

# xEffect - Industrial Switchgear Range Miniature Circuit Breakers AZ



Catalog



Powering Business Worldwide

SG51412



## Description

- High-quality miniature circuit breakers for industrial and commercial applications
- Contact position indicator red - green
- Accessories suitable for subsequent installation
- Rated currents up to 125 A
- Tripping characteristics B, C, D
- Rated breaking capacity up to 25 kA according to EN 60947-2
- Classified for the use in rail rolling stock



Rated current  $I_n$  (A)

Type Designation

Article No.

Units per package

**Characteristic B**

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**1-pole**

20	AZ-B20	174480	12
25	AZ-B25	174481	12
32	AZ-B32	174482	12
40	AZ-B40	174483	12
50	AZ-B50	174484	12
63	AZ-B63	174485	12
80	AZ-B80	174486	12
100	AZ-B100	174487	12
125	AZ-B125	174488	12

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**2-poles**

20	AZ-2-B20	174493	6
25	AZ-2-B25	174494	6
32	AZ-2-B32	174495	6
40	AZ-2-B40	174496	6
50	AZ-2-B50	174497	6
63	AZ-2-B63	174498	6
80	AZ-2-B80	174499	6
100	AZ-2-B100	174500	6
125	AZ-2-B125	174501	6

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**3-poles**

20	AZ-3-B20	174506	4
25	AZ-3-B25	174507	4
32	AZ-3-B32	174508	4
40	AZ-3-B40	174509	4
50	AZ-3-B50	174510	4
63	AZ-3-B63	174511	4
80	AZ-3-B80	174512	4
100	AZ-3-B100	174513	4
125	AZ-3-B125	174514	4

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**3+N-poles**

20	AZ-3N-B20	174519	3
25	AZ-3N-B25	174520	3
32	AZ-3N-B32	174521	3
40	AZ-3N-B40	174522	3
50	AZ-3N-B50	174523	3
63	AZ-3N-B63	174524	3
80	AZ-3N-B80	174525	3
100	AZ-3N-B100	174526	3
125	AZ-3N-B125	174527	3

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**4-poles**

20	AZ-4-B20	174532	3
25	AZ-4-B25	174533	3
32	AZ-4-B32	174534	3
40	AZ-4-B40	174535	3
50	AZ-4-B50	174536	3
63	AZ-4-B63	174537	3
80	AZ-4-B80	174538	3
100	AZ-4-B100	174539	3
125	AZ-4-B125	174540	3

# 1.3

## Miniature Circuit Breakers

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### AZ Miniature Circuit Breakers

Rated  
current  
 $I_n$  (A)

Type  
Designation

Article No.

Units per  
package

SG51212



#### Characteristic C

##### 1-pole

20	AZ-C20	211769	12
25	AZ-C25	211774	12
32	AZ-C32	211779	12
40	AZ-C40	211784	12
50	AZ-C50	211789	12
63	AZ-C63	211794	12
80	AZ-C80	211799	12
100	AZ-C100	211804	12
125	AZ-C125	211809	12

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##### 2-poles

20	AZ-2-C20	211770	6
25	AZ-2-C25	211775	6
32	AZ-2-C32	211780	6
40	AZ-2-C40	211785	6
50	AZ-2-C50	211790	6
63	AZ-2-C63	211795	6
80	AZ-2-C80	211800	6
100	AZ-2-C100	211805	6
125	AZ-2-C125	211810	6

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##### 3-poles

20	AZ-3-C20	211771	4
25	AZ-3-C25	211776	4
32	AZ-3-C32	211781	4
40	AZ-3-C40	211786	4
50	AZ-3-C50	211791	4
63	AZ-3-C63	211796	4
80	AZ-3-C80	211801	4
100	AZ-3-C100	211806	4
125	AZ-3-C125	211811	4

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##### 3+N-poles

20	AZ-3N-C20	211773	3
25	AZ-3N-C25	211778	3
32	AZ-3N-C32	211783	3
40	AZ-3N-C40	211788	3
50	AZ-3N-C50	211793	3
63	AZ-3N-C63	211798	3
80	AZ-3N-C80	211803	3
100	AZ-3N-C100	211808	3
125	AZ-3N-C125	211813	3

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##### 4-poles

20	AZ-4-C20	211772	3
25	AZ-4-C25	211777	3
32	AZ-4-C32	211782	3
40	AZ-4-C40	211787	3
50	AZ-4-C50	211792	3
63	AZ-4-C63	211797	3
80	AZ-4-C80	211802	3
100	AZ-4-C100	211807	3
125	AZ-4-C125	211812	3

Rated current  $I_n$  (A)

Type Designation

Article No.

Units per package

**Characteristic D**

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**1-pole**

20	AZ-D20	174489	12
25	AZ-D25	174490	12
32	AZ-D32	174491	12
40	AZ-D40	174492	12
50	AZ-D50	211814	12
63	AZ-D63	211818	12
80	AZ-D80	211822	12
100	AZ-D100	211826	12

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**2-poles**

20	AZ-2-D20	174502	6
25	AZ-2-D25	174503	6
32	AZ-2-D32	174504	6
40	AZ-2-D40	174505	6
50	AZ-2-D50	211815	6
63	AZ-2-D63	211819	6
80	AZ-2-D80	211823	6
100	AZ-2-D100	211827	6

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**3-poles**

20	AZ-3-D20	174515	4
25	AZ-3-D25	174516	4
32	AZ-3-D32	174517	4
40	AZ-3-D40	174518	4
50	AZ-3-D50	211816	4
63	AZ-3-D63	211820	4
80	AZ-3-D80	211824	4
100	AZ-3-D100	211828	4

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**3+N-poles**

20	AZ-3N-D20	174528	3
25	AZ-3N-D25	174529	3
32	AZ-3N-D32	174530	3
40	AZ-3N-D40	174531	3
50	AZ-3N-D50	211817	3
63	AZ-3N-D63	211821	3
80	AZ-3N-D80	211825	3
100	AZ-3N-D100	211829	3

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**4-poles**

20	AZ-4-D20	174541	3
25	AZ-4-D25	174542	3
32	AZ-4-D32	174543	3
40	AZ-4-D40	174544	3
50	AZ-4-D50	174545	3
63	AZ-4-D63	174546	3
80	AZ-4-D80	174547	3
100	AZ-4-D100	174548	3

### Description

- Independent switching contacts
- With isolator function, meets the requirements of insulation co-ordination, distance between contacts  $\geq 4$  mm, for secure isolation

### Accessories:

Auxiliary switch for subsequent installation (0.5 MU)	Z-LHK	248440
Shunt Trip Release for subsequent installation (1.5 MU)	Z-LHASA/230	248442
	Z-LHASA/24	248441
Switching interlock	LH-SPL	285752
	LHSP-E	215999
Switchoff interlock	LHSP-A	216000

### Technical Data

#### AZ

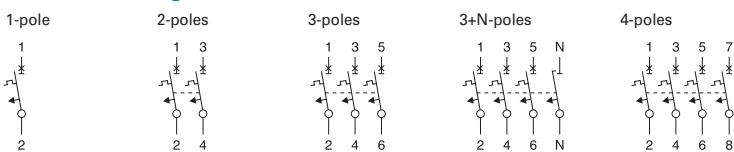
#### Electrical

Standards	IEC/EN 60947-2
Classified according to	IEC 61373, EN 45545-2
Current test marks as printed onto the device	
Rated operating voltage	230/400 V AC 60 V DC (per pole)
Limiting breaking capacity according to IEC/EN 60947-2	
Characteristic B	$I_n = 20-63$ A: 25 kA $I_n = 80-100$ A: 20 kA $I_n = 125$ A: 15 kA
Characteristic C	$I_n = 20-63$ A: 25 kA $I_n = 80-100$ A: 20 kA $I_n = 125$ A: 15 kA
Characteristic D	$I_n = 20-63$ A: 25 kA $I_n = 80$ A: 20 kA $I_n = 100$ A: 15 kA
Characteristic	Similar: B, C, D
Max. back-up fuse	200 A gL/gG
Selectivity class	Compliant with class 3
Endurance	>10,000 Operations
Direction of incoming supply	Any

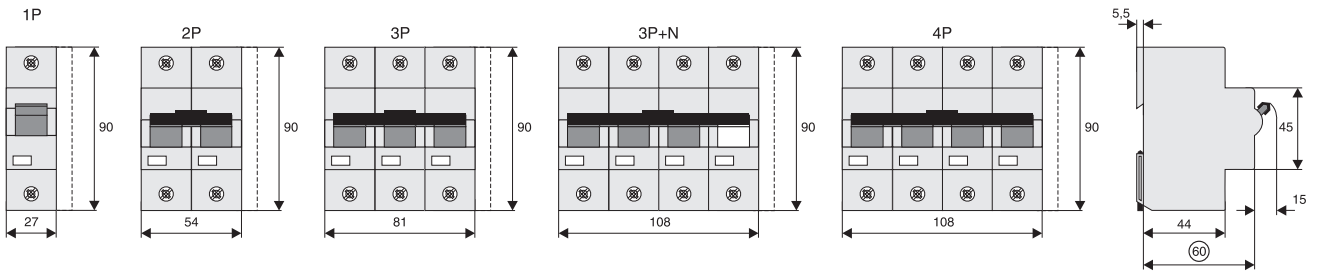
#### Mechanical

Frame size	45 mm
Device height	90 mm
Mounting width per pole	27 mm
Terminal protection	finger and hand touch safe according to BGV A2
Mounting	Top-hat rail to IEC/EN 60715
Terminals top and bottom	Lift terminals
Terminal capacity	2.5 – 50 mm <sup>2</sup> (solid)
Operation temperature	-25 °C up to +55 °C
Storage- and transport temperature	-40 °C up to +75 °C

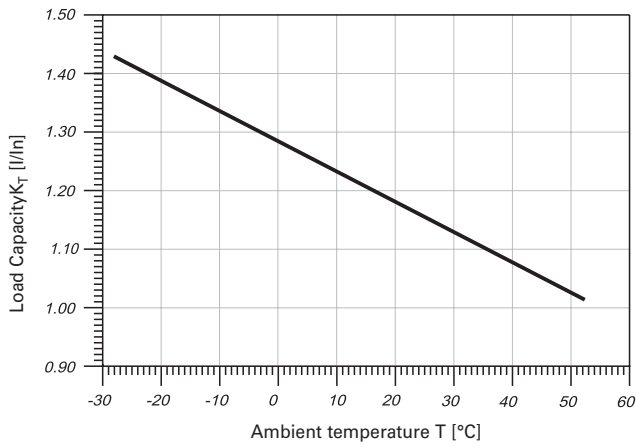
### Connection diagram



Dimensions (mm)



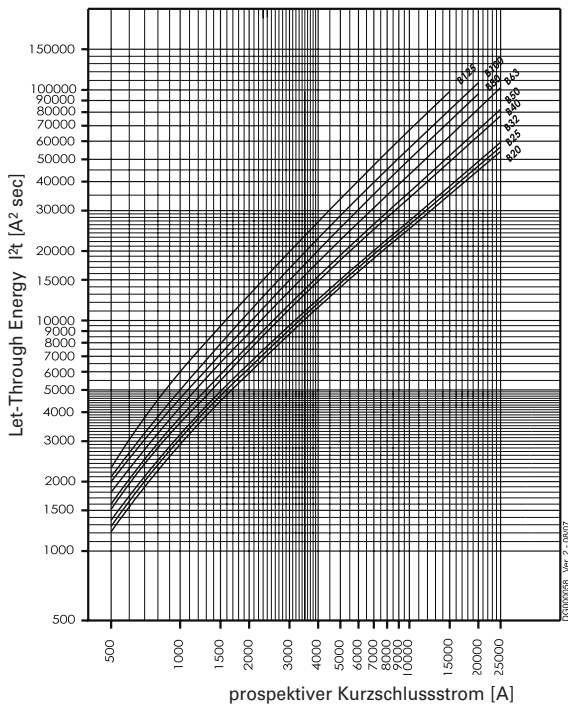
Influence of Ambient Temperature AZ



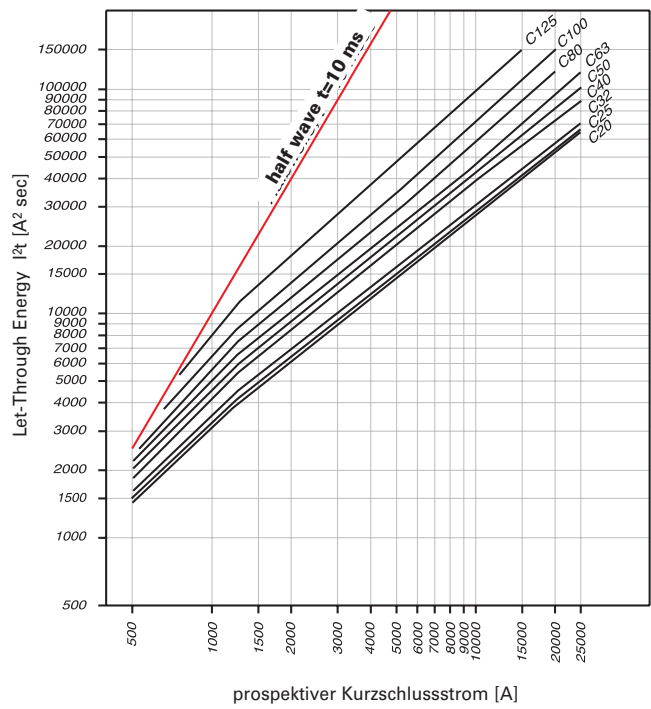
Permitted permanent load at ambient temperature T [°C] and n devices:  $I_{DL} = I_n K_T(T) K_N(N)$ .

### Let-Through Energy AZ

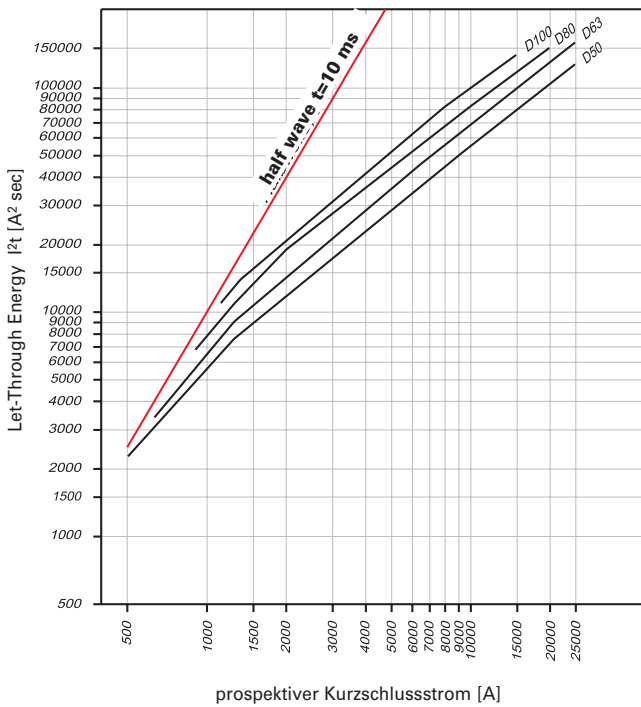
Maximum Let-Through Energy AZ, Characteristic B, 1poles



Maximum Let-Through Energy AZ, Characteristic C, 1poles



Maximum Let-Through Energy AZ, Characteristic D, 1poles

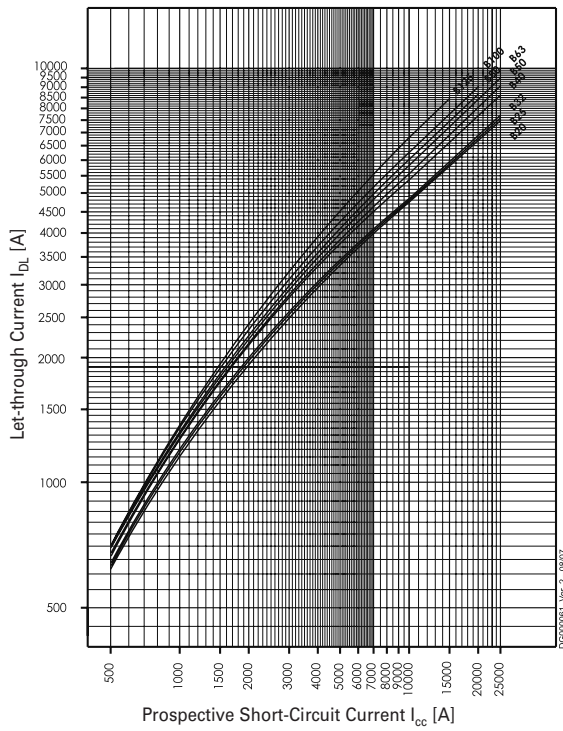


Determined according to EN 60898-1.

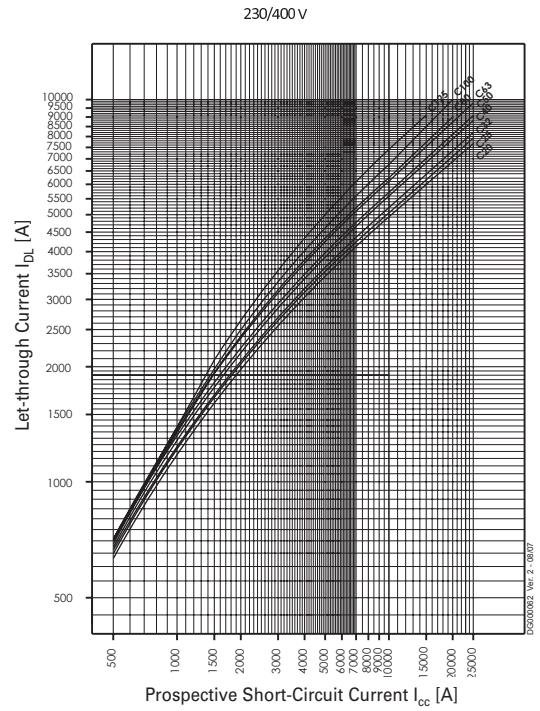


Maximum Let-Through Current AZ

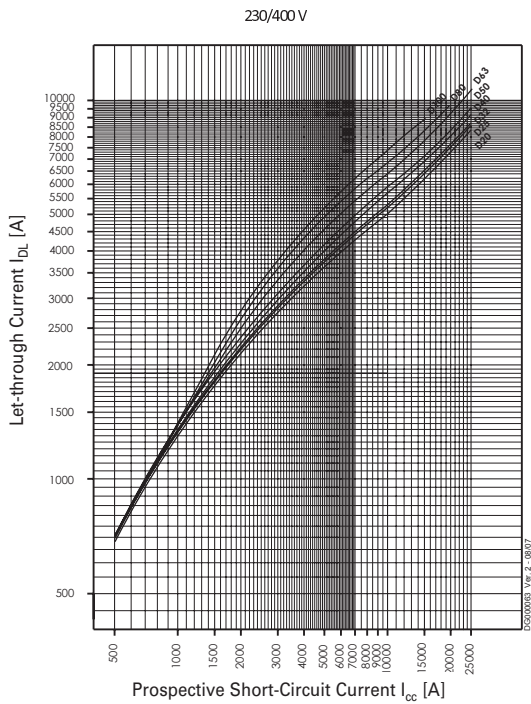
Type B



Type C



Type D



**Short Circuit Selectivity AZ**

In case of short circuit, there is selectivity between the miniature circuit breakers AZ and the upstream protection devices up to the specified values of the selectivity limit current  $I_s$  [kA] (i. e. in case of short-circuit currents  $I_{ks}$  under  $I_s$ , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

**AZ towards back-up fuses D01, D02, D03****Characteristic C**

AZ	D01. D02. D03					
$I_n$ [A]	25	35	50	63	80	100
20	0.5	1.0	2.0	2.9	3.9	7.6
25		1.0	1.9	2.8	3.8	7.3
32		1.0	1.8	2.7	3.6	7.0
40			1.6	2.2	3.0	5.6
50				2.1	2.8	5.2
63					2.7	4.8
80						4.3
100						
125						

**Characteristic D**

AZ	D01. D02. D03					
$I_n$ [A]	25	35	50	63	80	100
20	0.5	0.9	1.7	2.5	3.4	6.7
25		0.9	1.6	2.3	3.2	6.2
32		0.9	1.5	2.3	3.0	6.0
40			1.4	2.0	2.6	4.7
50				1.8	2.3	4.3
63					2.1	3.7
80						3.1
100						

**AZ towards back-up fuses NH Gr. 00****Characteristic C**

AZ	NH Gr. 00									
$I_n$ [A]	25	35	40	50	63	80	100	125	160	200
20	0.5	1.0	1.3	1.9	2.7	3.7	6.7	17.0	25.0	25.0
25		0.9	1.3	1.8	2.6	3.5	6.5	17.0	25.0	25.0
32		0.9	1.2	1.7	2.4	3.3	6.0	15.0	23.0	25.0
40				1.4	2.1	2.9	4.8	12.0	18.0	25.0
50					1.9	2.7	4.5	11.0	17.0	25.0
63							4.2	10.0	15.0	25.0
80							3.8	8.5	12.0	25.0
100								7.0	10.0	25.0
125									7.5	25.0

**Characteristic D**

AZ	NH Gr. 00									
$I_n$ [A]	25	35	40	50	63	80	100	125	160	200
20	<0.5	0.8	1.1	1.5	2.3	3.1	5.6	16.0	25.0	25.0
25		0.7	1.0	1.4	2.1	3.0	5.3	14.0	23.0	25.0
32		0.7	1.0	1.3	2.1	2.9	5.0	13.0	22.0	25.0
40				1.1	1.8	2.5	4.2	10.0	15.0	25.0
50					1.6	2.3	3.8	8.5	13.0	22.0
63						2.1	3.2	7.0	10.5	18.0
80							2.8	5.5	8.4	15.0
100								4.8	7.5	12.5

**AZ towards NZM 1****Characteristic C**

AZ	NZM...1-A gL/gG					
$I_n$ [A]	40	50	63	80	100	125
20	0.5	1.0	1.3	1.9	2.7	3.7
20	0.3	0.4	0.5	0.75	0.9	1.25
25	0.3	0.4	0.5	0.7	0.9	1.2
32		0.4	0.5	0.7	0.85	1.2
40			0.5	0.6	0.85	1.1
50				0.6	0.85	1.1
63					0.8	1
80						1
100						
125						

**Characteristic D**

AZ	NZM...1-A gL/gG					
$I_n$ [A]	40	50	63	80	100	125
50						
63						
80						
100						

Shaded fields: no selectivity

**AZ towards NZM 2**

**Characteristic C**

AZ	NZM...2-A gL/gG									
$I_n$ [A]	40	50	63	80	100	125	160	200	250	
20	0.3	0.4	0.5	0.75	0.9	1.25	1.8	2.5	3.5	
25	0.3	0.4	0.5	0.7	0.9	1.2	1.7	2.4	3.3	
32		0.4	0.5	0.7	0.85	1.2	1.65	2.3	3.2	
40			0.5	0.6	0.85	1.1	1.5	2.1	2.9	
50				0.6	0.85	1.1	1.5	2	2.8	
63					0.8	1	1.4	1.8	2.5	
80						1	1.4	1.8	2.4	
100							1.3	1.7	2.3	
125								1.6	2.1	

**Characteristic D**

AZ	NZM...2-A gL/gG									
$I_n$ [A]	40	50	63	80	100	125	160	200	250	
50								1	1.4	2.6
63								1	1.3	2.3
80										2.1
100										

Shaded fields: no selectivity

**Back-up Protection AZ**

The up-stream protective devices will protect the down-stream AZ up to the short-circuit current specified.

**AZ and NZM(B)(C)(N)(H)1**

<b>AZ</b>	<b>NZMB1</b>
$I_n$ [A]	$U_e = 230/400$ V
<b>20</b>	25 kA
<b>25</b>	25 kA
<b>32</b>	25 kA
<b>40</b>	25 kA
<b>50</b>	25 kA
<b>63</b>	25 kA
<b>80</b>	25 kA
<b>100</b>	25 kA
<b>125</b>	25 kA

<b>AZ</b>	<b>NZMC1</b>
$I_n$ [A]	$U_e = 230/400$ V
<b>20</b>	36 kA
<b>25</b>	36 kA
<b>32</b>	36 kA
<b>40</b>	36 kA
<b>50</b>	36 kA
<b>63</b>	36 kA
<b>80</b>	36 kA
<b>100</b>	36 kA
<b>125</b>	36 kA

<b>AZ</b>	<b>NZMN1</b>
$I_n$ [A]	$U_e = 230/400$ V
<b>20</b>	50 kA
<b>25</b>	50 kA
<b>32</b>	50 kA
<b>40</b>	50 kA
<b>50</b>	50 kA
<b>63</b>	50 kA
<b>80</b>	50 kA
<b>100</b>	50 kA
<b>125</b>	50 kA

<b>AZ</b>	<b>NZMH1</b>
$I_n$ [A]	$U_e = 230/400$ V
<b>20</b>	80 kA
<b>25</b>	80 kA
<b>32</b>	80 kA
<b>40</b>	80 kA
<b>50</b>	80 kA
<b>63</b>	80 kA
<b>80</b>	80 kA
<b>100</b>	80 kA
<b>125</b>	80 kA

**AZ and NZM(B)(C)(N)(H)2**

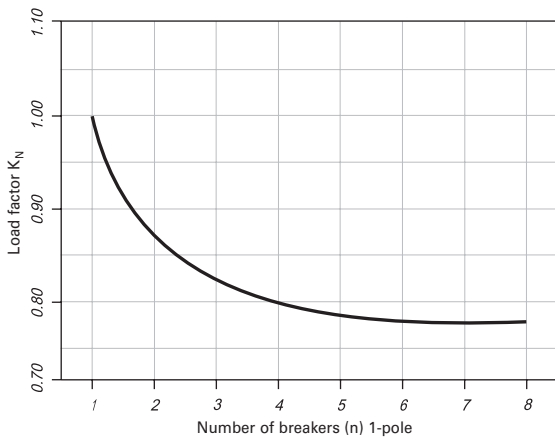
<b>AZ</b>	<b>NZMB2</b>
$I_n$ [A]	$U_e = 230/400$ V
<b>20</b>	25 kA
<b>25</b>	25 kA
<b>32</b>	25 kA
<b>40</b>	25 kA
<b>50</b>	25 kA
<b>63</b>	25 kA
<b>80</b>	25 kA
<b>100</b>	25 kA
<b>125</b>	25 kA

<b>AZ</b>	<b>NZMC2</b>
$I_n$ [A]	$U_e = 230/400$ V
<b>20</b>	36 kA
<b>25</b>	36 kA
<b>32</b>	36 kA
<b>40</b>	36 kA
<b>50</b>	36 kA
<b>63</b>	36 kA
<b>80</b>	36 kA
<b>100</b>	36 kA
<b>125</b>	36 kA

<b>AZ</b>	<b>NZMN2</b>
$I_n$ [A]	$U_e = 230/400$ V
<b>20</b>	50 kA
<b>25</b>	50 kA
<b>32</b>	50 kA
<b>40</b>	50 kA
<b>50</b>	50 kA
<b>63</b>	50 kA
<b>80</b>	50 kA
<b>100</b>	50 kA
<b>125</b>	50 kA

<b>AZ</b>	<b>NZMH2</b>
$I_n$ [A]	$U_e = 230/400$ V
<b>20</b>	65 kA
<b>25</b>	65 kA
<b>32</b>	65 kA
<b>40</b>	65 kA
<b>50</b>	65 kA
<b>63</b>	65 kA
<b>80</b>	65 kA
<b>100</b>	65 kA
<b>125</b>	65 kA

**Load capacity in case of block installation AZ**



**Derating table for AZ above 2000m sea level**

60947-2

$U_e$  230/400 V

80/B, C, D and 100/B, C	80, 100/B, C, D	100/D and 125/B, C	100/D and 125/B, C
-------------------------	-----------------	--------------------	--------------------

Above sea level (m)	Overvoltage category	Disconnect function	$I/I_n$	$I_{cu}$	$I_{cs}$	$I_{cu}$	$I_{cs}$
m	x	x	x	kA	kA	kA	kA
$\leq 2000$	III	yes	1	20	10	15	7.5
>2000-2500	II	no	0.93	15	7.5	10	6
>2500-3000	II	no	0.88	15	7.5	10	6
>3000-3500	II	no	0.83	15	7.5	10	6
>3500-4000	II	no	0.78	15	7.5	10	6



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