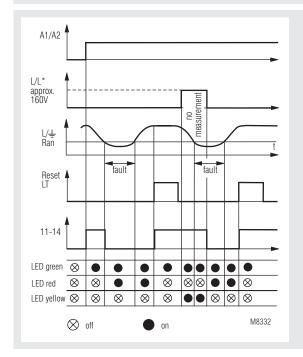
# **Monitoring Technique**

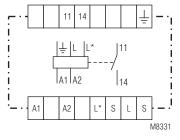
#### VARIMETER IMD Insulation Monitoring Relay BD 5877/241

# 

#### Function Diagram



#### **Circuit Diagram**



#### BD 5877.01/241

# Translation of the original instructions



- According to IEC/EN 61557
- Setting range 200 k $\Omega$  to 2 M $\Omega$
- LED indicators
- Output: 1 NO contact
- De-energized on trip
- Test button for function check
- Reset button
- Input for voltage detection
- Manual reset available by bridge
- Width 45 mm

#### Approvals and Markings



#### Applications

Monitors the insulation of motors including connection wires during standby. E.g. for submerged pumps or smoke exhaust fans according to the French standard NFS 61.937 page 13 Add.A. The motor is monitored in disconnected state.

#### Indicators

Green LED:	Auxiliary supply connected
Red LED:	Insulation resistance to low
Yellow LED:	Measurement disabled

#### Notes

L

١

As the fault detection can only be active in voltage free state, the unit has an additional voltage detection. If on input  $L/L^*$  the voltage rises above AC 160 V the measuring input is disconnected and the detection is inactive (yellow LED).

An insulation failure on input L /  $\pm$  is stored and can be reset with button LT or by disconnecting the power. With an external bridge the function can be altered between manual or automatic reset. A fault can be simulated with button PT.

# Technical Data Auxiliary Circuit

Auxiliary voltage U <sub>µ</sub> :	AC 400 V
	(other voltages on request)
Voltage range:	0,8 1,1 U <sub>N</sub>
Nominal consumption:	Approx. 2,5 VA
Frequency range:	40 60 Hz

# Frequency range: Measuring Circuit

Setting range:	200 kΩ 2 MΩ
Setting R <sub>AN</sub> :	Infinite on relative scale
Hysteresis:	> 10 %
Voltage detection:	160 V (at 400 V-model)
Test resistance:	150 kΩ
Internal AC resistance:	> 300 kΩ
Internal DC resistance:	> 30 kΩ
Measuring voltage:	DC 15 V
Max. measuring current	
$(R_{_{\rm F}}=0)$ :	< 0,5 mA
Max. permitted DC voltage:	DC 250 V
Operate delay	
$R_{_{\rm F}}$ from $\infty$ to 0,9 $R_{_{\rm AN}}$ :	Approx. 3 s
$R_{E}^{2}$ from $\infty$ to 0 k $\Omega$ :	< 0,3 s

#### **Technical Data**

#### Output

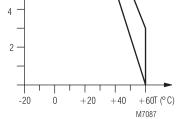
Contacts BD 5877.01/241: Thermal current I <sub>th</sub> : Switching capacity To AC 15	1 NO contact 6 A (see continuous cu	rrent limit curve)
NO contact: Electrical life	3 A / AC 230 V	IEC/EN 60947-5-1
To AC 15 at 1 A, AC 230 V: Short circuit strength	1,5 x 10 <sup>5</sup> switching cycles	s IEC/EN 60947-5-1
max. fuse rating: Mechanical life:	6 A gG / gL 30 x 10 <sup>6</sup> switching cycl	IEC/EN 60947-5-1 es

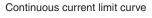
#### **General Data**

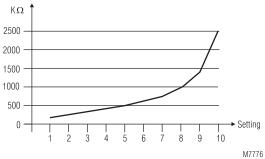
Operating mode: Temperature range:Continuous operation $-30 \dots + 60^{\circ}C$ $\dots + 70^{\circ}C$ for max. 1 hClearance and creepage distancesClearance and creepage distancesRated impulse voltage / pollution degree: $4 \text{ kV } / 2$ IEC 60664-1EMCElectrostatic discharge: Fast transients: $8 \text{ kV}$ (air)IEC/EN 61000-4-2Electrostatic discharge: Between $8 \text{ kV}$ (air)IEC/EN 61000-4-2Wires for power supply: Interference suppression: Degree of protection $2 \text{ kV}$ IEC/EN 61000-4-5Housing: Terminals:IP 40IEC/EN 60529Housing: Terminals:IP 40IEC/EN 60529Housing: Terminals:IP 20IEC/EN 60068-2-6 frequency 10 55 HzClimate resistance: Wire connection: $30 / 060 / 04$ IEC/EN 60068-2-6 frequency 10 55 HzVibration resistance: Terminal designation: $2 \times 1,5 \text{ mm}^2$ stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing: Wire fixing:Flat terminals with self-lifting clamping pieceIEC/EN 60999-1 IEC/EN 60715Mounting: Weight:DIN railIEC/EN 60715			
Line + 70°C for max. 1 hClearance and creepage distancesRated impulse voltage / pollution degree:4 kV / 2IEC 60664-1EMCElectrostatic discharge: Fast transients:8 kV (air)IEC/EN 61000-4-2Fast transients:1 kVIEC/EN 61000-4-4Surge voltages Between8 kV (air)IEC/EN 61000-4-5Detween wires for power supply: Nerference suppression:2 kVIEC/EN 61000-4-5Degree of protection Housing:IP 40IEC/EN 60529Housing:IP 40IEC/EN 60529Terminals:IP 20IEC/EN 60068-2-6Housing:Thermpolastic with V0 behaviour according to UL subject 94Vibration resistance:30 / 060 / 04IEC/EN 60068-2-6frequency 10 55 Hz30 / 060 / 04IEC/EN 60068-1Terminal designation: Wire connection:1 x 4 mm² solid or 2 x 1,5 mm² stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:DIN 46228-1/-2/-3/-4Mounting: Wire fixing:DIN railIEC/EN 60999-1Mounting: Weight:DIN railIEC/EN 60715	Operating mode:		
Clearance and creepage distancesIncrease of the function of the	Temperature range:	- 30 + 60°C	
distancesRated impulse voltage / pollution degree: $4 \text{ kV} / 2$ IEC 60664-1EMCElectrostatic discharge: $8 \text{ kV}$ (air)IEC/EN 61000-4-2Fast transients: $1 \text{ kV}$ IEC/EN 61000-4-4Surge voltagesBetweenwires for power supply: $2 \text{ kV}$ IEC/EN 61000-4-5Betweenwires for power supply: $2 \text{ kV}$ IEC/EN 61000-4-5Degree of protectionHousing:IP 40IEC/EN 60529Housing:IP 40IEC/EN 60529Terminals:IP 20IEC/EN 60529Housing:Thermpolastic with V0 behaviour according to UL subject 94Vibration resistance:30 / 060 / 04IEC/EN 60068-2-6 frequency 10 55 HzClimate resistance:30 / 060 / 04IEC/EN 60068-1Terminal designation:EN 50005Ix 4 mm² solid or $2 \times 1,5 mm²$ stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceIEC/EN 60999-1Mounting:DIN railIEC/EN 60715Weight:450 gIEC/EN 60715		+ 70°C for max.	1 h
Rated impulse voltage / pollution degree: $4 \text{ kV} / 2$ IEC 60664-1EMCElectrostatic discharge: $8 \text{ kV}$ (air)IEC/EN 61000-4-2Fast transients: $1 \text{ kV}$ IEC/EN 61000-4-4Surge voltagesBetweenIEC/EN 61000-4-5Between $4 \text{ kV}$ IEC/EN 61000-4-5Interference suppression:Limit value class B EN 55011Degree of protectionIP 40IEC/EN 60529Housing:IP 40IEC/EN 60529Terminals:IP 20IEC/EN 60068-2-6Housing:Thermpolastic with V0 behaviour according to UL subject 94Vibration resistance:Amplitude 0,35 mmIEC/EN 60068-2-6frequency 10 55 Hz30 / 060 / 04IEC/EN 60068-1Wire connection:1 x 4 mm² solid or 2 x 1,5 mm² stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceIEC/EN 60999-1Mounting:DIN railIEC/EN 60715Weight:DIN railIEC/EN 60715	Clearance and creepage		
pollution degree: $4 \text{ kV}/2$ IEC 60664-1EMCElectrostatic discharge: $8 \text{ kV}$ (air)IEC/EN 61000-4-2Fast transients: $1 \text{ kV}$ IEC/EN 61000-4-4Surge voltagesBetweenIEC/EN 61000-4-4Betweenwires for power supply: $2 \text{ kV}$ IEC/EN 61000-4-5Interference suppression:Limit value class B EN 55011IEC/EN 61000-4-5Degree of protectionIP 40IEC/EN 60529Housing:IP 40IEC/EN 60529Terminals:IP 20IEC/EN 60529Housing:Thermpolastic with V0 behaviour according to UL subject 94Vibration resistance:Amplitude 0,35 mmIEC/EN 60068-2-6 frequency 10 55 HzClimate resistance: $30 / 060 / 04$ IEC/EN 60068-1Wire fixing: $1 \times 4 \text{ mm}^2$ solid or $2 \times 1,5 \text{ mm}^2$ stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceIEC/EN 60999-1Mounting:DIN railIEC/EN 60715Weight:450 gIEC/EN 60715	distances		
EMCElectrostatic discharge:8 kV (air)IEC/EN 61000-4-2Fast transients:1 kVIEC/EN 61000-4-4Surge voltagesBetweenwires for power supply:2 kVIEC/EN 61000-4-5Between wire and ground:4 kVIEC/EN 61000-4-5Interference suppression:Limit value class B EN 55011Degree of protectionIP 40IEC/EN 60529Housing:IP 20IEC/EN 60529Terminals:IP 20IEC/EN 60529Housing:Thermpolastic with V0 behaviour according to UL subject 94Vibration resistance:Amplitude 0,35 mmIEC/EN 60068-2-6 frequency 10 55 HzClimate resistance:S0 / 060 / 04IEC/EN 60068-1Wire connection:1 x 4 mm² solid or 2 x 1,5 mm² stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceMounting:DIN railIEC/EN 60715Weight:450 g	Rated impulse voltage /		
LieL	pollution degree:	4 kV / 2	IEC 60664-1
Fast transients:1 kVIEC/EN 61000-4-4Surge voltagesBetweenwires for power supply:2 kVBetween wire and ground:4 kVInterference suppression:Limit value class B EN 55011Degree of protectionIP 40Housing:IP 20Terminals:IP 20Housing:Thermpolastic with V0 behaviour according to UL subject 94Vibration resistance:Amplitude 0,35 mmClimate resistance:30 / 060 / 04Terminal designation:EN 50005Wire connection:1 x 4 mm² solid or 2 x 1,5 mm² stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceMounting:DIN railIEC/EN 60715Weight:450 g	EMC		
Surge voltages BetweenKVIEC/EN 61000-4-5wires for power supply:2 kVIEC/EN 61000-4-5Between wire and ground:4 kVIEC/EN 61000-4-5Interference suppression:Limit value class B EN 55011Degree of protectionIP 40IEC/EN 60529Housing:IP 20IEC/EN 60529Housing:Thermpolastic with V0 behaviour according to UL subject 94Vibration resistance:Amplitude 0,35 mmIEC/EN 60068-2-6 frequency 10 55 HzClimate resistance:30 / 060 / 04IEC/EN 60068-1Terminal designation:EN 50005IX 4 mm² solid or 2 x 1,5 mm² stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceIEC/EN 60999-1Mounting:DIN railIEC/EN 60715Weight:450 gIEC/EN 60715	Electrostatic discharge:	8 kV (air)	IEC/EN 61000-4-2
BetweenWires for power supply:2 kVIEC/EN 61000-4-5Between wire and ground:4 kVIEC/EN 61000-4-5Interference suppression:Limit value class B EN 55011Degree of protectionIP 40IEC/EN 60529Housing:IP 20IEC/EN 60529Housing:IP 20IEC/EN 60529Housing:Thermpolastic with V0 behaviour according to UL subject 94Vibration resistance:Amplitude 0,35 mmIEC/EN 60068-2-6 frequency 10 55 HzClimate resistance:30 / 060 / 04IEC/EN 60068-1Terminal designation:EN 50005Wire connection:1 x 4 mm² solid or 2 x 1,5 mm² stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceIEC/EN 60999-1Mounting:DIN railIEC/EN 60715Weight:450 gIEC/EN 60715	Fast transients:	1 kV	IEC/EN 61000-4-4
wires for power supply:2 kVIEC/EN 61000-4-5Between wire and ground:4 kVIEC/EN 61000-4-5Interference suppression:Limit value class B EN 55011Degree of protectionHousing:IP 40Housing:IP 40IEC/EN 60529Terminals:IP 20IEC/EN 60529Housing:Thermpolastic with V0 behaviour according to UL subject 94Vibration resistance:Amplitude 0,35 mmIEC/EN 60068-2-6 frequency 10 55 HzClimate resistance:30 / 060 / 04IEC/EN 60068-1Terminal designation:EN 50005Wire connection:1 x 4 mm² solid or 2 x 1,5 mm² stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceMounting:DIN railIEC/EN 60715Weight:450 g	Surge voltages		
Between wire and ground: Interference suppression: $4 \text{ kV}$ IEC/EN 61000-4-5Interference suppression: Degree of protection Housing:IP 40IEC/EN 60529Terminals:IP 20IEC/EN 60529Housing:IP 20IEC/EN 60529Housing:Thermpolastic with V0 behaviour according to UL subject 94Vibration resistance:Amplitude 0,35 mmIEC/EN 60068-2-6 frequency 10 55 HzClimate resistance:30 / 060 / 04IEC/EN 60068-1Terminal designation:EN 50005Wire connection:1 x 4 mm² solid or 2 x 1,5 mm² stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceMounting:DIN railIEC/EN 60715Weight:450 g	Between		
Interference suppression:Limit value class B EN 55011Degree of protectionIP 40IEC/EN 60529Housing:IP 20IEC/EN 60529Terminals:IP 20IEC/EN 60529Housing:Thermpolastic with V0 behaviour according to UL subject 94Vibration resistance:Amplitude 0,35 mmIEC/EN 60068-2-6 frequency 10 55 HzClimate resistance:30 / 060 / 04IEC/EN 60068-1Terminal designation:EN 50005Wire connection:1 x 4 mm² solid or 2 x 1,5 mm² stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceIEC/EN 60999-1Mounting:DIN railIEC/EN 60715Weight:450 g	wires for power supply:	2 kV	IEC/EN 61000-4-5
Degree of protection Housing:IP 40IEC/EN 60529Terminals:IP 20IEC/EN 60529Housing:Thermpolastic with V0 behaviour according to UL subject 94Vibration resistance:Amplitude 0,35 mmIEC/EN 60068-2-6 frequency 10 55 HzClimate resistance:30 / 060 / 04IEC/EN 60068-1Terminal designation:EN 50005Wire connection:1 x 4 mm² solid or $2 \times 1,5$ mm² stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceMounting:DIN railIEC/EN 60715Weight:450 g	5		
Housing:IP 40IEC/EN 60529Terminals:IP 20IEC/EN 60529Housing:Thermpolastic with V0 behaviour according to UL subject 94Vibration resistance:Amplitude 0,35 mmIEC/EN 60068-2-6 frequency 10 55 HzClimate resistance:30 / 060 / 04IEC/EN 60068-1Terminal designation:EN 50005Wire connection:1 x 4 mm² solid or $2 \times 1,5 mm²$ stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceMounting:DIN railIEC/EN 60999-1Weight:450 g		Limit value class B EN 55011	
Terminals:IP 20IEC/EN 60529Housing:Thermpolastic with V0 behaviour according to UL subject 94Vibration resistance:Amplitude 0,35 mmIEC/EN 60068-2-6 frequency 10 55 HzClimate resistance:30 / 060 / 04IEC/EN 60068-1Terminal designation:EN 50005Wire connection:1 x 4 mm² solid or 2 x 1,5 mm² stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceIEC/EN 60999-1Mounting:DIN railIEC/EN 60715Weight:450 g	<b>3</b> 1		
Housing:Thermpolastic with V0 behaviour according to UL subject 94Vibration resistance:Amplitude 0,35 mmIEC/EN 60068-2-6 frequency 10 55 HzClimate resistance:30 / 060 / 04IEC/EN 60068-1Terminal designation:EN 50005Wire connection:1 x 4 mm² solid or 2 x 1,5 mm² stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceMounting:DIN railIEC/EN 60999-1Weight:450 g	0		
according to UL subject 94Vibration resistance:Amplitude 0,35 mmIEC/EN 60068-2-6 frequency 10 55 HzClimate resistance:30 / 060 / 04IEC/EN 60068-1Terminal designation:EN 50005Wire connection:1 x 4 mm² solid or 2 x 1,5 mm² stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceMounting:DIN railIEC/EN 60999-1Weight:450 g		=•	
Vibration resistance:Amplitude 0,35 mmIEC/EN 60068-2-6 frequency 10 55 HzClimate resistance:30 / 060 / 04IEC/EN 60068-1Terminal designation:EN 50005IEC/EN 60068-1Wire connection:1 x 4 mm² solid or 2 x 1,5 mm² stranded ferruled DIN 46228-1/-2/-3/-4IEC/EN 60098-1Wire fixing:Flat terminals with self-lifting clamping pieceIEC/EN 60999-1Mounting:DIN railIEC/EN 60715Weight:450 g	Housing:	1	
Climate resistance:       30 / 060 / 04       IEC/EN 60068-1         Terminal designation:       EN 50005         Wire connection:       1 x 4 mm² solid or         2 x 1,5 mm² stranded ferruled         DIN 46228-1/-2/-3/-4         Wire fixing:       Flat terminals with self-lifting         clamping piece       IEC/EN 60999-1         Mounting:       DIN rail       IEC/EN 60715         Weight:       450 g		• •	
Climate resistance:30 / 060 / 04IEC/EN 60068-1Terminal designation:EN 50005Wire connection:1 x 4 mm² solid or 2 x 1,5 mm² stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceMounting:DIN railIEC/EN 60999-1Weight:450 g	Vibration resistance:		IEC/EN 60068-2-6
Terminal designation:       EN 50005         Wire connection:       1 x 4 mm² solid or         2 x 1,5 mm² stranded ferruled       DIN 46228-1/-2/-3/-4         Wire fixing:       Flat terminals with self-lifting         clamping piece       IEC/EN 60999-1         Mounting:       DIN rail       IEC/EN 60715         Weight:       450 g	or:	1 2	
Wire connection:1 x 4 mm² solid or 2 x 1,5 mm² stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceMounting:DIN railWeight:450 g	•••••••••••••••••		IEC/EN 60068-1
2 x 1,5 mm² stranded ferruled DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceMounting:DIN railWeight:450 g	•		
Wire fixing:DIN 46228-1/-2/-3/-4Wire fixing:Flat terminals with self-lifting clamping pieceIEC/EN 60999-1Mounting:DIN railIEC/EN 60715Weight:450 g	wire connection:		e www.ul.e.el
Wire fixing:Flat terminals with self-lifting clamping pieceIEC/EN 60999-1Mounting:DIN railIEC/EN 60715Weight:450 g			erruied
clamping pieceIEC/EN 60999-1Mounting:DIN railIEC/EN 60715Weight:450 g	Wire fixing		lifting
Mounting:DIN railIEC/EN 60715Weight:450 g	wire lixing.		0
Weight: 450 g	Mounting	1 01	
•	5		ILC/LN 00/15
Dimensions	Weight.	-50 y	
	Dimensions		

## at nominal voltage-I (A) at overvoltage-6

Characteristics

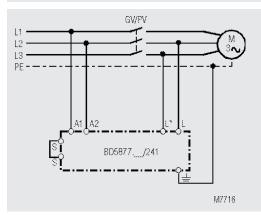






Setting diagram

#### **Application Example**



# Di

Width x height x depth: 45 x 74 x 131 mm

### Standard Type

••••••••••		
	10011 00010	140
BD 5877.01/241 AC	400 V 200 kΩ 2	2 MΩ
Article number:	0051266	
Output:	1 NO conta	ict
<ul> <li>Auxiliary voltage U<sub>1</sub></li> </ul>	.: AC 400 V	
Width:	45 mm	
<ul> <li>Output:</li> <li>Auxiliary voltage U<sub>F</sub></li> </ul>	1 NO conta -: AC 400 V	ict

E. Dold & Söhne GmbH & Co. KG • D-78120 Furtwangen • Bregstraße 18 • Phone +49 7723 654-0 • Fax +49 7723 654356