

IsoProtect CM

Isolation protector

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Ensuring mobile inverter system safety with the IsoProtect CM

The IsoProtect CM serves as an isolation systems protector, providing vital ground fault protection for floating inverter or inverter/charger systems.

Example of application

This protective device finds typical usage in mobile applications, particularly in scenarios where an inverter or inverter/charger is housed within a vehicle, and the power generated by the vehicle's inverter system is utilised externally. For instance, this setup is commonly observed in professional vehicles, where the inverter system powers various electrical equipment or tools outside the vehicle (excluding double-insulated equipment).

Limitations of solely relying on an earth leakage device

In situations where a ground fault occurs outside the vehicle, a traditional earth leakage device (RCD or GFCI) does not detect an earth fault unless the vehicle itself is grounded to an earth spike, which is often not the case. Thus, there arises a critical need to incorporate an isolation protection device into the system.

Functionality and operation

The isolation protector acts promptly by cutting off the power supply to the monitored system once the system's isolation resistance drops below a pre-defined value. This is achieved by utilising the inverter (or inverter/charger) remote on/off terminal to deactivate the inverter (or inverter/charger). Furthermore, it intelligently distinguishes whether the vehicle system is powered by mains (grid) supply or an inverter supply and adjusts its protection accordingly. When the mains is not connected and the system is powered by an inverter, the unit acts as an Isolation protector, and if the grid is connected and not powered by the inverter, it acts as an earth leakage detector.

LEDs and alarm contacts

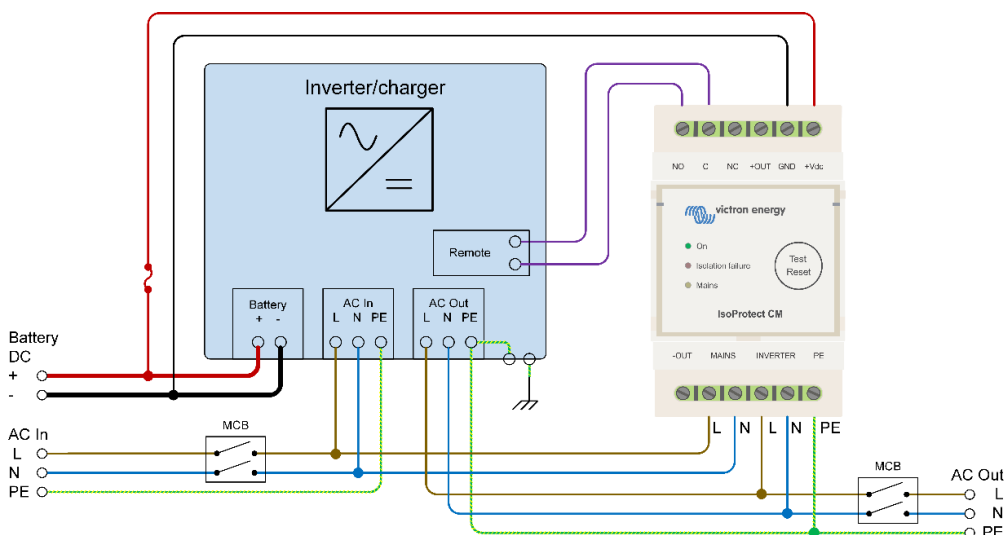
Three LEDs indicate the isolation protector mode, being inverter operation, mains operation, isolation failure or earth fault. The alarm contacts, "+Out" or "-Out" activate in case of an earth fault or an isolation failure.

Usage

To ensure effective protection, the isolation protector is designed for use in floating electrical systems, replacing the traditional earth leakage device (RCD or GFCI). Its compatibility extends to inverters and inverter/chargers up to 3000VA. If using the IsoProtect CM with an inverter/charger, its ground relay needs to be disabled.



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TECHNICAL SPECIFICATIONS IsoProtect CM	
Supply voltage (+Vdc/GND)	6-60Vdc (for 12V, 24V or 48V system)
Power consumption	11.9mA (12V) / 4.9mA (24V)
Mains input (L/N) voltage range	180-280Vac
Inverter input (L/N) voltage range	100-260Vac
Relay contact (NO/C/N) rating	30Vdc, 2A / 250Vac, 0.25A
Insulation error output (-OUT) rating	0.85Vdc, 100mA
Earth fault error output (+OUT) rating	Vdc-0.45V, 100mA
DETECTION LEVELS	
Detection mains active	180-280Vac
Detection mains load	0.25-0.6mAac
Detection inverter active	100-260Vac
Detection inverter load	0.25-0.6mAac
ISOLATION MONITORING CIRCUIT	
Asymmetrical response resistance (phase - PE or zero - PE)	$\leq 12 \pm 10\%$ k Ω
Symmetrical response resistance (phase - PE and zero - PE)	$\leq 100 \pm 20\%$ k Ω
Response delay	<1s
Voltage current	$\leq 32\mu$ A
Voltage measurement	-14.6Vdc
GENERAL	
Operating temperature	-10 to +65°C
Humidity	Maximum 95% (non-condensing)
Protection grade	IP20
Maximum altitude	2000m
Overvoltage category	Cat III
ENCLOSURE	
Material and colour	ABS, white
Dimensions (h x w x d)	73 x 53 x 110 mm
Mounting	Screw holes or TS35 DIN-rail
STANDARDS	
Emission/ Immunity	EN 61326-1 EN 61000-3-2 EN 61000-3-3 EN 61326-2-4
Electrical safety	IEC 61557 IEC 61557-8 IEC 61010-1 IEC 61010-2-030