

Protective Devices Arc Fault Detection Device AFDD⁺,



Catalog



Powering Business Worldwide

sg06416



Description

- Arc Fault Detection Device acc. to IEC/EN-62606
- Detects and quenches arc faults in final circuits
- Fully combined with residual current circuit breaker (RCCB) and miniature circuit breaker (MCB)
- 2-pole: Both clearances between open contacts are protected
- Variable installation of N either to the left or right
- Rated currents from 6 to 40 A
- Contact position indicator red – green
- Tripped indication: MCB, RCCB or AFDD
- LED indication for arc faults
- Permanent self-monitoring
- Overvoltage and overheat monitoring
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- 10 and 30 mA rated residual currents
- Tripping characteristics B, C
- Rated breaking capacity up to 10 kA
- The -OL types are specifically designed to fulfill the tripping characteristic requirements of $I_2 \leq I_z$ in the Norwegian electrotechnical standard NEK 400-8-823.

Arc Fault Detection Device AFDD⁺, 2-pole

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
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Type F, 10 kA, 2-pole

Surge current-proof 3 kA, sensitive to residual pulsating DC, type F

Characteristic B

100L/0.03	AFDD-10/2/B/003-F-OL	MB-300184	1/40
130L/0.03	AFDD-13/2/B/003-F-OL	MB-300185	1/40
150L/0.03	AFDD-15/2/B/003-F-OL	MB-300186	1/40
200L/0.03	AFDD-20/2/B/003-F-OL	MB-300187	1/40
10/0.03	AFDD-10/2/B/003-F	187243	1/40
13/0.03	AFDD-13/2/B/003-F	187253	1/40
16/0.03	AFDD-16/2/B/003-F	187263	1/40
20/0.03	AFDD-20/2/B/003-F	187272	1/40
25/0.03	AFDD-25/2/B/003-F	187278	1/40

Characteristic C

100L/0.03	AFDD-10/2/C/003-F-OL	MB-300179	1/40
130L/0.03	AFDD-13/2/C/003-F-OL	MB-300180	1/40
150L/0.03	AFDD-15/2/C/003-F-OL	MB-300181	1/40
200L/0.03	AFDD-20/2/C/003-F-OL	MB-300182	1/40
6/0.03	AFDD-6/2/C/003-F	MB-300178	1/40
10/0.03	AFDD-10/2/C/003-F	187249	1/40
13/0.03	AFDD-13/2/C/003-F	187259	1/40
16/0.03	AFDD-16/2/C/003-F	187269	1/40
20/0.03	AFDD-20/2/C/003-F	187275	1/40
25/0.03	AFDD-25/2/C/003-F	187281	1/40

Type F, 6 kA, 2-pole

Surge current-proof 3 kA, sensitive to residual pulsating DC, type F

Characteristic B

32/0.03	AFDD-32/2/B/003-F	187284	1/40
40/0.03	AFDD-40/2/B/003-F	187290	1/40

Characteristic C

32/0.03	AFDD-32/2/C/003-F	187287	1/40
40/0.03	AFDD-40/2/C/003-F	187293	1/40

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$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
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Type G/A, 10 kA, 2-pole

Surge current-proof 3 kA, sensitive to residual pulsating DC, type G/A

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Characteristic B

10/0.01	AFDD-10/2/B/001-G/A	MB-300194	1/40
13/0.01	AFDD-13/2/B/001-G/A	MB-300195	1/40
16/0.01	AFDD-16/2/B/001-G/A	MB-300196	1/40
10/0.03	AFDD-10/2/B/003-G/A	MB-300162	1/40
13/0.03	AFDD-13/2/B/003-G/A	MB-300165	1/40
16/0.03	AFDD-16/2/B/003-G/A	MB-300168	1/40
20/0.03	AFDD-20/2/B/003-G/A	MB-300170	1/40
25/0.03	AFDD-25/2/B/003-G/A	MB-300173	1/40

Characteristic C

6/0.01	AFDD-6/2/C/001-G/A	MB-300188	1/40
10/0.01	AFDD-10/2/C/001-G/A	MB-300189	1/40
13/0.01	AFDD-13/2/C/001-G/A	MB-300191	1/40
16/0.01	AFDD-16/2/C/001-G/A	MB-300192	1/40
6/0.03	AFDD-6/2/C/003-G/A	MB-300138	1/40
10/0.03	AFDD-10/2/C/003-G/A	MB-300147	1/40
13/0.03	AFDD-13/2/C/003-G/A	MB-300149	1/40
16/0.03	AFDD-16/2/C/003-G/A	MB-300152	1/40
20/0.03	AFDD-20/2/C/003-G/A	MB-300153	1/40
25/0.03	AFDD-25/2/C/003-G/A	MB-300155	1/40

Type G/A, 6 kA, 2-pole

Surge current-proof 3 kA, sensitive to residual pulsating DC, type G/A

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Characteristic B

32/0.03	AFDD-32/2/B/003-G/A	MB-300174	1/40
40/0.03	AFDD-40/2/B/003-G/A	MB-300222	1/40

Characteristic C

32/0.03	AFDD-32/2/C/003-G/A	MB-300158	1/40
40/0.03	AFDD-40/2/C/003-G/A	MB-300159	1/40

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
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Type A, 10 kA, 2-pole

Non-delayed, sensitive to residual pulsating DC, type A

Characteristic B

10/0.01	AFDD-10/2/B/001-A	187165	1/40
100L/0.03	AFDD-10/2/B/003-A-OL	MB-300217	1/40
130L/0.03	AFDD-13/2/B/003-A-OL	MB-300221	1/40
13/0.01	AFDD-13/2/B/001-A	187177	1/40
16/0.01	AFDD-16/2/B/001-A	187201	1/40
10/0.03	AFDD-10/2/B/003-A	187168	1/40
13/0.03	AFDD-13/2/B/003-A	187180	1/40
150L/0.03	AFDD-15/2/B/003-A-OL	187192	1/40
16/0.03	AFDD-16/2/B/003-A	187204	1/40
200L/0.03	AFDD-20/2/B/003-A-OL	187213	1/40
20/0.03	AFDD-20/2/B/003-A	187219	1/40
25/0.03	AFDD-25/2/B/003-A	187225	1/40

Characteristic C

6/0.01	AFDD-6/2/C/001-A	MB-300206	1/40
10/0.01	AFDD-10/2/C/001-A	187171	1/40
100L/0.03	AFDD-10/2/C/003-A-OL	MB-300215	1/40
130L/0.03	AFDD-13/2/C/003-A-OL	MB-300216	1/40
13/0.01	AFDD-13/2/C/001-A	187183	1/40
16/0.01	AFDD-16/2/C/001-A	187207	1/40
6/0.03	AFDD-6/2/C/003-A	MB-300199	1/40
10/0.03	AFDD-10/2/C/003-A	187174	1/40
13/0.03	AFDD-13/2/C/003-A	187186	1/40
150L/0.03	AFDD-15/2/C/003-A-OL	187198	1/40
16/0.03	AFDD-16/2/C/003-A	187210	1/40
200L/0.03	AFDD-20/2/C/003-A-OL	187216	1/40
20/0.03	AFDD-20/2/C/003-A	187222	1/40
25/0.03	AFDD-25/2/C/003-A	187228	1/40

Type A, 6 kA, 2-pole

Non-delayed, sensitive to residual pulsating DC, type A

Characteristic B

32/0.03	AFDD-32/2/B/003-A	187231	1/40
40/0.03	AFDD-40/2/B/003-A	187237	1/40

Characteristic C

32/0.03	AFDD-32/2/C/003-A	187234	1/40
40/0.03	AFDD-40/2/C/003-A	187240	1/40

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$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
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Type AC, 10 kA, 2-pole

Non-delayed, alternating-current-sensitive, type AC

Characteristic B

10/0.01	AFDD-10/2/B/001	187164	1/40
13/0.01	AFDD-13/2/B/001	187176	1/40
16/0.01	AFDD-16/2/B/001	187200	1/40
10/0.03	AFDD-10/2/B/003	187167	1/40
13/0.03	AFDD-13/2/B/003	187179	1/40
16/0.03	AFDD-16/2/B/003	187203	1/40
20/0.03	AFDD-20/2/B/003	187218	1/40
25/0.03	AFDD-25/2/B/003	187224	1/40

Characteristic C

6/0.01	AFDD-6/2/C/001	MB-300205	1/40
10/0.01	AFDD-10/2/C/001	187170	1/40
13/0.01	AFDD-13/2/C/001	187182	1/40
16/0.01	AFDD-16/2/C/001	187206	1/40
6/0.03	AFDD-6/2/C/003	MB-300197	1/40
10/0.03	AFDD-10/2/C/003	187173	1/40
13/0.03	AFDD-13/2/C/003	187185	1/40
16/0.03	AFDD-16/2/C/003	187209	1/40
20/0.03	AFDD-20/2/C/003	187221	1/40
25/0.03	AFDD-25/2/C/003	187227	1/40

Type AC, 6 kA, 2-pole

Non-delayed, alternating-current-sensitive, type AC

Characteristic B

32/0.03	AFDD-32/2/B/003	187230	1/40
40/0.03	AFDD-40/2/B/003	187236	1/40

Characteristic C

32/0.03	AFDD-32/2/C/003	187233	1/40
40/0.03	AFDD-40/2/C/003	187239	1/40

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Specifications | Arc Fault Detection Device AFDD⁺, 2-pole

Description

- Arc Fault Detection Device acc. to IEC/EN-62606
- Line-voltage-independent RCBO (combined switch) acc. to IEC/EN 61009
- 2-pole: Both clearances between open contacts are protected
- Variable installation of N either to the left or the right
- Tripped indication: MCB, RCCB or AFDD
- LED indication for arc faults
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Comprehensive range of accessories can be mounted subsequently
- The test key "T" must be pressed every 6 months. The system operator must be informed of this obligation and their responsibility in a way that can be proven (self-adhesive RCD-label enclosed). The test interval of 6 months is valid for residential and similar applications. Under all other conditions (e.g. damp or dusty environments), it's recommended to test in shorter intervals (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not perform an earthing resistance measurement (R_E), nor does it render the check of the earth conductor condition redundant, which means both tests must additionally be performed separately.
- The cable length (one-way) from the AFDD⁺ to the socket outlet should not exceed 70 m. This guarantees that arc faults can be detected reliably.
- **Type -A:** Protects against special forms of residual pulsating DC which have not been smoothed
- **Type -F:** Sensitive to pulsating DC residual current and detection of multi-frequency residual currents up to 1 kHz
 - Increased protection due to the detection of mixed frequencies
 - Higher load rating with DC residual currents up to 10 mA
 - Reduction of nuisance tripping thanks to time delayed tripping and increased current withstand capability of 3 kA
 Recommended for washing machines, dish washers, or motor applications with single-phase drives.
- **Type -G/A:** Additionally protects against special forms of residual pulsating DC which have not been smoothed
- **Type -G:** High reliability against unwanted tripping. Suitable for any circuit where personal injury or damage to property may occur in case of unwanted tripping. Additionally protects against special forms of residual pulsating DC which have not been smoothed.
- **OL types:** Specifically designed to fulfill the tripping characteristic requirements of $I_2 \leq I_2$ in the Norwegian electrotechnical standard NEK 400-8-823. 10:28

Error memory:

The AFDD⁺ saves the last tripping reason/cause. If the device is in the open position (turned off), press and hold the test button "T" and simultaneously turn on the device. This causes the in-built LED to flash in a sequence that will reveal the tripping cause.

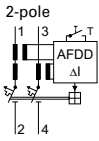
Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
Auxiliary switch	ZP-NHK	248437
	ZP-WHK	286053
Shunt trip release	ZP-ASA/..	248438, 248439
Busbars	EVG-2PHAS/4AFDD; ZV-SS; ZV-L1/N; ZV-L2/L3; ZV-ADP; ZV-AEK	

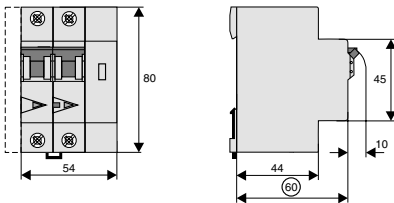
Technical Data

		AFDD ⁺
Electrical		
Design according to		IEC/EN 62606
Relevant effective certification marks as printed onto the device		IEC/EN 61009 IEC/EN 62423 Type G acc. to ÖVE E 8601
Line voltage-independent tripping		instantaneous surge current proof 250 A (8/20 μs) surge current proof 3 kA (F, -F-OL, -G/A, -G/A-OL) (8/20 μs)
Rated voltage	U_n	240 V AC; 50 Hz
Operational voltage range		180-264 V
Self-consumption		< 0.8 W
Rated residual operating current	$I_{\Delta n}$	10, 30 mA
Rated residual non-operating current	$I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity		AC and pulsating DC, Type F
Selectivity class		3
Rated breaking capacity		
AFDD 6-25 A		10 kA
AFDD 32-40 A		6 kA
Rated current		6 - 40 A
Rated insulation voltage	U_i	440 V
Rated impulse withstand voltage	U_{imp}	4 kV (1.2/50 μs)
Rated residual making and breaking capacity	$I_{\Delta m}$	
EN 61009		3 kA
IEC 61009		6-16 A: 3 kA 20-40 A: 500 A
Arc fault tripping times after load current (acc. to IEC/EN 62606)		
Load current (A)		Tripping time (s)
2,5		<1
5		<0.5
10		<0.25
16		<0.15
32		<0.12
40		<0.12
Characteristic		B, C, B(-OL), C(-OL)
Maximum back-up fuse (short-circuit)		100 A gL (>10 kA)
Endurance		
electrical components		≥ 4,000 switching operations
mechanical components		≥ 20,000 switching operations
Mechanical		
Frame size		45 mm
Device height		80 mm
Device width		54 mm (3 MU)
Mounting		3-position DIN rail clip, permits removal from existing busbar system
Degree of protection, switch		IP20
Degree of protection, built-in		IP40
Upper and lower terminals		open-mouthed/lift terminals
Terminal protection		finger and hand touch safe, EN 50274
Terminal cross section (capacity)		1 - 25 mm ²
Busbar thickness		0.8 - 2 mm
Operating temperature		-25° C to +40° C
Storage and transport temperature		-35° C to +60° C
Resistance to climatic conditions		according to IEC/EN 61009

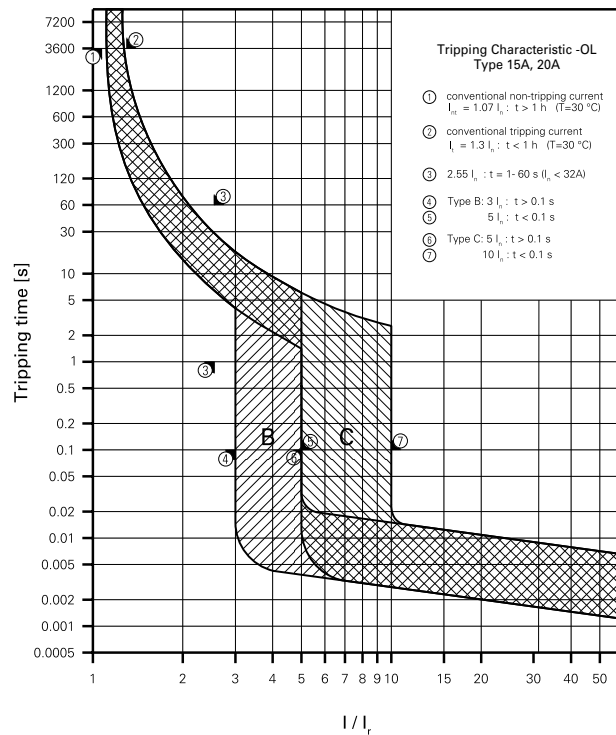
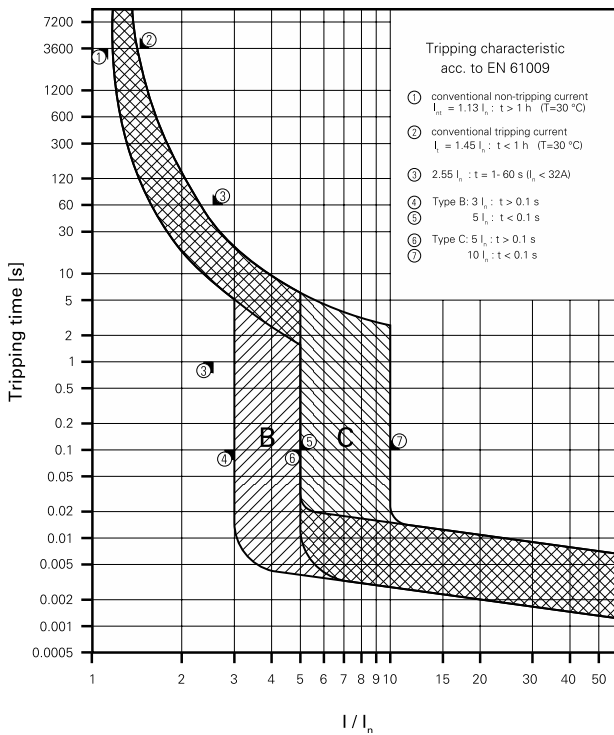
Connection diagram



Dimensions (mm)

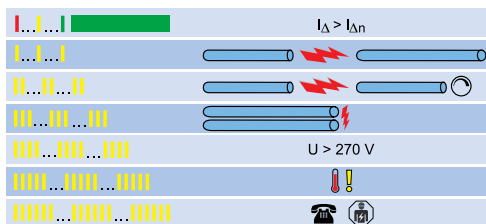


Tripping Characteristic AFDD+, Characteristics B and C



Declaration AFDD reason for tripping

After switching on the AFDD is initially a test LED (LED sequence red-yellow-green -> continuous green). Any previous arc tripping reasons are shown only one time after switching on again.



- Green, no arcing as tripping reason
- 1x yellow, serial arc
- 2x yellow, serial arc of a dimmed load
- 3x yellow, parallel arc
- 4x yellow, over voltage (about 270V) AFDD tripped for self protection
- 5x yellow, overtemperature in the device (about >115°C) AFDD tripped for self protection
- 6x yellow, device error, please check device by an expert

The last AFDD error can be reshown by pressing the test key while the device is switched on.

Short-circuit Selectivity AFDD+ 10-20 A towards Neozed¹⁾ / Diazed²⁾ / NH00³⁾

Short-circuit currents in kA, rated currents of fuses in A

Short-circuit selectivity **AFDD+** towards **Neozed** ¹⁾

AFDD+	Neozed ¹⁾										
	I _n [A]	16	20	25	32	35	40	50	63	80	100
B10/B10-OL	<0.5	0.5	0.9	2	2.3	3.7	8	10	10	10	
B13/B13-OL	<0.5	0.5	0.8	1.7	1.9	3	6	10	10	10	
B16/B15-OL		0.5	0.7	1.5	1.7	2.4	4.4	6.8	10	10	
B20/B20-OL			0.7	1.4	1.5	2.2	3.9	6	9.2	10	
C10/C10-OL	<0.5	0.5	0.8	1.7	1.9	3	6.1	10	10	10	
C13/C13-OL	<0.5	0.5	0.7	1.6	1.8	2.8	5.5	9.5	10	10	
C16/B15-OL		<0.5	0.7	1.3	1.5	2.2	4	6.2	10	10	
C20/C20-OL			0.6	1.3	1.4	2.1	3.7	5.6	8.5	10	

Short-circuit selectivity **AFDD+** towards **Diazed** ²⁾

AFDD+	Diazed ²⁾									
	I _n [A]	16	20	25	32	35	50	63	80	100
B10/B10-OL	<0.5	0.5	0.9	1.8	2.9	5.6	10	10	10	
B13/B13-OL	<0.5	0.5	0.8	1.5	2.4	4.5	10	10	10	
B16/B15-OL		0.5	0.8	1.3	2	3.4	8	10	10	
B20/B20-OL			0.7	1.3	1.9	3.1	7.1	10	10	
C10/C10-OL	<0.5	0.5	0.8	1.5	2.4	4.4	10	10	10	
C13/C13-OL	<0.5	0.5	0.8	1.4	2.3	4.2	10	10	10	
C16/B15-OL		<0.5	0.7	1.2	1.9	3.2	7.6	10	10	
C20/C20-OL			0.7	1.2	1.8	2.9	6.5	9.7	10	

Short-circuit selectivity **AFDD+** towards **NH00** ³⁾

AFDD+	NH00 ³⁾												
	I _n [A]	16	20	25	32	35	40	50	63	80	100	125	160
B10/B10-OL	<0.5	<0.5	0.8	1.5	2.3	3.2	5.7	9.1	10	10	10	10	10
B13/B13-OL	<0.5	<0.5	0.8	1.3	1.9	2.7	4.4	6.5	10	10	10	10	10
B16/B15-OL		<0.5	0.7	1.1	1.6	2.2	3.4	4.8	8	10	10	10	10
B20/B20-OL			0.6	1	1.4	2	3.1	4.3	7	10	10	10	10
C10/C10-OL	<0.5	<0.5	0.7	1.3	1.9	2.7	4.5	6.9	10	10	10	10	10
C13/C13-OL	<0.5	<0.5	0.7	1.2	1.8	2.5	4.1	6.1	10	10	10	10	10
C16/B15-OL		<0.5	0.6	1	1.5	2	3.1	4.4	7.5	10	10	10	10
C20/C20-OL			0.6	0.9	1.4	1.9	2.9	4.1	6.5	10	10	10	10

Darker areas: no selectivity

¹⁾ SIEMENS Type 5SE2; Size: D01, D02, D03; Operating class gG; Rated voltage: AC 400 V/DC 250 V

²⁾ SIEMENS Type 5SB2, 5SB4, 5SC2; Size: DII, DIII, DIV; Operating class gG; Rated voltage: AC 500 V/DC 500 V

³⁾ SIEMENS Type 3NA3 8, 3NA6 8, 3NA7 8; Size: 000, 00; Operating class gG; Rated voltage: AC 500 V/DC 250 V

Short-circuit Selectivity AFDD+ 25-40 A towards Neozed¹⁾ / Diazed²⁾ / NH00³⁾

Short-circuit currents in kA, rated currents of fuses in A

Short-circuit selectivity **AFDD+** towards **Neozed** ¹⁾

AFDD+	Neozed ¹⁾										
	I _n [A]	16	20	25	32	35	40	50	63	80	100
B25				1.2	1.3	1.8	3.1	4.7	6	6	
B32					1.2	1.7	2.7	3.8	5.5	6	
B40						1.3	1.7	2.2	2.7	4.2	
C25				1.1	1.3	1.8	2.8	3.9	5.6	6	
C32					1.2	1.7	2.6	3.6	5.1	6	
C40						1.3	1.9	3.3	3.2	5.8	

Short-circuit selectivity **AFDD+** towards **Diazed** ¹⁾

AFDD+	Diazed ²⁾									
	I _n [A]	16	20	25	32	35	50	63	80	100
B25					1.1	1.5	2.4	5.5	6	6
B32						1.4	2.1	4.3	6	6
B40							1.4	2.4	2.9	5.1
C25					1.1	1.5	2.3	4.4	6	6
C32						1.4	2.2	4.1	5.6	6
C40							1.6	2.8	3.6	6

Short-circuit selectivity **AFDD+** towards **NH00** ³⁾

AFDD+	NH00 ³⁾												
	I _n [A]	16	20	25	32	35	40	50	63	80	100	125	160
B25				0.9	1.2	1.6	2.4	3.4	5.5	6	6	6	6
B32					1.1	1.4	2.1	2.9	4.3	6	6	6	6
B40							1.4	1.9	2.8	4.1	6	6	6
C25				0.9	1.2	1.6	2.3	3	4.6	6	6	6	6
C32					1.1	1.5	2.1	2.8	4.3	6	6	6	6
C40							1.5	2.1	3.1	5.4	6	6	6

Darker areas: no selectivity

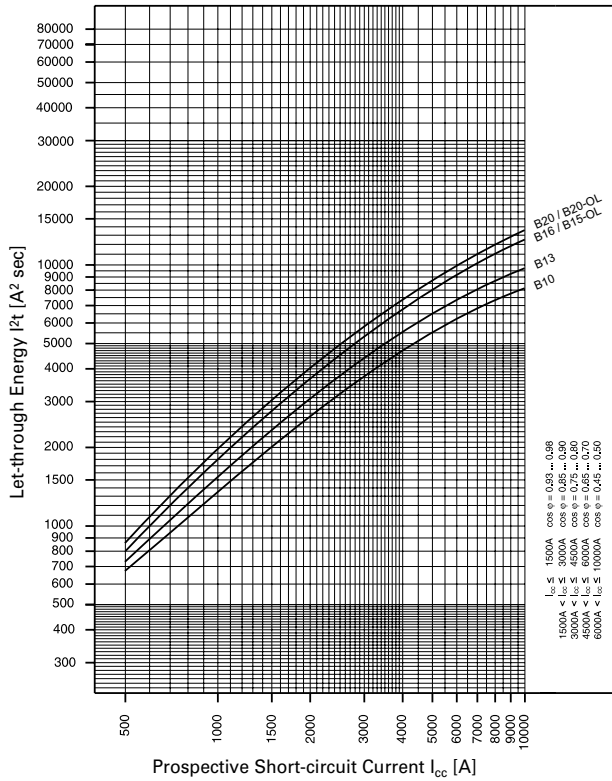
¹⁾ SIEMENS Type 5SE2; Size: D01, D02, D03; Operating class gG; Rated voltage: AC 400 V/DC 250 V

²⁾ SIEMENS Type 5SB2, 5SB4, 5SC2; Size: DII, DIII, DIV; Operating class gG; Rated voltage: AC 500 V/DC 500 V

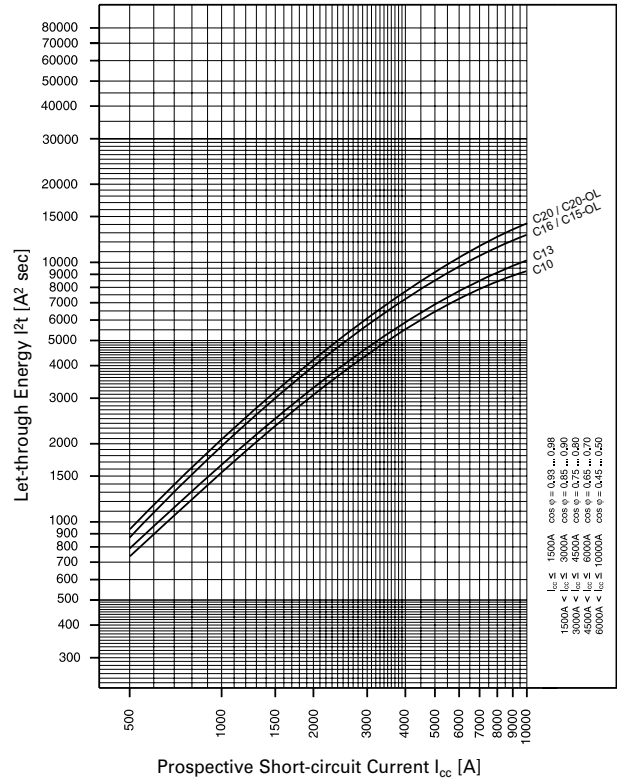
³⁾ SIEMENS Type 3NA3 8, 3NA6 8, 3NA7 8; Size: 000, 00; Operating class gG; Rated voltage: AC 500 V/DC 250 V

Let-through Energy AFDD+

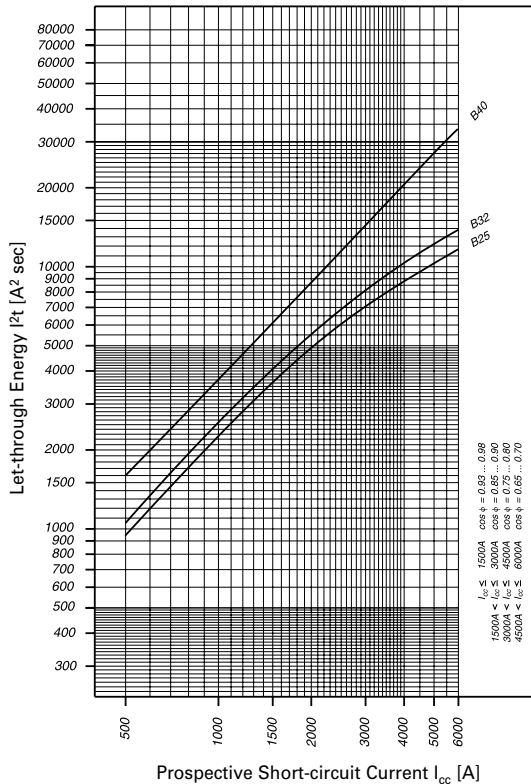
Let-through Energy AFDD+, Characteristic B, 2-pole, 10-20 A



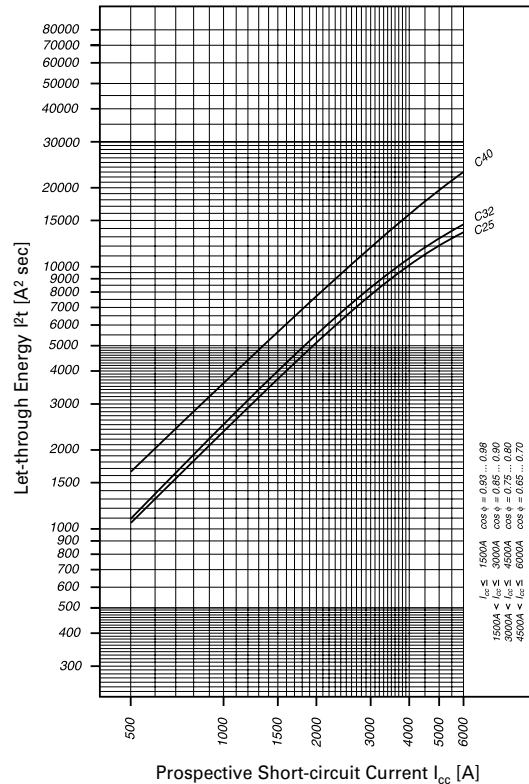
Let-through Energy AFDD+, Characteristic C, 2-pole, 6-20 A



Let-through Energy AFDD+, Characteristic B, 2-pole, 25-40 A



Let-through Energy AFDD+, Characteristic C, 2-pole, 25-40 A



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Publication No. CA019040EN
Article number: 302723-MK
November 2022

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