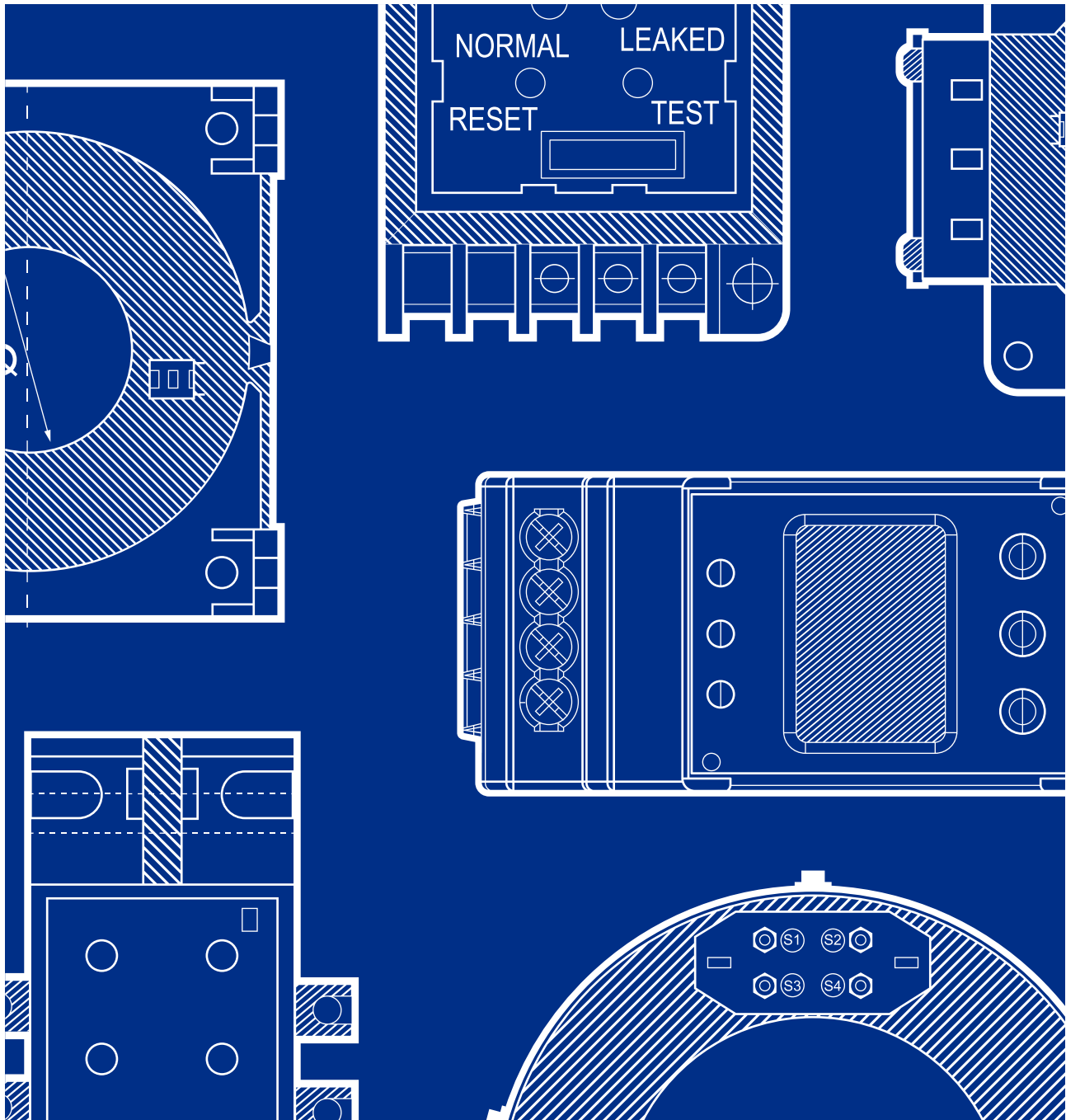
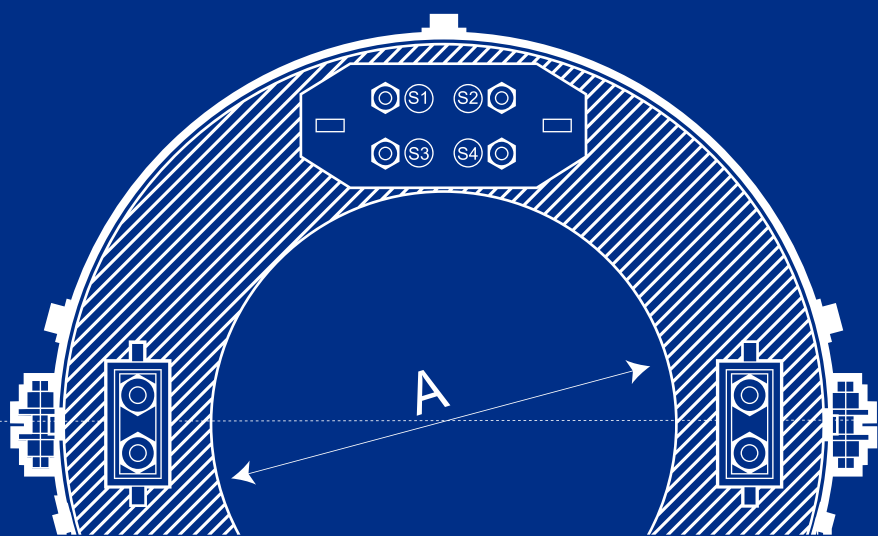
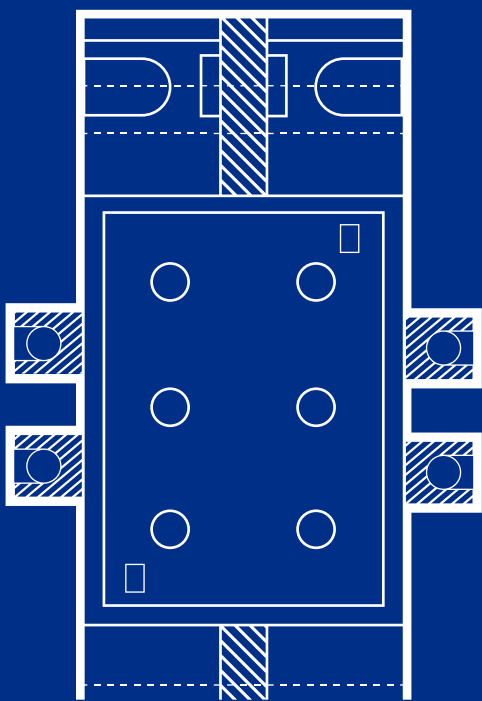
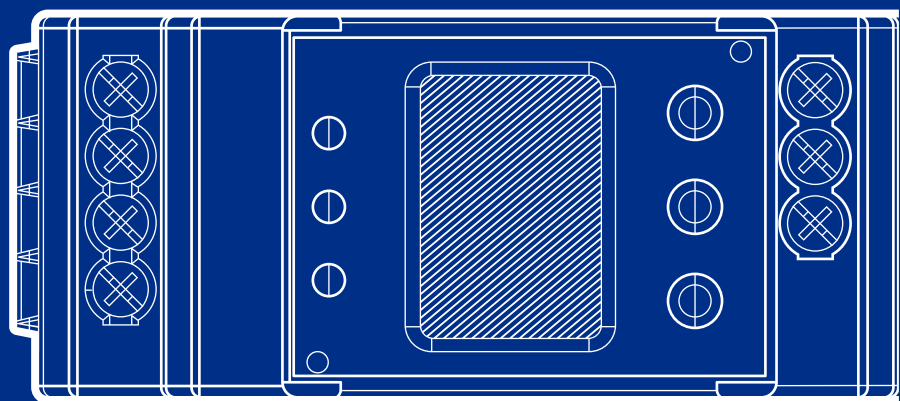
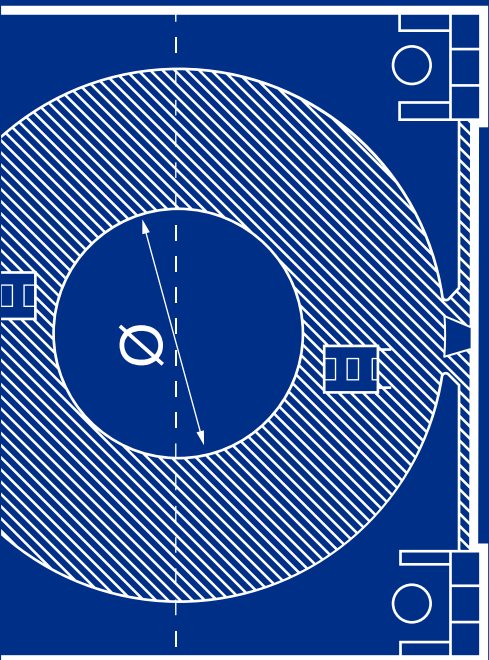
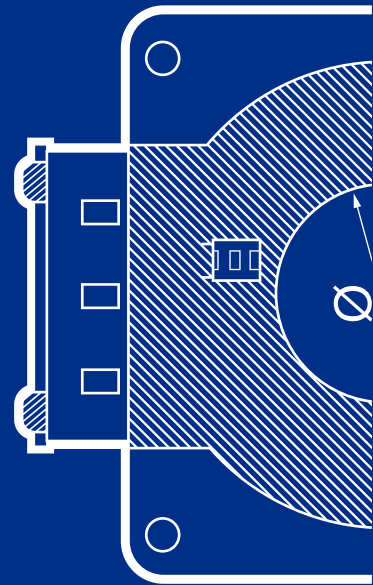
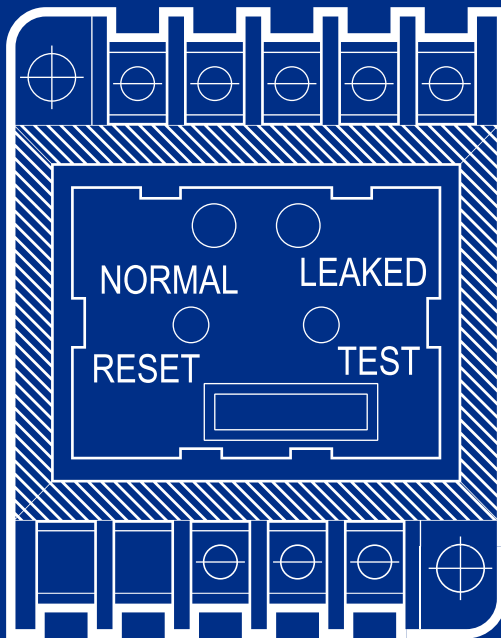
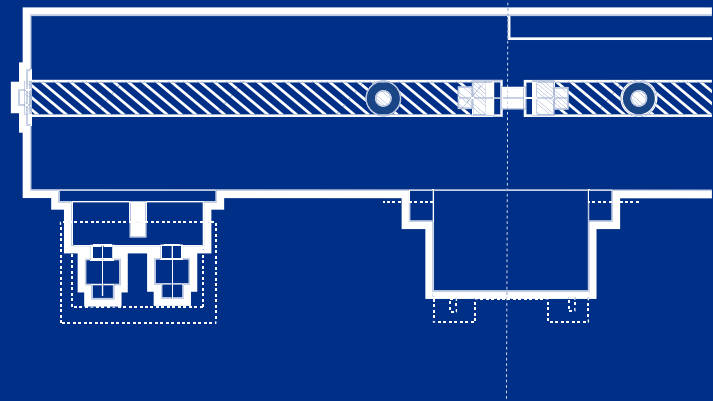
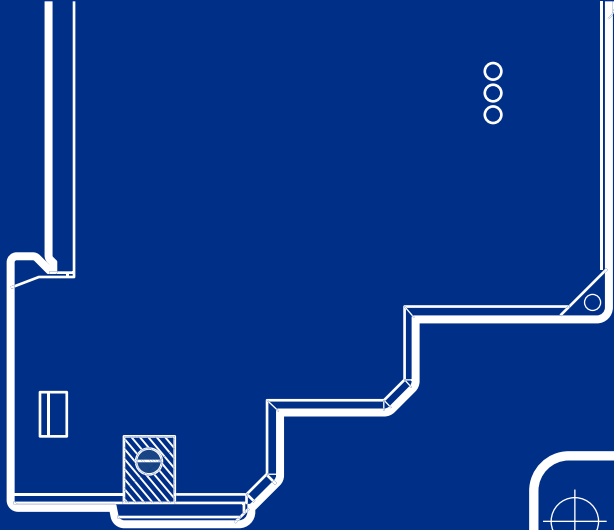


Power Distribution and Protection

Circuit Protection



Earth Leakage Relays



3 Earth Leakage Relays

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Earth Leakage Relay and Toroid Selection Guide

RD3AF



RD1B2



RDD421



RD1DF



RD1EP2



Panel Mount	-	-	-	48 mm	72 mm
DIN Rail Mount	2 Pole	4 Pole	4 Pole	-	-
Surface Mount	-	-	-	-	-
Standard	60947-2	60947-2	60947-2	60947-2	60947-2
Trip Contact	1 C/O	1 C/O	1 C/O	1 C/O	1 C/O
Selectable Pre-Trip Alarm or Extra Auxiliary Contact	No	1 C/O	1 C/O	No	1 C/O
Selectable Power Fail or Extra Auxiliary Contact	No	No	No	No	No
Digital Display	No	No	Yes	No	No
Monitor Function	No	No	Yes	No	No
Voltage	110 V AC, 240 V AC, 415 V AC, 24 V AC, 24 - 150 V DC	110 V AC, 240 V AC, 415 V AC, 24 - 150 V DC	240 V AC, 24 - 150 V DC	110 V AC, 240 V AC, 415 V AC	110 V AC, 240 V AC, 415 V AC, 24 - 150 V DC
Harmonic Filter	Yes	Yes	Yes	Yes	Yes
Auto Reset Option	Yes	No	Yes	Yes	No
% LED Indication of I _{Δn}	Yes	Yes	No	No	Yes
Setting Range (A)	0.03 to 30	0.03 to 30	0.03 to 30	0.03 to 30	0.03 to 30
Time Delay Range	Up to 5 s	Up to 5 s	Up to 5 s	Up to 5 s	Up to 5 s
Positive/ Negative Security	Yes	Yes	Yes	Yes	Yes
Communications	No	No	RS485	No	No
Remote Reset / Test ¹⁾	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes
Page Number	6	12	18	24	30

Compatible Toroid

2 Wire



Page Number

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1) Not applicable to units with DC supply.

RD3E2**RD1G2****DSRM****RDBMRC****TZSAD**

72 mm	96 mm	72 mm / 48 mm	72 mm	-	-
-	-	-	-	2 Pole	-
-	-	-	-	-	60 x 78
60947-2	60947-2	2081	2081	60947	-
1 C/O	1 C/O	1 C/O	1 C/O	1 C/O	1 C/O
1 N/O	1 C/O	No	No	1 C/O	No
No	No	1 C/O	1 C/O	No	No
Yes	No	No	No	Yes	No
Yes	No	No	No	No	No
110 V AC, 240 V AC, 415 V AC, 24 - 150 V DC	110 V AC, 240 V AC, 24 - 150 V DC	110 V AC, 240 V AC	24 V DC	240 V AC / DC 24 V AC / DC	120 / 240 V AC, 415 / 440 V AC
Yes	Yes	Yes	Yes	Yes	Yes
No	No	No	No	No	No
No	Yes	Yes	Yes	No	No
0.03 to 30	0.03 to 30	0.03 to 5	0.03 to 5	0.03 to 3	0.03 / 1.0
Up to 5 s	Up to 5 s	0 - 0.5 s	0 - 0.5 s	0 - 5 s	0.2 - 2 s
Yes	Yes	Yes	Yes	Yes / No	No
No	No	No	No	No	No
Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes	No
36	42	48	48	66	76

4 Wire

**61**

Type B

**71**

TZS

**82**

IME Relay DIN Mount RD3AF



- ✓ Standard AS/NZS IEC 60947-2 (annex B and M)
- ✓ Core balance earth leakage relay
- ✓ Field adjustable
- ✓ 2 wire toroid connection
- ✓ Adjustable $I_{\Delta n}$ up to 30 A
- ✓ Local or remote reset / test
- ✓ Selectable negative or positive security
- ✓ Adjustable trip time up to 5 seconds
- ✓ Automatic permanent test

General

Relay Type	DIN Mount Earth Leakage Relays
Contact Configuration	1 CO
Setpoint Range(s)	Configurable; 0.03 ... 30 A
Trip Time, Max	5000 ms
Display Technology	LED Sequence
Details, Output(s)	1 SPDT contact. Positive and Negative security
Reset Type	Automatic / Manual
Details, Alarm	Trip contact and RED LED
Auxiliary Voltage	110 V AC 240 V AC 415 V AC 20 - 150 V DC 24 V AC

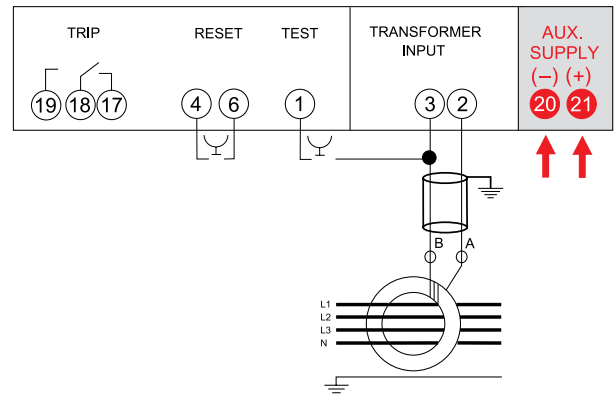


Connection Image

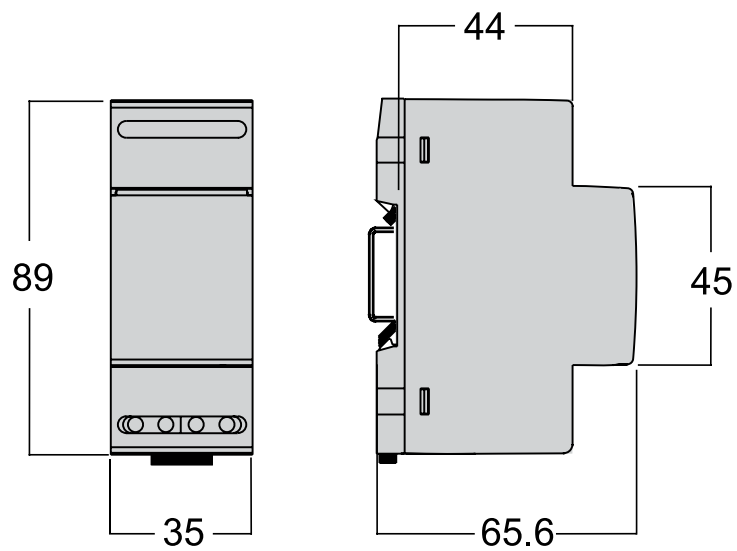


Connection

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Dimensions for RD3AF Relays (mm)





Aux Voltage (V AC / V DC)	Umin Voltage (V AC / V DC)	Umax Voltage (V AC / V DC)	Reverse Polarity Protection	Function	Catalogue No.
110 V AC	97 V AC	127 V AC	No	Local pushbutton or remote closing contact	RD3AF12
240 V AC	204 V AC	264 V AC	No	Local pushbutton or remote closing contact	RD3AF14
415 V AC	340 V AC	440 V AC	No	Local pushbutton or remote closing contact	RD3AF15
20 - 150 V DC	20 V DC	150 V DC	Yes	Local pushbutton	RD3AF1H
24 V AC	20 V AC	26 V AC	No	Local pushbutton or remote closing contact	RD3AF1N

Input

RCD Type, AS/NZS 60947-2	A	
Waveform	Sinusoidal (type AC) or chopped pulsating with superimposed D.C. (type A) according to EN60947-2 (annex Band M) IEC60947-2	
Details, Connection	Low voltage lines, with series TD transformer	
Input Frequency, Nom	50	Hz
Frequency Tolerance	47...63	Hz
Details, Compatible Product Series	-	

Setup

Setpoint Range(s)	Configurable; 0.03 ... 30 A	
Configuration Method	Potentiometer / DIP-Switch	
Number of Setpoints	19	
Current Set Points $I_{\Delta n}$	0.03, 0.05, 0.075, 0.1, 0.15, 0.2, 0.3 3 ranges x1, x10, x100	A
$I_{\Delta n}$, Leakage Current, Max	30	A
Intervention Time T	0, 0.15, 0.25, 0.5, 1.0, 2.5, and 5 s	
Trip Time, Max	5000	ms
Trip Time Selection Table	Refer to Time	
Harmonic Filter	Yes	

Control

Reset Type	Automatic / Manual
Details, Automatic Reset	3 attempts

Signalling

Display Technology	LED Sequence
Power On	Green LED
Instantaneous Value $I_{\Delta n}$	3 x Yellow LED 20, 40 and 60%
Accuracy, $I_{\Delta n}$	-
Visible Trip Indicator	Red LED
Toroid Connection Failure (Indicator)	Red LED Blinking
Number of Characters	-
Height, Characters	-

Trip Function

Alarm Function	Yes
Details, Alarm	Trip contact and RED LED
Inhibited Reset	>50% $I_{\Delta n}$
Non-Operating Residual Current (IEC60755)	50%
Pre-Alarm Settings	-
Details, Pre-Alarm	-
Pre-Trip Alarm Reset	-
Toroid Connection Failure (Automatic Test)	Trip contact and Red LED blinking
Power Fail Function	-

Output

Number of Alarm Contacts	1
Contact Configuration	1 CO
Details, Output(s)	1 SPDT contact. Positive and Negative security
Contact Rating	5 A 250 V AC cos 1 - 3 A 250 V AC cos 0.4 - 5 A 30 V DC
Positive or Negative Security	Yes
Communications	-
Protocol	-

Auxiliary

Immunity to AUX Supply Disruption (Max)	300	ms
Reverse Polarity Protection	Refer to product table	
Burden, Rated	2.5	VA

Voltage and Insulation

Ui, Rated Insulation Voltage	450	V (rms)
Input, Relay Output, Aux Support AC Voltage Test	AC 2.5 kV rms 50 Hz / 1 min	
All Circuits and Earth AC Voltage Test	AC 4.0 kV rms 50 Hz / 1 min	
Input, Relay Output, Aux Supply Impulse Voltage Test	AC 2.5 kV rms 50 Hz / 1 min	

Standards

Standards Compliance	EN 60947-1 IEC 60947-2 EN 60529 IEC 60947-1 IEC 60529 IEC 60715 EN 60715 EN 60947-2 AS 60947-2 EN 60755 IEC 60755 EN 50081-1 EN 55011 EN 50082-2 DIN 43880
Electromagnetic Compatibility-Emissions Test	EN / IEC 60947-2
Electromagnetic Compatibility-Immunity Test	EN / IEC 60947-2
Installation Category	III
Pollution Degree	2

Environmental Conditions

Operating Temperature, Min	-10	°C min
Operating Temperature, Max	55	°C max
Storage Temperature, Min	-40	°C min
Storage Temperature, Max	70	°C max
Humidity Type	Suitable for tropical environments	
Relative Humidity (IEC60755)	50	% RH
Power Dissipation, Max	2	W

Physical

Mounting	DIN-35 Rail Mount	
Material, Body / Housing	Plastic PC (Polycarbonate) self-extinguishing	
Sealable Cover	Yes	
Width	35	mm
Height	89	mm
Depth	65.6	mm
IP Rating, Front	IP50	
IP Rating, Terminals	IP20	
Terminal Type	Screw Terminal(s)	
Wire / Conductor Size (Max)	4	mm ²
Weight	0.2	kg
Height, Cutout	-	mm
Width, Cutout	-	mm



Time Delay Operating Characteristics

Set point ($I\Delta n$)	0.03 A	0.05 ... 30 A					
Selected delay t(s)	0 s	0.15 s	0.25 s	0.5 s	1.00 s	2.50 s	5.00 s
Non-operating time at @ $2I\Delta n$	-	0.15 s	0.25 s	0.5 s	1.00 s	2.50 s	5.00 s
Max. delay @ $5I\Delta n$	0.03 s	0.24 s	0.35 s	0.63 s	1.20 s	2.80 s	5.50 s

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IME Relay DIN Mount RD1B2



- ✓ Standard AS/NZS IEC 60947-2 (annex B and M)
- ✓ Core balance earth leakage relay
- ✓ Field adjustable
- ✓ 2 wire toroid connection
- ✓ Adjustable IΔn up to 30 A
- ✓ Local or remote reset / test
- ✓ Selectable negative or positive security
- ✓ Adjustable trip time up to 5 seconds
- ✓ Automatic permanent test

General

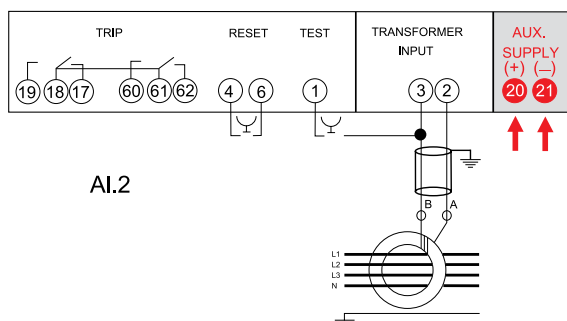
Relay Type	DIN Mount Earth Leakage Relays
Contact Configuration	2 CO
Setpoint Range(s)	Configurable; 0.03 ... 30 A
Trip Time, Max	5000 ms
Display Technology	LED Sequence
Details, Output(s)	1 SPDT alarm contact and 1 SPDT contact selectable alarm or pre-trip alarm
Reset Type	Manual local or remote
Details, Alarm	Trip contact and RED LED
Auxiliary Voltage	110 V AC 240 V AC 415 V AC 20 - 150 V DC

Connection Image

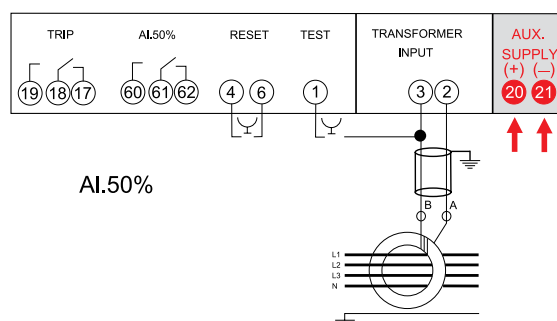


Connection

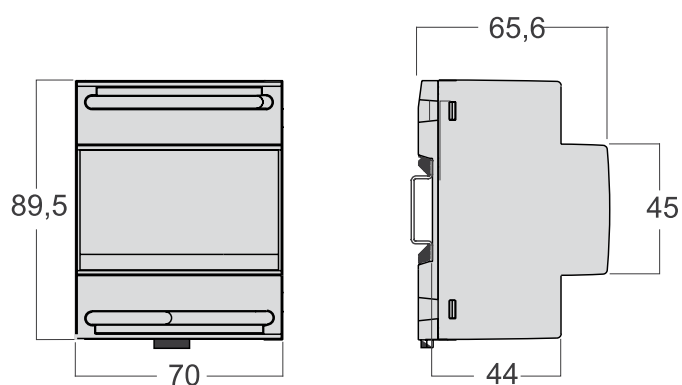
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Dimensions for RD1B2 Relays (mm)





Aux Voltage (V AC / V DC)	Umin Voltage (V AC / V DC)	Umax Voltage (V AC / V DC)	Reverse Polarity Protection	Function	Catalogue No.
110 V AC	97 V AC	127 V AC	No	Local pushbutton or remote closing contact	RD1B212
240 V AC	204 V AC	264 V AC	No	Local pushbutton or remote closing contact	RD1B214
415 V AC	340 V AC	440 V AC	No	Local pushbutton or remote closing contact	RD1B215
20 - 150 V DC	20 V DC	150 V DC	Yes	Local pushbutton	RD1B21H



Input

RCD Type, AS/NZS 60947-2	A	
Waveform	Sinusoidal (type AC) or chopped pulsating with superimposed D.C. (type A) according to EN60947-2 (annex Band M) IEC60947-2	
Details, Connection	Low voltage lines, with series TD transformer	
Input Frequency, Nom	50	Hz
Frequency Tolerance	47...63	Hz
Details, compatible product series	-	

Setup

Setpoint Range(s)	Configurable; 0.03 ... 30 A	
Configuration Method	Potentiometer / DIP-Switch	
Number of Setpoints	19	
Current Set Points I Δ n	0.03, 0.05, 0.075, 0.1, 0.15, 0.2, 0.3	A
	3 ranges x1, x10, x100	
I Δ n, Leakage Current, Max	30	A
Intervention Time T:	0, 0.15, 0.25, 0.5, 1.0, 2.5, and 5 s	
Trip Time, Max	5000	ms
Trip Time Selection Table	Refer to Time	
Harmonic Filter	Yes - selectable	

Control

Reset Type	Manual local or remote
Details, Automatic Reset	-

Signalling

Display Technology	LED Sequence
Power On	Green LED
Instantaneous Value I Δ n	4 x Yellow LED 20, 30, 40 and 50%
Accuracy, I Δ N	-
Visible Trip Indicator	Red LED
Toroid Connection Failure (Indicator)	Red LED Blinking
Number of Characters	-
Height, Characters	-

Trip Function

Alarm Function	Yes
Details, Alarm	Trip contact and RED LED
Inhibited Reset	>50% I Δ n
Non-Operating Residual Current (IEC60755)	50%
Pre-Alarm Settings	50%
Details, Pre-Alarm	50% I Δ n relay switching
Pre-Trip Alarm Reset	Automatic <50% I Δ n
Toroid Connection Failure (Automatic Test)	Trip contact and Red LED blinking
Power Fail Function	-

Output

Number of Alarm Contacts	2
Contact Configuration	2 CO
Details, Output(s)	1 SPDT alarm contact and 1 SPDT contact selectable alarm or pre-trip alarm
Contact Rating	5 A 250 V AC cos 1-3 A 250 V AC cos 0.4-5 A 30 V DC
Positive or Negative Security	Yes
Communications	-
Protocol	-

Auxiliary

Immunity to AUX Supply Disruption (Max)	150	ms
Reverse Polarity Protection	Refer to Product table	
Burden, Rated	2.5	VA

Voltage and Insulation

Ui, Rated Insulation Voltage	450	V (rms)
Input, Relay Output, Aux Support AC Voltage Test	AC 2.5 kV rms 50 Hz / 1 min	
All Circuits and Earth AC Voltage Test	AC 4.0 kV rms 50 Hz / 1 min	
Input, Relay Output, Aux Supply Impulse Voltage Test	AC 2.5 kV rms 50 Hz / 1 min	

Standards

Standards Compliance	EN 60947-1 IEC 60947-2 EN 60529 IEC 60947-1 IEC 60529 IEC 60715 EN 60715 EN 60947-2 AS 60947-2 EN 60755 IEC 60755 EN 50081-1 EN 55011 EN 50082-2 DIN 43880
Electromagnetic Compatibility-Emissions Test	EN / IEC 60947-2
Electromagnetic Compatibility-Immunity Test	EN / IEC 60947-2
Installation Category	III
Pollution Degree	2

Environmental Conditions

Operating Temperature, Min	-10	°C min
Operating Temperature, Max	55	°C max
Storage Temperature, Min	-40	°C min
Storage Temperature, Max	70	°C max
Humidity Type	Suitable for tropical environments	
Relative Humidity (IEC60755)	50	% RH
Power Dissipation, Max	2	W

Physical

Mounting	DIN-35 Rail Mount	
Material, Body / Housing	Plastic PC (Polycarbonate) self-extinguishing	
Sealable Cover	-	
Width	70	mm
Height	89.5	mm
Depth	65.6	mm
IP Rating, Front	IP40	
IP Rating, Terminals	IP20	
Terminal Type	Screw Terminal(s)	
Wire / Conductor Size (Max)	4	mm ²
Weight	0.28	kg
Height, Cutout	-	mm
Width, Cutout	-	mm



Time Delay Operating Characteristics

Set point ($I\Delta n$)	0.03 A	0.05 ... 30 A					
Selected delay t(s)	0 s	0.15 s	0.25 s	0.5 s	1.00 s	2.50 s	5.00 s
Non-operating time at @ $2I\Delta n$	-	0.15 s	0.25 s	0.5 s	1.00 s	2.50 s	5.00 s
Max. delay @ $5I\Delta n$	0.03 s	0.24 s	0.35 s	0.63 s	1.20 s	2.80 s	5.50 s

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IME Relay DIN Mount RDD421



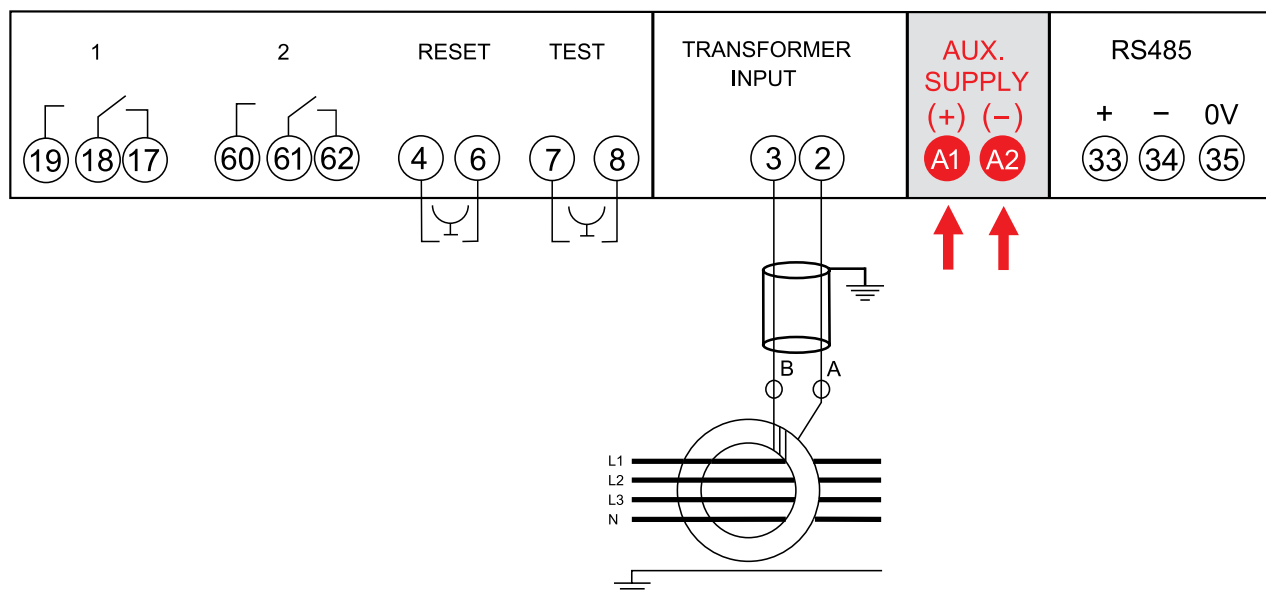
- ✓ Standard AS/NZS IEC 60947-2 (annex B and M)
- ✓ Core balance earth leakage relay
- ✓ Field adjustable
- ✓ 2 wire toroid connection
- ✓ Adjustable $I_{\Delta n}$ up to 30 A
- ✓ Local or remote reset / test
- ✓ Selectable negative or positive security
- ✓ Adjustable trip time up to 5 seconds
- ✓ Automatic permanent test

General

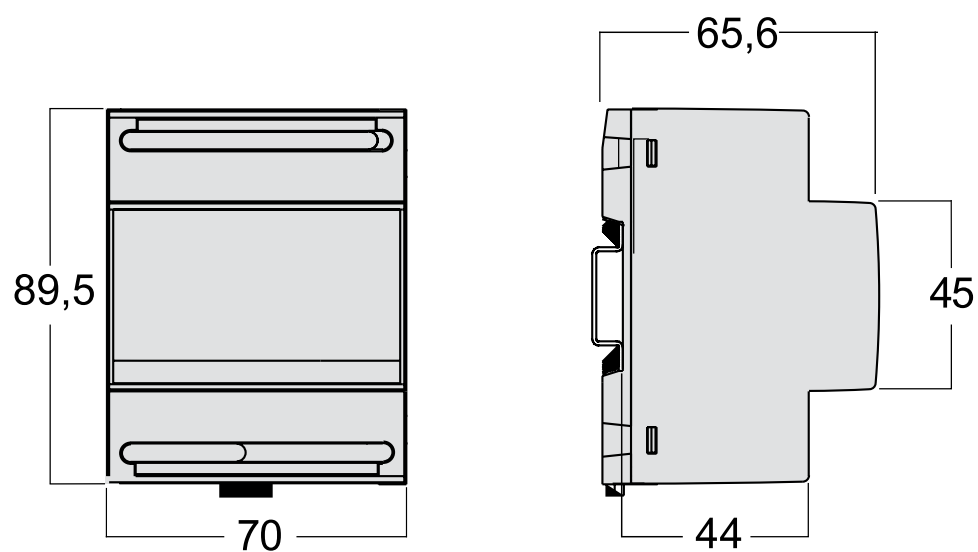
Relay Type	DIN Mount Earth Leakage Relays
Contact Configuration	2 CO
Setpoint Range(s)	Configurable; 0.03 ... 30 A
Trip Time, Max	5000 ms
Display Technology	Digital Display and LED
Details, Output(s)	1 SPDT alarm contact and 1 SPDT contact selectable alarm or pre-trip alarm
Reset Type	Manual local, Remote or Automatic
Details, Alarm	Trip contact and RED LED
Auxiliary Voltage	240 V AC 20 - 150 V DC

Connection

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Dimensions for RDD421 Relays (mm)





Aux Voltage (V AC / V DC)	Umin Voltage (V AC / V DC)	Umax Voltage (V AC / V DC)	Reverse Polarity Protection	Catalogue No.
240 V AC	195 V AC	253 V AC	No	RDD42131
20 - 150 V DC	20 V DC	150 V DC	Yes	RDD421H1

Input

RCD Type, AS/NZS 60947-2	A	
Waveform	Sinusoidal (type AC) or chopped pulsating with superimposed D.C. (type A) according to EN60947-2 (annex Band M) IEC60947-2	
Details, Connection	Low voltage lines, with series TD transformer	
Input Frequency, Nom	50	Hz
Frequency Tolerance	47...63	Hz
Details, Compatible Product Series	-	

Setup

Setpoint Range(s)	Configurable; 0.03 ... 30 A	
Configuration Method	Keypad	
Number of Setpoints	19	
Current Set Points $I_{\Delta n}$	0.03, 0.05, 0.075, 0.1, 0.15, 0.2, 0.3 3 ranges x1, x10, x100	A
$I_{\Delta n}$, Leakage Current, Max	30	A
Intervention Time T	Programmable by push buttons	
Trip Time, Max	5000	ms
Trip Time Selection Table	Refer to Time	
Harmonic Filter	Yes - selectable	

Control

Details, Function	Local pushbutton or remote closing contact
Reset Type	Manual local, Remote or Automatic
Details, Automatic Reset	Attempts number 1-255, Time 1-999s The attempt counter automatically resets when a time equal to the selected lapse among the attempts has passed from the reset

Signalling

Display Technology	Digital Display and LED
Power On	Green LED
Instantaneous Value $I_{\Delta n}$	Digital display 1000 points (3 digits)
Accuracy, $I_{\Delta n}$	0.95
Visible Trip Indicator	Red LED, Display "ALL"
Toroid Connection Failure (Indicator)	Display "Ct"
Number of Characters	3
Height, Characters	10

Trip Function

Alarm Function	Yes
Details, Alarm	Trip contact and RED LED
Inhibited Reset	>50% $I_{\Delta n}$
Non-Operating Residual Current (IEC60755)	50%
Pre-Alarm Settings	20 - 30, 40, 50%, select $I^{\Delta}N$ (Auto reset if below selected value)
Details, Pre-Alarm	Selectable 4 settings
Pre-Trip Alarm Reset	Automatic < pre trip set point
Toroid Connection Failure (Automatic Test)	Trip contact and Display "Ct"
Power Fail Function	-

Voltage and Insulation

U_i , Rated Insulation Voltage	450	V (rms)
Input, Relay Output, Aux Support AC Voltage Test	AC >1.5 kV rms 50 Hz / 1 min	
All Circuits and Earth AC Voltage Test	AC 4.0 kV rms 50 Hz / 1 min	
Input, Relay Output, Aux Supply Impulse Voltage Test	AC 2.5 kV rms 50 Hz / 1min	

Output

Number of Alarm Contacts	2
Contact Configuration	2 CO
Details, Output(s)	1 SPDT alarm contact and 1 SPDT contact selectable alarm or pre-trip alarm.
Contact Rating	5 A 250 V AC cos 1-3 A 250 V AC cos 0.4-5 A 30 V DC
Positive or Negative Security	Yes
Communications	3 wire RS485: Ethernet RS485 +IF2E or IFE (RS485 / Ethernet) or RS232 RD485 + IF2E) Refer to Product Table
Protocol	Modbus RTU / TCP

Auxiliary

Immunity to AUX Supply Disruption (Max)	150	ms
Reverse Polarity Protection	Refer to product table	
Burden, Rated	2.5	VA

Standards

Standards Compliance	EN 60947-1 IEC 60947-2 EN 60529 IEC 60947-1 IEC 60529 IEC 60715 EN 60715 EN 60947-2 AS 60947-2 EN 60755 IEC 60755 EN 50081-1 EN 55011 EN 50082-2 DIN 43880
Electromagnetic Compatibility-Emissions Test	EN / IEC 60947-2
Electromagnetic Compatibility-Immunity Test	EN / IEC 60947-2
Installation Category	III
Pollution Degree	2

Environmental Conditions

Operating Temperature, Min	-5	°C min
Operating Temperature, Max	55	°C max
Storage Temperature, Min	-40	°C min
Storage Temperature, Max	70	°C max
Humidity Type	Suitable for tropical environments	
Relative Humidity (IEC60755)	50	% RH
Power Dissipation, Max	2	W

Physical

Mounting	DIN-35 Rail Mount	
Material, Body / Housing	Plastic PC (Polycarbonate) self-extinguishing	
Sealable Cover	-	
Width	70	mm
Height	89.5	mm
Depth	65.6	mm
IP Rating, Front	IP40	
IP Rating, Terminals	IP20	
Terminal Type	Screw Terminal(s)	
Wire / Conductor Size (Max)	2.5	mm ²
Weight	0.32	kg
Height, Cutout	-	mm
Width, Cutout	-	mm



| Time Delay Operating Characteristics

Set point ($I\Delta n$)	0.03 A	0.05 ... 30 A					
Selected delay t(s)	0 s	0.15 s	0.25 s	0.5 s	1.00 s	2.50 s	5.00 s
Non-operating time at @ $2I\Delta n$	-	0.15 s	0.25 s	0.5 s	1.00 s	2.50 s	5.00 s
Max. delay @ $5I\Delta n$	0.03 s	0.24 s	0.35 s	0.63 s	1.20 s	2.80 s	5.50 s

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IME Relay Panel Mount RD1DF

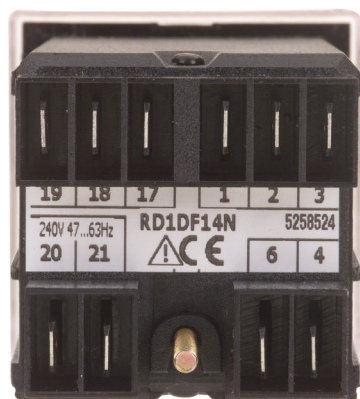


- ✓ Standard AS/NZS IEC 60947-2 (annex B and M)
- ✓ Core balance earth leakage relay
- ✓ Field adjustable
- ✓ 2 wire toroid connection
- ✓ Adjustable $I_{\Delta n}$ up to 30 A
- ✓ Adjustable trip time up to 5 seconds
- ✓ Local or remote reset / test
- ✓ Selectable negative or positive security
- ✓ Automatic permanent test
- ✓ Harmonic Filter

General

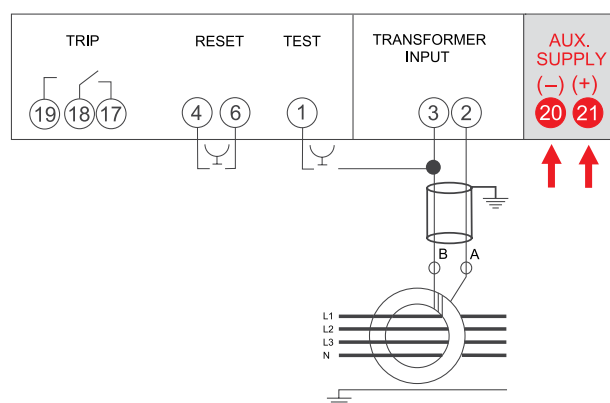
Relay Type	Panel Mount Earth Leakage Relays
Contact Configuration	1 CO
Setpoint Range(s)	Configurable; 0.03 ... 30 A
Trip Time, Max	5000 ms
Display Technology	LED
Details, Output(s)	1 SPDT contact
Reset Type	Manual local, Remote or Automatic
Details, Alarm	Trip contact and RED LED
Auxiliary Voltage	110 V AC 240 V AC 415 V AC

Connection Image

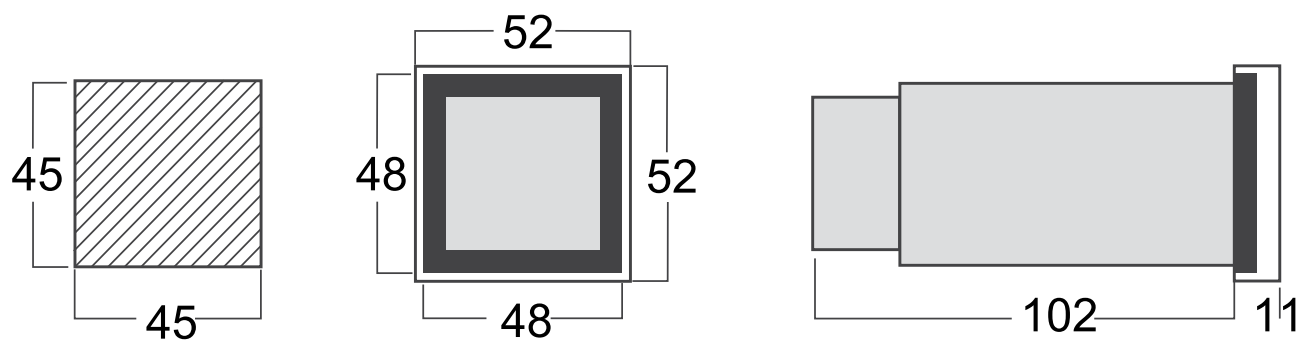


Connection

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Dimensions for RD1DF Relays (mm)





Aux Voltage (V AC)	Umin Voltage (V AC)	Umax Voltage (V AC)	Catalogue No.
110 V AC	97 V AC	127 V AC	RD1DF12
240 V AC	204 V AC	264 V AC	RD1DF14
415 V AC	340 V AC	440 V AC	RD1DF15

Input

RCD Type, AS/NZS 60947-2	A	
Waveform	Sinusoidal (type AC) or chopped pulsating with superimposed D.C. (type A) according to EN60947-2 (annex Band M) IEC60947-2	
Details, Connection	Low voltage lines, with series TD transformer	
Input Frequency, Nom	50	Hz
Frequency Tolerance	47...63	Hz
Details, Compatible Product Series	-	

Setup

Setpoint Range(s)	Configurable; 0.03 ... 30 A	
Configuration Method	Potentiometer / DIP-Switch	
Number of Setpoints	19	
Current Set Points $I_{\Delta n}$	0.03, 0.05, 0.075, 0.1, 0.15, 0.2, 0.3 3 ranges x1, x10, x100	A
$I_{\Delta n}$, Leakage Current, Max	30	A
Intervention Time T	0, 0.15, 0.25, 0.5, 1.0, 2.5, and 5 s	
Trip Time, Max	5000	ms
Trip Time Selection Table	Refer to Time	
Harmonic Filter	Yes	

Control

Details, Function	Local pushbutton or remote closing contact
Reset Type	Manual local, Remote or Automatic
Details, Automatic Reset	3 attempts

Signalling

Display Technology	LED
Power On	Green LED
Instantaneous Value $I_{\Delta n}$	-
Accuracy, $I_{\Delta n}$	-
Visible Trip Indicator	Red LED
Toroid Connection Failure (Indicator)	Red LED Blinking
Number of Characters	-
Height, Characters	-

Trip Function

Alarm Function	Yes
Details, Alarm	Trip contact and RED LED
Inhibited Reset	>50% $I_{\Delta n}$
Non-Operating Residual Current (IEC60755)	50%
Pre-Alarm Settings	-
Details, Pre-Alarm	-
Pre-Trip Alarm Reset	-
Toroid Connection Failure (Automatic Test)	Trip contact and Red LED blinking
Power Fail Function	-

Output

Number of Alarm Contacts	1
Contact Configuration	1 CO
Details, Output(s)	1 SPDT contact
Contact Rating	5 A 250 V AC cos 1 - 3 A 250 V AC cos 0.4 - 5 A 30 V DC
Positive or Negative Security	Yes
Communications	-
Protocol	-

Auxiliary

Immunity to AUX Supply Disruption (Max)	300	ms
Reverse Polarity Protection	Refer to Product table	
Burden, Rated	2.5	VA

Voltage and Insulation

Ui, Rated Insulation Voltage	450	V (rms)
Input, Relay Output, Aux Support AC Voltage Test	AC >1.5 kV rms 50 Hz / 1 min	
All Circuits and Earth AC Voltage Test	AC 4.0 kV rms 50 Hz / 1 min	
Input, Relay Output, Aux Supply Impulse Voltage Test	AC 2.5 kV rms 50 Hz / 1min	

Standards

Standards Compliance	EN 60947-1 IEC 60947-2 EN 60529 IEC 60947-1 IEC 60529 EN 60947-2 AS 60947-2 IEC 60755 EN 50081-1 EN 55011 EN 50082-2
Electromagnetic Compatibility-Emissions Test	EN / IEC 60947-2
Electromagnetic Compatibility-Immunity Test	EN / IEC 60947-2
Installation Category	III
Pollution Degree	2

Environmental Conditions

Operating Temperature, Min	-5	°C min
Operating Temperature, Max	50	°C max
Storage Temperature, Min	-40	°C min
Storage Temperature, Max	70	°C max
Humidity Type	Suitable for tropical environments	
Relative Humidity (IEC60755)	50	% RH
Power Dissipation, Max	2	W

Physical

Mounting	Panel Mount	
Material, Body / Housing	Plastic PC (Polycarbonate) self-extinguishing	
Sealable Cover	-	
Width	48	mm
Height	48	mm
Depth	113	mm
IP Rating, Front	IP40	
IP Rating, Terminals	IP20	
Terminal Type	Fast-On Crimp Terminal(s)	
Wire / Conductor Size (Max)	-	
Weight	0.2	kg
Height, Cutout	45	mm
Width, Cutout	45	mm



Time Delay Operating Characteristics

Set point ($I\Delta n$)	0.03 A	0.05 ... 30 A					
Selected delay t(s)	0 s	0.15 s	0.25 s	0.5 s	1.00 s	2.50 s	5.00 s
Non-operating time at @ $2I\Delta n$	-	0.15 s	0.25 s	0.5 s	1.00 s	2.50 s	5.00 s
Max. delay @ $5I\Delta n$	0.03 s	0.24 s	0.35 s	0.63 s	1.20 s	2.80 s	5.50 s

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IME Relay Panel Mount RD1EP2

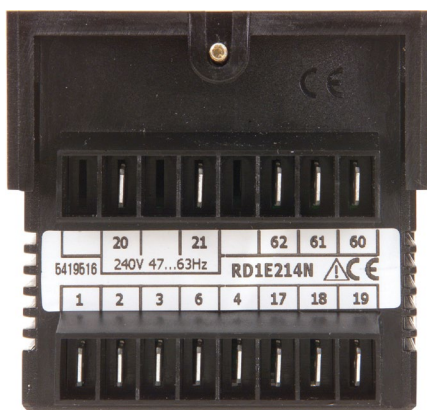


- ✓ Standard AS/NZS IEC 60947-2 (annex B and M)
- ✓ Core balance earth leakage relay
- ✓ Field adjustable
- ✓ 2 wire toroid connection
- ✓ Adjustable $I_{\Delta n}$ up to 30 A
- ✓ Adjustable trip time up to 5 seconds
- ✓ Local or remote reset / test
- ✓ Selectable negative or positive security
- ✓ Automatic permanent test
- ✓ Harmonic Filter

General

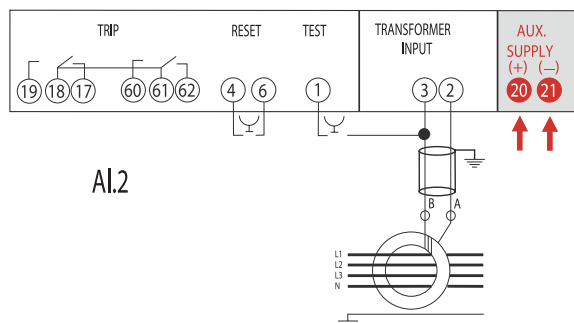
Relay Type	Panel Mount Earth Leakage Relays
Contact Configuration	2 CO
Setpoint Range(s)	Configurable; 0.03 ... 30 A
Trip Time, Max	5000 ms
Display Technology	LED Sequence
Details, Output(s)	1 SPDT alarm contact and 1 SPDT contact selectable alarm or pre-trip alarm
Reset Type	Manual local or Remote
Details, Alarm	Trip contact & RED LED
Auxiliary Voltage	110 V AC 240 V AC 415 V AC 20 - 150 V DC

Connection Image

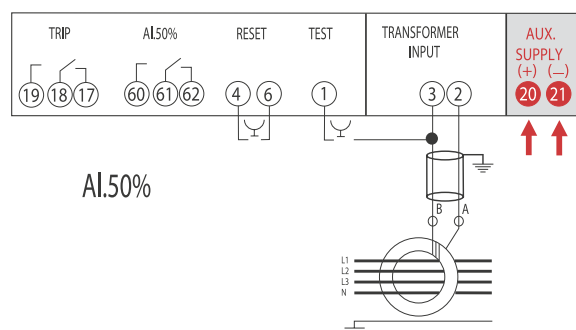


Connection

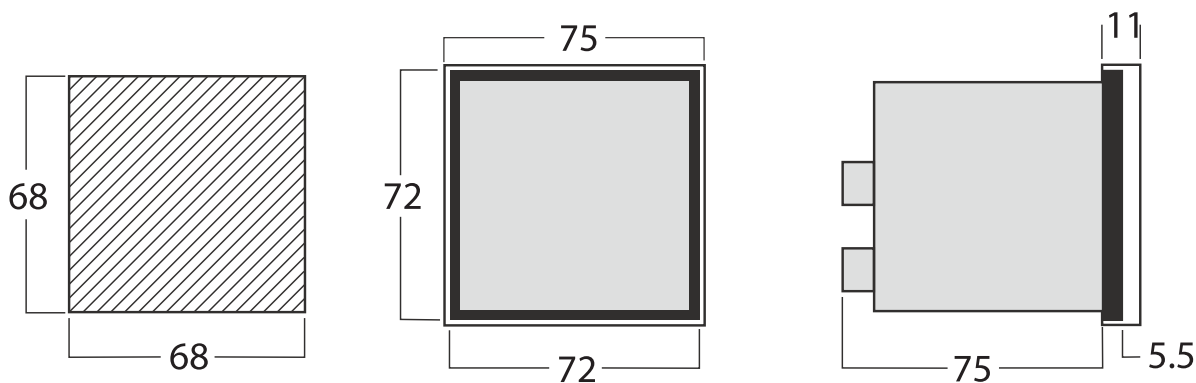
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Dimensions for RD1EP Relays (mm)





Aux Voltage (V AC / V DC)	Umin Voltage (V AC / V DC)	Umax Voltage (V AC / V DC)	Reverse Polarity Protection	Catalogue No.
110 V AC	97 V AC	127 V AC	No	RD1EP212
240 V AC	204 V AC	264 V AC	No	RD1EP214
415 V AC	340 V AC	440 V AC	No	RD1EP215
20 - 150 V DC	20 V DC	150 V DC	Yes	RD1EP21H

Input

RCD Type, AS/NZS 60947-2	A	
Waveform	Sinusoidal (type AC) or chopped pulsating with superimposed D.C. (type A) according to EN60947-2 (annex Band M) IEC60947-2	
Details, Connection	Low voltage lines, with series TD transformer	
Input Frequency, Nom	50	Hz
Frequency Tolerance	47...63	Hz
Details, Compatible Product Series	-	

Setup

Setpoint Range(s)	Configurable; 0.03 ... 30 A	
Configuration Method	Potentiometer / DIP-Switch	
Number of Setpoints	19	
Current Set Points I Δ n	0.03, 0.05, 0.075, 0.1, 0.15, 0.2, 0.3 3 A ranges x1, x10, x100	
I Δ n, Leakage Current, Max	30	A
Intervention Time T	0, 0.15, 0.25, 0.5, 1.0, 2.5, and 5 s	
Trip Time, Max	5000	ms
Trip Time Selection Table	Refer to Time	
Harmonic Filter	Yes	

Control

Details, Function	Local pushbutton or remote closing contact. Local pushbutton	
Reset Type	Manual local or Remote	
Details, Automatic Reset	-	

Signalling

Display Technology	LED Sequence
Power On	Green LED
Instantaneous Value I Δ n	4 x Yellow LED 20, 30, 40 & 50%
Accuracy, I Δ N	-
Visible Trip Indicator	Red LED
Toroid Connection Failure (Indicator)	Red LED Blinking
Number of Characters	-
Height, Characters	-

Trip Function

Alarm Function	Yes
Details, Alarm	Trip contact & RED LED
Inhibited Reset	>50% I Δ n
Non-Operating Residual Current (IEC60755)	50%
Pre-Alarm Settings	50%
Details, Pre-Alarm	50% I Δ n relay switching
Pre-Trip Alarm Reset	Automatic <50% I Δ n
Toroid Connection Failure (Automatic Test)	Trip contact & Red LED blinking
Power Fail Function	-

Output

Number of Alarm Contacts	2
Contact Configuration	2 CO
Details, Output(s)	1 SPDT alarm contact and 1 SPDT contact selectable alarm or pre-trip alarm
Contact Rating	5 A 250 V AC cos 1 - 3 A 250 V AC cos 0.4 - 5 A 30 V DC
Positive or Negative Security	Yes
Communications	-
Protocol	-

Auxiliary

Immunity to AUX Supply Disruption (Max)	150	ms
Reverse Polarity Protection	Refer to Product table	
Burden, Rated	2.5	VA

Voltage and Insulation

Ui, Rated Insulation Voltage	450	V (rms)
Input, Relay Output, Aux Support AC Voltage Test	AC >1.5 kV rms 50 Hz / 1 min	
All Circuits and Earth AC Voltage Test	AC 4.0 kV rms 50 Hz / 1 min	
Input, Relay Output, Aux Supply Impulse Voltage Test	AC 2.5 kV rms 50 Hz / 1 min	

Standards

Standards Compliance	EN 60947-1 IEC 60947-2 EN 60529 IEC 60947-1 IEC 60529 EN 60947-2 AS 60947-2 IEC 60755 EN 50081-1 EN 55011 EN 50082-2
Electromagnetic Compatibility-Emissions Test	EN / IEC 60947-2
Electromagnetic Compatibility-Immunity Test	EN / IEC 60947-2
Installation Category	III
Pollution Degree	2

Environmental Conditions

Operating Temperature, Min	-5	°C min
Operating Temperature, Max	50	°C max
Storage Temperature, Min	-40	°C min
Storage Temperature, Max	70	°C max
Humidity Type	Suitable for tropical environments	
Relative Humidity (IEC60755)	50	% RH
Power Dissipation, Max	2	W

Physical

Mounting	Panel Mount	
Material, Body / Housing	Plastic PC (Polycarbonate) self-extinguishing	
Sealable Cover	-	
Width	72	mm
Height	72	mm
Depth	86	mm
IP Rating, Front	IP40	
IP Rating, Terminals	IP20	
Terminal Type	Fast-On Crimp Terminal(s)	
Wire / Conductor Size (Max)	-	
Weight	0.25	kg
Height, Cutout	68	mm
Width, Cutout	68	mm



| Time Delay Operating Characteristics

Set point ($I\Delta n$)	0.03 A	0.05 ... 30 A					
Selected delay t(s)	0 s	0.15 s	0.25 s	0.5 s	1.00 s	2.50 s	5.00 s
Non-operating time at @ $2I\Delta n$	-	0.15 s	0.25 s	0.5 s	1.00 s	2.50 s	5.00 s
Max. delay @ $5I\Delta n$	0.03 s	0.24 s	0.35 s	0.63 s	1.20 s	2.80 s	5.50 s

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IME Relay Panel Mount RD3E21

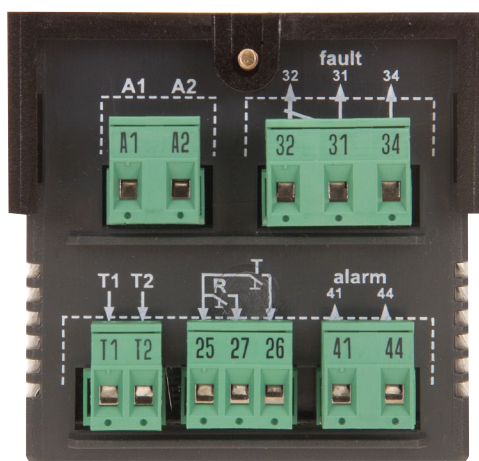


- ✓ Standard AS/NZS IEC 60947-2 (annex B and M)
- ✓ Core balance earth leakage relay
- ✓ Field adjustable
- ✓ 2 wire toroid connection
- ✓ Adjustable $I\Delta n$ up to 30 A
- ✓ Adjustable trip time up to 5 seconds
- ✓ Local or remote reset / test
- ✓ Selectable negative or positive security
- ✓ Automatic permanent test
- ✓ Harmonic Filter

General

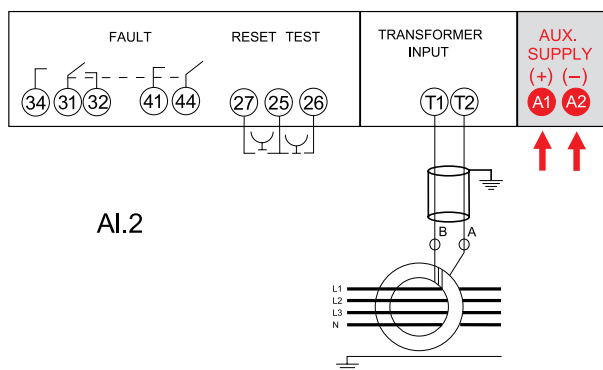
Relay Type	Panel Mount Earth Leakage Relays
Contact Configuration	1 NO + 1 CO
Setpoint Range(s)	Configurable; 0.03 ... 30 A
Trip Time, Max	5000 ms
Display Technology	Digital Display & LED
Details, Output(s)	1 SPDT alarm contact and 1 SPDT contact selectable alarm or pre-trip alarm
Reset Type	Manual local or Remote
Details, Alarm	Trip contact & RED LED
Auxiliary Voltage	110 V AC 240 V AC 415 V AC 20 - 150 V DC

Connection Image



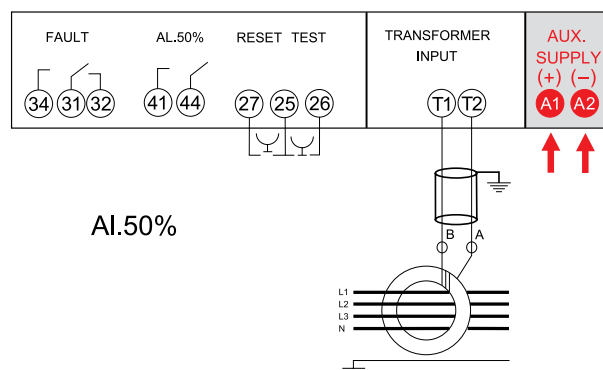
Connection

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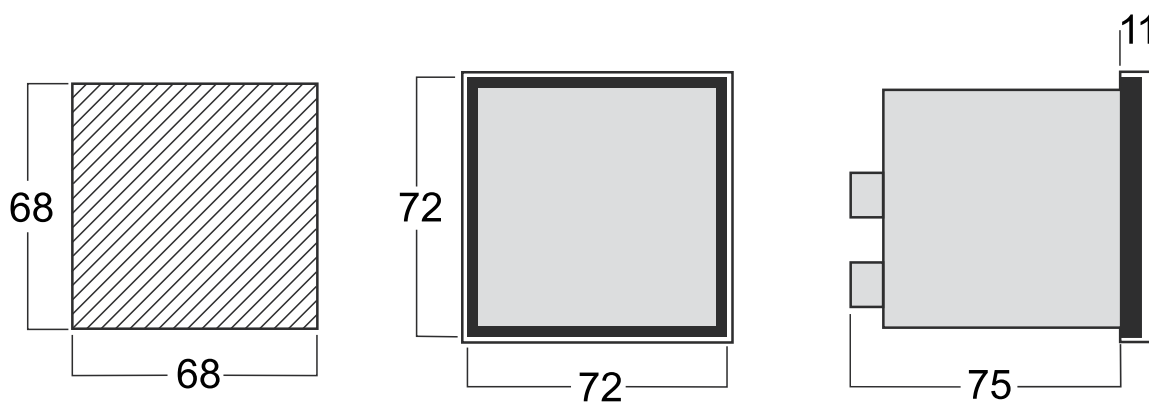
AI.2

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AI.50%

Dimensions for RD3E21 Relays (mm)





Aux Voltage (V AC / V DC)	Umin Voltage (V AC / V DC)	Umax Voltage (V AC / V DC)	Reverse Polarity Protection	Catalogue No.
110 V AC	77 V AC	143 V AC	No	RD3E212B
240 V AC	154 V AC	264 V AC	No	RD3E217B
415 V AC	266 V AC	456 V AC	No	RD3E218B
20 - 150 V DC	20 V DC	150 V DC	Yes	RD3E21HB

Input

RCD Type, AS/NZS 60947-2	A	
Waveform	Sinusoidal (type AC) or chopped pulsating with superimposed D.C. (type A) according to EN60947-2 (annex Band M) IEC60947-2	
Details, Connection	Low voltage lines, with series TD transformer	
Input Frequency, Nom	50	Hz
Frequency Tolerance	47...63	Hz
Details, Compatible Product Series	-	

Setup

Setpoint Range(s)	Configurable; 0.03 ... 30 A	
Configuration Method	Potentiometer / DIP-Switch	
Number of Setpoints	19	
Current Set Points I Δ n	0.03, 0.05, 0.075, 0.1, 0.15, 0.2, 0.3 3 A ranges x1, x10, x100	
I Δ n, Leakage Current, Max	30	A
Intervention Time T	0, 0.15, 0.25, 0.5, 1.0, 2.5, and 5 s	
Trip Time, Max	5000	ms
Trip Time Selection Table	Refer to Time	
Harmonic Filter	Yes	

Control

Details, Function	Local pushbutton or remote closing contact
Reset Type	Manual local or Remote
Details, Automatic Reset	-

Signalling

Display Technology	Digital Display & LED
Power On	LED Lit
Instantaneous Value I Δ n	Digital display 1000 points (3 digits)
Accuracy, I Δ N	0.95
Visible Trip Indicator	Red LED, Display "ALL"
Toroid Connection Failure (Indicator)	Display "Ct"
Number of Characters	3
Height, Characters	10

Trip Function

Alarm Function	Yes
Details, Alarm	Trip contact & RED LED
Inhibited Reset	>50% I Δ n
Non-Operating Residual Current (IEC60755)	50%
Pre-Alarm Settings	Automatic <50% I Δ n
Details, Pre-Alarm	50% I Δ n relay switching
Pre-Trip Alarm Reset	Automatic <50% I Δ n
Toroid Connection Failure (Automatic Test)	Trip contact & Display "Ct"
Power Fail Function	-

Output

Number of Alarm Contacts	2
Contact Configuration	1 NO + 1 CO
Details, Output(s)	1 SPDT alarm contact and 1 SPDT contact selectable alarm or pre-trip alarm.
Contact Rating	5 A 250 V AC cos 1-3 A 250 V AC cos 0.4-5 A 30 V DC
Positive or Negative Security	Yes
Communications	-
Protocol	-

Auxiliary

Immunity to AUX Supply Disruption (Max)	150	ms
Reverse Polarity Protection	Refer to product table	
Burden, Rated	4	VA

Voltage and Insulation

Ui, Rated Insulation Voltage	450	V (rms)
Input, Relay Output, Aux Support AC Voltage Test	AC >1.5 kV rms 50 Hz / 1 min	
All Circuits and Earth AC Voltage Test	AC 4.0 kV rms 50 Hz / 1 min	
Input, Relay Output, Aux Supply Impulse Voltage Test	AC 2.5 kV rms 50 Hz / 1min	

Standards

Standards Compliance	EN 60947-1 IEC 60947-2 EN 60529 IEC 60947-1 IEC 60529 EN 60947-2 AS 60947-2 IEC 60755 EN 50081-1 EN 55011 EN 50082-2
	EN / IEC 60947-2
Electromagnetic Compatibility-Emissions Test	EN / IEC 60947-2
Electromagnetic Compatibility-Immunity Test	EN / IEC 60947-2
Installation Category	III
Pollution Degree	2

Environmental Conditions

Operating Temperature, Min	-25	°C min
Operating Temperature, Max	55	°C max
Storage Temperature, Min	-40	°C min
Storage Temperature, Max	70	°C max
Humidity Type	Suitable for tropical environments	
Relative Humidity (IEC60755)	50	% RH
Power Dissipation, Max	2.5	W

Physical

Mounting	Panel Mount	
Material, Body / Housing	Plastic PC (Polycarbonate) self-extinguishing	
Sealable Cover	-	
Width	72	mm
Height	72	mm
Depth	81.8	mm
IP Rating, Front	IP40	
IP Rating, Terminals	IP20	
Terminal Type	Extractable terminals	
Wire / Conductor Size (Max)	4	mm ²
Weight	0.28	kg
Height, Cutout	68	mm
Width, Cutout	68	mm



Time Delay Operating Characteristics

Set point ($I\Delta n$)	0.03 A	0.05 ... 30 A					
Selected delay t(s)	0 s	0.15 s	0.25 s	0.5 s	1.00 s	2.50 s	5.00 s
Non-operating time at @ $2I\Delta n$	-	0.15 s	0.25 s	0.5 s	1.00 s	2.50 s	5.00 s
Max. delay @ $5I\Delta n$	0.03 s	0.24 s	0.35 s	0.63 s	1.20 s	2.80 s	5.50 s

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IME Relay Panel Mount RD1G2



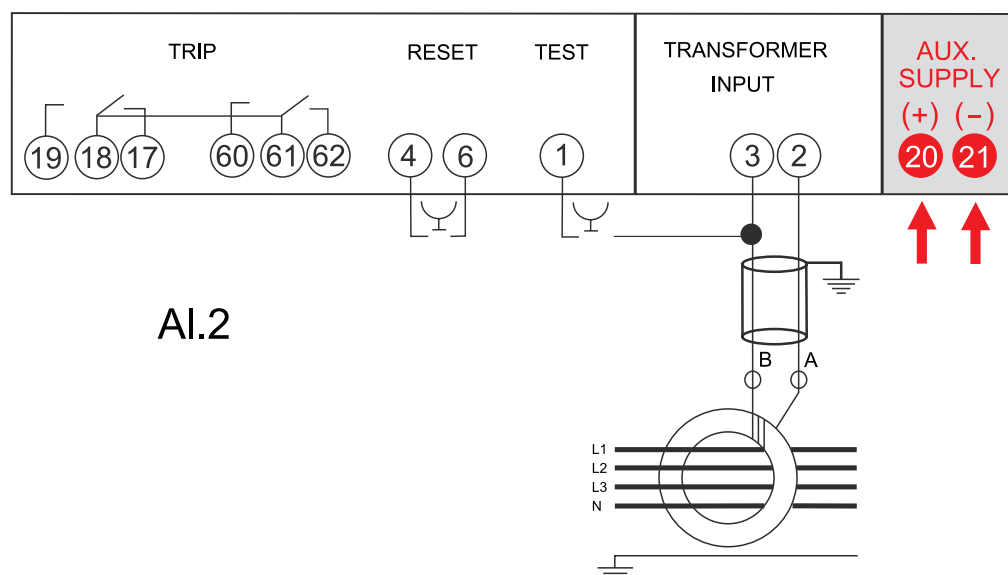
- ✓ Standard AS/NZS IEC 60947-2 (annex B and M)
- ✓ Core balance earth leakage relay
- ✓ Field adjustable
- ✓ 2 wire toroid connection
- ✓ Adjustable IΔn up to 30 A
- ✓ Adjustable trip time up to 5 seconds
- ✓ Local or remote reset / test
- ✓ Selectable negative or positive security
- ✓ Automatic permanent test
- ✓ Harmonic Filter

General

Relay Type	Panel Mount Earth Leakage Relays
Contact Configuration	2 CO
Setpoint Range(s)	Configurable; 0.03 ... 30 A
Trip Time, Max	5000 ms
Display Technology	LED Sequence
Details, Output(s)	1 SPDT alarm contact and 1 SPDT contact selectable alarm or pre-trip alarm
Reset Type	Manual local or Remote
Details, Alarm	Trip contact & RED LED
Auxiliary Voltage	110 V AC 240 V AC 415 V AC

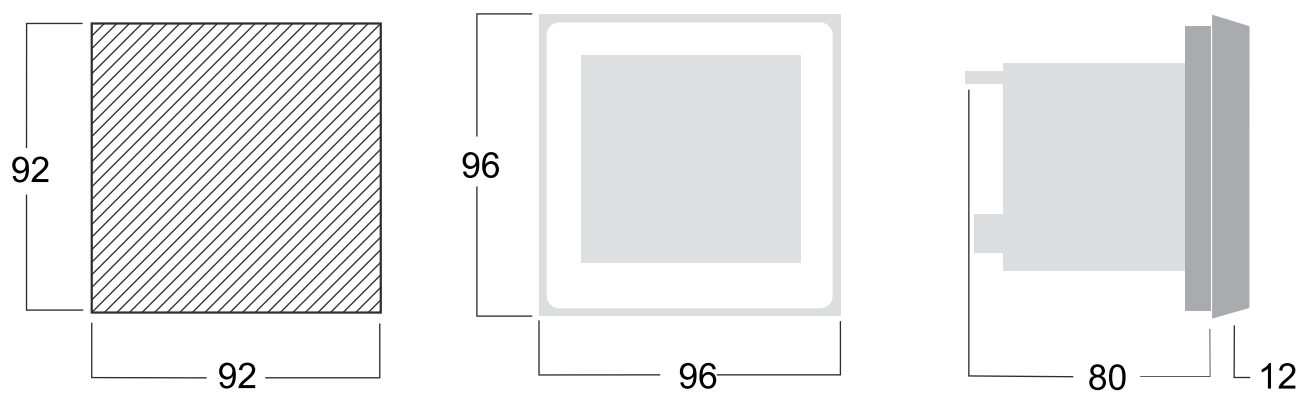
Connection

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AI.2

Dimensions for RD1G2 Relays (mm)





Aux Voltage (V AC)	Umin Voltage (V AC)	Umax Voltage (V AC)	Reverse Polarity Protection	Catalogue No.
110 V AC	95 V AC	127 V AC	No	RD1G212
240 V AC	192 V AC	253 V AC	No	RD1G214
415 V AC	340 V AC	440 V AC	No	RD1G215

Input

RCD Type, AS/NZS 60947-2	A	
Waveform	Sinusoidal (type AC) or chopped pulsating with superimposed D.C. (type A) according to EN60947-2 (annex Band M) IEC60947-2	
Details, Connection	Low voltage lines, with series TD transformer	
Input Frequency, Nom	50	Hz
Frequency Tolerance	47...63	Hz
Details, Compatible Product Series	-	

Setup

Setpoint Range(s)	Configurable; 0.03 ... 30 A	
Configuration Method	Potentiometer / DIP-Switch	
Number of Setpoints	19	
Current Set Points $I_{\Delta n}$	0.03, 0.05, 0.075, 0.1, 0.15, 0.2, 0.3 A 3 ranges x1, x10, x100	
$I_{\Delta n}$, Leakage Current, Max	30	A
Intervention Time T	0, 0.15, 0.25, 0.5, 1.0, 2.5, and 5 s	
Trip Time, Max	5000	ms
Trip Time Selection Table	Refer to Time	
Harmonic Filter	Yes - selectable	

Control

Details, Function	Local pushbutton or remote closing contact
Reset Type	Manual local or Remote
Details, Automatic Reset	-

Signalling

Display Technology	LED Sequence
Power On	Green LED
Instantaneous Value $I_{\Delta n}$	4 x Yellow LED 20, 30, 40 & 50%
Accuracy, $I_{\Delta n}$	-
Visible Trip Indicator	Red LED
Toroid Connection Failure (Indicator)	Red LED Blinking
Number of Characters	-
Height, Characters	-

Trip Function

Alarm Function	Yes
Details, Alarm	Trip contact & RED LED
Inhibited Reset	>50% $I_{\Delta n}$
Non-Operating Residual Current (IEC60755)	50%
Pre-Alarm Settings	50%
Details, Pre-Alarm	50% $I_{\Delta n}$ relay switching
Pre-Trip Alarm Reset	Automatic <50% $I_{\Delta n}$
Toroid Connection Failure (Automatic Test)	Trip contact & Red LED blinking
Power Fail Function	-

Output

Number of Alarm Contacts	2
Contact Configuration	2 CO
Details, Output(s)	1 SPDT alarm contact and 1 SPDT contact selectable alarm or pre-trip alarm
Contact Rating	5 A 250 V AC cos 1-3 A 250 V AC cos 0.4-5 A 30 V DC
Positive or Negative Security	Yes
Communications	-
Protocol	-

Auxiliary

Immunity to AUX Supply Disruption (Max)	150	ms
Reverse Polarity Protection	Refer to product table	
Burden, Rated	2.5	VA

Voltage and Insulation

Ui, Rated Insulation Voltage	450	V (rms)
Input, Relay Output, Aux Support AC Voltage Test	AC 2.5 kV rms 50 Hz / 1 min	
All Circuits and Earth AC Voltage Test	AC 4.0 kV rms 50 Hz / 1 min	
Input, Relay Output, Aux Supply Impulse Voltage Test	AC 2.5 kV rms 50 Hz / 1 min	

Standards

Standards Compliance	EN 60947-1 IEC 60947-2 EN 60529 IEC 60947-1 IEC 60529 EN 60947-2 AS 60947-2 IEC 60755 EN 50081-1 EN 55011 EN 50082-2	
Electromagnetic Compatibility-Emissions Test	EN / IEC 60947-2	
Electromagnetic Compatibility-Immunity Test	EN / IEC 60947-2	
Installation Category	III	
Pollution Degree	2	

Environmental Conditions

Operating Temperature, Min	-10	°C min
Operating Temperature, Max	50	°C max
Storage Temperature, Min	-40	°C min
Storage Temperature, Max	70	°C max
Humidity Type	Suitable for tropical environments	
Relative Humidity (IEC60755)	50	% RH
Power Dissipation, Max	2	W

Physical

Mounting	Panel Mount	
Material, Body / Housing	Plastic PC (Polycarbonate) self-extinguishing	
Sealable Cover	-	
Width	96	mm
Height	96	mm
Depth	92	mm
IP Rating, Front	IP40	
IP Rating, Terminals	IP20	
Terminal Type	Fast-On Crimp Terminal(s)	
Wire / Conductor Size (Max)	-	
Weight	0.28	kg
Height, Cutout	92	mm
Width, Cutout	92	mm



Time Delay Operating Characteristics

Set point ($I\Delta n$)	0.03 A	0.05 ... 30 A					
Selected delay t(s)	0 s	0.15 s	0.25 s	0.5 s	1.00 s	2.50 s	5.00 s
Non-operating time at @ $2I\Delta n$	-	0.15 s	0.25 s	0.5 s	1.00 s	2.50 s	5.00 s
Max. delay @ $5I\Delta n$	0.03 s	0.24 s	0.35 s	0.63 s	1.20 s	2.80 s	5.50 s

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IME Relays and Kits DSRM72C



- ✓ Standard AS/NZS2081
- ✓ Core balance earth leakage relay
- ✓ Panel mount 72 mm relay
- ✓ Panel mount 48 mm test device
- ✓ Field adjustable
- ✓ 4 wire toroid connection
- ✓ Adjustable $I_{\Delta n}$ up to 5 A
- ✓ $I_{\Delta n}$ LED indication 20, 30, 40, 50% setting
- ✓ Adjustable trip time up to 0.5 seconds
- ✓ 2 change-over latching contacts
- ✓ Selectable power fail or alarm contact
- ✓ Local or remote reset / test
- ✓ Selectable negative or positive security
- ✓ Automatic permanent test
- ✓ Harmonic Filter

General

Relay Type	Panel Mount Mining Earth Leakage Relays
Contact Configuration	2 CO
Setpoint Range(s)	Configurable; 0.03 ... 5 A
Trip Time, Max	500 ms
Display Technology	LED Sequence
Details, Output(s)	1 SPDT latching alarm contact and 1 SPDT latching contact selectable alarm or power fail alarm.
Reset Type	Manual local or Remote
Details, Alarm	TRIP state memorisation: red LED "TRIP" + relay latching
Auxiliary Voltage	110 V AC 240 V AC 24 V DC

Connection

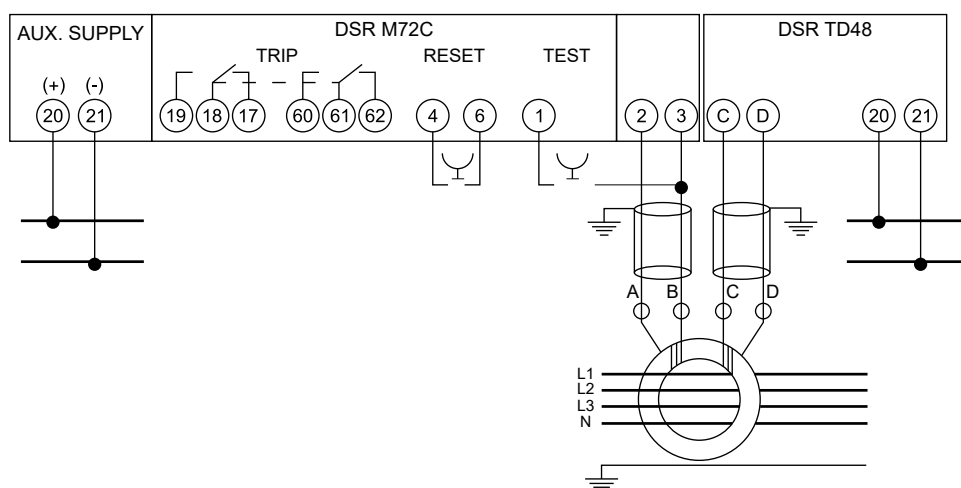
Setting 1 OPTION

AL.2 = alarm with 2 SPDT output contacts

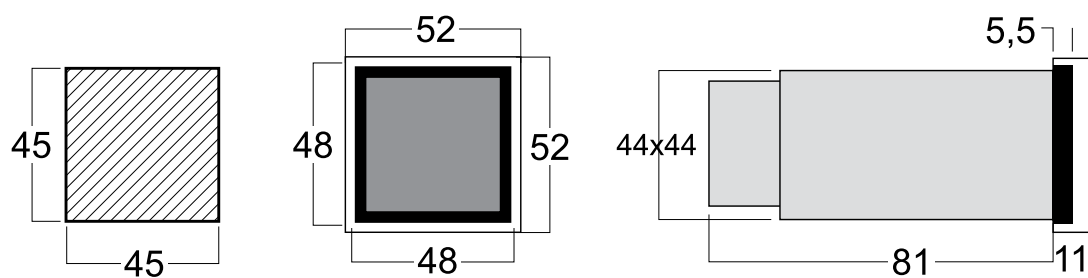
(Select contact output type option using DIP switch located on relay fascia)

S 291/117 = wiring diagram number

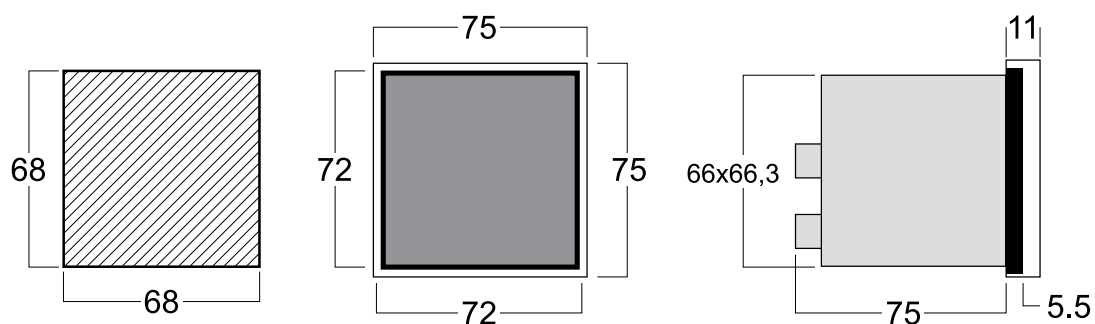
S 291 / 117



Dimensions for DSRM-TD-48 Test Device (mm)



Dimensions for DSR-M-72 Relay (mm)



Kits

Aux Voltage (V AC / V DC)	Umin Voltage (V AC / V DC)	Umax Voltage (V AC / V DC)	Reverse Polarity	Catalogue No.
110 V AC	97 V AC	127 V AC	No	DSRM110VC
240 V AC	204 V AC	264 V AC	No	DSRM240VC

Relays

Aux Voltage (V AC / V DC)	Umin Voltage (V AC / V DC)	Umax Voltage (V AC / V DC)	Reverse Polarity	Catalogue No.
24 V DC	20 V DC	26 V DC	Yes	DSRM72C24
110 V AC	94 V AC	121 V AC	No	DSRM72C110
240 V AC	204 V AC	264 V AC	No	DSRM72C240

Test

Aux Voltage (V AC / V DC)	Umin Voltage (V AC / V DC)	Umax Voltage (V AC / V DC)	Catalogue No.
110 V AC	97 V AC	127 V AC	DSRTD48C110
240 V AC	204 V AC	264 V AC	DSRTD48C240

Relay Technical Information

Input

RCD Type, AS/NZS 60947-2	A	
Waveform	Sinusoidal (type AC) or chopped pulsating with superimposed D.C. (type A) according to EN60947-2 (annex Band M) IEC60947-2	
Details, Connection	Low voltage lines, with TD series, 4 wire	
Input Frequency, Nom	50	Hz
Frequency Tolerance	47...63	Hz
Details, Compatible Product Series	-	

Signalling

Display Technology	LED Sequence	
Power On	Green LED	
Instantaneous Value $I_{\Delta n}$	4 x Yellow LED 20, 30, 40 & 50%	
Accuracy, $I_{\Delta n}$	-	
Visible Trip Indicator	Red LED	
Toroid Connection Failure (Indicator)	Red LED Blinking	
Number of Characters	-	
Height, Characters	-	

Control

Details, Function	Local pushbutton or remote closing contact	
Reset Type	Manual local or Remote	
Details, Automatic Reset	-	

Setup

Setpoint Range(s)	Configurable; 0.03 ... 5 A	
Configuration Method	Potentiometer / DIP-Switch	
Number of Setpoints	14	
Current Set Points $I_{\Delta n}$	0.03, 0.06, 0.1, 0.2, 0.3, 0.4, 0.5, 2 ranges x1, x10	A
$I_{\Delta n}$, Leakage Current, Max	5	A
Intervention Time T	0.05, 0.1, 0.15, 0.2, 0.3, 0.4, and 0.5 s	
Trip Time, Max	500	ms
Trip Time Selection Table	Refer to Time	
Harmonic Filter	Yes	

Trip Function

Alarm Function	Yes	
Details, Alarm	TRIP state memorisation: red LED "TRIP" + relay latching	
Inhibited Reset	>50% $I_{\Delta n}$	
Non-Operating Residual Current (IEC60755)	50%	
Pre-Alarm Settings	50%	
Details, Pre-Alarm	-	
Pre-Trip Alarm Reset	-	
Toroid Connection Failure (Automatic Test)	Trip contact & Red LED blinking	
Power Fail Function	Yes, 50% V Nom	

Output

Number of Alarm Contacts	2
Contact Configuration	2 CO
Details, Output(s)	1 SPDT latching alarm contact and 1 SPDT latching contact selectable alarm or power fail alarm
Contact Rating	5 A 250 V AC cos 1 - 3 A 250 V AC cos 0.4 - 5 A 30 V DC
Positive or Negative Security	Yes
Communications	-
Protocol	-

Voltage and Insulation

Ui, Rated Insulation Voltage	450 V (rms)
Input, Relay Output, Aux Support AC Voltage Test	AC 2.5 kV rms 50 Hz / 1 min
All Circuits and Earth AC Voltage Test	AC 4.0 kV rms 50 Hz / 1 min
Input, Relay Output, Aux Supply Impulse Voltage Test	AC 2.5 kV rms 50 Hz / 1min

Standards

Standards Compliance	EN 61010-1 IEC 60755 EN 60439-1 EN 50081-1 EN 55011 EN 50082-2 AS/NZS 2081.3
Electromagnetic Compatibility-Emissions Test	EN / IEC 60947-2
Electromagnetic Compatibility-Immunity Test	EN / IEC 60947-2
Installation Category	III
Pollution Degree	2

Auxiliary

Immunity to AUX Supply Disruption (Max)	150 ms
Reverse Polarity Protection	Refer to Product table
Burden, Rated	2.5 VA

Environmental Conditions

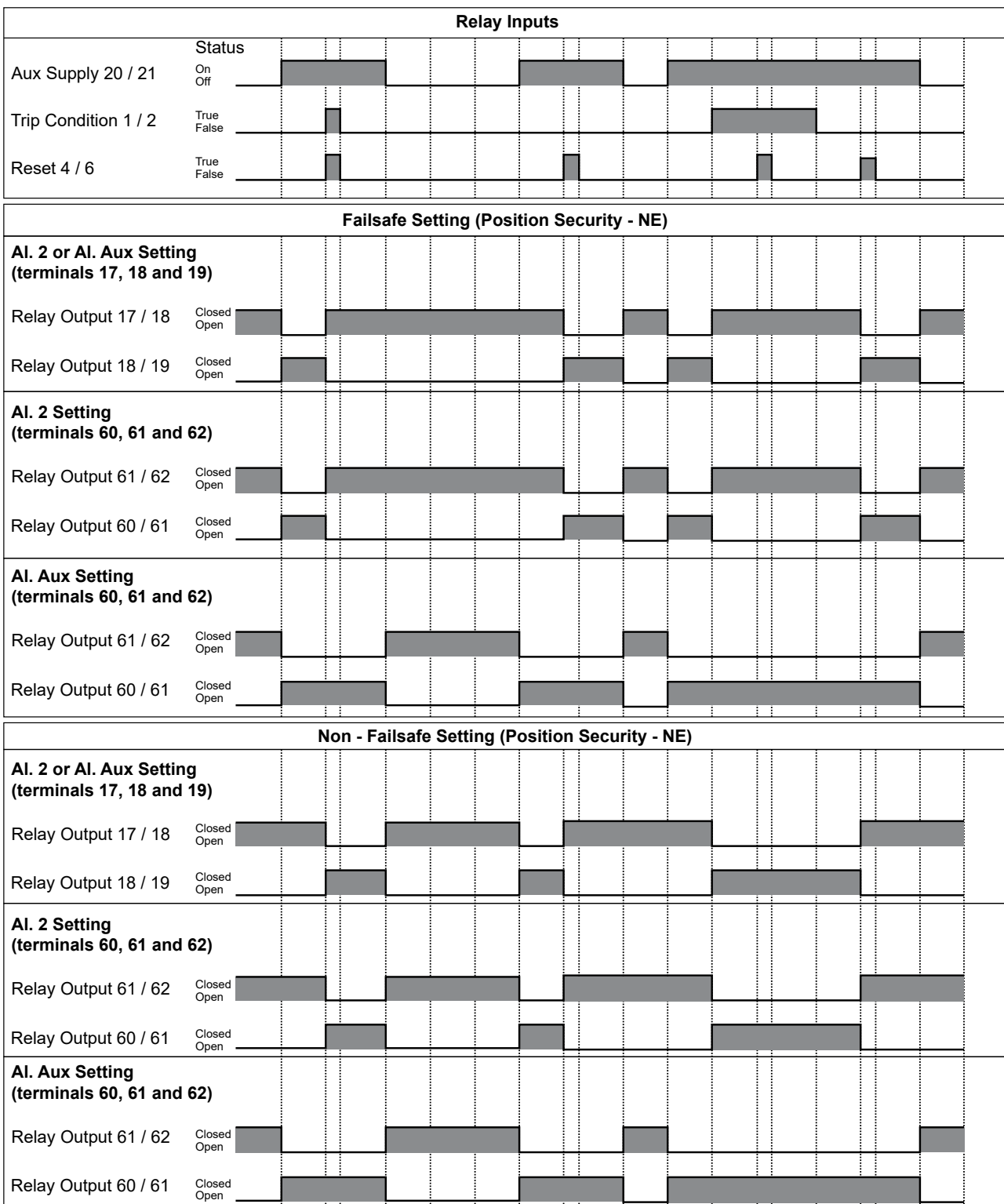
Operating Temperature, Min	-5 °C min
Operating Temperature, Max	60 °C max
Storage Temperature, Min	-40 °C min
Storage Temperature, Max	70 °C max
Humidity Type	Suitable for tropical environments
Relative Humidity (IEC60755)	50 % RH
Power Dissipation, Max	3.5 W

Physical

Mounting	Panel Mount
Material, Body / Housing	Plastic PC (Polycarbonate) self-extinguishing
Sealable Cover	-
Width	72 mm
Height	72 mm
Depth	75 mm
IP Rating, Front	IP40
IP Rating, Terminals	IP20
Terminal Type	Fast-On Crimp Terminal(s)
Wire / Conductor Size (Max)	-
Weight	0.28 kg
Height, Cutout	68 mm
Width, Cutout	68 mm



DSR M72C Earth Leakage Relay with DSR TD48C Separate Test Device - Functional Diagram



Test Units Technical Information

Input

RCD Type, AS/NZS 60947-2	-
Waveform	-
Details, Connection	Low voltage lines, with series TD transformer
Input Frequency, Nom	50 Hz
Frequency Tolerance	47...63 Hz
Details, Compatible Product Series	Terasaki DSRM Earth Leakage Relay

Setup

Setpoint Range(s)	Configurable; 0.03 ... 5 A
Configuration Method	Potentiometer / DIP-Switch
Number of Setpoints	14
Current Set Points I Δ n	0.03, 0.06, 0.1, 0.2, 0.3, 0.4, 0.5, 2 ranges x1, x10 A
I Δ n, Leakage Current, Max	5 A

Control

Details, Function	Local pushbutton or remote closing contact
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Standards

Standards Compliance	AS/NZS 2081.3
Electromagnetic Compatibility-Emissions Test	EN / IEC 60947-2
Electromagnetic Compatibility-Immunity Test	EN / IEC 60947-2
Installation Category	-
Pollution Degree	2

Voltage and Insulation

Ui, Rated Insulation Voltage	450 V (rms)
Input, Relay Output, Aux Support AC Voltage Test	AC 2.5 kV rms 50 Hz /1 min
All Circuits and Earth AC Voltage Test	AC 4.0 kV rms 50 Hz /1 min
Input, Relay Output, Aux Supply Impulse Voltage Test	AC 2.5 kV rms 50Hz / 1min

Environmental Conditions

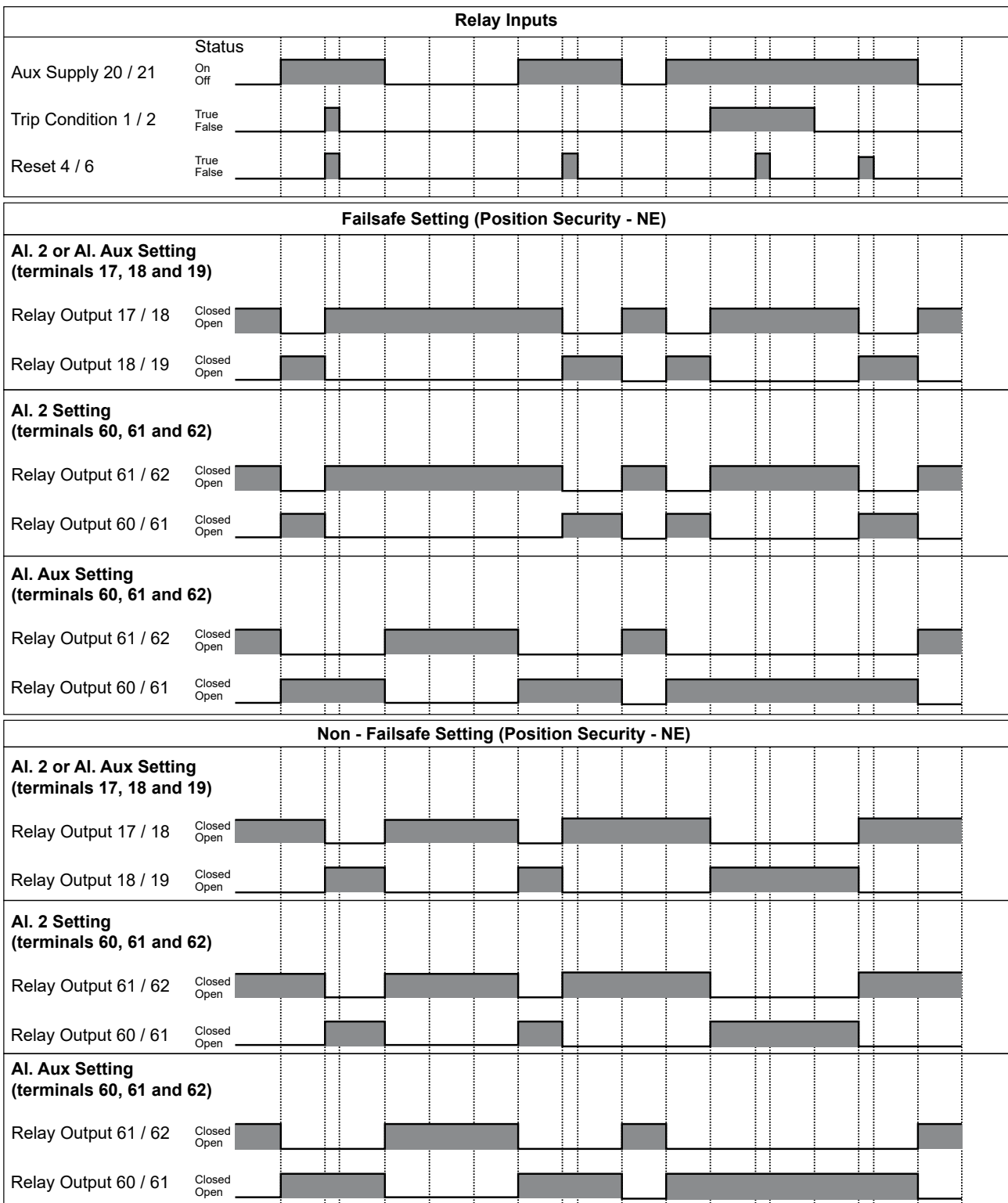
Operating Temperature, Min	-5 °C min
Operating Temperature, Max	60 °C max
Storage Temperature, Min	-40 °C min
Storage Temperature, Max	70 °C max
Humidity Type	Suitable for tropical environments
Relative Humidity (IEC60755)	50 % RH
Power Dissipation, Max	- W

Physical

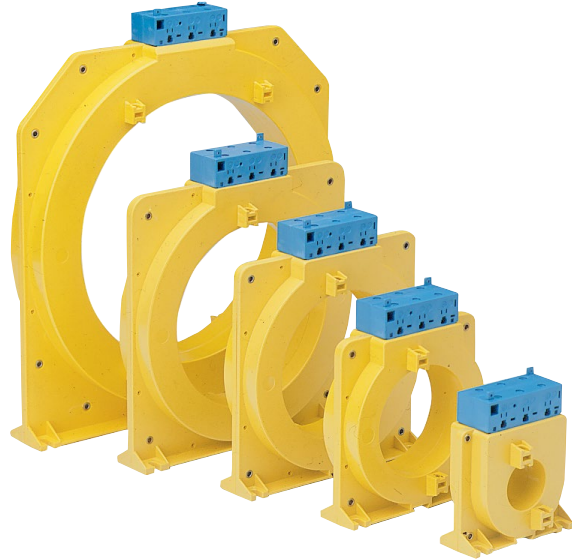
Mounting	Panel Mount
Material, Body / Housing	Plastic PC (Polycarbonate) self-extinguishing
Sealable Cover	-
Width	48 mm
Height	48 mm
Depth	81 mm
IP Rating, Front	IP40
IP Rating, Terminals	IP20
Terminal Type	Fast-On Crimp Terminal(s)
Wire / Conductor Size (Max)	-
Weight	0.2 kg
Height, Cutout	45 mm
Width, Cutout	45 mm



DSR M72C Earth Leakage Relay with DSR TD48C Separate Test Device - Functional Diagram



Toroid 2 Wire

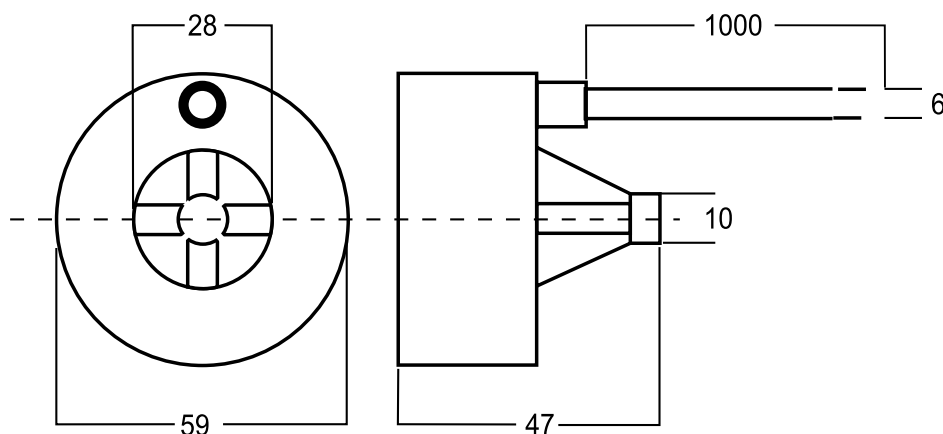


- ✓ Suits RD Series Earth Leakage Relays
- ✓ Internal diameter 28 - 310 mm
- ✓ Closed core and split core models

General

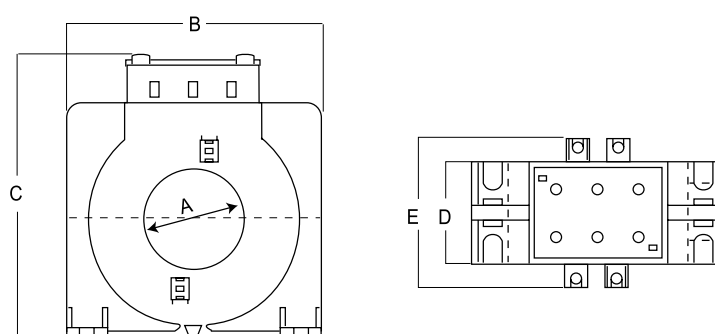
Component Type Transformer	Closed and Split-Core Transformer	
Diameter, Internal	28, 35, 60, 80, 110, 140, 150, 210, 310	mm
IΔn, Leakage Current, Min	30, 50, 100, 300, 500, 1000	mA
I_e, Rated Operational Current, Max	390, 420, 540, 1020, 1500, 2400, 3780	A (max)
I_e, Rated Operational Current, Nom	65, 70, 90, 170, 250, 400, 630	A (nom)

Dimensions for TDGA2 Torroids (mm)



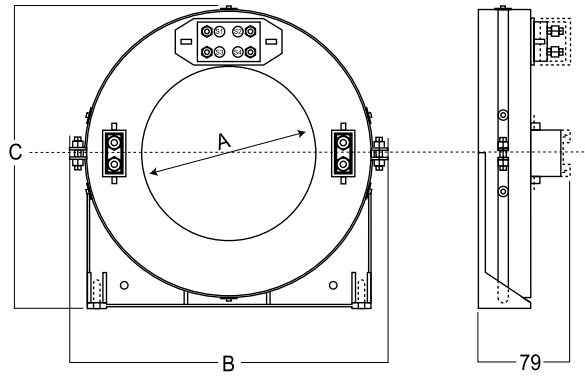
Weight 200g

Dimensions for TDGx2 Torroids (mm)



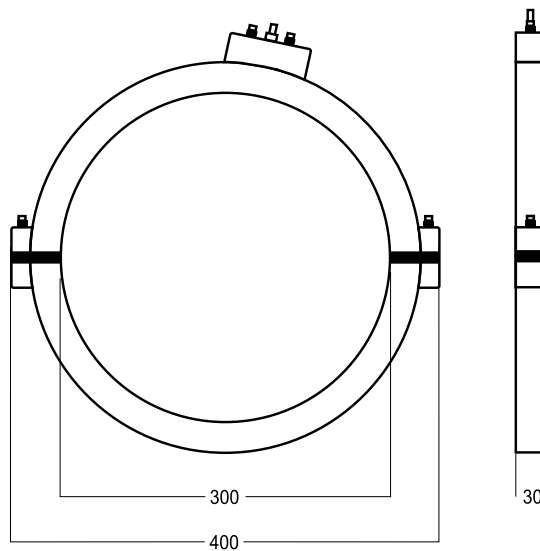
Model	A	B	C	D	E	Weight
TDGB2	35	92	113	36	56	250 g
TDGH2	60	105	138	36	56	300 g
TDGC2	80	125	160	36	56	350 g
TDGD2	110	165	198	36	56	500 g
TDGE2	140	200	234	36	56	700 g
TDGF2	210	290	323	44	64	1200 g

Dimensions for TDAX2 Torroids (mm)



Model	A	B	C	Weight
TDAA2	110	235	219	2,35 Kg
TDAB2	150	275	259	2,5 Kg

Dimensions for TDAC2 Torroids (mm)



Weight 3,8g



Internal Ø (mm)	IΔn Min (mA)	Ie (A, nom)	Ie (A, max)	Toroid Open or Closed Core	Catalogue No.
28	30	65	390	Closed-Core Transformer	TDGA2
35	30	70	420	Closed-Core Transformer	TDGB2
60	30	90	540	Closed-Core Transformer	TDGH2
80	50	170	1020	Closed-Core Transformer	TDGC2
110	100	250	1500	Closed-Core Transformer	TDGD2
140	300	250	1500	Closed-Core Transformer	TDGE2
210	300	400	2400	Closed-Core Transformer	TDGF2
110	500	250	1500	Split-Core Transformer	TDAA2
150	500	250	1500	Split-Core Transformer	TDAB2
310	1000	630	3780	Split-Core Transformer	TDAC2

Input

Toroid Open or Closed Core	Closed and Split-Core Transformer	
Details, Transformer	Suits RD range of earth leakage relays. Suitable for retrofitting on existing installations.	
Relay Connection (Cable Type)	Shield cable or minium twisted conductors	
Relay Connection (Cable No.)	2	
Relay Connection (Max Length)	5	M

Ratings

Primary / Secondary Measuring Ratio	1 / 700	
Details, Primary Circuit	Supply conductors to be protected pass through toroid hole	
I_{th}, Thermal Current, Short Time, 1s	20	kA

Voltage and Insulation

U_i, Rated Insulation Voltage	720	V (rms)
Impulse Voltage Test, Measure Winding Towards Earth	AC 3 kV rms 50 Hz / 1min	
Frequency Tolerance	-	

Standards

Standards Compliance	IEC 60947-2 EN 60947-2 IEC 60755
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Environmental Conditions

Reference Temperature	20 +/- 5	°C
Nominal Temperature Range	-5...40	°C
Operating Temperature, Min	-10	°C min
Operating Temperature, Max	55	°C max
Storage Temperature, Min	-40	°C min
Storage Temperature, Max	70	°C max
Humidity Type	Suitable for tropical environments	

Dimensions

Mounting	Screw Fixing	
Terminal Type	Screw Terminal(s)	
Sealable Cover	Yes	
Material, Body / Housing	ABS Self extinguishing	
Height	400	mm
Width	400	mm
Depth	30	mm
Wire / Conductor Size (Max)	-	max

Toroid 4 Wire

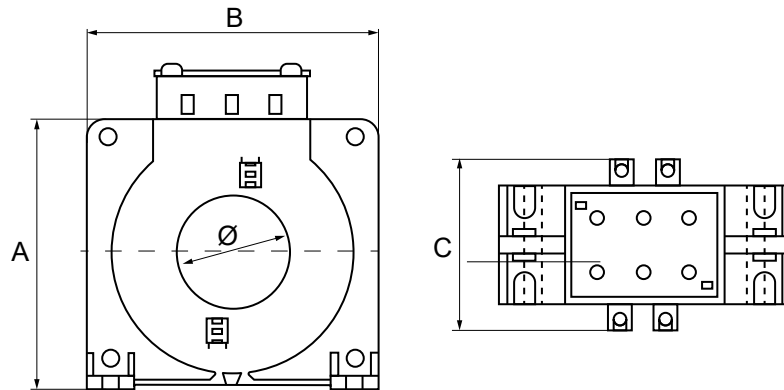


- ✓ Suits DSRM Mining Earth Leakage Relays
- ✓ Internal diameter 35 - 210 mm
- ✓ Closed core and split core models

General

Component Type Transformer	Closed and Split-Core Transformer	
Diameter, Internal	35, 80, 110, 140, 150, 210	mm
IΔn, Leakage Current, Min	30, 50, 100, 300, 500	mA
I_e, Rated Operational Current, Max	420, 1020, 1500, 2400	A (max)
I_e, Rated Operational Current, Nom	70, 170, 250, 400	A (nom)

Dimensions for DSR 4 Wire Toroids



Overall Dimensions			Catalogue No.
A	B	C	
113	92	56	DSR 35 DEL
160	125	56	DSR 80 DEL
198	165	56	DSR 110 DEL
234	200	56	DSR 140 DEL
323	290	64	DSR 210 DEL

Internal Ø (mm)	I Δ n Min (mA)	l _e (A, nom)	l _e (A, max)	Toroid Open or Closed Core	Catalogue No.
110	100	250	1500	Closed-Core Transformer	DSR110DEL
140	300	250	1500	Closed-Core Transformer	DSR140DEL
210	300	400	2400	Closed-Core Transformer	DSR210DEL
35	30	70	420	Closed-Core Transformer	DSR35DEL
80	50	170	1020	Closed-Core Transformer	DSR80DEL
110	500	250	1500	Split-Core Transformer	DSR110ADEL
150	500	-	1500	Split-Core Transformer	DSR150ADEL

Input

Toroid Open or Closed Core	Closed and Split-Core Transformer	
Details, Transformer	Suits DSR range of earth leakage relays	
Relay Connection (Cable Type)	Shield cable or minium twisted conductors	
Relay Connection (Cable No.)	4	
Relay Connection (Max Length)	5	M

Ratings

Primary / Secondary Measuring Ratio	1 / 700	
Details, Primary Circuit	Supply conductors to be protected pass through toroid hole	
Ith, Thermal Current, Short Time, 1s	20	kA

Voltage and Insulation

Ui, Rated Insulation Voltage	720	V (rms)
Impulse Voltage Test, Measure Winding Towards Earth	AC 3 kV rms 50 Hz / 1 min	
Frequency Tolerance	-	

Standards

Standards Compliance	IEC 60947-2 EN 60947-2
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Environmental Conditions

Reference Temperature	20 +/- 5	°C
Nominal Temperature Range	-5...40	°C
Operating Temperature, Min	-10	°C min
Operating Temperature, Max	55	°C max
Storage Temperature, Min	-40	°C min
Storage Temperature, Max	70	°C max
Humidity Type	Short-Term Condensation	

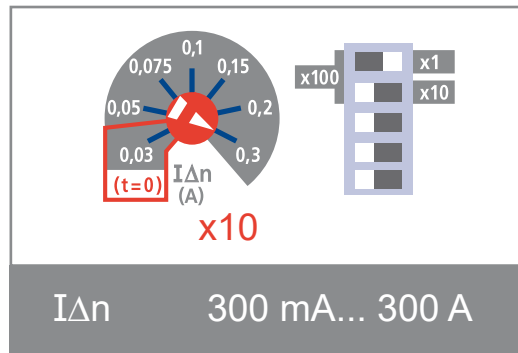
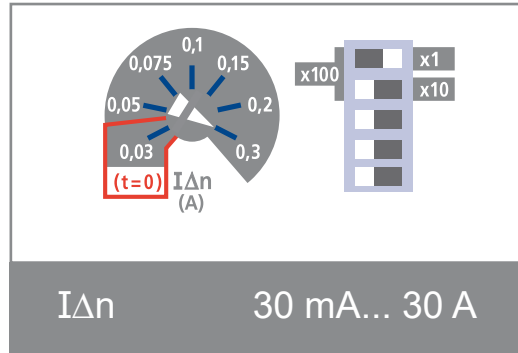
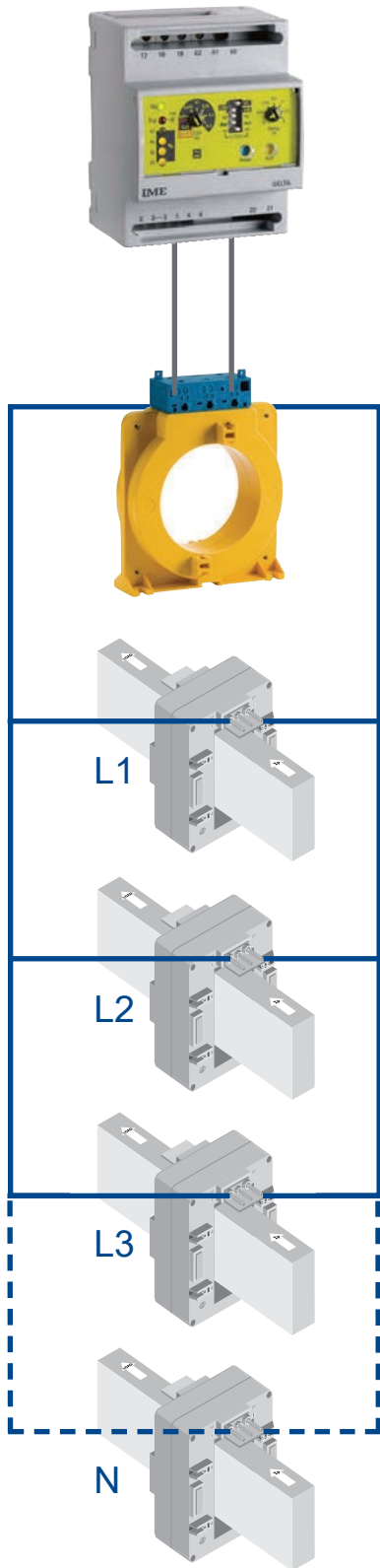
Dimensions

Mounting	Screw Fixing	
Terminal Type	Screw Terminal(s)	
Sealable Cover	Yes	
Material, Body / Housing	ABS Self extinguishing	
Height	259	mm
Width	275	mm
Depth	79	mm
Wire / Conductor Size (Max)	-	max



Holmgreen Connection System

Earth Leakage Relays



Ordering Code	Combined With CT
TDS5C100	100 / 5A
TDS5C150	150 / 5A
TDS5C250	250 / 5A
TDS5C400	400 / 5A
TDS5C500	500 / 5A
TDS5C600	600 / 5A
TDS5C800	800 / 5A
TDS5D100	1000 / 5A
TDS5D120	1200 / 5A
TDS5D125	1250 / 5A
TDS5D150	1500 / 5A
TDS5D160	1600 / 5A
TDS5D200	2000 / 5A
TDS5D250	2500 / 5A
TDS5D300	3000 / 5A
TDS5D320	3200 / 5A
TDS5D400	4000 / 5A
TDS5D500	5000 / 5A

Application

In specific applications where the dimensions of supply cables or busbar configurations for the system to be protected, do not allow the use of a single ring current transformer, it is possible to use multiple current transformers (specially selected CTs with homogeneous errors) one per phase, connected with a special summation transformer TDS5Dxx, using the Holmgreen connection system. This system can be used on 3 and 4 wire supply systems.

Ring Current Transformer – Selection

TDS5Dxx: Special summation ring current transformer. When selecting this item, the CT ratio of the individual CTs (TA) must be specified.

TA: Measuring CTs specially selected and matched with homogeneous errors, class 0.5 or 1. Busbar window size suitable for application must be specified.

Residual Current Relay – Selection

RD: Standard RD relays can be used with measuring CTs (TA) having ratios not higher than 400 / 5 A or 80 / 1 A.

RD (S): In applications where the measuring CTs (TA) have a higher ratio than 400 / 5 A or 80 / 1 A, a special 10 x I_n RD relay will be required where the residual current settings will be multiplied by 10. These relays will have an additional inscription on the front face “x 10 I_n”

Ordering Information

The Holmgreen connection system is available by special order on an indent only basis. Refer NHP for assistance when specifying.

E.g. 1. 250 A incoming supply to distribution board requiring 500 mA earth leakage protection, cable used is 4 x 120 mm² single core PVC insulated cable

TA (CT) = 4 x TA1200 250 / 5 A class 0.5 ¹⁾²⁾

Summation transformer = TDS5D250 ratio 250 / 5 A ¹⁾

Relay = RD3AF14 ²⁾

E.g. 2. 1600 A main switchboard feeder busbars comprising 2 x solid copper bars 80 x 6.3 mm per phase and neutral with a ground fault specified at 80 A.

TA (CT) = TAS80 1600 / 5S class 0.5 ¹⁾²⁾

Summation transformer = TDS5D1600 ratio 1600 / 5 A ¹⁾

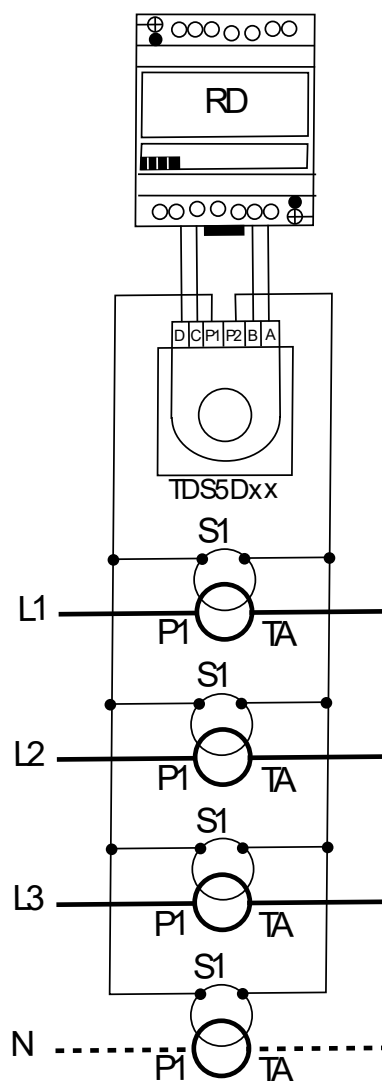
Relay = RD3AF145 (x10 I_n) ²⁾

Note:

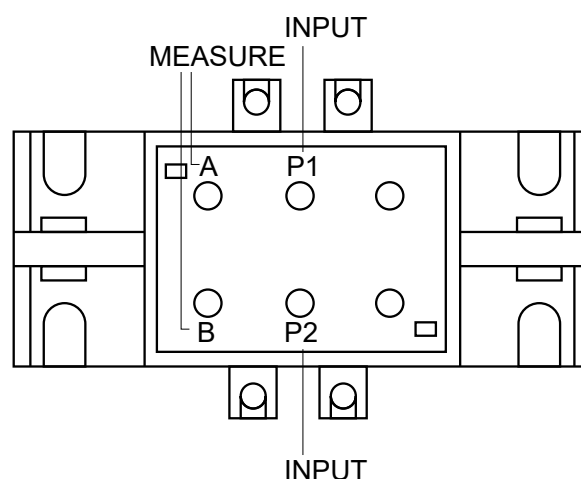
1) Non-standard components available on indent only.

2) Add “SP” to end of part number for special version.

Wiring Diagram



TDGC45



IME Relay DIN Mount RDBMRCD



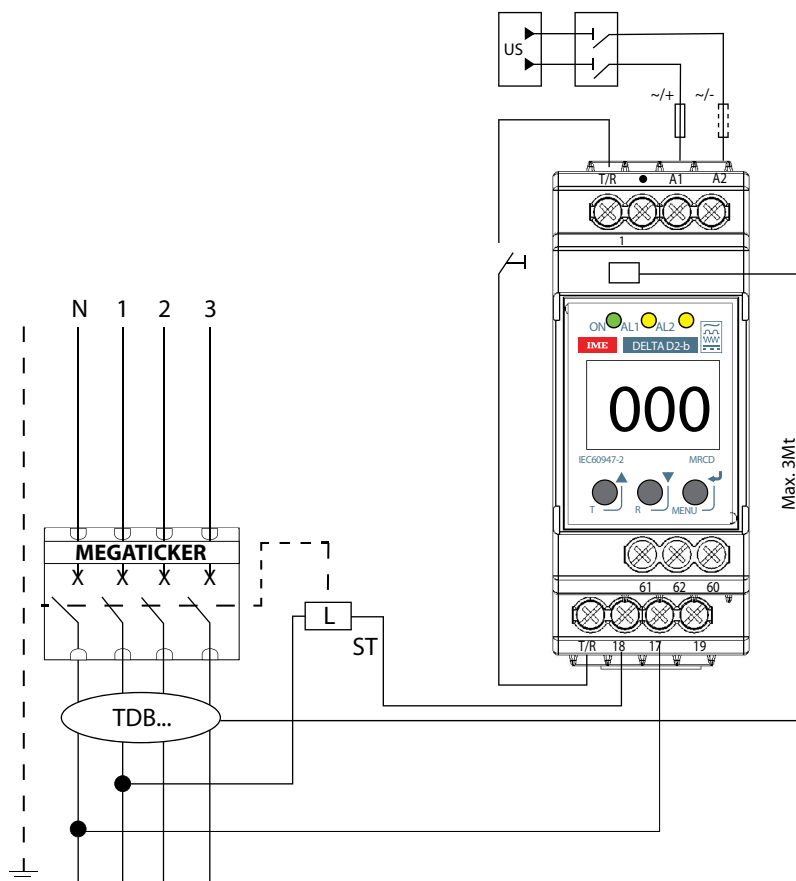
- ✓ Type B RCD Relay
- ✓ Standard AS/NZS IEC 60947-2 (annex B and M)
- ✓ Core balance earth leakage relay
- ✓ Field adjustable
- ✓ 2 wire toroid connection
- ✓ Adjustable $I\Delta n$ up to 3 A
- ✓ Adjustable trip time up to 5 seconds
- ✓ Local or remote reset / test
- ✓ Selectable negative or positive security
- ✓ Automatic permanent test
- ✓ Harmonic Filter

General

Relay Type	DIN Mount Earth Leakage Relay
Contact Configuration	2 CO
Setpoint Range(s)	Configurable; 0.03 ... 3 A
Trip Time, Max	5000 ms
Display Technology	LCD
Details, Output(s)	1 SPDT alarm contact and 1 SPDT contact selectable alarm or pre-trip alarm
Reset Type	Manual local, Remote or Automatic
Details, Alarm	Trip contact and Red LED
Auxiliary Voltage	230 V AC 24 V AC / 9.6 - 94 V DC



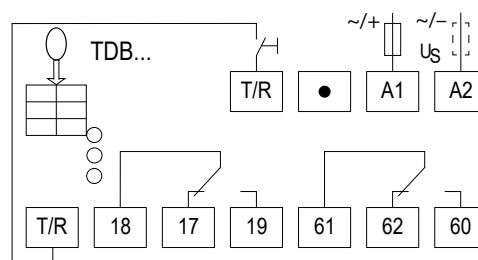
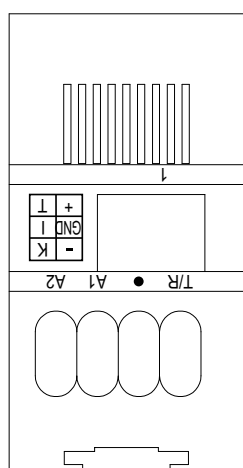
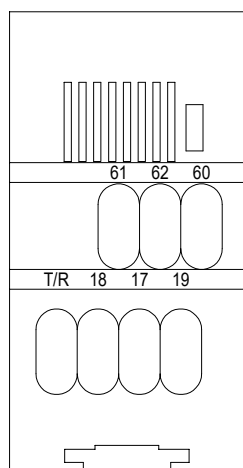
Connection



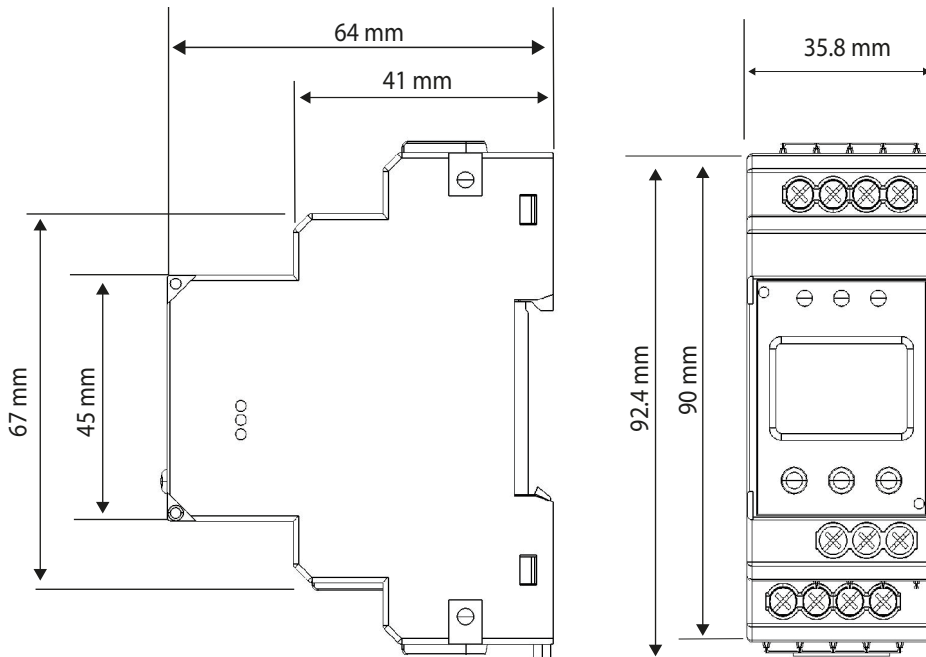
Earth Leakage Relays

Bottom

Top



Dimensions for RDBMRCDI Relays (mm)



Aux Voltage (V AC / V DC)	Umin Voltage (V AC / V DC)	Umax Voltage (V AC / V DC)	Current set point (I Δ n)	Catalogue No.
230 V AC	70 V AC	300 V AC	0.03, 0.06, 0.1, 0.2, 0.3, 0.4, 0.5, 2 ranges x1, x10	RDBMRCD230
24 V AC 9.6 / 94 V DC	9.6 V DC / 16 V AC	72 V AC / 94 V DC	-	RDBMRCD24

Input

RCD Type, AS/NZS 60947-2	B
Waveform	Detection of sinusoidal AC, pulsating DC, composite of multi-frequency, as well as smooth DC residual currents
Details, Connection	Low voltage lines, with series TD transformer
Input Frequency, Nom	-
Frequency Tolerance	0...2 kHz
Details, Compatible Product Series	Relay

Setup

Setpoint Range(s)	Configurable; 0.03 ... 3 A
Configuration Method	Programmable
Number of Setpoints	-
Current Set Points $I_{\Delta n}$	0.03, 0.06, 0.1, 0.2, 0.3, 0.4, 0.5, A 2 ranges x1, x10
$I_{\Delta n}$, Leakage Current, Max	3 A
Intervention Time T	0.06, 0.15, 0.25, 0.5, 1.0, 2.5, and 5.0 s
Trip Time, Max	5000 ms
Trip Time Selection Table	Refer to Time
Harmonic Filter	Yes

Control

Details, Function	Local pushbutton or remote closing contact
Reset Type	Manual local, Remote or Automatic
Details, Automatic Reset	-

Signalling

Display Technology	LCD
Power On	Green LED
Instantaneous Value $I_{\Delta n}$	LCD Display
Accuracy, $I_{\Delta n}$	-
Visible Trip Indicator	Red LED
Toroid Connection Failure (Indicator)	Red LED Blinking
Number of Characters	3
Height, Characters	-

Trip Function

Alarm Function	Yes
Details, Alarm	Trip contact and Red LED
Inhibited Reset	>50% $I_{\Delta n}$
Non-Operating Residual Current (IEC60755)	50%
Pre-Alarm Settings	-
Details, Pre-Alarm	Trip contact and Red LED
Pre-Trip Alarm Reset	-
Toroid Connection Failure (Automatic Test)	Trip contact & Red LED blinking
Power Fail Function	-

Output

Number of Alarm Contacts	2
Contact Configuration	2 CO
Details, Output(s)	1 SPDT alarm contact and 1 SPDT contact selectable alarm or pre-trip alarm
Contact Rating	5 A 230 V AC (AC13) 24 V DC 1 A (DC12)
Positive or Negative Security	Yes
Communications	-
Protocol	-

Auxiliary

Immunity to AUX Supply Disruption (Max)	-
Reverse Polarity Protection	Refer to Product table
Burden, Rated	6.5 VA

Voltage and Insulation

Ui, Rated Insulation Voltage	100 V (rms)
Input, Relay Output, Aux Support AC Voltage Test	AC 2.5 kV rms 50 Hz / 1 min
All Circuits and Earth AC Voltage Test	AC 2.2 kV rms 50 Hz / 1 min
Input, Relay Output, Aux Supply Impulse Voltage Test	2.5 kV 1.2 / 50 us 0.5 J

Standards

Standards Compliance	IEC 60947-2 EN 60947-2
Electromagnetic Compatibility-Emissions Test	-
Electromagnetic Compatibility-Immunity Test	-
Installation Category	-
Pollution Degree	2

Environmental Conditions

Operating Temperature, Min	-25 °C min
Operating Temperature, Max	55 °C max
Storage Temperature, Min	-25 °C min
Storage Temperature, Max	70 °C max
Humidity Type	-
Relative Humidity (IEC60755)	- % RH
Power Dissipation, Max	6.5 W

Physical

Mounting	DIN-35 Rail Mount
Material, Body / Housing	Plastic PC (Polycarbonate) self-extinguishing
Sealable Cover	Yes
Width	36 mm
Height	93 mm
Depth	64 mm
IP Rating, Front	IP30
IP Rating, Terminals	IP20
Terminal Type	Screw Terminal(s)
Wire / Conductor Size (Max)	4 mm ²
Weight	0.22 kg
Height, Cutout	- mm
Width, Cutout	- mm

Toroid Type B



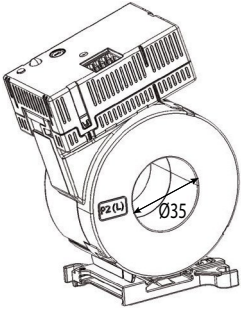
- ✓ Suits IME Type B Toroids
- ✓ Internal Diameter 35 -210 mm
- ✓ Closed core and split core models

General

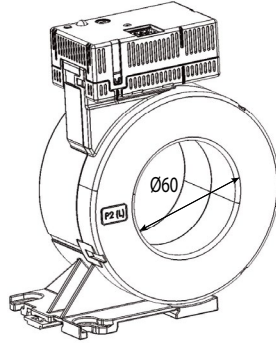
Component Type	Transformer	Closed-Core Transformer
Diameter, Internal	35, 60, 120, 210	mm
I Δ n, Leakage Current, Min	30	mA
I _e , Rated Operational Current, Max	-	A (max)
I _e , Rated Operational Current, Nom	80 A @ 0.03 A 125 A @ 0.30 A 160 A @ 0.03 A 250 A @ 0.30 A 330 A @ 0.10 A 630 A @ 0.30 A	A (nom)

Dimensions for Type B Torroids (mm)

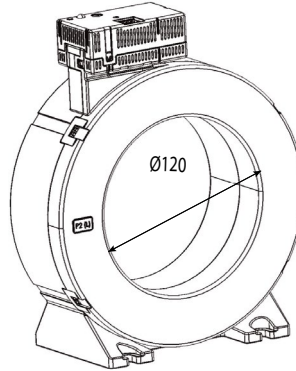
TDB35



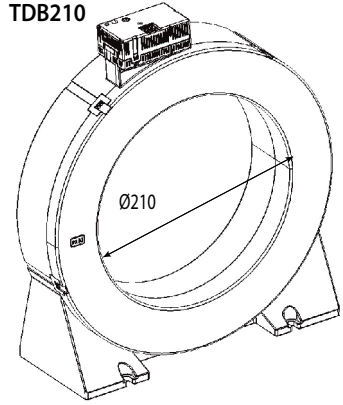
TDB60



TDB120



TDB210



Model	Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
TDB35	97	61	130	0.4
TDB60	126	78	151	0.7
TDB120	188	96	255	1.65
TDB210	339	113	339	4.65



Internal Ø (mm)	I Δ n Min mA	I _e (A, nom)	Toroid Open or Closed Core	Catalogue No.
35	30	125 A @ 0,30 A; 80 A @ 0,03 A	Closed-Core Transformer	TDB35
60	30	160 A @ 0,03 A; 250 A @ 0,30 A	Closed-Core Transformer	TDB60
120	30	330 A @ 0,10 A	Closed-Core Transformer	TDB120
210	30	630 A @ 0,30 A	Closed-Core Transformer	TDB210

Input

Toroid Open or Closed Core	Closed-Core Transformer	
Details, Transformer	Suits RDBMRCD range of earth leakage relays	
Relay Connection (Cable Type)	Shield cable or minimum twisted conductors	
Relay Connection (Cable No.)	4	
Relay Connection (Max Length)	3	M

Ratings

Primary / Secondary Measuring Ratio	1 A / 400 mV	
Details, Primary Circuit	Supply conductors to be protected pass through toroid hole	
I _{th} , Thermal Current, Short Time, 1s	2.4	kA

Voltage and Insulation

U _i , Rated Insulation Voltage	800	V (rms)
Impulse Voltage Test, Measure Winding Towards Earth	8	kV
Frequency Tolerance	0...2	kHz

Standards

Standards Compliance	IEC 60947-2 IEC 60529
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Environmental Conditions

Reference Temperature	20	°C
Nominal Temperature Range	-25...70	°C
Operating Temperature, Min	-25	°C min
Operating Temperature, Max	70	°C max
Storage Temperature, Min	-25	°C min
Storage Temperature, Max	70	°C max
Humidity Type	Suitable for tropical environments	

Dimensions

Mounting	Screw Fixing	
Terminal Type	Push in Clamp	
Sealable Cover	Yes	
Material, Body / Housing	PC & ABS	
Height	339	mm
Width	113	mm
Depth	339	mm
Weight	4.65	kg
Wire / Conductor Size (Max)	1.5 mm ²	max



Accessories



Item Description	Catalogue No.
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Earth Leakage Relay Front Cover IP65- 48 X 48 mm	RD4848C
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Item Description	Catalogue No.
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Earth Leakage Relay Front Cover IP65- 72 X 72 mm	RD7272C
---	---------

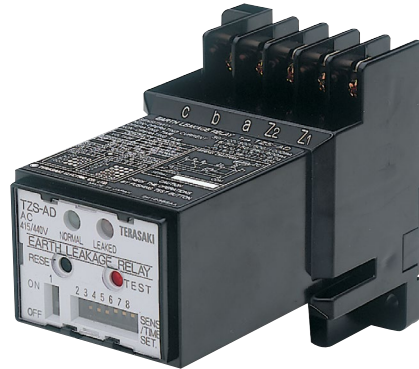
Earth Leakage Relay Front Cover IP65- 96 X 96 mm	RD9696C
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Item Description	Catalogue No.
------------------	---------------

Earth Leakage Relay adaptor plate, convert 72 mm panel mount to 96 mm	RD7296A
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Terasaki Relay Surface Mount TZS



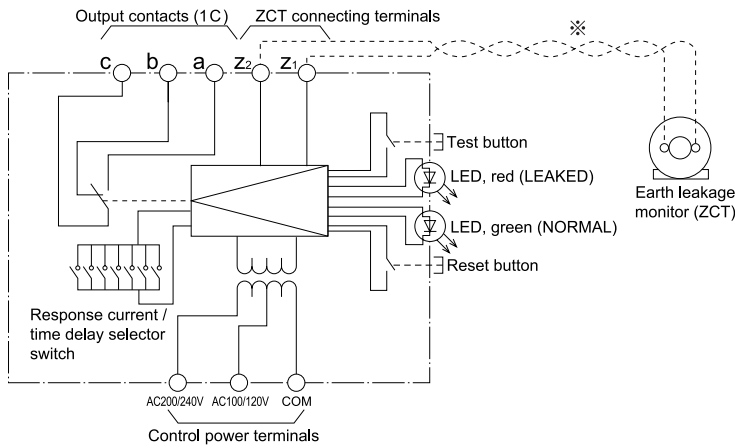
- ✓ Surface mount and field adjustable
- ✓ 1 x trip change-over contact
- ✓ Red LED trip indication
- ✓ High vibration withstand
- ✓ 2-wire toroid connection
- ✓ 30 mA - 1000 mA sensitivity and up to 2s time delay
- ✓ Harmonic filter

General

Relay Type	TZS Earth Leakage Relay
Contact Configuration	1 CO
Setpoint Range(s)	Configurable; 0.03 ... 1 A
Trip Time, Max	2000 ms
Display Technology	LED Sequence
Details, Output(s)	1 SPDT trip contact
Reset Type	Local pushbutton
Details, Alarm	Trip contact & RED LED
Auxiliary Voltage	120 / 240 V AC 24 V AC 415 / 440 V AC



Connection



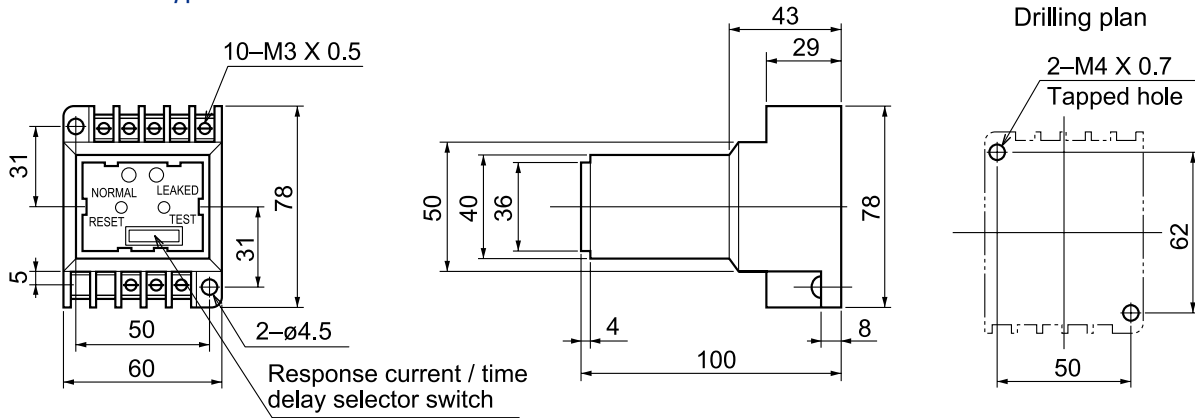
※ TZS-AD — ZCT wire length:
 30 mA: less than 3 m,
 100, 300 mA: less than 5 m,
 500, 1000 mA: less than 10 m

Note: The output contacts are hold until the reset button is pressed. Loss of control power resets the contacts automatically.

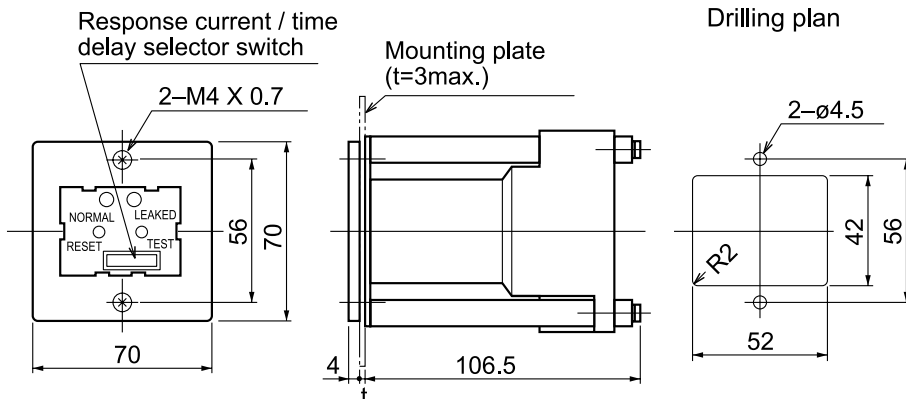
Terminal screw tightening torque: 0.45-0.73 N.m (4.6-7.4 kgf.cm)

Dimensions for TZS Series Earth Leakage Relays (mm)

Surface Mount Type



Flush Mount Type





Un Supply (V AC)	H x W x D (mm)	Catalogue No.
120 / 240	78 x 60 x 100	TZSAD120240V
24	78 x 60 x 100	TZSAD24VAC
415 / 440	78 x 60 x 100	TZSAD415440V

Input

RCD Type, AS/NZS 60947-2	-
Waveform	-
Details, Connection	-
Input Frequency, Nom	50 Hz
Frequency Tolerance	-
Details, Compatible Product Series	-

Setup

Setpoint Range(s)	Configurable; 0.03 ... 1 A
Configuration Method	DIP-Switch
Number of Setpoints	5
Current Set Points I Δ n	0.03, 0.1, 0.3, 0.5 & 1.0 A
I Δ n, Leakage Current, Max	1 A
Intervention Time T	0.04, 0.3, 0.5, 1.0 and 2.0 s
Trip Time, Max	2000 ms
Trip Time Selection Table	Refer to Time
Harmonic Filter	Yes

Signalling

Display Technology	LED Sequence
Power On	Green LED
Instantaneous Value I Δ n	-
Accuracy, I Δ N	-
Visible Trip Indicator	Red LED
Toroid Connection Failure (Indicator)	-
Number of Characters	-
Height, Characters	-

Control

Details, Function	Local pushbutton
Reset Type	Local pushbutton
Details, Automatic Reset	-

Trip Function

Alarm Function	Yes
Details, Alarm	Trip contact & RED LED
Inhibited Reset	-
Non-Operating Residual Current (IEC60755)	-
Pre-Alarm Settings	-
Details, Pre-Alarm	-
Pre-Trip Alarm Reset	-
Toroid Connection Failure (Automatic Test)	-
Power Fail Function	-

Output

Number of Alarm Contacts	1
Contact Configuration	1 CO
Details, Output(s)	1 SPDT trip contact
Contact Rating	120/240 V AC and 30 V DC 6 A cos \emptyset 1, 120 / 240 V AC 3.5 A and 30 V DC 3 A cos \emptyset 0.4 (L / R7 ms) min. load 10 mA at 5 V DC
Positive or Negative Security	-
Communications	-
Protocol	-

Auxiliary

Immunity to AUX Supply Disruption (Max)	-	
Reverse Polarity Protection	Refer to product table	
Burden, Rated	1	VA

Voltage and Insulation

Ui, Rated Insulation Voltage	-	V (rms)
Input, Relay Output, Aux Support AC Voltage Test	-	
All Circuits and Earth AC Voltage Test	-	
Input, Relay Output, Aux Supply Impulse Voltage Test	-	

Standards

Standards Compliance	-	
Electromagnetic Compatibility-Emissions Test	-	
Electromagnetic Compatibility-Immunity Test	-	
Installation Category	-	
Pollution Degree	-	

Environmental Conditions

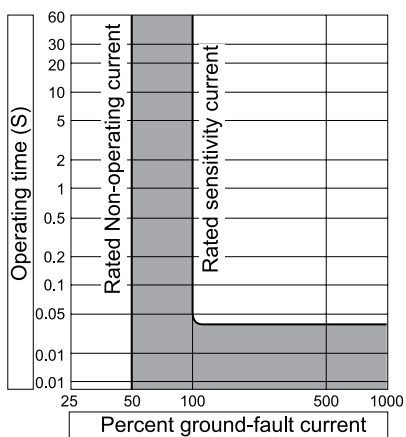
Operating Temperature, Min	-	°C min
Operating Temperature, Max	-	°C max
Storage Temperature, Min	-	°C min
Storage Temperature, Max	-	°C max
Humidity Type	-	
Relative Humidity (IEC60755)	-	% RH
Power Dissipation, Max	1	W

Physical

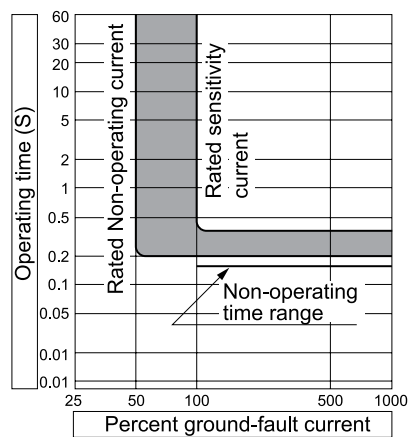
Mounting	Surface Mount	
Material, Body / Housing	-	
Sealable Cover	-	
Width	60	mm
Height	78	mm
Depth	100	mm
IP Rating, Front	-	
IP Rating, Terminals	-	
Terminal Type	Screw Terminal(s)	
Wire / Conductor Size (Max)	-	
Weight	0.22	kg
Height, Cutout	-	mm
Width, Cutout	-	mm

Earth Leakage Trip Characteristics

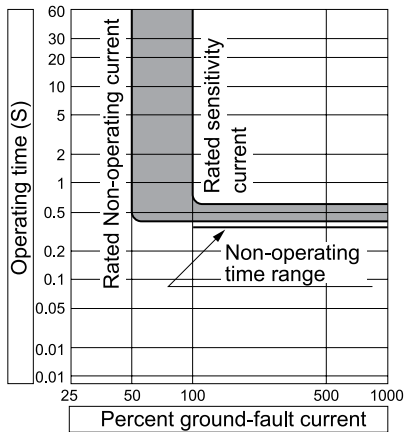
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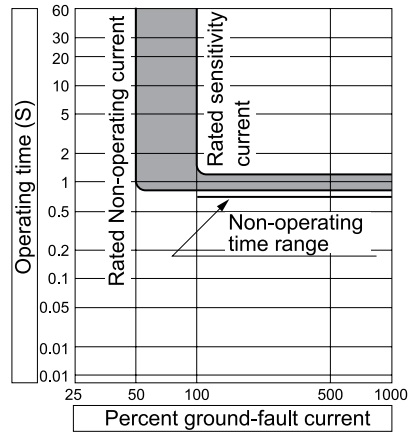
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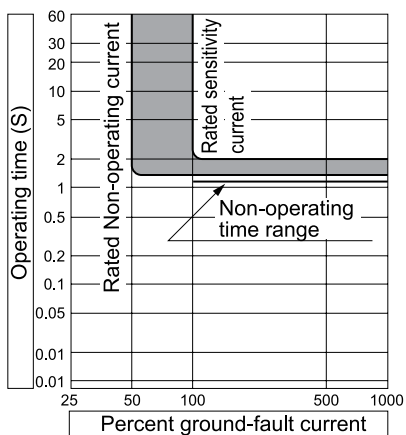
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1 sec



2 sec



Terasaki Toroid TZS

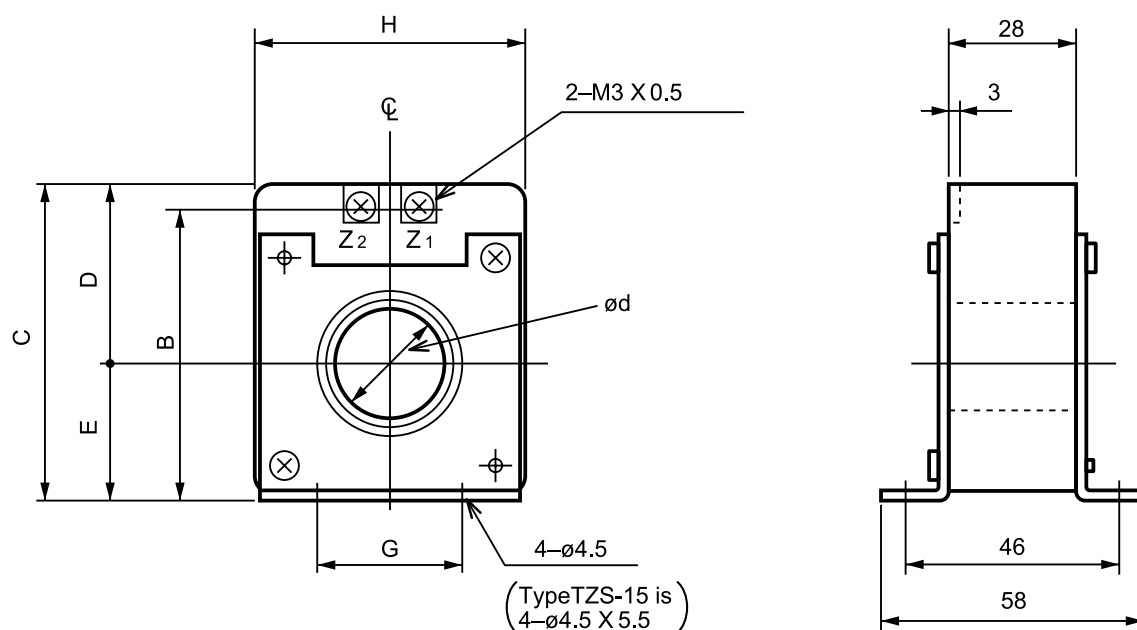


- ✓ Suits TZS Series Earth Leakage Relays
- ✓ Internal diameter 15-100 mm
- ✓ Closed core

General

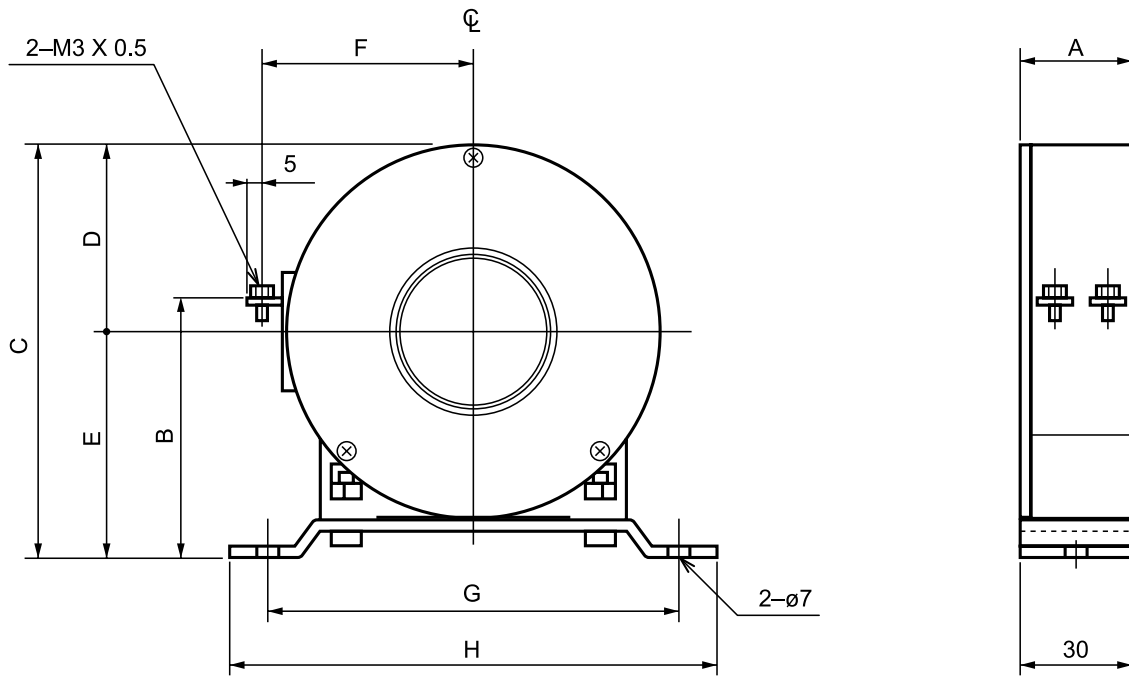
Component Type Transformer	Closed-Core Transformer	
Diameter, Internal	15, 24, 40, 68, 100	mm
I Δ n, Leakage Current, Min	30	mA
I _e , Rated Operational Current, Max	49, 115, 257, 556, 990	A (max)
I _e , Rated Operational Current, Nom	-	A (nom)

Dimensions for Earth Leakage Monitor (TZS-15 to TZS-24) (mm)



ZCT Type	ϕd	A	B	C	D	E	F	G	H
TZS-15	15	—	55	60	32	28	—	25	46
TZS-24	24	—	67	72	40	32	—	34	58

Dimensions for Earth Leakage Monitor (TZS-40 to TZS-100) (mm)



ZCT Type	ød	A	B	C	D	E	F	G	H
TZS-40	40	30	71	113	51	62	57	110	130
TZS-68	68	42	85	141	65	76	70	134	150
TZS-100	100	45	105	181	85	96	90	150	170



Internal Ø (mm)	IΔn Min mA	Ie (A, max)	Catalogue No.
15	30	49	TZS15
24	30	115	TZS24
40	30	257	TZS40
68	30	556	TZS68
100	30	990	TZS100

Input

Toroid Open or Closed Core	Closed-Core Transformer
Details, Transformer	Suits TZS range of earth leakage relays
Relay Connection (Cable Type)	Shield cable or minimum twisted conductors
Relay Connection (Cable No.)	2
Relay Connection (Max Length)	30 mA < 3 m, 100 / 300 mA < 5 m, 500 / 100 mA < 10 m

Ratings

Primary / Secondary Measuring Ratio	-
Details, Primary Circuit	-
I _{th} , Thermal Current, Short Time, 1s	- kA

Voltage and Insulation

U _i , Rated Insulation Voltage	- V (rms)
Impulse Voltage Test, Measure Winding Towards Earth	-
Frequency Tolerance	-

Standards

Standards Compliance	-
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Environmental Conditions

Reference Temperature	-
Nominal Temperature Range	-
Operating Temperature, Min	- °C min
Operating Temperature, Max	- °C max
Storage Temperature, Min	- °C min
Storage Temperature, Max	- °C max
Humidity Type	-

Dimensions

Mounting	Screw Fixing
Terminal Type	Screw Terminal(s)
Sealable Cover	Yes
Material, Body / Housing	-
Height	181 mm
Width	170 mm
Depth	45 mm
Weight	2 kg
Wire / Conductor Size (Max)	600 mm ² max



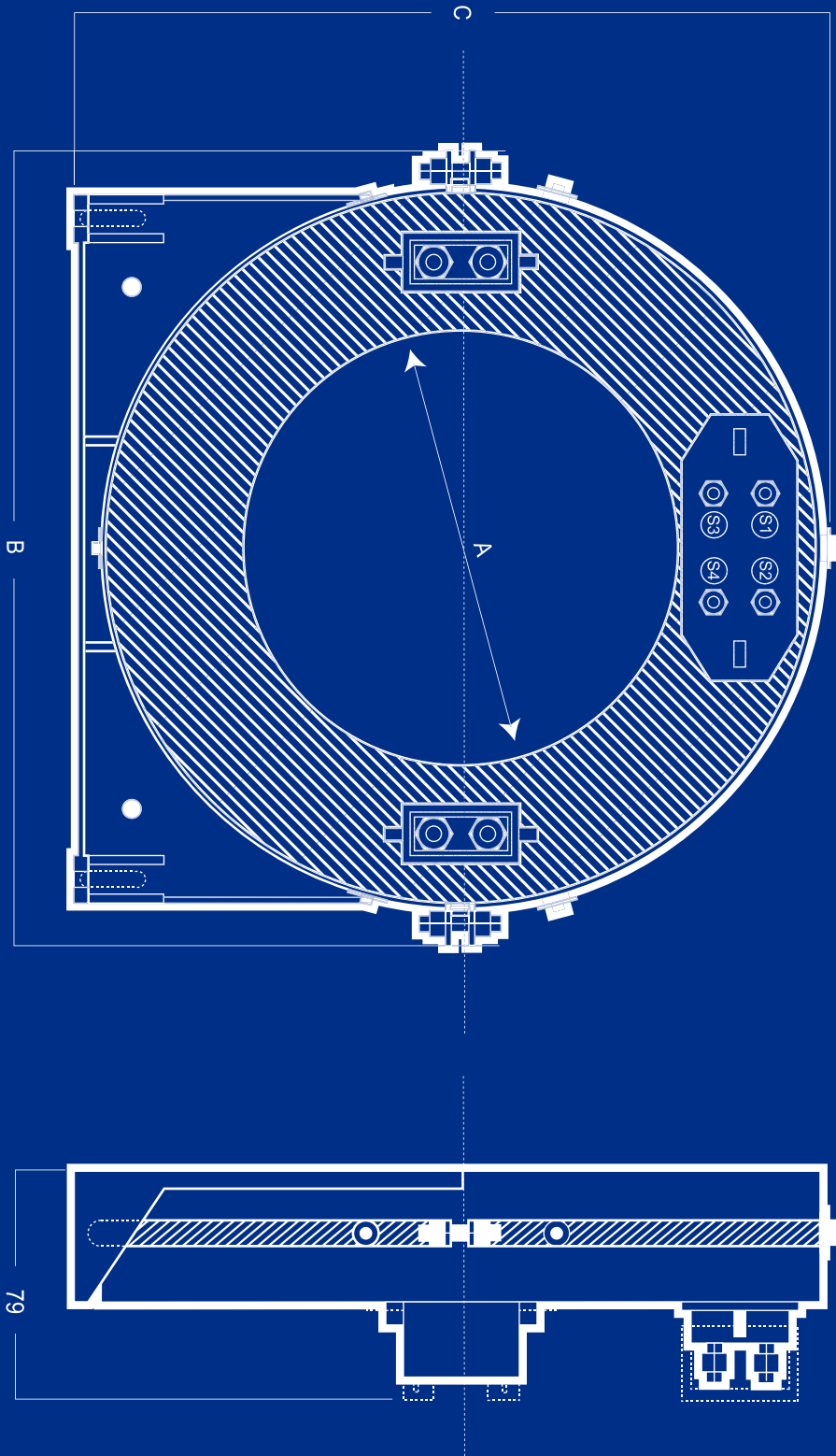
Accessories



Item Description	Catalogue No.
Earth Leakage Relay Flush Mounting Plate to suit TZS Relay	TPDOSZ



Catalogue Number	Page	Catalogue Number	Page
D		T	
DSR110ADEL	62	TDAA2	59
DSR110DEL	62	TDAB2	59
DSR140DEL	62	TDAC2	59
DSR150ADEL	62	TDB120	73
DSR210DEL	62	TDB210	73
DSR35DEL	62	TDB35	73
DSR80DEL	62	TDB60	73
DSRM110VC	50	TDGA2	59
DSRM240VC	50	TDGB2	59
DSRM72C110	50	TDGC2	59
DSRM72C24	50	TDGD2	59
DSRM72C240	50	TDGE2	59
DSRTD48C110	50	TDGF2	59
DSRTD48C240	50	TDGH2	59
R		TPDOSZ	87
RD1B212	14	TZS100	85
RD1B214	14	TZS15	85
RD1B215	14	TZS24	85
RD1B21H	14	TZS40	85
RD1DF12	26	TZS68	85
RD1DF14	26	TZSAD120240V	78
RD1DF15	26	TZSAD24VAC	78
RD1EP212	32	TZSAD415440V	78
RD1EP214	32		
RD1EP215	32		
RD1EP21H	32		
RD1G212	44		
RD1G214	44		
RD1G215	44		
RD3AF12	8		
RD3AF14	8		
RD3AF15	8		
RD3AF1H	8		
RD3AF1N	8		
RD3E212B	38		
RD3E217B	38		
RD3E218B	38		
RD3E21HB	38		
RD4848C	75		
RD7272C	75		
RD7296A	75		
RD9696C	75		
RDBMRCD230	68		
RDBMRCD24	68		
RDD42131	20		
RDD421H1	20		



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