

# RISH Relay - I

## Áram védőrelé



## TRMS Digitális áram védőrelé

Túláram, alacsony áram, áram kimaradás, és áram aszimmetria elleni védelem

- Valódi RMS (TRMS) mérés
- Kijelzési pontosság 0.5%
- 4-digites 7-szegmenses LED
- 4 különböző paraméter helyszíni választással
- 15 hiba tárolása
- Konfigurálás PRKAB USB kábellel (opció)
- Kétszínű LED hibajelzéshez
- Hiba kijelzése a paraméter értékével
- Alkalmazás 1- és 3-fázisú rendszerekben

## Főbb jellemzők

- 1- és 3-fázisú (3- és 4-vezetékes) alkalmazás. Beállítás az előlapról.
- Túláram elleni védelem IDMT görbe alapján
- Alacsony áram elleni védelem
- Áramkimaradás elleni védelem
- Áram aszimmetria elleni védelem
- 4-digites ultra fényes 7-szegmenses LED kijelző
- Trip relay cum DPM with Class 0.5
- TRMS mérés. Torzított hullámforma mérése a 15. harmonikusig
- Előző hiba tárolása. A készülék tárolja az előző 15 hibát
- LED jelzések
  - Relé-1 és Relé-2 állapotának jelzése
  - Működés jelzése 4-digites kijelzővel
  - Kétszínű LED (zöld/piros) a normál és a hiba állapot jelzéséhez
- **AND (ÉS)** funkció. Két hiba fellépése ÉS-funkcióba kapcsolható
- Programozás USB-PRKAB programozó kábellel
- Auto / kézi alaphelyzetbe állítás  
In auto mode instrument automatically clears itself. If the device set into manual mode, the device must be manually reset by push button through display if it goes into fault.
- Állítható kapcsolási pontok
  - túláramra
  - alacsony áramra
  - áramkimaradásra
  - áram aszimmetriára
- Állítható késleltetés minden kapcsolási pontra
- Működés, vagy hangjelzés üzemmód. A készülék lekapcsolhatja a berendezést, vagy csak hangjelzés kapcsolhat hia esetén.
- Felhasználó által beállítható áramváltó szekunder áram (1A, vagy 5A)
- Megfelel a nemzetközi szabványoknak és az IEC 61010-1-2010 érintésvédelmi szabványnak

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- **User selectable CT primary**

The Primary of Current Transformer can be programmed on site from 1 A to 999 kA for Current protection relay.

- **EMC Compatibility**

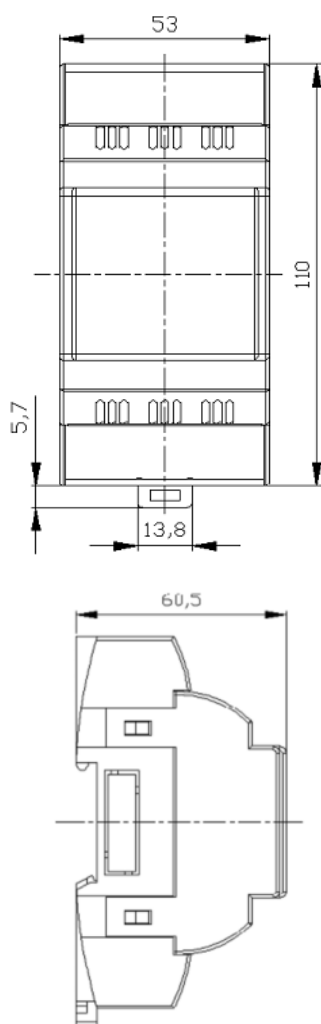
Compliance to International standard IEC 61326 - 1.

- **Onsite selection of Auto scroll / Fixed Screen**

User can set the display in auto scrolling mode or fixed screen mode using front panel keys.

ANSI szám	Magyarázat
37	Alsó határérték alatti áram relé
51	Túláram relé
46	Aszimmetria-áram relé

### Méreték



### Technical Specifications

#### Input Current

Nominal Input Current (AC RMS)	5 A
System CT Secondary Values	1 A to 5 A programmable on site
System CT Primary Values	1 A to 999 kA programmable on site

#### Auxiliary Supply

Auxiliary Supply Voltage	60 V – 300V AC-DC
Higher Aux Nominal value	230 V AC/DC 50/60 Hz for AC Aux
External Lower Aux	20 V – 60 VDC / 20 V – 40 VAC
Lower Aux Nominal value	48 VDC / 24 VAC 50/60 Hz for AC Aux
Aux Supply Frequency	45 to 66 Hz range

#### Overload Withstand

Current	20 x for 1 second, repeated 5 times at 5 min
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#### Operating Measuring Ranges

Current Range	5...140% of CT Secondary
Frequency	40...70Hz

#### VA Burden

Input Current Burden	< 0.25 VA approx. per phase
Auxiliary Supply Burden	< 4 VA approx.

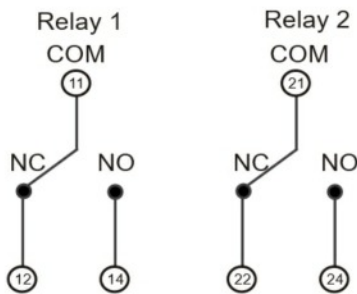
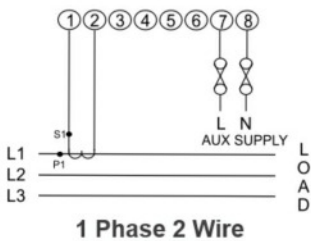
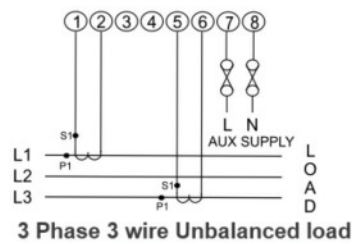
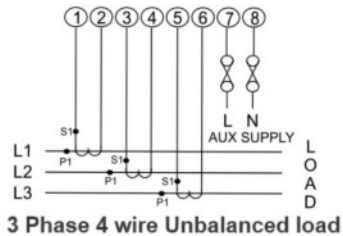
#### Reference condition for Accuracy

Reference Condition	23°C +/- 2°C
Input waveform	Sinusoidal (distortion factor 0.005)
Input Frequency	50 or 60 Hz ±2%
Auxiliary supply voltage	Nominal Value ±1%
Auxiliary supply frequency	Nominal Value ±1%

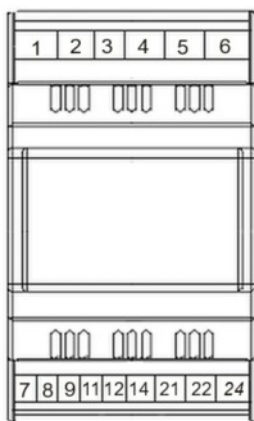
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### Electrical Connection



Note- Relay Contacts are shown in power off condition



### Technical Specifications

#### Accuracy

Input Current  $\pm 0.5\%$  of nominal value

Frequency  $\pm 0.2$  Hz

Trip, Reset Delays, Power ON  $\pm 140$  msec or  $\pm 5\%$  of Set Delay,

Whichever is Greater (WIG)

#### Influence of Variations

Temperature coefficient  $0.05\%/^{\circ}\text{C}$  for current

#### Applicable Standards

EMC IEC 61326 - 1

Immunity IEC 61000-4-3. 10V/m min – Level 3 industrial Low level

Safety IEC 61010-1-2010 , Permanently connected use

IP for water & dust IEC60529

Pollution degree: 2

Installation category: 300V CAT III / 600V CAT II

High Voltage Test 2.2 KV AC, 50Hz for 1 minute between all Electrical circuits.

#### Environmental

Operating temperature  $-10$  to  $+55^{\circ}\text{C}$

Storage temperature  $-25$  to  $+70^{\circ}\text{C}$

Relative humidity 0... 90% non condensing

Shock 15g in 3 planes

Vibration 10... 55 Hz, 0.15mm amplitude

Enclosure IP20 (front face only)

#### Relay Contacts

Types of output 1CO, 2CO, 1CO+1CO

Contact Ratings (Res. Load) 5A/250VAC/30VDC

Mechanical Endurance  $1 \times 10^7$  OPS

Electrical Endurance

- NO-  $3 \times 10^4$  OPS, NC-  $1 \times 10^4$  OPS for 1CO / 1CO+1CO relay
- $1 \times 10^5$  OPS for 2CO relay

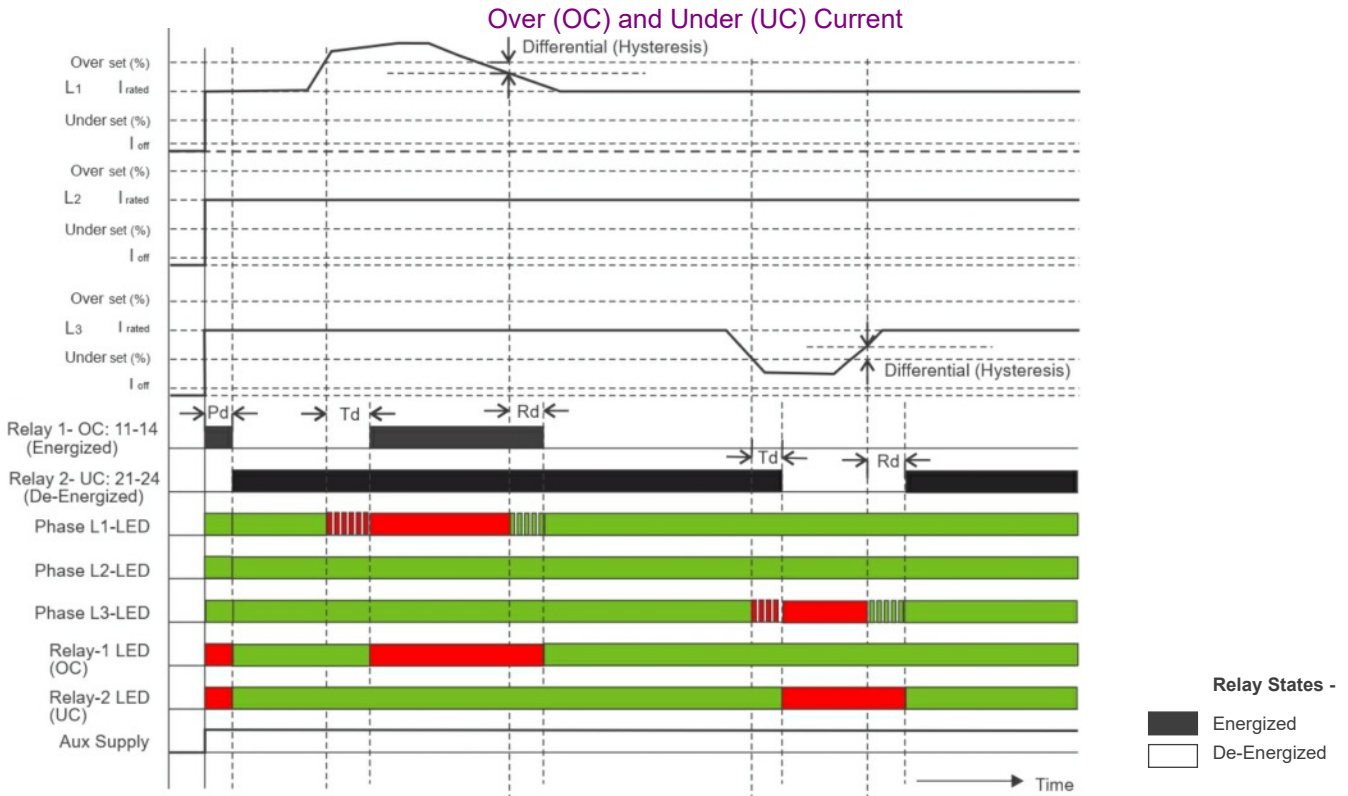
#### Mechanical Attributes

Weight 300g Approx.

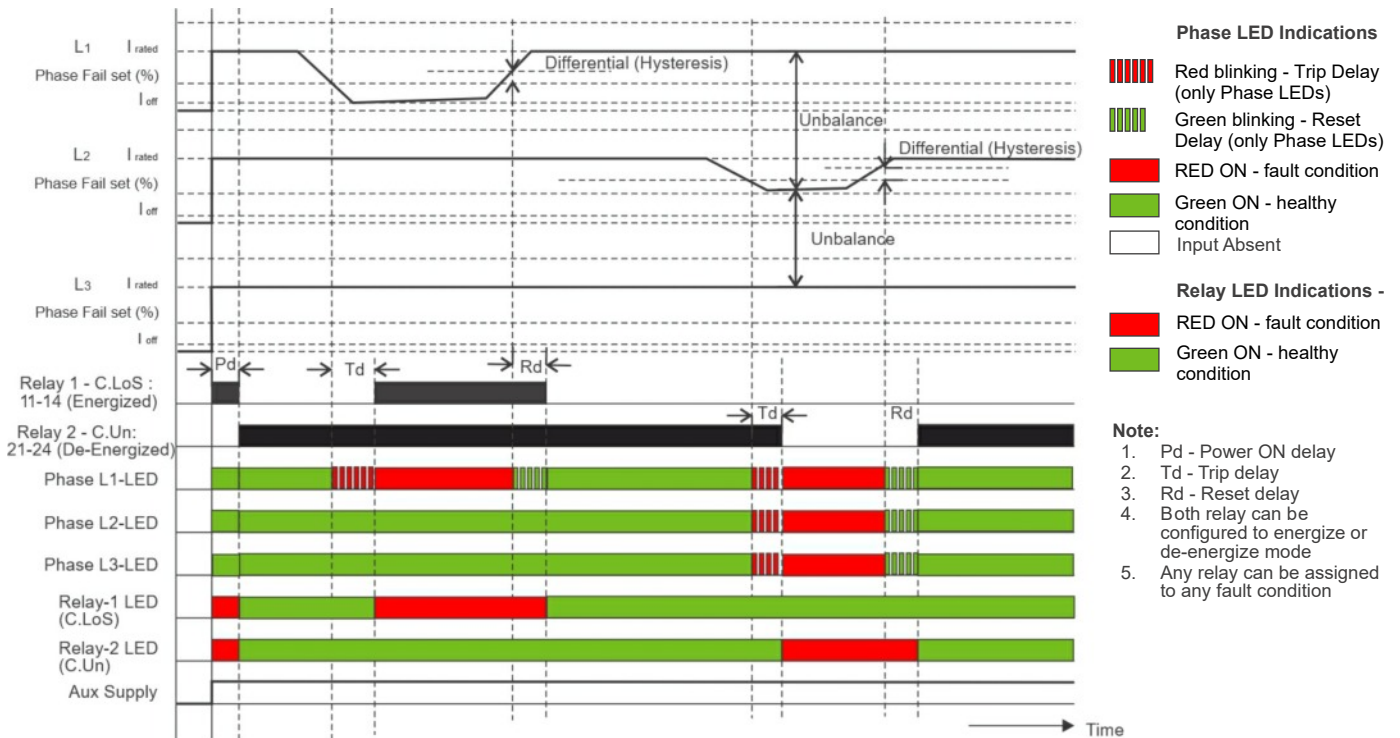
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Definite Time Characteristics:

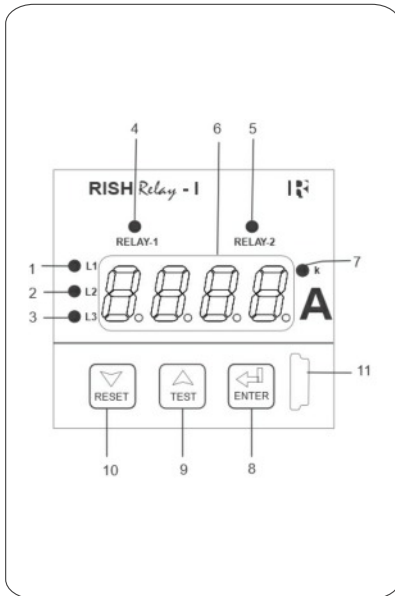


### Current Loss (C.LoS) and Current Unbalance (C.un)



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### Operating elements:

- 1 - L1- LED : Indicates status of I1 . It Lights green when input current is healthy, red in fault condition, red blinking in trip delay and green blinking in reset delay.
- 2 - L2-LED : Indicates status of I2. It Lights green when input current is healthy, red in fault condition, red blinking in trip delay and green blinking in reset delay.
- 3 - L3- LED : Indicates status of I3. It Lights green when input current is healthy, red in fault condition, red blinking in trip delay and green blinking in reset delay.
- 4/5 - Relay-1 and Relay-2 status LED : Indicates status of relay-1 and relay-2 respectively. It lights green for relay in healthy condition and red for relay in trip condition.
- 6 - 4 Digit ultra bright 7 seg LED Display.
- 7 - K LED : It is used to show value in kA.
- 8 - Enter Key : Confirms changes of parameter setting. When on the measurement screen, holding for 3 sec enters in setup menu.
- 9- Test Key : Increments setting value, move upwards in the menu or change parameter. It is also used to test operation of relay. Continuous holding of test key changes relay position and when release it resets the relay position (Only in healthy condition).
- 10- Reset Key : Decrements setting value, move downwards in the menu or change parameter. It is also used to reset relay when manual reset mode is selected.
- 11- Configuration via USB-based PRKAB.

### Parameter Settings:

- Trip setting for Current loss: 5 - 99%
- Trip setting for Current Unbalance: 2 - 20%
- Trip setting for over current (IDMT Disabled): 101 - 140%
- : Trip setting for over current (IDMT Enabled): : 101 - 125%
- : Trip setting for under current: : 10 - 99%
- Setting for Differential / hysteresis: 1 - 15%\*
- : Time Multiplier Setting (TMS): 0.1 - 1
- Individual Faults can be deactivated as per system requirement: YES
- Relay control mode: De-energize / Energize
- Reset Delay: : 0.2 - 30s
- Programmable Delay for over current: 0 - 30s
- Programmable Delay for under current: 0 - 30s
- Programmable Delay for Current loss: 0 - 30s
- Programmable Delay for current unbalance: 0 - 30s
- Power ON Delay: 0.5 - 30s
- CT primary current: 1 A - 999 kA
- Rated current: 1 to 5 A
- Reset option: Auto / Manual

Note \* Differential setting range for current unbalance is limited as per its setting of trip point.

### Hysteresis Calculation Method:

#### Example-1

- For "OC" (Over Current)
- CT Secondary = 5 A .
- Trip point = 101% of CT Secondary = 5.05 A
- Hysteresis = 2% of CT Secondary = 0.1 A
- Relay Reset point = Trip point - Hysteresis = 5.05 - 0.1 = 4.95 A

#### Example-2

- For "C.un" (Current Unbalance)
- CT Secondary = 5 A
- Trip point = 10% of CT Secondary = 0.5 A
- Hysteresis = 2% of CT Secondary = 0.1 A
- Relay Reset point = Trip point - Hysteresis = 0.5 - 0.1 = 0.4 A

### Inverse Characteristics Curve [Over Current IDMT]:

Relay Characteristics type	a	C
Standard Inverse	0.02	0.14
Very Inverse	1	13.5
Extremely Inverse	2	80
Long Inverse	1	120

To Calculate Relay Operating Time when IDMT is enabled, use the following formula

$$T = \frac{C}{\left(\frac{I}{I_s}\right)^{\alpha} - 1} \times TMS$$

Where,

T = Time in Sec (Operating time of relay).

I = Input Current.

I<sub>s</sub> = Secondary Current.

TMS = Time Multiplier Setting.

C = Constant for relay characteristics.

α = Constant representing inverse time type (α > 0)