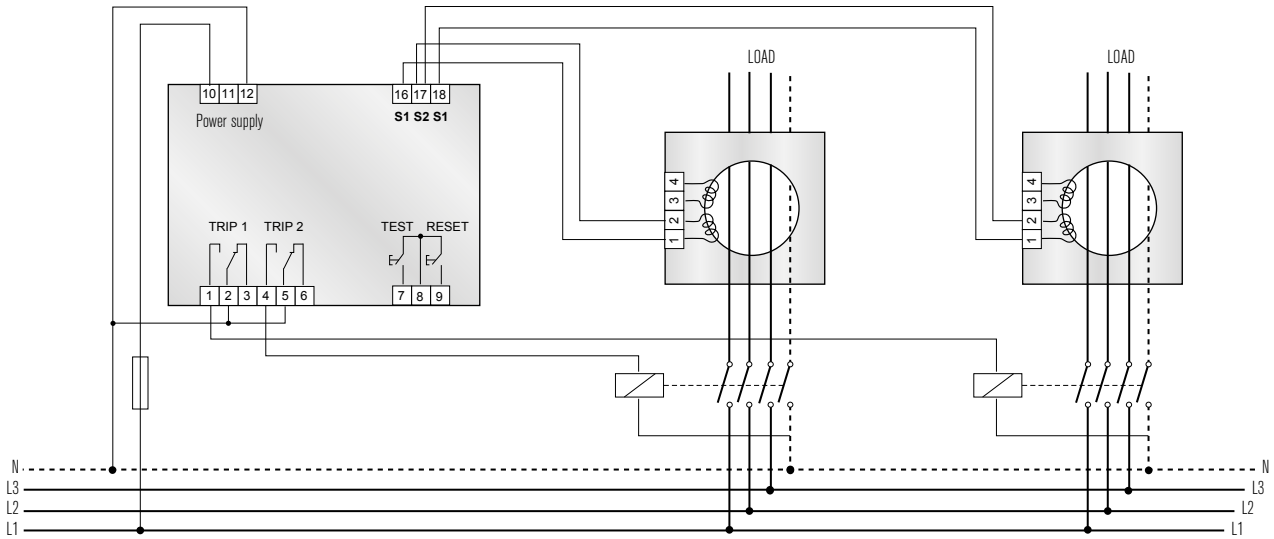
ELR-D2 | ELR-D2-V



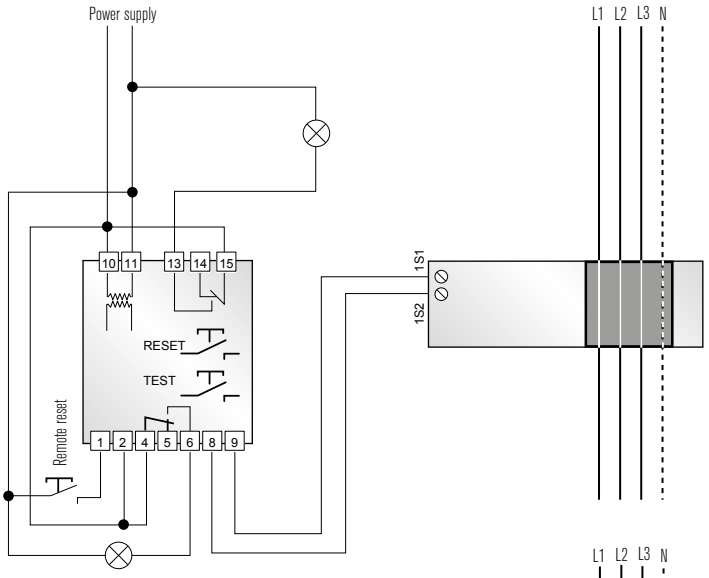
ELR-3AN | ELR-51AS



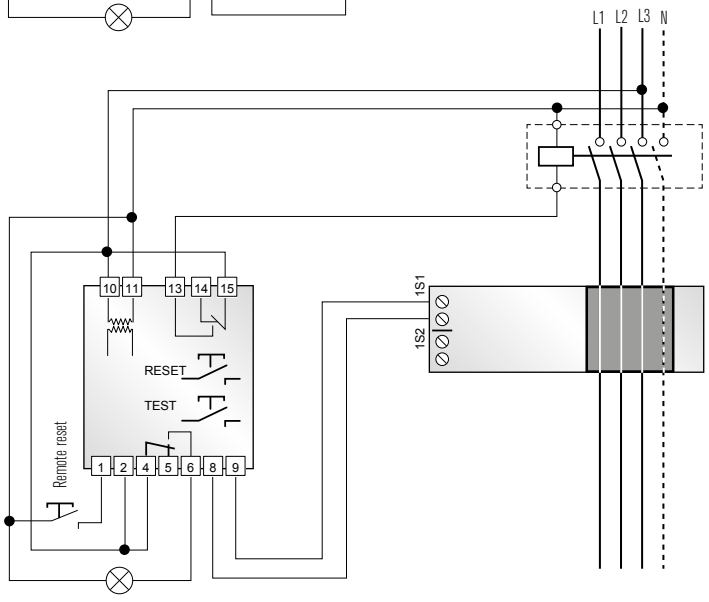
ELR-52AS



ELR-3B | ELR-3B-10



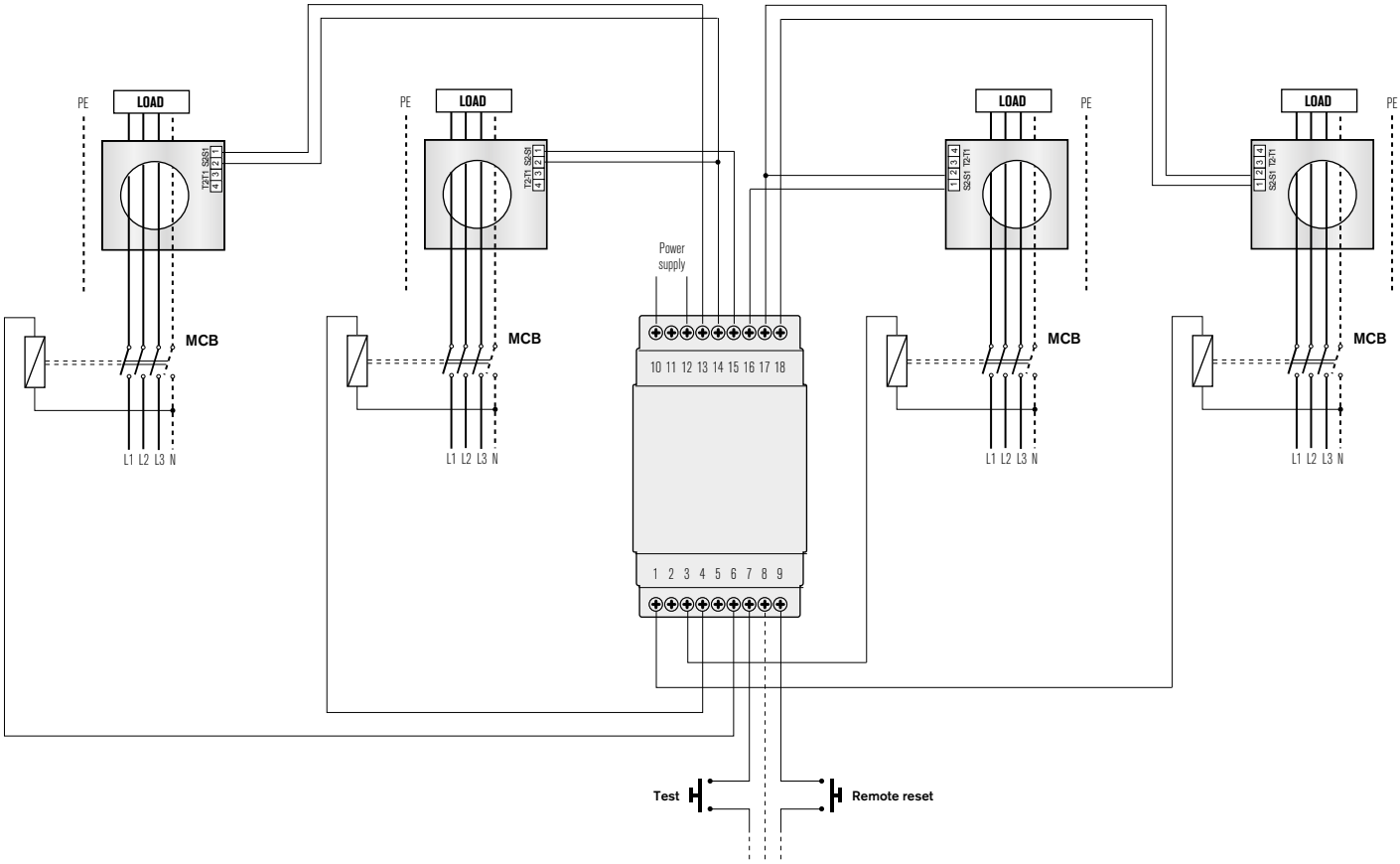
ELR-3B | ELR-3B-10



EARTH LEAKAGE RELAYS | wiring diagrams

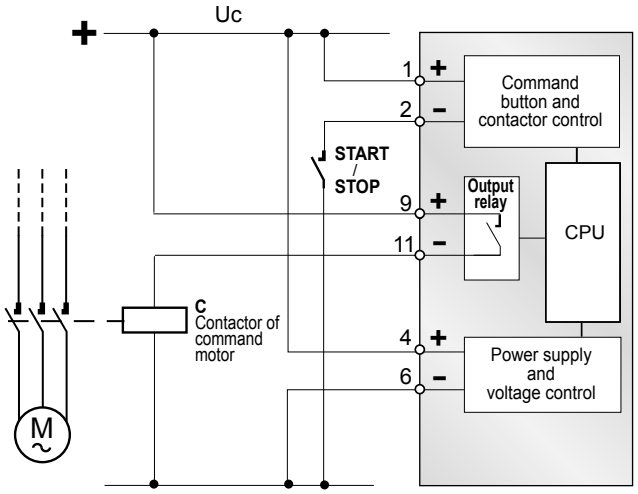
Certification obtained: **EAC | Compliant with standards: IEC/EN 60947-2 Annex M**

ELR-4C

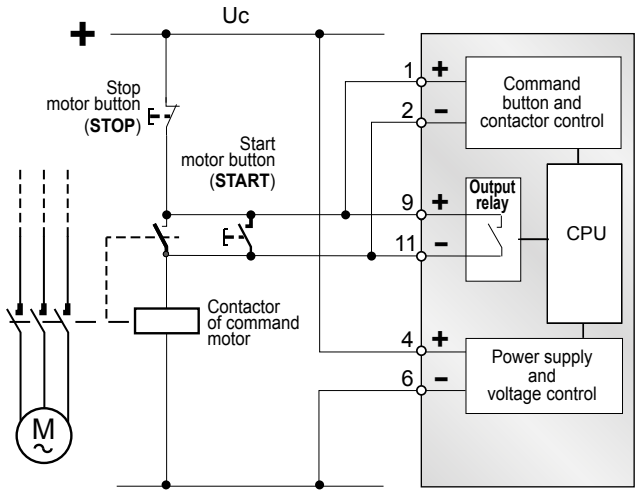


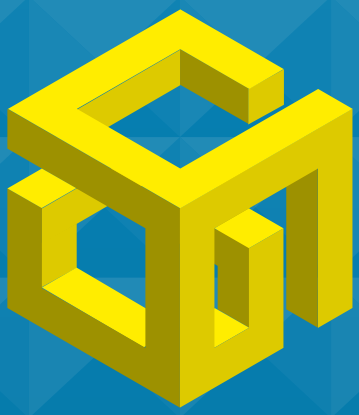
STATIC RELAY FOR AUTOMATIC MOTORS RESTART AND RE-ACCELERATION

RSR-72A



RSR-72 | RSR-72B

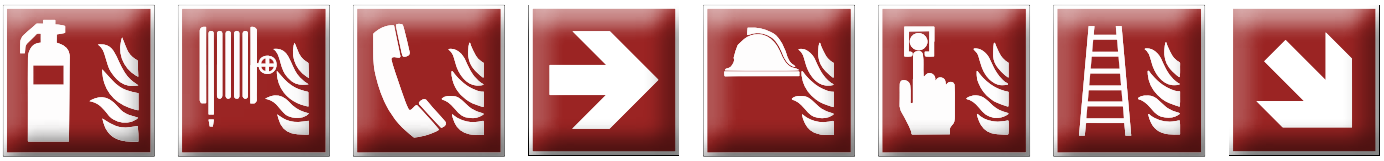




RELAY FOR PERMANENT CONTROL OF THE MCCB'S TRIPPING CIRCUIT AND ACTUATOR FOR SAFETY CIRCUITS

contrel elettronica

ITALIAN DESIGN




VACUATION PLAN
LEGENDS
ALARM Button
EXIT
FIRE
WATER dispenser
EXIT STAIRS
POMPIER
EXIT way
FIRE AXE
YOU are HERE
DON'T SMOKE
SWITCHBOARD
6.
7.
10.
2.
3.
8.
9.
11.

Permanent control of safety circuits

Always in sight and within reach, the emergency stop allows you to interrupt the power supply to a system in a safe and immediate manner. Its functionality must be guaranteed for the entire life of the system itself and must never give space to the unexpected. There are several technical solutions proposed by Contrel that allow you to carry out an emergency stop.

Rooms and types of systems in which the emergency command is provided:

- TOURIST RECEPTION (Hotels, Tourist Villages, Agritourisms, Alpine Refuges, etc.).
- LIFTS AND GOODS LIFTS
- GARAGES AND AUTOSILO
- CAR WORKSHOPS, BODY SHOPS, ELECTRICIANS, TIRES, ETC.
- LARGE COMPANIES AND OFFICES
- MV / LV ELECTRICAL CABINETS OF THE USER
- CONSTRUCTION SITES
- QUARRIES AND MINES
- GAS POWERED THERMAL CENTRAL UNITS AND HOT AIR GENERATORS
- SHOPPING CENTERS AND OTHER PREMISES USED FOR SALE
- DATA PROCESSING CENTERS
- LPG DEPOSITS
- DEPOSITS, FACTORIES, PLANTS AND RESALE OF FLAMMABLE LIQUIDS
- SHOPPING CENTERS AND OTHER PREMISES USED FOR SALE
- HISTORICAL BUILDINGS, MUSEUMS, LIBRARIES, ARCHIVES, ART GALLERIES, ETC.
- LARGE GAS COOKERS
- GENERATING SETS
- PUBLIC SHOW PREMISES
- UNDERGROUND
- HOSPITALS, NURSING HOUSES, CLINICS
- RESTAURANTS, CANTEENS, ETC.
- SCHOOLS AND UNIVERSITIES OF ALL ORDER AND GRADE

Index Page

RELAY FOR PERMANENT CONTROL OF THE MCCB'S TRIPPING CIRCUIT

Certification obtained: **EAC** | Compliant with standards: **CEI-EN 61010-1, CEI-EN 61551-1, CEI-EN 61326-1 CEI-EN 61326-2-4, CEI 64-8 (64-8/464.1, 64-8/465.5, 64-8/537.4.3)**

See dimensions and wiring diagrams at the end of chapter

TCS-1

TCS-2

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
TCS-1	• Relay for permanent control of the mccb's tripping circuit • Modular 3 DIN	24-48 VAC/DC	13÷60 VAC/DC	**3TC01N**	1	0,200
TCS-2	• Relay for permanent control of the mccb's tripping circuit • Modular 3 DIN	110-230 VAC/DC 400 VAC	50÷260 VAC/DC 250÷440 VAC	**3TC02P**	1	0,240

GENERAL CHARACTERISTICS

The TCS-1 and TCS-2 relays are devices used for tripping circuit breaker control or safety circuit control. When an anomaly occurs on the release or emergency circuit, the red "ALARM" LED lights up and at the same time the relay is de-energized for a possible acoustic signal or remote repetition of the information.

- Green LED indicating system (OK)
- Red LED for alarm signaling (ALARM)
- Tripping delay:
- 0,4÷1 sec (TCS-1 only)
- 0,2÷0,5 sec (TCS-2 only)
- Reset delay:
- 0,6÷1 sec (TCS-1 only)
- 1,5÷2 sec (TCS-2 only)
- Front TEST button
- 2 relay outputs for any anomaly condition
- Modular DIN housing, 2 modules
- Degree of protection: IP20

RELAY FOR PERMANENT CONTROL OF THE MCCB'S TRIPPING CIRCUIT

Certification obtained: **EAC** | Compliant with standards: **CEI-EN 61010-1, CEI-EN 61551-1, CEI-EN 61326-1 CEI-EN 61326-2-4, CEI 64-8 (64-8/464.1, 64-8/465.5, 64-8/537.4.3)**

See dimensions and wiring diagrams at the end of chapter

TCS-3 TCS 4

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
TCS-3	• Relay for permanent control of the mccb's tripping circuit • Flush mount 96x96 mm	24-48 VAC/DC	13÷60 VAC/DC	**3TC05N**	1	0,200
TCS-4	• Relay for permanent control of the mccb's tripping circuit • Flush mount 96x96 mm	110-230 VAC/DC 400 VAC	50÷260 VAC/DC 250÷440 VAC	**3TC06P**	1	0,240

GENERAL CHARACTERISTICS

The TCS-3 and TCS-4 relays are devices used for tripping circuit breaker control or safety circuit control. When an anomaly occurs on the release or emergency circuit, the red "ALARM" LED lights up and at the same time the relay is de-energized for a possible acoustic signal or remote repetition of the information.

- Green LED indicating system (OK)
- Red LED for alarm signaling (ALARM)
- Tripping delay:
- 0,4÷1 sec (TCS-3 only)
- 0,2÷0,5 sec (TCS-4 only)
- Reset delay:
- 0,6÷1 sec (TCS-3 only)
- 1,5÷2 sec (TCS-4 only)
- Front TEST button
- 2 relay outputs for any anomaly condition
- Flush mount 96x96mm housing with transparent cover
- Degree of protection: IP52

DEVICES FOR PERMANENT CONTROL OF SAFETY CIRCUITS WITH ACTIVATOR FOR SWITCH EMERGENCY OPENING

See dimensions and wiring diagrams at the end of chapter

Certification obtained: **EAC** | Compliant with standards: **CEI-EN 61010-1, CEI-EN 61551-1, CEI-EN 61326-1 CEI-EN 61326-2-4, CEI 64-8 (64-8/464.1, 64-8/465.5, 64-8/537.4.3)**

TCS-A5

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
TCS-A5	• Device for permanent control of safety circuits with actuator for opening emergency switch with shunt trip opening coil and buttons or normally closed contacts • Modular 6 DIN	110-230 VAC	100÷250 VAC/DC	**3TC10V**	1	0,500
		110-230 VAC	20÷60 VAC/DC	**3TC12V**		
		110 VDC	100÷250 VAC/DC	**3TC10F**		
		110 VDC	20÷60 VAC/DC	**3TC12F**		
		20÷60 VAC/DC	100÷250 VAC/DC	**3TC10N**		
		20÷60 VAC/DC	20÷60 VAC/DC	**3TC12N**		

GENERAL CHARACTERISTICS

The TCS-A5 device is a command and control system for emergency stop through buttons and normally closed contacts. Unlike TCS products, the TCS-A5 is used to open the switches associated with shunt opening coil or in any case systems that can be activated with normally open contacts. The TCS-A5 actuator thus creates a controlled input line for normally closed buttons or contacts and the output with a normally open contact with continuity and circuit efficiency control.

In case of connection to TCS-R6 multiple trip modules, the Vc must be 20-60 VAC/DC.

- Buttons and contacts used normally closed with very low voltage power supply for greater safety and to avoid functional problems with long lines
- Active control with signaling of interruption or short circuit of the pushbutton line
- Ability to use multiple buttons with total control
- Outputs for switch control, alarm signal output and safety output
- Control of the output line to the opening coil with continuity check
- Insensitivity to mains interruptions without using batteries
- Selection of number of buttons or contacts with total control
- Selection of opening or alarm function in case of button line and / or coil line fault
- Insulated and stabilized power supply insensitive to micro-interruptions
- Auxiliary voltage presence check
- Green power supply signaling LED (ON)
- Red LED for signaling trip circuit anomaly (ALARM)
- Red LED for signaling input contacts anomaly (ALARM)
- Red LED indicating device ready for activation of the output in the absence of anomalies (READY)
- Red LED for signaling relay output activated (TRIP)
- TRIP output activation delay: 150 ms
- LED READY switch-on delay: 150 ms
- TRIP output pulse due to Vaux missing: 100 ms
- LED READY switch-on delay: 1 s
- TEST and RESET button on the front
- Number of self-controlled contacts selectable by microswitch
- Alarm signaling selectable by microswitch
- Relay outputs for any anomaly condition
- DIN modular container with transparent lid
- Degree of protection: IP20 terminals; IP40 front (with cover)

DEVICES FOR PERMANENT CONTROL OF SAFETY CIRCUITS WITH ACTIVATOR FOR SWITCH EMERGENCY OPENING

See dimensions and wiring diagrams at the end of chapter

Certification obtained: **EAC** | Compliant with standards: **CEI-EN 61010-1, CEI-EN 61551-1, CEI-EN 61326-1 CEI-EN 61326-2-4, CEI 64-8 (64-8/464.1, 64-8/465.5, 64-8/537.4.3)**

TCS-R6

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NR.TC	NETWORK TO MONITOR	ORDER CODE	PCS	WT
TCS-R6	• Multiple control and release of emergency circuits up to 5 circuits • Modular 6 DIN • Possibility of controlling subsequent modules	110-230 VAC	6	65÷150 VAC/DC	**3TC21V**	1	0,500
		110-230 VAC	6	150÷260 VAC/DC	**3TC20V**		
		110-230 VAC	6	20÷60 VAC/DC	**3TC22V**		
		110-230 VAC	5	65÷150 VAC/DC	**3TC26V**		
			1	24-48 VAC/DC			
		110-230 VAC	5	150÷260 VAC/DC	**3TC25V**		
			1	24-48 VAC/DC			
		110-230 VAC	5	48 VAC/DC	**3TC27V**		
			1	24-48 VAC/DC			
		110 VDC	6	65÷150 VAC/DC	**3TC21S**		
		110 VDC	6	150÷260 VAC/DC	**3TC20S**		
		110 VDC	6	20÷60 VAC/DC	**3TC22S**		
		110 VDC	5	65÷150 VAC/DC	**3TC26F**		
			1	24-48 VAC/DC			
		110 VDC	5	150÷260 VAC/DC	**3TC26F**		
			1	24-48 VAC/DC			
		110 VDC	5	230 VAC/DC	**3TC25F**		
			1	24-48 VAC/DC			
		24-48 VAC/DC	6	65÷150 VAC/DC	**3TC21N**		
		24-48 VAC/DC	6	150÷260 VAC/DC	**3TC20N**		
		24-48 VAC/DC	6	20÷60 VAC/DC	**3TC22N**		
		24-48 VAC/DC	6	24 VAC/DC	**3TC28N**		
		24-48 VAC/DC	5	65÷150 VAC/DC	**3TC26N**		
			1	24-48 VAC/DC			
		24-48 VAC/DC	5	150÷260 VAC/DC	**3TC25N**		
			1	24-48 VAC/DC			
		24-48 VAC/DC	5	48 VAC/DC	**3TC27N**		
			1	24-48 VAC/DC			

GENERAL CHARACTERISTICS

The TCS-R6 device allows continuity and efficiency control of up to 5 distinct circuits with circuit inefficiency alarm signaling.

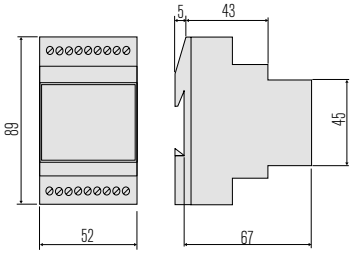
With the sixth output (TC1, always at 24-48 VAC/DC) of the TCS-R6 it is possible to control a subsequent TCS-R6 in order to expand the number of individually controlled circuits indefinitely. Obviously, the TC1 output can also be used to drive a 24-48 VAC/DC coil.

The TCS-R6 is therefore a device that includes a command input to be connected to the TCS-A5 output (or in any case a normally open contact) and five relay outputs to be used for opening switches, including a continuity check. for each output keeping the outputs isolated from each other, so that different power sources can also be used.

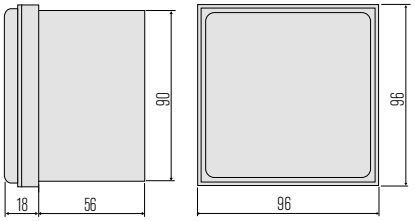
- Green power supply signaling LED (ON)
- Red LED for signaling output anomaly (TC1..6)
- TC output activation delay: 150 ms
- TEST button on the front
- Alarm signaling selectable by microswitch
- Manual reset by closing the remote or automatic contact
- Relay outputs for each fault condition of each controlled circuit (TC1..6)
- Relay output for any anomaly condition (ALARM)
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

DEVICES FOR PERMANENT CONTROL OF SAFETY CIRCUITS WITH ACTIVATOR FOR SWITCH EMERGENCY OPENING
dimensions (mm)

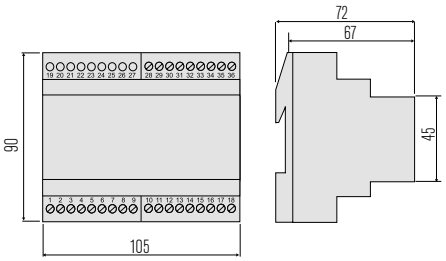
TCS-1 | **TCS-2**



TCS-3 | **TCS-4**

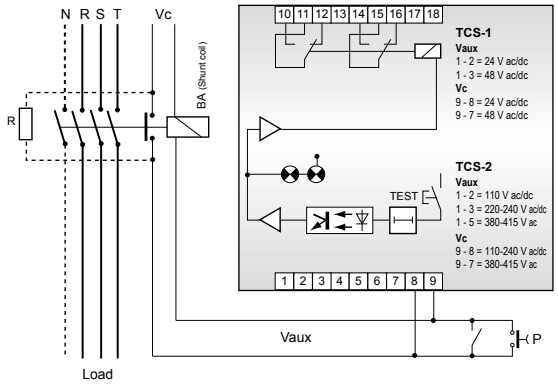


TCS-A5 | **TCS-R6**

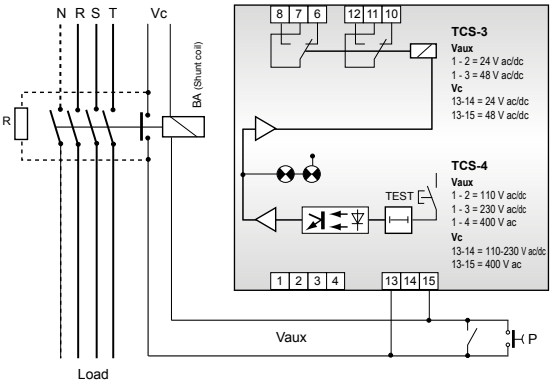


DEVICES FOR PERMANENT CONTROL OF SAFETY CIRCUITS WITH ACTIVATOR FOR SWITCH EMERGENCY OPENING
wiring diagrams

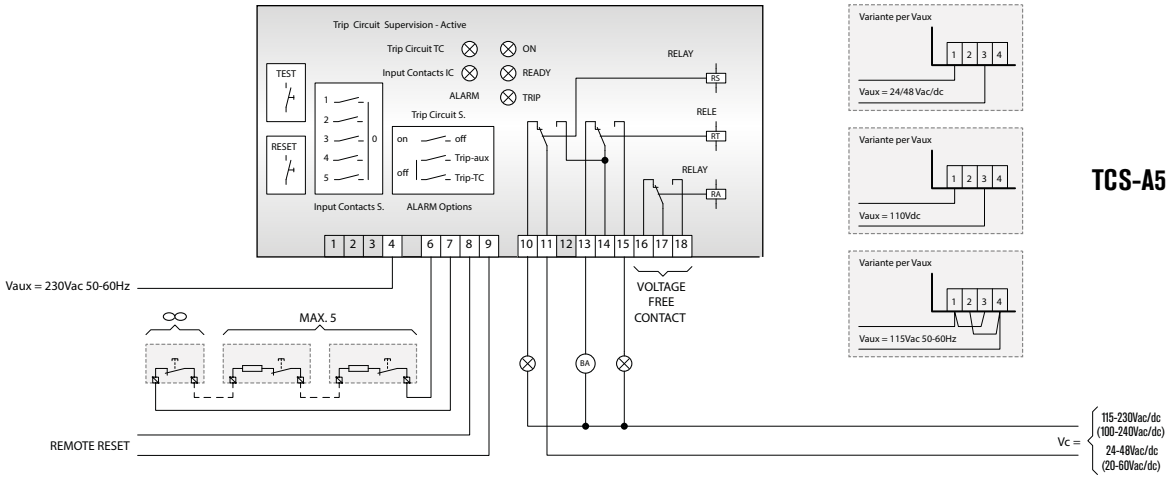
TCS-1 | **TCS-2**



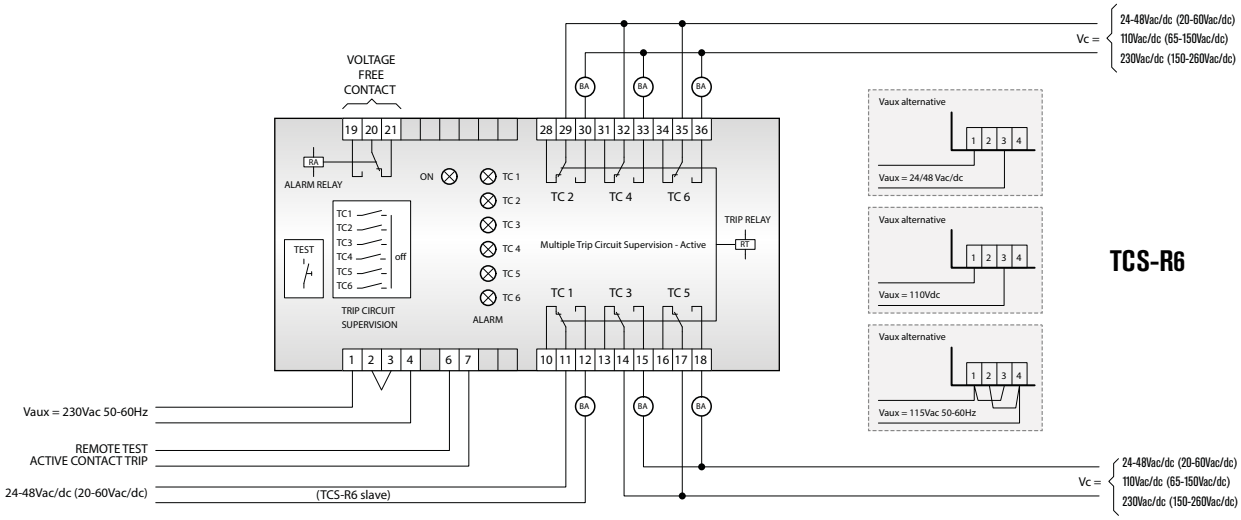
TCS-3 | **TCS-4**



TCS-A5

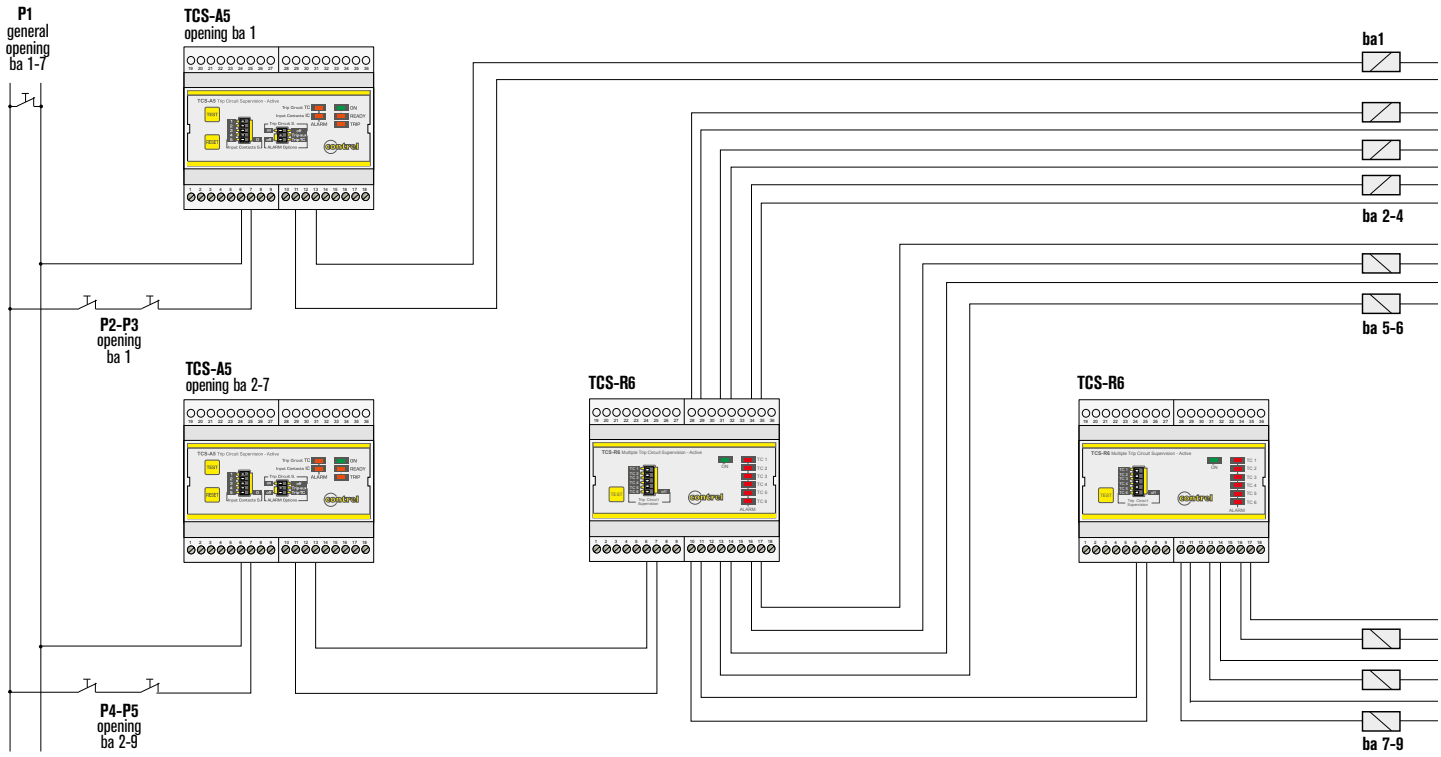


TCS-R6

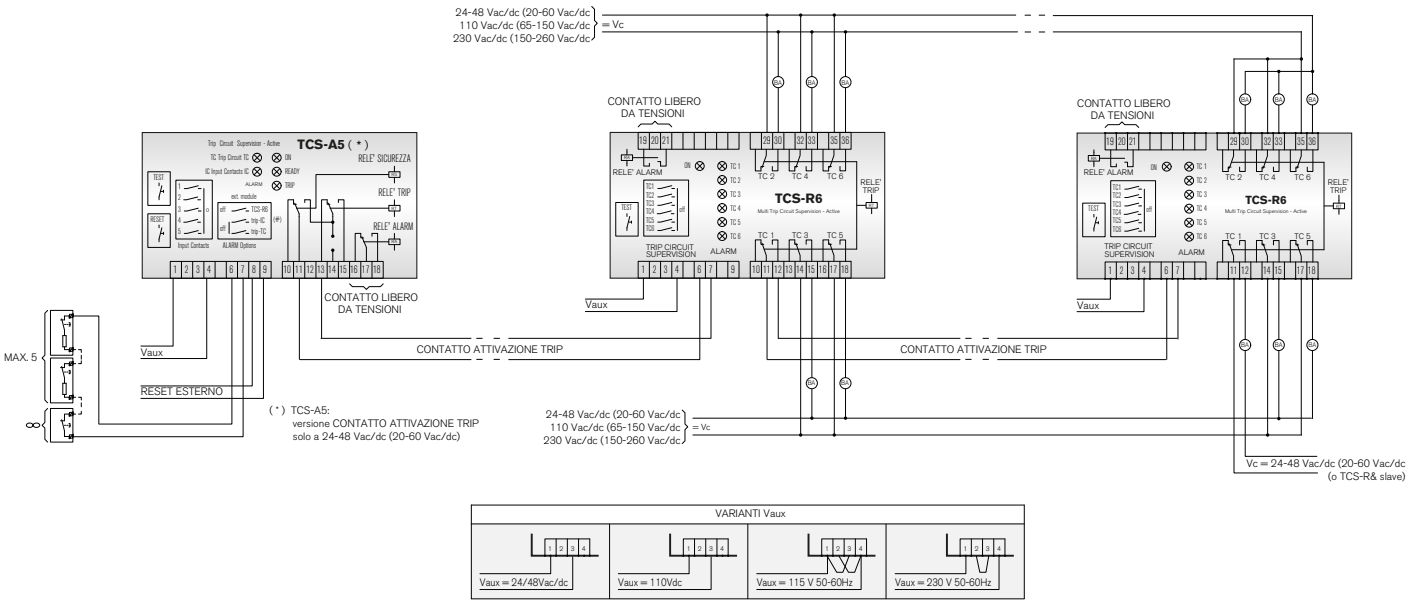


wiring diagrams

Example of circuit breaker opening system with TCS-A5 and TCS-R6 modules



Example of circuit breaker opening system with TCS-A5 and TCS-R6 modules



INSULATION MONITORING DEVICES

contrel elettronica

ITALIAN DESIGN


HOSPITAL

Insulation monitoring devices

An IT earthing system allows your electrical distribution system to continually operate, even in the presence of an insulation fault, without endangering people or property. Required as part of an IT earthing system, an insulation monitoring device (IMD) detects the initial fault so you can make repairs before a second fault occurs, which could trigger protective devices and halt operations.

The main interest of IT systems is that in case of one insulation fault.

- Enhanced continuity of service of the network (no trip if there is one insulation fault on the network).
- Reduced risk of electric shock.
- Reduced risk of fire or explosion (low faulty current in case of insulation fault).
- Reduced stress on the network and increased equipment life (low faulty current in case of insulation fault).

For this reason, Insulation Monitoring Devices are used on IT networks in order to detect a first insulation fault so that the fault can be repaired; hence avoiding situations with several insulation faults and maintaining the continuity of service on the network.

- Using an Insulation Fault Locator (IFL) allows the operator to locate the fault in multiple feeders installations.

The RI/HRI catalog offers a range of products suitable for these various applications, from the simplest insulation monitoring systems to the most advanced ones, including individual insulation monitoring per feeder and communication with supervision.

IT earthing systems are used for applications requiring continuity of service, such as:

- Healthcare: critical rooms in medical premises such as operating theaters, intensive care units, recovery rooms.
- Industry: critical processes in cement, steel, aluminium, oil and gas, chemical factories, food processing, car manufacturing, (painting area, other...) water, and waste water.
- Infrastructure: control tower and take-off path in airports, railways, seaports, tunnels, and signaling networks in rail.
- Utilities: power plants and control command systems.
- Photovoltaic: solar farms.
- Marine: electrical distribution of any type of ship.
- DC applications such as electrical vehicle charging stations.
- Medium Voltage: cable monitoring, distribution in industrial sites, MV loads-transformers and motors.

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INSULATION MONITORING DEVICES
DC NETWORKS

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

RI-R11

RI-R11D

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-R11	• 2 operation thresholds • Modular 6 DIN • Configurable fail safe operation • Damaged pole LED	80-180 VDC	115 VDC	**3RI44F**	1	0,400
		185-275 VDC	230 VDC	**3RI44H**		
RI-R11D	• 2 operation thresholds • Modular 6 DIN • Configurable fail safe operation • Damaged pole LED • Insulation level visual indication	80-180 VDC	115 VDC	**3RI45F**	1	0,400

GENERAL CHARACTERISTICS

- Insulation monitor for DC networks
- Green power LED indicator (ON)
- Yellow indicator light for preventive insulation alarm
- Red indicator light for insulation trip
- Tripping delay < 5 sec
- LED indicator for damaged pole
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Configurable fail safe pre-alarm and operation
- LED bar for insulation level (RI-R11D only)
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS
RI-R11 e RI-R11D

- ALARM threshold setting: 30-50-80-150-300 kΩ
- TRIP threshold setting: 10-20-40-60-100 kΩ

INSULATION MONITORING DEVICES
DC NETWORKS

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

RI-R15

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-R15	• 1 operation threshold • Modular 6 DIN • Configurable fail safe operation • Damaged pole LED	300 VDC	280÷340 VDC	**3RI47M**	1	0,400
		600 VDC	400÷600 VDC	**3RI47Z**		
		1000 VDC (with adapter ARI-R15)	600÷1000 VDC	**3RI470**		

GENERAL CHARACTERISTICS

- Insulation monitor for DC networks
- Green power LED indicator (ON)
- Red indicator light for insulation trip
- Tripping delay < 5 sec
- Indication of which polarity of the network under control has the low insulation
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Configurable fail safe pre-alarm and operation
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS RI-R15

- TRIP threshold setting: 30...300 kΩ

INSULATION MONITORING DEVICES
AC NETWORKS

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

RI-F22

RI-R22

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-F22	• Modular 3 DIN • Fixed TRIP threshold	115 VAC	220÷240 VAC	**3RI02E**	1	0,200
		230 VAC	220÷240 VAC	**3RI02G**		
RI-R22	• Modular 3 DIN • TRIP threshold adjustment	115 VAC	220÷240 VAC	**3RI01E**	1	0,200
		230 VAC	220÷240 VAC	**3RI01G**		

GENERAL CHARACTERISTICS

- Insulation monitor for AC networks
- Green power LED indicator (ON)
- Red indicator light for insulation trip
- Tripping delay 1 sec
- Front TEST and RESET buttons (RI-R22 only)
- Manual resetting
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS RI-F22

- Fixed TRIP threshold: 100 kΩ

ADJUSTMENTS RI-R22

- TRIP threshold setting: 25…100 kΩ

INSULATION MONITORING DEVICES
AC NETWORKS

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

RI-R38

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-R38	• Modular 3 DIN • TRIP threshold adjustment	115 VAC	440 VAC	**3RI24E**	1	0,200
		230 VAC	440 VAC	**3RI24G**		

GENERAL CHARACTERISTICS

- Insulation monitor for AC networks
- Green power LED indicator (ON)
- Red indicator light for insulation trip
- Tripping delay 1 sec
- Front TEST and RESET buttons
- Manual resetting
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover.

ADJUSTMENTS RI-R38

- TRIP threshold setting: 10-30-50-100-150 kΩ

INSULATION MONITORING DEVICES
AC NETWORKS

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

RI-R45

RI-R46

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-R45	• Modular 2 DIN • 1 operation threshold	115 VAC	440 VAC	**3RI38E**	1	0,200
		230 VAC	440 VAC	**3RI38G**		
RI-R46	• Modular 2 DIN • 2 operation thresholds	115 VAC	440 VAC	**3RI37E**	1	0,200
		230 VAC	440 VAC	**3RI37G**		

GENERAL CHARACTERISTICS

- Insulation monitor for AC networks
- Green power LED indicator (ON)
- Yellow indicator light for preventive insulation alarm (RI-R46 only)
- Red indicator light for insulation trip
- Tripping delay 1 sec
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Configurable fail safe operation
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS RI-R45

- TRIP threshold setting: 10...200 kΩ

ADJUSTMENTS RI-R46

- ALARM threshold setting: 22...300 kΩ
- TRIP threshold setting: 10...200 kΩ

INSULATION MONITORING DEVICES
AC NETWORKS

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

RI-R44
RI-R44-485

RI-R44-V
RI-R44-V-485

ACCESSORY

ARI-R60:
auxiliary voltage adapter
for isolation control 1000V
AC networks

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-R44	• Modular 2 DIN • 2 operation thresholds • Configurable fail safe operation	115 VAC	440 VAC	**3RI27E**	1	0,400
		230 VAC	440 VAC	**3RI27G**		
RI-R44-V	• Modular 2 DIN • 2 operation thresholds • Measure and display of the network insulation resistance • Configurable fail safe operation	115 VAC	440 VAC	**3RI30E**	1	0,400
		230 VAC	440 VAC	**3RI30G**		
RI-R44-485	• Modular 2 DIN • 2 operation thresholds • Configurable fail safe operation • Isolated RS485 interface	115 VAC	440 VAC	**3RI28E**	1	0,400
		230 VAC	440 VAC	**3RI28G**		
RI-R44-V-485	• Modular 2 DIN • 2 operation thresholds • Measure and display of the network insulation resistance • Configurable fail safe operation • Isolated RS485 interface	115 VAC	440 VAC	**3RI29E**	1	0,400
		230 VAC	440 VAC	**3RI29G**		

GENERAL CHARACTERISTICS

- Insulation monitor for AC networks
- Green power LED indicator (ON)
- Yellow indicator light for preventive insulation alarm
- Red indicator light for insulation trip
- Yellow indicator LCD for preventive insulation alarm (RI-R44-V only)
- Red indicator LCD for insulation trip (RI-R44-V only)
- Configurable tripping delay
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Configurable fail safe operation
- Modbus-RTU communication protocol
- Modular DIN module, with transparent cover (RI-R44 only)
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS RI-R44

- ALARM threshold setting: 200% della
- TRIP threshold setting: 1-5-10-30-50-100-150-300 kΩ

ADJUSTMENTS RI-R44-V

- ALARM threshold setting: 1...999 kΩ
- TRIP threshold setting: 1...999 kΩ

INSULATION MONITORING DEVICES
AC NETWORKS

See dimensions and wiring diagrams at the end of chapter

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-R60	• Modular 2 DIN • 2 operation thresholds • Configurable fail safe operation • Insulation level visual indication	115-230 VAC	760 VAC	**3RI34V**	1	0,500
ARI-R60	Voltage adapter for RI-60 insulation monitor device	-	1000 VAC	**3RI35V**	1	0,500

GENERAL CHARACTERISTICS

- Insulation monitor for AC networks
- Green power LED indicator (ON)
- Yellow indicator light for preventive insulation alarm
- Red indicator light for insulation trip
- Tripping delay < 5 sec
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Configurable fail safe operation
- LED bar for insulation level
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS RI-R60

- ALARM threshold setting: 30-50-80-150-300 kΩ
- TRIP threshold setting: 10-20-40-60-100 kΩ

INSULATION MONITORING DEVICES
AC / DC NETWORKS

See dimensions and wiring diagrams at the end of chapter

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-F48	• Modular 3 DIN • Fixed threshold setting	24÷48 VAC/DC	24÷48 VAC/DC	**3RI03N**	1	0,200
RI-R48	• Modular 3 DIN • TRIP threshold adjustment	24÷48 VAC/DC	24÷48 VAC/DC	**3RI04N**	1	0,200
RI-R48N	• Modular 3 DIN • TRIP threshold adjustment • Damaged pole LED	24÷48 VAC/DC	24÷48 VAC/DC	**3RI42N**	1	0,200

GENERAL CHARACTERISTICS

- Insulation monitor for AC and DC networks
- Green power LED indicator (ON)
- Red indicator light for insulation trip
- Tripping delay 0,2 sec
- Indication of which polarity of the network under control has low insulation (only for RI-R48N)
- Front TEST and RESET buttons
- Manual resetting
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS RI-F48

- TRIP threshold setting: 10-30-50-100-150 kΩ

ADJUSTMENTS RI-R48

- TRIP threshold setting: 10-30-50-100-150 kΩ

ADJUSTMENTS RI-R48N

- TRIP threshold setting: 10-30-50-100-150 kΩ

INSULATION MONITORING DEVICES
FOR VOLTAGELESS NETWORKS

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

RI-SM

RI-SM-V-485

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-SM	• Modular 2 DIN • 1 operation threshold	115 VAC	20÷500 VAC/DC (fuori tensione)	**3RI52E**	1	0,200
		230 VAC		**3RI52G**		
RI-SM-V-485	• Modular 2 DIN • 1 operation threshold • Measure and display of the network insulation resistance • Isolated RS485 interface	115 VAC	20÷500 VAC/DC (fuori tensione)	**3RI54E**	1	0,200
		230 VAC		**3RI54G**		

GENERAL CHARACTERISTICS

- Green power LED indicator (ON)
- Yellow indicator light for preventive insulation alarm
- Red indicator light for insulation trip
- Yellow indicator LCD for preventive insulation alarm (RI-SM-V-485 only)
- Red indicator LCD for insulation trip (RI-SM-V-485 only)
- Tripping delay 0,2 sec
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Modular DIN module, with transparent cover (RI-SM only)
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS RI-SM (2 DIN)

- ALARM threshold setting: 120% of trip threshold
- TRIP threshold setting: 0,1-0,25-0,50-1-2,5-5-10-15 MΩ

ADJUSTMENTS RI-SM-V-485

- ALARM threshold setting: 0,1...30 MΩ
- TRIP threshold setting: 0,1...30 MΩ

INSULATION MONITORING DEVICES
FOR HEALTHCARE FACILITIES

Certification obtained: **EAC**
Compliant with standards: **CEI EN 61010-1; CEI EN 64-8/7-710; CEI EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

HRI-R24

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
HRI-R24	• Pannello di segnalazione a distanza. • Scatola universale tipo E503.	24 VAC/DC	24 VAC/DC	**3RI04J**	1	0,200

GENERAL CHARACTERISTICS

- Medical insulation monitoring device for scialitic lamps
- Green power LED indicator (ON)
- Red indicator light for insulation trip
- Tripping delay 1 sec
- Front TEST and RESET buttons
- Manual resetting
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS PER HRI-R24

- TRIP threshold setting: 25...100 kΩ

INSULATION MONITORING DEVICES
FOR HEALTHCARE FACILITIES

Certification obtained: **EAC**
Compliant with standards: **CEI-EN 64-8/7-710, CEI EN 61557-8, EN 60255-6, UNE 20615**

See dimensions and wiring diagrams at the end of chapter

HRI-R40

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
HRI-R40	• Modular 6 DIN • Alarm threshold: low insulation, low impedence, over temperature, over current, Link-Fail	115 VAC / 230 VAC	24÷230 VAC	**3RI83V**	1	0,500
HRI-R40-485	• Modular 6 DIN • Alarm threshold: low insulation, low impedence, over temperature, over current, Link-Fail • Isolated RS485 interface using Modbus RTU	115 VAC / 230 VAC	24÷230 VAC	**3RI85V**	1	0,500
HRI-R40W	• Modular 6 DIN • Thanks to a codified signal, it grants absolute reliability of measurement in any operational condition, even if high network interferences occur. • Isolated RS485 interface using Modbus RTU	115 VAC / 230 VAC	24÷230 VAC	**3RI86V**	1	0,500

GENERAL CHARACTERISTICS

- Medical insulation monitoring devices
- Insulation resistance is measured by applying a direct current signal between insulated line and earth
- Displays the resistance and impedance of the network insulation
- Monitoring of the isolation transformer
- Monitoring of the current consumed by the loads
- Red LED for signaling insulation threshold intervention
- Red LED for signaling intervention of the overtemperature threshold
- Red LED for signaling intervention of the current overload threshold
- Red LED indicating device not connected to the line (LINK-FAIL)
- Tripping delay 3 sec
- Front TEST and RESET buttons
- Ripristino automatico o manuale impostabile
- Configurable fail safe operation
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS HRI-R40

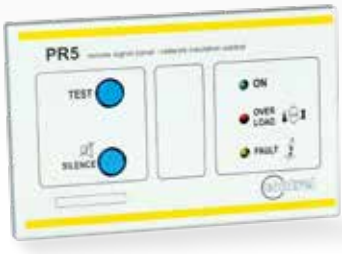
- Low resistence threshold: 50÷500 kΩ
- Low impedance threshold: 50÷500 kΩ
- Overtemperature of the transformer: 0 ÷ 200 °C
- Overload of the transformer: 1 ÷ 999 A
- Device not connected to the line (LINK-FAIL)

INSULATION MONITORING DEVICES
REMOTE SIGNALLING PANEL

Certification obtained: **EAC** | Compliant with standards: **CEI EN 61010-1; CEI EN 61557-8; CEI EN 64-8/7-710; UNE 20615; CEI EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

PR-5



TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
PR-5	• Panel provides an acoustic and luminous signal in case of low insulation or thermal and electrical overload • Operational efficiency: both visual and acoustic signalling	24 VAC/DC (from HRI-R40 device)	-	**3RIA08**	1	0,200

GENERAL CHARACTERISTICS

- Remote signalling panel enables to send alarm signals from the insulation monitoring devices
- Green LED (device is working properly)
- Red LED for overload alarm
- Yellow LED for fault alarm
- TEST and MUTE pushbutton
- Compact size: installation in a universal 3-module flush-mounted box type E503, in horizontal or vertical position
- Degree of protection: IP30

INSULATION MONITORING DEVICES
OPERATING THEATER DISPLAY

Certification obtained: **EAC**
Compliant with standards: **IEC/EN 61010-1, EN 61000-6-2, EN 61000-6-4**

See dimensions and wiring diagrams at the end of chapter

RMS-24

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RMS-24	• Compact data concentrator of several insulation monitoring devices for hospitals. It is possible to immediately understand if the system works correctly or if, on the other hand, it has anomalies or damage. • Alarms page: summarizes the measurements in a single screen real time, maximum and minimum (resistance, impedance, transformer overtemperature and overcurrent) and alarms (Error - Link Fail; low insulation; programmed alarm threshold exceeded) • Configuration page: it is possible to configure the system to be monitored and monitored. Password access protection • Isolated RS485 interface for Modbus RTU	90-250 VAC/DC	-	**3ML30V**	1	0,400
		24-48 VAC/DC	-	**3ML30N**	1	0,400
RMS-24-Eth	• Compact data concentrator of several insulation monitoring devices for hospitals. It is possible to immediately understand if the system works correctly or if, on the other hand, it has anomalies or damage. • Alarms page: summarizes the measurements in a single screen real time, maximum and minimum (resistance, impedance, transformer overtemperature and overcurrent) and alarms (Error - Link Fail; low insulation; programmed alarm threshold exceeded) • Configuration page: it is possible to configure the system to be monitored and monitored. Password access protection • Ethernet interface for Modbus TCP / IP	90-250 VAC/DC	-	**3ML302V**	1	0,400
		24-48 VAC/DC	-	**3ML302N**	1	0,400

SYSTEM CONFIGURATION PAGES

DEFINITION ALPHA-NUMERIC OF THE MEDICAL PREMISES

MANAGEMENT OF ALARMS ON THRESHOLD EXCEEDING

CONTROL THE STATUS OF A GROUP OF OPERATING THEATRES

ALARM LOGGER ENABLING

ENABLING INTERNAL BUZZER

GENERAL CHARACTERISTICS

- RMS-24 is an interface to be installed in a medical critical room such as an operating theater.
- Simple and intuitive human machine interface, informing the medical staff about the status of the medical room
- Works in conjunction with insulation monitors such as HRI-R40 and fault locator such as HRI-IFL-4
- 320x240 pixel color TFT display
- Alarm signaling LED
- Event storage and management
- Advanced I / O functions
- Relay outputs each with 1 changeover contact, both settable for intervention or 1 for intervention and 1 for pre-alarm
- Positive safety operation settable with pre-alarm
- Include a buzzer to provide a sound signal in case of alarm.
- Acoustic silence button on the front
- Front insulation monitor functional test buttons
- Modbus-RTU communication protocol
- Modbus-TCP communication protocol (optional)
- Housing for recessed mounting 96x96x50mm
- Degree of protection: IP20 terminals, IP40 on front

INSULATION FAULT LOCATOR
FOR HEALTHCARE FACILITIES

Certification obtained: **EAC |** Compliant with standards: **CEI EN 61010-1; CEI EN 64-8/7-710; CEI EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

HRI-IFL-4

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
HRI-IFL-4	• Insulation fault locator, simultaneously for 4 lines • Monitoring of the ground insulation of each individual line • The insulation fault is displayed by 4 LEDs, one for each line • Communication via Modbus RS485 protocol to allow measurement and event reporting to the supervisory system	115 VAC / 230 VAC	-	**3RI90V**	1	0,600

Application

- For Medical premises such as operating theaters, intensive care units, Recovery rooms, designed as per IEC60364-7-710, where ungrounded networks are used and where automatic insulation fault location is required.
- Strongly recommended in networks where a medical IT system is used to supply multiple rooms or locations

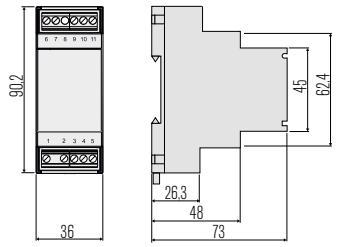
Insulation Fault Locator

If an insulation fault occurs on the IT network, the latter must be localized and corrected, with a minimum interruption of site operations.
The search for the fault can be performed by sequentially opening the circuit breakers; however this method causes the temporary interruption of the power supply on the various departures.

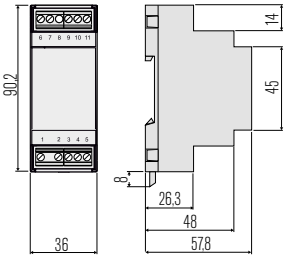
To avoid this situation, it is useful to use insulation fault locators as they allow you to automatically locate the fault while maintaining continuity of service on the site. In networks that contain numerous lines, the use of fault locators also saves time and operating costs in network maintenance.

The insulation fault locators are associated with a permanent insulation controller. Their measurement principle is based on the low frequency component injected by the insulation monitor.

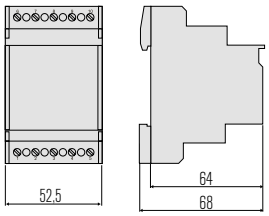
RI-SM | RI-R44-V | RI-R45 | RI-R46



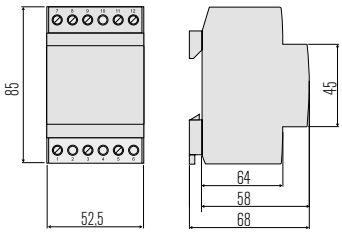
RI-R44-V | RI-SM-V



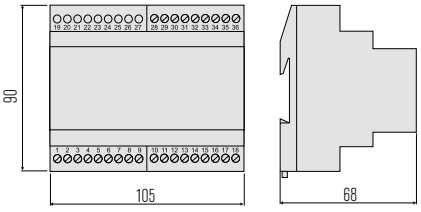
RI-F48 | RI-R48 | RI-F22 | RI-R22 | HRI-R24



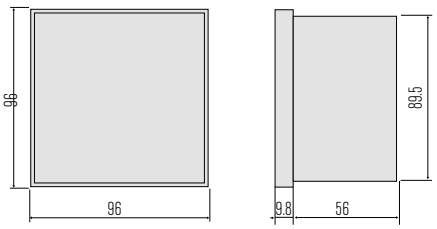
RI-R38 | RI-R48N



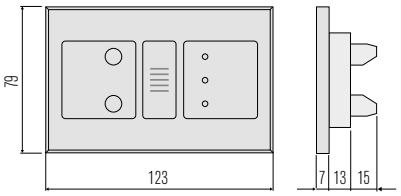
RI-R11 | RI-R11D | RI-R60 | HRI-R40 | ARI-R60



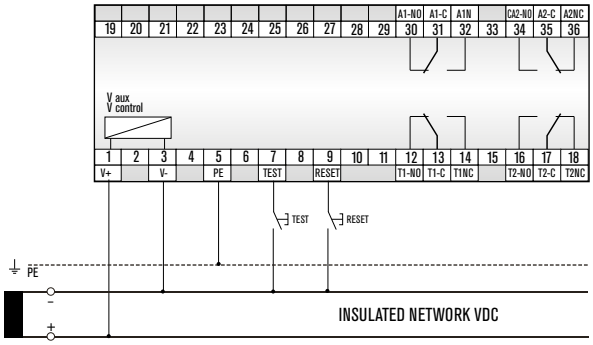
RMS-24



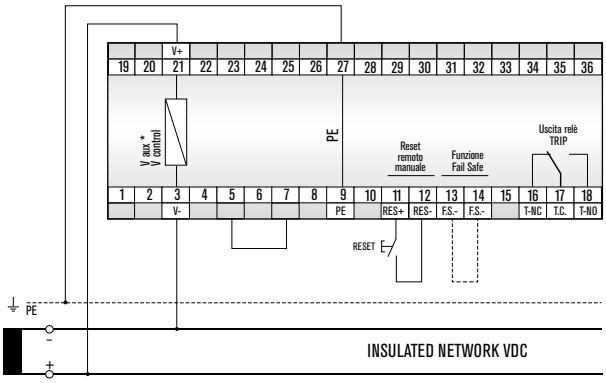
PR-5



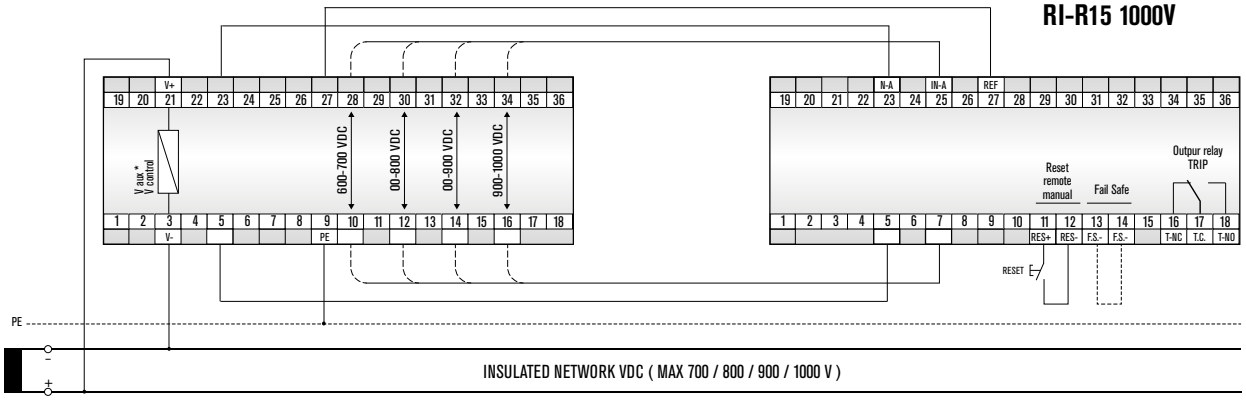
RI-R11 | RI-R11D



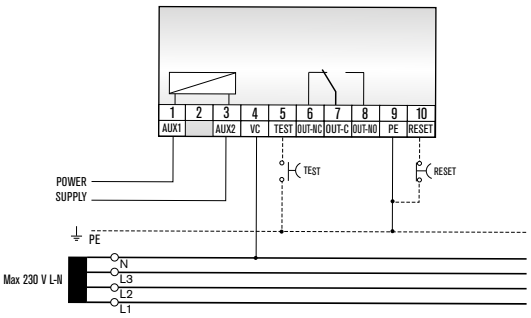
RI-R15



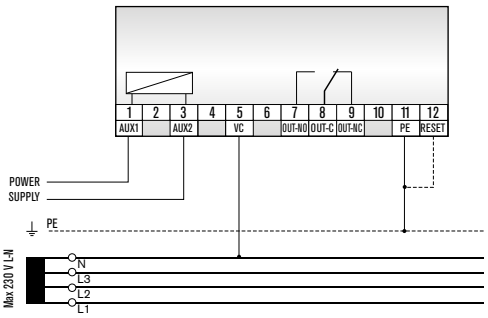
RI-R15 1000V



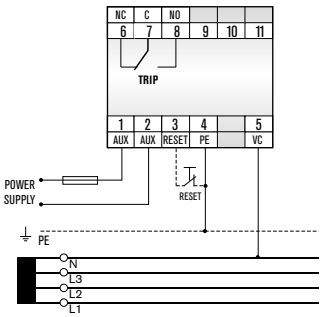
RI-F22 | RI-R22



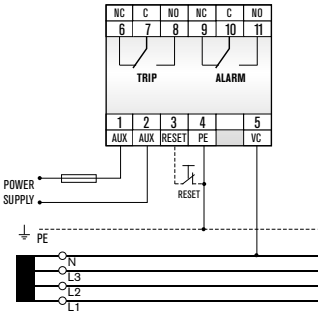
RI-R38



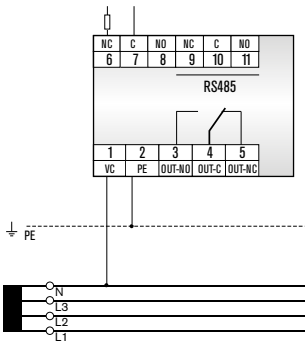
RI-R45



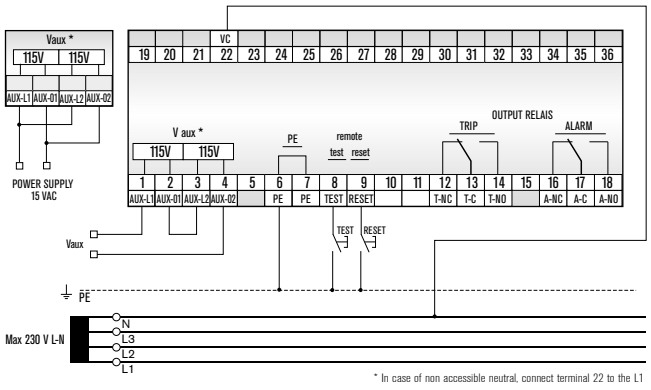
RI-R46



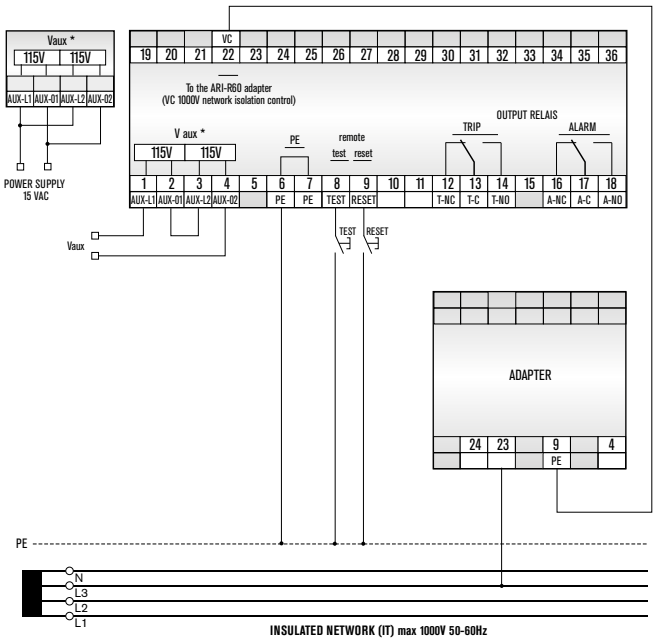
RI-R44 | RI-R44-V



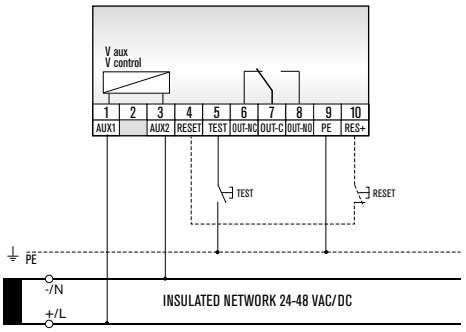
RI-R60



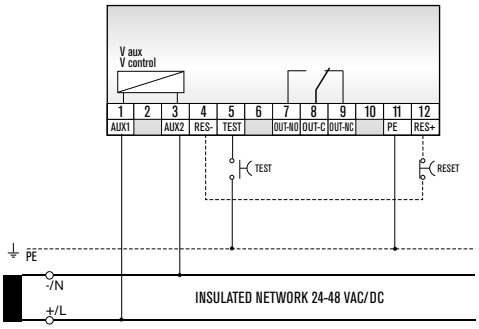
RI-R60 1000



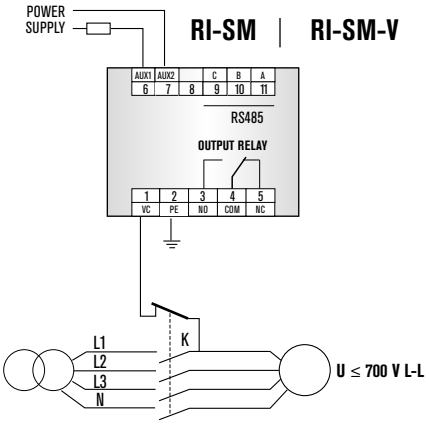
RI-F48 | RI-R48



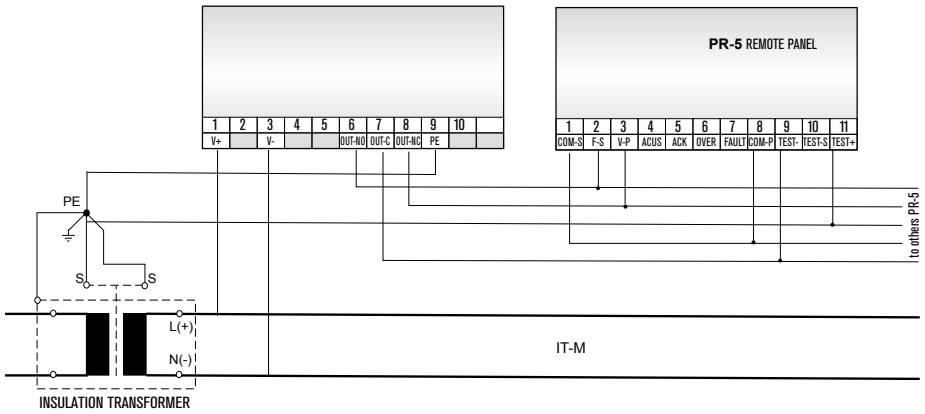
RI-R48N



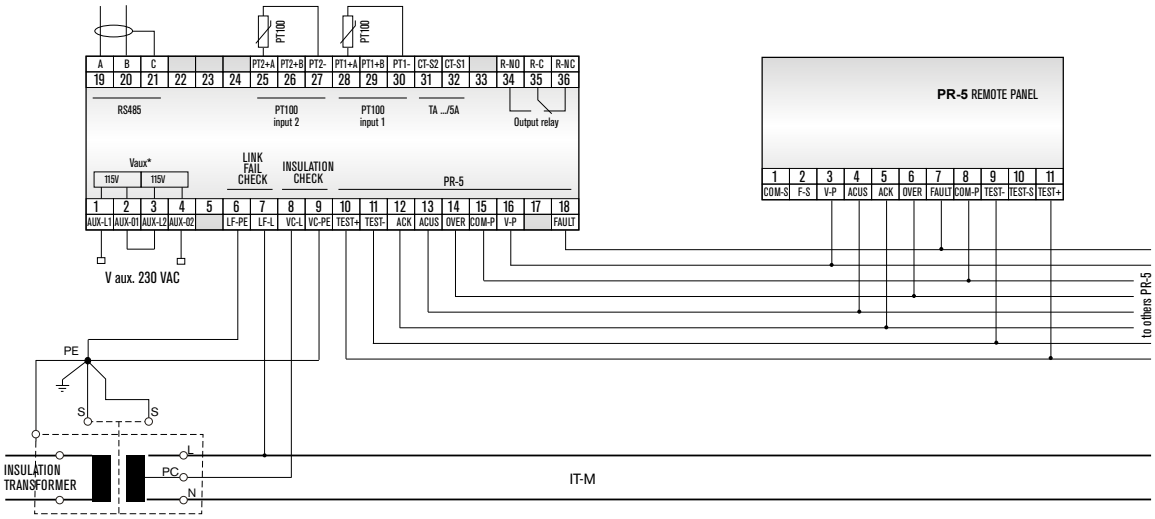
RI-SM | RI-SM-V



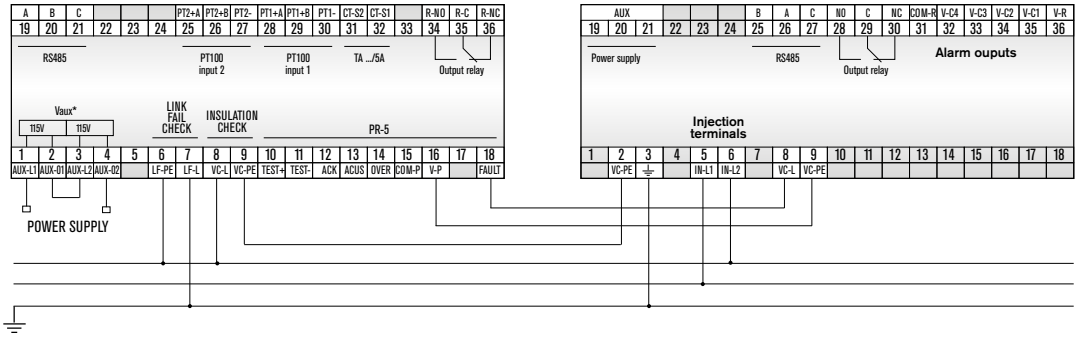
HRI-R24



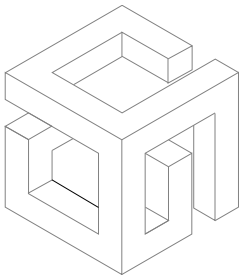
HRI-R40



HRI-R40



HRI-IFL-4



ALARM CONCENTRATORS AND TEMPERATURE CONTROL UNIT

contrel elettronica

ITALIAN DESIGN


FIRE
PULL DOWN

Alarm concetrators and temperature control units

Index Page

TEMPERATURE CONTROL UNITS

Certification obtained: **EAC**
Compliant with standards: **EN 61000-6-2:2006, EN 61000-6-4, EN 61010-1**

See dimensions and wiring diagrams at the end of chapter

CTT-4

CTT-8

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
CTT-4	• 4 PT100 RTD (not included) • Flush mount • Double level of intervention. • Programmable relay outputs. • Doppio display a 3 digit.	115-230-400 VAC	**3TT10P**	1	0,800
		24÷230 VAC/DC	**3TT10Y**		
CTT-4-485	• 4 PT100 RTD (not included) • Flush mount. • Double level of intervention. • Programmable relay outputs. • Doppio display a 3 digit. • RS485.	115-230-400 VAC	**3TT12P**		
		24÷230 VAC/DC	**3TT12Y**		
CTT-4-485-AO	• 4 PT100 RTD (not included) • Flush mount. • Double level of intervention.• Programmable relay outputs. • Doppio display a 3 digit. • Analog ouput 0/4...20mA. • RS485.	115-230-400 VAC	**3TT16P**		
		24÷230 VAC/DC	**3TT16Y**		
CTT-4-4AO	• 4 PT100 RTD (not included) • Flush mount. • Double level of intervention.• Programmable relay outputs. • Doppio display a 3 digit. • 4 Analog ouputs 0/4...20mA.	115-230-400 VAC	**3TT24P**		
		24÷230 VAC/DC	**3TT24Y**		
CTT-4-485-4AO	• 4 PT100 RTD (not included) • Flush mount. • Double level of intervention.• Programmable relay outputs. • Doppio display a 3 digit. • 4 Analog ouputs 0/4...20mA. • RS485.	115-230-400 VAC	**3TT25P**		
		24÷230 VAC/DC	**3TT25Y**		
CTT-8	• 8 PT100 RTD (not included) • Flush mount. • Double level of intervention. • Programmable relay outputs. • Doppio display a 3 digit.	115-230-400 VAC	**3TT11P**		
		24÷230 VAC/DC	**3TT11Y**		
CTT-8-485	• 8 PT100 RTD (not included) • Flush mount. • Double level of intervention. • Programmable relay outputs. • Doppio display a 3 digit. • RS485.	115-230-400 VAC	**3TT13P**		
		24÷230 VAC/DC	**3TT13Y**		
CTT-8-485-AO	• 8 PT100 RTD (not included) • Flush mount. • Double level of intervention. • Programmable relay outputs. • Doppio display a 3 digit. • Analog ouput 0/4...20mA. • RS485.	115-230-400 VAC	**3TT17P**		
		24÷230 VAC/DC	**3TT17Y**		

GENERAL CHARACTERISTICS

- Display of instantaneous and maximum temperature
- Input sensor
  - 4 PT100 RTD (CTT-4 only)
  - 8 PT100 RTD (CTT-8 only)
- Double level of intervention for each channel: alarm and trip
- Red LED indicator for ALARM threshold intervention
- Red LED indicator for TRIP threshold intervention
- Measuring Range -30...+200 °C
- Tripping delay 5 sec
- Self-diagnostic function for anomalies or incorrect installation (FAULT)
- FDC function for automatic control of the temperature deviation within a defined time period
- Possibility of activating forced ventilation (FAN)
- Configurable automatic or manual resetting
- 4 programmable relay outputs for any anomaly or fault condition
- Analog output 0/4...20mA
- Communication interface RS485
- Communication protocol Modbus-RTU
- Communication protocol IEC 61850 international standard for communication in substations (CTT-4 only)
- Flush mount 96x96mm housing
- Degree of protection: IP20 terminals, IP52 on front

WEBSERVER FOR TEMPERATURE CONTROL UNITS CTT SERIE

Certification obtained: **EAC**
Compliant with standards: **EN 61010-1, EN 61000-6-2, EN 61000-6-3**

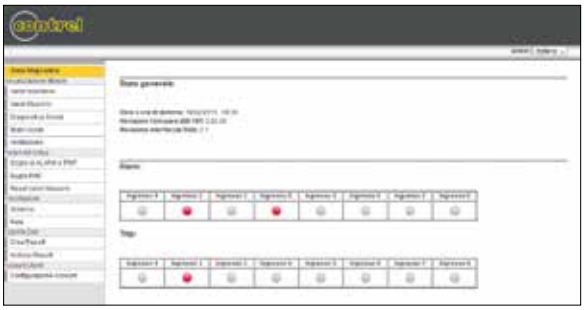
See dimensions and wiring diagrams at the end of chapter

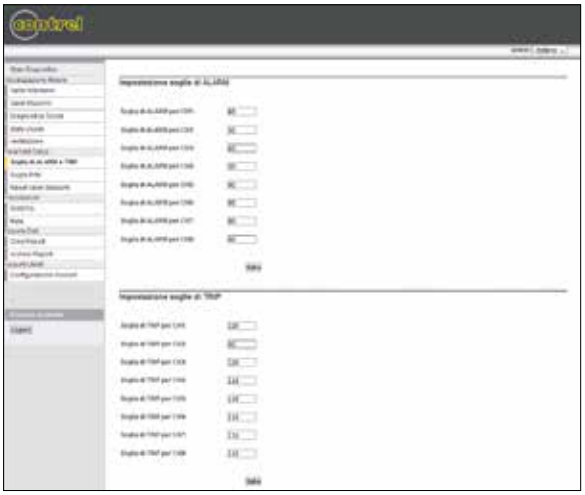
EMI-10T

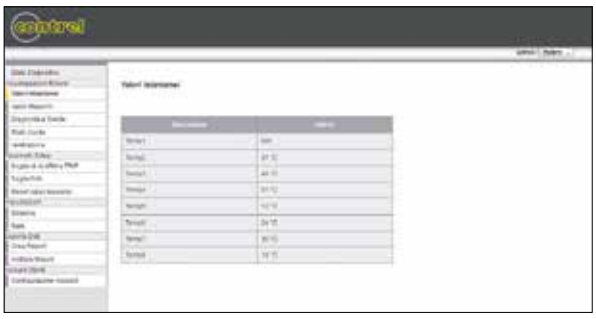
TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMI-10T	The EMI-10T converter allows CTT devices connected on an RS485 network to interface with a "Master" with Ethernet port: • 10/100 Mbps ETHERNET interface • programming via web interface • protocol conversion between Modbus RTU and Modbus TCP • data logging • device remote management, values readout, alarm management	230 VAC	**3IC55G**	1	0,300
		24-48 VAC/DC	**3IC55J**	1	0,300

GENERAL CHARACTERISTICS

- Modular DIN-rail housing, 3U
- 10/100Mbit ETHERNET interface
- Protocol conversion between modbus rtu and modbus tcp
- 2 color LED for the communication status
- RS485 serial interface
- Web interface for configuration and remote management
- Protocol supported: Modbus TCP, HTTP
- Log-in with a password







LUMINOUS INDICATORS

Certification obtained: **EAC**
Compliant with standards: **EN 61000-6-2, EN 61000-6-4, EN 61010-1**

See dimensions and wiring diagrams at the end of chapter

C0.3/sq3
3 LED

C0.4/sq4
4 LED

C2/sq
12 LED

C3/sq
12 LED

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
C0.3/sq	• Luminous indicator with 3 LEDs and neutral plate • Flush mount 48x48mm housing	24VAC/DC	**3C070J**	1	0,050
		48VAC/DC	**3C070K**		
		115VAC	**3C070E**		
		115VDC	**3C070F**		
		230VAC	**3C070G**		
C0.4/sq	• Luminous indicator with 4 LEDs and neutral plate • Flush mount 48x48mm housing	24VAC/DC	**3C071J**		
		48VAC/DC	**3C071K**		
		115VAC	**3C071E**		
		115VDC	**3C071F**		
		230VAC	**3C071G**		
C2/sq	• Luminous indicator with 12 LEDs and neutral plate • Flush mount 96x96mm housing	24VAC/DC	**3C065J**	1	0,200
		48VAC/DC	**3C065K**		
		115VAC	**3C065E**		
		115VDC	**3C065F**		
		230VAC	**3C065G**		
	• Luminous indicator with 12 LEDs and neutral plate with lamp test button on the front • Flush mount 96x96mm housing	24VAC/DC	**3C0651J**		
		115VDC	**3C0651F**		
C3/sq	• Luminous indicator with 12 LEDs and neutral plate • Flush mount 72x144mm housing	24VAC/DC	**3C045J**	1	0,200
		48VAC/DC	**3C045K**		
		115VAC	**3C045E**		
		115VDC	**3C045F**		
		230VAC	**3C045G**		
ACCESSORIES FOR LUMINOUS INDICATORS					
Red LED			**LED-RED**	-	-
Green LED			**LED-GREEN**		
Yellow LED			**LED-YELLOW**		
Blue LED			**LED-BLUE**		
White LED			**LED-WHITE**		

GENERAL CHARACTERISTICS

They are supplied in versions from 3 to 12 interchangeable LEDs with different power supply voltages; they provide the luminous signaling of the events that occur in the system (eg alarms, status indications, etc.).

All the versions in the range are provided with pre-printed description plates in Italian and English and with customizable neutral plates. With the accessories it is possible to configure the product according to specific needs, choosing the color of the LEDs.

ALARM CONCENTRATORS

Certification obtained: **EAC**
Compliant with standards: **EN 61000-6-2:2006, EN 61000-6-4, EN 61010-1**

See dimensions and wiring diagrams at the end of chapter

Compalarm D2

Compalarm D2m

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	VOLTAGE INPUTS	ORDER CODE	PCS	WT
Compalarm D2	• Alarm concentrator. • Graphic LCD display. • 16 alarms. • Flush mount 96x96mm housing • Calendar clock, built-in buzzer. • Programmable outputs. • RS485 port.	90÷250 VAC/DC	24 VAC/DC	**3CD711S**	1	0,500
		20÷60 VAC/DC	24 VAC/DC	**3CD711N**		
		90÷250 VAC/DC	48 VAC/DC	**3CD712S**		
		20÷60 VAC/DC	48 VAC/DC	**3CD712N**		
		90÷250 VAC/DC	115 VAC/DC	**3CD713S**		
		20÷60 VAC/DC	115 VAC/DC	**3CD713N**		
		90÷250 VAC/DC	230 VAC/DC	**3CD714S**		
		20÷60 VAC/DC	230 VAC/DC	**3CD714N**		
Compalarm D2-Eth	• Alarm concentrator. • Graphic LCD display. • 16 alarms. • Flush mount 96x96mm housing • Calendar clock, built-in buzzer. • Programmable outputs. • RS485 port and ethernet port for Modbus TCP/IP.	90÷250 VAC/DC	24 VAC/DC	**3CD721S**		
		20÷60 VAC/DC	24 VAC/DC	**3CD721N**		
		90÷250 VAC/DC	48 VAC/DC	**3CD722S**		
		20÷60 VAC/DC	48 VAC/DC	**3CD722N**		
		90÷250 VAC/DC	115 VAC/DC	**3CD723S**		
		20÷60 VAC/DC	115 VAC/DC	**3CD723N**		
		90÷250 VAC/DC	230 VAC/DC	**3CD724S**		
		20÷60 VAC/DC	230 VAC/DC	**3CD724N**		
Compalarm D2m	• Alarm concentrator. • LCD display 4 row x 20 chars. • 16 alarms. • Modular DIN-rail housing, 6U • Calendar clock, built-in buzzer. • Programmable outputs. • RS485 port.	90÷250 VAC/DC	24 VAC/DC	**3CD811S**	1	0,450
		20÷60 VAC/DC	24 VAC/DC	**3CD811N**		
		90÷250 VAC/DC	48 VAC/DC	**3CD812S**		
		20÷60 VAC/DC	48 VAC/DC	**3CD812N**		
		90÷250 VAC/DC	115 VAC/DC	**3CD813S**		
		20÷60 VAC/DC	115 VAC/DC	**3CD813N**		
		90÷250 VAC/DC	230 VAC/DC	**3CD814S**		
		20÷60 VAC/DC	230 VAC/DC	**3CD814N**		
Compalarm D2m-Eth	• Alarm concentrator. • LCD display 4 row x 20 chars. • 16 alarms. • Modular DIN-rail housing, 6U • Calendar clock, built-in buzzer. • Programmable outputs. • RS485 port and ethernet port for Modbus TCP/IP.	90÷250 VAC/DC	24 VAC/DC	**3CD821S**		
		20÷60 VAC/DC	24 VAC/DC	**3CD821N**		
		90÷250 VAC/DC	48 VAC/DC	**3CD822S**		
		20÷60 VAC/DC	48 VAC/DC	**3CD822N**		
		90÷250 VAC/DC	115 VAC/DC	**3CD823S**		
		20÷60 VAC/DC	115 VAC/DC	**3CD823N**		
		90÷250 VAC/DC	230 VAC/DC	**3CD824S**		
		20÷60 VAC/DC	230 VAC/DC	**3CD824N**		

GENERAL CHARACTERISTICS

The Compalarm D2 / D2m alarm concentrators are used to inform the operator that a process has gone beyond the set limits using a visual and audible alarm. The availability of numerous operating modes in a single product allows the concentrators to be installed in the most diverse application situations, for example alarm indicators, PLC / PC message displays, remote terminals, status / diagnosis indicators, human-machine interfaces , supervision and control equipment.

- 16 alarm inputs
- Backlight LCD display with multilingual text
- Alarm condition signaling LED
- N.O. or N.C. input configuration
- Configurable automatic or manual resetting
- Built-in buzzer
- Integrated calendar clock
- Storage of the latest events
- Programmable outputs for any alarm condition
- Configurable fail safe operation
- Communication interface RS485
- Modbus-RTU communication protocol
- Ethernet communication interface
- Modbus-TCP/IP communication protocol
- Programming via free downloadable software
- Flush mount 96x96mm housing (Compalarm D2)
- Modular DIN-rail housing, 6U (Compalarm D2m)
- Degree of protection: IP20 terminals, IP40 on front

ALARM CONCENTRATORS

Certification obtained: **EAC, RINA**
Compliant with standards: **EN 61000-6-2:2006, EN 61000-6-4, EN 61010-1**

See dimensions and wiring diagrams at the end of chapter

Ordering example for codes with specific certification:

3COMPE**1**00050000

Certification

0 = standard
1 = RINA

Compalarm E

EXPANSION MODULES – INPUTS / OUTPUTS	
MR-R8	External expansion 6 DIN modules, 8 relay outputs
MR-DI16	External expansion 6 DIN modules, 16 dig. inputs

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	VOLTAGE INPUTS	ORDER CODE	PCS	WT
Compalarm E	• Alarm concentrator. • TFT color display. • 16 alarms. • Flush mount 96x96mm housing • Calendar clock, built-in buzzer. • Programmable outputs. • RS485 port.	90÷250 VAC/DC	24 VAC/DC	**3COMPE000000000**	1	0,450
		20÷60 VAC/DC	24 VAC/DC	**3COMPE010000000**		
		90÷250 VAC/DC	48 VAC/DC	**3COMPE000100000**		
		20÷60 VAC/DC	48 VAC/DC	**3COMPE010100000**		
		90÷250 VAC/DC	115 VAC/DC	**3COMPE000200000**		
		20÷60 VAC/DC	115 VAC/DC	**3COMPE010200000**		
		90÷250 VAC/DC	230 VAC/DC	**3COMPE000300000**		
		20÷60 VAC/DC	230 VAC/DC	**3COMPE010300000**		
Compalarm E-Eth	• Alarm concentrator. • TFT color display. • 16 alarms. • Flush mount 96x96mm housing • Calendar clock, built-in buzzer. • Programmable outputs. • RS485 port and ethernet port for Modbus TCP/IP.	90÷250 VAC/DC	24 VAC/DC	**3COMPE000050000**		
		20÷60 VAC/DC	24 VAC/DC	**3COMPE010050000**		
		90÷250 VAC/DC	48 VAC/DC	**3COMPE000150000**		
		20÷60 VAC/DC	48 VAC/DC	**3COMPE010150000**		
		90÷250 VAC/DC	115 VAC/DC	**3COMPE000250000**		
		20÷60 VAC/DC	115 VAC/DC	**3COMPE010250000**		
		90÷250 VAC/DC	230 VAC/DC	**3COMPE000350000**		
		20÷60 VAC/DC	230 VAC/DC	**3COMPE010250000**		
Compalarm E-2-485	• Alarm concentrator. • TFT color display. • 16 alarms. • Flush mount 96x96mm housing • Calendar clock, built-in buzzer. • Programmable outputs. • 2 RS485 ports.	90÷250 VAC/DC	24 VAC/DC	**3COMPE000010000**		
		20÷60 VAC/DC	24 VAC/DC	**3COMPE010010000**		
		90÷250 VAC/DC	48 VAC/DC	**3COMPE000110000**		
		20÷60 VAC/DC	48 VAC/DC	**3COMPE010110000**		
		90÷250 VAC/DC	115 VAC/DC	**3COMPE000210000**		
		20÷60 VAC/DC	115 VAC/DC	**3COMPE010210000**		
		90÷250 VAC/DC	230 VAC/DC	**3COMPE000310000**		
		20÷60 VAC/DC	230 VAC/DC	**3COMPE010310000**		
Compalarm E-2-485-Eth	• Alarm concentrator. • TFT color display. • 16 alarms. • Flush mount 96x96mm housing • Calendar clock, built-in buzzer. • Programmable outputs. • 2 RS485 ports and ethernet port for Modbus TCP/IP.	90÷250 VAC/DC	24 VAC/DC	**3COMPE000080000**		
		20÷60 VAC/DC	24 VAC/DC	**3COMPE010080000**		
		90÷250 VAC/DC	48 VAC/DC	**3COMPE000180000**		
		20÷60 VAC/DC	48 VAC/DC	**3COMPE010180000**		
		90÷250 VAC/DC	115 VAC/DC	**3COMPE000280000**		
		20÷60 VAC/DC	115 VAC/DC	**3COMPE010280000**		
		90÷250 VAC/DC	230 VAC/DC	**3COMPE000380000**		
		20÷60 VAC/DC	230 VAC/DC	**3COMPE010380000**		

GENERAL CHARACTERISTICS

The Compalarm E alarm annunciator is used to inform the operator that a process has gone beyond set limits using a visual and audible alarms.
The TFT color display offers a user-friendly interface, which can be set the number of cells required to suit individual panel designs. It's possible to set different display window types: small, medium, large window, icon style, alarms group version. The rich variety of functions, makes the annunciator the ideal choice for a wide range of applications.
The Compalarm E is also provided with a RS-485 interface with Modbus protocol to consent the integration in supervision systems.

- 16 alarm inputs
- TFT color display 3.5" with multilingual text
- Red LED indicator alarm condition
- N.O. or N.C. input configuration
- Configurable automatic or manual resetting
- Built-in buzzer
- Alarm sequence according to the ISA standard
- Alarm detection time min 20ms
- Front and remote ACK, RESET and SILENCE buttons
- Password protection for settings
- Integrated calendar clock
- Storage of the latest events
- Programmable outputs
- Configurable fail safe operation
- Modular construction from 1 to 256 alarm channels
- Communication interface RS485
- Modbus-RTU communication protocol
- Ethernet communication interface
- Modbus-TCP/IP communication protocol
- Communication protocol IEC 61850 international standard for communication in substations
- Programming via free downloadable software
- Flush mount 96x96mm housing
- Degree of protection: IP20 terminals, IP50 on front

ALARM CONCENTRATORS

Certification obtained: **EAC**
Compliant with standards: **EN 61000-6-2:2006, EN 61000-6-4, EN 61010-1**

See dimensions and wiring diagrams at the end of chapter

Compalarm C2C

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	VOLTAGE INPUTS	ORDER CODE	PCS	WT
Compalarm C2C	• Alarm concentrator. • LED luminous indicator. • 12 alarms. • Flush mount 96x96mm housing • Built-in buzzer • Programming alarm sequence by dip-switch. • 2 relay outputs (alarms common and acoustic signal)	90÷250 VAC/DC	24 VAC/DC	**3CC101S**	1	0,450
		20÷60 VAC/DC	24 VAC/DC	**3CC101N**		
		90÷250 VAC/DC	48 VAC/DC	**3CC102S**		
		20÷60 VAC/DC	48 VAC/DC	**3CC102N**		
		90÷250 VAC/DC	115 VAC/DC	**3CC103S**		
		20÷60 VAC/DC	115 VAC/DC	**3CC103N**		
		90÷250 VAC/DC	230 VAC/DC	**3CC104S**		
		20÷60 VAC/DC	230 VAC/DC	**3CC104N**		
Compalarm C2C-485	• Alarm concentrator. • LED luminous indicator. • 12 alarms. • Flush mount 96x96mm housing • Built-in buzzer • Programming alarm sequence by dip-switch. • 2 relay outputs (alarms common and acoustic signal) • RS485 port	90÷250 VAC/DC	24 VAC/DC	**3CC111S**		
		20÷60 VAC/DC	24 VAC/DC	**3CC111N**		
		90÷250 VAC/DC	48 VAC/DC	**3CC112S**		
		20÷60 VAC/DC	48 VAC/DC	**3CC112N**		
		90÷250 VAC/DC	115 VAC/DC	**3CC113S**		
		20÷60 VAC/DC	115 VAC/DC	**3CC113N**		
		90÷250 VAC/DC	230 VAC/DC	**3CC114S**		
		20÷60 VAC/DC	230 VAC/DC	**3CC114N**		
Compalarm C2C-EthWeb	• Alarm concentrator. • LED luminous indicator. • 12 alarms. • Flush mount 96x96mm housing • Built-in buzzer • Programming alarm sequence by dip-switch. • 2 relay outputs (alarms common and acoustic signal) • RS485 port and ethernet port for Modbus TCP/IP.	90÷250 VAC/DC	24 VAC/DC	**3CC121S**		
		20÷60 VAC/DC	24 VAC/DC	**3CC121N**		
		90÷250 VAC/DC	48 VAC/DC	**3CC122S**		
		20÷60 VAC/DC	48 VAC/DC	**3CC122N**		
		90÷250 VAC/DC	115 VAC/DC	**3CC123S**		
		20÷60 VAC/DC	115 VAC/DC	**3CC123N**		
		90÷250 VAC/DC	230 VAC/DC	**3CC124S**		
		20÷60 VAC/DC	230 VAC/DC	**3CC124N**		

GENERAL CHARACTERISTICS

The Compalarm C2C alarm annunciator is used to inform the operator that a process has gone beyond set limits using visual and audible alarms.
The annunciator is constructed from 12 inputs channels. The C2C is equipped with a selectable features which can be accessed via dip-switch located behind the front panel. For all signal inputs it's possible to set the non alarm state to normally open or normally closed. Two output relays are located in the C2C.
Within the alarm annunciator market a common standards has been adopted by all key manufacturers and end users with regards to operational sequences. These standards are used worldwide to define the visual indication, audible alarm and the action the operator must take to control the annunciator.
The Instrument Society of America provide full details of each alarm sequence within ISA 18.1-1979 (R1992) and C2C alarm annunciator is fully compliant with the stated sequences.

- 12 inputs alarms
- Interchangeable LED indicator lights
- Green power LED indicator (ON)
- N.O. or N.C. input configuration via microswitch
- Volt-Free contacts (only for 24 VDC inputs)
- Built-in buzzer
- Alarm sequence selectable by microswitch
- Front and remote ACK, RESET, TEST and SILENCE buttons
- Relay outputs (cumulative alarms and acoustic signal)
- Configurable fail safe operation by microswitch
- Communication interface RS485
- Modbus-RTU communication protocol
- Ethernet communication interface
- Modbus-TCP/IP communication protocol
- Programming via free downloadable software
- Flush mount 96x96mm housing
- Degree of protection: IP20 terminals, IP50 on front

ALARM CONCENTRATORS

Certification obtained: **EAC**
Compliant with standards: **EN 61000-6-2:2006, EN 61000-6-4, EN 61010-1**

See dimensions and wiring diagrams at the end of chapter

Compalarm AP24

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	VOLTAGE INPUTS	ORDER CODE	PCS	WT
Compalarm AP12	• Alarm concentrator. • LED luminous indicator. • 12 alarms. • Flush mount.	24 VAC/DC	24 VDC	**3CA31B**	1	-
		24 VAC/DC	24 VAC/DC	**3CA31J**		
		48÷60 VDC	48÷60 VDC	**3CA31D**		
		100÷130 VDC	100÷130 VDC	**3CA31F**		
		180÷260 VDC	180÷260 VDC	**3CA31H**		
Compalarm AP24	• Alarm concentrator. • LED luminous indicator. • 24 alarms. • Flush mount.	24 VAC/DC	24 VDC	**3CA32B**	1	-
		24 VAC/DC	24 VAC/DC	**3CA32J**		
		48÷60 VDC	48÷60 VDC	**3CA32D**		
		100÷130 VDC	100÷130 VDC	**3CA32F**		
		180÷260 VDC	180÷260 VDC	**3CA32H**		
Compalarm AP36	• Alarm concentrator. • LED luminous indicator. • 36 alarms. • Flush mount.	24 VAC/DC	24 VDC	**3CA33B**	1	-
		24 VAC/DC	24 VAC/DC	**3CA33J**		
		48÷60 VDC	48÷60 VDC	**3CA33D**		
		100÷130 VDC	100÷130 VDC	**3CA33F**		
		180÷260 VDC	180÷260 VDC	**3CA33H**		
Compalarm AP48	• Alarm concentrator. • LED luminous indicator. • 48 alarms. • Flush mount.	24 VAC/DC	24 VDC	**3CA34B**	1	-
		24 VAC/DC	24 VAC/DC	**3CA34J**		
		48÷60 VDC	48÷60 VDC	**3CA34D**		
		100÷130 VDC	100÷130 VDC	**3CA34F**		
		180÷260 VDC	180÷260 VDC	**3CA34H**		

TYPE	DESCRIPTION	ORDER CODE	PCS	WT
OPTIONS	ACK, RESET, Silence, Test alarm sequence buttons	**P**	-	-
	TEST luminous indicators (as an alternative to sequence TEST)	**T**	-	-
	R2 relay with fail safe operation	**FS**	-	-
	First Out function	**FO**	-	-
	2 acoustic outputs	**2SA**	-	-
	2 cumulative alarm outputs	**2T**	-	-

GENERAL CHARACTERISTICS

Compalarm AP allows the supervision of 12 or max 48 alarm inputs, coming from as many normally open or normally closed contacts, with the possibility of selecting the operating sequence from the most common standardized ISA sequences.

The alarm display in the 30x30 mm (or larger) customizable boxes is obtained by means of white LEDs that guarantee constant and high brightness together with low consumption, without requiring maintenance for lamp replacement. The possibility of interconnection allows the realization of surveillance systems of considerable extension.

- 12 alarms, expandable to 48
- LED indicator lights
- N.O. or N.C. input configuration via microswitch
- FIRST-OUT function configuration via microswitch (only with FO expansion module)
- Alarm sequence selectable by microswitch
- Pulsanti di ACK, TEST, RESET, SILENCE sul fronte (solo con modulo di espansione P)
- Relay outputs (cumulative alarms and acoustic signal)
- Configurable fail safe operation by microswitch (only with FS expansion module)
- Colori caselle: Rosso, Ambra, Giallo, Bianco, Verde, Blu
- Flush mount housing
- Degree of protection: IP20 terminals, IP41 on front

FLAG RELAYS

Certification obtained: **EAC**
Compliant with standards: **EN 61000-6-2:2006, EN 61000-6-4, EN 61010-1**

See dimensions and wiring diagrams at the end of chapter

CM-2T 

CM-4T 

CM-6T 

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
Compalarm CM2	• Relay with mechanical flag • 2 alarms (C1, C3) • Flush mount 96x96mm housing • Output relay SA and T1	110-230-400 VAC	**3CO20P**	1	0,500
		24÷48 VAC/DC	**3CO20N**		
		110 VDC	**3CO20L**		
Compalarm CM2-T	• Relay with mechanical flag • 2 alarms (C1, C3) • Flush mount 96x96mm housing • Association of relay inputs and outputs: Input C1 • Output relay SA Input C3 • Output relays SA and T1	110-230-400 VAC	**3CO21P**		
		24÷48 VAC/DC	**3CO21N**		
		110 VDC	**3CO21L**		
Compalarm CM4	• Relay with mechanical flag • 4 alarms (C1, C3, C4, C6) • Flush mount 96x96mm housing • Output relays SA and T1	110-230-400 VAC	**3CO22P**	1	0,500
		24÷48 VAC/DC	**3CO22N**		
		110 VDC	**3CO22L**		
Compalarm CM4-T	• Relay with mechanical flag • 4 alarms (C1, C3, C4, C6) • Flush mount 96x96mm housing • Association of relay inputs and outputs: Inputs C1, C3 • Output relay SA Inputs C4, C6 • Output relays SA and T1	110-230-400 VAC	**3CO23P**		
		24÷48 VAC/DC	**3CO23N**		
		110 VDC	**3CO23L**		
Compalarm CM4-T3	• Relay with mechanical flag • 4 alarms (C1, C3, C4, C6) • Flush mount 96x96mm housing • Association of relay inputs and outputs: - Inputs C1, C3 • Output relay SA - Input C4 • Output relays SA and T2 - Input C6 • Output relays SA and T1	110-230-400 VAC	**3CO24P**		
		24÷48 VAC/DC	**3CO24N**		
		110 VDC	**3CO24L**		
Compalarm CM6	• Relay with mechanical flag • 6 alarms (C1, C2, C3, C4, C5, C6) • Flush mount 96x96mm housing • Output relays SA, T1 and T2	110-230-400 VAC	**3CO26P**	1	0,500
		24÷48 VAC/DC	**3CO26N**		
		110 VDC	**3CO26L**		
Compalarm CM6-T	• Relay with mechanical flag • 6 alarms (C1, C2, C3, C4, C5, C6) • Flush mount 96x96mm housing • Association of relay inputs and outputs: Inputs C1, C2, C3 • Output relay SA Inputs C4, C5, C6 • Output relays SA and T1	110-230-400 VAC	**3CO28P**		
		24÷48 VAC/DC	**3CO28N**		
		110 VDC	**3CO28L**		
Compalarm CM6-T3	• Relay with mechanical flag • 6 alarms (C1, C2, C3, C4, C5, C6). • Flush mount 96x96mm housing • Association of relay inputs and outputs: Inputs C1, C2, C3 • Output relay SA Input C4 • Output relays SA and T2 Inputs C5, C6 • Output relays SA and T1	110-230-400 VAC	**3CO27P**		
		24÷48 VAC/DC	**3CO27N**		
		110 VDC	**3CO27L**		

GENERAL CHARACTERISTICS

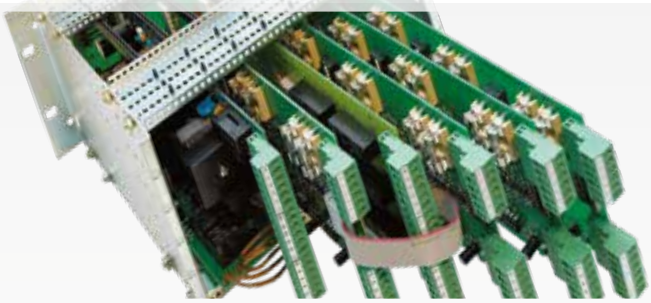
The CM series tag relays do not lose alarm information when there is no auxiliary voltage thanks to the electromagnetic holding indicators (located on the front of the instrument) which are polarized when the quantity associated with the relative input is in alarm.
The application fields of the CM series are different. They are the ideal solution for oil transformers as they can be combined with Buchholz temperature sensors.

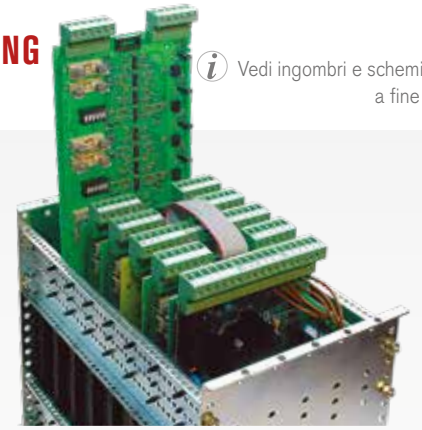
- Up to 6 alarms
- Green power LED indicator (ON)
- Product immunity to accidental overvoltages that may occur on the alarm inputs
- They maintain the alarm signal even in the event of a power failure thanks to the electromagnetic indicators
- Front and remote ACK, RESET, TEST
- Relay outputs (cumulative alarms and acoustic signal)
- Flush mount 96x96mm housing
- Degree of protection: IP20 terminals, IP50 on front

ALARM SYSTEMS WITH SEPARATE COMPONENTS FOR RACK MOUNTING

Certification obtained: **EAC**
Compliant with standards: **EN 61000-6-2:2006, EN 61000-6-4, EN 61010-1**

Vedi ingombri e schemi elettrici a fine capitolo





Compalarm A

TYPE		ORDER CODE	PCS	WT
Compalarm A	**CARDS HOLDER**			
	Card holder 4 +1 locations	**3CA001**	-	-
	Card holder 7 +1 locations	**3CA002**	-	-
	Card holder 11 +1 locations	**3CA003**	-	-
	Card holder 15 +1 locations	**3CA004**	-	-
	Card holder 4 locations (with interconnection card)	**3CA005**	-	-
	Card holder 7 locations (with interconnection card)	**3CA006**	-	-
	Card holder 11 locations (with interconnection card)	**3CA007**	-	-
	Card holder 15 locations(with interconnection card)	**3CA008**	-	-
	ALARM CARDS			
	6 alarm points, ISA A alarm sequence	**3CA020**	-	-
	6 alarm points, ISA M alarm sequence	**3CA022**	-	-
	4 alarm points, ISA R8 alarm sequence	**3CA024**	-	-
	4 alarm points, ISA F3A alarm sequence	**3CA025**	-	-
	6 alarm points, configurable alarm sequence (A, F1A, F3A, F1M, M, M5, R8) with RS485 port	**3CA035**	-	-
	RELAY CARDS			
	6 relays, without memory	**3CA041**	-	-
	6 relays, with memory	**3CA044**	-	-
	6 relays, with memory and re-flash pulse	**3CA045**	-	-
	TRANSFORMERS			
	110-230-400 VAC / 24 VAC - 50VA	**3CA060**	-	-
	110-230-400 VAC / 24 VAC - 100VA	**3CA061**	-	-
	110-230-400 VAC / 24 VAC - 150VA	**3CA062**	-	-
	110-230-400 VAC / 24 VAC - 200VA	**3CA063**	-	-
	110-230-400 VAC / 24 VAC - 250VA	**3CA064**	-	-
	110-230-400 VAC / 24 VAC - 300VA	**3CA064**	-	-
	POWER CONVERTERS			
	48 VDC / 24 VDC • 30W with flasher card	**3CA0794**	-	-
	110 VDC / 24 VDC • 30W with flasher card	**3CA0793**	-	-
	48 VDC / 24 VDC • 100W with flasher card	**3CA076**	-	-
	110 VDC / 24 VDC • 100W with flasher card	**3CA079**	-	-
	220 VDC / 24 VDC • 100W with flasher card	**3CA0791**	-	-
	48 VDC / 24 VDC • 250W with flasher card	**3CA073**	-	-
	110 VDC / 24 VDC • 250W with flasher card	**3CA069**	-	-
	220 VDC / 24 VDC • 250W with flasher card	**3CA067**	-	-
	POWER SUPPLY AND FLASHER CARD			
	RATED AUXILIARY SUPPLY VOLTAGE 24 VDC - 2FT-VDC	**3CA010**	-	-
	RATED AUXILIARY SUPPLY VOLTAGE 24 VAC/DC - 2FT-VAC	**3CA011**		

GENERAL CHARACTERISTICS

The Compalarm A system has a modular design (expandable rack mounting) and can be used to display alarms for immediate action and / or for subsequent analysis.
The presence of an RS485 serial port (optional) allows system control and connection with Modbus RTU protocol to acquisition systems (PLC, SCADA, Computer, etc.). Compalarm A systems are built using standard racks with front access to associated logic boards and connection terminals. All terminals are suitable for a maximum of 2.5 mm2 of wire and each terminal block can be removed to facilitate installation.

The alarm system consists of:
- rack chassis (base unit)
- chassis rack (expansion uni if applicable)
- alarm input cards
- relay repetition cards
- pulse card
- power supply board
- SQ series display panel

Any combination of input or relay cards can be used to suit individual applications. Compalarm A is also equipped with an RS-485 interface with Modbus-RTU protocol to allow integration into supervisory systems.

SQ PANEL INDICATOR

Certification obtained: **EAC**
Compliant with standards: **EN 61000-6-2:2006, EN 61000-6-4, EN 61010-1**

Vedi ingombri e schemi elettrici a fine capitolo

SQ
panel indicator

TYPE		ORDER CODE	PCS	WT
SQ Panel indicator	**PANEL INDICATOR**			
	24÷30 V (in combination with Compalarm A alarm system)	**SQ ***	1	-
	***** *Number of display windows (number of lines x number of columns)* **Maximum number of lines = 10** **Maximum number of columns = 20**			

GENERAL CHARACTERISTICS

The indicators of the SQ series are available in the version with 30x30 mm base windows. The SQ series is designed to accept white or ultra-bright LEDs. With the same it is possible to reach a maximum of 200 windows. The replacement of the lamp and the LEDs takes place from the front of the panel.

Window dimensions:
- 30x30 mm
- 60x30 mm
- 60x60 mm

- Maximum number of boxes 200 (30x30 mm)
- Available colors: red, amber, yellow, white, green, blue
- LED or ultra-bright LED lamp
- Degree of protection: IP41

DEVICES FOR CONTROL AND SUPERVISION THROUGH WIFI AND CELLULAR CONNECTIONS

Certification obtained: **EAC**

See dimensions and wiring diagrams at the end of chapter

Compliant with standards: **EN 62368-1, EN 62311, EN 55032, EN 55035, EN 301 489-1, EN 301 489-17, EN 301 489-52, EN 300 328, EN 301 511, EN 301 908-2, EN 301 908-13, EN55032 Class B, EN55032 Class A**

Compalarm GW-104

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
Compalarm GW-104	• 4 DIN modular device for control and supervision through WiFi and cellular connections. • Remote & local control. • 6 digital inputs, 4 analog inputs, 4 relay outputs. • Integrated WebServer. • Modbus • Notice to recipients on local event (SMS, Call, Email, Chat, HTTP, MQTT ..)	85÷264 VAC	**3CG80S**	1	0,200
		9÷27 VAC, 9÷35 VDC	**3CG80J**		

GENERAL CHARACTERISTICS

GW-104 is a DIN rail device for control and supervision through WiFi and cellular connections. **GW-104** can work as a passive input and output module, managed with remote commands (CLOUD) or as a programmable controller that produces actions in response to events. **GW-104** has a rich set of inputs, outputs and communication CHANNELS, each of which can be disabled or enabled and generate events:

- Six digital inputs with time counter and pulse counter functions
- Four software configurable analog inputs
- Four relay output contacts
- Infrared transmitter and receiver
- Com port
- Local and remote expandability
- Double power supply with surveillance and hour counter
- Backup battery with monitoring and operating hour counter
- Interface for SD cards up to 32 GB
- Remote update

GW-104 can receive commands via email, chat messages, HTTP.
All units are equipped with WiFi and Bluetooth connectivity. Additional functions are available for units with cellular connectivity for 2G 3G and 4G networks:

- Sending and receiving SMS
- Sending and receiving telephone calls
- Playing audio files during a phone call
- Detection of keys pressed during a call
- Alternative connectivity in case of WiFi unavailability

EXPANSION MODULE

Certification obtained: **EAC**
Compliant with standards: **EN 61000-6-2:2006, EN 61000-6-4, EN 61010-1**

See dimensions and wiring diagrams at the end of chapter

MR-R8

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
MR-R8	• Expansion module with 8 independent relay outputs each with changeover contact • Modular DIN-rail housing, 6U • Configurable fail safe operation by microswitch • RS485 port	90÷250 VAC/VDC	**3MR13S**	1	0,300
		20÷60 VAC/VDC	**3MR21N**	1	0,300

GENERAL CHARACTERISTICS

The MR-R8 module includes 8 relay outputs independent of each other. This module can also be connected to Contrel elettronica devices equipped with RS485 communication interface.
The outputs functionalities are done directly from the proper instrument menu in an easy way.
The MR-R8 is also provided with a RS-485 interface with Modbus protocol to consent the integration in supervision systems. The communication set-up is done directly from the proper setting dip switch.

- 8 relay outputs (complete exchange)
- Green power supply signaling LED (ON)
- Red LED for signaling output activated
- Operation with settable positive safety
- RS485 communication interface
- Modbus-RTU communication protocol
- 6-module modular container
- Degree of protection: IP20 terminals; IP40 front

EXPANSION MODULE

Certification obtained: **EAC**
Compliant with standards: **EN 61000-6-2:2006, EN 61000-6-4, EN 61010-1**

See dimensions and wiring diagrams at the end of chapter

MR-DI16

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	VOLTAGE INPUTS	ORDER CODE	PCS	WT
MR-DI16	• Expansion module with 16 digital inputs • Modular DIN-rail housing, 6U • RS485 port	90÷250 VAC/DC	24 VAC/DC	**3MR301S**	1	0,300
		20÷60 VAC/DC	24 VAC/DC	**3MR301N**		
		90÷250 VAC/DC	48 VAC/DC	**3MR302S**		
		20÷60 VAC/DC	48 VAC/DC	**3MR302N**		
		90÷250 VAC/DC	115 VAC/DC	**3MR303S**		
		20÷60 VAC/DC	115 VAC/DC	**3MR303N**		
		90÷250 VAC/DC	230 VAC/DC	**3MR304S**		
		20÷60 VAC/DC	230 VAC/DC	**3MR304N**		

GENERAL CHARACTERISTICS

The MR-DI16 module includes 16 isolated digital inputs. This module can also be connected to Contrel elettronica devices equipped with an RS485 communication interface where a greater number of inputs is required. It is possible to configure each input as normally open or normally closed, through the relative dip-switches.

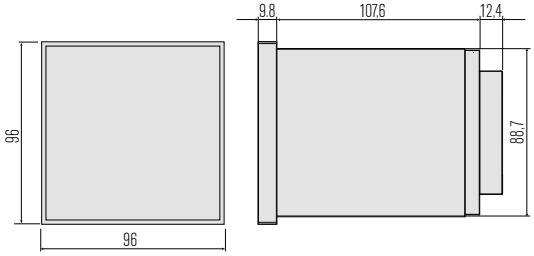
The MR-DI16 is also provided with a RS-485 interface with Modbus protocol to consent the integration in supervision systems. The communication set-up is done directly from the proper setting dip switch.

- 16 digital inputs
- Yellow LED for signaling data traffic on the RS485 serial
- Modbus-RTU communication protocol
- Green power supply signaling LED (ON)
- Configuration of inputs N.A or N.C. via microswitch
- 6-module modular container
- Red LED for signaling input status
- RS485 communication interface
- Degree of protection: IP20 terminals; IP40 front

ALARM CONCENTRATORS AND TEMPERATURE CONTROL UNIT | dimensions (mm)

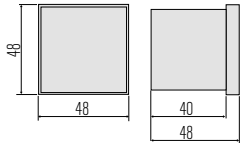
Temperature control units

CTT-4 - CTT-8

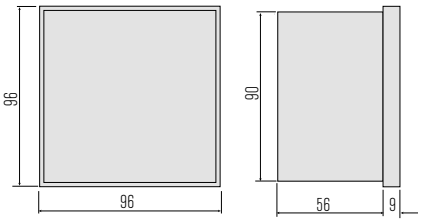


Luminous indicators

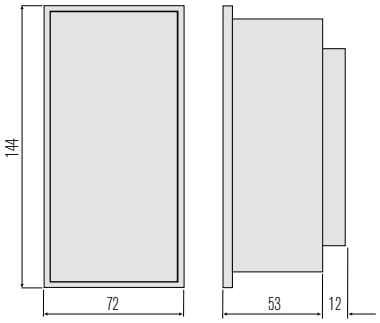
C0.3/sq - C0.4/sq



C2/sq

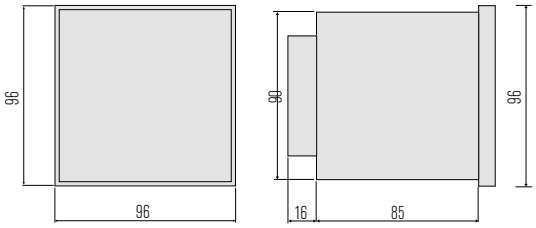


C3/sq

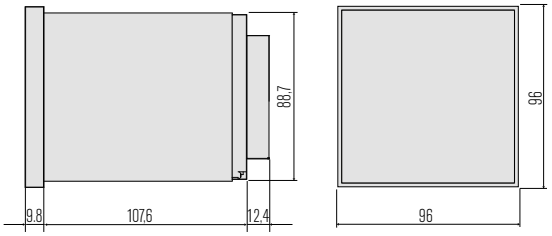


Alarm concentrators

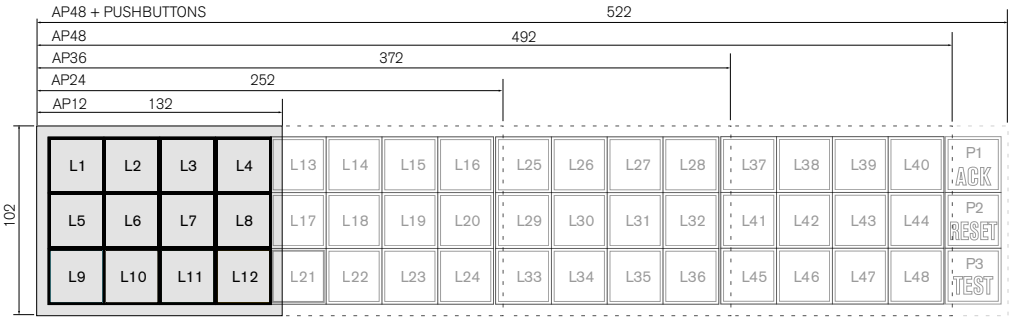
COMPALARM D2 - COMPALARM C2C



COMPALARM E

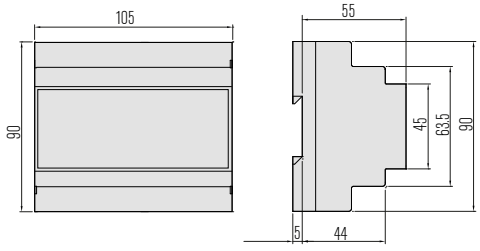


COMPALARM AP

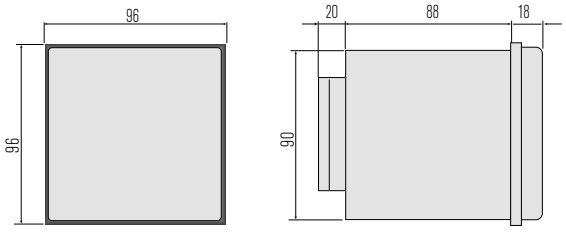


FLAG RELAYS

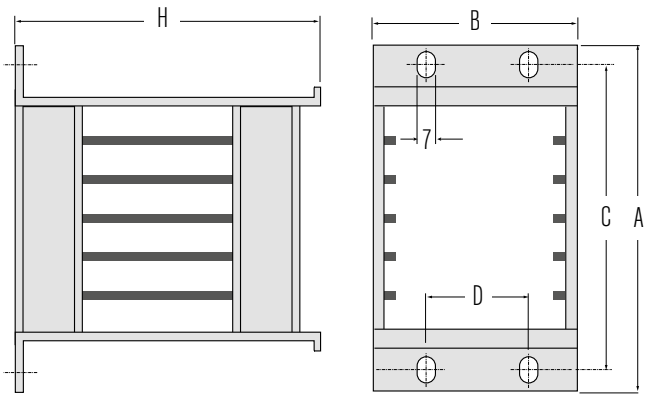
COMPALARM D2m



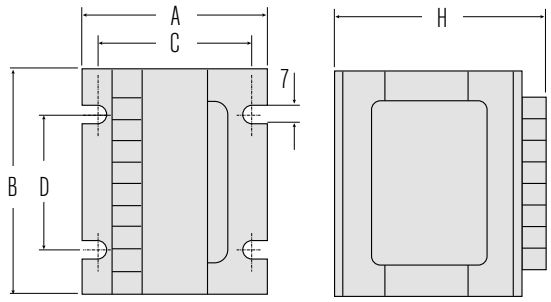
COMPALARM CM



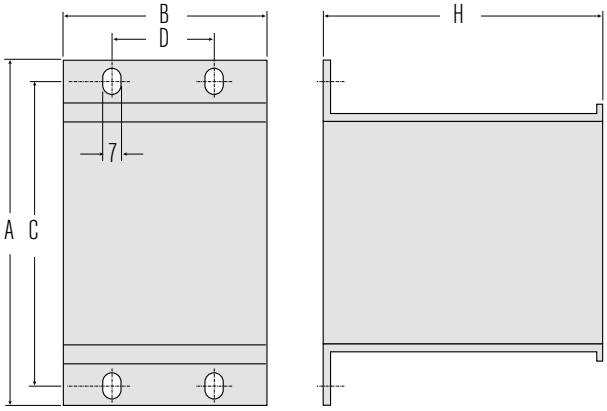
ALARM CONCENTRATORS AND TEMPERATURE CONTROL UNIT | dimensions (mm)



CARDS HOLDER					
TYPE	A	B	C	D	H
CH4 / CH5	200	132,5	183	57	200
CH7 / CH8	270	132,5	253	57	200
CH11 / CH12	375	132,5	360	57	200
CH15 / CH16	484	132,5	467	57	200



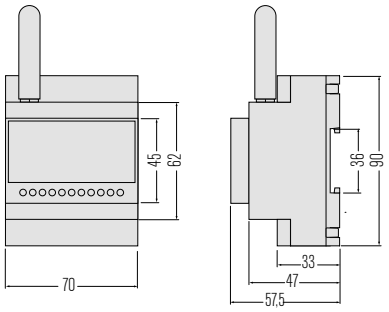
TRANSFORMERS					
TYPE	A	B	C	D	H
TR5	80	85	70	60	95
TR10	85	85	70	60	95
TR15	86	85	70	60	95
TR20	86	85	70	60	95
TR25	86	85	70	60	95
TR30	100	85	70	60	95



POWER CONVERTERS					
TYPE	A	B	C	D	H
DC3F-48/110/220	Esecuzione su scheda				
DC10F-48/110/220	Esecuzione su scheda				
DC25 - 48	200	132,5	183	57	200
DC25 - 110	200	132,5	183	57	200
DC25 - 220	200	132,5	183	57	200

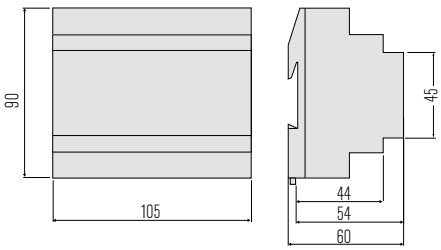
DEVICES FOR CONTROL AND SUPERVISION THROUGH WIFI AND CELLULAR CONNECTIONS

COMPALARM GW-104



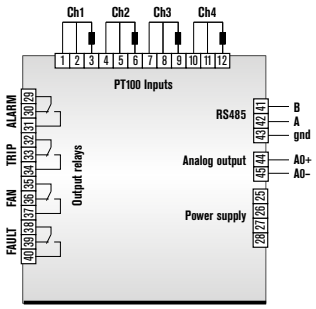
EXPANSION MODULES

MR-R8 – MR-DI16

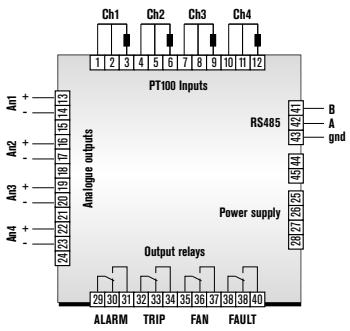


TEMPERATURE CONTROL UNITS

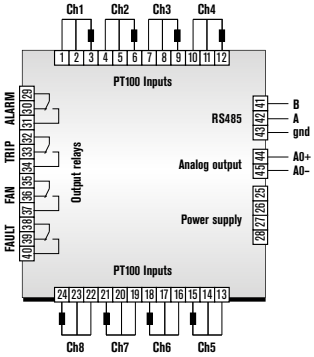
CTT-4



CTT-4-4AO

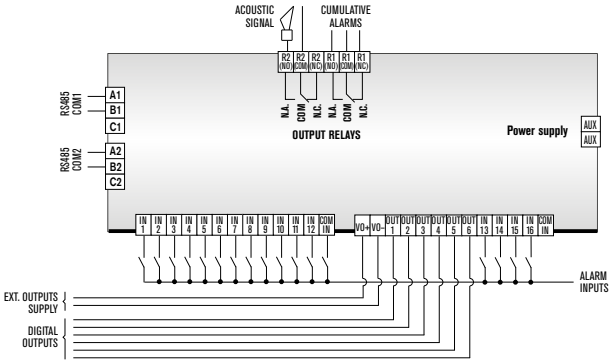


CTT-8

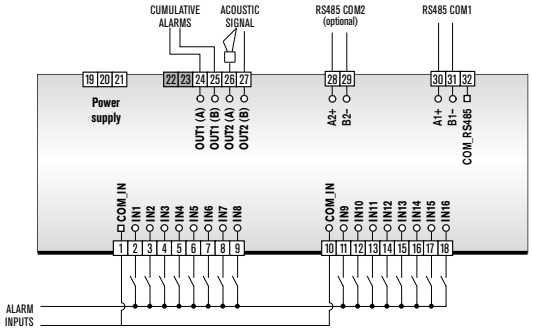


ALARM CONCENTRATORS

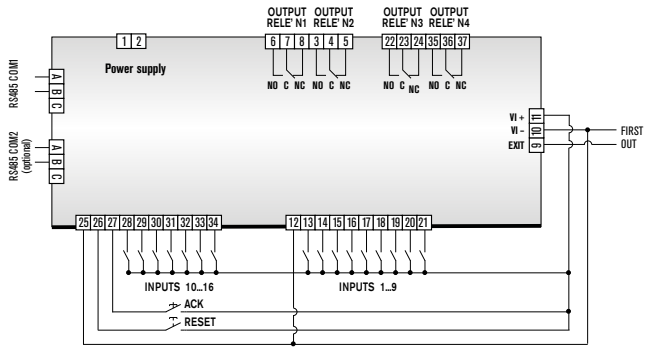
COMPALARM D2



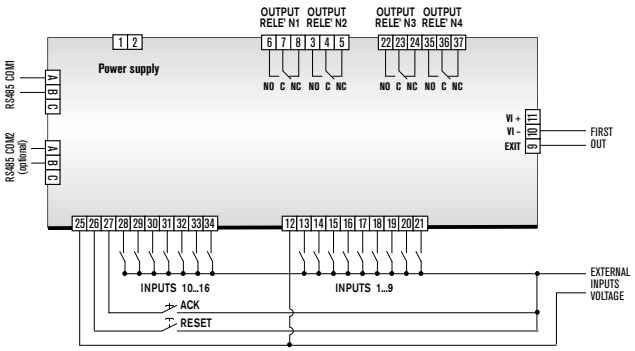
COMPALARM D2m



COMPALARM E
Volt-Free contacts (24 VDC ONLY)

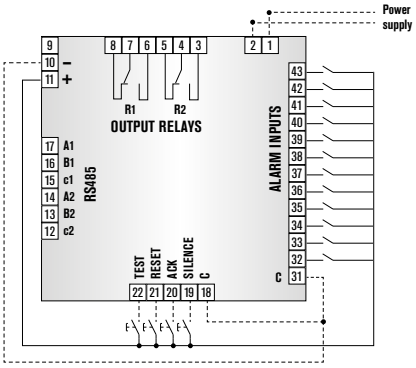


COMPALARM E
Higher Voltage Powered Inputs

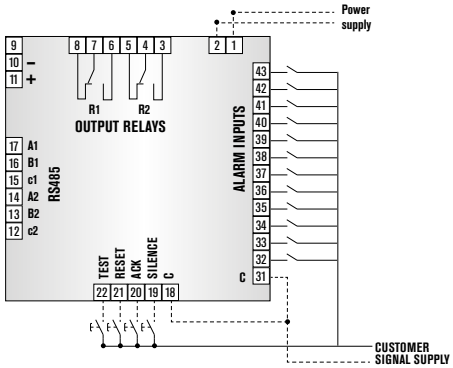


ALARM CONCENTRATORS

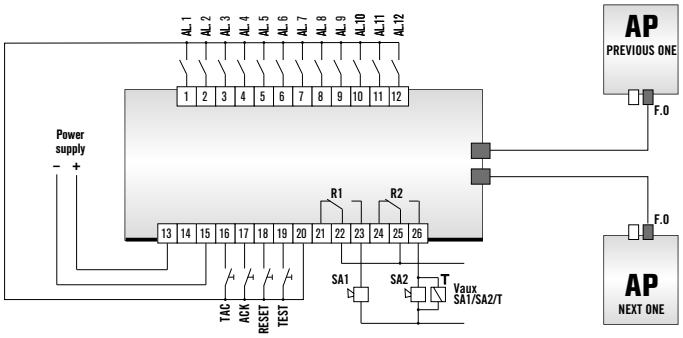
COMPALARM C2C
Volt-Free contacts (24 VDC ONLY)



COMPALARM C2C
Higher Voltage Powered Inputs

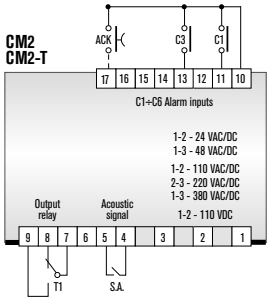


COMPALARM AP

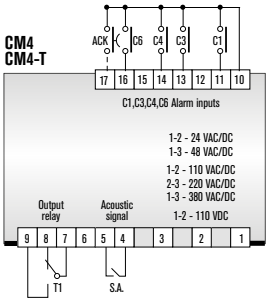


FLAG RELAYS

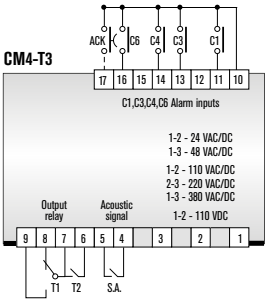
COMPALARM CM2 | CM2-T



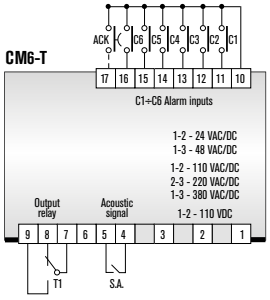
COMPALARM CM4



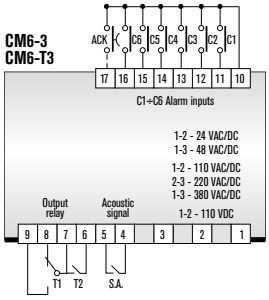
COMPALARM CM4-T | CM4-T3



COMPALARM CM6-T

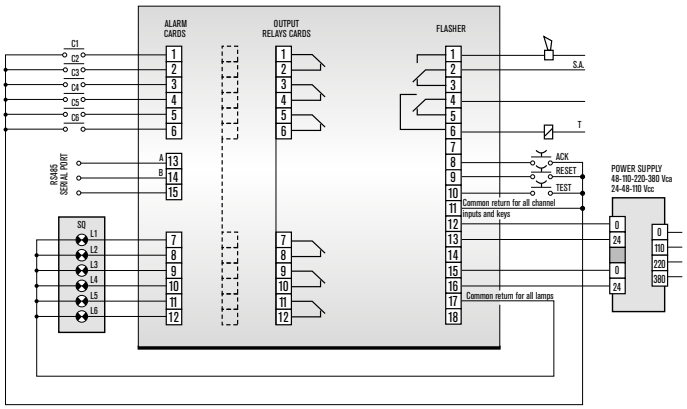


COMPALARM CM6-3 | CM6-T3



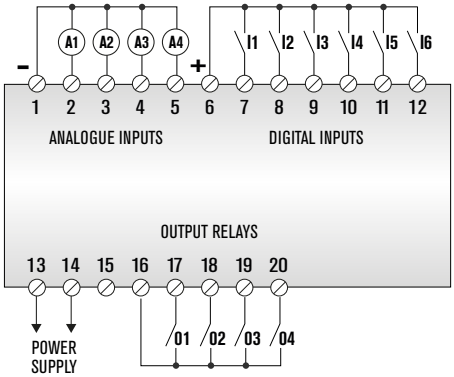
ALARM SYSTEMS WITH SEPARATE COMPONENTS FOR RACK MOUNTING

COMPALARM A



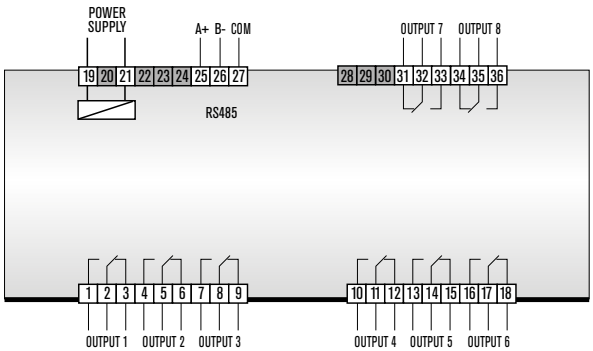
DEVICES FOR CONTROL AND SUPERVISION THROUGH WIFI AND CELLULAR CONNECTIONS

COMPALARM GW-104

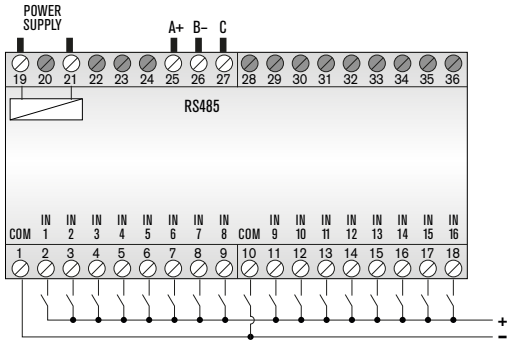


EXPANSION MODULES

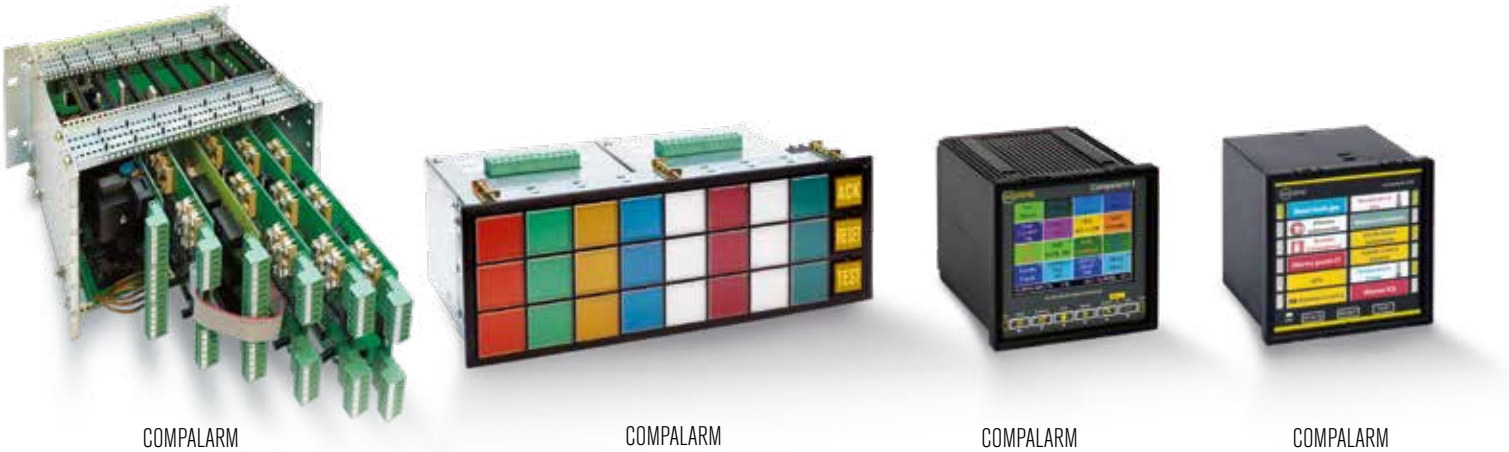
MR-R8



MR-DI16



ALARM SEQUENCE | COMPALARM A | AP | C2C | E



COMPALARM **A**

COMPALARM **AP**

COMPALARM **E**

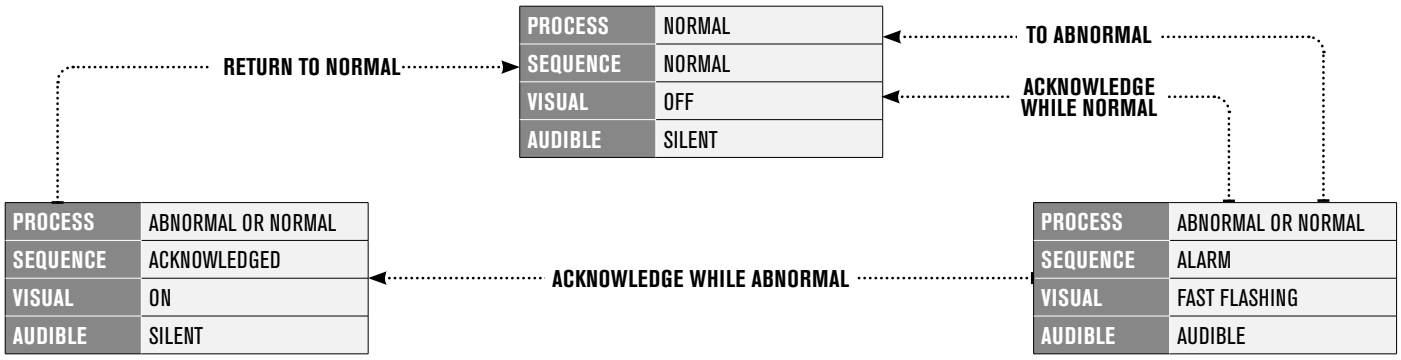
COMPALARM **C2C**

Each alarm channel can be configured to suit the required operating sequence as listed in the ISA publication "Annunciator Sequences and Specifications S18.1 1979 (R1985).

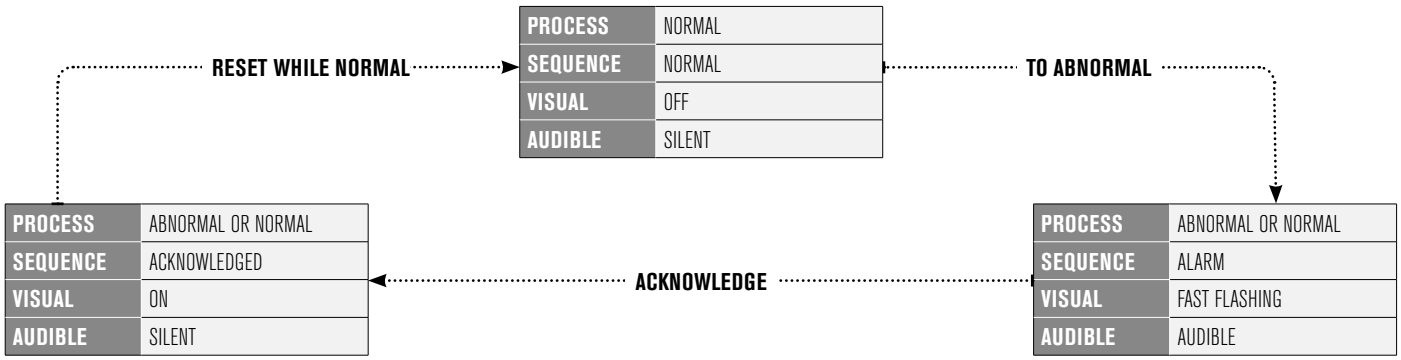
The systems can be configured with different functions on different alarm modes.

The following diagrams show the sequences used by the Contrel announcers.

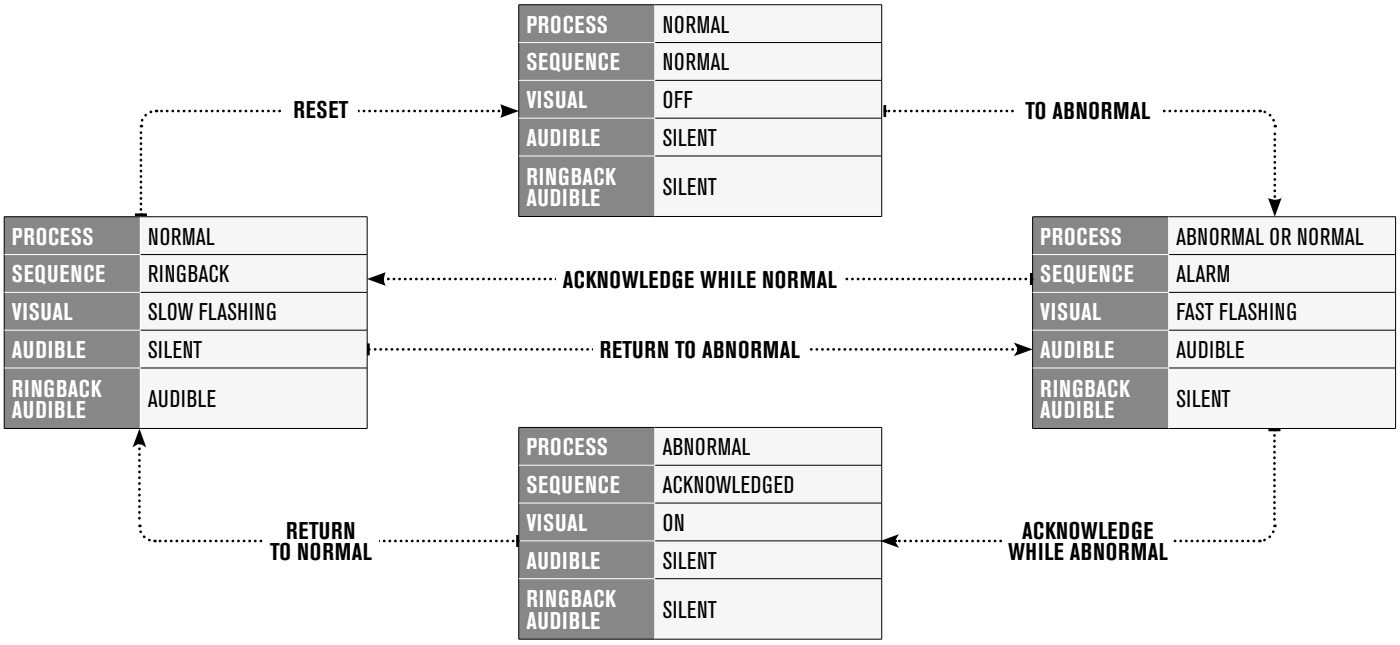
SEQUENCE **A** | AUTOMATIC RESET



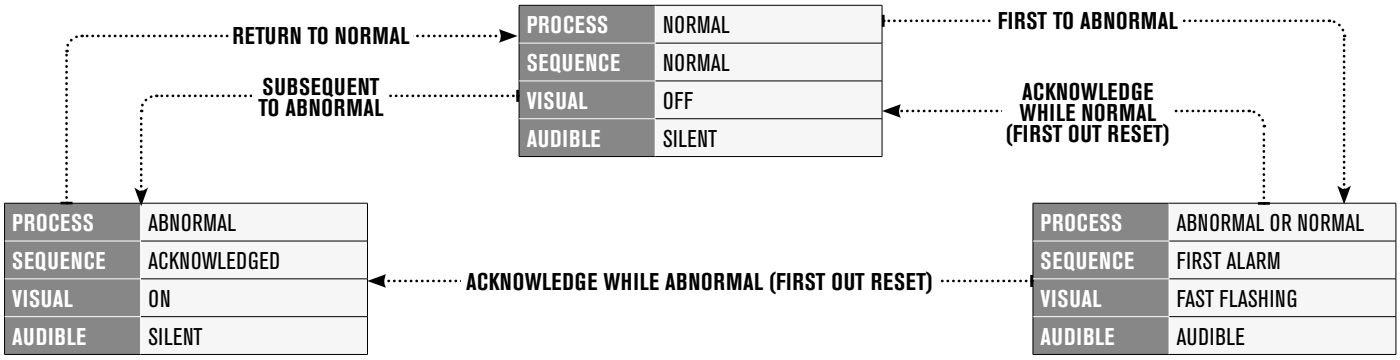
SEQUENCE **M** | MANUAL RESET



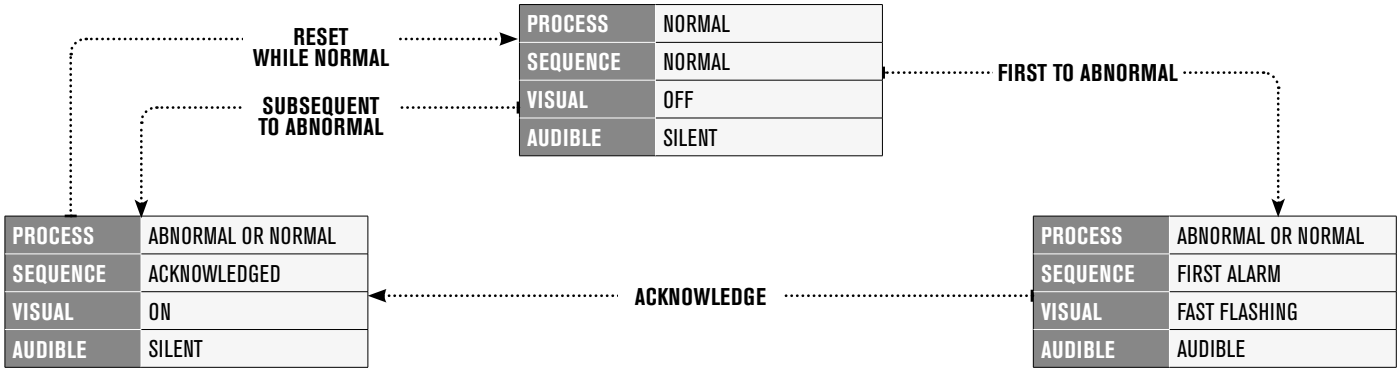
SEQUENCE R | RINGBACK



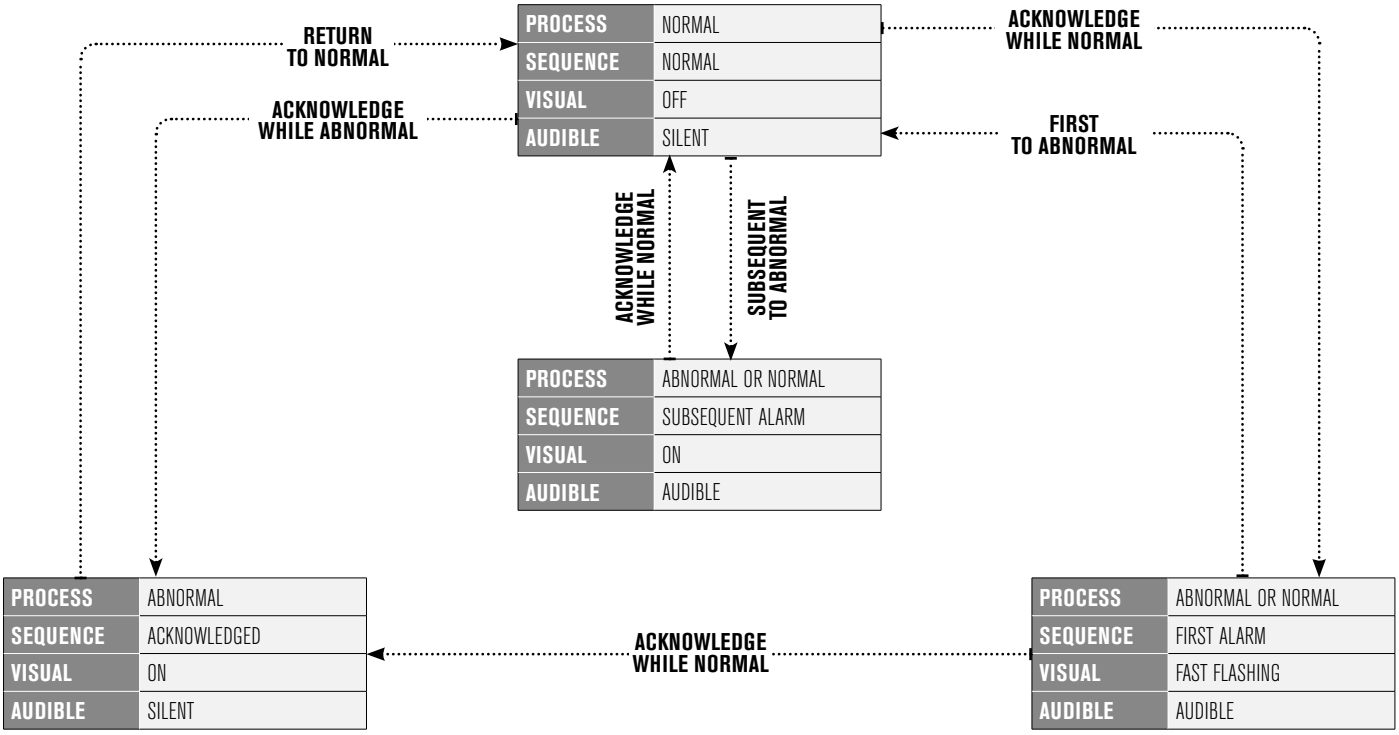
SEQUENCE F1A | AUTOMATIC RESET FIRST OUT WITH NO SUBSEQUENT ALARM STATE



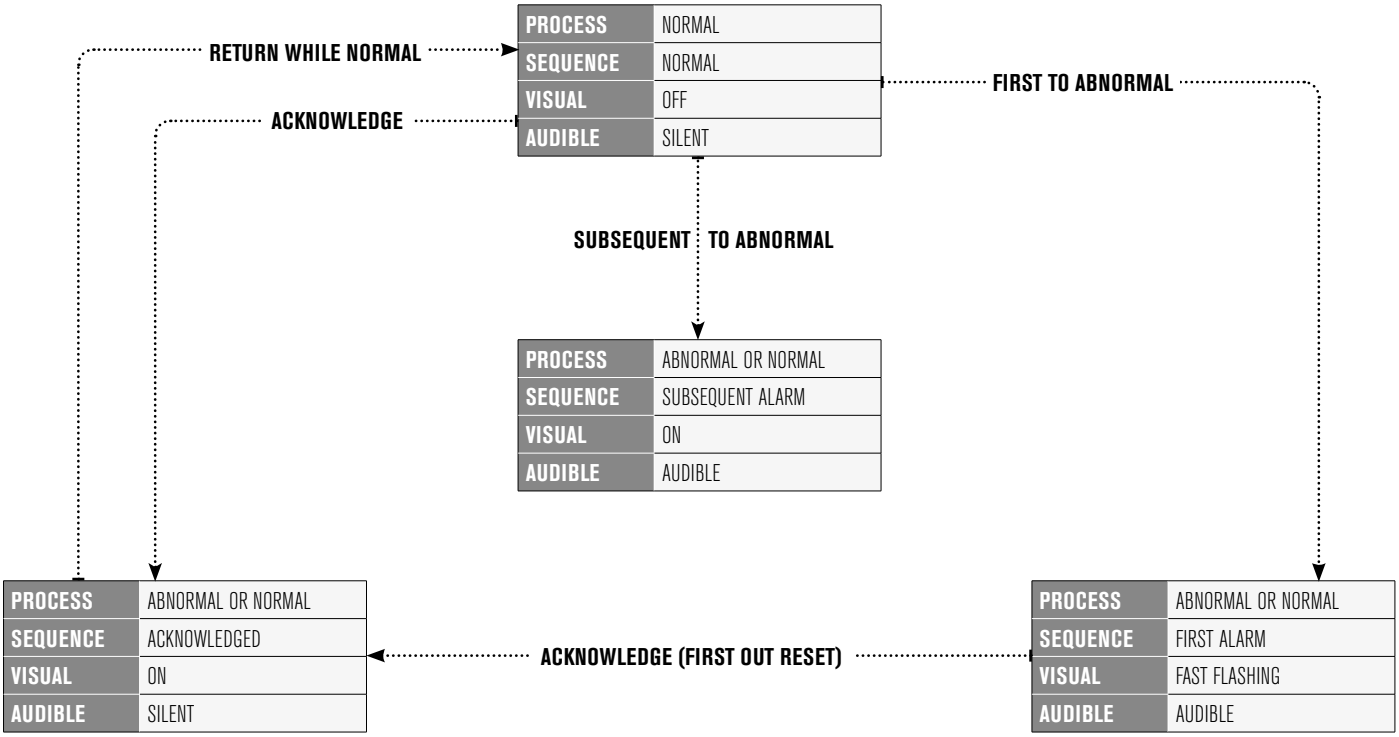
SEQUENCE F1M | MANUAL RESET FIRST OUT WITH NO SUBSEQUENT ALARM STATE



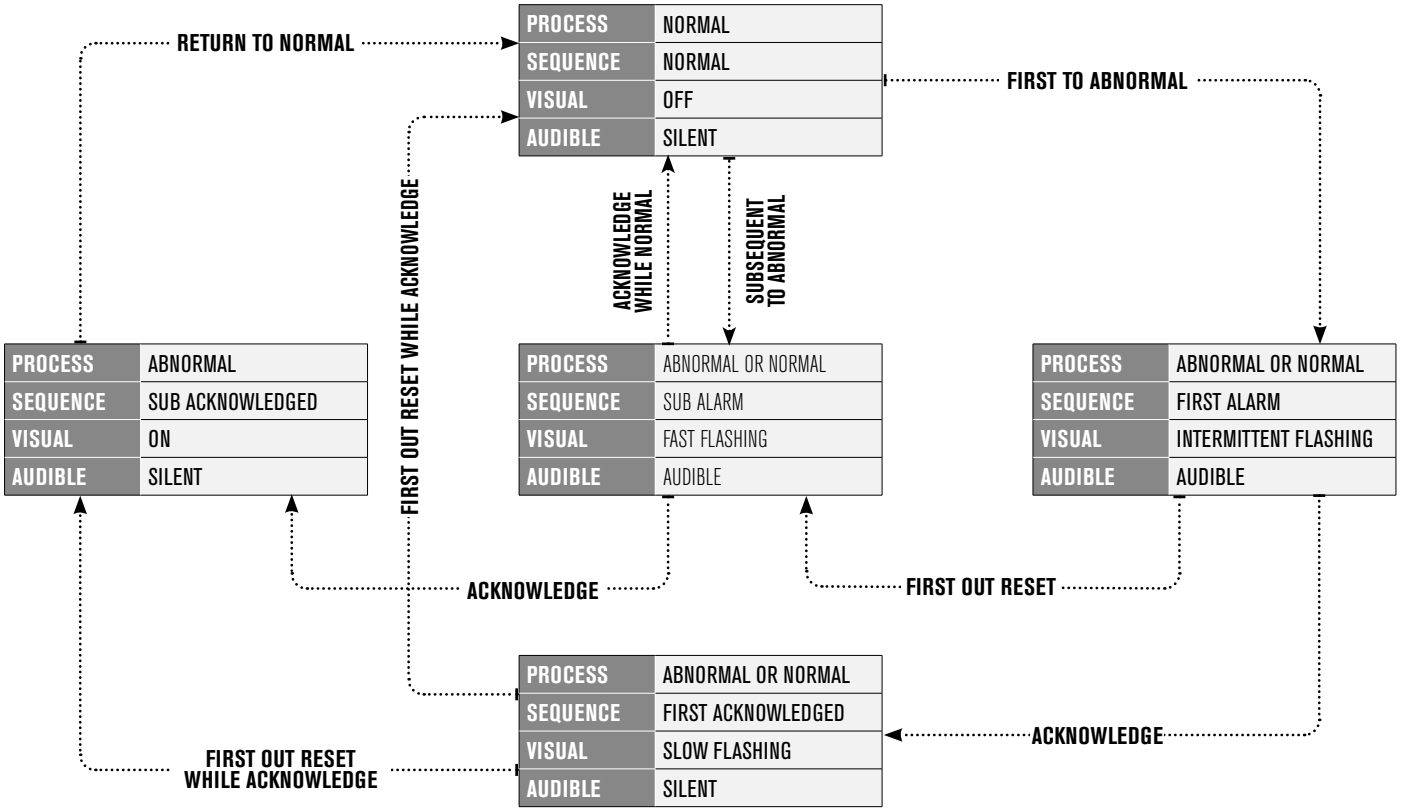
SEQUENCE **F2A** | AUTOMATIC RESET FIRST OUT WITH NO SUBSEQUENT ALARM FLASHING



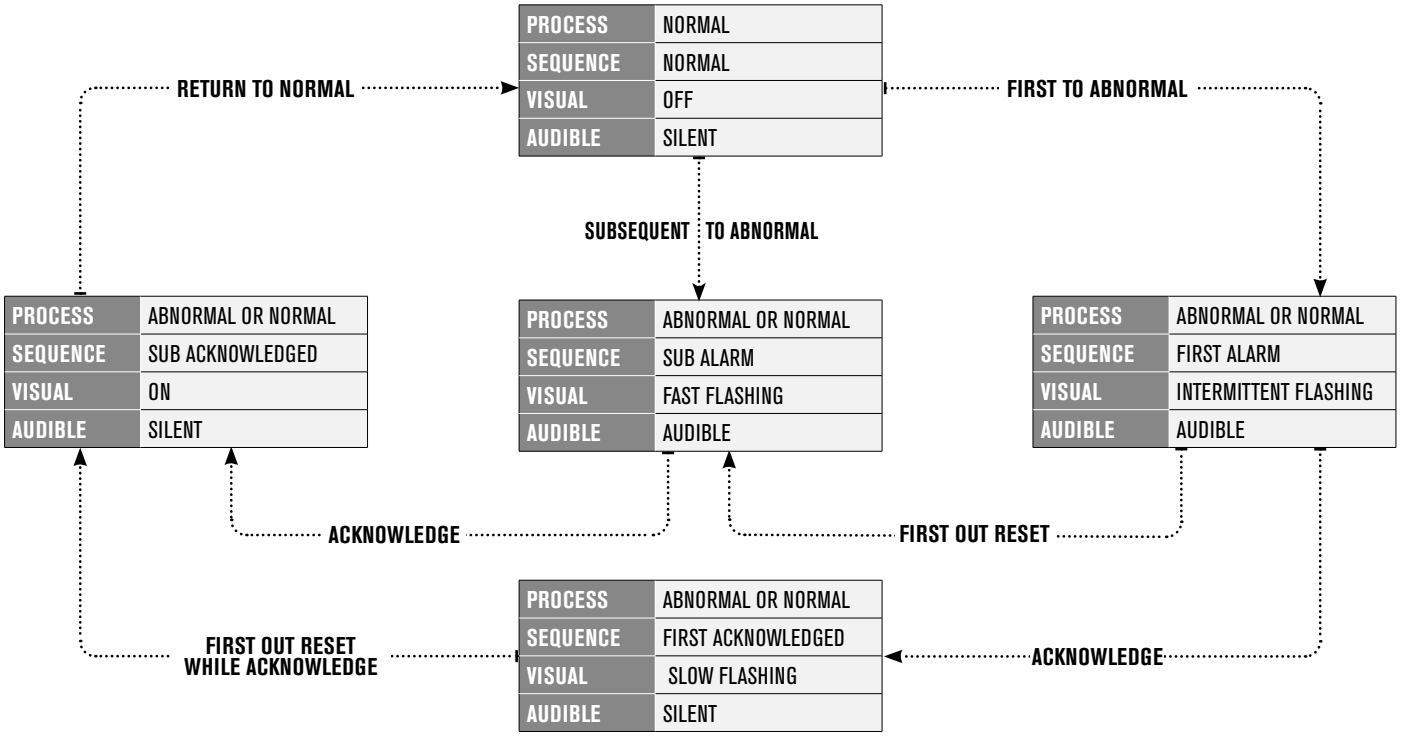
SEQUENCE **F2M** | MANUAL RESET FIRST OUT WITH NO SUBSEQUENT ALARM FLASHING

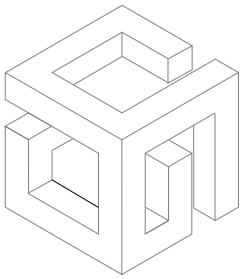


SEQUENCE F3A | AUTOMATIC RESET FIRST OUT WITH FIRST OUT FLASHING AND RESET PUSHBUTTON



SEQUENCE F3M | MANUAL RESET FIRST OUT WITH FIRST OUT FLASHING AND RESET PUSHBUTTON





METERING INSTRUMENTS

contrel elettronica

ITALIAN DESIGN





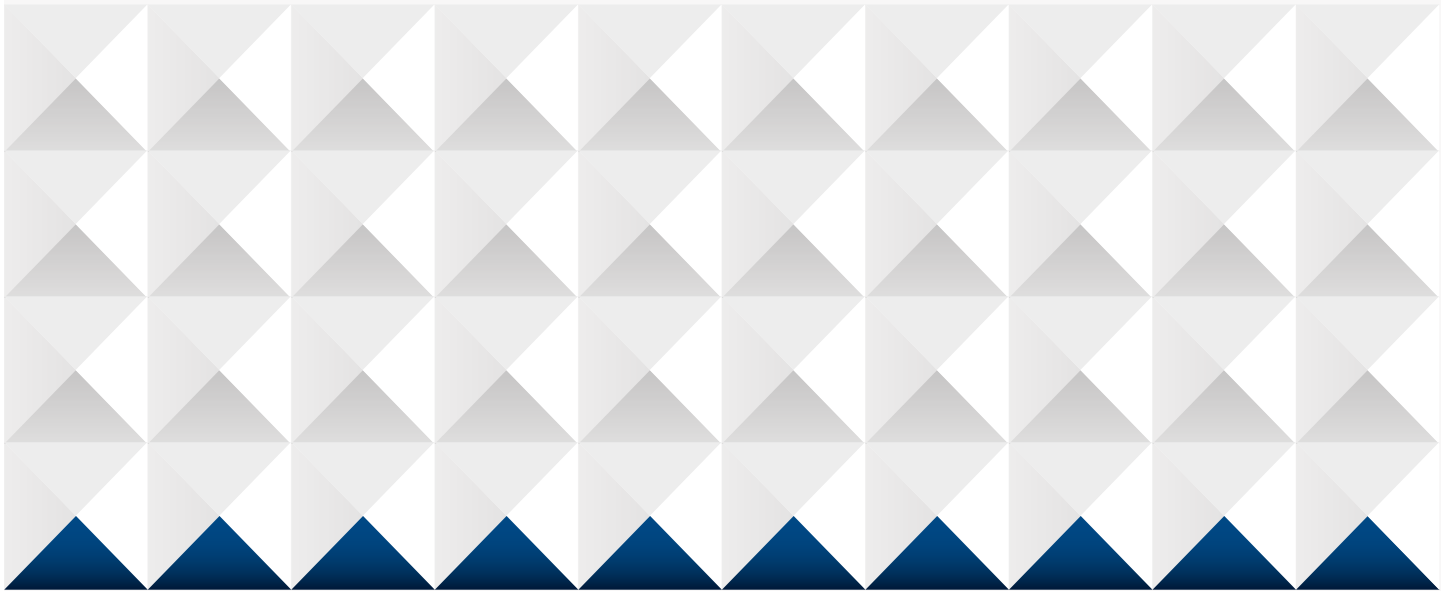






Metering instruments

Index Page



THREE-PHASE ENERGY METERS

Certification obtained: **EAC**
Compliant with standards: **EN 62053-21, EN 62053-21, EN 62052-11, EN 50022**

See dimensions and wiring diagrams at the end of chapter

EMC-3b

EMC-D3b

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMC-3b	• Digital meter for three-phase with or without neutral • Connection by CT /5A • Flush mount 96x96mm housing • 2 programmable pulses outputs • 1 programmable digital input	110-230-400 VAC	**3MC12P**	1	0,500
		20÷60 VAC/DC	**3MC12N**		
		90÷250 VAC/DC	**3MC12S**		
EMC-D3b	• Digital meter for three-phase with or without neutral • Connection by CT /5A • Modular housing, 6 module • 2 programmable pulses outputs	400 VAC	**3MC11P**	1	0,500
		20÷60 VAC/DC	**3MC11N**		
		90÷250 VAC/DC	**3MC11S**		

DESCRIPTION		ORDER CODE		
OPTIONS	**CURRENT INPUTS**			
	Connection by CT /1A.	**1A**	-	-
	Insulated ammeter inputs with internal CTs	**T**		
	Insulated ammeter inputs with compact prewired CTs	**TT**		
	COMMUNICATION PORTS			
	Opto-isolated RS485 port with communication protocol Modbus-RTU	**485**	-	-

GENERAL CHARACTERISTICS

The energy meters are digital meters/analyzers of electric energy for systems with connection by CT.

OPERATIONAL CHARACTERISTICS

- LED 7+1 digit count
- *Connection by CT*
- *Active energy measurement and accuracy: Class 1 (62053-22)*
- *LED with pulse emission for consumption indication*
- *Clearable partial energy measurements*
- *1 programmable digital input*
- *2 programmable pulses outputs*
- *RS485 interface, Modbus-RTU protocol*
- *Modular housing, 6 module (EMC-D3b only)*
- *Flush mount 96x96mm housing (EMC-3b only)*
- *Degree of protection: IP52 on front; IP20 at terminals.*

Multi-measurements:

- Total and partial active energy
- Total and partial reactive energy
- Total and partial apparent energy
- Voltage
- Current
- Active, reactive and apparent power
- Power factor
- Frequency

DIGITAL LCD MULTIMETERS | MID CERTIFIED

See dimensions and wiring diagrams at the end of chapter

Certification obtained: **MID**

Compliant with standards: **EN61326-1, EN55011 Class A, EN50470-1/3, EN50470-1/3,EN62053-21,EN62053-23, DIRECTIVE 2014/32/EU, EN62052-31, EN61010**

EMM-4L-96-MID

EMM-D4-MID
EMM-D4-MID-100

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMM-4L-96-MID	• Icon LCD • Connection by CT /5A • Flush mount 96x96mm housing • Active energy: Class B (EN50470-1/3) • Pulses output • RS485 port	85...270 VAC 50/60 Hz	**4EMM4L96MID**	1	0,230
EMM-D4-MID	• Icon LCD • Modular housing, 4 module • Connection by CT /5A • Active energy: Class B (EN50470-3) • Metrological LED • RS485 port	85...270 VAC 50/60 Hz	**4EMMD4MID**	1	0,210
EMM-D4-MID-100	• Icon LCD • Modular housing, 4 module • 100A direct connection • Active energy: Class B (EN50470-3) • Metrological LED • RS485 port	85...270 VAC 50/60 Hz	**4EMMD4MID100**	1	0,210

GENERAL CHARACTERISTICS

The digital multimeters in the MID approved versions are mandatory in Europe for commercial transactions between producers and consumers of electricity, for measuring electricity consumption in three-phase systems with direct insertion or via CT.

They are made in a built-in container (96x96x50mm) with reduced depth and in a modular container (4 modules). The main features of these multimeters are the wide power supply range, the high accuracy in measuring the values, integrated RS485 communication port and pulse output.

Main measurements:

- **Voltage: phase, line and system values**
- **Current: phase, line and system values**
- **Power: apparent, active and reactive phase and total values**
- **P.F.: Power Factor per phase and total**
- **Frequency**
- **Total harmonic distortion (THD) of voltage and current values**
- **Energy meters for active, reactive, apparent**
- **MAX-MIN-MAX DEMAND value functions**
- **Phase sequence indication**

OPERATIONAL CHARACTERISTICS

- Auxiliary supply voltage range: 85...270 VAC 50/60 Hz
- Voltage measurement range: 100...240 VAC (L-N); 173...415 VAC (L-L)
- Usage in medium and high voltage systems with voltage transformers
- Frequency measurement range 45...65Hz
- Connection by CT /5A (EMM-4L-96-MID and EMM-D4-MID only)
- 100A direct connection (EMM-D4-MID-100 only)
- True RMS measurements: for voltage and current
- Measurement accuracy:
  - Voltage: ±0,5% f.s.
  - Current: ±0,5% f.s.
  - Power: 1% f.s.
  - Frequency: 0,2% f.s.
  - Active energy: Class B (EN50470-1/3)
  - Reactive energy: Class 2 (EN62053-23)
- RS485 interface, Modbus-RTU protocol
- Flush mount 96x96x50mm housing (EMM-4L-96-MID only)
- Modular housing, 4 module (EMM-D4-MID and EMM-D4-MID-100 only)
- Sealable terminal blocks, standard supplied
- Degree of protection: IP54 on front; IP20 at terminals
- Degree of protection: IP51 on front; IP20 at terminals (EMM-D4-MID and EMM-D4-MID-100 only)

DATA CONCENTRATOR

Certification obtained: **EAC**
Compliant with standards: **EN 61010-1, EN 61000-6-2, EN 61000-6-3**

See dimensions and wiring diagrams at the end of chapter

EML-16

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	INPUTS VOLTAGE	ORDER CODE	PCS	WT
EML-16	• Data concentrator for general use • Graphic LCD display • With 16 programmable digital inputs for data collection or pulse count • Modular housing, 6 module • 2 programmable outputs • Opto-isolated RS485 port	90÷250 VAC/DC	24 VAC/DC	**3ML11S**	1	0,500
		20÷60 VAC/DC	24 VAC/DC	**3ML11N**		
		90÷250 VAC/DC	48 VAC/DC	**3ML12S**		
		20÷60 VAC/DC	48 VAC/DC	**3ML12N**		
		90÷250 VAC/DC	115 VAC/DC	**3ML13S**		
		20÷60 VAC/DC	115 VAC/DC	**3ML13N**		
		90÷250 VAC/DC	230 VAC/DC	**3ML14S**		
		20÷60 VAC/DC	230 VAC/DC	**3ML14N**		
EML-16-Eth	• Data concentrator for general use • Graphic LCD display • With 16 programmable digital inputs for data collection or pulse count • Modular housing, 6 module • 2 programmable outputs • Opto-isolated RS485 port • Ethernet port with Modbus TCP-IP	90÷250 VAC/DC	24 VAC/DC	**3ML21S**	1	0,500
		20÷60 VAC/DC	24 VAC/DC	**3ML21N**		
		90÷250 VAC/DC	48 VAC/DC	**3ML22S**		
		20÷60 VAC/DC	48 VAC/DC	**3ML22N**		
		90÷250 VAC/DC	115 VAC/DC	**3ML23S**		
		20÷60 VAC/DC	115 VAC/DC	**3ML23N**		
		90÷250 VAC/DC	230 VAC/DC	**3ML24S**		
		20÷60 VAC/DC	230 VAC/DC	**3ML24N**		

GENERAL CHARACTERISTICS

EML-16 is equipped with 16 inputs that allow the network connection of devices without communication as long as they are equipped with at least one pulse output.

It's able to count the pulses coming from the outputs of the energy, water, gas, etc. meters. All data are shown on the display or via the integrated RS485 port. With the programmable functions it is possible to determine the average of instantaneous quantities such as power, production rate, flow rate of water, gas, etc.

OPERATIONAL CHARACTERISTICS

- Backlight graphic LCD display
- 16 programmable digital inputs
- Built-in RS485 communication port
- Modbus-RTU and TCP communication protocol
- Clearable total and partial energy counters for each channel
- Programmable general counters
- Calculation of derivative average values
- Mathematical operations among counters
- 2 digital outputs
- Data storage, clock-calendar (RTC) for data logging
- Modular housing, 6 module
- Degree of protection: IP40 on front; IP20 at terminals

DATA CONCENTRATOR

Certification obtained: **EAC**
Compliant with standards: **EN 61010-1, EN 61000-6-2, EN 61000-6-3**

See dimensions and wiring diagrams at the end of chapter

EML-16 DC

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EML-16 DC	• Data concentrator in combination with power meters such as EMT-1C • 2 opto-isolated RS485 ports • Modular housing, 6 module	90÷250 VAC/DC	**3ML20V**	1	0,500
		20÷60 VAC/DC	**3ML20J**		
EML-16-DC-Eth	• Data concentrator in combination with power meters such as EMT-1C • Opto-isolated RS485 port • Modular housing, 6 module • Ethernet port with Modbus TCP-IP	90÷250 VAC/DC	**3ML21V**	1	0,500
		20÷60 VAC/DC	**3ML21J**		

GENERAL CHARACTERISTICS

The EML-16 DC data concentrator is a device that expands the potential of use of the EMT-1C series single-phase network analyzers family by providing a data collection function and interface to remote monitoring systems.

The EML-16 DC can find numerous applications such as, the measurement of consumption from meters of different types, the measurement of production, etc.

All data are shown on the display or via the integrated RS485 port.

OPERATIONAL CHARACTERISTICS

- Backlight graphic LCD display
- Management of 16 EMT-1C single-phase network analyzers
- LED for communication diagnostics
- Parameter display:
  - voltage, current and active power
  - active energy: total, imported, exported
  - maximum values: voltage, current and active power
- Built-in RS485 communication port
- Modbus-RTU and TCP communication protocol
- Modular housing, 6 module
- Degree of protection: IP40 on front; IP20 at terminals

REMOTE DISPLAY

Certification obtained: **EAC - RINA**
Compliant with standards: **EN 61000-6-2, EN 61000-6-4, EN 61010-1**

See dimensions and wiring diagrams at the end of chapter

RDU-L

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
RDU-L	• Remote display in combination with measurement transducers • Colour LCD display • Opto-isolated RS485 port	90÷250 VAC/DC	**3RLS000000000**	1	0,450
		20÷60 VAC/VDC	**3RLS010000000**		
DESCRIPTION			**ORDER CODE**		
OPTIONS	**Inputs and outputs**				
	2 digital outputs		**2DO**	-	-
	4 digital outputs		**4DO**		
	2 digital inputs		**2DI**		
	4 digital inputs		**4DI**		
	2 analogue outputs		**2AO**		
	4 analogue outputs		**4AO**		
	Communication ports				
	2 opto-isolated RS485 ports with communication protocol Modbus-RTU		**485**	-	-
	Ethernet port with communication protocol Modbus-TCP		**Eth**		

GENERAL CHARACTERISTICS

The RDU-L is a remote display unit consisting of a color TFT display and an interface that allows connection to remote acquisition/command units. The purpose is to provide an operator interface to devices that are normally without or limited, such as the EMS-D6 power transducer.

The RDU-L automatically adapts to the base unit to which it is connected, presenting the graphic display pages and commands as required by the base unit. On the back it is equipped with a connector through which the connection to the base unit can be made.

The housing is compatible for flush mount 96x96mm housing. Thanks to its expansion bus, the RDU-L can be expanded with additional modules.

The modules supported by the **RDU-L** are divided into the following categories: communication modules, digital I/O modules, analog I/O modules.

REMOTE DISPLAY

Certification obtained: **EAC - RINA**
Compliant with standards: **EN 61000-6-2, EN 61000-6-4, EN 61010-1**

See dimensions and wiring diagrams at the end of chapter

RDU

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
RDU	• Remote display in combination with measurement transducers • Color LCD display • Opto-isolated RS485 port	90÷250 VAC/DC	**3RDUS0000000010**	1	0,450
		20÷60 VAC/VDC	**3RDUS0100000010**		
RDU-Eth	• Remote display in combination with measurement transducers • Color LCD display • Ethernet port with Modbus TCP-IP	90÷250 VAC/DC	**3RDUS0000010010**	1	0,450
		20÷60 VAC/VDC	**3RDUS0100010010**		
RDU-485-Eth	• Remote display in combination with measurement transducers • Color LCD display • 2 opto-isolated RS485 ports • Ethernet port with Modbus TCP-IP	90÷250 VAC/DC	**3RDUS0000020010**	1	0,450
		20÷60 VAC/VDC	**3RDUS0100020010**		

GENERAL CHARACTERISTICS

The RDU is a remote display unit consisting of a color TFT display and an interface that allows connection to remote acquisition / command units. The purpose is to provide an operator interface to devices that are normally without or limited, such as the EMS-D6 power transducer.

The RDU automatically adapts to the base unit to which it is connected, presenting the graphic display pages and commands as required by the base unit. On the back it is equipped with a connector through which the connection to the base unit can be made.

The enclosure is compatible with panel cutouts intended for 96x96mm housing with reduced depth.

FLUSH-MOUNT AND MODULAR NETWORK ANALYZERS

Certification obtained: **EAC, RINA**
Compliant with standards: **EN 61010-1, EN 61000-6-2, EN 61000-6-3**

See dimensions and wiring diagrams at the end of chapter

EMA-90N

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMA-90N	• Color LCD display • Rated input current: by external CT 5A or 1A • Active energy: Class 1 (EN 62053-21) • Multilanguage graphic interface • 2 digital outputs • RS485 port	90÷250 VAC/DC	**3EMAN0000000000**	1	0,450
		20÷60 VAC/DC	**3EMAN0100000000**		
EMA-90NH	• Color LCD display • Rated input current: by external CT 5A or 1A • Active energy: Class 1 (EN 62053-21) • Multilanguage graphic interface • 2 digital outputs • RS485 port Harmonic analysis of voltage and current up to the 63° order	90÷250 VAC/DC	**3EMAN0000000010**		
		20÷60 VAC/DC	**3EMAN0100000010**		

DESCRIPTION		ORDER CODE		
OPTIONS	**Current Inputs**			
	Current measurement through pre-wired compact CTs	**TTA**	-	-
	Current measurement by CT with 333mV output	**333mV**		
	Current measurement through Rogowski coils	**R**		
	Neutral measurement input	**N**		
	Differential current input	**DIFF**		
	Measurement accuracy			
	Class 0,5s (IEC/EN 62053-22)	**0.5s**	-	-
	Class 0,2s (IEC/EN 62053-22)	**0.2s**		
	Inputs and outputs			
	4 digital inputs and 2 digital outputs	**4DI/2DO**	-	-
	2 digital inputs and 6 digital outputs	**2DI/6DO**		
	8 digital outputs	**8DO**		
	8 digital inputs	**8DI**		
	4 analog inputs	**4AI**		
	4 digital outputs and 4 analog outputs	**4DO/4AO**		
	4 digital outputs and 2 analog outputs	**4DO/2AO**		
	Communication ports			
	Opto-isolated RS485 port Modbus-RTU	**485**	-	-
	Ethernet port with Modbus TCP/IP	**Eth**		
	Profibus-DP interface	**PF**		
	M-Bus interface	**M-Bus**		
	Ethernet interface with Webserver function	**EthWeb**		
	Ethernet-RS485 gateway function	**EthWeb/S**		
	IEC61850 interface protocol substations	**IEC61850**		
	Web-based real-time dashboarding service	**ConSight**		

GENERAL CHARACTERISTICS

The **EMA-90N network analyzers** are able to display electrical measurements with high accuracy on the color LCD display, allowing you to control the power distribution network. They are made in a built-in container (96x96mm). They are high performance analyzers intended to provide accurate measurements. They allow you to check the power distribution network, to detect power problems that can compromise its quality and availability. The main features of these multimeters are the wide power supply range, the high accuracy in the measurement of the values and the expandability, which allow the device to be adapted to multiple applications.

The graphic interface, available in 7 languages (English, Italian, French, German, Spanish, Polish, Swedish) is designed to facilitate the consultation of available data, including:

- Voltage: phase, line and system values
- Current: phase values (neutral current calculated or measured)
- Measurements on 4 quadrants
- Power: apparent, active and reactive phase and total values
- P.F. per phase and total
- Cosφ per phase and total
- Frequency
- Maximum value (MAX), minimum value (MIN) and average value (AVG) function for all measurements
- Peak values (max demand)
- Asymmetry of voltage, current
- Total harmonic distortion (THD): voltage and current
- Waveform analysis of voltage, current
- Harmonic analysis of voltage and current up to the 63° order
- Active, reactive, apparent energy meters (partial and total with programmable tariff functions)
- Pulse counter for general use (only with expansion)
- Basic analysis of energy quality

FLUSH-MOUNT AND MODULAR NETWORK ANALYZERS

Certification obtained: **EAC**
Compliant with standards: **EN 61010-1, EN 61000-6-2, EN 61000-6-3**

See dimensions and wiring diagrams at the end of chapter

EMA-11N

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMA-11N	• Color LCD display • Rated input current: by external CT 5A or 1A • Active energy: Class 1 (EN 62053-21) • Multilanguage graphic interface • 2 digital outputs • RS485 por	90÷250 VAC/DC	**3MA1N0000000000**	1	0,450
		20÷60 VAC/DC	**3MA1N0100000000**		
EMA-11NH	• Color LCD display • Rated input current: by external CT 5A or 1A • Active energy: Class 1 (EN 62053-21) • Multilanguage graphic interface • 2 digital outputs • RS485 port • Harmonic analysis of voltage and current up to the 63° order	90÷250 VAC/DC	**3MA1N0000000010**		
		20÷60 VAC/DC	**3MA1N0100000010**		

DESCRIPTION		ORDER CODE		
OPTIONS	**Current Inputs**			
	Current measurement through pre-wired compact CTs	**TTA**	-	-
	Current measurement through Rogowski coils	**R**		
	Neutral measurement input	**N**		
	Measurement accuracy			
	Class 0,5s (IEC/EN 62053-22)	**0.5s**	-	-
	Class 0,2s (IEC/EN 62053-22)	**0.2s**		
	Inputs and outputs			
	2 digital inputs and 2 digital outputs	**2DI/2DO**	-	-
	2 digital outputs and 2 analog outputs	**2DO/2AO**		
	2 digital outputs and 4 analog outputs	**2DO/4AO**		
	2 digital outputs, 2 digital inputs and 4 analog outputs	**2DO/2DI/4AO**		
	Communication ports			
	Opto-isolated RS485 port Modbus-RTU	**485**	-	-
	Ethernet port with Modbus TCP/IP	**Eth**		
	Profibus-DP interface	**PF**		
	M-Bus interface	**M-Bus**		

OPERATIONAL CHARACTERISTICS

- Voltage measurement range: 20...690 VAC L-L 30...400 VAC L-N
- Usage in medium and high voltage systems with voltage transformers
- Rated input current: with external CT, 5A or 1A
- Current reading through Rogowski coils (option)
- Current measurement through pre-wired compact CTs (option)
- Frequency measurement range: 45...65Hz
- True RMS measurements for voltage and current values
- Continuous (gapless) sampling 128 samples/period
- Measurements update 200ms
- High accuracy
- Historical graphs of voltages and currents, power load curves, energy consumption
- Non-volatile memory for data and event storage
- Modbus-RTU and Modbus-TCP communication protocol
- Programming and remote control via software
- Flush mount 144x144mm housing
- Degree of protection: IP65 on front; IP20 at terminals.

FLUSH-MOUNT AND MODULAR NETWORK ANALYZERS

Certification obtained: **EAC, RINA**
Compliant with standards: **EN 61000-6-2, EN 61000-6-4, EN 61010-1**

See dimensions and wiring diagrams at the end of chapter

EMA-D6

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMA-D6	• Colour LCD display • Rated input current: by external CT 5A or 1A • Active energy: Class 1 (EN 62053-21) • Multilanguage graphic interface • 2 digital outputs • RS485 port	90÷250 VAC/DC	**3MADN0004000000**	1	0,200
		20÷60 VAC / 24÷85 VDC	**3MADN0104000000**		
EMA-D6H	• Colour LCD display • Rated input current: by external CT 5A or 1A • Active energy: Class 1 (EN 62053-21) • Multilanguage graphic interface • 2 digital outputs • RS485 port • Harmonic analysis of voltage and current up to the 63°order	90÷250 VAC/DC	**3MADN0004000010**		
		20÷60 VAC / 24÷85 VDC	**3MADN0104000010**		

DESCRIPTION		ORDER CODE		
OPTIONS	**Current Inputs**			
	Current measurement through pre-wired compact CTs	**TTA**	-	-
	Current measurement by CT with 333mV output	**333mV**		
	Current measurement through Rogowski coils	**R**		
	Neutral measurement input	**N**		
	Differential current input	**DIFF**		
	Measurement accuracy			
	Class 0,5s (IEC/EN 62053-22)	**0.5s**	-	-
	Class 0,2s (IEC/EN 62053-22)	**0.2s**		
	Inputs and outputs			
	2 digital intputs and 2 digital outputs	**2DI/2DO**	-	-
	2 digital outputs	**2DO**		
	4 digital outputs	**4DO**		
	4 digital intputs	**4DI**		
	Communication ports			
	Opto-isolated RS485 port Modbus-RTU	**485**	-	-
	Ethernet port with Modbus TCP/IP	**Eth**		

GENERAL CHARACTERISTICS

The EMA-D6 network analyzers are made in a modular 6-module container and are equipped with a backlit color graphic LCD display which gives these modular instruments the ability to view all the electrical parameters of the system in a clear, intuitive and flexible way. The high accuracy of the measurements combined with their extreme compactness makes them the ideal solution for any type of application. The graphic interface, available in 7 languages (English, Italian, French, German, Spanish, Polish, Swedish), is designed to facilitate the consultation of available data, including:

- Voltage (phase, phase-to-phase and system)
- Phase current (measured or calculated neutral current)
- Measurements on 4 quadrants
- Power (active, reactive and apparent phase and total power)
- P.F. (phase and total)
- Cosφ (phase and total)
- Frequency
- Maximum (MAX), minimum (MIN) and average(AVERAGE) of all measured values
- Peak power/current (max demand)
- Asymmetry of voltage, current
- Total harmonic distortion (THD) of voltages and currents
- Waveform analysis of voltage and current
- Voltage and current harmonic analysis up to the 63rd order
- Active, reactive, apparent energy meters (partial and total with programmable tariff functions)
- Basic analysis of energy quality

OPERATIONAL CHARACTERISTICS

- Voltage measurement range: 52...690 VAC L-L 30...400 VAC L-N
- Can be used in medium and high voltage systems using TV
- Nominal input current: 5A or 1A with an external current transformer
- Current measurement through rogowski coils (option)
- Current measurement through pre-wired compact CTs (option)
- Current measurement by CT with 333mV output (option)
- Frequency measurement range: 45...65Hz
- True RMS measurements for voltage and current values
- Continuous (gapless) sampling 128 samples/period
- Measurements update 200ms
- High accuracy
- Historical graphs of voltages and currents, power load curves, energy consumption
- Non-volatile memory for data and event storage
- Modbus-RTU and Modbus-TCP communication protocol
- Programming and remote control via software
- Modular housing, 6 module
- Degree of protection: IP40 on front; IP20 at terminals.

FLUSH-MOUNT AND MODULAR POWER ANALYZERS

Certification obtained: **EAC**
Compliant with standards: **EN61326-1, EN55011 Class A, EN50470-1/3, EN50470-1/3,EN62053-21,EN62053-23 DIRECTIVE 2014/32/EU, EN62052-31, EN61010**

See dimensions and wiring diagrams at the end of chapter


EMU-3ea

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMU-3ea	• Network analyzer with universal current inputs • Modular housing, 1 module • Active energy: Class0.5s (EN 62053-22) • RS485 port • Digital output	10÷40VDC / 19÷28VAC	**3MU22J**	1	0,060
EMU-3ea/h	• Network analyzer with universal current inputs • Modular housing, 1 module • Active energy: Class0.5s (EN 62053-22) • RS485 port • Digital output • Harmonic analysis of voltage and current up to the 63° order	10÷40VDC / 19÷28VAC	**3MU23J**		

GENERAL CHARACTERISTICS

The EMU-3ea network analyzer was developed in the modular container, 1U (17.5mm) for DIN rail. It supports universal current input (CT with secondary 1A or 5A, 0...333mV and Rogowski coils). The integrated static output allows you to bring the status of a threshold or an alarm to the output. Equipped with an RS485 port with Modbus-RTU protocol to allow integration into supervisory systems.

Main measurements:

- Voltage: phase, line and system values
- Current: phase values (neutral current measured or calculated)
- Measurements on 4 quadrants
- Power: apparent, active and reactive phase and total values
- P.F.: Power Factor per phase and total
- Cosφ per phase and total
- Frequency
- MAX-MIN-AVERAGE value functions for all measurements
- Maximum demand of power and current values
- Total harmonic distortion (THD) of voltage and current values
- Harmonic analysis of voltage and current up to 63° order (EMU-3ea/h only)
- Inter-harmonic analysis of voltage and current up to 63° order (EMU-3ea/h only)
- Energy meters for active, reactive, apparent per phase and total
- Basic analysis of energy quality (EMU-3ea/h only)

OPERATIONAL CHARACTERISTICS

- Diagnostics LED indicates correct communication
- Nominal input current: 5A or 1A with an external current transformer
- Current measurement through Rogowski coils
- Current measurement by CT with 333mV output
- Frequency measurement range: 45...65Hz
- True RMS measurements for voltage and current values
- Accuracy:
  - voltage: ±0,5% f.s
  - current: ±0,5% f.s
  - power: ±0,5% f.s.
  - frequency: ±0,1%
  - active energy: Class 0,5s (EN 62053-22)
  - reactive energy: Class 0,5s (EN 62053-24)
- Sampling: 6400 samples/s @ 50Hz
  7280 samples/s @ 60Hz
- RS485 port
- Communication protocol Modbus-RTU
- Programming and remote control via software
- Modular housing, 1 module
- Degree of protection: IP20

FLUSH-MOUNT AND MODULAR POWER ANALYZERS

Certification obtained: **EAC**

Compliant with standards: **EN61000-6-4/2006 + A1 2011, EN64000-6-2/2005, EN61010-1/2010**

See dimensions and wiring diagrams at the end of chapter

EMT-1C/50

EMT-1C/300

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMT-1C/50	• Single-phase power analyzer • Modular housing • Ø15mm • Voltage up to 800 VAC or 1000 VDC • Current up to 50A AC/DC • RS485 port	9÷30VDC	**3MT82B**	1	0,072
EMT-1C/300	• Single-phase power analyzer • Modular housing • Ø33mm • Voltage up to 800 VAC or 1000 VDC • Current up to 300A AC / 400A DC • RS485 port	9÷30VDC	**3MT86B**	1	0,370
EMT-1C/50 LV	• Single-phase power analyzer • Modular housing • Ø15mm • Voltage up to 80 VAC or 100 VDC • Current up to 50A AC/DC • RS485 port	9÷30VDC	**3MT83B**	1	0,072
EMT-1C/300 LV	• Single-phase power analyzer • Modular housing • Ø33mm • Voltage up to 80 VAC or 100 VDC • Current up to 300A AC / 400A DC • RS485 port	9÷30VDC	**3MT84B**	1	0,370

GENERAL CHARACTERISTICS

The EMT-1C is a single-phase network analyzer capable of measuring TRMS current and AC/DC voltage. The device can be configured via the RS485 port. Fitteted for mounting on DIN bar.

The main measures are:

- Voltage
- Current
- Power (active, reactive and apparent power)
- Cosφ
- Frequency
- Maximum value (MAX), minimum value (MIN) function
- Peak values (max demand)
- Active energy meters (total, imported and exported)

OPERATIONAL CHARACTERISTICS

- Diagnostics LED indicates correct communication
- Voltage measurement range:
  - up to 800 VAC or 1000 VDC (EMT-1C... only)
  - up to 80 VAC or 100 VDC (EMT-1C LV... only)
- Current measurement range:
  - up to 50A AC/DC (EMT-1C/50 only)
  - up to 300A AC, 400A DC (EMT-1C/300 only)
- Frequency measurement range: DC or 1...400Hz
- True RMS measurements for voltage and current values
- Accuracy:
  - voltage: ±0,5% f.s
  - current: ±0,5% f.s
  - power: ±0,5% f.s.
  - frequency: ±0,1%
  - active energy: ±1%
- Sampling: 11000 samples/s
- RS485 port
- Communication protocol Modbus-RTU
- Programming and remote control via software
- Modular housing
- Degree of protection: IP20

UNIVERSAL CURRENT ANALYZER

Certification obtained: **EAC**

Compliant with standards: **EN61000-6-3, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN6100 0-4-5, EN61000-4-6, EN61010-1**

See dimensions and wiring diagrams at the end of chapter

EMU-2it

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMU-2it	• AC / DC current analyzer with universal input • Modular housing, 1 module • RS485 port • Analog output 0...10V or 0/4...20mA	10÷40VDC / 19÷28VAC	**3MU11B**	1	0,060
EMU-2it/h	• AC / DC current analyzer with universal input • Modular housing, 1 module • RS485 port • Analog output 0...10V or 0/4...20mA • Harmonic analysis of voltage and current up to the 63° order	10÷40VDC / 19÷28VAC	**3MU12B**		

GENERAL CHARACTERISTICS

The EMU-2it current analyzer was developed in the modular container, 1U (17.5mm) for DIN rail. It supports universal current input (CT with secondary 1A or 5A, 0...333mv, ± 1 or 10Vpk, 100mA AC/DC, Rogowski probes, HALL sensors).
The integrated static output allows you to bring the status of a threshold, an alarm, etc. to the output. It also has an analogue output 0/4...20mA or 0...10V and a temperature input.
The EMU-2it is equipped with an RS485 interface with Modbus protocol to allow integration into supervisory systems.

The main measures are:

- Current (RMS, AC, DC)
- Crest factor
- Frequency
- MAX-MIN-AVERAGE value functions for all measurements
- Peak values (max demand)
- Total harmonic distortion (THD) of current values
- Harmonic analysis of voltage and current up to 63° order (EMU-2it/h only)

OPERATIONAL CHARACTERISTICS

- Diagnostics LED indicates correct communication
- Nominal input current: 5A or 1A with an external current transformer
- Current measurement through Rogowski coils
- Current measurement by CT with 333mV output
- Current measurement by HALL sensor
- Frequency measurement range: 45...65Hz
- True RMS measurements for current values
- Accuracy:
  - Current: ±0,5% f.s
- Sampling: 6400 samples/s @ 50Hz
  7280 samples/s @ 60Hz
- Input for PT100 or NTC temperature probe
- RS485 port
- Communication protocol Modbus-RTU
- Programming and remote control via software
- Modular housing
- Degree of protection: IP20

CURRENT ANALYZER

Certification obtained: **EAC**

Compliant with standards: **EN61000-6-4/2006 + A1 2011, EN64000-6-2/2005, EN61010-1/2010**

See dimensions and wiring diagrams at the end of chapter

TTC-V-485/50

TTC-I/50

TTC-I/300

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
TTC-V-485/50	• AC/DC current transformer • Modular housing • Ø15mm • Current up to 50A AC/DC • RS485 port • 0... 10V analog output	12÷30VDC	**3MT81B**	1	0,072
TTC-V-485/300	• AC/DC current transformer • Modular housing • Ø33mm • Current up to 300A AC/DC • RS485 port • 0... 10V analog output	21÷30VDC	**3MT85B**	1	0,370
TTC-I/50	• AC/DC current transformer • Modular housing • Ø15mm • Current up to 50A AC/DC • RS485 port • 4...20mA analog output	Passive current loop	**3MT80B**	1	0,072
TTC-I/300	• AC/DC current transformer • Modular housing • Ø33mm • Current up to 300A AC/DC • RS485 port • 4...20mA analog output	Passive current loop	**3MT87B**	1	0,072

GENERAL CHARACTERISTICS

The TTC-V and TTC-I are AC and DC current transformers, galvanically isolated from the measurement circuit. The devices are in function and appearance quite similar to a standard active CT, however capable of measuring the DC and AC component TRMS.

The TTC-V transformer is equipped with an RS485 port and an analog ouput 0...10V, while the TTC-I only has an analog output 4...20mA.

Fitteted for mounting on DIN bar.

The main measures are:

- Current
- Maximum value (MAX), minimum value (MIN) function

OPERATIONAL CHARACTERISTICS

- Diagnostics LED indicates correct communication
- Current measurement range:
  - Up to 50A AC/DC (TTC-V/50 and TTC-I/50 only)
  - Up to 300A AC, 400A DC (TTC-V/300 and TTC-I/300 only)
- True RMS measurements for current values
- Accuracy:
  - current: ±0,5% f.s
- RS485 port (TTC-V only)
- Communication protocol Modbus-RTU
- Analog output 0...10V (TTC-V only)
- Analog output 4...20mA (TTC-I only)
- Programming and remote control via software
- Modular housing
- Degree of protection: IP20

FLUSH-MOUNT AND MODULAR POWER METERS

Certification obtained: **EAC, RINA**
Compliant with standards: **EN 61010-1, EN 61000-6-2, EN 61000-6-3**

See dimensions and wiring diagrams at the end of chapter

EMS-96

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMS-96	• Color LCD display • Rated input current: by external CT 5A or 1A • Active energy: Class 1 (EN 62053-21) • Multilanguage graphic interface • 2 digital outputs • RS485 port	90÷250 VAC/DC	**3EMS0000000000**	1	0,450
		20÷60 VAC/DC	**3EMS0100000000**		
EMS-96H	• Color LCD display • Rated input current: by external CT 5A or 1A • Active energy: Class 1 (EN 62053-21) • Multilanguage graphic interface • 2 digital outputs • RS485 port • Harmonic analysis of voltage and current up to the 21° order	90÷250 VAC/DC	**3EMS0000000010**		
		20÷60 VAC/DC	**3EMS0100000010**		

DESCRIPTION		ORDER CODE		
OPTIONS	**Current Inputs**			
	Current measurement through pre-wired compact CTs	**TTA**	-	-
	Current measurement by CT with 333mV output	**333mV**		
	Current measurement through Rogowski coils	**R**		
	Neutral measurement input	**N**		
	Measurement accuracy			
	Class 0,5s (IEC/EN 62053-22)	**0.5s**	-	-
	Class 0,2s (IEC/EN 62053-22)	**0.2s**		
	Inputs and outputs			
	4 digital inputs and 2 digital outputs	**4DI/4DO**	-	-
	2 digital inputs and 6 digital outputs	**2DI/6DO**		
	8 digital outputs	**8DO**		
	8 digital inputs and 2 digital outputs	**8DI/2DO**		
	4 analog inputs	**4AI**		
	4 digital outputs and 4 analog outputs	**4DO/4AO**		
	4 digital outputs and 2 analog outputs	**4DO/2AO**		
	Communication ports			
	Opto-isolated RS485 port Modbus-RTU	**485**	-	-
	Ethernet port with Modbus TCP/IP	**Eth**		
	Profibus-DP interface	**PF**		
	M-Bus interface	**M-Bus**		
	Ethernet interface with Webserver function	**EthWeb**		
	Ethernet-RS485 gateway function	**EthWeb/S**		
	IEC61850 interface protocol substations	**IEC61850**		

GENERAL CHARACTERISTICS

The EMS-96 digital multimeters are able to display electrical measurements with high accuracy on the large LCD display, allowing you to control the energy distribution network. They're made in a built-in container (96x96mm) with the possibility of expansion that allow them to adapt to multiple applications. The graphic interface, available in 7 languages (English, Italian, French, German, Spanish, Polish, Swedish), is designed to facilitate the consultation of available data, including:

- Voltage (phase, phase-to-phase and system)
- Phase current (measured or calculated neutral current)
- Measurements on 4 quadrants
- Power (active, reactive and apparent phase and total power)
- P.F. (phase and total)
- Cosφ (phase and total)
- Frequency
- Maximum (MAX), minimum (MIN) and average(AVERAGE) of all measured values
- Peak power/current (max demand)
- Asymmetry of voltage, current
- Total harmonic distortion (THD) of voltages and currents
- Voltage and current harmonic analysis up to the 21st order
- Active, reactive, apparent energy meters (partial and total with programmable tariff functions)
- Basic analysis of energy quality

OPERATIONAL CHARACTERISTICS

- Voltage measurement range: 20...690 VAC L-L 30...400 VAC L-N
- Usage in medium and high voltage systems with voltage transformers
- Rated input current: with external CT, 5A or 1A
- Current reading through Rogowski coils (option)
- Current measurement through pre-wired compact CTs (option)
- Current measurement by CT with 333mV output (option)
- Frequency measurement range: 45...65Hz
- True RMS measurements for voltage and current values
- Measurements update 1s
- High accuracy
- Historical graphs of voltages and currents, power load curves, energy consumption
- Non-volatile memory for data and event storage
- Modbus-RTU and Modbus-TCP communication protocol
- Programming and remote control via software
- Flush mount 96x96mm housing
- Degree of protection: IP65 on front; IP20 at terminals

FLUSH-MOUNT AND MODULAR POWER METERS

Certification obtained: **EAC**
Compliant with standards: **EN61326-1, EN55011 Class A, EN61000-, EN62053-21, EN62053-23, EN61010-1, EN62053-31**

See dimensions and wiring diagrams at the end of chapter

EMM-4L-96

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMM-4L-96	• Backlit LCD icon display • Rated input current: by external CT 5A, 1A • RS485 port • Pulse output • Measurements update 1 second	100...240 VAC -15%...+12% 50/60Hz	**3ME22S**	1	0,320

GENERAL CHARACTERISTICS

The EMM-4L-96 digital multimeters are able to display electrical measurements with high accuracy on the large LCD display, allowing you to control the power distribution network. They are made in a built-in container (96x96mm) with reduced depth. The main features of these multimeters are the wide power supply range, the high accuracy in measuring the values, integrated RS485 communication port.

The main measurement parameters are:

- Voltage (phase, line and system voltages)
- Phase current (measured neutral current)
- Power (active, reactive and apparent phase and total powers)
- P.F. (power factor of each phase and total)
- Frequency
- Total harmonic distortion (THD voltages and currents)
- Active, reactive, apparent energy meters (total, per phase)
- Maximum value (MAX), minimum value (MIN) and MAX DEMAND function
- Phase sequence indication

OPERATIONAL CHARACTERISTICS

- Rated auxiliary power supply voltage: 100...240 VAC -15% ...+ 12% 50/60Hz
- Voltage measurement range: 10...300 VAC (L-N) 19...519 VAC (L-L)
- Possibility of use in medium and high voltage systems via TV
- Rated input current: 1A, 5A
- Frequency measurement range 45 ... 65Hz
- True RMS measurements (TRMS)
- Measurement accuracy:
  - voltages: ± 0.5% full scale
  - current: ± 0.5% full scale
  - power: 1% full scale
  - frequency: ± 0.1%
  - active energy: Class 1
  - reactive energy: Class 1
  - apparent energy: Class 1
- Modbus-RTU communication protocol
- Flush mount 96x96x50mm housing
- Degree of protection: IP54 on the front, IP20 on the terminals
- kWh pulse output
- High definition backlit LCD display
- Automatic or manual scrolling of pages
- Programmable voltage and current transformer ratio

FLUSH-MOUNT AND MODULAR POWER METERS

Certification obtained: **EAC, RINA**
Compliant with standards: **EN 61000-6-2, EN 61000-6-4, EN 61010-1**

See dimensions and wiring diagrams at the end of chapter

EMS-D6

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMS-D6	• LCD display • Rated input current: by external CT 5A or 1A • Active energy: Class 1 (EN 62053-21) • Multilanguage interface • 2 digital outputs • RS485 port	90÷250 VAC/DC	**3MSDS0004000000**	1	0,200
		20÷60 VAC / 24÷85 VDC	**3MSDS0104000000**		
EMS-D6H	• LCD display • Rated input current: by external CT 5A or 1A • Active energy: Class 1 (EN 62053-21) • Multilanguage interface • 2 digital outputs • RS485 port • Harmonic analysis of voltage and current up to the 21° order	90÷250 VAC/DC	**3MSDS0004000010**		
		20÷60 VAC / 24÷85 VDC	**3MSDS0104000010**		

DESCRIPTION		ORDER CODE		
OPTIONS	**Current Inputs**			
	Current measurement through pre-wired compact CTs	**TTA**	-	-
	Current measurement by CT with 333mV output	**333mV**		
	Current measurement through Rogowski coils	**R**		
	Neutral measurement input	**N**		
	Differential current input	**DIFF**		
	Measurement accuracy			
	Class 0,5s (IEC/EN 62053-22)	**0.5s**	-	-
	Class 0,2s (IEC/EN 62053-22)	**0.2s**		
	Inputs and outputs			
	2 digital outputs	**2DO**		
	4 digital outputs	**4DO**		
	Communication ports			
	Opto-isolated RS485 port Modbus-RTU	**485**	-	-
	Ethernet port with Modbus TCP/IP	**Eth**		

GENERAL CHARACTERISTICS

The EMS-D6 digital multimeters are made in a modular 6-module housing and are equipped with a backlit graphic LCD display that allows you to view all the electrical quantities of the system. The high accuracy of the measurements combined with their extreme compactness makes them the ideal solution for any type of application.

The main measurement parameters are:

- Voltage (phase, phase-to-phase and system)
- Phase current (measured or calculated neutral current)
- Measurements on 4 quadrants
- Power (active, reactive and apparent phase and total power)
- P.F. (phase and total)
- Cosφ (phase and total)
- Frequency
- Maximum (MAX), minimum (MIN) and average(AVERAGE) of all measured values
- Peak power/current (max demand)
- Asymmetry of voltage, current
- Total harmonic distortion (THD) of voltages and currents
- Voltage and current harmonic analysis up to the 21st order
- Active, reactive, apparent energy meters (partial and total with programmable tariff functions)

OPERATIONAL CHARACTERISTICS

- Voltage measurement range: 52...690 VAC L-L 30...400 VAC L-N
- Can be used in medium and high voltage systems using TV
- Nominal input current: 5A or 1A with an external current transformer
- Current measurement through rogowski coils (option)
- Current measurement through pre-wired compact CTs (option)
- Current measurement by CT with 333mV output (option)
- Frequency measurement range: 45...65Hz
- True RMS measurements for voltage and current values
- Measurements update 1s
- High accuracy
- Modbus-RTU and Modbus-TCP communication protocol
- Programming and remote control via software
- Modular housing, 6 module
- Degree of protection: IP40 on front; IP20 at terminals

FLUSH-MOUNT AND MODULAR POWER METERS

Certification obtained: **EAC**
Compliant with standards: **EN 61000-6-2, EN 61000-6-4, EN 61010-1**

See dimensions and wiring diagrams at the end of chapter

EMS-D3

3EDA02
72x72mm
flush-mount
adapter

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMS-D3-485	• LCD display • Modular housing, 3 module • Rated input current: by external CT 5A or 1A • Active energy: Class 1 • Multilanguage interface • 2 digital outputs • RS485 port	230 VAC	**3MS52G**	1	0,200
		115 VAC	**3MS52E**		
		24÷48 VAC/DC	**3MS52N**		
		90÷250 VAC/DC	**3MS52S**		
EMS-D3-TT-485	• LCD display • Modular housing, 3 module • Current measurement through pre-wired compact CTs • Active energy: Class 1 • Multilanguage interface • 2 digital outputs • RS485 port	230 VAC	**3MS521G**	1	0,200
		115 VAC	**3MS521E**		
		24÷48 VAC/DC	**3MS521N**		
		90÷250 VAC/DC	**3MS521S**		
EMS-D3	• LCD display • Modular housing, 3 module • Rated input current: by external CT 5A or 1A • Active energy: Class 1 • Multilanguage interface • 2 digital outputs	230 VAC	**3MS51G**	1	0,200
		115 VAC	**3MS51E**		
		24÷48 VAC/DC	**3MS51N**		
		90÷250 VAC/DC	**3MS51S**		
EMS-D3-TT	• LCD display • Modular housing, 3 module • Current measurement through pre-wired compact CTs • Active energy: Class 1 • Multilanguage interface • 2 digital outputs	230 VAC	**3MS511G**	1	0,200
		115 VAC	**3MS511E**		
		24÷48 VAC/DC	**3MS511N**		
		90÷250 VAC/DC	**3MS511S**		
ACCESSORY	• 72x72mm flush-mount adapter	-	**3EDA02**	1	-

GENERAL CHARACTERISTICS

The EMS-D3 digital multimeters are made in a 3-module modular housing and are equipped with a backlit graphic LCD display that allows you to view all the electrical quantities of the system. The high accuracy of the measurements combined with its extreme compactness makes it the ideal solution for any type of application.

The main measurement parameters are:

- Voltage (phase, line and system voltages)
- Phase current (calculated or measured neutral current)
- Measurements on 4 quadrants
- Power (active, reactive and apparent phase and total)
- P.F. (phase and total)
- Cosφ (phase and total)
- Frequency
- Maximum value (MAX) and average value (AVG) function
- Peak values (max demand)
- Total harmonic distortion (THD) of voltages and currents
- Active, reactive, apparent phase and total energy meters

OPERATIONAL CHARACTERISTICS

- Voltage measurement range:52...690 VAC L-L | 30...400 VAC L-N
- Can be used in medium and high voltage systems using TV
- Nominal input current: 5A or 1A with an external current transformer
- Current measurements through pre-wired compact CTs (TT or TTA series sensors) (option)
- Frequency measurement range: 50 / 60Hz
- True RMS measurements (TRMS)
- 500ms measurement update
- Digital outputs (output function: alarm or pulses)
- Modbus-RTU communication protocol
- Programming and remote control via software
- Modular housing, 3 module
- Degree of protection: IP40 on front; IP20 at terminals

FLUSH-MOUNT LED MEASURING INSTRUMENTS

Certification obtained: **EAC**
Compliant with standards: **EN 61010-1, EN 61000-6-2, EN 61000-6-3**

See dimensions and wiring diagrams at the end of chapter

EMM-4h

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMM-4h	• Compact dimensions 96x96 mm • 4 LED displays for excellent readability • Easy installation and configuration • True RMS measurements (TRMS) • Storage of maximum, average and maximum demand	110-230-400 VAC	**3MH10P**	1	0,450
		20÷60 VAC/DC	**3MH10N**		
		90÷250 VAC/DC	**3MH10S**		
EMM-4hp	• Compact dimensions 96x96 mm • 4 LED displays for excellent readability • Easy installation and configuration • True RMS measurements (TRMS) • Storage of maximum, average and maximum demand • 2 digital outputs	110-230-400 VAC	**3MH11P**		
		20÷60 VAC/DC	**3MH11N**		
		90÷250 VAC/DC	**3MH11S**		

DESCRIPTION		ORDER CODE		
OPTIONS	**Current Inputs**			
	Current measurement through pre-wired compact CTs	**TT**	-	-
	Neutral measurement input	**N**		
	Isolated amperometric inputs with internal CT	**T**		
	Current inputs for CT ../1A	**1A**		
	Voltage Inputs			
	Voltage measurement range: 20...660 VAC L-L	**HV**	-	-
	Inputs and outputs			
	1 digital inputs	**DI**	-	-
	1 analog output 0/4...20mA	**A**		
	Measurements			
	Bidirectional energy meters	**M**	-	-
	Communication ports			
	Opto-isolated RS485 port Modbus-RTU	**485**	-	-
	Ethernet port with Web server and Modbus TCP/IP	**PF**		
	Profibus-DP interface	**M-Bus**		
	M-Bus interface	**Eth**		
	IEC61850 interface protocol substations	**IEC61850**		

GENERAL CHARACTERISTICS

The EMM... digital multimeters are made in flush-mounted housing. They perform reliable measurements even in critical conditions. The availability of the total hour meter function makes them interesting for the control panels of generators. The wide availability and accuracy of measurements make these multimeters a winning technical-economic alternative to traditional analog measuring instruments.

The EMM digital multimeters display 47 electrical quantities:

- Voltage (line and total)
- Current (phase and total)
- Power (active, reactive, apparent phase and total)
- Cosφ (phase and total)
- Frequency
- Maximum instantaneous values of voltage and current, active power, reactive power and apparent power
- Peak values (max demand)
- Average value (AVG) for powers and currents
- Hour counter
- Active, reactive and apparent energy meters (partial and total with programmable tariff functions)
- Bidirectional active and reactive energy meters

OPERATIONAL CHARACTERISTICS

- Voltage measurement range: 20...500VAC L-L 20...290VAC L-N
- Current measurement range: 0,02...5A
- Operating frequency range: 45...65Hz
- Programmable CT ratio: 1,0...2000
- Accuracy: Voltage: ±0,5% ±1 digit
  Current: ±0,5% ±1 digit
  Frequency: ±0,5% ±1 digit
  Active energy: Class 2
- Total hour meter
- Max and AVG measurement storage
- True RMS measurements
- RS485 port
- Modbus-RTU communication protocol
- 2 pulses outputs
- Housing: flush-mount 96x96mm
- Degree of protection: IP65 on front; IP20 at terminal

FLUSH-MOUNT LED MEASURING INSTRUMENTS

Certification obtained: **EAC**
Compliant with standards: **EN 61000-6-2, EN 61000-6-4, EN 61010-1**

See dimensions and wiring diagrams at the end of chapter

ELM-4

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
ELM-4	• Housing: flush-mount 96x96mm • LED display • Control circuit via external toroid (up to 4) • True RMS measurements (TRMS) • Maximum / average values	110-230-400 VAC	**3MS10P**	1	0,450
		20÷60 VAC/DC	**3MS10N**		
		90÷250 VAC/DC	**3MS10S**		
ELM-4P	• Housing: flush-mount 96x96mm • LED display • Control circuit via external toroid (up to 4) • True RMS measurements (TRMS) • Maximum / average values • 2 digital outputs	110-230-400 VAC	**3MS101P**		
		20÷60 VAC/DC	**3MS101N**		
		90÷250 VAC/DC	**3MS101S**		

DESCRIPTION		ORDER CODE	PCS	WT
OPTIONS	**Current Inputs**			
	Current inputs for CT ../1A	**1A**	-	-
	Current inputs for CT ../5A	**5A**		
	1÷999 mA	**0-1A**		
	0,05÷5 A	**0-5A**		
	0,50÷50 A	**0-50A**		
	Inputs and outputs			
	1 analog output 0/4...20mA	**A**	-	-
	Communication ports			
	Opto-isolated RS485 port Modbus-RTU	**485**	-	-

GENERAL CHARACTERISTICS

Ammeter for measuring residual or residual currents (up to four at the same time) using a suitable external toroidal reducer or for measuring line currents (possibly even lines separated from each other) using special external CTs.

The main measurement parameters are:

- Current (phase)
- Differential currents
- Maximum instantaneous current measurement
- Peak values (max demand) for current measurement
- Average value (AVG) for current measurement

OPERATIONAL CHARACTERISTICS

- Current measurement range:
  - input 0-1A: 1÷999 mA
  - input 0-5A: 0,05÷5 A
  - input 0-50A: 0,50÷50 A
  - input CT../1A: 1÷999 mA
  - input CT../5A: 0,05÷5 A
- Accuracy: Current: ±0,5% ±1 digit
- Max and AVG measurement storage
- RS485 port
- Modbus-RTU communication protocol
- 2 pulses outputs
- Housing: flush-mount 96x96mm
- Degree of protection: IP65 on front; IP20 at terminal

FLUSH-MOUNT LED MEASURING INSTRUMENTS

Certification obtained: **EAC**
Compliant with standards: **EN 61010-1, EN 61000-6-2, EN 61000-6-3**

See dimensions and wiring diagrams at the end of chapter

EMM-R4h

EMM-µ4h

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMM-R4h	• Housing: flush-mount 96x96mm with reduced depth • Self-powered by phases • 4 LED displays for optimal viewing • Easy installation and configuration • True RMS measurement • Max, AVG, max demand measurement storage	400 VAC (from phases L2-L3)	**3MH30U**	1	0,440
		230 VAC (from phases L2-L3)	**3MH30G**		
		110 VAC (from phases L2-L3)	**3MH30E**		
EMM-µ4h	• Housing: flush-mount 72x72mm • Self-powered by phases • 4 LED displays for optimal viewing • Easy installation and configuration • True RMS measurement • Max, AVG, max demand measurement storage	400 VAC (from phases L2-L3)	**3MH40U**	1	0,440
		230 VAC (from phases L2-L3)	**3MH40G**		
		110 VAC (from phases L2-L3)	**3MH40E**		

DESCRIPTION		ORDER CODE		
OPTIONS	**Current Inputse**			
	Current measurement through pre-wired compact CTs	**TT**	-	-
	Isolated amperometric inputs with internal CT	**T**		
	Current inputs for CT ../1A	**1A**		
	Measurements			
	Bidirectional energy meters	**M**	-	-
	Communication ports			
	Opto-isolated RS485 port Modbus-RTU	**485**	-	-

GENERAL CHARACTERISTICS

The EMM... digital multimeters are made in 72x72mm and 96x96mm flush-mounted housing with reduced depth. The TRMS measurements allow correct operation even in critical conditions.

The main measurement parameters are:

- Voltage (line and total)
- Current (phase and total)
- Power (active, reactive, apparent phase and total)
- Cosφ (phase and total)
- Frequency
- Maximum instantaneous values of voltage and current, active power, reactive power and apparent power
- Peak values (max demand)
- Average value (AVG) for powers and currents
- Hour counter
- Active, reactive and apparent energy meters (partial and total with programmable tariff functions)
- Bidirectional active and reactive energy meters

OPERATIONAL CHARACTERISTICS

- Self-powered by phases
- Voltage measurement range: 20...500VAC L-L 20...290VAC L-N
- Current measurement range: 0,02...5A
- Operating frequency range: 45...65Hz
- Accuracy: Voltage: ±0,5% ±1 digit

Current: ±0,5% ±1 digit
Frequency: ±0,5% ±1 digit
Active energy: Class 2

- Total hour meter
- Max and AVG measurement storage
- True RMS measurements
- RS485 port
- Modbus-RTU communication protocol
- 2 pulses outputs
- Housing: flush-mount 96x96mm with reduced depth (EMM-R4h only)
- Housing: flush-mount 72x72mm (EMM-µ4h only)
- Degree of protection: IP65 on front; IP20 at terminal

MODULAR LED MEASURING INSTRUMENTS

Certification obtained: **EAC**
Compliant with standards: **EN 61010-1, EN 61000-6-2, EN 61000-6-3**

See dimensions and wiring diagrams at the end of chapter

EMM-D4h

EMM-µD3h

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMM-D4h	• Modular housing, 6 module • 4 LED displays for optimal viewing • Easy installation and configuration • True RMS measurement • Max, AVG, max demand measurement storage	110-230-400 VAC	**3MH20P**	1	0,450
		20÷60 VAC / 24÷72 VDC	**3MH20N**		
		80÷230 VAC / 90÷250 VDC	**3MH20S**		
EMM-D4hp	• Modular housing, 6 module • 4 LED displays for optimal viewing • Easy installation and configuration • True RMS measurement • Max, AVG, max demand measurement storage • 2 digital outputs	110-230-400 VAC	**3MH21P**		
		20÷60 VAC / 24÷72 VDC	**3MH21N**		
		80÷230 VAC / 90÷250 VDC	**3MH21S**		
EMM-µD3h	• Modular housing, 3 module • 4 LED displays for optimal viewing • Easy installation and configuration • True RMS measurement • Max, AVG, max demand measurement storage	230 VAC	**3MH010G**	1	0,300
		110 VAC	**3MH010E**		
		400 VAC	**3MH010U**		
EMM-µD3hp	• Modular housing, 3 module • 4 LED displays for optimal viewing • Easy installation and configuration • True RMS measurement • Max, AVG, max demand measurement storage • 2 digital outputs	230 VAC	**3MH011G**		
		110 VAC	**3MH011E**		
		400 VAC	**3MH011U**		

DESCRIPTION		ORDER CODE		
OPTIONS	**Current Inputs**			
	Current measurement through pre-wired compact CTs	**TT**	-	-
	Neutral measurement input	**N**		
	Isolated amperometric inputs with internal CT	**T**		
	Current inputs for CT ../1A	**1A**		
	Inputs and outputs			
	1 digital output (EMM-D4h only)	**DI**		
	1 analog output 0/4...20mA (EMM-D4h only)	**A**		
	Measurements			
	Bidirectional energy meters	**M**	-	-
	Communication ports			
	Opto-isolated RS485 port Modbus-RTU	**485**	-	-
	Ethernet port with Web server and Modbus TCP/IP (EMM-D4h only)	**Eth**		

GENERAL CHARACTERISTICS

The EMM-D... digital multimeters are made in DIN modular housing, 3 and 6 module. The TRMS measurements allow correct operation even in critical conditions.

The main measurement parameters are:

- Voltage (line and total)
- Current (phase and total)
- Power (active, reactive, apparent phase and total)
- Cosφ (phase and total)
- Frequency
- Maximum instantaneous values of voltage and current, active power, reactive power and apparent power
- Peak values (max demand)
- Average value (AVG) for powers and currents
- Hour counter
- Active, reactive and apparent energy meters (partial and total with programmable tariff functions)
- Bidirectional active and reactive energy meters

OPERATIONAL CHARACTERISTICS

- Voltage measurement range: 20...500VAC L-L 20...290VAC L-N
- Current measurement range: 0,02...5A
- Operating frequency range: 45...65Hz
- Programmable CT ratio: 1,0...2000
- Accuracy: Voltage: ±0,5% ±1 digit
  Current: ±0,5% ±1 digit
  Frequency: ±0,5% ±1 digit
  Active energy: Class 2
- Total hour meter
- Max and AVG measurement storage
- True RMS measurements
- RS485 port
- Modbus-RTU communication protocol
- 2 pulses outputs
- Modular housing, 3 module (EMM-µD3h only)
- Modular housing, 6 module (EMM-D4h only)
- Degree of protection: IP65 on front; IP20 at terminal

VOLTMETER AND AMMETER

Certification obtained: **EAC**
Compliant with standards: **EN 61010-1, EN 61000-6-2, EN 61000-6-3**

See dimensions and wiring diagrams at the end of chapter

EMM-µ3-VA

EMM-R3-VA

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMM-µ3-VA	• Flush-mount housing, 72x72 mm • Self-powered by phases • 3 LED displays for optimal viewing • Easy installation and configuration • True RMS measurement	400 VAC (from phases L2-L3)	**3MV02U**	1	0,300
		230 VAC (from phases L2-L3)	**3MV02G**		
		110 VAC (from phases L2-L3)	**3MV02E**		
EMM-µ3-VA-p	• Flush-mount housing, 72x72 mm • Self-powered by phases • 3 LED displays for optimal viewing • Easy installation and configuration • True RMS measurement • 2 digital outputs	400 VAC (from phases L2-L3)	**3MV22U**		
		230 VAC (from phases L2-L3)	**3MV22G**		
		110 VAC (from phases L2-L3)	**3MV22E**		
EMM-R3-VA	• Flush-mount housing, 96x96 mm • Self-powered by phases • 3 LED displays for optimal viewing • Easy installation and configuration • True RMS measurement	400 VAC (from phases L2-L3)	**3MV01U**	1	0,450
		230 VAC (from phases L2-L3)	**3MV01G**		
		110 VAC (from phases L2-L3N)	**3MV01E**		
EMM-R3-VA-p	• Flush-mount housing, 96x96 mm • Self-powered by phases • 3 LED displays for optimal viewing • Easy installation and configuration • True RMS measurement • 2 digital outputs	400 VAC (from phases L2-L3)	**3MV12U**		
		230 VAC (from phases L2-L3)	**3MV12G**		
		110 VAC (from phases L2-L3)	**3MV12E**		

DESCRIPTION		ORDER CODE	PCS	WT
OPTIONS	**Current Inputs**			
	Current measurement through pre-wired compact CTs	**TT**	-	-
	Isolated amperometric inputs with internal CT	**T**		
	Current inputs for CT ../1A	**1A**		
	Measurements			
	Frequency range up to 400Hz	**400Hz**	-	-
	Communication ports			
	Opto-isolated RS485 port Modbus-RTU	**485**	-	-

GENERAL CHARACTERISTICS

The EMM-... VA digital multimeters are manufactured in 72x72mm and 96x96mm flush-mounted housing. The measurements made in TRMS (True Root Mean Square / True RMS value) allow correct operation even in critical conditions.
The main measurement parameters are:

- Voltage (line and system voltages)
- Current (phase and system currents)
- Frequency (frequency of the measured voltage)
- Maximum instantaneous values of voltage and current
- Peak values (max demand)
- Average value (AVG) for voltages and currents
- Hour counter
- Phase sequence

OPERATIONAL CHARACTERISTICS

- Auxiliary power supply taken phase-phase
- Voltage measurement range: 20...500VAC L-L 20...290VAC L-N
- Current measurement range: 0,02...5A
- Operating frequency range: 45...65Hz
- Programmable CT ratio: 1,0...2000
- Accuracy Voltage: ±0,5% ±1 digit
- Accuracy Current: ±0,5% ±1 digit
- Accuracy Frequency: ±0,5% ±1 digit
- Total hour counter
- Max and AVG measurement storage
- True RMS measurements
- RS485 port
- 2 pulses outputs
- Housing: flush-mount 96x96mm (EMM-R3VA only)
- Housing: flush-mount 72x72mm (EMM-µ3VA only)
- Degree of protection: IP65 on front; IP20 at terminal

VOLTMETER AND AMMETER

Certification obtained: **EAC**
Compliant with standards: **EN 61010-1, EN 61000-6-2, EN 61000-6-3**

See dimensions and wiring diagrams at the end of chapter

EMM-µD3VA

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMM-µD3VA	• Modular housing, 3 module • 3 LED displays for optimal viewing • Easy installation and configuration • True RMS measurement	230 VAC	**3MV03G**	1	0,300
		110 VAC	**3MV03E**		
		400 VAC	**3MV03U**		
EMM-µD3VA-p	• Modular housing, 3 module • 3 LED displays for optimal viewing • Easy installation and configuration • True RMS measurement • 2 digital outputs	230 VAC	**3MV031G**	1	0,300
		110 VAC	**3MV031E**		
		400 VAC	**3MV031U**		

DESCRIPTION		ORDER CODE		
OPTIONS	**Current Inputs**			
	Isolated amperometric inputs with internal CT	**T**	-	-
	Current inputs for CT ../1A	**1A**		
	Current measurement through pre-wired compact CTs	**TT**	-	-

GENERAL CHARACTERISTICS

The EMM-… VA digital multimeters are made in a modular 6-module housing. The measurements made in TRMS (True Root Mean Square / true effective value) allow correct operation even in critical conditions.

The main measurement parameters are:

- Voltage (line and total)
- Current (phase and total)
- Frequency (frequency of the measured voltage)
- Maximum instantaneous values of voltage and current
- Peak values (max demand)
- Average value (AVG) for voltages and currents
- Hour counter

OPERATIONAL CHARACTERISTICS

- Voltage measurement range: 20...500VAC L-L 20...290VAC L-N
- Current measurement range: 0,02...5A
- Operating frequency range: 45...65Hz
- Programmable CT ratio: 1,0...2000
- Accuracy: ±0,5% ±1 digit
- Max and AVG measurement storage
- True RMS measurement
- Modular housing, 3 module
- Degree of protection: IP65 on front; IP20 at terminal

FLUSH-MOUNT LED MEASURING INSTRUMENTS FOR DC NETWORKS

Certification obtained: **EAC**
Compliant with standards: **EN 61010-1, EN 61000-6-2, EN 61000-6-3**

See dimensions and wiring diagrams at the end of chapter

EMM-4dc

EMM-4d2c

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMM-4dc	• Compact dimensions 96x96 mm • 4 LED displays for excellent readability • Easy installation and configuration • Max, AVG, max demand measurement storage	110-230-400 VAC	-	1	0,440
		20÷60 VAC / 24÷72 VDC	-		
		80÷230 VAC / 90÷250 VDC	-		
EMM-4dc-p	• Compact dimensions 96x96 mm • 4 LED displays for excellent readability • Easy installation and configuration • Max, AVG, max demand measurement storage • 2 digital outputs	110-230-400 VAC	-		
		20÷60 VAC / 24÷72 VDC	-		
		80÷230 VAC / 90÷250 VDC	-		
EMM-4d2c	• Compact dimensions 96x96 mm • 4 LED displays for excellent readability • Easy installation and configuration • Only voltage and current measurements • Max, AVG, max demand measurement storage	110-230-400 VAC	-	1	0,440
		20÷60 VAC / 24÷72 VDC	-		
		80÷230 VAC / 90÷250 VDC	-		
EMM-4d2c-p	• Compact dimensions 96x96 mm • 4 LED displays for excellent readability • Easy installation and configuration • Only voltage and current measurements • Max, AVG, max demand measurement storage • 2 digital outputs	110-230-400 VAC	-		
		20÷60 VAC / 24÷72 VDC	-		
		80÷230 VAC / 90÷250 VDC	-		

DESCRIPTION		ORDER CODE		
OPTIONS	**Current Inputs**			
	Current measurement through pre-wired compact CTs	**TT**	-	-
	Isolated amperometric inputs with internal CT	**T**		
	Current inputs for CT ../1A	**1A**		
	Current inputs for HALL sensors	**HE**		
	Voltage inputs			
	Voltage inputs 500 VDC	**HV**	-	-
	Inputs and outputs			
	2 digital inputs	**DI**	-	-
	1 analog output 0/4...20mA	**A**		
	2 analogue outputs 0/4...20mA	**2A**		
	Communication ports			
	Opto-isolated RS485 port Modbus-RTU	**485**	-	-
	Profibus-DP interface	**PF**		
	M-Bus interface	**M-Bus**		
	Ethernet port with Web server and Modbus TCP/IP	**Eth**		

GENERAL CHARACTERISTICS

The digital multimeters of the EMM -... dc series are able to visualize the electrical measurements with accuracy on the display, allowing to control direct current networks. The voltage input is directly connected to the line, while the current input is derived from shunts (60 or 150 mV) or from sensors with HALL effect in voltage (0 ... 4 / 10V) or in current (0/4 ... 20mA). The wide availability and accuracy of measurements make these multimeters a winning technical-economic alternative to traditional analog measuring instruments.

The main measurement parameters are:

- Voltage / • Current
- Active power (EMM-4dc only) / • Temperature
- Maximum instantaneous values of voltage and current, active power, temperature
- Peak peaks (max demand) / • average value (AVG) • Totalizer hour counter (EMM-4dc only)
- Active energy meters (partial and total) (EMM-4dc only)

OPERATIONAL CHARACTERISTICS

- Voltage measurement range: 5...200VDC fase-fase 20...290VAC fase-neutro
- Voltage measurement range: 5...500VAC (HV option)
- Current measurement range: 0,4...20mA (TA effetto HALL)
- Shunt measurement range: 1...60/150mV
- Programmable CT ratio: 1,0...2000
- Accuracy Voltage: ±0,5% ±1 digit
- Accuracy Current: ±0,5% ±1 digit
- Accuracy Active energy: ±1%
- 2 digital otputs
- RS485 port
- Modbus-RTU communication protocol
- Housing: flush-mount 96x96mm
- Degree of protection: IP65 on front; IP20 at terminal

ACCESSORIES

CONVERTER

Certification obtained: **EAC**
Compliant with standards: **EN 61010-1, EN 61000-6-2, EN 61000-6-3**

See dimensions and wiring diagrams at the end of chapter

GENERAL FEATURES

The EMI-10L converter
allows you to interface n "Slave" devices connected on an RS485 network with a "Master" equipped with an Ethernet port:
- Power LED, Ethernet diagnostics, RS485
- Programming via web interface
- Multimaster up to 4 connections
- 2 RS485 serial ports

EMI-10L

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMI-10L	• RS485/Ethernet converter • Modular DIN housing, 3 module • Modbus TCP / Modbus RTU conversion	230 VAC	**3IC52G**	1	0,440
		110 VAC	**3IC52V**		
		20÷60 VAC/DC	**3IC52J**		

CONVERTER

Certification obtained: **EAC**
Compliant with standards: **EN 61010-1, EN 61000-6-2, EN 61000-6-3**

See dimensions and wiring diagrams at the end of chapter

GENERAL FEATURES

The EMI-5s gateway allows to interface "Slave" devices connected on an RS485 network with a "Master" via Profibus DP network.
- Diagnostic LED
- Backlit LCD display
- Multimaster up to 4 connections

EMI-5s

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMI-5s	• RS485/Profibus DP converter • Modular DIN housing, 3 module • Modbus RTU / Profibus DP V0 conversion	24÷230 VAC/DC	**3IC74S**	1	0,168

CONVERTER

Certification obtained: **EAC**
Compliant with standards: **EN 61000-6-4 / N 64000-6-2 / EN 61010-1 / EN 60742**

See dimensions and wiring diagrams at the end of chapter

GENERAL FEATURES

The EMI-1P-USB is a 2.5kV galvanically isolated RS485 / USB serial converter, it uses an FTDI USB chip.
This device will allow you to connect securely to all "Slave" devices on the RS485 serial port.

EMI-1P-USB

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
EMI-1P-USB	RS485 / USB converter	Da PC 5V @ 100mA	**3IC18**	1	0,100

PROTECTION COVERS

See dimensions and wiring diagrams at the end of chapter

GENERAL CHARACTERISTICS

When a higher front IP protection degree is needed, the covers can be installed on the corresponding devices and also provide a sealing feature.

TYPE		ORDER CODE	PCS	WT
Protection cover	• IP65 96 x 48 mm	**CAL 96x48**	1	0,048
	• IP65 72 x 72 mm	**CAL 72x72**	1	0,070
	• IP65 96 x 96 mm	**CAL 96x96**	1	0,077

POWER SUPPLY

See dimensions and wiring diagrams at the end of chapter

GENERAL CHARACTERISTICS

- Universal input power supply
- Protections: Short circuit / Overload / Over voltage
- Ultra slim design with 17.5mm (1SU width)
- Isolation class II
- LED indicator for power on
- No load power consumption<0.3W
- DC output voltage adjustable
- Working temperature:-30 ~ +70 C

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
Power supply	• LED indicator for power on • Ultra slim design with 17.5mm (1SU width) • Voltage adj. range: 21.6÷29V • Current range: 0÷0.63A • Rated power: 15.2W	85÷264 VAC 120÷370 VDC	**AL15W24VDCHD**	1	0,078

POWER SUPPLY

See dimensions and wiring diagrams at the end of chapter

GENERAL CHARACTERISTICS

- Universal input power supply
- Protections: Short circuit / Overload / Over voltage
- Ultra slim design with 35mm (2SU width)
- Isolation class II
- LED indicator for power on
- No load power consumption<0.3W
- DC output voltage adjustable
- Working temperature:-30 ~ +70 C

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	ORDER CODE	PCS	WT
Power supply	• LED indicator for power on • Modular DIN housing, 3 module • Voltage adj. range: 21.6÷29V • Current range: 0÷1.5A • Rated power: 36W	85÷264 VAC 120÷370 VDC	**AL60W24VDCHD**	1	0,300

COMPACT PREWIRED SPLIT AND SOLID CORE

Certification obtained:
Compliant with standards:

Compact prewired split-core

Compact prewired solid-core

TYPE		PRIMARY CURRENT	MEASURE RANGE	HOLE Ø (mm)	ORDER CODE	PCS	WT
TTA	• Spit-core • Cable supplied as standard, length 1 m	50A	0,3÷70A	10	**TTA50**	3	0,200
		100A	0,6÷130A	16	**TTA100**	3	0,250
		200A	0,2÷250A	24	**TTA200**	3	0,250
TT	• Solid-core • Cable supplied as standard, length 15 cm	10A	0,1÷15A	9	**TT10**	3	0,100
		50A	0,3÷70A	9	**TT50**	3	0,100
		100A	0,6÷130A	19	**TT100**	3	0,130

GENERAL CHARACTERISTICS

The TT .. or TTA .. measuring current transformers (CTs) are mounted in an electrical system to reduce the line current to a secondary value compatible with the amperometric inputs of digital multimeters or network analyzers.

They're class 0.5 or 1 measuring current transformers without primary winding and are normally used for high primary current values starting from 10A. Thanks to their very compact size and easy mounting, these sensors can be easily used in critical and space-constrained applications.

The TTA openable current sensors .., facilitate installation and reduce the costs of a possible shutdown of the system.

OPERATIONAL CHARACTERISTICS

- Operating frequency: 50...60Hz (TT only)
- Operating frequency: 50...400Hz (TTA only)
- Overload withstand: 120% Ipn
- Rated insulation voltage Ui: 2.5kV for 1 minute
- Ambient conditions:
  - Operating temperature: -25...+50°C
  - Storage temperature: -40...+80°C
  - Relative humidity, not condensing: 90%

ROGOWSKI COILS

Compliant with standards: : **2014/35/EU (Low Voltage), EN61010-1**

TYPE		COIL LENGTH (mm)	EXTERNAL COIL DIAMETE (mm)	MAX CONDUCTOR DIAMETER (mm)	ORDER CODE	PCS	WT
Rogowski coils	Note: different cable lengths and external coil diameter available on request.	250	92	68	**CRC250100AC052M**	1	0, 130
		400	139	115	**CRC400100AC052M**	1	0, 130
		600	203	179	**CRC600100AC052M**	1	0, 160
		900	299	275	**CRC900100AC052M**	1	0, 200

GENERAL CHARACTERISTICS

The Rogowski sensor is a measuring device for alternating currents.

Unlike current sensors with ferromagnetic core, the linearity of the Rogowski sensor makes it particularly suitable for measuring large currents.

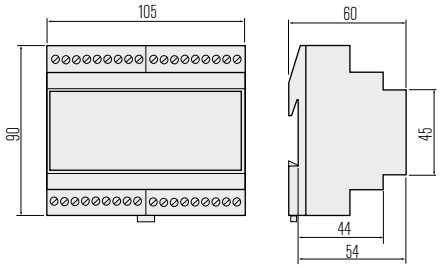
CRC sensors do not require an external integrator because the measurement processing is entirely managed by the measurement device. They can be connected to network analyzers. The range of flexible CRC sensors is specially designed for existing installations limited by stringent integration constraints or with high intensity currents. The absence of a ferromagnetic core makes the Rogowski sensor linear even in the presence of large currents.

OPERATIONAL CHARACTERISTICS

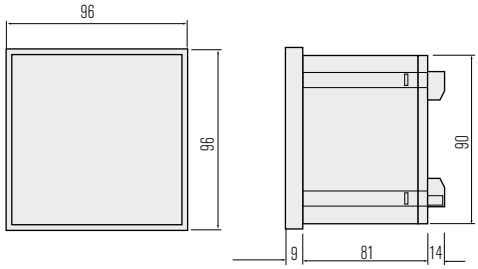
- Primary current 20 ÷ 4000A
- 100 mV / kA @ 50 Hz output signal
- Operating frequency 45 - 65 Hz
- Accuracy ± 0.5%
- Linearity ± 0.2%
- Coil and connection cable: thermoplastic rubber, self-extinguishing grade V-0 (UL 94)
- Insulation voltage 7.4kV for 1 minute
- Degree of protection: IP52
- Environmental conditions:
- Operating temperature: -20 ... + 70 ° C
- Storage temperature: -20 ... + 70 ° C

ENERGY METERS

EMC-D3b

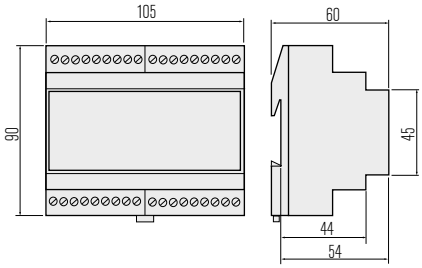


EMC-3b

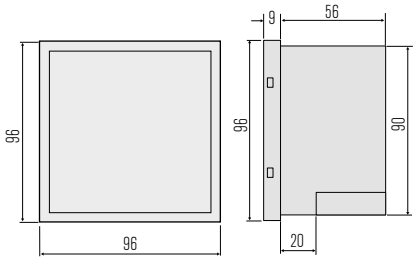


DATA CONCENTRATOR, REMOTE DISPLAY

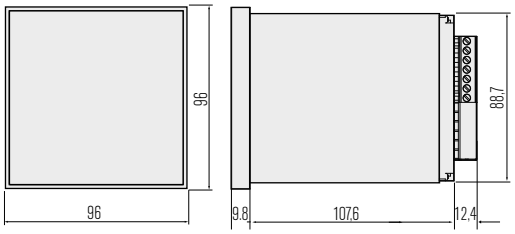
EML-16 | EML-16-DC



RDU

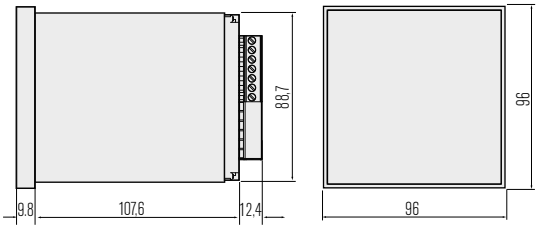


RDU-L

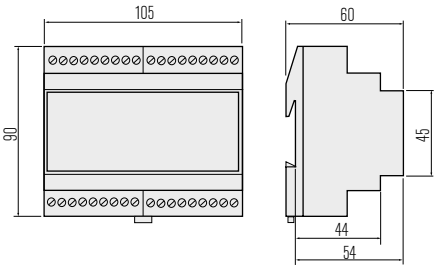


NETWORK ANALYZERS, POWER METERS, VOLTMETERS AND AMMETERS

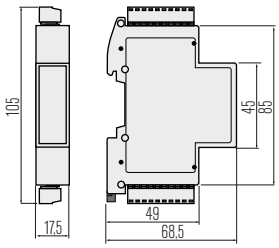
EMA-90N | EMS-96



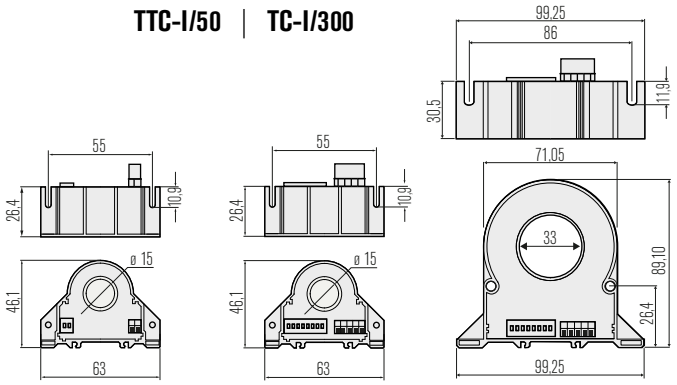
EMS-D6 | EMA-D6



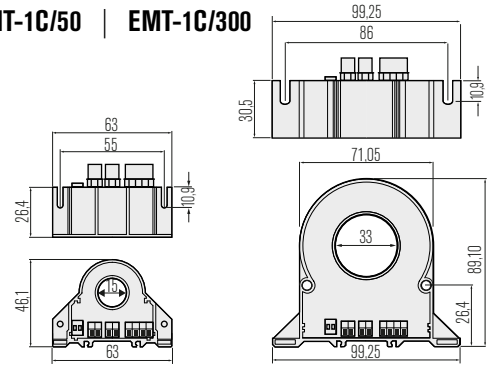
EMU-3ea | EMU-2it



TTC-I/50 | TC-I/300

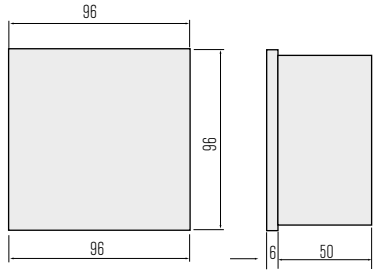


EMT-1C/50 | EMT-1C/300

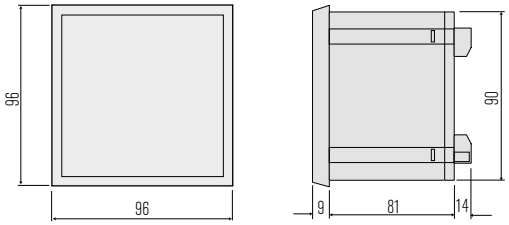


NETWORK ANALYZERS, POWER METERS, VOLTMETERS AND AMMETERS

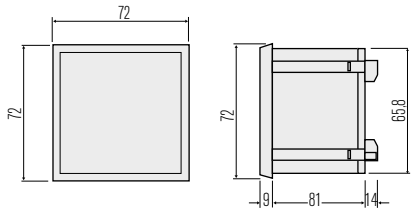
EMM-4L-96 | EMM-4L-96-MID



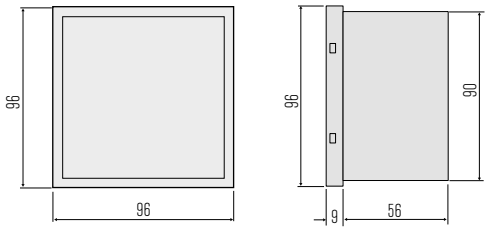
EMM-4h | ELM-4 | EMM-4dc | EMM-4d2c



EMM-µ4h | EMM-µ3VA

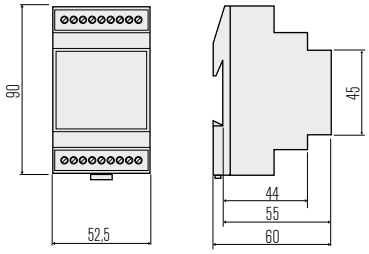


RDU | EMM-R4h | EMM-R3VA



CONVERTERS, GATEWAY

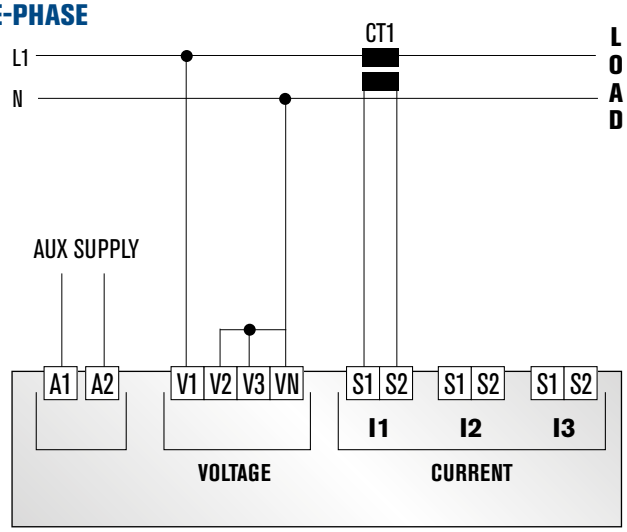
EMI-10L | EMI-5s



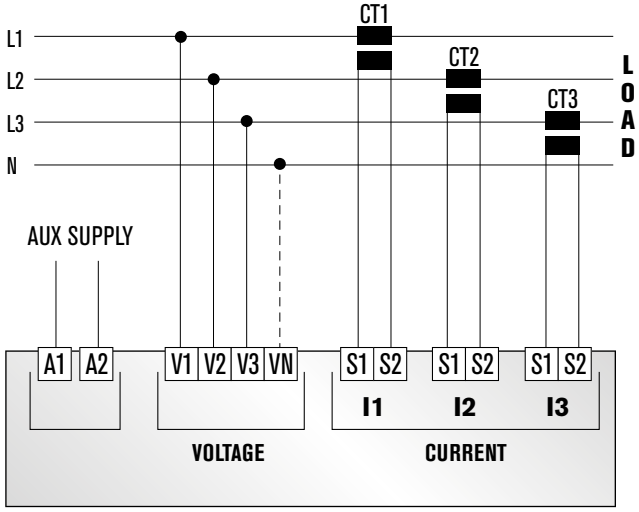
NETWORK ANALYZERS, POWER METERS, ENERGY METERS

EMC-D3b | EMC-3b | EMS-D3 | EMU-3ea | EMM-4h | EMM-D4h | EMM-µD3h | EMM-µ3VA

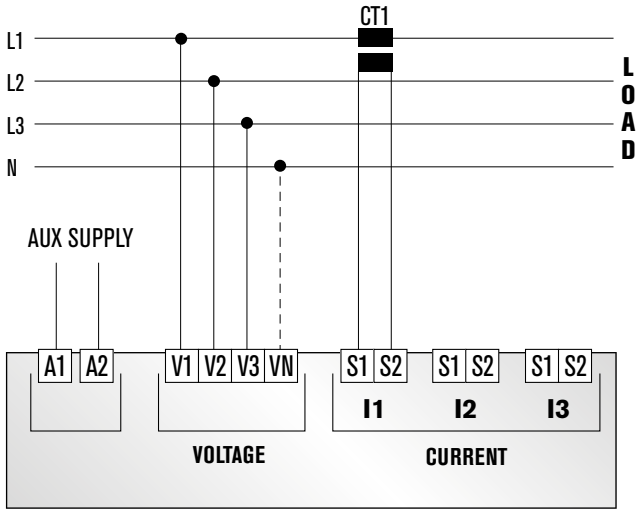
SINGLE-PHASE



THREE-PHASE MEASURING, WITH OR WITHOUT NEUTRAL



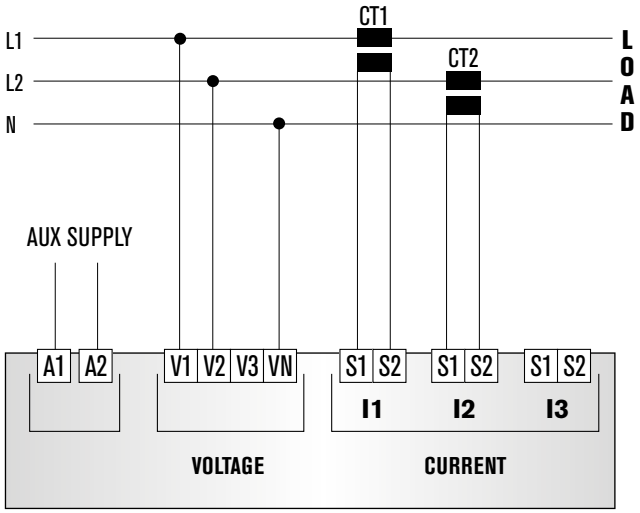
THREE-PHASE MEASURING, BALANCED LOAD, WITH OR WITHOUT NEUTRAL



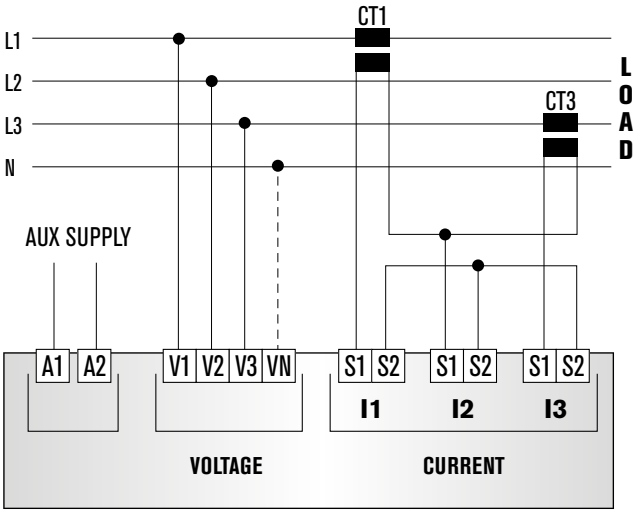
NETWORK ANALYZERS, POWER METERS, ENERGY METERS

EMC-D3b | EMC-3b | EMS-D3 | EMU-3ea | EMM-4h | EMM-D4h | EMM-µD3h | EMM-µ3VA

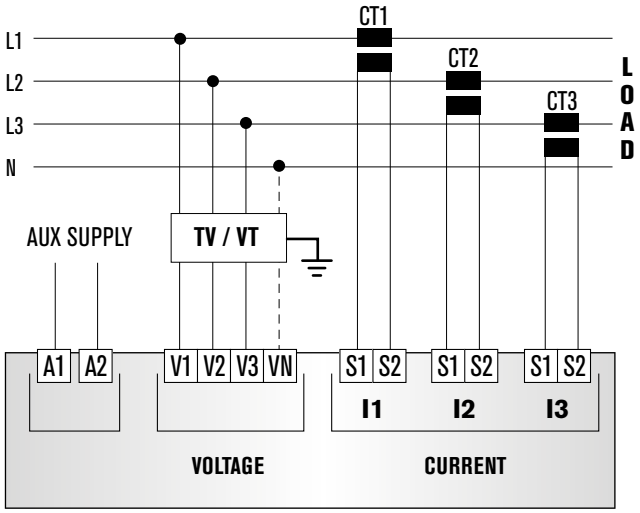
2-PHASE



THREE-PHASE MEASURING WITHOUT NEUTRAL, ARON CONNECTION



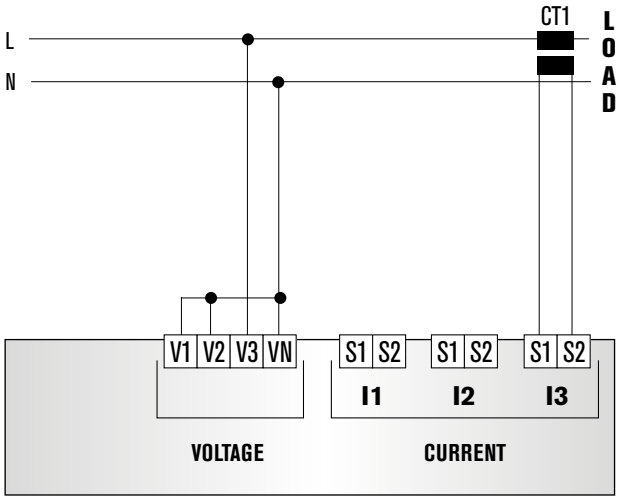
THREE-PHASE MEASURING, WITH OR WITHOUT NEUTRAL, WITH VOLTAGE TRANSFORMERS



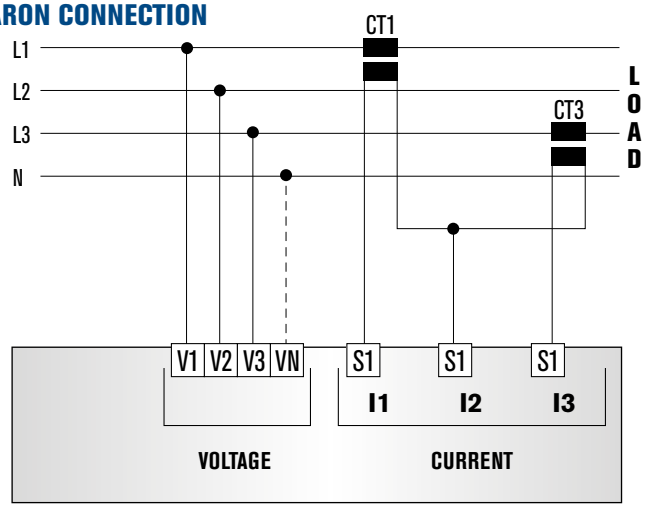
POWER METERS, VOLTMETERS AND AMMETERS (SELF-POWERED BY THE PHASES)

EMM-R4h | EMM-μ4h | EMM-R3VA | EMM-μ3VA

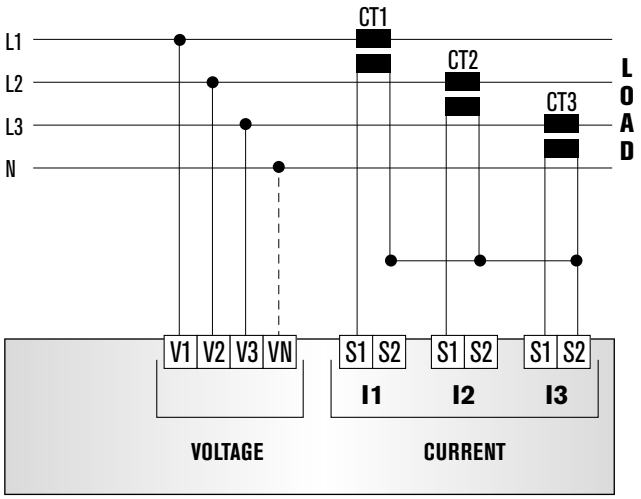
SINGLE-PHASE



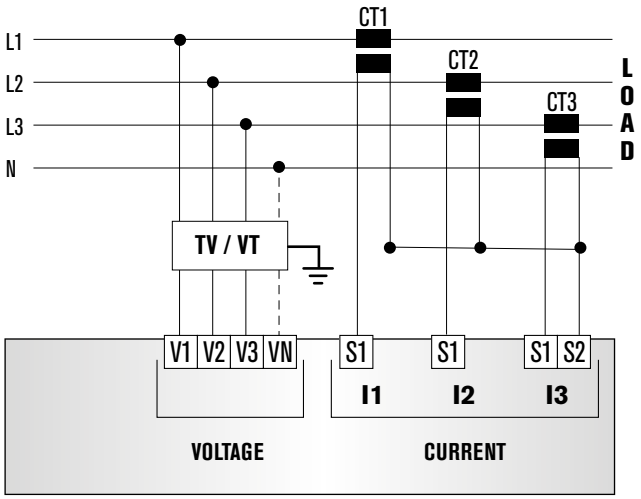
THREE-PHASE MEASURING WITHOUT NEUTRAL, ARON CONNECTION



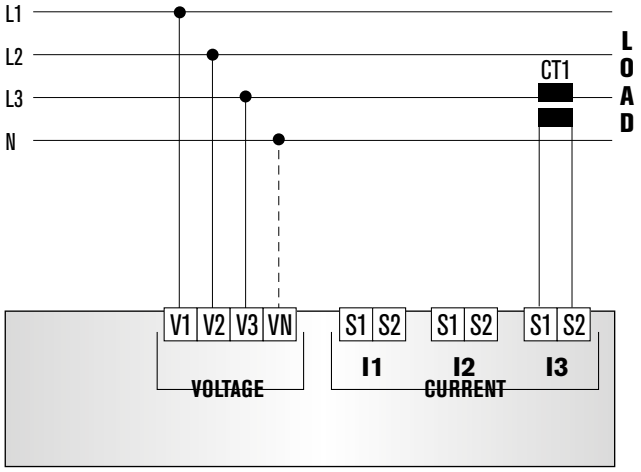
THREE-PHASE MEASURING, WITH OR WITHOUT NEUTRAL



THREE-PHASE MEASURING WITHOUT NEUTRAL, WITH VOLTAGE TRANSFORMERS, ARON CONNECTION



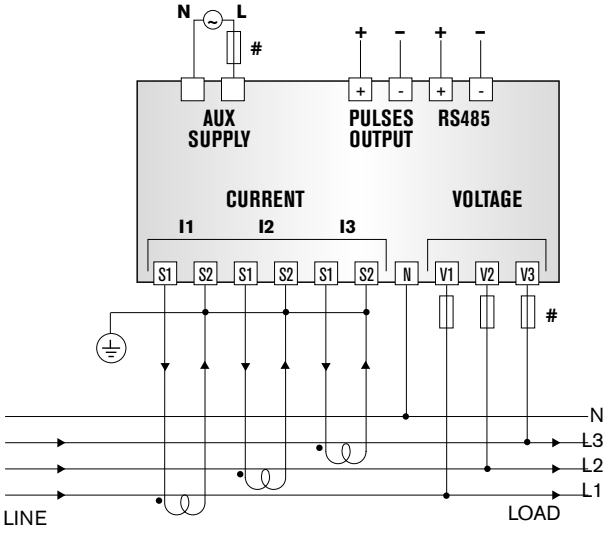
THREE-PHASE MEASURING, BALANCED LOAD, WITH OR WITHOUT NEUTRAL



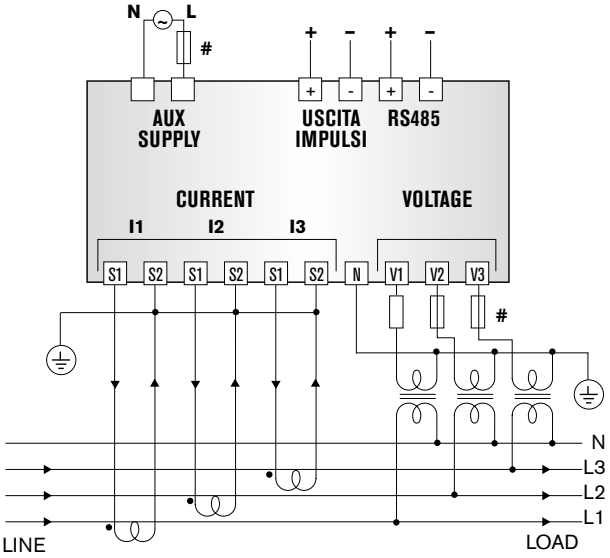
POWER METERS, MID CERTIFIED

EMM-4L-96-MID | EMM-D4-MID

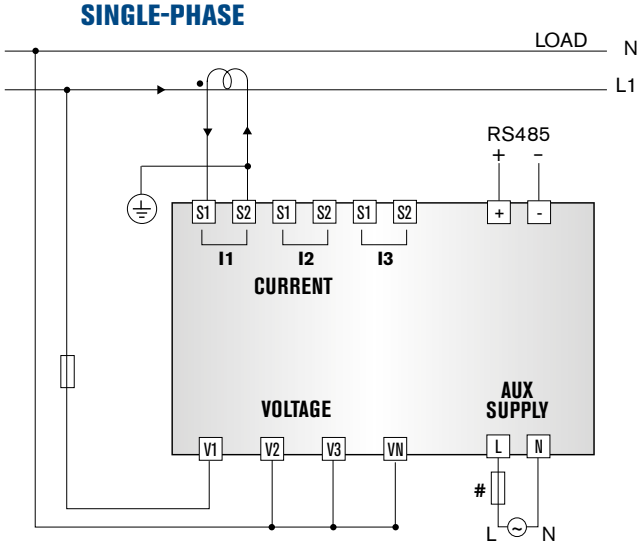
THREE-PHASE MEASURING, WITH NEUTRAL, WITH THREE CURRENT TRANSFORMERS



THREE-PHASE MEASURING, WITH NEUTRAL, WITH VOLTAGE TRANSFORMERS, WITH THREE CURRENT TRANSFORMERS,



SINGLE-PHASE

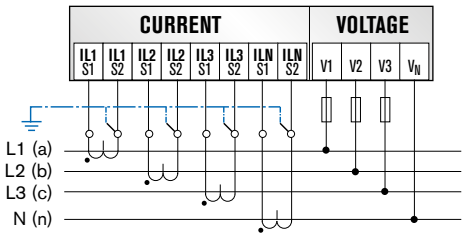


NETWORK ANALYZERS

EMA-90N | EMA-11N | EMA-D6 | EMS-96 | EMS-D6

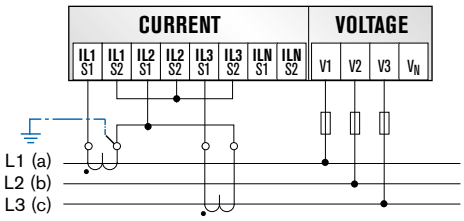
1
Three-phase measuring, four conductors, unbalanced load,without voltage transformers, with current transformers.

Connection type 3PH-4W



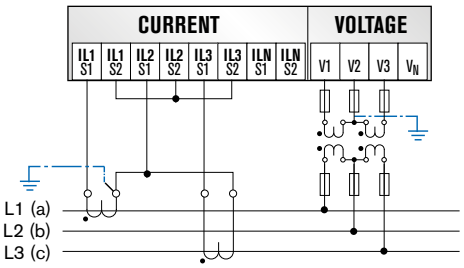
2
Three-phase measuring, three conductors, unbalanced load, without voltage transformers, with two current transformers. (ARON)

Connection type ARON



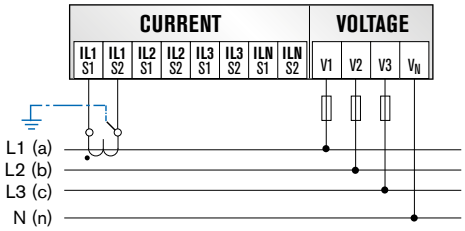
3
Three-phase measuring, three conductors, unbalanced load, with voltage transformers, with two current transformers. (ARON)

Connection type ARON



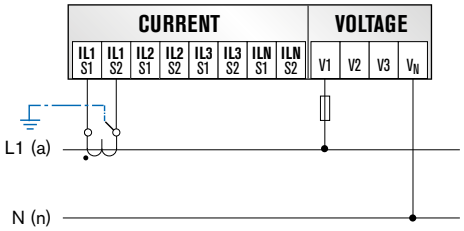
4
Three-phase measuring, three conductors, balanced load, without voltage transformers, with one current transformer.

Connection type 3PH BAL



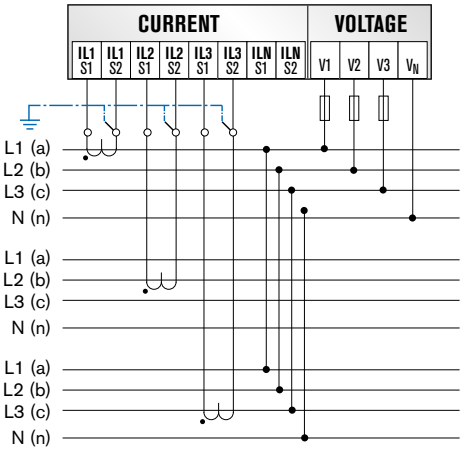
5
Single-phase measuring, two conductors, without voltage transformers, with one current transformer.

Connection type 1PH



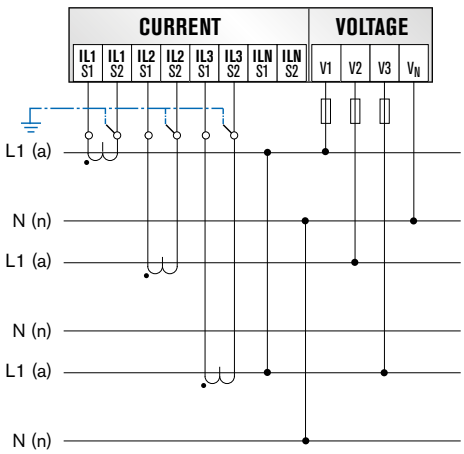
6
Three-phase measuring, four conductors, balanced multiple loads, with three current transformers.

Connection type 3PH ML BAL



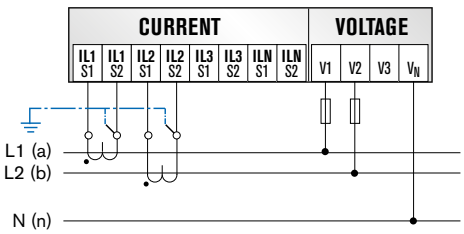
7
Single-phase measuring, two conductors, without voltage transformers, with one current transformer.

Connection type 1PH ML



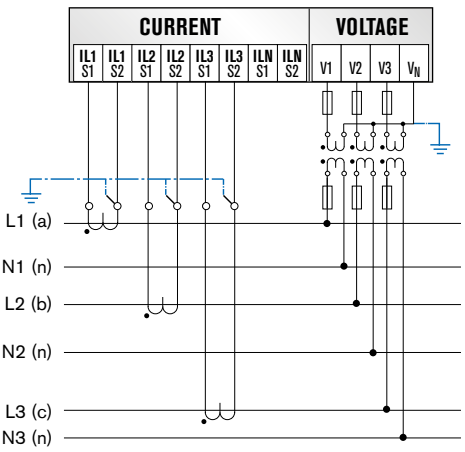
8
Two-phase measuring, three conductors, unbalanced loads, without voltage transformers with two current transformers.

Connection type 2PH 3W



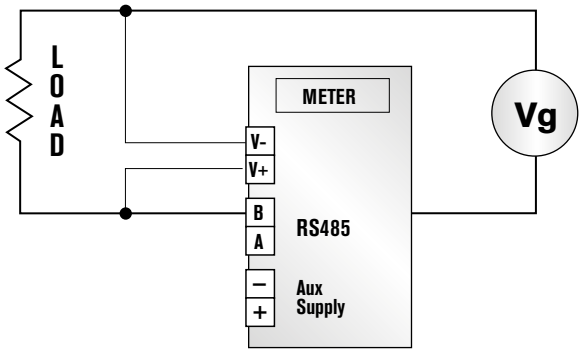
9
Single-phase measuring, two conductors, with voltage transformers, with three current transformer.

Connection type 3X1PH



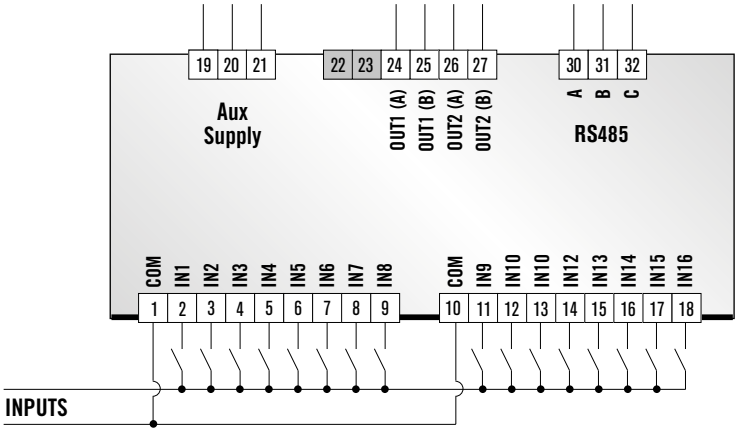
NETWORK ANALYZERS

EMT-1C/50 | EMT-1C/300



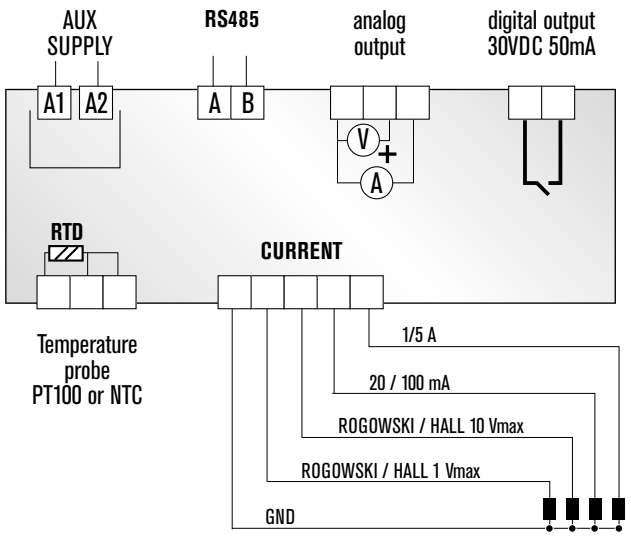
DATA CONCENTRATOR

EML-16

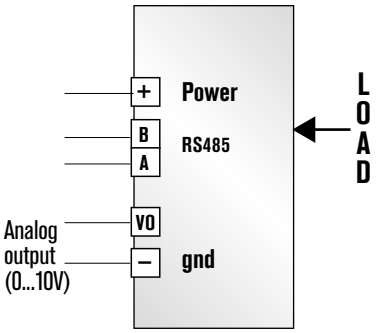


CURRENT ANALYZERS

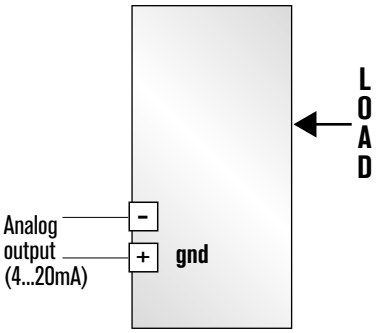
EMU-2it



TTC-V



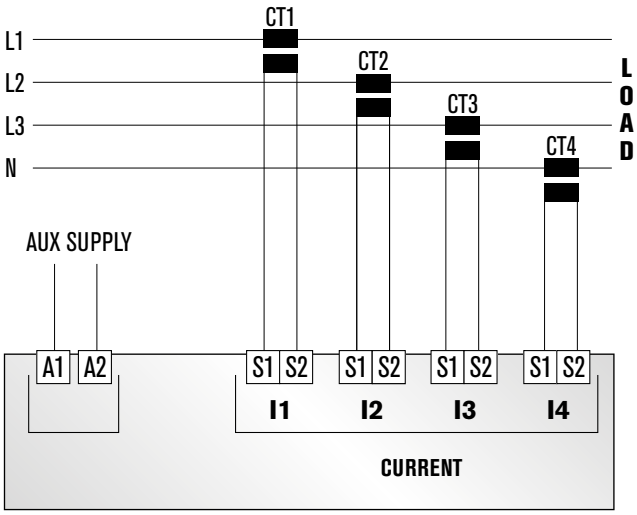
TTC-I



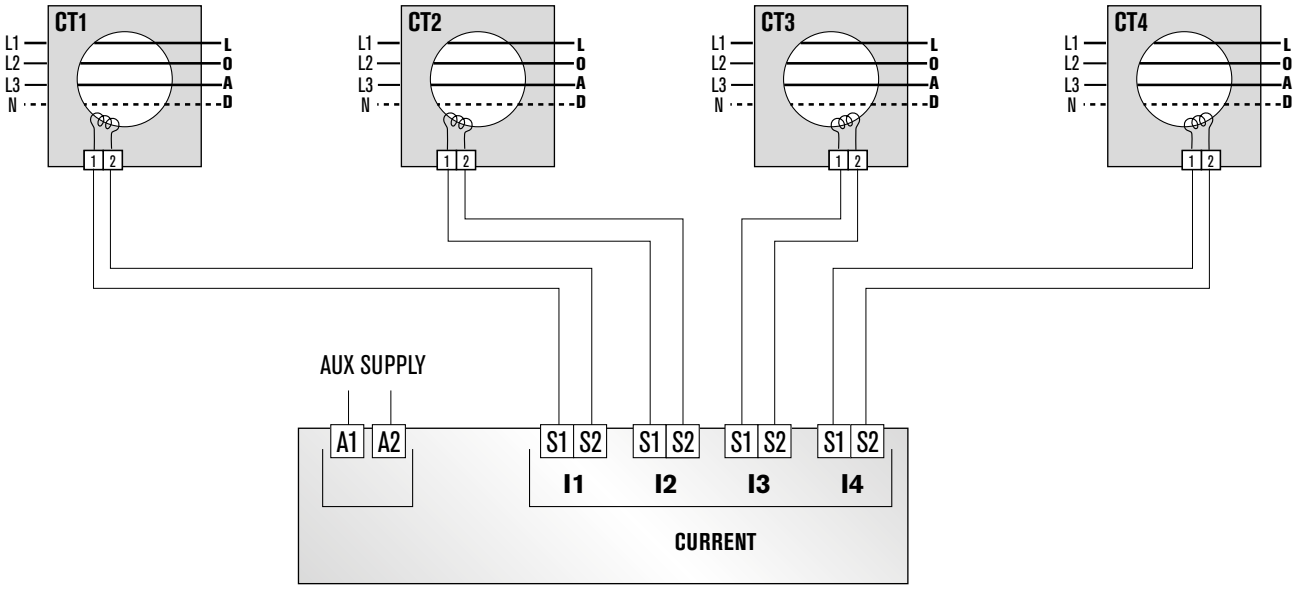
CURRENT ANALYZERS

ELM-4

CURRENT INPUTS VIA EXTERNAL CT



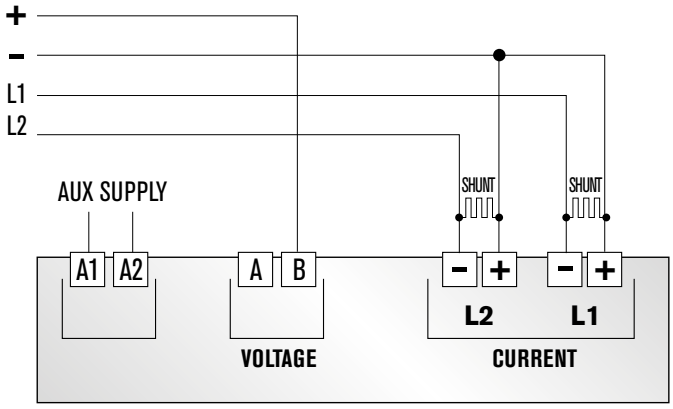
DIFFERENTIAL CURRENT INPUTS



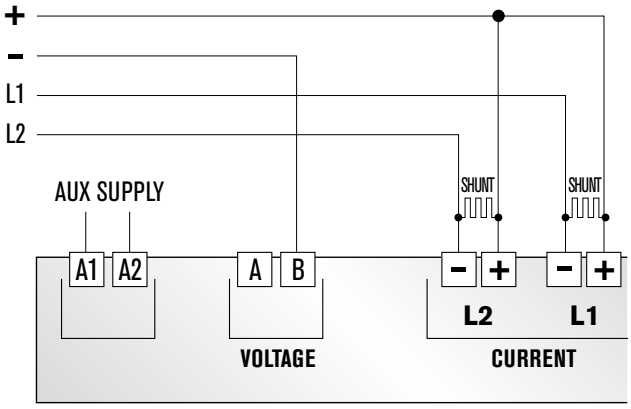
POWER METERS FOR DC NETWORKS

EMM-4DC | EMM-2d4c

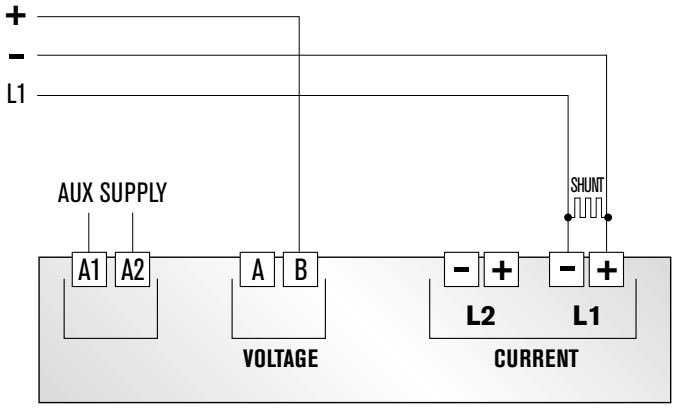
2 SHUNT INPUTS / NEGATIVE COMMON



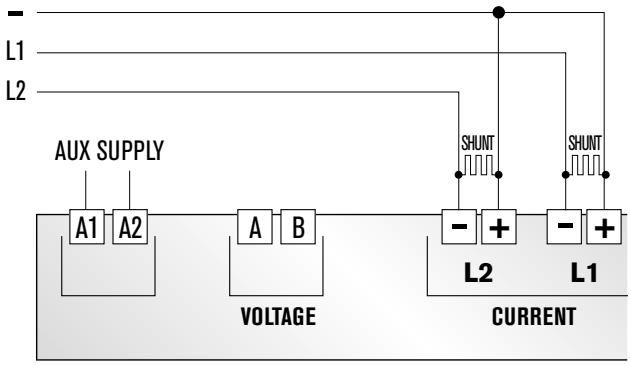
2 SHUNT INPUTS / POSITIVE COMMON



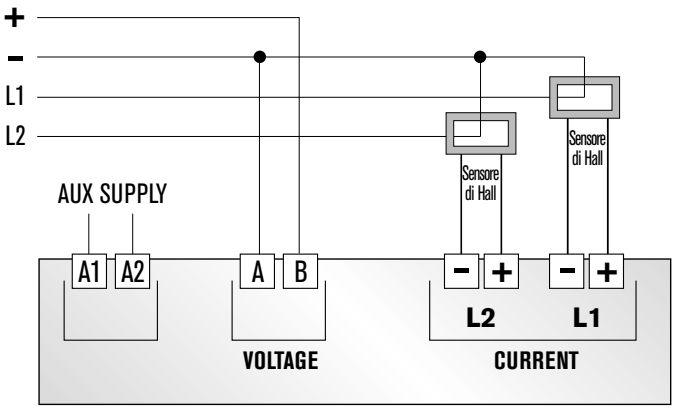
1 SHUNT INPUT / NEGATIVE COMMON



ONLY SHUNT INPUTS



HALL SENSOR INPUTS / NEGATIVE COMMON



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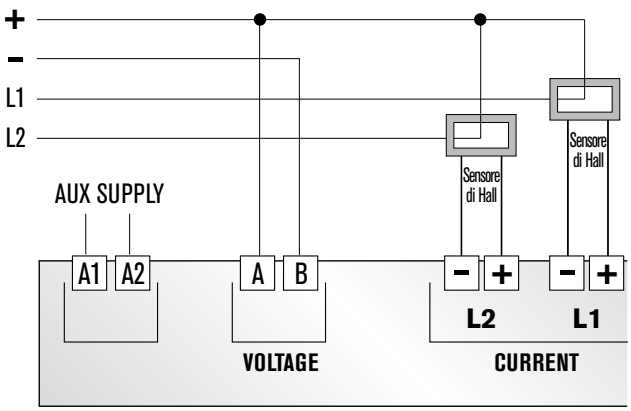

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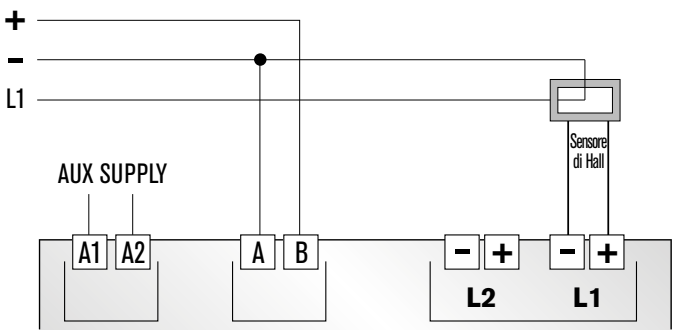

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