

# Traf $\Omega$ x Superintend<sup>®</sup>



Electric  
vehicles

IMD Insulation  
Monitoring device

# Insulation Monitoring device IM-05DCCT.E for electric vehicles and battery stations

## NEW!



- For voltages up to 1500 VDC / 690 VAC
- Monitoring of system voltage
- Short circuit proof and galvanically isolated outputs for system status
  - system OK or alarm
  - indication of insulation resistance with PWM signal
- CAN bus interface

### Monitored circuit

AC Voltage range	0...690V
DC Voltage range	0...1500V
Frequency range	DC, 10...500Hz

### Auxiliary supply voltage

DC supply voltage	10...36V
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### Monitoring functions

Insulation resistance between HV circuit and earth
Connection of the earth wires
System voltage level
Self-test

### Outputs

Status output	<ul style="list-style-type: none"> <li>· High side (external pull-down resistor required)</li> <li>· High = system ok, insulation resistance above alarm level</li> <li>· Low = alarm situation (insulation resistance below alarm level, system fault, earth wire disconnected, system undervoltage or supply voltage disconnected)</li> </ul>
	<ul style="list-style-type: none"> <li>· Low side (external pull-up resistor required)</li> <li>· High side (external pull-down resistor required)</li> <li>· Indication of the measured insulation resistance and possible fault conditions</li> </ul>
PWM output	

**CAN bus interface**  
 Outputs are short circuit proof and galvanically isolated from the HV side

### Alarm parameters (set at factory or with the CAN bus interface)

Insulation resistance response value $R_{an}$	50k $\Omega$ ...1M $\Omega$
Insulation resistance response value hysteresis	25 %
Undervoltage detection threshold	OFF / 50...500V
Averaging factor	1...10

### Measuring specifications

Measuring range	0k $\Omega$ ...10M $\Omega$
Relative uncertainty	±20k $\Omega$ @ 0...50 k $\Omega$ ±15% @ 50k $\Omega$ ... 2M $\Omega$ ±25% @ 2M $\Omega$ ...10M $\Omega$
Measuring voltage $U_M$	±25V
Measuring current $I_M$ at $R_F = 0$	50 $\mu$ A
Impedance $Z_i$ at 50 Hz	≥ 500k $\Omega$
Internal DC resistance $R_i$	≥ 500k $\Omega$
System leakage capacitance $C_e$ (nominal measurement specifications)	≤ 1 $\mu$ F
Response time $t_{an}$ ( $R_F = 10 \text{ M}\Omega$ to $R_{an}/2$ ; at $C_e < 1 \mu\text{F}$ )	5s

## Other details

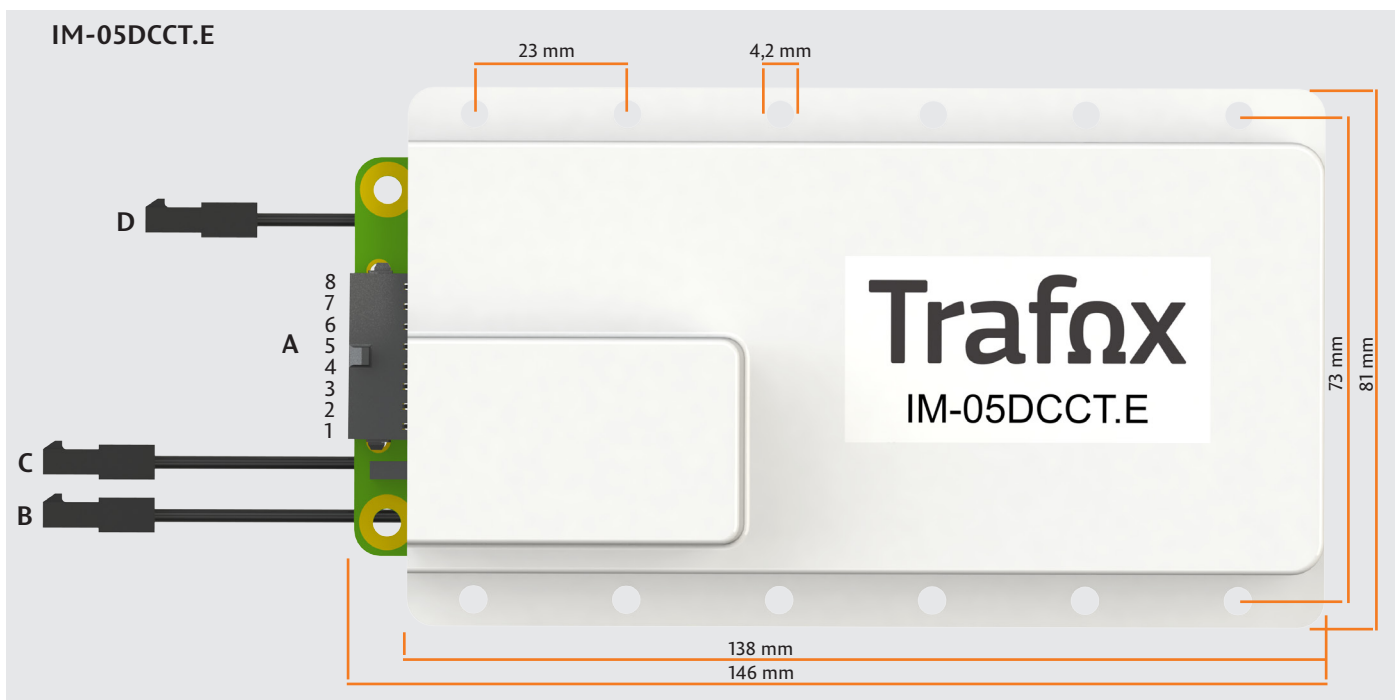
Operating temperature	-40...+85°C
Mounting	M4 metal screws
Maximum dimensions - Height	25mm
Maximum dimensions - Width	60mm
Maximum dimensions - Length	140mm
Weight	100g



## Standards

Measurements	IEC 61557-8:2014 (requires alarm indicator and test button implemented at the customer's installation)
Safety	IEC 61010-1:2010 (3rd Edition), IEC 60664-1
EMC	IEC 61326-2-4, ISO 10605
Electrically propelled road vehicles - Safety specifications	ISO 6469-3:2021
Road vehicles – Environmental conditions and testing for electrical and electronic equipment	ISO 16750-1, ISO 16750-2, ISO 16750-3
Environmental tests	IEC 60068-2-14, IEC 60068-2-27, IEC 60068-2-30, IEC 60068-2-38, IEC 60068-2-64

## Connectors

<b>A</b>	PCB connector type	TE Connectivity Micro MATE-N-LOK 2-1445088-8	
	Crimp contacts	8 x TE Connectivity Micro MATE-N-LOK 1-794606-1	
	Housing for crimp contacts	TE Connectivity Micro MATE-N-LOK 1445022-8	
	Pin 1	Chassis ground / electronic ground	
	Pin 2	Supply voltage	
	Pin 3	Chassis ground	
	Pin 4	Chassis ground (must be separate wire)	
	Pin 5	PWM output (high side)	
<b>B</b>	PCB connector type	TE Connectivity Micro MATE-N-LOK 2-1445088-2	
	Crimp contacts	2 x TE Connectivity Micro MATE-N-LOK 1-794606-1	
	Housing for crimp contacts	TE Connectivity Micro MATE-N-LOK 1445022-2	
	Pin 1	HV line +	
	Pin 2	HV line +	
	<b>C</b>	PCB connector type	TE Connectivity Micro MATE-N-LOK 2-1445088-2
		Crimp contacts	2 x TE Connectivity Micro MATE-N-LOK 1-794606-1
		Housing for crimp contacts	TE Connectivity Micro MATE-N-LOK 1445022-2
Pin 1		HV line -	
Pin 2		HV line -	
<b>D</b>		PCB connector type	TE Connectivity Micro MATE-N-LOK 2-1445088-2
		Crimp contacts	2 x TE Connectivity Micro MATE-N-LOK 1-794606-1
		Housing for crimp contacts	TE Connectivity Micro MATE-N-LOK 1445022-2
	Pin 1	CAN_L	
	Pin 2	CAN_H	



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## Muuntosähkö

Trafox is a brand of Muuntosähkö Oy. We develop, manufacture and customise high-quality transformers, chokes, filters and Trafox Superintend® monitoring devices for a large number of applications.

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