

## Supplementary Protectors / Miniature Circuit Breakers

### Technical Data

Supplementary protectors				FAZ
<b>General</b>				
IEC Standards	B, C, D characteristics			IEC/EN 60 898, VDE 0641, DIN 43 880
	S, R characteristics			IEC/EN 60 947-2, VDE 0660 part 1, DIN 43 880
UL/CSA Standards				UL 1077, CSA 22.2 No. 235, UL 489 <sup>2)</sup>
Ambient temperature		min./max.	°C	-5/+40
Influence of ambient temperature on rated current	(reference 30 °C)		%/K	consult Moeller Electric
Mechanical shock resistance (shock duration 20 ms)			g	10
Mounting position / direction of incoming supply				as required
Protection against electric shock to IEC 536				finger and back of hand safe
Degree of protection (terminals)				IP 20 (IP 00)
Dimensions				→ page 10/018
Weight per pole			kg	0,12
IEC terminal capacity <sup>1)</sup>	solid or stranded	min./max.	mm <sup>2</sup>	1 – 25; 2 × (1 – 10)
Tightening torque			Nm	2.4
UL/CSA Terminal capacity		min./max.	AWG	18 ... 8, Cu only, 75°C
Tightening torque UL/CSA wire			Nm	2.4
<b>Contacts</b>				
Rated current $I_n$ = rated uninterrupted current $I_u$			A	UL/CSA: 0.5 - 40; IEC: 0.5 – 63
Rated impulse withstand voltage $U_{imp}$			V	4000
Rated insulation voltage $U_i$			V AC	440
Overvoltage category / pollution degree				III/3
IEC Rated operational voltage $U_e$			V AC	230 / 400; 240 / 415
UL/CSA Rated voltage	single pole / multi pole		V AC	277 / 480
	DC max. voltage per pole		V DC	40
Rated frequency			Hz	50 – 60
<b>Switching capacity</b>				
Short-circuit current rating UL 1077 / CSA 22.2 No. 235	277/480 V AC		B, C, R, S one pole	kA
			B, C, R, S multi-pole	kA
Rated short-circuit breaking capacity $I_{cn}$ IEC/EN 60 898, VDE 0641	230/400 V AC		B, C, D 0,5 – 50	kA
	240/415 V AC		B, C 63	kA
	48 V DC (T = 4ms)		B, C, D 0,5 – 50	kA
			B, C 63	kA
Rated ultimate short-circuit breaking capacity $I_{cu}$ IEC/EN 60 947-2	230/400 V AC		B, C, D 0,5 – 63	kA/cos $\varphi$
			C, D 80/100	kA/cos $\varphi$
			C 125	kA/cos $\varphi$
			R 6 – 50	kA/cos $\varphi$
			S 1 – 16	kA/cos $\varphi$
	up to 250 V DC		1 pole	kA
	up to 500 V DC		2 pole	kA
Mechanical lifespan (1 operation = 2 switching movements)			operations	≥ 7000
<b>Selectivity</b>				
Current limiting class to VDE 0641 B, C, D characteristic	0,5 – 32 A			3
<b>Back-up protection</b>				
with IEC NH type fuses, characteristic gG/gL rated 100A			kA	≥ 10

**Notes**

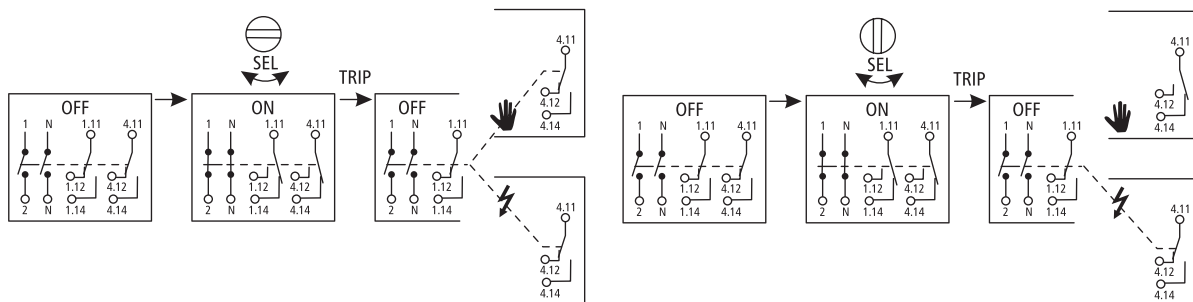
- <sup>1)</sup> when using 2 conductors, the maximum permissible difference is one size  
<sup>2)</sup> for NA devices only

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Auxiliary contacts, voltage trips				FAZ-XHI11	FAZ-XAM002	FAZ-XUA	FAZ-XAA	
<b>General</b>								
Degree of protection (terminals)				IP 20 (IP 00)				
Dimensions				→ page 10/018				
Weight				kg	0.045	0.045	0.155	0.155
Terminal capacity								
IEC	solid, stranded	min./max.	mm <sup>2</sup>	1 x (0.5 - 2.5)	1 x (0.5 - 2.5)	1 x (0.5 - 4)	1 x (1 - 25)	
				2 x (0.5 - 2.5)	2 x (0.5 - 2.5)	2 x (0.5 - 2.5)	2 x (1 - 4)	
Tightening torque				Nm	0.8	0.8	0.8	2.4
UL / CSA		min./max.	AWG	18 ... 14, Cu only 75°C				
			Tightening torque	Nm	0.8	0.8	0.8	2.4
<b>Auxiliary contacts</b>								
Rated insulation voltage $U_i$				V AC	440	250	440	440
Rated operational voltage $I_e$								
AC-12	250 V	A		–	2	–	–	
				–	2	–	–	
				3	–	–	–	
				–	–	–	–	
AC-13	230 V	A		–	–	–	–	
				–	–	–	–	
				–	–	–	–	
AC-15	230 V	A		2	1	–	–	
				–	–	–	–	
				–	–	–	–	
DC-12	110 V	A		0.5	0.5	–	–	
				–	–	–	–	
DC-13	60 V	A		–	–	–	–	
				–	–	–	–	
				–	–	–	–	
DC-13	110 V	A		–	–	–	–	
				–	–	–	–	
				–	–	–	–	
DC-13	230 V	A		–	–	–	–	
				–	–	–	–	
				–	–	–	–	
Safe isolation to IEC 536 between auxiliary contacts and main contacts				V AC	440	440	–	–
Min. operational voltage $U_e$ (AC/DC)				V/mA	5/10	5/10	–	–
Min. pulse duration				ms	–	–	–	>15
Min. command time				ms	–	–	–	≤100 ms
Max. short-circuit protection device								
fuseless	type			FAZ-B4HI	FAZ-B4HI	–	–	
				–	–	–	–	
fuse	gL/gG	A		6	6	inherently	inherently	
				–	–	–	–	
Mechanical lifespan				operations	≥6000	≥6000	≥10000	≥4000
<b>Coil</b>								
Rated operational voltage $U_e$				V	–	–	115 V AC	110 – 415 V AC
				V	–	–	230 V AC	110 – 230 V DC
				V	–	–	400 V AC	12 – 110 V AC
				V	–	–	–	12 – 60 V DC
Undervoltage trip								
drop-out voltage				× $U_s$	–	–	0.7 – 0.35	–
inrush current				pick-up	A (AC/DC)	–	3.6/44	–
Shunt trip								
voltage range				× $U_s$	–	–	–	0.7 – 1.1
inrush current				Anzug	A (AC)	–	–	25/12 ms
				A (DC)	–	–	–	15/3 ms

**Notes:** <sup>1)</sup> FAZ-XAM002 contact is supplied with two contacts: one standard auxiliary contact, and contact 4.11 - 4.12/4.14 is convertible from a standard auxiliary contact to a trip indicating auxiliary contact, via a yellow selector screw.



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### Influence of the ambient temperature on the thermal tripping characteristic

The table shows the corrected values of the rated current dependent on the ambient temperature.

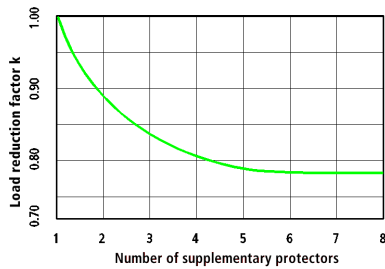
Example:

To maintain the specified tripping times at an ambient temperature of 60 °C with rated current 10 A, a supplementary protector suitable for 16 A must be used.

FAZ B, C, D, R, S	Rated heat dissipation per pole			Reference temperature	Ambient temperature						
	B, C, D [W]	R [W]	S [W]		30 °C	35 °C	40 °C	45 °C	50 °C	55 °C	60 °C
$I_n$ [A]											
0,5	1.2	-	-	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,4
1	1.3	-	1.6	1	1,0	1,0	0,9	0,9	0,9	0,9	0,9
2	1.4	2.6	1.0	2	2,0	1,9	1,9	1,8	1,8	1,8	1,8
3	1.2	2.6	1.4	3	2,9	2,9	2,8	2,8	2,8	2,7	2,6
4	1.2	2.7	1.6	4	3,9	3,8	3,8	3,7	3,7	3,6	3,5
6	1.8	2.8	2.4	6	5,9	5,8	5,6	5,5	5,4	5,3	5,3
10	2.1	2.9	1.6	10	9,8	9,6	9,4	9,2	9,0	8,8	8,8
13	2.3	3.2	-	13	12,7	12,5	12,2	12,0	11,7	11,4	11,4
16	2.0	2.6	2.2	16	15,7	15,4	15,0	14,7	14,4	14,1	14,1
20	2.9	3.4	-	20	19,6	19,2	18,8	18,4	18,0	17,6	17,6
25	3.1	3.3	-	25	24,5	24,0	23,5	23,0	22,5	22,0	22,0
32	3.1	3.6	-	32	31,4	30,7	30,1	29,4	28,8	28,2	28,2
40	4.2	4.3	-	40	39,2	38,4	37,6	36,8	36,0	35,2	35,2

### Load reduction factors for adjoining supplementary protectors

Correction factor k, to be applied when FAZ supplementary protectors are mounted side by side at rated load ( $I_n$ ).



### Maximum possible combinations for mounting auxiliary contacts and voltage trips to FAZ supplementary protectors

FAZ-XHI11	FAZ-XAM002	FAZ/XAA	FAZ/XUA
●	-	●	-
-	●	●	-
-	-	-	●