Iso4-DIN

Multipoint earth leakage relay
4 inputs

pag. 1 / 8

WARNING!

- Carefully read the manual before the installation or use.
- This device is to be installed by qualified personnel, complying to current standards, to avoid damages.
- Before any maintenance operation on the device, remove supply inputs.
- The manufacturer cannot be held responsible for electrical safety in case of improper use of the equipment.
- Products illustrated herein are subject to alteration and changes without prior notice.

Description

- Earth leakage relay type A
- Measuring in true effective value (TRMS)
- Third harmonic filtering (settable)
- Modular DIN-rail housing, 3 modules
- Green power LED indicator (ON)
- External residual current transfomer CT-1 series
- Fail safe function for each four relays (settable)
- Visualization instant leakage values
- Backlighted LCD display (green, yellow, red)
- 4 red indicator LEDs for tripping
- TEST and RESET by front button or remote contact
- Four independent relays to control the circuit breakers of the four channels
- Instantaneous bar-graph of current measurement for each channel
- Log tripped residual current
- RS-485 communication (Modbus RTU protocol)

Display and LED functions

Thanks to LCD display, the user can view very quickly the measurements (instant leakage values, filter TRMS, MAX values, THD, crest factor), the graph bar, the Log, the alarms and can access to all settings.

- Green: detected current lower than threshold
- Yellow:
  - detected current higher than PRE-ALARM threshold but lower than TRIP threshold
- Red:
  - detected current higher than TRIP threshold and relay activation
  - current leakage read off scale
  - TEST, causes tripping of the relay
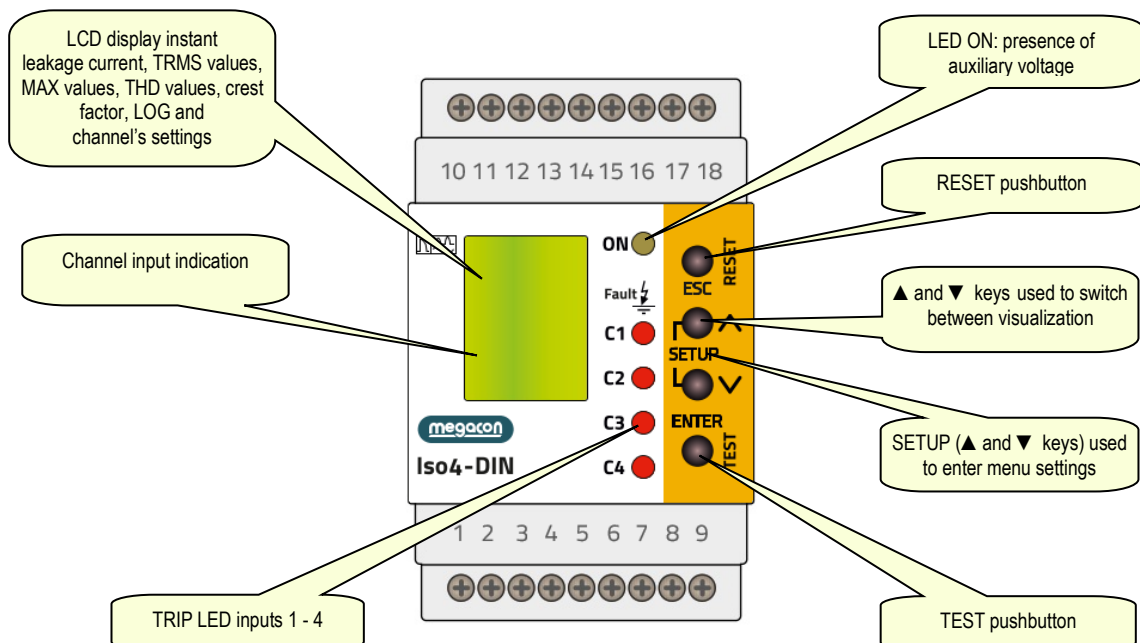 - open residual current transformer circuit (or not right connected)

Front keyboard

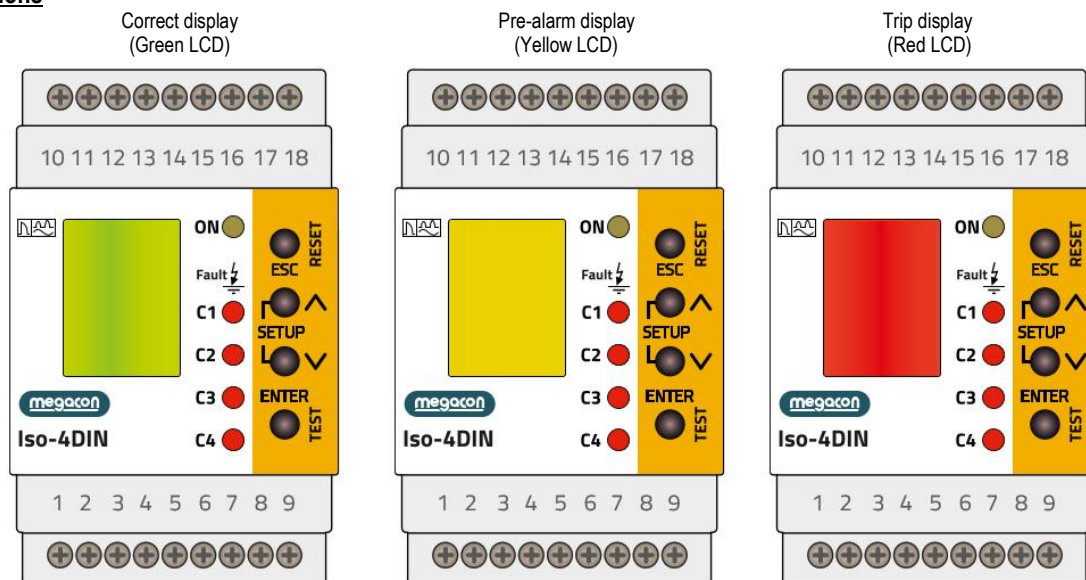**RESET** key – To reset the relay after tripping, used to exit from settings menu.
TEST key – Causes tripping of the relays, to confirm a choice.
PROG keys – Used to enter into settings menu, to scroll display pages.
▲ and ▼ keys – Used to switch between visualization modes, to select among possible choices and to modify settings (increment/decrement).

LCD display instant leakage current, TRMS values, MAX values, THD values, crest factor, LOG and channel's settings

Channel input indication

TRIP LED inputs 1 - 4

LED ON: presence of auxiliary voltage

RESET pushbutton

▲ and ▼ keys used to switch between visualization

SETUP (▲ and ▼ keys) used to enter menu settings

TEST pushbutton

Display indications

Correct display (Green LCD)	Pre-alarm display (Yellow LCD)	Trip display (Red LCD)

Cause of the trip	Display message
Test	⚠ / Red display
Current leakage	⚠ / Red display

Others display messages	
Pre-alarm	🔔 / Yellow display
Current leakage over scale	OVR / Red display
Poor toroidal connection	OPEN / Red display

Parameters table

Below are listed all the programming parameters. For each parameter are indicated the possible setting range, the factory default, as well as a description of the function of the parameter.

Press ▲ and ▼ keys to select the required parameter. The selected parameter is highlited with ► .

Press **TEST** key to activated the selected parameter. Use ▲ and ▼ keys to select among possible choices and press **TEST** key to confirm a choice.

INPUTS menu

Configuration parameters for current inputs (for inputs 1…4).

INPUT ENABLE	Unit of measure	Default	Range
Enable	-	YES	YES-NO

If set to OFF, the toroidal current input is disabled.

INPUT FILTER	Unit of measure	Default	Range
Filter	-	3rd arm.	OFF 3rd arm. 21st arm. 60479-2 62423

OFF – If set to OFF the harmonic blocking filter is disabled.

3ª arm. – Activate the third harmonic filter.

21ª arm. – Activate the twenty-first harmonic filter.

IEC 60479-2 – Attenuates harmonic components in installations, according to EN 60479-2 standard.

IEC 62423 – Attenuates harmonic components in installations, according to EN 62423 standard.

FAULT CURRENT	Unit of measure	Default	Range
IΔ	mA	30	30…30000

Select the tripping fault current to earth.

TRIPPING DELAY TIME	Unit of measure	Default	Range
Time	ms	20	20…10000

Note: **settable >20ms only if fault current >30mA.**
Select the tripping delay time.

RESET TRIP	Unit of measure	Default	Range
Reset	-	MAN	AUTO-MAN

If set to AUTO, the reset of TRIP will be automatic. If set to MAN, manual reset through the RESET key on the front.

PRE-ALARM DELAY TIME	Unit of measure	Default	Range
Time	ms	20	20…10000

Select the pre-alarm delay time.

PRE-ALARM THRESHOLD	Unit of measure	Default	Range
%	%	50	50…90

Select the pre-alarm threshold which is a function of the tripping fault current value.

PRE-ALARM RESET	Unit of measure	Default	Range
Reset	-	AUTO	AUTO-MAN

If set to AUTO, the reset of pre-alarm will be automatic. If set to MAN, manual reset through the RESET key on the front.

TRIP RELAY FAILSAFE	Unit of measure	Default	Range
Failsafe	-	OFF	ON-OFF

If set to ON, positive safety activated on TRIP relay of the channel input, in this condition the TRIP relay is normally energised; therefore in the event of the lack of auxiliary voltage the output contacts move to the trip condition.

HYSTERESIS	Unit of measure	Default	Range
Hysteresis	%	90	50…90

Tripping fault current threshold hysteresis.

RESET ATTEMPTS	Unit of measure	Default	Range
N° attempts	-	3	1…10

Possibility of setting *n* automatic resets.

TIME TRIP RESET ATTEMPTS	Unit of measure	Default	Range
Time	s	10	5…600

After fault, the time between one reclosing attempt and the next.

COMMUNICATION menu
Communication port parameters (COM1).

RS-485	Unit of measure	Default	Range
Serial node address	-	01	01-247
Baudrate	bps	38400	4800-115200
Stop bits	-	1	1-2
Data format	-	8 bit - n	8 bit, no parity 8 bit, odd 8 bit, even
Response time	ms	10	5-100

UTILITY menu

UTILITY	Unit of measure	Default	Range
Language	-	ENG	ENG-ITA
Operating frequency	Hz	50	50-60
TRIP memory	-	NO	YES-NO

TRIP memory - If set YES, the TRIP condition reappears when turned on, if the device was turned off without TRIP reset.

TIME and DATE menu
The ELR-4C manages the time and date, that is used for the storage of events (tripped current).

COMMANDS menu
The commands menu allows executing some occasional operations like resetting, log events clearing. Once the required command has been selected, press **TEST** to execute it. To cancel the command execution press **RESET** key.

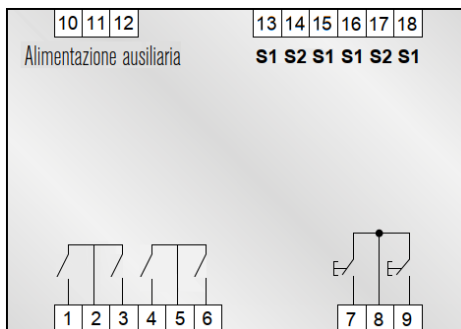| COMMAND	Description
Parameters to default	All setup parameters are resetted to factory default value
Reset MAX & TRIP	Clears the event list and max values
Reset MAX	Clears the max values
Reset LOG	Clears the event list

PASSWORD menu
The password is used to enable or lock to setting menu and command menu (RESET). For new devices (factory default), the password management is disabled and the access is free. If instead the password has been enabled and defined (0-9999), then to get access, it's necessary to enter the password first, specifyng the number code.

PASSWORD	Unit of measure	Default	Range
Value	-	0	0-9999

If set to 0, password management is disabled.

Terminals connection

N°	Description
1	Trip output relay R1
2	Trip output relay R1,R2 (COMMON)
3	Trip output relay R2
4	Trip output relay R3
5	Trip output relay R3,R4 (COMMON)
6	Trip output relay R4
7	External TEST (DI1)
8	Digital input (COMMON)
9	External RESET (DI2)
10	Auxiliary supply (neutral or phase)
11	Not used
12	Auxiliary supply (neutral or phase)
13	Input toroidal current transformer 4-S1
14	Input toroidal current transformer 3,4-S2
15	Input toroidal current transformer 3-S1
16	Input toroidal current transformer 2-S1
17	Input toroidal current transformer 1,2-S2
18	Input toroidal current transformer 1-S1

Mechanical dimensions (mm)
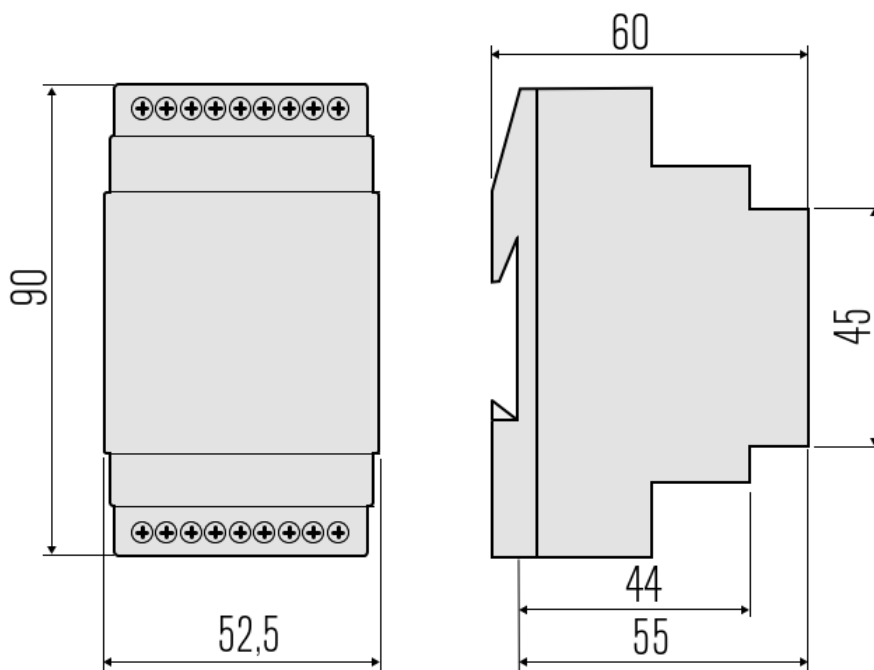
Wiring connection
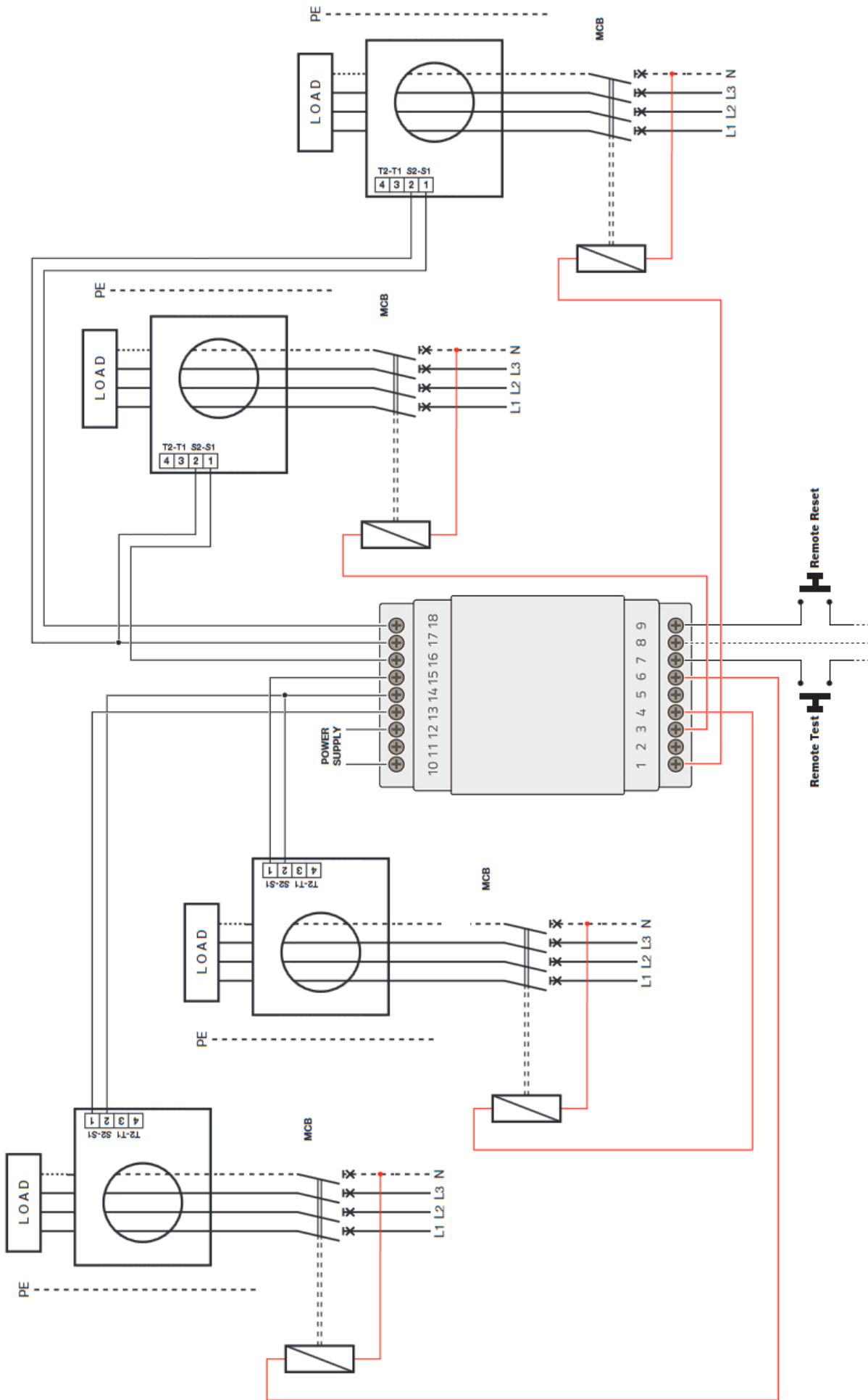
Technical characteristics

Control circuit	
Toroidal transformer	External, CT-1 series
Tripping type	Type A
Tripping set-point (I∆)	0,03÷30A
Prealarm set-point	50÷90%
Tripping time (t)	0,02÷10s
Resetting	Automatic or manual by pushbutton on front or remote
Auxiliary supply	
Auxiliary voltage	230 VAC 115 VAC (optional) 24-48VAC/DC (optional)
Rated frequency	50/60Hz
Max power consumption	6VA
Output relay	
Number of outputs	4
State	Configurable normally de-energised or energised
Rated operating voltage	250 VAC
Rated current	5A
Mechanical life	$10 \cdot 10^6$ cycles
Digital inputs	
Number of inputs	2
Rated voltage	Self powered 24 VAC/DC (optional)
Display	
Type	LCD
RS485 serial interface (optional)	
Protocol	Modbus-RTU
Baud-rate	Programmable 4800 – 115200 bps
Connections	
Type of terminal	Screw (fixed)
Number of terminals	18
Conductor cross section	0,127 - 2,082 mm^2
Tightening torque	0.5 - 0.6 Nm
Length of cable to strip	7mm
Ambient operating conditions	
Operating temperature	-10÷60°C
Storage temperature	-20÷80°C
Relative humidity	5÷95%
Housing	
Version	3 module DIN
Degree of protection	IP20 terminals IP40 on front
Weight	200g
Certifications and compliance	
Reference standards	EN 61010, EN 61000-6-2, EN 61000-6-3, IEC/TR 60755 EN 60947-2 Annex M

For further details please contact:

Megacon AB
Ranhammarsvägen 20
S-168 67 Bromma, Sweden
Phone: +46 (0)8-402 42 50

www.megacon.se