

series FAZ branch circuit breakers

Branch circuit protection up to 10kA







- > Molded case circuit breaker per UL 489 / CSA 22.2 No. 5.1
- > Current limiting device
- > Ring-tongue terminals available
- > Worldwide approvals



Moeller has just expanded its FAZ line of miniature circuit breakers to include devices that are listed and certified as molded case circuit breakers per UL 489 and CSA 22.2, No. 5-02. These new branch circuit breakers, called FAZ-NA, are ideal for the protection of power supplies, control power transformers, HVAC, refrigeration equipment, florescent lighting (to 20A) and many other applications requiring a primary protective device.

Flexible product range

Moeller's FAZ Branch Circuit Breakers are available in one, two and three pole configurations with 20 different current ratings ranging from 0.5A to 40A. All breakers are available in both C and D tripping curves, offering protection from 5 to 10 and 10 to 20 x the continuous rating of the device (I_n). Two and three pole devices can be used in solidly grounded circuits up to 480V AC. The entire line offers short circuit ratings of 10kA regardless of voltage applied.



Many installation options

FAZ Branch Circuit Breakers are available in two terminal configurations; standard box terminals that accept multiple conductors and ring-tongue terminals, ideally suited to the demanding requirements of the semi-conductor industry. All breakers mount on standard 35mm DIN-rail. Bus Connectors and Feeder Terminals facilitate mounting and wiring of multiple miniature circuit breaker arrays in control panel assemblies. Power to the circuit breakers can also be fed from the line or load side.

Standard features enhance safety

As with most products from Moeller, FAZ breaker terminals provide finger and backof-hand protection to guard against accidental contact with live parts. A color-coded red/green indicator provides immediate visual indication of device status and isolation function (green for OFF, red for ON). All FAZ breakers incorporate a "tripfree" mechanism. This prevents the trip function from being defeated by holding the operator in the ON position. In addition, all FAZ branch circuit breakers are UL listed and CSA certified for *fuseless* protection of smaller AWG 18 and 16 conductors!

Worldwide acceptance

FAZ-NA (RT) Molded Case Circuit Breakers are UL Listed for use in the United States in accordance with NFPA 70 (NEC). The devices comply with UL 489 and CSA 22.2 No. 5-02, meeting the requirements for Molded Case Circuit Breakers. These devices also comply with IEC 60947-2 and are CE compliant.



Tripping characteristics

Moeller FAZ-NA(RT) branch circuit breakers are available with "C" and "D" tripping characteristics. C-curve devices are suitable for applications where medium levels of inrush current are expected. Applications include small transformers, lighting, pilot devices, control circuits, and coils. C-curve devices provide a medium magnetic trip point.

Devices with a "D" curve are suitable for applications where high levels of inrush current are expected. The high magnetic trip point prevents nuisance tripping in high inductive applications such as motors, transformers, and power supplies.

Even though not required by NEC or CEC for Branch Circuit Breakers, Moeller's FAZ-NA(RT) devices are current limiting, which means they interrupt fault currents within one half cycle of the fault. Current limiting devices offer superior protection by reducing peak letthrough current and energy.



This graph shows trip-time versus over-current for Type C and D devices FAZ-NA branch circuit breakers.





- UL Approved (UL489) and CSA Certified (CSA C22.2 No. 5-02) as Branch Circuit Breakers
- > Interrupting capacity: 10kA UL/CSA; 15kA IEC 60947
- Trip characteristic C: Response time of instantaneous trip: $5 10 \times I_n$ current rating
- > Current limiting device

Trip Characteristic C – Designed for inductive loads

1 pole 2 poles 3 poles Rated Current 1_n **Catalog Number Catalog Number** [A] **Catalog Number** FAZ-CO,5/1-NA FAZ-C0,5/2-NA FAZ-C0,5/3-NA 0.5 FAZ-C1/1-NA FAZ-C1/2-NA FAZ-C1/3-NA 1 1.5 FAZ-C1,5/1-NA FAZ-C1,5/2-NA FAZ-C1,5/3-NA FAZ-C2/2-NA FAZ-C2/3-NA 2 FAZ-C2/1-NA 3 FAZ-C3/1-NA FAZ-C3/2-NA FAZ-C3/3-NA FAZ-C4/2-NA 4 FAZ-C4/1-NA FAZ-C4/3-NA FAZ-C5/3-NA 5 FAZ-C5/1-NA FAZ-C5/2-NA FAZ-C6/2-NA FAZ-C6/3-NA 6 FAZ-C6/1-NA 7 FAZ-C7/1-NA FAZ-C7/2-NA FAZ-C7/3-NA 8 FAZ-C8/1-NA FAZ-C8/2-NA FAZ-C8/3-NA 10 FAZ-C10/1-NA FAZ-C10/2-NA FAZ-C10/3-NA FAZ-C13/1-NA FAZ-C13/2-NA FAZ-C13/3-NA 13 15 FAZ-C15/1-NA FAZ-C15/2-NA FAZ-C15/3-NA FAZ-C16/1-NA FAZ-C16/2-NA FAZ-C16/3-NA 16 FAZ-C20/3-NA 20 FAZ-C20/1-NA FAZ-C20/2-NA 25 FAZ-C25/1-NA FAZ-C25/2-NA FAZ-C25/3-NA FAZ-C30/2-NA FAZ-C30/1-NA FAZ-C30/3-NA 30 FAZ-C32/1-NA FAZ-C32/2-NA FAZ-C32/3-NA 32 35 FAZ-C35/1-NA FAZ-C35/2-NA FAZ-C35/3-NA FAZ-C40/3-NA 40 FAZ-C40/1-NA FAZ-C40/2-NA

See Trip Curve chart on page 11

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Type C Characteristics

and coils. Medium magnetic trip point.

Suitable for applications where medium levels of inrush current are

expected. Instantaneous trip is 5 to 10 x rating of device (I_n) . Applications include small transformers, lighting, pilot devices, control circuits,

Trip Characteristic D



- UL Approved (UL489) and CSA Certified (CSA C22.2 No. 5-02) as Branch Circuit Breakers
- > Interrupting capacity: 10kA UL/CSA; 15kA IEC 60947
- Trip characteristic D: Response time of instantaneous trip: 10 – 20 x I_n current rating
- > Current limiting device

Type D Characteristics

Suitable for applications where high levels of inrush current are expected. Instantaneous trip is 10 to 20 x rating of device (I_n) . The high magnetic trip point prevents nuisance tripping in high inductive applications such as motors, transformers, and power supplies.

	1 pole		2 poles		3 poles	
Rated Current						P
[A]	Catalog Number		Catalog Number		Catalog Number	
0.5	FAZ-D0,5/1-NA		FAZ-D0,5/2-NA		FAZ-D0,5/3-NA	
1	FAZ-D1/1-NA		FAZ-D1/2-NA		FAZ-D1/3-NA	
1.5	FAZ-D1,5/1-NA		FAZ-D1,5/2-NA	-	FAZ-D1,5/3-NA	
2	FAZ-D2/1-NA		FAZ-D2/2-NA		FAZ-D2/3-NA	
3	FAZ-D3/1-NA		FAZ-D3/2-NA		FAZ-D3/3-NA	
4	FAZ-D4/1-NA		FAZ-D4/2-NA		FAZ-D4/3-NA	
5	FAZ-D5/1-NA	-	FAZ-D5/2-NA	-	FAZ-D5/3-NA	
6	FAZ-D6/1-NA		FAZ-D6/2-NA		FAZ-D6/3-NA	
7	FAZ-D7/1-NA		FAZ-D7/2-NA	1	FAZ-D7/3-NA	
8	FAZ-D8/1-NA	-	FAZ-D8/2-NA	1	FAZ-D8/3-NA	
10	FAZ-D10/1-NA	-	FAZ-D10/2-NA	-	FAZ-D10/3-NA	
13	FAZ-D13/1-NA		FAZ-D13/2-NA	-	FAZ-D13/3-NA	
15	FAZ-D15/1-NA	1	FAZ-D15/2-NA	-	FAZ-D15/3-NA	
16	FAZ-D16/1-NA	1	FAZ-D16/2-NA	-	FAZ-D16/3-NA	
20	FAZ-D20/1-NA		FAZ-D20/2-NA	1	FAZ-D20/3-NA	
25	FAZ-D25/1-NA	1	FAZ-D25/2-NA	-	FAZ-D25/3-NA	
30	FAZ-D30/1-NA		FAZ-D30/2-NA	1	FAZ-D30/3-NA	
32	FAZ-D32/1-NA	1	FAZ-D32/2-NA		FAZ-D32/3-NA	
35	FAZ-D35/1-NA	1	FAZ-D35/2-NA	-	FAZ-D35/3-NA	
40	FAZ-D40/1-NA		FAZ-D40/2-NA	1	FAZ-D40/3-NA	

Trip Characteristic D – Designed for highly inductive loads

See Trip Curve chart on page 11





- UL Approved (UL489) and CSA Certified (CSA C22.2 No. 5-02) as Branch Circuit Breakers
- > Connections for ring-tongue terminals
- Trip characteristic C: Response time of instantaneous trip: $5 10 \times I_n$ current rating
- > Interrupting capacity: 10kA UL/CSA; 15kA IEC 60947

Type C Characteristics

Suitable for applications where medium levels of inrush current are expected. Instantaneous trip is 5 to 10 x rating of device (I_n) . Applications include small transformers, lighting, pilot devices, control circuits, and coils. Medium magnetic trip point.

Ring Tongue Trip Characteristic C – *Designed for inductive loads*

	Ring Tongue 1 pole		Ring Tongue 2 poles		Ring Tongue 3 pol	25
Rated Current						-
[A]	Catalog Number	Ca	talog Number		Catalog Number	
0.5	FAZ-CO,5/1-RT	FAZ	Z-C0,5/2-RT		FAZ-C0,5/3-RT	
1	FAZ-C1/1-RT	FAZ	Z-C1/2-RT		FAZ-C1/3-RT	
1.5	FAZ-C1,5/1-RT	FAZ	Z-C1,5/2-RT		FAZ-C1,5/3-RT	
2	FAZ-C2/1-RT	FAZ	Z-C2/2-RT		FAZ-C2/3-RT	
3	FAZ-C3/1-RT	FAZ	Z-C3/2-RT		FAZ-C3/3-RT	
4	FAZ-C4/1-RT	FAZ	Z-C4/2-RT		FAZ-C4/3-RT	
5	FAZ-C5/1-RT	FAZ	Z-C5/2-RT		FAZ-C5/3-RT	
6	FAZ-C6/1-RT	FAZ	Z-C6/2-RT		FAZ-C6/3-RT	
7	FAZ-C7/1-RT	FAZ	Z-C7/2-RT		FAZ-C7/3-RT	
8	FAZ-C8/1-RT	FAZ	Z-C8/2-RT		FAZ-C8/3-RT	
10	FAZ-C10/1-RT	FAZ	Z-C10/2-RT		FAZ-C10/3-RT	
13	FAZ-C13/1-RT	FAZ	Z-C13/2-RT		FAZ-C13/3-RT	
15	FAZ-C15/1-RT	FA	Z-C15/2-RT		FAZ-C15/3-RT	
16	FAZ-C16/1-RT	FAZ	Z-C16/2-RT		FAZ-C16/3-RT	
20	FAZ-C20/1-RT	FAZ	Z-C20/2-RT		FAZ-C20/3-RT	
25	FAZ-C25/1-RT	FA	Z-C25/2-RT		FAZ-C25/3-RT	
30	FAZ-C30/1-RT	FAZ	Z-C30/2-RT		FAZ-C30/3-RT	
32	FAZ-C32/1-RT	FAZ	Z-C32/2-RT		FAZ-C32/3-RT	
35	FAZ-C35/1-RT	FA	Z-C35/2-RT		FAZ-C35/3-RT	
40	FAZ-C40/1-RT	FA	Z-C40/2-RT		FAZ-C40/3-RT	



All breakers on this page are equipped with terminals that accommodate ring-tongue connectors.

See Trip Curve chart on page 11

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Trip Characteristic D

- UL Approved (UL489) and CSA Certified (CSA C22.2 No. 5-02) as Branch Circuit Breakers
- > Connections for ring-tongue terminals

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- Trip characteristic D: Response time of instantaneous trip: 10 - 20 x I_n current rating
- > Interrupting capacity: 10kA UL/CSA; 15kA IEC 60947

Type D Characteristics

Suitable for applications where high levels of inrush current are expected. Instantaneous trip is 10 to 20 x rating of device (I_n) . The high magnetic trip point prevents nuisance tripping in high inductive applications such as motors, transformers, and power supplies.

Ring Tongue Trip Characteristic D – Designed for highly inductive loads

	Ring Tongue 1 po	e Ring Tong	ue 2 poles	Ring Tongue 3 pol	es
Rated Current					
[A]	Catalog Number	Catalog Numbe	r	Catalog Number	
0.5	FAZ-D0,5/1-RT	FAZ-D0,5/2-RT		FAZ-D0,5/3-RT	
1	FAZ-D1/1-RT	FAZ-D1/2-RT		FAZ-D1/3-RT	
1.5	FAZ-D1,5/1-RT	FAZ-D1,5/2-RT		FAZ-D1,5/3-RT	
2	FAZ-D2/1-RT	FAZ-D2/2-RT		FAZ-D2/3-RT	All brea
3	FAZ-D3/1-RT	FAZ-D3/2-RT		FAZ-D3/3-RT	with 1
4	FAZ-D4/1-RT	FAZ-D4/2-RT		FAZ-D4/3-RT	
5	FAZ-D5/1-RT	FAZ-D5/2-RT		FAZ-D5/3-RT	
6	FAZ-D6/1-RT	FAZ-D6/2-RT		FAZ-D6/3-RT	
7	FAZ-D7/1-RT	FAZ-D7/2-RT		FAZ-D7/3-RT	
8	FAZ-D8/1-RT	FAZ-D8/2-RT		FAZ-D8/3-RT	
10	FAZ-D10/1-RT	FAZ-D10/2-RT		FAZ-D10/3-RT	
13	FAZ-D13/1-RT	FAZ-D13/2-RT		FAZ-D13/3-RT	
15	FAZ-D15/1-RT	FAZ-D15/2-RT		FAZ-D15/3-RT	
16	FAZ-D16/1-RT	FAZ-D16/2-RT		FAZ-D16/3-RT	
20	FAZ-D20/1-RT	FAZ-D20/2-RT		FAZ-D20/3-RT	
25	FAZ-D25/1-RT	FAZ-D25/2-RT		FAZ-D25/3-RT	
30	FAZ-D30/1-RT	FAZ-D30/2-RT		FAZ-D30/3-RT	
32	FAZ-D32/1-RT	FAZ-D32/2-RT		FAZ-D32/3-RT	
35	FAZ-D35/1-RT	FAZ-D35/2-RT		FAZ-D35/3-RT	
40	FAZ-D40/1-RT	FAZ-D40/2-RT		FAZ-D40/3-RT	



All breakers on this page are equipped with terminals that accommodate ring-tongue connectors.

See Trip Curve chart on page 11



Accessories

For all FAZ...NA and FAZ...RT Miniature Circuit Breakers

Accessory	Description	Circuit Diagram	Rated Operational Voltage	Catalog Number	
Auxiliary / Trip Indicat	ing Contacts				
	 Small selector screw changes mode Two Form C (changeover) contacts Installs on left side of FAZ or Shunt Trip Aux. contacts switch when FAZ is tripped electrically or manually Trip indicating contact switches only when FAZ is tripped electrically Test button for electrical tripping function 	Trip indicating mode	230V AC	Z-NHK 1	
Shunt Trip					
	Allows remote trip of FAZ		110 – 415V AC	FAZ-XAA-NA110-415VAC	
1			12 – 110V AC	FAZ-XAA-NA12-110VAC	
Padlock Hasp					
Y	 Prevents reactivation of the device during maintenance Holds one padlock 	_	_	IS/SPE-1TE	

Allowable combinations of accessories



• Voltage of FAZ-...-NA circuit breaker is limited to 300V with this auxiliary contact installed.

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Accessories

Bus Bar System

Bus Bar	Number of Poles per Device	Number of Terminals Fixed Length	Rated Operational Current (A)	Description	Catalog Number
	1	6			Z-SV/UL-16/1P-1TE/6
B		12	80A	UL/CSA Max 480V AC, 50/60 HZ; 96V DC	Z-SV/UL-16/1P-1TE/12
		18			Z-SV/UL-16/1P-1TE/18
		6	80A	UL/CSA Max 480V AC 50/60 H7·96V DC	Z-SV/UL-16/2P-2TE/6
0-22 mm	2	12			Z-SV/UL-16/2P-2TE/12
and the second s		18		max 1001 hc, 50,00 hz, 501 bc	Z-SV/UL-16/2P-2TE/18
Xuore BI		6			Z-SV/UL-16/3P-3TE/6
	3	12	80A	UL/CSA Max 480V AC 50/60 H7· 96V DC	Z-SV/UL-16/3P-3TE/12
		18			Z-SV/UL-16/3P-3TE/18

Terminal Shroud for unused bus bar terminals

Shroud	Description	Catalog Number
	3-pole busbar cover	ZV-BS-UL

Incoming Supply Terminal

Terminal	Description	Catalog Number
	 Extension Terminal Accommodates conductors up to 25 mm² (2 – 14 AWG) Finger-safe connection Max 480V AC, 50/60 HZ; 96V DC @ 80A 	Z-EK/35/UL



Technical Data

Tripping Characteristics



Influence of ambient temperature T on load carrying capacity



Power loss at In

Characteristic C

<i>I</i> n [A]	1p P[W]	2p P[W]	3p P[W]
0.5	1.6	3.2	4.7
1	1.1	2.2	3.4
1.5	1.3	2.6	3.9
2	1.4	2.8	4.3
3	1.2	2.4	3.6
4	1.4	2.9	4.3
5	1.9	3.7	5.6
6	1.2	2.3	3.5
7	1.4	2.8	4.3
8	1.4	2.8	4.2
10	1.8	3.6	5.3
13	2.4	4.7	7.1
15	1.9	3.8	5.6
16	2.1	4.3	6.4
20	2.9	5.8	8.7
25	3.1	6.2	9.3
30	3.0	6.0	9.0
32	3.4	6.8	10.2
35	3.7	7.4	11.0
40	4.0	8.1	12.1

Characteristic D			
	<i>I</i> _n [A]	1p P[W]	
_	0.5	1.6	
	1	0.8	
	1.5	1.0	
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/n [A]	1p P[W]	2p P[W]	3p P[W]
0.5	1.6	3.2	4.8
1	0.8	1.5	2.3
1.5	1.0	2.1	3.1
2	1.0	2.1	3.1
3	1.2	2.4	3.6
4	1.4	2.9	4.3
5	1.5	2.9	4.4
6	1.2	2.3	3.5
7	1.4	2.8	4.3
8	1.2	2.4	3.7
10	1.5	3.0	4.5
13	2.0	4.1	6.1
15	1.5	3.1	4.6
16	1.7	3.5	5.2
20	1.8	3.7	5.5
25	2.6	5.1	7.7
30	2.7	5.4	8.1
32	3.1	6.2	9.3
35	3.8	7.6	11.3
40	3.9	7.8	11.6



FAZ-NA, FAZ-RT Miniature Circuit Breakers

	FAZ-NA, FAZ-RT
Electrical	
Design according to current test marks as printed onto the device	UL 489, CSA C22.2 No. 5, IEC 60947-2
Rated voltage - AC	
UL/CSA 0.5 – 25A	277/480Y V AC
UL/CSA 25 – 40A	240 V AC
IEC	240/415 V AC
Rated Voltage - DC	
UL/CSA - Single Pole	48 V DC
UL/CSA - Two Pole	96 V DC
Rated frequency	50/60 Hz
Rated breaking capacity - AC	
UL/CSA	10 kA
IEC	15 kA
Rated breaking capacity - DC	
UL/CSA	10 kA
Characteristic	C, D
Endurance	\geq 20,000 operating cycles
Line voltage connection	operational suitable for reverse feed
Mechanical	
Frame size	45 mm
Device height	105 mm
Device width	17.7 mm per pole
Mounting	quick fastening with 2 lock-in positions on DIN rail EN 50022
Upper and lower terminals	open mouth/lift terminals
Terminal capacity	1 Wire AWG 18-6
	2 Wires AWG 18-10
Terminal fastening torque	1 Wire 21 lb-in
Mounting	2 WIRES 25 ID-IN
Nounany	
	40°C
UL 407, LJM L22.2 IVU. J	40 L 20°C
IEC 0094/-2	30 C

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Technical Data

Selectable Aux Contact / Trip Indicating Contact – Z-NHK

		Z-NHK
Electrical		
Can be mounted from the left onto:		FAZ-NA, FAZ-RT, FAZ-XAA-NA
Contact function		2 changeover contacts (self cleaning)
Rated voltage	[V]	230
Rated frequency	[Hz]	50/60
Rated current	[A]	2
Rated thermal current I _{th}	[A]	2
Utilization category AC13		
Rated operational current I_{e}	[A]	3 / 250V AC
Utilization category AC15		
Rated operational current I_{e}	[A]	2 / 250V AC
Utilization category DC12		
Rated operational current I_{e}	[A]	0.5 / 110V DC
Rated insulation voltage U_{i}	[VAC]	250
Minimum operational voltage per contact $U_{\sf min}$	[VDC]	5
Minimum operational current I_{min}	[mA]	10 mA DC
Rated peak withstand voltage U_{imp} (1.2/50 μ)	[kV]	2.5
Conditional short-circuit current lk with back-up fuse 6A	[kA]	1 kA
Max. back-up fuse, overload and short-circuit		6A gL
Mechanical		
Tripping indicator "electrical tripping"		blue/white
Frame size		45 mm
Device height		80 mm
Device width		8.8 mm (0.5MU)
Mounting		Snaps on to side of MCB
Degree of protection, built-in		IP40
Terminal protection		finger and hand-touch safe according to BGV A3, ÖVE-EN 6
Terminals		lift terminals
Terminal capacity		18-14 AWG
Terminal screws		M3 (Pozidrive Z0)
Fastening torque of terminal screws		7 lb-in



Shunt Trip Release FAZ-XAA-NA

	FAZ-XAA-NA12-110VAC	FAZ-XAA-NA110-415VAC
Electrical		
Can be mounted onto	FAZ-NA, FAZ-RT	FAZ-NA, FAZ-RT
Operational voltage range	12-110V AC	110-415V AC
	12-60V DC	110-230V DC
Frequency	50/60 Hz	50/60 Hz
Possible standard auxiliary switch	Z-NHK	Z-NHK
Mechanical		
Frame size	45 mm	45 mm
Device height	105 mm	105 mm
Device width	17.5 mm (1MU)	17.5 mm (1MJ)
Mounting	quick fastening with 2 lock-in positions on DIN rail EN 50022	quick fastening with 2 lock-in positions on DIN rail EN 50022
Degree of protection, built-in	IP40	IP40
Terminal protection	finger and hand-touch safe according to BGV A3, ÖVE-EN 6	finger and hand-touch safe according to BGV A3, ÖVE-EN 6
Terminals	box/lift	box/lift
Terminal capacity 1 and 2 wires	AWG 18-10	AWG 18-10

Bus Bar

	Z-SV/UL-16
Electrical	
Rated voltage	690V
Rated current	80A
Short-circuit strength	< 25 kA
Overvoltage category	III
Impulse voltage strength	≥ 9.5 kV
Mechanical	
Bus bar cross-section	16 mm² Cu
Step distance	17.6 mm
Climatic stability	according to DIN EN 60068
Flame class according to UL	V0/0.4 mm
Pollution degree	2

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