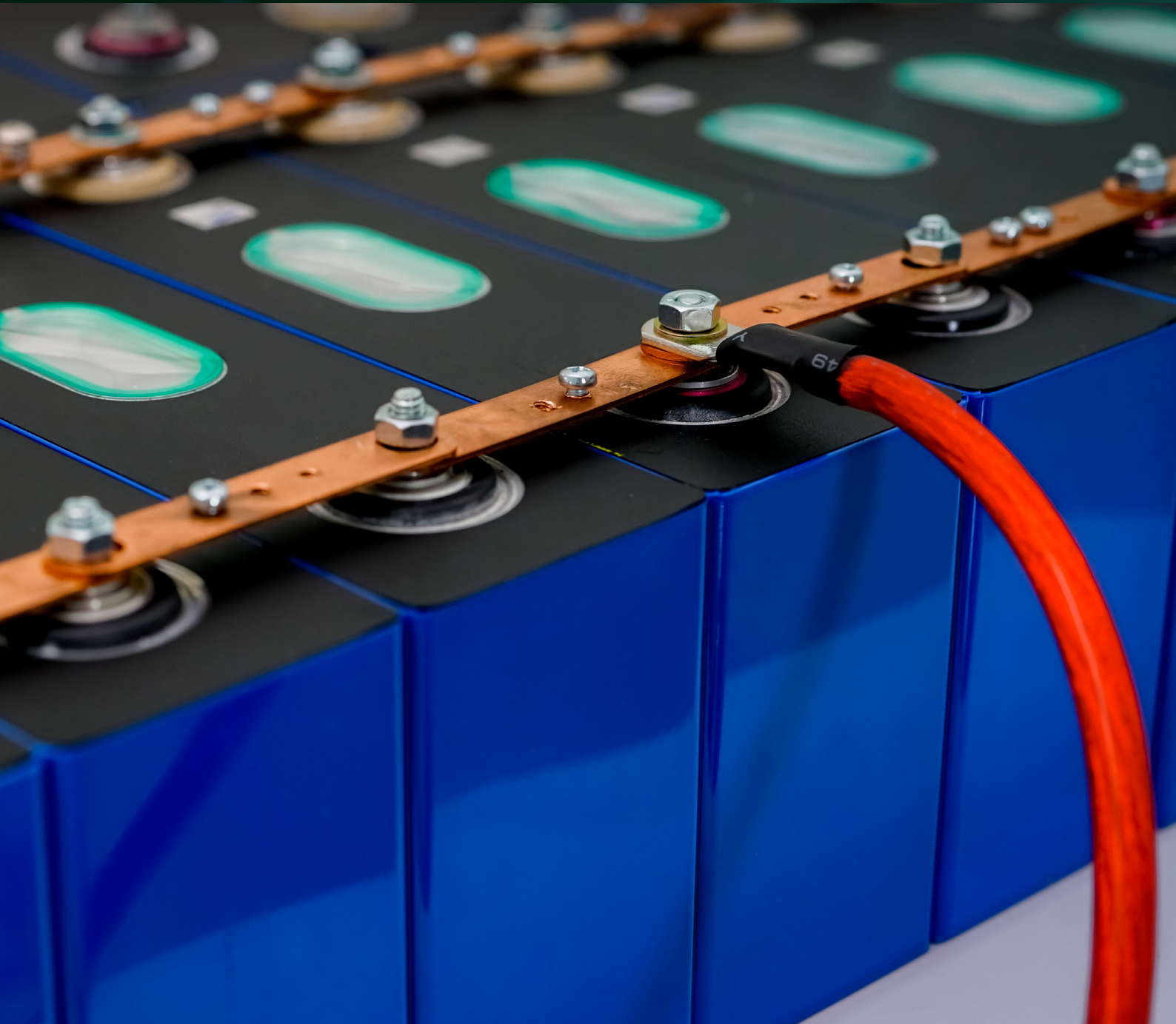




# MONITORING DC POWER SUPPLY

Relays for monitoring faults in earthed and un-earthed  
DC power supply systems



FOR YOUR ELECTRICAL SAFETY!

# THii RELAYS

DC

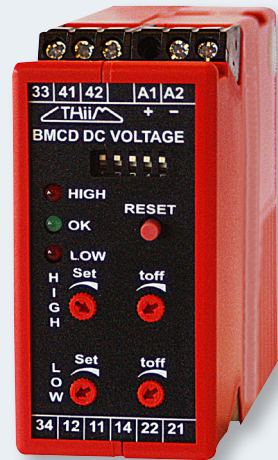
UPS



## BATTERY UNDERVOLTAGE – BMCA BATTERY OVER- AND UNDERVOLTAGE – BMCD

The relay (BMCA) triggers an alarm at undervoltage, thereby preventing drain of the battery. BMCD triggers alarms both in the case of drain and overcharging.

- Programmable for 12, 24, 48 or 110 VDC
- OFF delay 0-10 s or 0-100 s
- Relay functions:  
Undervoltage: 1 x C/O and 1 x N/C  
Over- and undervoltage: 1 x C/O, 2 x N/C and 1 x N/O
- LED indication status



DC

UPS



## OVER- AND UNDERVOLTAGE (WINDOW) – BMWB

Combined over- and undervoltage relay. By means of a built-in switchmode supply designed to monitor levels in the range 14-340 VDC. The individually adjustable hysteresis for over- and undervoltage means that the relay can be used for both in and out coupling of equipment, with well defined voltage values. BMWB can be used as Window discriminator with well defined upper and lower limit values.

- 2 x C/O relay outputs, can be combined or used individually
- Exact adjustment of upper level/return and lower level/return
- Dip switches for the setting of over and/or undervoltage, or window function
- LED indication of state of input, relay state and timing state



# THii RELAYS

DC

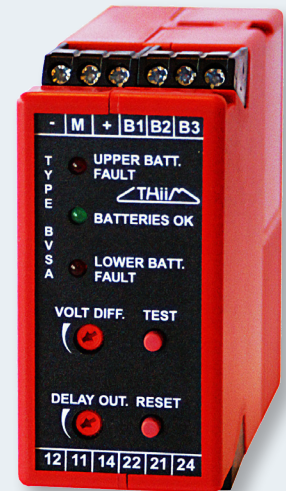
UPS



## BATTERY SYMMETRY – BVSA

The relay triggers an alarm when an asymmetry is present in the battery packs two halves eg. if a cell in a battery doesn't function anymore. This relay presupposes that the two halves of the battery are identical. For a complete monitoring of the battery, BVSA can be used together with a BMCD (Hi/Low).

- Supply direct from battery: 12, 24 or 48 VDC
- LATCH function by symmetry fault
- TEST and RESET function direct on relay and via terminals
- Adjustable sensitivity and time delay to avoid false alarms
- LED indication of status and fault state



DC

UPS



## BATTERY SYMMETRY AND VOLTAGE – BMSA

Relay can be used with identical or different batteries connected in series. The individual cells in the batteries have to be identical. The series connection needs to have an output from a reference point between the + and the - side. The relay will trigger an alarm if the balance between the two batteries in series is changing. This could be the result of a collapsed cell. Furthermore, BMSA (optional extension) can be programmed to monitor over and undervoltage.

- Complete unit, multirange 24-512 VDC
- No leak current through the middle point
- Adjustable delay, ON and OFF
- Relay functions:
 

Symmetry	2 x C/O
Symmetry and over-/undervoltage:	3 x C/O
- LED indication of status, latch and timer function



# THii RELAYS

DC

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## DC RESIDUAL CURRENT – DDCA/DDCB EARTH LEAKAGE MONITORING IN MAIN WIRES AND BRANCHES

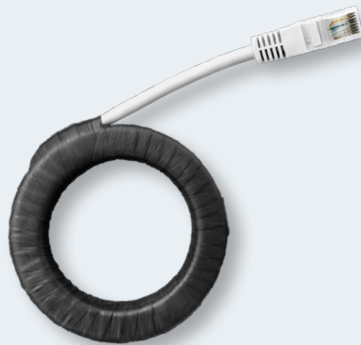
The supply wires are installed directly through the hole in the cabinet. This enables detection of fault currents both in the + and - wire. Faults can be the result eg. of bad isolation. The built-in measuring transformer eliminates the need of shunts with resulting voltage drop and creation of heat.

### DDCA:

- Both unearthed systems and systems with earthed middle voltage
- Built-in measuring coil, Ø12,5 mm og Ø28 mm
- Detect fault current in the range 5-200 mA
- Supply range 18-340 VDC
- Output signal indicating direction ( $12 \pm 8$  mA) and LED indication
- Relay function: 2 x C/O (fault from + or -)
- Adjustable time delay for ON and OFF

### DDCB + DDCC:

- Alternative solution for thicker cables using an external measuring coil, Ø50 mm or Ø90 mm



DDCA



DDCB + DDCC



# THii RELAYS

DC

UPS



## DC EARTH LEAKAGE MONITOR – DDEA/DDEB

By the use of an artificial ground, the relay detects fault currents from the + or -side to ground. This could be the result of direct shortages or bad insulation.

- Detects fault current in the range 0,2-30 mA
- Actual fault current shown in 3½ LED display
- Cover the range 20-500 VDC
- Programmable delay
- Relay function: 2 x C/O (fault from + or -)
- Additional symmetric fault detection (DDEB)



DC

PULS. DC

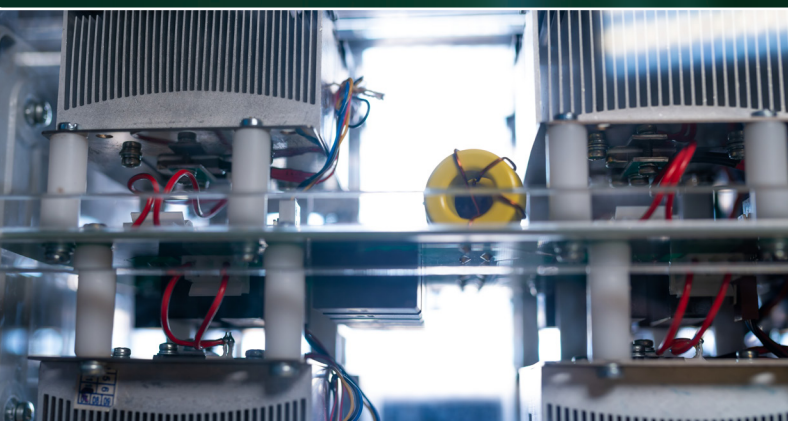
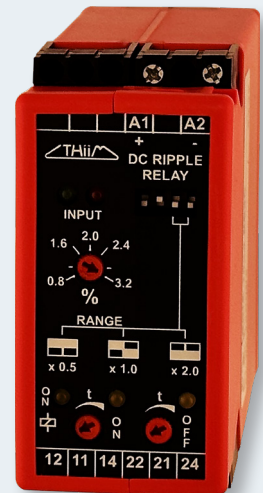
UPS



## DC RIPPLE – BRIA

The relay measures ripple in DC Power Supply. It is ideal for monitoring the quality of the smoothed DC output voltage in AC/DC converters, both single-phase and three-phase AC. The relay helps ensure optimal and correct functionality of connected equipment that is sensitive to larger variations in the supply, such as battery chargers.

- One unit for all supply voltages from 18-360 VDC
- 4 adjustable subranges for precise detection from 0.4 % to 6.4% of nominal voltage ( $U_n$ )
- Uniform sensitivity regardless of varying ripple frequencies between 30 and 3000 Hz
- Relay function: 2 x C/O (activated at % ripple relative to set voltage)
- Adjustable response time (ON and OFF)



# THiim RELAYS

## RELIABLE DC SUPPLY WITH THIIM MONITORING RELAYS

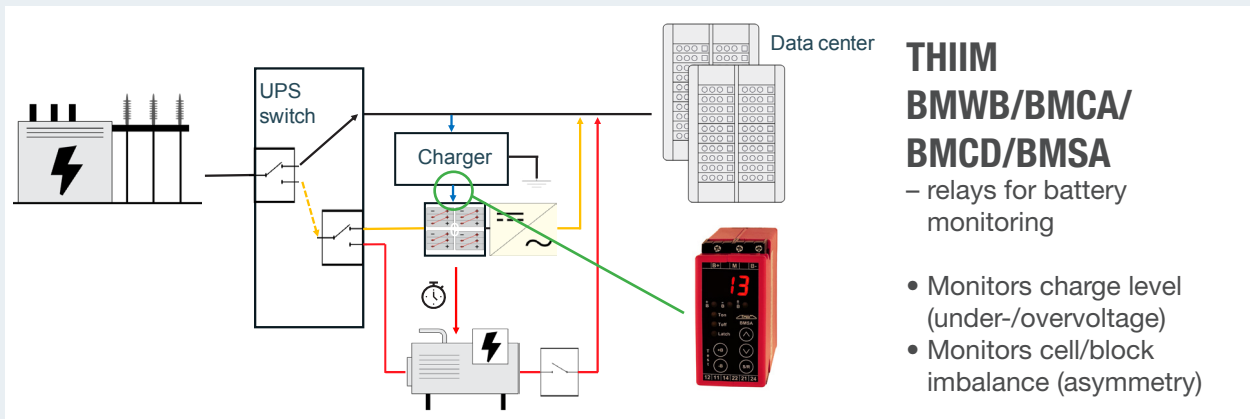
Efficient installation monitoring is crucial for optimum performance.

Thiim relay solutions not only ensure accurate fault detection, but also provide valuable insights into the health condition of the electrical installation.

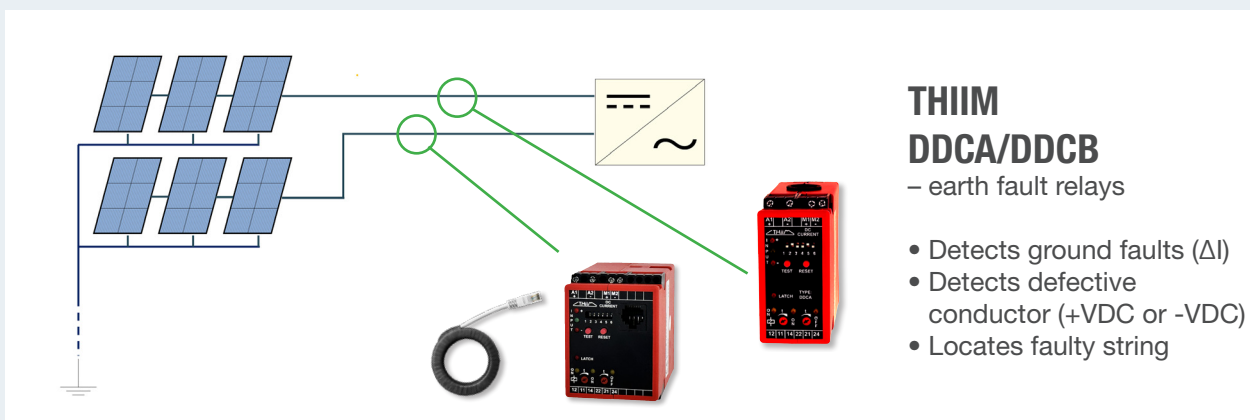
With seamless integration, Thiim relays enable proactive monitoring, allowing you to take timely and appropriate actions to prevent potential critical or dangerous situations, before they occur. Whether it is in UPS systems, energy storage, power distribution, or supplying processing machinery or electrical appliances, our relays offer a reliable and efficient way to safeguard your power supply installation.

**Empower your operations with intelligent battery voltage and earth fault monitoring – choose reliability, choose precision, choose our relay solutions.**

## UPS – EMERGENCY POWER SYSTEM

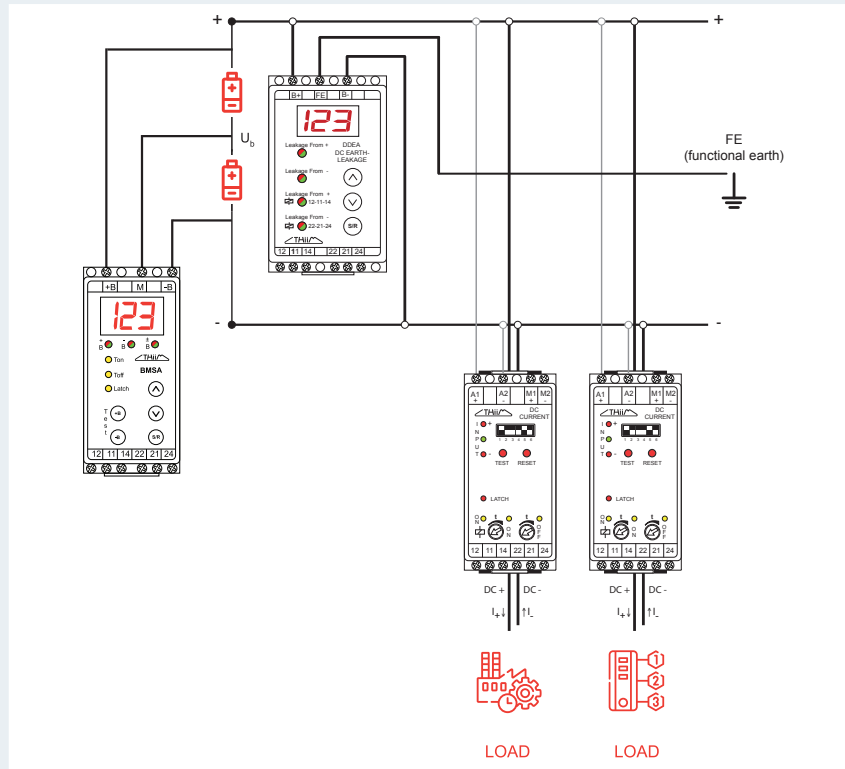


## SOLAR ENERGY PANEL



# THii RELAYS

An example of the connectivity between 3 of our relays; BMSA, DDEA and DDCA:



RELAY	BMCA	BMCD	BMWB	BVSA	BMSA	DDCA	DDCB	DDEA	DDEB	BRIA
DC fault current						5-200 mA	5-300 mA	0.2-30 mA	0.2-30 mA	
Differential current measurement ( $\Delta$ )						Built-in coil: $\varnothing$ 12,5 mm or $\varnothing$ 28 mm	External coil (DDCC): $\varnothing$ 50 mm or $\varnothing$ 90 mm	Direct connection	Direct connection	
Voltage variation (ripple)										0.4-6.4 %
DC undervoltage	x	x	x		x					
DC overvoltage		x	x		x					
Symmetry (voltage)				x						
Symmetry (fault current)									x	
User configuration	Dip-switch and potentiometer	Dip-switch and potentiometer	Dip-switch and potentiometer	Potentiometer	Soft-keys or via serial port	Dip-switch and potentiometer	Dip-switch and potentiometer	Soft-keys	Soft-keys	Dip-switch and potentiometer
Relay output (potential-free)	1 x C/O 1 x N/C	1 x C/O 2 x N/C 1 x N/O	2 x C/O	2 x C/O	3 x C/O	2 x C/O	2 x C/O	2 x C/O	2 x C/O	2 x C/O
Time setting	ON: 0-10 s or 0-100 s	ON: 0-10 s or 0-100 s	ON: 0-10 s OFF: 0-10 s	ON: 0-10 s	ON: 0.1-99.9 s OFF: 0.1-99.9 s	ON: 0-10 s OFF: 0-10 s	ON: 0-10 s OFF: 0-10 s	ON: 0.1-99.9 s OFF: 0.1-99.9 s	ON: 0.1-99.9 s OFF: 0.1-99.9 s	ON: 0.2-10 s OFF: 0.2-10 s
Status indication	LED	LED	LED	LED	Display and LED	LED	LED	Display and LED	Display and LED	LED
Power supply from installation	12, 24, 48 or 110 VDC	12, 24, 48 or 110 VDC	14-340 VDC	12, 24 or 48 VDC	2 x 12-256 VDC (symmetry) 24-512 VDC (voltage)	18-340 VDC	18-340 VDC	20-500 VDC	20-500 VDC	18-340 VDC

# THiim RELAYS

## What Thiim can do for you

Thiim specializes in relay and electronic solutions, offering comprehensive monitoring and measurement products for low voltage electrical installations, ensuring **electrical safety** within a large range of applications.

Our range includes standard products, featuring a selection of Thiim relays, optimized for earth fault current detection, current and voltage measurement, and phase failure monitoring.

At Thiim, we are committed to delivering **optimized solutions** that align perfectly with your individual needs.

Choose Thiim for reliable and adaptable relays, and electronic solutions that speak to your specific requirements, backed by **our commitment to innovation and customer satisfaction**.

Download  
the datasheets  
for our relays



## About Thiim

- **Industrial IT** – we connect and secure your OT network with a wide range of solutions and products within IIoT and OT environments
- **Data loggers** – regardless of your specific measurement needs, we have the right data logger to ensure reliable data collection and analysis
- **Electrical components** – we support your electrical systems with our range of circuit breakers, switches, magnets, and ATEX products
- **Thiim Relays & Controls** – Your electrical safety is important to us! We continuously refine our in-house produced measuring relays to ensure the highest quality, so faults can be detected and addressed in time

*We reserve the right for any text or printing errors, as well as for discontinued products, sold-out products, and delivery challenges.*