

# Ground Fault Relay Selection Guide

[See Shunt Trip Breaker Options >>>](#)  
[See Additional Resources & Downloads >>>](#)

Branch Circuit Specifications & Details					Recommendation for all appliances except electric ovens		Recommendation for electric ovens or appliance is not disclosed	
Breaker Rating <sup>1</sup>	Wire Size <sup>2</sup> AWG	Corrected <sup>3</sup> Conductor Amperage Capacity (A)	Calculated Wire Bundle Diameter <sup>4</sup>	Branch Circuit Configuration	AG1-SDT1-120-DEN-005	AGL1-SDT1-120-DEN-005	AG3-SDT1-120-DEN-TR3	AGL3-SDT1-120-DEN-TR3
30 A	10	36	0.353	3 Phase, Delta, up to 480 V (3+1)	X		X	
	10	29	0.396	3 Phase, WYE, up to 480 V (4+1)	X		X	
	10	36	0.328	1 Phase, up to 240 V (2+1)	X		X	
40A	8	50	0.474	3 Phase, Delta, up to 480 V (3+1)	X		X	
	8	40	0.531	3 Phase, WYE, up to 480 V (4+1)	X		X	
	8	50	0.440	1 Phase, up to 240 V (2+1)	X		X	
50A	8	50	0.474	3 Phase, Delta, up to 480 V (3+1)	X		X	
	6	55	0.618	3 Phase, WYE, up to 480 V (4+1)	X		X	
	8	50	0.440	1 Phase, up to 240 V (2+1)	X		X	
60A	6	68	0.552	3 Phase, Delta, up to 480 V (3+1)	X		X	
	4	69	0.785	3 Phase, WYE, up to 480 V (4+1)		X		X
	6	68	0.512	1 Phase, up to 240 V (2+1)	X		X	
80A	4	86	0.700	3 Phase, Delta, up to 480 V (3+1)	X		X	
	3	84	0.852	3 Phase, WYE, up to 480 V (4+1)		X		X
	4	86	0.650	1 Phase, up to 240 V (2+1)	X		X	
90A	3	105	0.761	3 Phase, Delta, up to 480 V (3+1)		X		X
	2	95	0.932	3 Phase, WYE, up to 480 V (4+1)		X		X
	3	105	0.706	1 Phase, up to 240 V (2+1)	X		X	
100A	3	105	0.761	3 Phase, Delta, up to 480 V (3+1)		X		X
	1	106	1.168	3 Phase, WYE, up to 480 V (4+1)		X		X
	3	105	0.706	1 Phase, up to 240 V (2+1)	X		X	

**Note(s)**

1. Ground fault relay recommendations based on mating with a shunt-trip breaker only
2. Wire type: CU | THHN
3. Corrected conductor amperage capacity @ +40°C ambient temperature and as required correction factor for more than 3 conductors in raceway, reference NEC Tables: 310.15(B)(1), 310.15(C)(1) & 310.16
4. Reference [How to Calculate Wire Bundle Diameter Application Note](#)

## AC Ground Fault Relay Relevant Features and Options



A properly configured NK Technologies AC ground fault relay will trip in range 4 mA to 6 mA and trips within an established period-of-time, meeting intent of 2020 & 2023 National Electric Code.

Standard features:

- Manual ground fault push-to test.
- Two visual indicators: power status and ground fault trip status.

User selectable output options:

- Normally Open/Normally Closed solid state switch or mechanical relay outputs.
- Normally energized or normally de-energized contacts.

## APPLICATION NOTE

# Shunt Trip Breaker Options

[See Ground Fault Relay Selection Guide >>>](#)  
[See Additional Resources & Downloads >>>](#)

A Shunt Trip Breaker is required along with a NK Technologies [AG or AGL Ground Fault Relay](#) to complete 5mA Ground Fault Interrupter Solution. NK Technologies does not sell Shunt Trip Breakers. To make it easier for you complete your solution see the table below showing the correct part number for many of the leading Shunt Trip Breaker manufacturers.

If you need technical assistance contact our Engineers by Phone, Chat, or Email.

MFR	# Poles	Voltage	Amperage	MPN (10,000A IR)	MFR	# Poles	Voltage	Amperage	MPN (10,000A IR)
ABB (GE)	3	120/240	20	THQL32020ST1	Siemens	3	120/240	15	Q31500S01
ABB (GE)	3	120/240	30	THQL32030ST1	Siemens	3	120/240	25	Q32500S01
ABB (GE)	3	120/240	40	THQL32040ST1	Siemens	3	120/240	30	Q33000S01
ABB (GE)	3	120/240	50	THQL32050ST1	Siemens	3	120/240	35	Q33500S01
ABB (GE)	3	120/240	60	THQL32060ST1	Siemens	3	120/240	45	Q34500S01
ABB (GE)	3	120/240	100	THQL32100ST1	Siemens	3	120/240	50	Q35000S01
ABB (GE)	2	120/240	20	THQL2120ST1	Siemens	3	120/240	60	Q36000S01
ABB (GE)	2	120/240	30	THQL2130ST1	Siemens	3	120/240	70	Q37000S01
ABB (GE)	2	120/240	35	THQL2135ST1	Siemens	3	120/240	80	Q38000S01
ABB (GE)	2	120/240	40	THQL2140ST1	Siemens	3	120/240	90	Q39000S01
ABB (GE)	2	120/240	50	THQL2150ST1	Siemens	2	120/240	20	Q22000S01
ABB (GE)	2	120/240	60	THQL2160ST1	Siemens	2	120/240	25	Q22500S01
ABB (GE)	2	120/240	100	THQL21100ST1	Siemens	2	120/240	30	Q23500S01
Eaton (Cutler Hammer)	3	120/240	10	CHP310ST*	Siemens	2	120/240	35	Q23500S01
Eaton (Cutler Hammer)	3	120/240	15	CHP315ST*	Siemens	2	120/240	40	Q24000S01
Eaton (Cutler Hammer)	3	120/240	20	CHP320ST*	Siemens	2	120/240	45	Q24500S01
Eaton (Cutler Hammer)	3	120/240	25	CHP325ST*	Siemens	2	120/240	50	Q25000S01
Eaton (Cutler Hammer)	3	120/240	30	CHP330ST*	Siemens	2	120/240	60	Q26000S01
Eaton (Cutler Hammer)	3	120/240	35	CHP335ST*	SquareD	3	120/240	15	QOU3151021
Eaton (Cutler Hammer)	3	120/240	40	CHP340ST*	SquareD	3	120/240	20	QOU3201021
Eaton (Cutler Hammer)	3	120/240	45	CHP345ST*	SquareD	3	120/240	30	QOU3301021
Eaton (Cutler Hammer)	3	120/240	50	CHP350ST*	SquareD	3	120/240	40	QOU3401021
Eaton (Cutler Hammer)	3	120/240	60	CHP360ST*	SquareD	3	120/240	50	QOU3501021
Eaton (Cutler Hammer)	2	120/240	10	CHP210ST*	SquareD	3	120/240	60	QOU3601021
Eaton (Cutler Hammer)	2	120/240	15	CHP215ST*	SquareD	3	120/240	70	QOU3701042
Eaton (Cutler Hammer)	2	120/240	20	CHP220ST*	SquareD	3	120/240	80	QOU3801042
Eaton (Cutler Hammer)	2	120/240	25	CHP225ST*	SquareD	3	120/240	100	QOU31001042
Eaton (Cutler Hammer)	2	120/240	30	CHP230ST*	SquareD	2	120/240	20	QOU2201021
Eaton (Cutler Hammer)	2	120/240	35	CHP235ST*	SquareD	2	120/240	25	QOU2251042
Eaton (Cutler Hammer)	2	120/240	40	CHP240ST*	SquareD	2	120/240	30	QOU2301021
Eaton (Cutler Hammer)	2	120/240	45	CHP245ST*	SquareD	2	120/240	40	QOU2401021
Eaton (Cutler Hammer)	2	120/240	50	CHP250ST*	SquareD	2	120/240	50	QOU2501021
Eaton (Cutler Hammer)	2	120/240	60	CHP260ST*	SquareD	2	120/240	60	QOU2601021

\* If you prefer a CH, simply replace the CHP in the model number.

## 5 mA Ground Fault Circuit Interrupter Solutions for Single or Three Phase Circuits up to 100 Amps

Cost Effective, Readily Available, Designed and Assembled in the USA

[See Ground Fault Relay Selection Guide >>>](#)

[See Shunt Trip Breaker Options >>>](#)



### NK Technologies 5 mA Ground Fault Circuit Interrupter Solution Benefits

- Meets intent of 2020 NEC 210.8 defined term ground fault circuit interrupter.
- Compact relay size allows for multiple mounting opportunities anywhere from the breaker to the appliance.
- Inventory and unrivaled in-house expertise within the USA.
- When you call, chat or email our application support team will answer promptly.
- Industry leading 5-year warranty.

### Resources & Downloads

[How to Select a Ground Fault Relay >>>](#)

[Ground Fault Relay Part Number Selection >>>](#)

[Shunt Trip Breaker Selection >>>](#)

[2020 & 2023 NEC Impact to the Market >>>](#)

[What is a 5 mA Ground Fault Interrupter Solution? >>>](#)

[Calculating a Wire Size Bundle >>>](#)

[How to Wire a Shunt Trip >>>](#)

[Frequently Asked Questions >>>](#)

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