Insulation Resistor Monitoring System

Insulation Resistor monitoring System (IRMS) for unearthed (IT systems) BESS and DC drive systems

Version 2.0

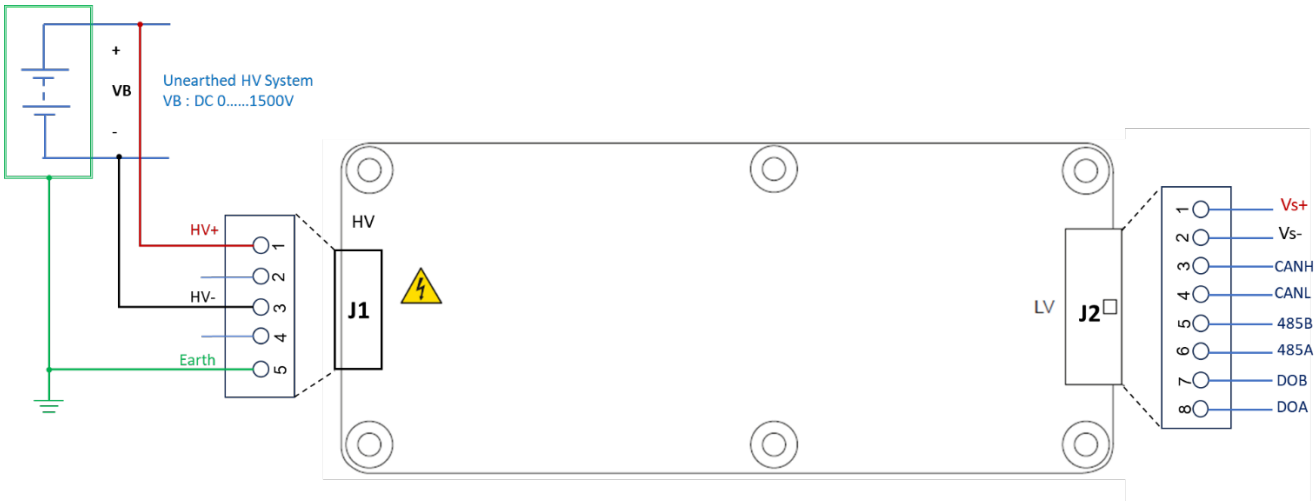
■ Product description

The IRMS monitors the insulation resistance between the insulated and active HV-conductors of an electrical drive system and Battery Energy storage system, there it continuously monitors the insulation resistance of the HV system. Depending on the variant, the device communicates with a higher-level location using different CAN protocols (standard SAEJ1939).

■ Technical data

Item	SPEC.
Supply Voltage	12~30V
Max. operation current	500mA
HV Voltage range (DC)	0~1500Vdc
Measuring range	0~500MΩ, 0~1500Vdc
Response time	<0.1S
Accuracy	< 3% @Riso > 1MOhm, <0.1% @500~1500V
Temperature range	0…+85 ˚C
Coating	thick-film lacquer
Weight	350g
Dimension	142X65X29.5

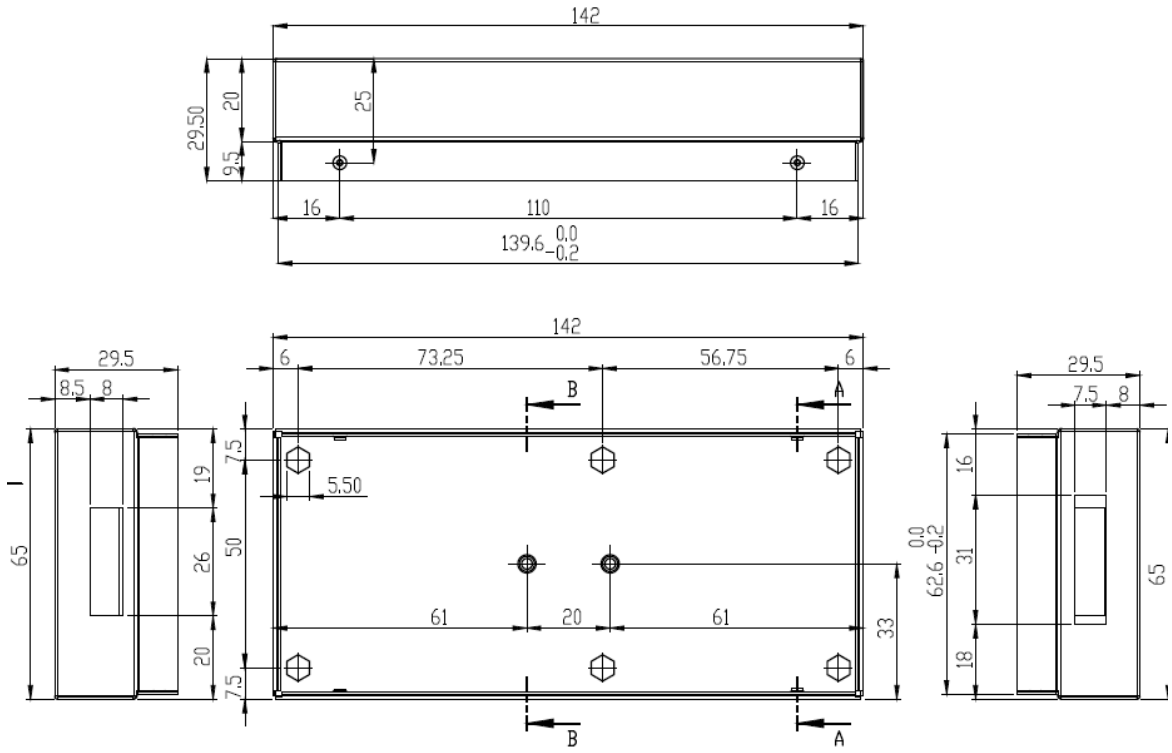
■ Wiring diagrams

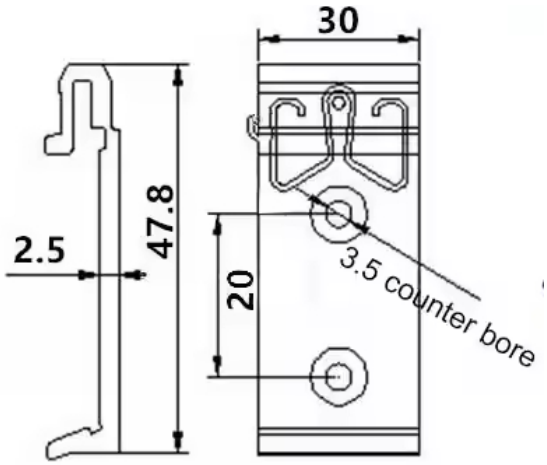


Connector		Pin no.	Description
J1 (HV)	HV+	1	Mains Voltage (+)
		2	n.c.
	HV-	3	Mains Voltage (-)
		4	n.c.
	Earth	5	Earth connection (E)
J2(LV)	VS+	1	Supply Voltage (+)
	VS-	2	Supply Voltage (-)
	CANH	3	CAN-HI
	CANL	4	CAN-LO
	485B	5	RS485-B
	458A	6	RS485-A
	DOB	7	Dry Contact
	DOA	8	Dry Contact

For a functioning connection detection of HV pin 5 to chassis ground.

■ Dimension diagram



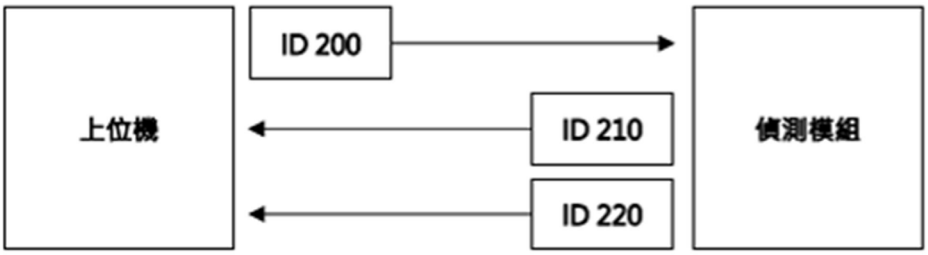


DIN Rail Clip

■ Communication Protocol

Item	Description
Protocol	CAN 2.0A (11-Bit)
Baud Rate	100 Kbits/s
Frame Types	DATA FRAME
Data Length	8 bytes (固定長度)

A. Communication Flow



B. REGISTER MAP

I. CAN ID: 0x200

No.	Data Frame
Byte 1	Cycle_LSB
Byte 2	Cycle_MSB
Byte 3	Reserved
Byte 4	Reserved
Byte 5	Reserved
Byte 6	Reserved
Byte 7	Reserved
Byte 8	Reserved

參數名稱	說明
Reserved:	保留
Cycle:	Cycle = (Byte 1) + (Byte 2)<<8

	單位 : 0x1 = 1 秒 單次轉換 : 設定 0 週期轉換 : 設定秒數則進行週期轉換 (最小週期需大於等於 60 秒)

II. CAN ID: 0x201

No.	Data Frame
Byte 1	Status
Byte 2	Reserved
Byte 3	Reserved
Byte 4	Reserved
Byte 5	Voltage_LSB
Byte 6	Voltage
Byte 7	Voltage
Byte 8	Voltage_MSB

參數名稱	說明
Reserved	保留
Status	0x00 : OK 0x01 : BUSY 0x08 : ERROR 0x80 : ALARM
Voltage	● Voltage = (Byte 5) + (Byte 6)<<8 + (Byte 7)<<16 + (Byte 8)<<24 ● 單位 : 0x1 = 1mV ●Example : Voltage =200 V = 0x00030D40 Byte 5 = 0x40 Byte 6 = 0x0D Byte 7 = 0x03 Byte 8 = 0x00

III. CAN ID: 0x202

No.	Data Frame
Byte 1	Rp_LSB
Byte 2	Rp
Byte 3	Rp
Byte 4	Rp_MSB
Byte 5	Rn_LSB
Byte 6	Rn
Byte 7	Rn
Byte 8	Rn_MSB

參數名稱	說明
Rp	● Rp = (Byte 1) + (Byte 2)<<8 + (Byte 3)<<16 + (Byte 4)<<24 ● 單位 : 0x1 = 1Ω ● Example Rp = 0x12345678 Byte 1 = 0x78 Byte 2 = 0x56 Byte 3 = 0x34 Byte 4 = 0x12
Rn	● Rp = (Byte 1) + (Byte 2)<<8 + (Byte 3)<<16 + (Byte 4)<<24 ● 單位 : 0x1 = 1Ω ● Example Rn = 0x12345678 Byte 1 = 0x78 Byte 2 = 0x56 Byte 3 = 0x34 Byte 4 = 0x12