THE DATASHEET OF

CR7508-SV1-.011-C-CD-I

The CR7508 series Ground Fault Sensor, provides a reliable and cost effective method for sensing ground fault currents. Ground fault sensors help to protect equipment and processes from potentially harmful ground fault currents. The CR7508 monitors the differential current of the current carrying wires routed through the current transformer.

The CR7508 offers a wide range of either an adjustable or fixed trip threshold. Upon sensing a ground fault current above the trip threshold the red LED illuminates and the Form C relay changes states providing an output signal.

The CR7508 series is rated as a UL 1053 Class 1 device.

c UL us LISTED

Applications:

- **Ground-Fault Protection of Equipment (GFPE)**

- Marinas and boatyards
- Snow and Ice melt systems
- Switchgear
- Localized branch circuit fault protection
- UL 508A panels

Typically 30mA+ trip range and provides ground-fault protection at services and feeders. Not intended for personal protection.

Intended to operate with shunt-trip coils as a disconnecting means.

Features:

- Wide range of selectable trip thresholds
- Adjustable delay time
- Optional latching mechanism
- Changeable Form C relay state logic
- Green and Red LED indicators for no fault and fault conditions
- Integrated Ground-Fault test circuit for functionality verification
- Internal or External Current Transformer with locking mechanism
- Optional 35mm DIN rail mount adapter

Theory of Operation:

Under normal operating conditions current flow between the Line and Neutral conductors is equal and opposite in polarity. Measurement of a balanced system results in the cancellation of electromagnetic fields generated by both the Line and Neutral conductors. However, during an imbalance current leaks through to ground, generating a measurable electromagnetic field (fault condition). The CR7508 measures the resulting electromagnetic field and provides LED and electromechanical relay indication when leakage currents rise above an adjustable or fixed threshold.

		Relay Contact States					
		No Power		Power Applied			
				No Fault Condition		Fault Condition	
		Contact State	LED	Contact State	LED	Contact State	LED
DIP switch setting 1 OFF (Normally De-Energized)	N.C.	Closed	OFF	Closed	Green	Open	Red
	N.O.	Open	OFF	Open	Green	Closed	Red
DIP switch setting 1 ON (Normally Energized)	N.C.	Closed	OFF	Open	Green	Closed	Red
	N.O.	Open	OFF	Closed	Green	Open	Red

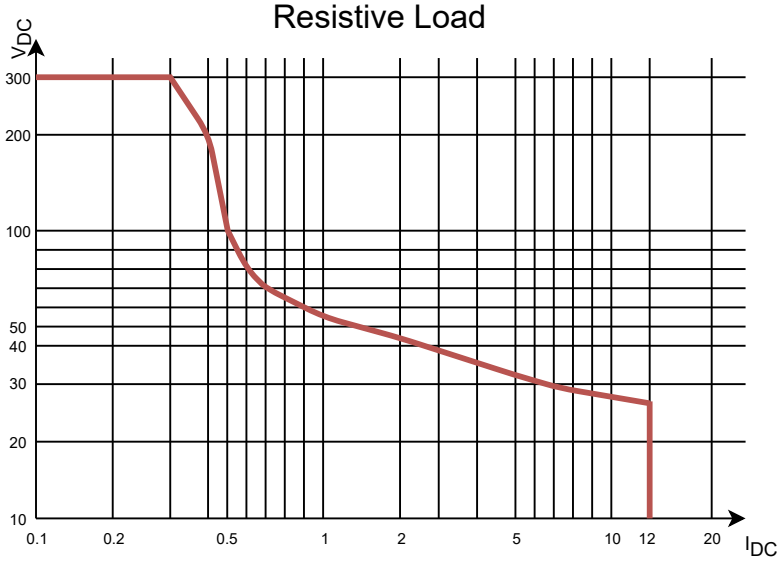
A DIVISION OF KHORPORATE HOLDINGS, INC.
CR MAGNETICS
ISO 9001:2015 QUALITY MANAGEMENT SYSTEM

CR Magnetics, Inc. 3500 Scarlet Oak Blvd. St. Louis, MO. 63122 USA
P:636-343-8518 Fax: 636-343-8518 Email: sales@crmagnetics.com
W: www.crmagnetics.com

CR7508 Specifications		
Control Power Supply	SV1	SV2
	Universal AC Power Supply 85 - 240 V_{AC} 50/60Hz 110 - 240 V_{DC}	12.5 - 35 V_{DC} 18 - 24 V_{AC} 50/60Hz
	Copper Wire only for Supply Connections	
Power Consumption	3 VA Max	2 Watts Max
Measurable Range	200% of Rated Full Scale, 50 - 400Hz	
Limiting Continuous Current	$10A_{RMS}$ for Rated Full Scale <= $1A_{RMS}$ Otherwise 200% of Rated Full Scale	
Current Withstand	500A, 2 seconds	
Output Type	1 SPDT Form C Relay	
Terminals	(3) 0.25" Male Quick Connect	
Relay Output Ratings	Rated Voltage	250 V_{AC}
	Rated Current	12 Amps
	Limiting Continuous Current	12 Amps
	Breaking Capacity MAX	3000 VA
	Electrical Endurance	> 10^5 Operations
	Mechanical Endurance	> 30 x 10^6 Operations
Trip Threshold	Adjustable or Fixed	
Time Delay	Adjustable or No Delay	
Hysteresis	5% of full scale Set Point	
Case	UL 94 5-VA Flammability Rated	
Environmental Ratings	Operating Temperature	-30C to +60C
	Storage Temperature	-55C to +85C
	Relative Humidity	0-95% RH, Non-condensing
	Altitude	< 2000 meters
Certifications	UL 1053 Listed, E211244 Vol. 2	

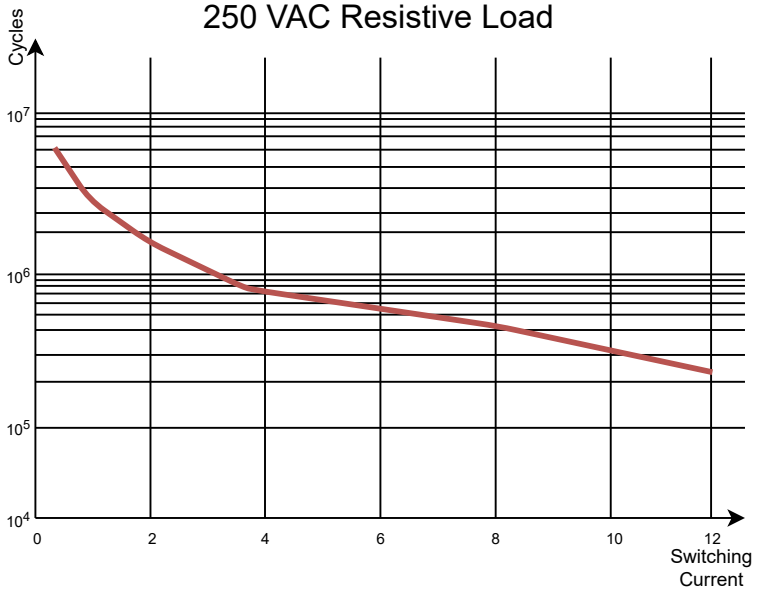
Max. DC load breaking capacity

Resistive Load



Electrical endurance

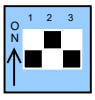
250 VAC Resistive Load



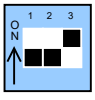
DIP Switch Settings:

The DIP switch settings allow for multiple re-configurable options to meet various application needs. All DIP switch settings are latched at device start up. Any adjustments made to the DIP switch settings will need a power reset before taking effect.

DIP Switch setting 1 enables normally energized Form C Relay state logic. When enabled it causes the Form C relay to energize during a NO FAULT condition, and be de-energized when control power is removed and during a FAULT condition. See Relay Contact States table above. Used to detect both ground faults and loss of supply power.



DIP Switch setting 2 enables device latching. Once ground fault currents rise above the adjustable or fixed threshold the Form C relay and red LED latch to a fault condition and will remain in a fault condition until either control power is removed or the "Latch Reset" button is activated.



DIP Switch setting 3 changes the settable delay to a reverse delay. Upon sensing a ground fault current greater than the settable or fixed threshold, the LED and Form C relay change states immediately to a FAULT condition. Once currents drop below the settable or fixed threshold, the LED returns to a NO FAULT state and the delay timer starts. Once the delay timer has timed out the Form C relay is returned to the NO FAULT state. **DIP SWITCH SETTING 3 IS IGNORED IF LATCHING IS ENABLED AND THE REGULAR SETTABLE DELAY IS OBSERVED.**

A DIVISION OF KHORPORATE HOLDINGS, INC.

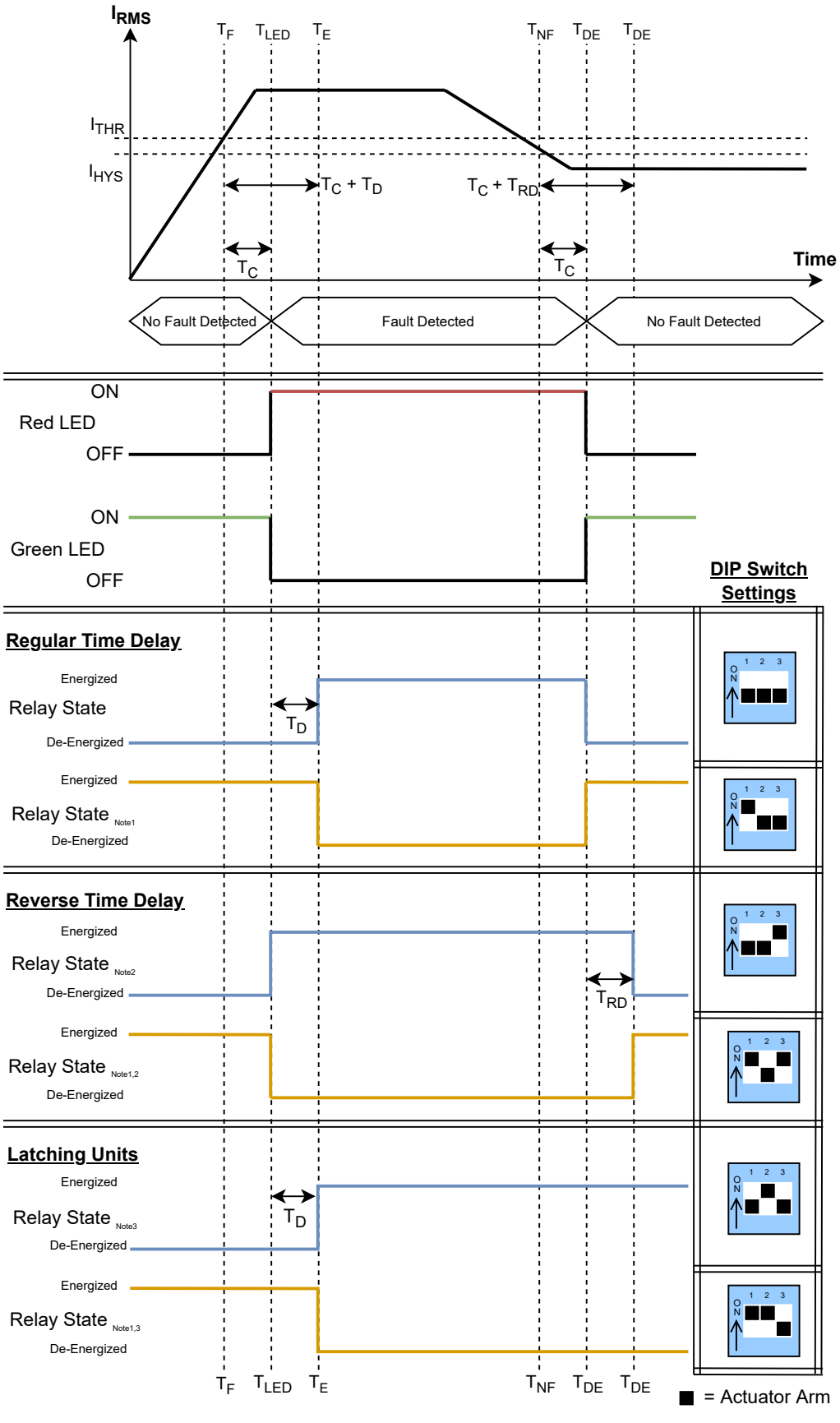
CR MAGNETICS

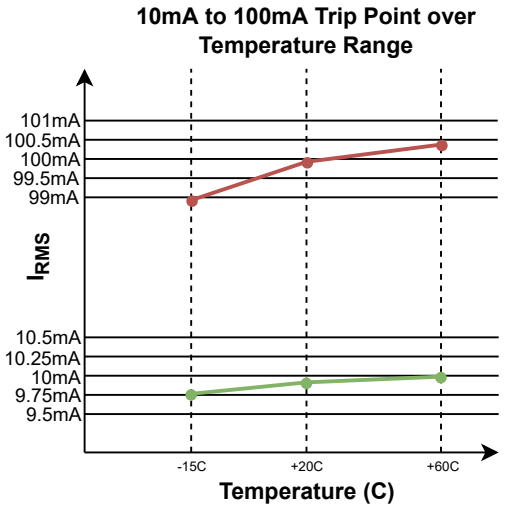
ISO 9001:2015 QUALITY MANAGEMENT SYSTEM

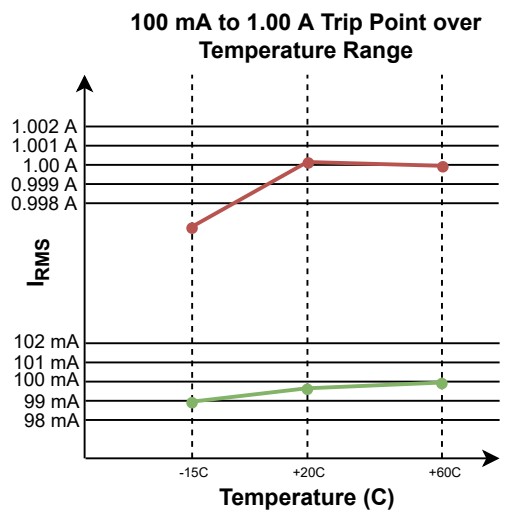
CR Magnetics, Inc. 3500 Scarlet Oak Blvd. St. Louis, MO. 63122 USA
P:636-343-8518 Fax: 636-343-8518 Email: sales@crmagnetics.com
W: www.crmagnetics.com

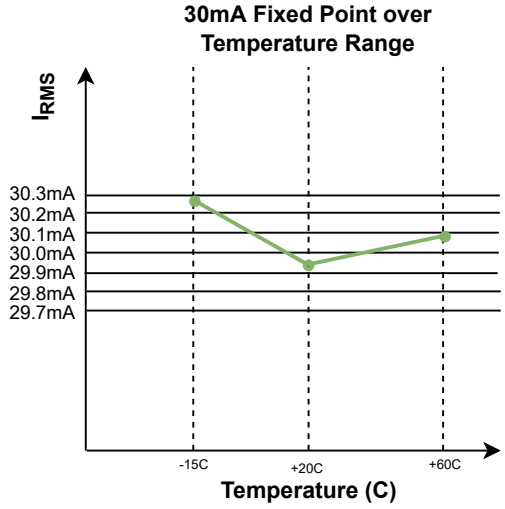
Ground-Fault Relay Timing Diagram

T_F = Time at which I_{RMS} exceeds settable current threshold, I_{THR}
T_{LED} = Time at which the red and green LED change states
T_E = Time at which the relay changes state to a fault condition
T_{NF} = Time at which I_{RMS} drops below I_{THR} plus hysteresis, I_{HYS}
T_{DE} = Time at which the relay changes state to a no fault condition
T_C = Internal Calculation cycle, ~100mS
T_D = Settable Time Delay, if applicable
T_{RD} = Settable Reverse Time Delay, if applicable note2









Note 1: Relay Energize state set by external DIP switch position 1. ON position causes relay to energize during a **NO** fault state and de-energize during a fault state. The OFF position causes the relay to energize during a fault state only.
Note 2: Reverse Time delay set by external DIP switch position 3.

ON position adds a settable delay time between when I_{RMS} drops below I_{HYS} and when the relay changes states. With a reverse time delay, both the LED and relay change state at T_{LED} when I_{RMS} rises above I_{THR}.

OFF position adds a settable delay time between when I_{RMS} rises above the settable current threshold, I_{THR} and when the relay changes state.
Note 3: External DIP switch position 2 enables or disables relay latching. Latching with a reverse time delay are **NOT** compatible. Reverse Time delay is ignored for latching parts and will behave like a regular time delay
Note 4: Per UL 1053 Section 22, table 22.1 I_{RMS} currents greater than 150% of I_{THR} must trip within 2.0 seconds and I_{RMS} currents greater than 250% of I_{THR} must trip within 1.0 second. If T_D is greater than the allowable delay, a 250mS max delay is used.
Note 5: DIP switch settings are latched at device start up. Power reset necessary for DIP switch setting adjustment.

Ground-Fault Test Circuit:

The CR7508 includes an integrated test circuit which provides operational verification of the measuring current transformer, settable delay, LEDs and the electromechanical relay. Upon pressing the "Circuit Test" button, a $3mA_{RMS}$ current is generated around a 10-turn test winding, simulating a $30mA_{RMS}$ Ground-Fault current.

Each unit's test circuit is factory calibrated and tested such that upon sensing the $30mA_{RMS}$ test current the device will indicate a fault condition by changing the LED and relay state to the fault condition. DIP switch settings 2 and 3 are ignored for the purposes of the test; the device will observe the settable delay timer and latch to a fault condition (Reverse Time delays are not tested). The device remains in test mode until the "Latch Reset" button is pressed, at which point all original DIP switch settings will be reverted back.

NOTE: Internal test circuit does not satisfy the Performance Testing required by NEC 230.95(c). See Installation Test Procedures for information.

NOTE: The test circuit is meant to be active while no current is flowing through the current transformer. If an external current is flowing through the current transformer while the test circuit is active, device behavior is undefined and may or may not indicate a fault condition.

Latch Reset:

A latch reset button is included and performs two functions:

1. When DIP switch setting 2, Latching enable, is set, the latch reset button will return the CR7508 to a no fault condition if, the sensed ground fault current has fallen below the fixed or settable trip threshold plus hysteresis.
2. Stops the ground fault test circuit and resets to a no fault condition once the device has latched to a fault state.

If DIP switch setting 2 is disabled and the ground fault test circuit is inactive, the latch reset button has no effect.

Settable Delay:

The CR7508 internal digital timer allows for accurate and repeatable time delays. Settable delay times include:

C - Time delay, 100 milliseconds to 1 second
X - Time delay, 10 milliseconds, non-adjustable

Customized time delays available on request.

Per UL 1053, if ground fault currents exceed 150% of the set threshold current, a maximum of a 2 second delay is allowed; at 250% above the set threshold current a maximum of a 1 second delay is allowed.

Immediately following a calculation cycle, if the sensed ground fault current exceeds 150% of the threshold and the settable delay is set greater than 250 milliseconds, the delay defaults to 250 milliseconds. For over threshold currents less than 150%, the normal settable delay is observed.

Fixed Point or Calibrated Dial:

The CR7508 is offered with either a fixed ground fault threshold or an adjustable range. A wide range of standard and customizable options are available for both fixed point and calibrated dial units upon request.

For custom adjustable trip ranges, a 10-100% scaling is used.

e.g. a 5mA minimum, 10%, will have a 50mA maximum, 100%.

Part Number Ordering Information

CR7508 - - - -

Supply Voltage
SV1 - 85 to 240 V_{AC}, 50/60 Hz
110 - 240 V_{DC}
SV2 - 12.5 to 35 V_{DC}
18 - 24 V_{AC} 50/60Hz

Trip Range
.011 - .01 to 0.1 A_{AC}
.11 - 0.1 to 1.0 A_{AC}
* Custom range available on request

Trip Delay
X - No Delay
C - 0.1 to 1 sec
* Custom delay available on request

Trip Point Dial
CD - Calibrated Dial
FP - Fixed Point

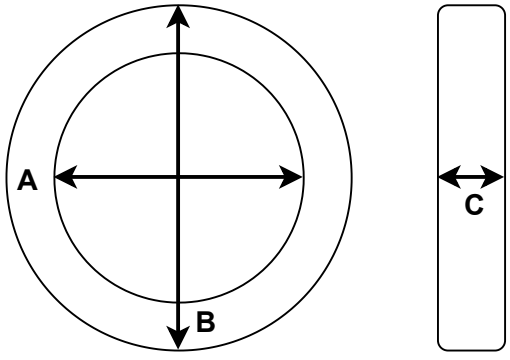
I - Internal Transformer
R1 - Remote Transformer CRGFS-101 (1.60" window)
R2 - Remote Transformer CRGFS-201 (1.75" window)

Example Part Numbers:

CR7508-SV1-.011-C-CD-R1
CR7508-SV2-.03-X-FP-I

Remote Transformer Dimensions

CRGFS	A	B	C	Lead Length
-101	1.60" (40.58)	2.88" (73.16)	0.79" (20.07)	10.00" (254.0)
-201	1.75" (44.45)	3.25" (82.55)	0.82" (20.83)	



A DIVISION OF KHORPORATE HOLDINGS, INC.
CR MAGNETICS
ISO 9001:2015 QUALITY MANAGEMENT SYSTEM

CR Magnetics, Inc. 3500 Scarlet Oak Blvd. St. Louis, MO. 63122 USA
P:636-343-8518 Fax: 636-343-8518 Email: sales@crmagnetics.com
W: www.crmagnetics.com

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

- View CR7508-SV1-.011-C-CD-I on WIN SOURCE
- CR Magnetics Inc. Information

Optimize Your Supply Chain with WIN SOURCE Solutions

- Global Sourcing Solution
- Obsolete Management
- Cost Control Management
- Shortage Management
- Alternative Solution
- Excess Inventory Management