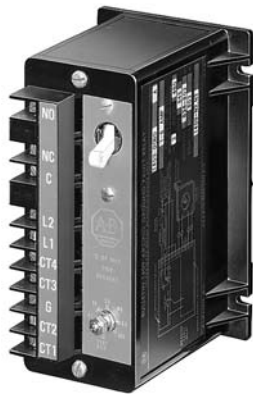
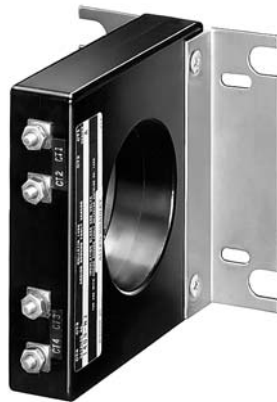


Bulletin 1409



Arcing Ground Fault Relay
 Cat. No. 1409-DOBD



Arcing Ground Fault Sensor
 Cat. No. 1409-N2

- Adjustable Trip From 1...6 A for Maximum Sensitivity without Nuisance Tripping
- Output Form C Contact (Single-Pole Double-Throw) for Application Flexibility
- Time Delay of 50 ms Nominal to Minimize Nuisance Tripping and Allow Time for High Current Inhibit
- Test Circuit is Built In to Test System for Proper Operation

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Description

Low-level (arcing) ground faults are below the fuse or circuit breaker rating and therefore go undetected until a much larger problem develops. The Allen-Bradley Arcing Ground Fault Detection System is designed to sense these low-level faults and either drop out the motor controller or operate a shunt-trip circuit breaker to clear the fault.

The Bulletin 1409 Arcing Ground Fault Detection Systems are intended for equipment protection only. **These systems are not Ground-Fault Circuit-Interrupters for personnel protection as defined in Article 100 of the U.S. National Electric Code.**

The Bulletin 1409 is available in two designs, Class I and Class II. The Class I Arcing Ground Fault Detection Systems are intended for use with shunt-trip circuit breakers or medium voltage controllers. These Class I systems **do not** contain a high-current inhibit circuit.

The Class II Arcing Ground Fault Detection Systems are designed for use with motor starters or contactors (controllers) to interrupt low-level ground faults. These detection systems incorporate a high-current inhibit circuit that guards against the controller opening when the fault current exceeds the controller interrupting capacity. Ground fault currents exceeding the interrupting rating of the controllers are designed to be cleared by the short circuit protection device (fuse or circuit breaker).

Both Class I and Class II Arcing Ground Fault Detection Systems consist of two parts — a relay and a sensor. The Arcing Ground Fault Relay contains all the detection, adjustment and output circuitry. The Arching Ground Fault Sensor is a special two-winding current transformer. Operation of the ground fault detection system is indicated by the relay toggle.

Approvals:

CSA Certified
 UL Listed

Your order must include:

- Cat. No. of the arching ground fault relays and sensor selected.

Arcing Ground Fault Detection System

Product Selection

Arcing Ground Fault Relays — Class II with High Current Inhibit Feature

NEMA Starter Size	Maximum Voltage (V) AC	Maximum HP	Full Load Current (A)	High Current Inhibit (A)		Cat No.
				Min.	Max.	
1	200...230	7.5	27	114	144	1409-BOAD
	460	10	14	63	79	1409-BOBD
	575	10	11	50	62	1409-BOCD
2	200...230	15	45	189	239	1409-COAD
	460	25	34	153	193	1409-COBD
	575	25	27	122	153	1409-COCD
3	200...230	30	90	360	456	1409-DOAD
	460	50	65	293	370	1409-DOBD
	575	50	52	234	296	1409-DOCD
4	200...230	50	135	585	741	1409-EOAD
	460	100	124	558	706	1409-EOBD
	575	100	99	446	564	1409-EOCD
5	200...230	100	270	1116	1413	1409-FOAD
	460	200	240	1080	1368	1409-FOBD
	575	200	192	864	1094	1409-FOCD
6	200...230	200	540	2160	2736	1409-GOAD
	460	400	465	2147	2718	1409-GOBD
	575	400	372	1719	2177	1409-GOCD

Arcing Ground Fault Sensors

NEMA Starter Size	Maximum Recommended Cable Size ❶	Window Diameter	Cat. No.
1...2	2 AWG @ 600V AC	1-9/16	1409-N1
3...4	250 MCM @ 600V AC	2-1/2	1409-N2
	4/0 @ 5000V AC		
5	4/0 @ 8000V AC ❷	3-1/4	1409-N3
	500 MCM @ 600V AC		
	350 MCM @ 5000V AC		
6	350 MCM @ 8000V AC ❷	4-1/4	1409-N4
	2-500 MCM @ 600V AC		
	500 MCM @ 5000V AC		
	500 MCM @ 8000V AC ❷		

❶ For a 3-phase system with one cable per phase except as indicated.

❷ 8000V cable — select sensor to have a window diameter greater than 2.5 times the cable diameter.

Arcing Ground Fault Relays — Class I without High Current Inhibit Feature

Application	Max. Line Voltage (V)	Cat. No.
Shunt-Trip Circuit Breaker	600	1409-MV
Medium Voltage Controller	7200	

Note: Interrupting capacity is determined by starter or circuit breaker selection.

Bulletin 1409
Arcing Ground Fault Detection System
Specifications

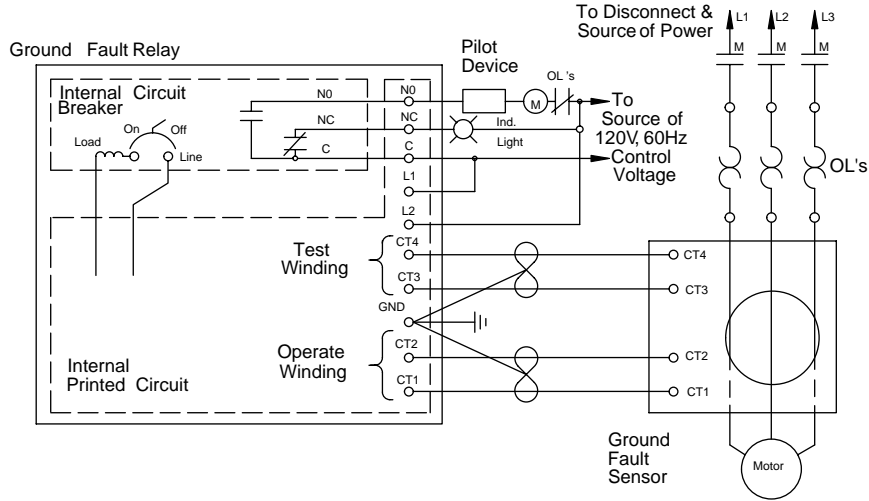
Technical Data

Response Time	50 ms nominal plus the controller drop-out time
Supply Voltage	120V AC, 60 Hz
Power Input	3VA
Temperature Range	The operating ambient temperature range for the sensor is $-40...+85^{\circ}\text{C}$ ($-40...+184^{\circ}\text{F}$) and for the relay is $0...+65^{\circ}\text{C}$ ($+32...+149^{\circ}\text{F}$)
Output Contact Rating	Make 30 A; Break 3 A; Continuous carrying current 5 A at 120V

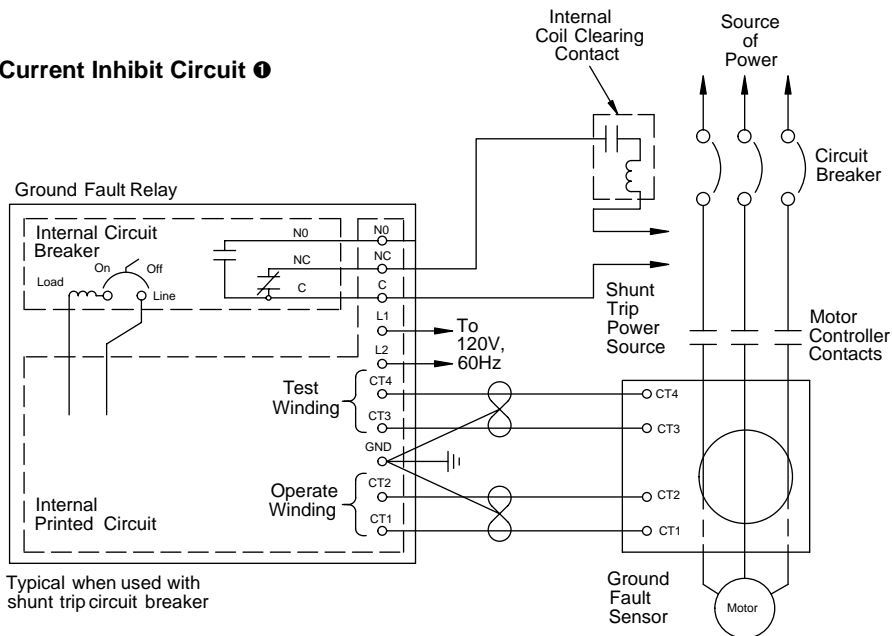
Typical Wiring Diagrams

See Applicable Codes and Laws.

Class II with High Current Inhibit Circuit ❶



Class I without High Current Inhibit Circuit ❶



Typical when used with shunt trip circuit breaker

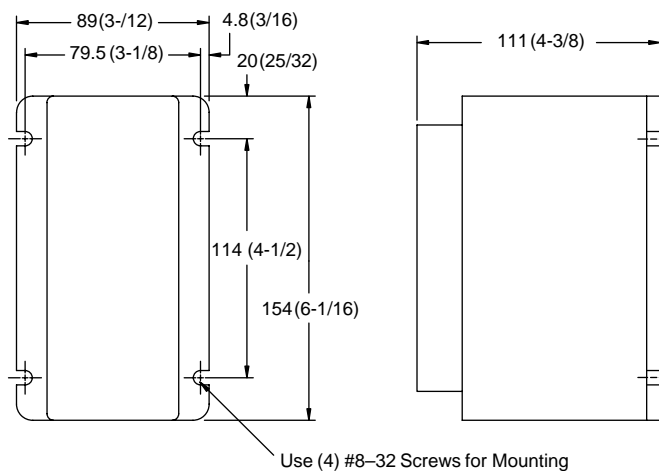
❶ Wiring diagrams are shown in the tripped condition.

Arcing Ground Fault Detection System

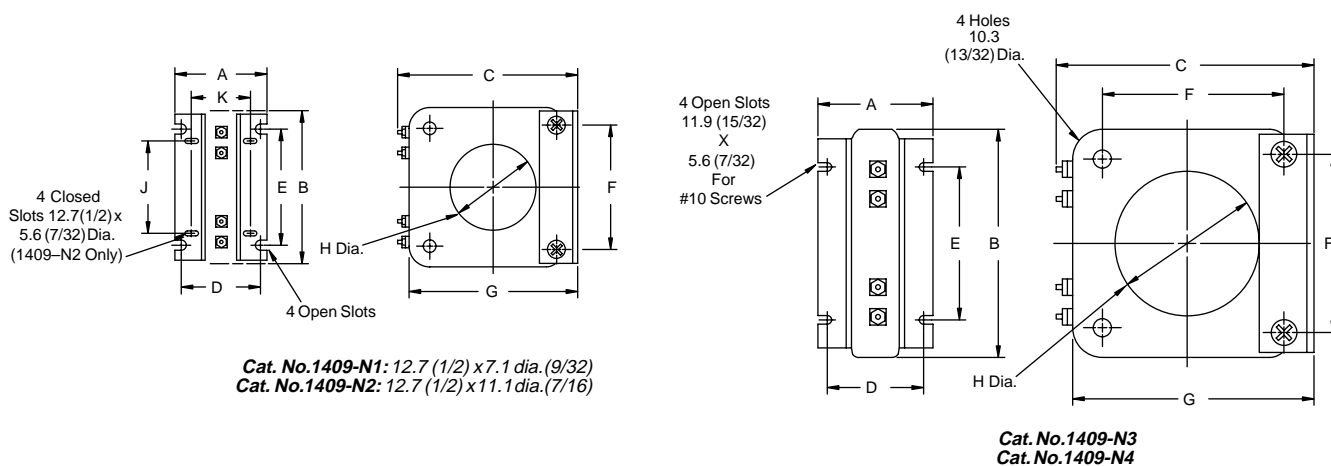
Approximate Dimensions

Dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.

Arcing Ground Fault Relay



Arcing Ground Fault Sensors



Cat. No.	A	B	C	D	E	F	G	H	J	K
1409-N1	92.6 (3-21/32)	88.9 (3-1/2)	104 (4-3/32)	74 (2-15/16)	67.3 (2-21/32)	56.4 (2-7/32)	92.9 (3-21/32)	39.6 (1-9/16)	—	—
1409-N2	91.4 (3-19/32)	115.8 (4-9/16)	131.8 (5-3/16)	77 (3-1/32)	88.9 (3-1/2)	88.9 (3-1/2)	120.6 (4-3/4)	63.5 (2-1/2)	69.8 (2-3/4)	54.9 (2-5/32)
1409-N3	73.2 (2-7/8)	144 (5-11/16)	157.2 (6-3/16)	54.9 (2-5/32)	96.8 (3-13/16)	119.4 (4-23/32)	146.1 (5-3/4)	82.6 (3-1/4)	—	—
1409-N4	77.2 (3-1/32)	169.9 (6-11/16)	182.6 (7-3/16)	59.5 (2-11/32)	123.7 (4-7/8)	138.2 (5-7/16)	171.5 (6-3/4)	108 (4-1/4)	—	—