Technical specifications

General system data

Type		BD2-...
Standards and specifications		IEC/EN 60439-1 and -2 (IEC/EN 61439-1 and -6 as from 2015)
Rated insulation voltage U_i	V AC/DC	690/800
Rated operational voltage U_e	V AC	690
Frequency	Hz	50
Rated current I_n		
• Aluminum busbars	A	160 ... 1000
• Copper busbars	A	160 ... 1250
Climatic proofing		
• Damp heat, constant, according to IEC 60068-2-78		40 °C/93 %/RH/56d
• Damp heat, cyclic, according to IEC 60068-2-30		56 x (25 ... 40 °C/3 h; 40 °C/9 h; 40 ... 25 °C/3_..._6 h; 25 °C/6 h) 95 % RH
• Cold according to IEC 60068-2-1		-45 °C, 16 h
• Temperature change according to IEC 60068-2-14		-45 ... 55 °C; 5 cycles (1 °C/min); holding time min. 30 min
• Salt spray test according to IEC 60068-2-52		Severity grade 3
• Ice formation according to IEC 60068-2-52		Composite test of damp heat, cyclic [56x (25-40 °C/3 h; 40 °C/9 h; 40-25 °C/3-6 h; 25 °C/6 h)/95 %RH] + cold [-45 °C, 16 h]
Ambient temperature min./max./24h average	°C	-5/+40/+35
Environment classes were derived from climatic proofing tests		
• Climatic		1K5 (storage) = 3K7L (operation without exposure to the sun); 2K2 (transport)
• Chemically active		Salt spray, more contaminants optional 1C2 (storage) = 3C2 (operation) = 2C2 (transport)
• Biological		Is covered by IP degrees of protection and type of packaging 1B2 (storage) = 3B2 (operation) = 2B2 (transport)
• Mechanically active		Is covered by IP degrees of protection and type of packaging 1S2 (storage) = 3S2 (operation) = 2S2 (transport)
Degree of protection according to IEC/EN 60529 (installation type 2)		
• Trunking units		IP52
• Trunking units with optional equipment on the busbar run		IP54, IP55
• Feeding units, tap-off units		IP54
• Feeding units and tap-off units with accessories		IP55
Material		
• Trunking units, feeding units, tap-off units		Hot-galvanized, painted sheet steel, light gray (RAL 7035)
• Exception: BD2-AK1/... tap-off units		Molded-plastic enclosure, light gray (RAL 7035)
• Busbars		
- Aluminum		Nickel-plated and tinned aluminum busbars
- Copper		Tinned copper busbars
Mounting position		Edgewise, flat, tap-off points on side
Weights		See "Selection and Ordering Data"

Tap-off units

Type	BD2-AK...					
Rated current I_n	**25 A**	**63 A**	**125 A**	**250 A**	**400 A**	**630 A**
Switching capacity of contact system	AC-22B	--	--	--	--	--
Switching capacity of the built-in switch-disconnector according to IEC/EN 60947-3 at 400 V	--	AC-22B	AC-21B	--	--	--
Max. admissible rated prospective short-circuit withstand current when tap-off units with miniature circuit breakers are used:	10 kAeff: For higher prospective short-circuit currents the "back-up protection"[1] for the miniature circuit breakers must be noted. 25 kAeff: For higher rated prospective short-circuit currents the upstream protective device must limit to: – max. let-through energy I^2t = 12 × 10^4 A^2s; – max. let-through current I_D= 9.5 kA					

[1] Back-up protection, see page 4/75.

Important configuring notes

Not every tap-off unit has a rated voltage of 690 V and a short-circuit rating according to the system value.

The short-circuit rating and rated voltage of the tap-off units used in a system must be appropriate for it.

If the rated voltage of a tap-off unit does not match, choose one equipped with the appropriate components. Higher short-circuit currents must be limited by upstream protective devices (e.g. circuit breakers).

Trunking units with aluminum conductor

Type				BD2A-.-160	BD2A-.-250	BD2A-.-400
Conducting paths						
Rated insulation voltage U_i			V AC/DC	690/800	690/800	690/800
Rated operational voltage U_e			V AC	690	690	690
Frequency			Hz	50 ... 60	50 ... 60	50 ... 60
Rated current I_n			A	160	250	400
Impedance per unit length of conducting paths with 50 Hz and 20 °C ambient temperature (cold bars)						
• Equivalent resistance		R_{20}	mΩ/m	0.484	0.302	0.167
• Positive reactance		X_{20}	mΩ/m	0.162	0.131	0.123
• Impedance		Z_{20}	mΩ/m	0.511	0.330	0.207
Impedance per unit length of conducting paths with 50 Hz and 20 °C ambient temperature (bar under operating conditions warm)						
• Equivalent resistance		R_1	mΩ/m	0.588	0.375	0.215
• Positive reactance		X_1	mΩ/m	0.160	0.128	0.122
• Impedance		Z_1	mΩ/m	0.610	0.397	0.247
Impedance of conducting paths in event of a fault						
• AC resistance per unit length		R_F	mΩ/m	0.959	0.673	0.548
• Positive reactance per unit length		X_F	mΩ/m	0.681	0.487	0.456
• Impedance per unit length		Z_F	mΩ/m	1.159	0.831	0.713
Zero sequence impedance acc. to IEC/EN 60909 (VDE 0102)	Phase to N	R_0	mΩ/m	2.050	1.340	1.217
		X_0	mΩ/m	0.884	0.750	0.640
		Z_0	mΩ/m	2.232	1.535	1.375
	Phase to PE	R_0	mΩ/m	2.018	1.071	1.059
		X_0	mΩ/m	0.416	0.567	0.518
		Z_0	mΩ/m	2.061	1.212	1.179
Short-circuit rating						
• Rated peak withstand current I_{pk}			kA	17	32	40
• Rated short-time withstand current I_{cw}		t = 1 s	kA	5.5	10	16
		t = 0.1 s	kA	10	16	20
Number of conductors				5	5	5
Conductor cross-section		L1, L2, L3	mm^2	63	108	205
		N	mm^2	63	108	205
		PE	mm^2	63	108	205
		$^1/_2$ PE	mm^2	63	108	205
Conductor material				Al	Al	Al
Max. interval between trunking unit at normal mechanical loading						
• Edgewise			m	4	4	4
• Edgewise with BD2-BD[1)]			m	4	4	4
• Flat			m	3.5	3.5	3.5
Fire load[2)]			kWh/m	1.32	1.32	1.32

1) When using BD2-BD spacer bracket.

2) Values for trunking units with tap-off points.
For more values, see page 4/21.

The equivalent copper cross-section of the exterior profile of the enclosure is:
- 64 mm^2 for size 1 up to 400 A
- 77 mm^2 for size 2 from 630 A to 1250 A

The following must be noted in this connection:
1. This enclosure cross-section does not apply to the two flange covers at the connection point.
2. The complete enclosure comprises two enclosure halves and flange covers at the connection point. These items form part of the protective measures. The impact of the enclosure is taken into account in the measurements of the fault loops for the impedance in the event of a fault (Z_f) and for the impedance (Z_{20}) according to the currently valid technical specifications.

General data

Trunking units with aluminum conductor

Type				BD2A-.-630	BD2A-.-800	BD2A-.-1000
Conducting paths						
Rated insulation voltage U_i			V AC/DC	690/800	690/800	690/800
Rated operational voltage U_e			V AC	690	690	690
Frequency			Hz	50 ... 60	50 ... 60	50 ... 60
Rated current I_n			A	630	800	1000
Impedance per unit length of conducting paths with 50 Hz and 20 °C ambient temperature (cold bars)						
• Equivalent resistance		R_{20}	mΩ/m	0.093	0.073	0.051
• Positive reactance		X_{20}	mΩ/m	0.065	0.058	0.058
• Impedance		Z_{20}	mΩ/m	0.113	0.094	0.077
Impedance per unit length of conducting paths with 50 Hz and 20 °C ambient temperature (bar under operating conditions warm)						
• Equivalent resistance		R_1	mΩ/m	0.134	0.098	0.066
• Positive reactance		X_1	mΩ/m	0.065	0.057	0.057
• Impedance		Z_1	mΩ/m	0.149	0.114	0.088
Impedance of conducting paths in event of a fault						
• AC resistance per unit length		R_F	mΩ/m	0.199	0.225	0.157
• Positive reactance per unit length		X_F	mΩ/m	0.179	0.239	0.240
• Impedance per unit length		Z_F	mΩ/m	0.268	0.328	0.287
Zero sequence impedance acc. to IEC/EN 60909 (VDE 0102)	Phase to N	R_0	mΩ/m	0.432	0.494	0.340
		X_0	mΩ/m	0.329	0.312	0.301
		Z_0	mΩ/m	0.543	0.584	0.454
	Phase to PE	R_0	mΩ/m	0.429	0.438	0.408
		X_0	mΩ/m	0.377	0.280	0.273
		Z_0	mΩ/m	0.571	0.520	0.491
Short-circuit rating						
• Rated peak withstand current I_{pk}			kA	64	84	90
• Rated short-time withstand current I_{cw}		t = 1 s	kA	26	32	34
		t = 0.1 s	kA	32	40	43
Number of conductors				5	5	5
Conductor cross-section		L1, L2, L3	mm^2	381	446	699
		N	mm^2	381	446	699
		PE	mm^2	381	446	699
		$^1/_2$ PE	mm^2	381	381	446
Conductor material				Al	Al	Al
Max. interval between trunking unit at normal mechanical loading						
• Edgewise			m	3.5	3.5	3
• Edgewise with BD2-BD[1)]			m	1.75	1.75	1.5
• Flat			m	3	3	2.5
Fire load[2)]			kWh/m	2	2	2

1) When using BD2-BD spacer bracket.

2) Values for trunking units with tap-off points.
For more values, see page 4/21.