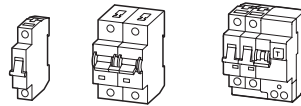


FAZ Supplementary Protectors, FAZ Miniature Circuit Breakers, P2 Disconnect Switches Overview

Supplementary Protectors / Miniature Circuit Breakers



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FAZ supplementary protectors	10/004
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Disconnect Switches

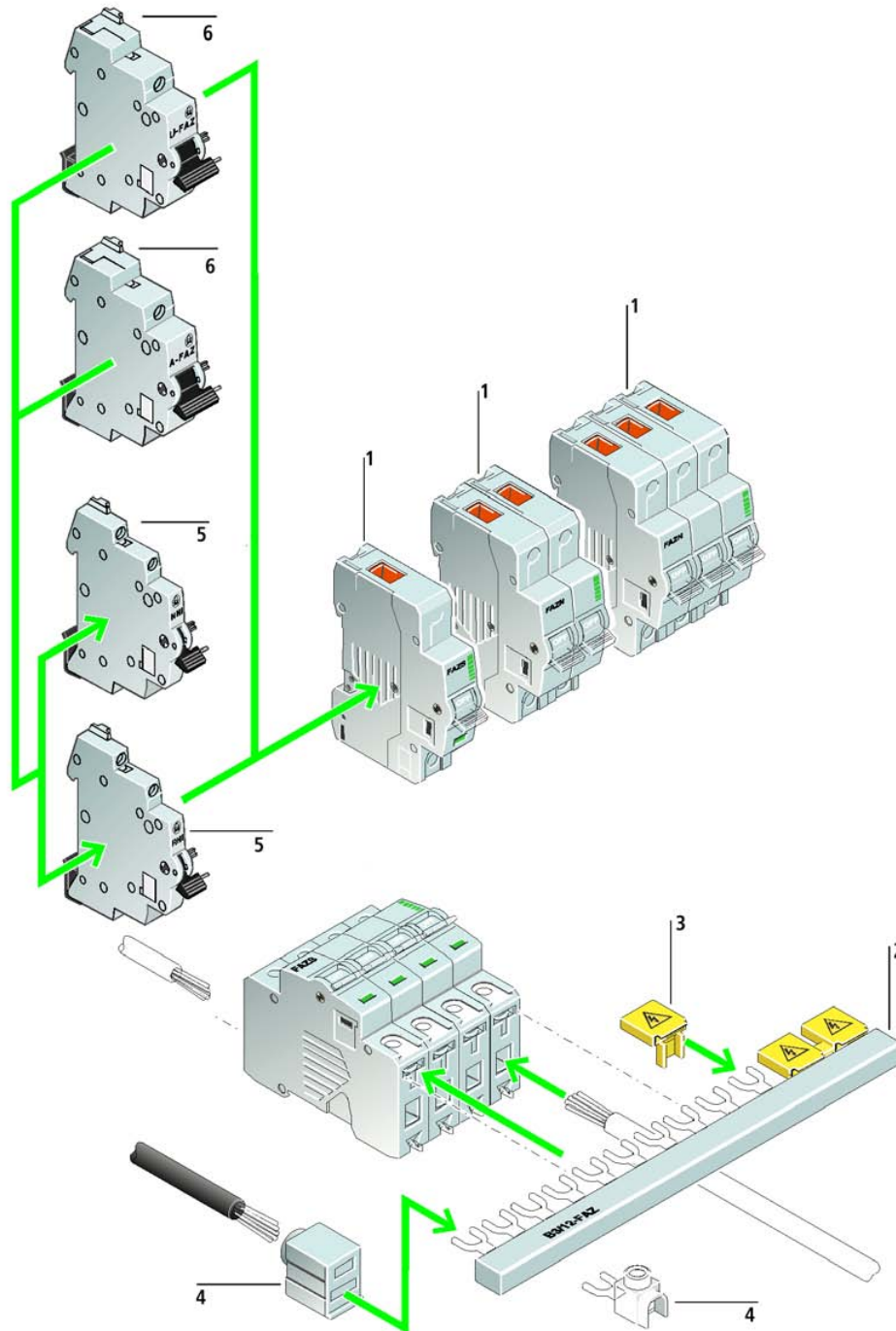
	Page
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FAZ Supplementary Protectors / Miniature Circuit Breakers

System Overview

UL / CSA ; IEC / EN 60 898 ; CE

Supplementary Protectors, Miniature
Circuit Breakers, Disconnect Switches



FAZ Supplementary Protectors / Miniature Circuit Breakers

System Overview

UL / CSA ; IEC / EN 60 898 ; CE

Basic devices

FAZ Supplementary protectors 1

Available in single or multipole

B trip characteristic for resistive or slightly inductive loads

C trip characteristic for inductive loads

D trip characteristic for highly inductive loads

R trip characteristic for circuits where a low instantaneous trip response is desired

S trip characteristic for protection of control circuits and higher inrush loads

1-, 1N-, 2-, 3-, 3N-, pole
(S:1-, 2-pole; R:1-, 2-, 3-pole)

Meets UL 1077 / CSA 22.2 No. 235.

In conformity with IEC/EN 60 898.

CE marked.

AC ratings up to 40 A.

→ page 10/004

FAZ Miniature circuit breakers 1

Characteristic/rated current ranges

B/4 - 63 A; C/0.5 - 63A; S/1 - 16 A;

R/2 - 50 A; D/6 - 40 A

Switching capacity:

10 kA to IEC/EN 60 898

B, C, D characteristics

4.5 kA to IEC/EN 60 947-2

S characteristic

6 kA to IEC/EN 60 947-2

R characteristic

1-, 1N-, 2-, 3-, 3N-, pole
(S:1-, 2-pole; R:1-, 2-, 3-pole)

Selected range available in conformity with UL 489 circuit breaker standard.

→ page 10/004

Add-on functions

Auxiliary contact modules 5

Standard auxiliary contacts

Trip-indicating auxiliary contacts

1 N.O. and 1 N.C. set of contacts

Field-installable or supplied with device

Finger-safe design protects against shock hazards

Mounts to the side

Module width is half the size of a single pole.

→ page 10/010

Voltage trips 6

Undervoltage trip

Shunt trip

Field-installable or supplied with device

Mounts to the side

Module width is equal to that of a single pole.

→ page 10/010

Feeder bus connectors 2

for single pole and multipole

Will supply from 2 to 12 supplementary protector poles

Can be joined to accommodate more units

Finger safe design

Available for supplementary protectors with or without auxiliary contact modules

→ page 10/011

Protective covers 3

Slip-on covers for unused terminals on the feeder bus connector to provide protection against shock hazards

→ page 10/010

Incoming supply terminal 4




Accommodates conductor cross-sections up to 35 mm² (~ AWG 2)

Finger-safe design protects against shock hazards

→ page 10/010

Supplementary Protectors FAZ-B(-C)...

Miniature Circuit Breakers FAZ-B(-C)...

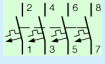

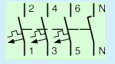
		1 pole		2 poles with 2 protected poles		3 poles with 3 protected poles			
									
Trip characteristic	Continuous current rating I_n A	Type	Price	Type	Price	Type	Price		
		Article No.	see price list	Article No.	see price list	Article No.	see price list		
Supplementary protector									
B Response time of instantaneous trip: $3 - 5 \times I_n$ current rating	6	FAZ-B6 211352		FAZ-2-B6 211353		FAZ-3-B6 211354			
	10	FAZ-B10 211358		FAZ-2-B10 211359		FAZ-3-B10 211360			
	13	FAZ-B13 211364		FAZ-2-B13 211365		FAZ-3-B13 211366			
	For resistive or slightly inductive loads	16	FAZ-B16 211370		FAZ-2-B16 211371		FAZ-3-B16 211372		
		20	FAZ-B20 211376		FAZ-2-B20 211377		FAZ-3-B20 211378		
		25	FAZ-B25 211382		FAZ-2-B25 211383		FAZ-3-B25 211384		
		32	FAZ-B32 211388		FAZ-2-B32 211389		FAZ-3-B32 211390		
		40	FAZ-B40 211394		FAZ-2-B40 211395		FAZ-3-B40 211396		
		C Response time of instantaneous trip: $5 - 10 \times I_n$ current rating	0,5	FAZ-C0,5 211474		FAZ-2-C0,5 211475		FAZ-3-C0,5 211476	
			1	FAZ-C1 211480		FAZ-2-C1 211481		FAZ-3-C1 211482	
2	FAZ-C2 211486			FAZ-2-C2 211487		FAZ-3-C2 211488			
For inductive loads	3		FAZ-C3 211492		FAZ-2-C3 211493		FAZ-3-C3 211494		
	4		FAZ-C4 211498		FAZ-2-C4 211499		FAZ-3-C4 211500		
	6		FAZ-C6 211504		FAZ-2-C6 211505		FAZ-3-C6 211506		
	10		FAZ-C10 211510		FAZ-2-C10 211511		FAZ-3-C10 211512		
	13		FAZ-C13 211516		FAZ-2-C13 211517		FAZ-3-C13 211518		
	16		FAZ-C16 211522		FAZ-2-C16 211523		FAZ-3-C16 211524		
	20		FAZ-C20 211528		FAZ-2-C20 211529		FAZ-3-C20 211530		
	25	FAZ-C25 211534		FAZ-2-C25 211535		FAZ-3-C25 211536			
32	FAZ-C32 211540		FAZ-2-C32 211541		FAZ-3-C32 211542				
40	FAZ-C40 211546		FAZ-2-C40 211547		FAZ-3-C40 211548				

Notes:

FAZ... components are single-pole and multi-pole thermal magnetic protective devices which can be used both internationally and domestically:

- Internationally, FAZ-B... and FAZ-C... switches are in conformity with IEC/EN 60 898 and are referred to and commonly applied as Miniature Circuit Breakers in electrical circuits.
- In North America, FAZ-B... and FAZ-C... switches are UL recognized and CSA certified as Supplementary Protectors. Per the intent of NEC (National Electrical Code), article 240, and CEC (Canadian Electrical Code), part 1 C22.1, supplementary protectors cannot be used as a substitute for the branch circuit protective device. They can be used to provide overcurrent protection within an appliance or other electrical equipment where branch circuit overcurrent protection is already provided, or is not required.

Supplementary Protectors FAZ-B(-C)... Miniature Circuit Breakers FAZ-B(-C)...

4 poles with 4 protected poles		2 poles with 1 protected pole N switching with pole		4 poles with 3 protected poles N switching with pole	
					
Type	Price	Type	Price	Type	Price
Article No.	see price list	Article No.	see price list	Article No.	see price list
FAZ-4-B6 211355		FAZ-1N-B6 211356		FAZ-3N-B6 211357	
FAZ-4-B10 211361		FAZ-1N-B10 211362		FAZ-3N-B10 211363	
FAZ-4-B13 211367		FAZ-1N-B13 211368		FAZ-3N-B13 211369	
FAZ-4-B16 211373		FAZ-1N-B16 211374		FAZ-3N-B16 211375	
FAZ-4-B20 211379		FAZ-1N-B20 211380		FAZ-3N-B20 211381	
FAZ-4-B25 211385		FAZ-1N-B25 211386		FAZ-3N-B25 211387	
FAZ-4-B32 211391		FAZ-1N-B32 211392		FAZ-3N-B32 211393	
FAZ-4-B40 211397		FAZ-1N-B40 211398		FAZ-3N-B40 211399	
FAZ-4-C0,5 211477		FAZ-1N-C0,5 211478		FAZ-3N-C0,5 211479	
FAZ-4-C1 211483		FAZ-1N-C1 211484		FAZ-3N-C1 211485	
FAZ-4-C2 211489		FAZ-1N-C2 211490		FAZ-3N-C2 211491	
FAZ-4-C3 211495		FAZ-1N-C3 211496		FAZ-3N-C3 211497	
FAZ-4-C4 211501		FAZ-1N-C4 211502		FAZ-3N-C4 211503	
FAZ-4-C6 211507		FAZ-1N-C6 211508		FAZ-3N-C6 211509	
FAZ-4-C10 211513		FAZ-1N-C10 211514		FAZ-3N-C10 211515	
FAZ-4-C13 211519		FAZ-1N-C13 211520		FAZ-3N-C13 211521	
FAZ-4-C16 211525		FAZ-1N-C16 211526		FAZ-3N-C16 211527	
FAZ-4-C20 211531		FAZ-1N-C20 211532		FAZ-3N-C20 211533	
FAZ-4-C25 211537		FAZ-1N-C25 211538		FAZ-3N-C25 211539	
FAZ-4-C32 211543		FAZ-1N-C32 211544		FAZ-3N-C32 211545	
FAZ-4-C40 211549		FAZ-1N-C40 211550		FAZ-3N-C40 211551	

Notes:

Accessories	Page
Auxiliary contacts	10/010
Voltage trips	10/010

1 pole
depth 71 mm
width 17,5 mm



2 pole
depth 71 mm
width 35 mm



3 pole
depth 71 mm
width 52,5 mm






4 pole
depth 71 mm
width 70 mm



Supplementary Protectors FAZ-D(-S)(-R)...

Miniature Circuit Breakers FAZ-D(-S)(-R)...


		1 pole		2 pole with 2 protected poles		3 pole with 3 protected poles	
							
Trip characteristic	Continuous current rating I_n A	Type	Price	Type	Price	Type	Price
		Article No.	see price list	Article No.	see price list	Article No.	see price list
Supplementary protector FAZ							
D Response time of instantaneous trip: 10–20 × I_n current rating For highly inductive loads	6	FAZ-D6 214572		FAZ-2-D6 214573		FAZ-3-D6 214574	
	10	FAZ-D10 214577		FAZ-2-D10 214578		FAZ-3-D10 214579	
	13	FAZ-D13 214582		FAZ-2-D13 214583		FAZ-3-D13 214584	
	16	FAZ-D16 214587		FAZ-2-D16 214588		FAZ-3-D16 214589	
	20	FAZ-D20 214592		FAZ-2-D20 214593		FAZ-3-D20 214594	
	25	FAZ-D25 214597		FAZ-2-D25 214598		FAZ-3-D25 214599	
S Response time of instantaneous trip: 13–17 × I_n current rating For control circuits and highly inductive loads	1	FAZ-S1 211739		FAZ-2-S1 211740		–	
	2	FAZ-S2 211741		FAZ-2-S2 211742		–	
	3	FAZ-S3 211743		FAZ-2-S3 211744		–	
	4	FAZ-S4 211745		FAZ-2-S4 211746		–	
	6	FAZ-S6 211747		FAZ-2-S6 211748		–	
	10	FAZ-S10 211749		FAZ-2-S10 211750		–	
	16	FAZ-S16 211751		FAZ-2-S16 211752		–	
R Response time of instantaneous trip 2–3 × I_n current rating For resistive loads	6	FAZ-R6 211712		FAZ-2-R6 211713		FAZ-3-R6 211714	
	10	FAZ-R10 211715		FAZ-2-R10 211716		FAZ-3-R10 211717	
	13	FAZ-R13 211718		FAZ-2-R13 211719		FAZ-3-R13 211720	
	16	FAZ-R16 211721		FAZ-2-R16 211722		FAZ-3-R16 211723	
	20	FAZ-R20 211724		FAZ-2-R20 211725		FAZ-3-R20 211726	
	25	FAZ-R25 211727		FAZ-2-R25 211728		FAZ-3-R25 211729	
	32	FAZ-R32 211730		FAZ-2-R32 211731		FAZ-3-R32 211732	
	40	FAZ-R40 211733		FAZ-2-R40 211734		FAZ-3-R40 211735	

Notes:

FAZ... components are single-pole and multi-pole thermal magnetic protective devices which can be used both internationally and domestically:

- Internationally, FAZ-D... switches are in conformity with IEC/EN 60 898 and are referred to and commonly applied as Miniature Circuit Breakers in electrical circuits.
- The tripping characteristics of FAZ-S... and FAZ-R... devices are in conformity with IEC/EN 60 947-2 (circuit breakers).
- In North America, FAZ-S... switches (specifically geared towards the protection of control circuits and other more inductive loads), FAZ-R... (for more resistive loads) and FAZ-D... (for highly inductive loads) are UL recognized and CSA certified as Supplementary Protectors. Per the intent of NEC (National Electrical Code), article 240, and CEC (Canadian Electrical Code), part 1 C22.1, they cannot be used as a substitute for the branch circuit protective device. They can be used to provide over-current protection within an appliance or other electrical equipment where branch circuit overcurrent protection is already provided, or is not required.

Miniature Circuit Breakers FAZ-B(-C)...

		1 pole	
			
Trip characteristic	Continuous current rating I_n A	Type Article No.	Price see price list
UL 489 Miniature circuit breaker			
B	0.5	FAZ-B0.5-NA 263490	
Response time of instantaneous trip:	1	FAZ-B1-NA 263491	
$3 - 5 \times I_n$ current rating	1.5	FAZ-B1.5-NA 263492	
For resistive or slightly inductive loads	2	FAZ-B2-NA 263493	
	3	FAZ-B3-NA 263494	
	4	FAZ-B4-NA 263495	
	5	FAZ-B5-NA 263496	
	6	FAZ-B6-NA 232304	
	7	FAZ-B7-NA 263497	
	10	FAZ-B10-NA 232305	
	13	FAZ-B13-NA 232306	
	15	FAZ-B15-NA 263498	
	16	FAZ-B16-NA 232307	
20	FAZ-B20-NA 232308		

Notes:

- In North America, FAZ...-NA switches are UL 489 listed as molded case circuit breakers. Per the intent of the NEC (National Electric Code), the FAZ...-NA switches can be used as a branch circuit protective device.

Miniature Circuit Breakers FAZ-B(-C)...

Supplementary Protectors, Miniature Circuit Breakers, Disconnect Switches

		1 pole	
Trip characteristic	Continuous current rating I_n A	Type	Price
		Article No.	see price list
UL 489 Miniature circuit breaker			
C	0.5	FAZ-C0.5-NA 232309	
Response time of instantaneous trip: $5 - 10 \times I_n$ current rating	1	FAZ-C1-NA 232310	
	1.5	FAZ-C1.5-NA 263500	
For inductive loads	2	FAZ-C2-NA 232311	
	3	FAZ-C3-NA 232312	
	4	FAZ-C4-NA 232313	
	5	FAZ-C5-NA 263501	
	6	FAZ-C6-NA 232314	
	7	FAZ-C7-NA 263502	
	10	FAZ-C10-NA 223513	
	13	FAZ-C13-NA 232315	
	15	FAZ-C15-NA 263503	
	16	FAZ-C16-NA 223514	
	20	FAZ-C20-NA 223515	

Notes:

Accessories	Page
Auxiliary contacts	10/010
Voltage trips	10/010

1 pole
depth 71 mm
width 17,5 mm


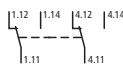





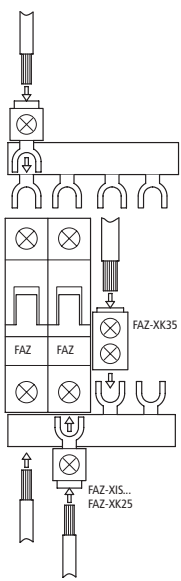


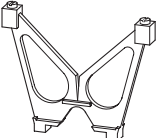
Notes:

- In North America, FAZ...-NA switches are UL 489 listed as molded case circuit breakers.
Per the intent of the NEC (National Electric Code), the FAZ...-NA switches can be used as a branch circuit protective device.

Accessories for Supplementary Protectors / Miniature Circuit Breakers

Auxiliary Contacts, Voltage Trips

Contact sequence	Contacts	Rated operational voltage	Width, relative to a single-pole switch	Type Suffix when ordered with basic device Article No.	Price see price list	Type when ordered separately Article No.	Price see price list
Auxiliary contacts and voltage trips							
Standard auxiliary contact 	1 N.O. / 1 N.C.	230V AC	0,5	-		FAZ-XH11 262413	
Trip-indicating auxiliary contact convertible to standard auxiliary contact 	2 form C (change-over) contacts	230 V AC	0,5	-		FAZ-XAM002 ¹⁾ 262414	
Undervoltage trips 		115 V AC	1	+FAZ-XUA(115VAC) 212050		FAZ-XUA(115VAC) 212049	
		230 V AC	1	+FAZ-XUA(230VAC) 212052		FAZ-XUA(230VAC) 212051	
		400 V AC	1	+FAZ-XUA(400VAC) 212054		FAZ-XUA(400VAC) 212053	
Shunt trips 		110 - 415 V AC 110 - 230 V DC	1	+FAZ-XAA (110-415VAC) 212056		FAZ-XAA (110-415VAC) 212055	
		12 - 110 V AC 12 - 60 V DC	1	+FAZ-XAA (12-110VAC) 212058		FAZ-XAA (12-110VAC) 212057	



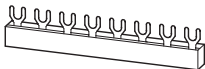
	Type Article No.	Price see price list	
Incoming supply terminals ²⁾			
Fork connector 	for conductors up to 25 mm ² (~ AWG 4) Finger safe connection FAZ-XK25 212116		
Bus connector 	for conductors up to 35 mm ² (~ AWG 2) Finger safe connection to FAZ-XIS... FAZ-XK35 212119		
Protective cover ²⁾ for covering unused terminals on the busbar 	FAZ-XBS 212120		
Bracket for securing the covers 	2 required per group of supplementary protectors REG-BB 212106		

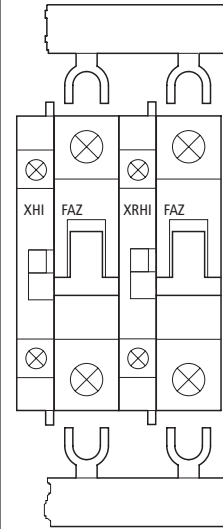
Notes:

- FAZ-XAM002 contact is supplied with two contacts: one standard auxiliary contact, whereas contact 4.11 - 4.12/4.14 is convertible from a standard auxiliary to a trip-indicating auxiliary, via a yellow selector screw.
- UL/CSA approval pending - please inquire.

Supplementary Protectors / Miniature Circuit Breakers FAZ Accessories

Supplementary Protectors, Miniature Circuit Breakers, Disconnect Switches

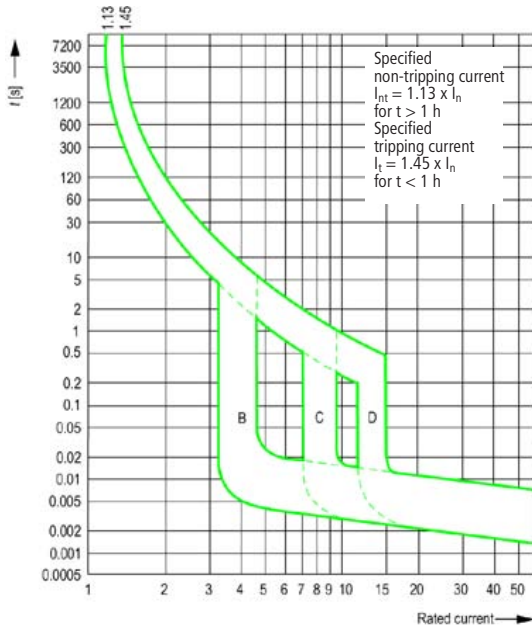
	Number of poles	Number of terminals	Rated operational current I_e A	Type Article No.	Price see price list	
Feeder bus connectors ¹⁾						
Fork terminals						
without auxiliary contact spacing						
	1	2	85	FAZ-XIS1/2 212121		$I_e = 85$ A, terminal capacity 25 mm ² (~ AWG 4) at ambient temperature 50 °C $I_e = 100$ A, terminal capacity 35 mm ² (~ AWG 2) at ambient temperature 50 °C $I_e = 120$ A, terminal capacity 35 mm ² (~ AWG 2) at ambient temperature 40 °C
	1	6	85	FAZ-XIS1/6 212122		
	1	12	85	FAZ-XIS1/12 212123		
	2	4	120	FAZ-XIS2/4 212124		
	2	6	120	FAZ-XIS2/6 212125		
	2	12	120	FAZ-XIS2/12 212126		
	3	6	120	FAZ-XIS3/6 212127		
	3	12	120	FAZ-XIS3/12 212128		
	4	8	120	FAZ-XIS4/8 212129		
	4	12	120	FAZ-XIS4/12 212130		
with auxiliary contact spacing						
	1	2	85	FAZ-XIS1/2-HI 212131		
	1	6	85	FAZ-XIS1/6-HI 212132		
	1	9	85	FAZ-XIS1/9-HI 212133		
	2	4	120	FAZ-XIS2/4-HI 212134		
	2	6	120	FAZ-XIS2/6-HI 212135		
	2	10	120	FAZ-XIS2/10-HI 212136		
	3	6	120	FAZ-XIS3/6-HI 212137		
	3	12	120	FAZ-XIS3/12-HI 212138		
	3 ²⁾	6	120	FAZ-XIS31/6-HI 212139		
	3 ²⁾	8	120	FAZ-XIS31/8-HI 212140		
	3 ²⁾	9	120	FAZ-XIS31/9-HI 212141		



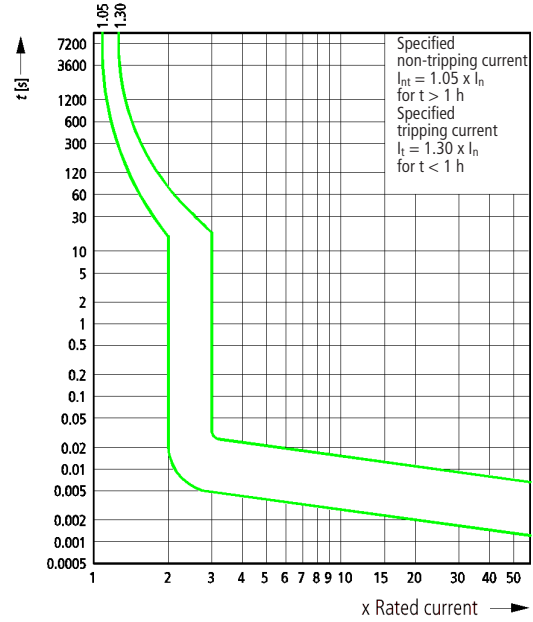
Notes ¹⁾ UL/CSA approval pending - please inquire
²⁾ 1 auxiliary contact per pole

FAZ Supplementary Protectors Tripping Characteristics

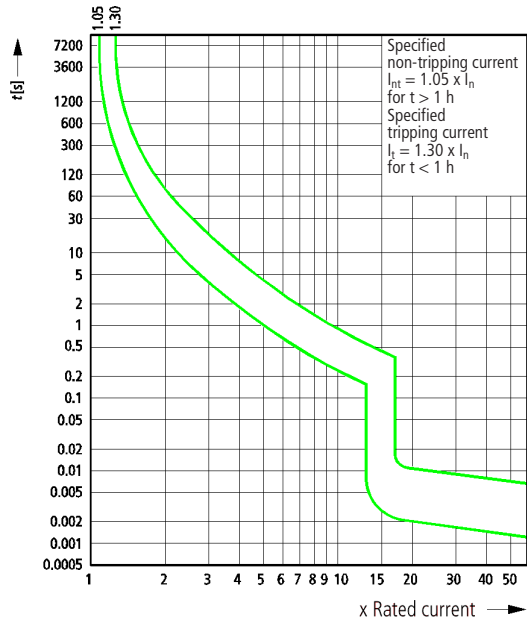
FAZ tripping characteristics at 30 °C: B, C, D to IEC/EN 60 898



FAZ tripping characteristics at 30 °C: R to IEC/EN 60 947



FAZ tripping characteristics at 30 °C: S to IEC/EN 60 947

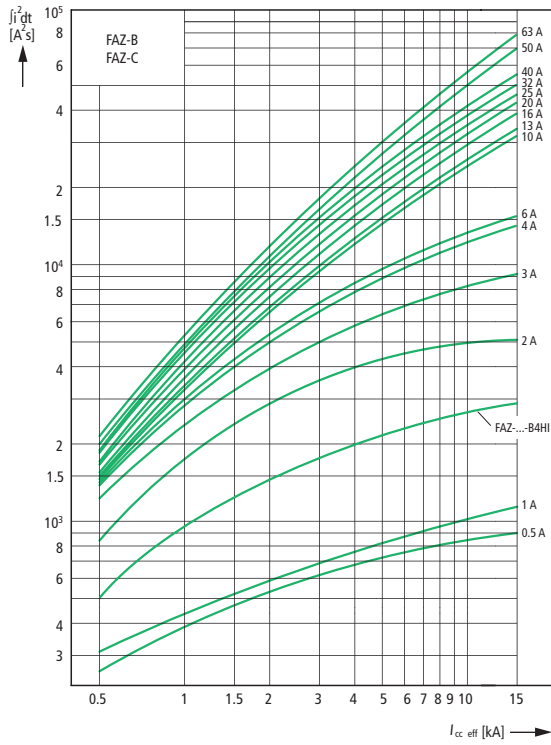


FAZ Supplementary Protectors

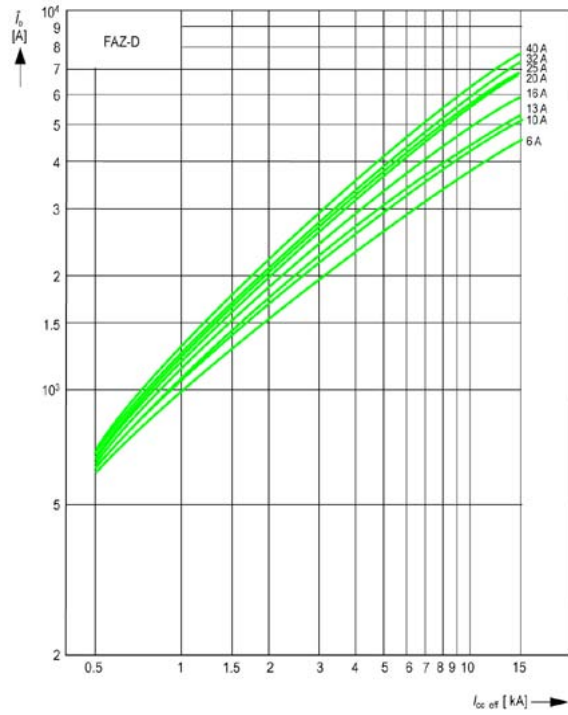
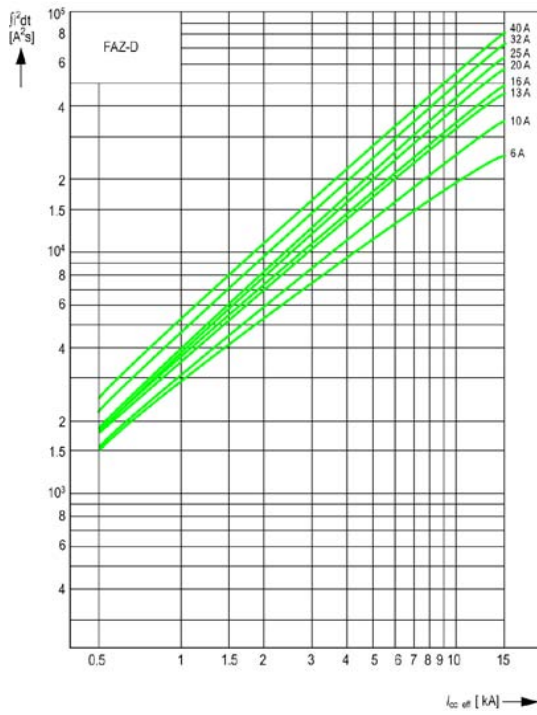
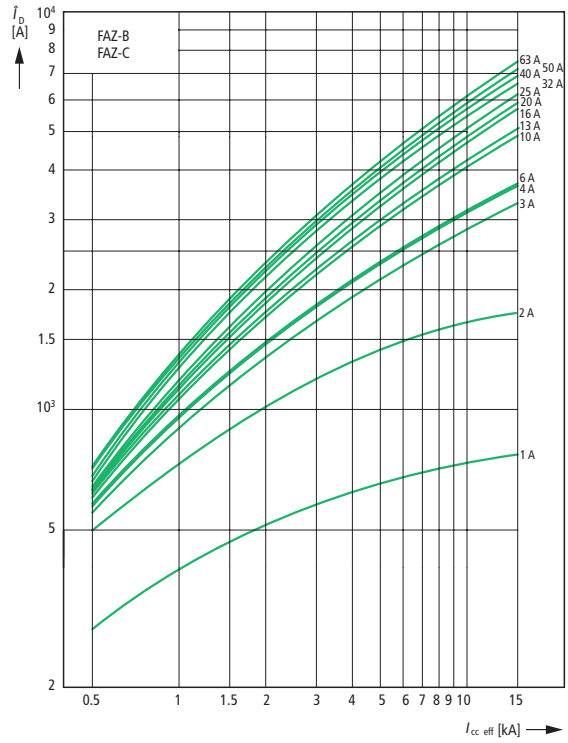
Let-through characteristics

Let-through energy I^2t / Let-through current \hat{I}_D
 Determined in accordance with IEC/EN 60 898

Let-through energy I^2t



Let-through current \hat{I}_D

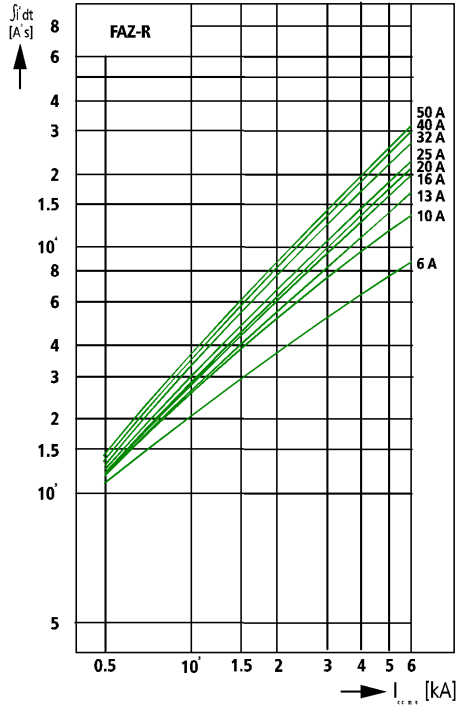


FAZ Supplementary Protectors

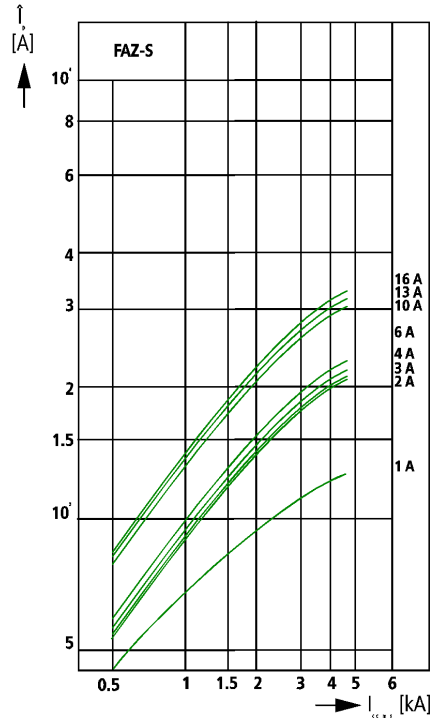
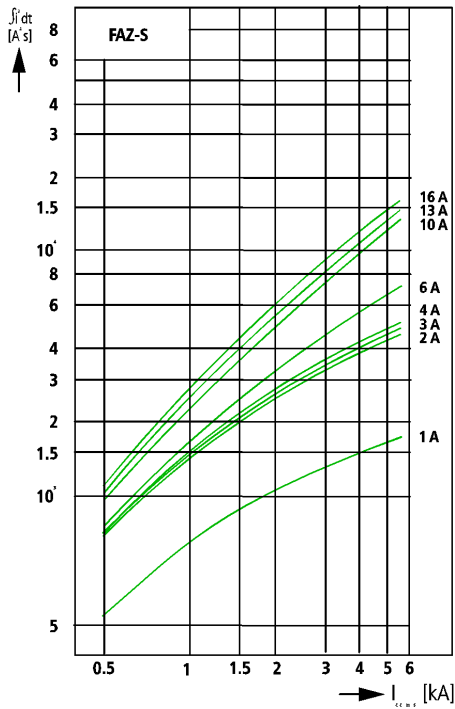
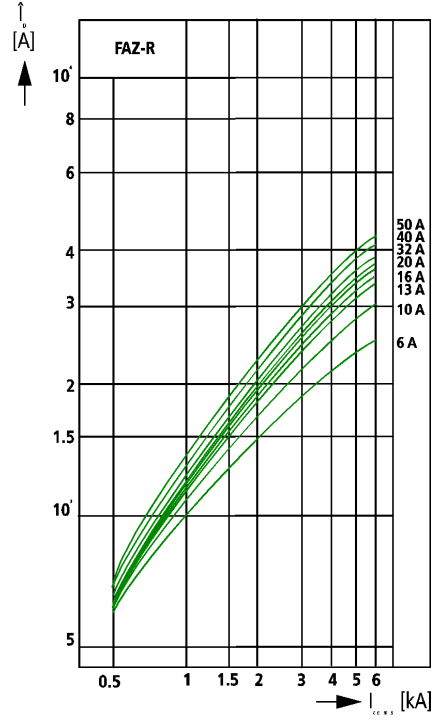
Let-through characteristics

Let-through energy I^2t / Let-through current \hat{I}_D
Determined in accordance with IEC/EN 60 898

Let-through energy I^2t



Let-through current \hat{I}_D



Supplementary Protectors / Miniature Circuit Breakers

Technical Data

Supplementary protectors				FAZ
General				
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 ²⁾
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 ¹⁾	solid or stranded	min./max.	mm ²	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
Contacts				
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
Overtoltage 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
Switching capacity				
Short-circuit current rating UL 1077 / CSA 22.2 No. 235				
	277/480 V AC	B, C, R, S one pole	kA	5
		B, C, R, S multi-pole	kA	5
Rated short-circuit breaking capacity I_{cn} IEC/EN 60 898, VDE 0641				
	230/400 V AC	B, C, D 0,5 – 50	kA	10/10
	240/415 V AC	B, C 63	kA	10/8
	48 V DC (T = 4ms)	B, C, D 0,5 – 50	kA	10
		B, C 63	kA	8
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 φ	15/0.5
		C, D 80/100	kA/cos φ	–
		C 125	kA/cos φ	–
		R 6 – 50	kA/cos φ	6/0.7
		S 1 – 16	kA/cos φ	4.5/0.8
	up to 250 V DC	1 pole	kA	6
	up to 500 V DC	2 pole	kA	6
Mechanical lifespan (1 operation = 2 switching movements)		operations		≥ 7000
Selectivity				
Current limiting class to VDE 0641 B, C, D characteristic		0,5 – 32 A		3
Back-up protection				
with IEC NH type fuses, characteristic gG/gL rated 100A			kA	≥ 10

Notes
¹⁾ when using 2 conductors, the maximum permissible difference is one size

²⁾ for NA devices only

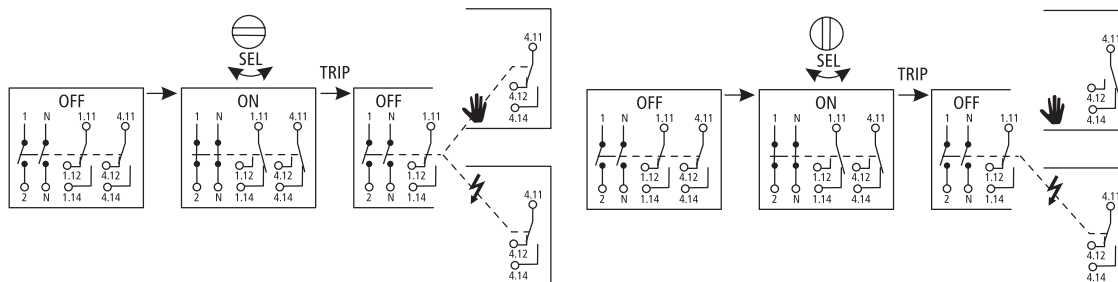
Supplementary Protectors / Miniature Circuit Breakers

Technical Data

Auxiliary contacts, voltage trips				FAZ-XHI11	FAZ-XAM002	FAZ-XUA	FAZ-XAA	
General								
Degree of protection (terminals)				IP 20 (IP 00)				
Dimensions				→ page 10/018				
Weight				kg	0.045	0.155	0.155	
Terminal capacity								
IEC	solid, stranded	min./max.	mm ²	1 x (0.5 - 2.5) 2 x (0.5 - 2.5)	1 x (0.5 - 2.5) 2 x (0.5 - 2.5)	1 x (0.5 - 4) 2 x (0.5 - 2.5)	1 x (1 - 25) 2 x (1 - 4)	
Tightening torque				Nm	0.8	0.8	2.4	
UL/CSA		min./max.	AWG	18 ... 14, Cu only 75°C				
Tightening torque				Nm	0.8	0.8	2.4	
Auxiliary contacts								
Rated insulation voltage U_i				V AC	440	250	440	440
Rated operational voltage I_e								
	AC-12	250 V	A	–	2	–	–	
	AC-13	230 V	A	–	2	–	–	
		250 V	A	3	–	–	–	
		440 V	A	–	–	–	–	
	AC-15	230 V	A	2	1	–	–	
	DC-12	110 V	A	0.5	0.5	–	–	
		110 V	A	–	–	–	–	
		230 V	A	–	–	–	–	
	DC-13	110 V	A	–	–	–	–	
		110 V	A	–	–	–	–	
		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	gU/gG	A	6	6	inherently	inherently	
Mechanical lifespan				operations	≧6000	≧6000	≧10000	≧4000
Coil								
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		$\times U_s$	–	–	0.7 – 0.35	–	
	inrush current	pick-up	A (AC/DC)	–	–	3.6/44	–	
Shunt trip								
	voltage range		$\times U_s$	–	–	–	0.7 – 1.1	
	inrush current	Anzug	A (AC)	–	–	–	25/12 ms	
			A (DC)	–	–	–	15/3 ms	

Notes:

¹⁾ 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.



Supplementary Protectors / Miniature Circuit Breakers

Technical Data

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.

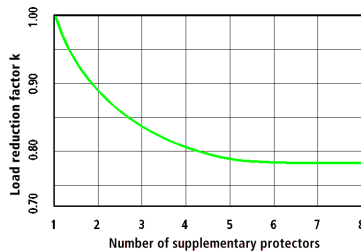
Example:

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	5,4	5,3
10	2.1	2.9	1.6	10	9,8	9,6	9,4	9,2	9,0	9,0	8,8
13	2.3	3.2	-	13	12,7	12,5	12,2	12,0	11,7	11,7	11,4
16	2.0	2.6	2.2	16	15,7	15,4	15,0	14,7	14,4	14,4	14,1
20	2.9	3.4	-	20	19,6	19,2	18,8	18,4	18,0	18,0	17,6
25	3.1	3.3	-	25	24,5	24,0	23,5	23,0	22,5	22,5	22,0
32	3.1	3.6	-	32	31,4	30,7	30,1	29,4	28,8	28,8	28,2
40	4.2	4.3	-	40	39,2	38,4	37,6	36,8	36,0	36,0	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).



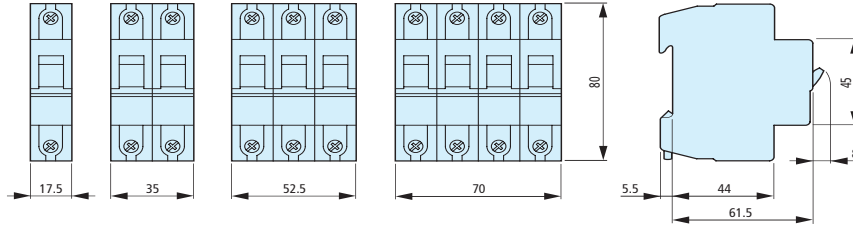
Maximum possible combinations for mounting auxiliary contacts and voltage trips to FAZ supplementary protectors

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

Supplementary Protectors / Miniature Circuit Breakers Dimensions

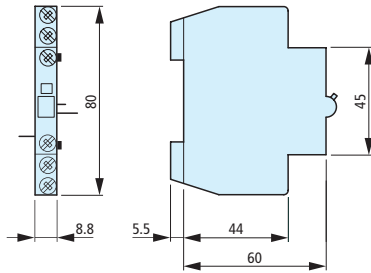
Supplementary protectors / miniature circuit breakers

FAZ



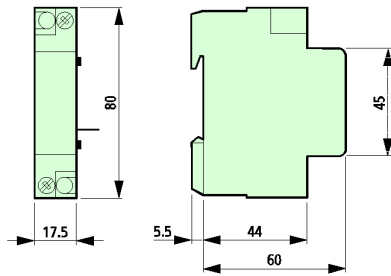
(Trip-indicating) auxiliary contacts

FAZ-XH11
FAZ-XAM002



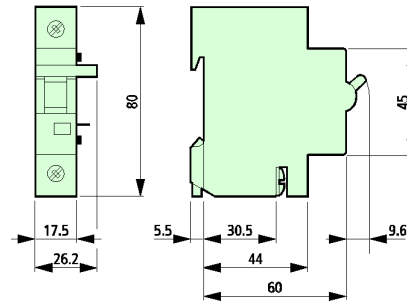
Undervoltage trip

FAZ-XUA



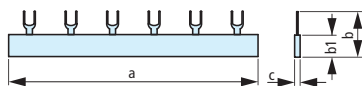
Shunt trip

FAZ-XAA



Feeder bus connectors

FAZ-XIS



Connectors without auxiliary contact spacing

Typ	a	b	b1	c
FAZ-XIS1/2	30	27	14	3,5
FAZ-XIS1/6	104	27	14	3,5
FAZ-XIS1/12	207	27	14	3,5
FAZ-XIS2/4	65	27	14	6,3
FAZ-XIS2/6	104	27	14	6,3
FAZ-XIS2/12	207	27	14	6,3
FAZ-XIS3/6	104	27	14	9
FAZ-XIS3/12	206	27	14	9
FAZ-XIS4/8	141	27	14	11,8
FAZ-XIS4/12	207	27	14	11,8

Connectors with auxiliary contact spacing

Typ	a	b	b1	c
FAZ-XIS1/2-HI	53	27	14	3,5
FAZ-XIS1/6-HI	155	27	14	3,5
FAZ-XIS1/9-HI	228	27	14	3,5
FAZ-XIS2/4-HI	73	27	14	6,3
FAZ-XIS2/6-HI	120	27	14	6,3
FAZ-XIS2/10-HI	207	27	14	6,3
FAZ-XIS3/6-HI	120	27	14	10,7
FAZ-XIS3/12-HI	236	27	14	10,7
FAZ-XIS31/6-HI	155	27	14	10,7
FAZ-XIS31/8-HI	207	27	14	10,7
FAZ-XIS31/9-HI	236	27	14	10,7

Notes



Fusible and Non-fusible Disconnect Switches, Accessories

Continuous current rating	Switch max. fused HP rating 50-60 Hz, 3-phase				Type Complete type with suffixes from columns on the right	Max. fuse clip	With fuse blocks and clips ¹⁾ for:												
	A	200V HP		230V HP			460V HP		575V HP		Class H fuses 250 V		Class H or J fuses 600 V		Class R fuses 250 V		600 V		
		Type Suffix	Price	Type Suffix			Price	Type Suffix	Price	Type Suffix	Price	Type Suffix	Price	Type Suffix	Price	Type Suffix	Price	Type Suffix	Price
		Article No. ²⁾	see price list	Article No. ²⁾	see price list	Article No. ²⁾	see price list	Article No. ²⁾	see price list	Article No. ²⁾	see price list	Article No. ²⁾	see price list	Article No. ²⁾	see price list	Article No. ²⁾	see price list		
Fusible disconnect switches open type																			
30	7½	10	20	25	P2-30/F-...	30	C13-CNA 105989		C23-CNA ³⁾ 105991		C33-CNA 105993		C36-CNA						
						60	C16-CNA 105990		C26-CNA 105992		C43-CNA 105994		C46-CNA 105995						
60	15	20	40	50	P2-60/F-...	60	C16-CNA 106001		C26-CNA 106002		C43-CNA 106004		C46-CNA 106005						
						100	C110-CNA 106000		C110-CNA 106000		C310-CNA 106003		C310-CNA 106003						
100	30	40	60	75	P2-100/F-...	100	C110-CNA 105983		C110-CNA 105983		C310-CNA 105984		C310-CNA 105984						

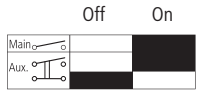
Continuous current	Max. HP rating 50-60 Hz, 3-phase				Type (load terminals included)	Price	
	A	200V HP	230V HP	460V HP			575V HP
Non-fusible disconnect switches open type							
30	7½	10	20	25	P2-30-CNA 105987		Operating handles not included. See below. For molded case switches up to 600A, refer to Section 09.
60	15	20	40	50	P2-60-CNA 105998		
100	30	40	60	75	P2-100-CNA 105979		

Accessories

Rotary-action operating handles for P2-... fusible and non-fusible disconnect switches

	For manual operation with door open. No cover interlock.	H6U 093191	H6U and H6-SW-NA handles are accessories from the NZM molded case circuit breaker line. Refer to Section 09 for further information.
	Door-mounted with cover interlock and padlock feature. Color: black	H6-SW-NA 088865	

Auxiliary contacts

Circuit diagram	Type suffix	Price	Type	Price
		when ordered with device	see price list	when ordered separately for field installation
	+HI22-P2 105930		HI22-P2 105964	

Easy bolt-on installation
Visible contacts 2 N.O., 2 N.C.

Notes:

- ¹⁾ Price includes fuse holders, but not fuses or operating handle.
- ²⁾ Article No. designates the complete switch, c/w fuse base and clips.
- ³⁾ Type C23-CNA for Class J fuses only. For Class H fuses, specify Type C38-CNA as a substitute.

Fuse Blocks
Type F ¹⁾

Supplementary Protectors, Miniature
Circuit Breakers, Disconnect Switches

Ampere Rating	With fuse holders for non-time delay fuses or dual element (time delay fuses. "H" dimensions		With fuse holders for Class "J" fuses "J" dimensions to 600 V	With fuse holders for Class "R" fuses		Type	Price
	250 V	600 V		250 V	600 V		
Fuse clip kits 6 clips per kit							see price list
30	30	-	-	-	-	F 30-C 13-CNA 116653	
	-	30	-	-	-	F 30-C 38-CNA 166974	
	-	-	30	-	-	F 30-C 23-CNA 145633	
	-	-	-	30	-	F 30-C 33-CNA 116655	
	-	-	-	-	30	F 30-C 36-CNA 166975	
60	60	-	-	-	-	F 60/100-C 16-CNA 117477	
	-	60	60	-	-	F 60/100-C 26-CNA 114681	
	-	-	-	60	-	F 60/100-C 43-CNA 115223	
	-	-	-	-	60	F 60/100-C 46-CNA 117480	
100	100	100	100	-	-	F 60/100-C 110-CNA 117712	
	-	-	-	100	100	F 60/100-C 310-CNA 117714	

Notes:

¹⁾ fuses not included

Disconnect Switches

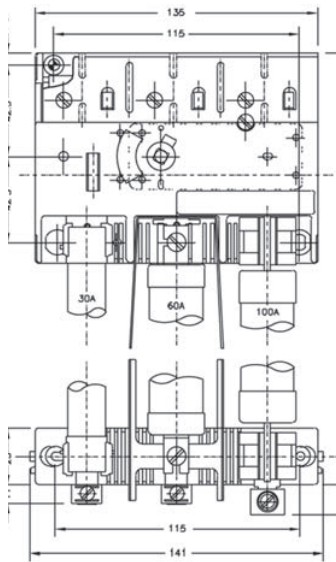
Technical Data, Dimensions

Disconnect switches				P2-30 P2-30/F-...	P2-60 P2-60/F-...	P2-100 P2-100/F-...
General						
Standards				UL recognized		
Dimensions				see below		
Wire size to be connected per phase	min.	AWG	14	10	10	
	max.	AWG	6	1/0	1/0	
Main contacts						
Rated voltage		V AC	600	600	600	
Rated continuous current		A	30	60	100	
Short-circuit current rating	non-fusible switch	kA R.M.S. Sym.	10	10	10	
	with class J, R fuses	kA R.M.S. Sym.	100	100	100	
Max. AC motor HP rating, 3-phase at	200 V	HP	7½	15	30	
	230 V	HP	10	20	40	
	460 V	HP	20	40	60	
	575 V	HP	25	50	75	
Auxiliary contacts						
Rated voltage		V	600			
Continuous current		A	10			
Pilot duty rating			Heavy Duty, A 600 / P 600			

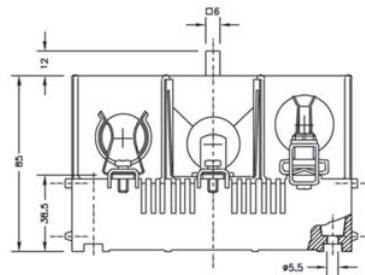
Dimensions (all dimensions in millimeters)

Fusible disconnect switches

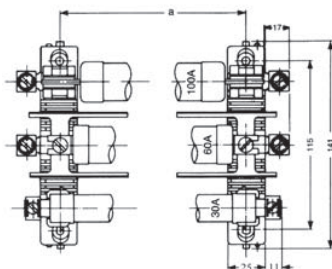
P2-30(60)/F-...-CNA
P2-100/F-...-CNA



Fuse Class	Dimensions in mm			
	V	A	C1	C2
H and (R)K	250	30	122	153
		60	144	181
		100	208	245
600	30		198	229
		60	208	245
		100	259	296
J	600	30	128	159
		60	130	167
		100	176	213



Fuse blocks



Fuse Block Type	Fuse Rating		Dimensions / Fuse class		
	A	V	H	J	R
F30-C13-CNA	30	250	1 ½" (38mm)		
F30-C38-CNA	30	600	4 ½" (114mm)		
F30-C23-CNA	30	250		1 ¾" (45mm)	
F30-C33-CNA	30	600			1 ½" (38mm)
F30-C36-CNA	30	600			4 ½" (114mm)
F60/100-C16-CNA	60	250	2 ¾" (60mm)		
F60/100-C26-CNA	60	600	4 7/8" (124mm)		
F60/100-C43-CNA	60	250		1 ¾" (45mm)	
F60/100-C46-CNA	60	600			2 ¾" (60mm)
					4 7/8" (124mm)
F60/100-C110-CNA	100	250	4 7/8" (124mm)		
F60/100-C110-CNA	100	600	6 7/8" (175mm)		
F60/100-C310-CNA	100	250		3 5/8" (92mm)	
F60/100-C310-CNA	100	600			4 7/8" (124mm)
					6 7/8" (175mm)