AUXILIARY | TRIPPING | SUPERVISION

XRD3

Compact high-performance 3-pole supervision relays for power utility protection and control applications with 4 C/O self reset contacts.

FEATURES

- Continuous supervision of trip circuit independently of the circuit breaker position
- Alarming delay to mask a circuit breaker operations
- Operation states indication by green LED (healthy) and red LED (failure alarm)
- Low-level measuring current allows to use it in sensitive or high resistance circuits
- Trip supply source supervision
- Wide range of nominal DC voltages
- Galvanic isolation is possible between auxiliary source and supervised circuit
- Very low burden
- Continuous contact current up to 10 A
- Ability to see the relay switching and state of the contacts
- Operating altitude < 2000 m
- No problem to continuously energize relay in worst case conditions (temperature, voltage)
- No maintenance necessary during lifetime of the relay
- Compact and sturdy design
- Easy to insert in/extract from socket without tools
- No need for external fastening when inserted in socket
- A 3-phase trip circuit supervision relay

OPTIONAL FEATURES

- Gold contacts
- IP50 rating
- Keying
- Mounting arrangement with different sockets
- Magnetic arc blowout

Functional Description

DESCRIPTION

The XRD3 provides trip circuit supervision of single pole circuit breakers with three trip coils.

The trip circuits are supervised from the positive supply to the negative supply whilst the circuit breaker is in the open or closed position.

Supervision is undertaken using a low supervision current in each circuit thus avoiding unwanted operation of the trip coil. Healthy circuits are indicated by a green LED and a red LED indicates a failed trip circuit.

APPLICATION

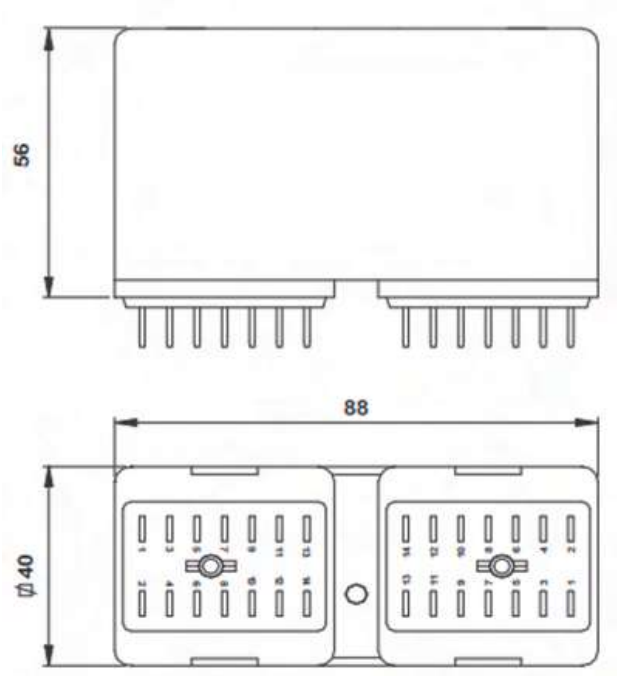
Whole trip circuit supervision, from positive supply to negative supply.

Supervision of 3 single pole circuit breaker coils down to 4.5 W operating power.

Operating altitude <2000m.

PRODUCT DIMENSIONS AND WEIGHT

Product weight before mounting is ~ 300 grams.



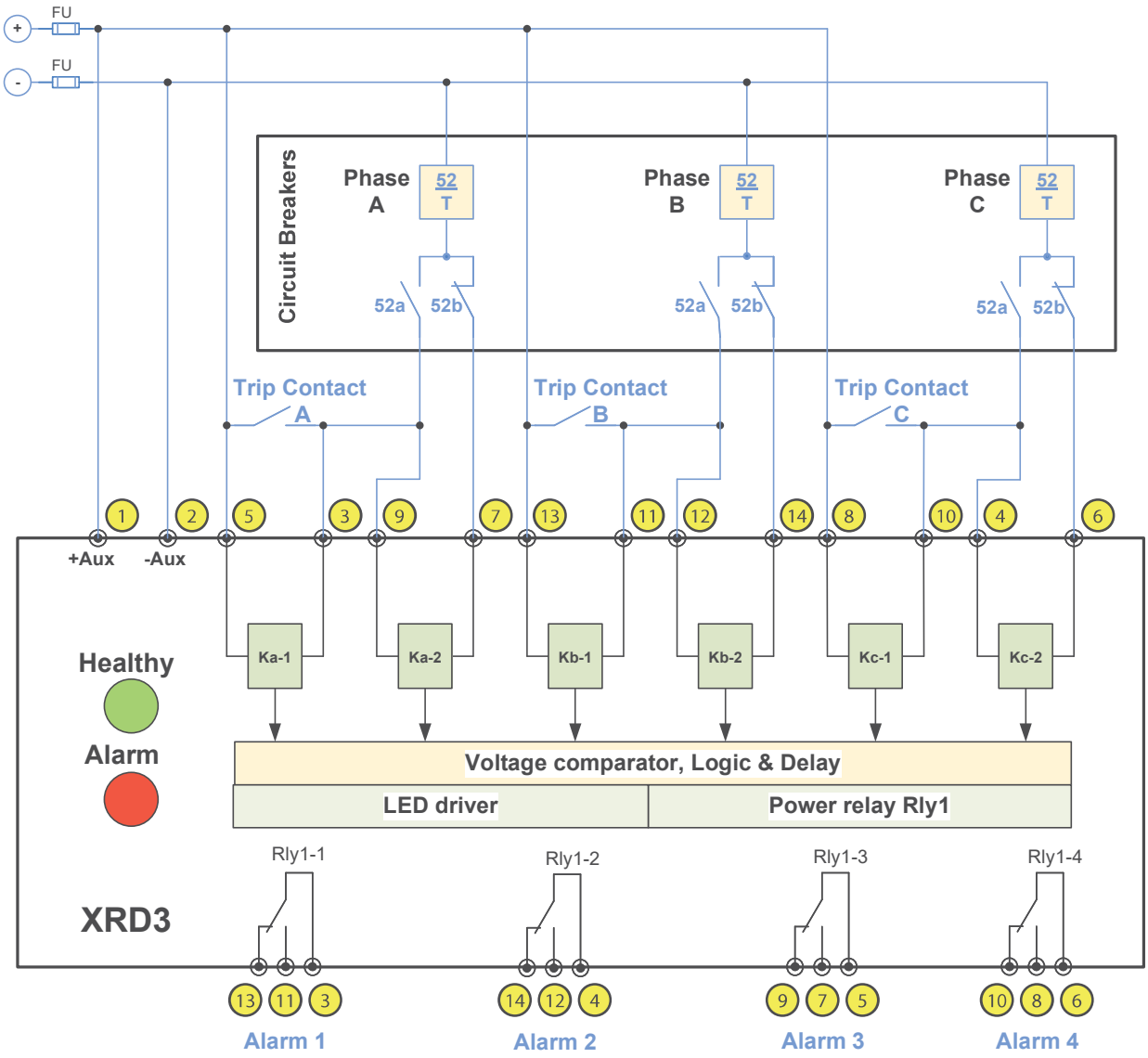
PRODUCT WARNINGS AND END-USER CARE

Relays are shown in the non-powered (Alarm) condition. Note the connection polarity for correct DC operation.
A wiring diagram is also printed on the front panel of the relay module for easy reference in the field.

To remove relays from the socket, employ up and down lever movements.

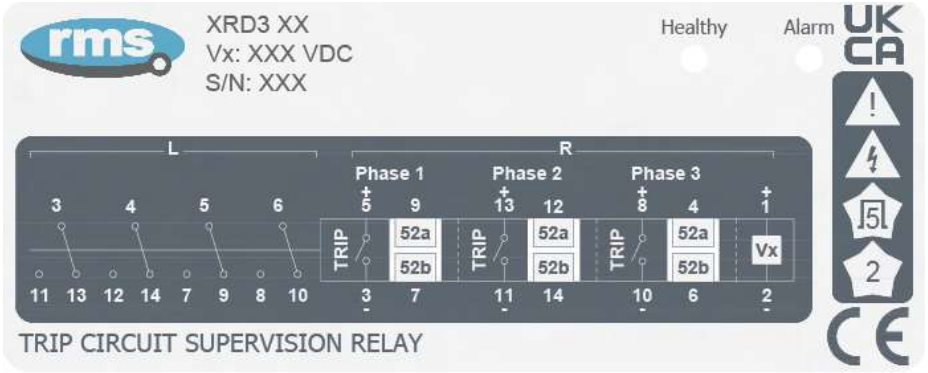
Sideway movement may cause damage to the coil wires.

CONNECTION SCHEME



PRODUCT FRONT PANEL VIEW

L - Left side, output alarm contacts.
R - Right side, supervised lines and auxiliary input Vx.



Technical Data

Nominal voltages Vnom	24, 30/32, 48, 60, 110/125 and 220/250 VDC
Voltage range	75% to +110% of Vnom
Guaranteed drop-out voltage	60% of Vnom
Drop-out time @23^{o} C	Trip circuit fail drop-out time: 400 - 550 ms
	Loss of supply drop-out time: 200 - 400 ms
Max burden XRD-3	**Nominal**
	24 V
	30/32 V
	48 V
	60 V
	110/125 V
	220/250 V

CONTACT RATING

Contact material	Ag
Operating voltage	Voltage free
Isolation across open contacts	1 KV rms
Make and carry	7 A all contacts; 10 A any two contacts
Peak inrush current	200 A for 10 ms, 40 A for 0.5 s, 30 A for 1 s
AC break capacity	10 A/230 VAC
DC break capacity	1 A/110 V
	0.7 A/220 V
Maximum switching voltage	250 VDC/440 VAC
Minimum switching voltage	12 V
Minimum switching current	10 mA
Weld no transfer	No
Mechanical endurance	50 million operations

Compliance Data

ATMOSPHERIC ENVIRONMENT

TEMPERATURE

Standard	IEC 60068-2-1, IEC 60068-2-2
Test identification	Auxiliary power supply voltage
Operating range - Min and Max	-10 to + 55^{O} C
Non-energized condition temperature range	-25 to + 70^{O} C
Test duration	16 hours at top and bottom temperatures

DAMP HEAT (HUMIDITY)

Standard	IEC 60068-2-78 ENA TS 48-5, Issue 5, 2023
Test identification	Test specification
Operating range	40^{O} C and 93% RH non condensing
Test duration	16 hours

IP RATING (INCLUDES OPTIONAL FEATURES)

Standard	IEC 60529 ENA TS 48-5, Issue 5, 2023
Test identification	Test specification
IP rating	IP4x, IP5x optional
Condition	With socket

ELECTRICAL

CLEARANCES AND CREEPAGE DISTANCES

Standard	IEC 60255-27, #9.6.3
Test identification	Test specification
Pollution degree	2
Overvoltage category	III
Rated insulation voltage	300 VDC
Clearances and creepage compliance	CAD drawings assessment

SAFETY-RELATED ELECTRICAL TESTS

Standard	IEC 60255-27, #9.6.4
Test identification	Test specification
Between independent circuits	5 kV 1.2/50 µs 0.5 J
	3 pulses of each polarity
	2.2 kV AC rms for 1 minute
Any terminal and earth	5 kV 1.2/50 µs 0.5 J
	3 pulses of each polarity
	2.2 kV AC rms for 1 minute
Across normally open contacts	1 kV AC rms for 1 minute

REVERSE POLARITY AND SLOW RAMP TEST

Standard	IEC 60255-27, #9.6.6
Test identification	Test specification
Maximum voltage dc	V start-up + 20%
Minimum voltage dc	V shut-down - 20%
Ramp down/up gradient	1 V/min

ELECTRICAL ENVIRONMENT AND FLAMMABILITY

Standard	IEC 60255-27, #9.6.5
Test identification	Test specification
Single-fault condition	Assessment for opened and closed-circuit cases
Maximum temperature of accessible parts at ambient temperature +40^{O} C	< 80^{O} C
Flammability of insulating materials, components and fire enclosures	Assessment

Compliance Data

MECHANICAL ENVIRONMENT

VIBRATION - SINUSOIDAL

Standard	IEC 60255-21-1 Class 1	
Test identification	Test specification	Variation
Vibration response in each of 3 axes	0.035 mm/0.5 gn peak 1 sweep cycle 10-150 Hz	<=5%
Vibration endu-rance in each of 3 axes	1.0 gn peak 20 sweep cycles 10-150 Hz	Non-energized

SHOCK AND BUMP

Standard	IEC 60255-21-2 Class 1	
Test identification	Test specification	Variation
Shock response in each of 3 axes	5 gn, 11 ms, 3 pulses in each direction	<=5%
Shock withstand in each of 3 axes	15 gn, 11 ms, 3 pulses in each direction	Non-energized
Bump test in each of 3 axes	10 gn, 16 ms, 1000 bumps in each direction	Non-energized

SEISMIC

Standard	IEC 60255-21-3 Class 2	
Test identification	Test specification	Variation
Seismic response horizontal, on each axis	7.5 mm/2.0 gn, 1 sweep cycle 1-35Hz	<=5%
Seismic response vertical	3.5 mm/1.0 gn, 1 sweep cycle 1-35Hz	<=5%

Compliance Data

RELAY STANDARDS COMPLIANCY

Standards	Description
IEC 60068-2-1, IEC 60068-2-2	Temperature
IEC 60068-2-78, ENA TS 48-5, Issue 5, 2023	Damp heat
IEC 60529, ENA TS 48-5, Issue 5, 2023	IP rating
IEC 60255-21-1 Class 1	Vibration - Sinusoidal
IEC 60255-21-2 Class 1	Shock and bump
IEC 60255-21-3 Class 2	Seismic
IEC 60255-27, #9.6.3	Clearances and creepage distances
IEC 60255-27, #9.6.4	Safety-related electrical tests
IEC 60255-27, #9.6.5	Electrical environment and flammability
IEC 60255-27, #9.6.6	Reverse polarity and slow ramp test
IEC 60068-2-30 (Test Db)	Damp heat cyclic test
IEC 60068-2-14, #7, (Test Na)	Rapid change of temperature
IEC 60255-26:2023, #7.3.12	Gradual shutdown/start-up
IEC 60255-26:2023 Table 5.1, (IEC 61000-4-3)	Radiated immunity
IEC 60255-26:2023 Table 5.2, (IEC 61000-4-2)	ESD immunity
IEC 60255-27, #6.3, Table 6 UL508, #45, Table 45.2	Touch surface safety
IEC 60255-26:2023 Table 5.3, (IEC 61000-4-8)	Magnetic field immunity
IEC 60255-26:2023 Table 6.1, (IEC 61000-4-6)	Conducted immunity
IEC 60255-26:2023 Table 6.2, (IEC 61000-4-4)	EFT immunity
IEC 60255-26:2023 Table 6.3, (IEC 61000-4-18)	Damped oscillatory wave immunity
IEC 60255-26:2023 Table 6.4, (IEC 61000-4-5)	Surge immunity
IEC 60255-26, #5.1, Table 1.1 (CISPR 11) and Table 1.2 (CISPR 32)	Radiated emissions
IEC 60255-26, #5.2, Table 3.1 (CISPR 32)	Conducted emissions
IEC 60255-26:2023, #7.3.11	Ripple on DC input

Order Codes

XRD3 -			
Nominal operate voltage	A		24 V dc
	B		30/32 V dc
	C		48 V dc
	D		60 V dc
	E		110/125 V dc
	F		220/250 V dc
Options		E	Gold plated contacts
		K	Extra dust protection IP50
		B	Magnetic arc blowout

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