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SBG/EXP/FR/200906

Make the most of your Energy

Schneider Busway

From 20A to 6000A

14 type test · KEMA KEUR · ASTA · Zone 4 Seismic Compliance · Made by Schneider Electric · 99.9% Cu · Bimetal Technology

Schneider Electric

Schneider Busway, make the most of your energy!

Being a global specialist in energy management, Schneider Electric provides you the highest energy efficient, safest and most reliable busway system for power distribution.

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Schneider Busway, make the most of your energy!

Being a global specialist in energy management, Schneider Electric provides you the **highest energy efficient, safest and most reliable** busway system for power distribution.

- 70,000 kilometers busway installed worldwide
- IEC and UL full type tested for each and every rating
- KEMA-KEUR, ASTA Diamond, UL compliance
- Seismic zone 4 compliance
- Complete package solution
- Made by Schneider Electric
- Mylar® insulation by DuPont
- 99.9% copper purity
- Bimetal technology
- Steel/Aluminum housing
- Continuous earth

70,000 KM installed worldwide

14 type test

KEMA-KEUR Certification

ASTA Diamond Certification

UL listed

Seismic compliance

Complete solution

Made by Schneider Electric

Mylar® insulation by DuPont

99.9% Cu
Highest purity

Bimetal Technology

Steel Alum housing

Earth continuity

70,000 Kilometers busway installed worldwide

With over 50 years of experience, more than 70,000 kilometers of Schneider busway has been installed around the world; Schneider busway is now on the second round of world tour!

Schneider Electric Presence in 100 countries

Schneider Electric is present at more than 100 countries, providing you strong local support and quick response!

Made by Schneider Electric

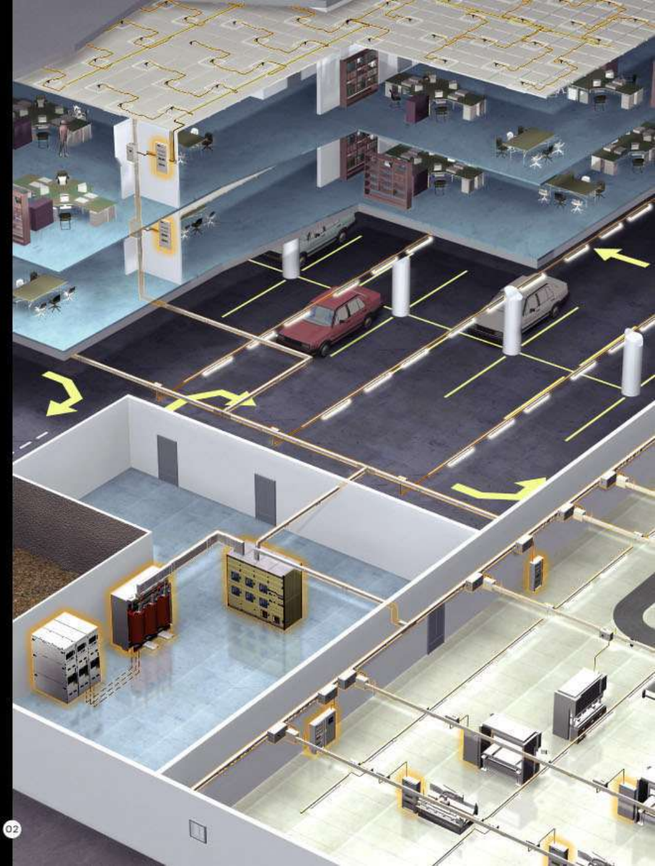
Schneider Electric stands behind our products whether they are made in Europe, America or Asia Pacific, and the product design and quality meet the exact same standards in all Schneider Electric facilities.

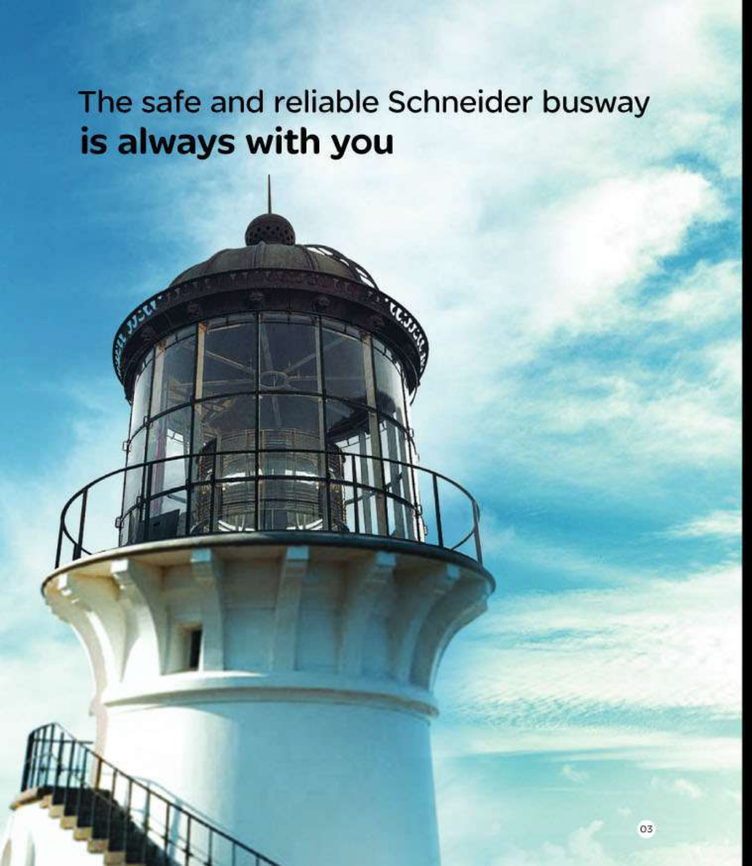
ISO 9001 · ISO 14001 · OHSAS 18001 · RoHS

Integrated and complete solutions

Schneider Electric offers complete and integrated solutions across multiple market segments. Schneider busway is part of the comprehensive offering of low and medium voltage electrical distribution system. (transformer, switchboard, busway, ect)

The result is an optimized and fully coordinated electrical installation with higher performance through full electrical, mechanical and communication compatibility.





The safe and reliable Schneider busway
is always with you

14 type test Full type tests, Reliable quality









According to IEC standard 60439-2:2005, there are 14 type tests for busway system.

The 14 type tests include the verifications of

- temperature-rise limits (8.2.1)
- dielectric properties (8.2.2)
- short-circuit strength (8.2.3)
- the effectiveness of the protective circuit (8.2.4)
- clearances and creepage distances (8.2.5)
- mechanical operation (8.2.6)
- the degree of protection (8.2.7)
- EMC tests (7.10)
- the resistance of insulating materials to abnormal heat and fire (8.2.9)
- structural strength (8.2.10)
- crushing resistance (8.2.12)
- the electrical characteristics of the busbar trunking system (8.2.13)
- resistance to flame propagation (8.2.14)
- fire resistance in building penetration (8.2.15)

Safety Certification

KEMA-KEUR

ASTA Diamond

Schneider busway performed full type test for all ratings according to IEC60439:2005 and obtained KEMA-KEUR and ASTA Diamond certification

	KEMA-KERU / ASTA Diamond	KEMA / ASTA
Test	full type test	as specified by manufacturer
Time	continuous surveillance	one time test
Object	production line, identical to the original tested sample	one sample
Standard	latest standard	as specified by manufacturer

Zone 4 Seismic compliance, Reliable system

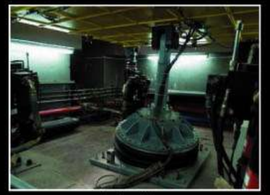
Why Seismic compliance important for busway?

There are more and more earthquakes all over the world, and people deserve to have higher requirement for the safety of building as well as electrical system in the case of an earthquake. The seismic compliance can guarantee that busway can work properly and safely and maintain its integrity even in the event of an earthquake.

Schneider Busway certified Zone 4 Seismic compliance

Schneider Busway is certified for UBC Zone 4 seismic conditions - the maximum seismic risk zone. The seismic test was performed in EERTC (Earthquake Engineering Research & Test Center) which is a member of Asian Pacific Network of Centers for Earthquake engineering Research (ANCER), and the test was done with actual physical product, not a computer simulation analysis.

test shaking table

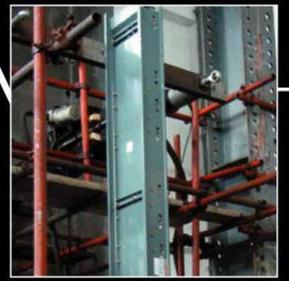


shaking driver

single and Repeated bending test

horizontal dynamic test

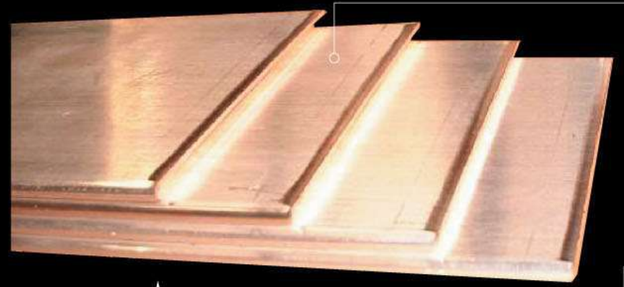
The tests at the lab include mechanical tests and dynamic tests. The dynamic tests are done with simulations of different kinds of waveforms of those biggest earthquakes - ***KOBE, EL Centro, OJIYA.***



twisting tests

vertical dynamic test

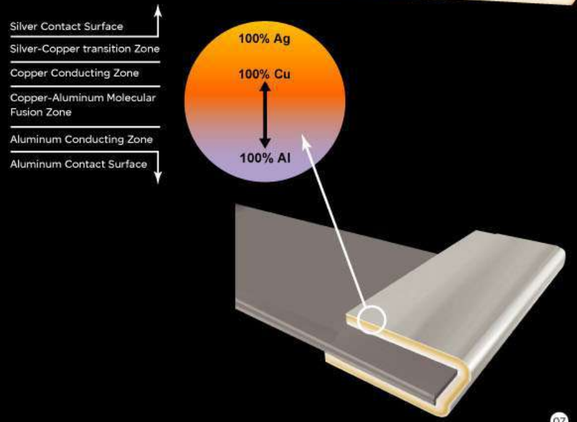
Energy Efficiency



Highest copper purity

99.9% Cu

- Only copper of 99.9% purity used, with silver plating at all lengths, minimize surface oxygenation, assure low surface contact resistance and low voltage drop.
- Large cross section ensures minimum heat rise and voltage drop.

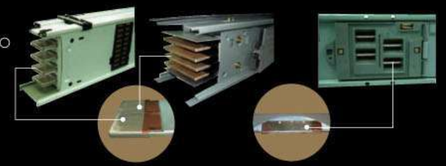


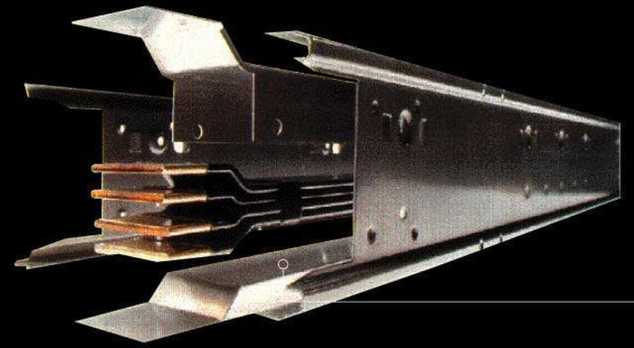
Laminated Bimetal (Copper contact)

The weakest link of busway power transportation is the electrical connection part (joint-pak and plug-in opening), where have high temperature rise and concentrated power consumption.

With unique Molecular Fusion technology, Schneider'Copper Contact Busway' breakthrough the bottleneck of electrical connection. It incorporates the advantage of low contact resistance of copper and the lightness of aluminum, brings excellent power distribution performance.

All contact surface are silver-plated copper, ensure high energy efficiency and stable power quality.





Continuous earth

'One Piece Earth Bus' design

- Ensure the earth continuity from joint to joint, maintain the continuity even if joint cover is removed.
- Eliminate possible malfunction caused by bolting connection.
- The two ground bus bars completely encircle the phase conductor and provide a very effective high level ground path for ground faults.
- Academic study indicates that this ground bus system offers the lowest earth fault loop impedance.
- ensure an effective connection, protecting people and equipment from electrical shock.
- Both integral and internal earth are optional.

Effective cross sectional area

- The effective cross sectional area of full length remains the same.
- Eliminate possible malfunction caused by bolting connection between phase bars.

Free of Orientation

- Universal installation, no need of derating, regardless of orientation.
- Excellent compact design, ensure the good heat dissipation.

Maximum contact (non-welded design)

- plug-in jaw of a plug-in unit contact with busbar itself, not through a welded stab.
- This non-welded design eliminates the danger of imperfect welding and sudden reduction of conductor cross section and ensures a safe and effective power transportation.

Mylar® insulation by DuPont

- Two layers surrounding each busbar, 4 layers between phases.
- Class B, 130C, excellent dielectric performance.
- Over 40 years of application record without failure.
- Class F is optional upon request.
- Halogen free, no toxic emission, safe in event of fire.

Easy Installation

Steel/Aluminum housing

- Stronger, more durable and rigid enclosure, higher mechanical strength.
- Plug-in units can be loaded on either side of the busway without causing the busway to twist.
- Tough and durable uniform "E-Coat" epoxy paint finish.
- No deformation, cracking on enclosure during transportation, handling and installation.

Finger proof

Shutter design, maximum protect for human from direct contact with live part.

High degree of protection

- Against dust and water: IP 40 - IP67
- Against mechanical impact: IK10

Easy installation

- Single bolt connection makes busway installation faster.
- Belleville washer provides equal pressure across the complete joint contact area to assure proper electrical contact.
- Double, Silver plated surface contact ensure a good current continuity.
- Adjustable range: +-13mm

Slide Contact

- The system is made up of springs and an area of sliding contacts that allow conductor movement (maximum 21mm) while maintaining outstanding electrical contact.
- Each Joint can absorb expansion, no need for expansion unit.
- Sliver plated contact, lower contact resistance and voltage drop.
- Easily tighten by rotating the red button 90 deg.

Intelligent plug-in unit

Safe protection

- All plug-in units equip with Schneider original circuit breaker only, fully compatible with busway system.
- Schneider circuit breaker can provide complete overload, short circuit and earthing malfunction protection.
- Transparent shield inside the PIU can prevent a direct contact with live part.

Accurate measurement and easy communication

- Schneider plug-in unit can measure and display all kinds of electrical data accurately.
- With communication module, the data of plug-in unit can be accessed through network, making power management easier for you.

Triple interlock

- Plug-in unit can not be switched ON until it is installed in the right position.
- When the unit is switched ON, the door can not be opened and removed from the busway.
- When the door is opened, the unit can not be switched ON.

Spring jaw design

- The spring jaw is composed of different metal - copper and steel.
- The spring design ensures the plug-in jaw always has firm and tight contact with the busbar regardless of hundreds of times of operation and temperature fluctuation.

Earthing protection

Earthing path is established at first and broken off at last as to protect human against electrical shock.

Worldwide major project reference, Asia Pacific and Middle East

Buildings

Office Building
- Petronas Twin Towers (Malaysia)
- International Finance Centre (Hong Kong)
- International Commerce Centre (Hong Kong)
- Shanghai Jin Mao Building (China)
- Grand Indonesia (Indonesia)
- Dubai International Finance Center (UAE)

Shopping Center
- Carrefour supermarket (World wide)
- Central World Mall (Thailand)
- Mall of Arabia (Saudi Arabia)
- Mall of the Emirates (UAE)
- Queensgate shopping Mall (New Zealand)
- Las Vegas Sands (Macau)
- Kyoto Station South Area Development (Japan)

Exhibition Center
- Guangzhou International Exhibition Centre (China)
- Convention & Exhibition Centre (Hong Kong)
- Asia World Expo (Hong Kong)
- Abu Dhabi National Exhibition Center (UAE)
- National Convention Centre (Vietnam)
- National Olympic Stadium (China)

Hospital
- Mina Hospital (Saudi Arabia)
- The first affiliated Hospital, Guangzhou (China)
- Angkor International Hospital (Thailand)
- Dukhan Hospital (Qatar)
- Atomic Hospital (Korea)

Bank
- Bank of China Tower (Hong Kong)
- China Construction Bank (China)
- Maybank (Malaysia)
- Commercial Bank (Qatar)
- Islamabad stock exchange (Pakistan)
- Central Bank of Kuwait (Kuwait)

Industry

Automotive
- General Motors (World wide)
- Maruti Suzuki (India)
- Toyota Motors (Thailand)
- Mitsubishi Motors (Australia)

Electronic
- Hitachi Semiconductor Manufacturing (China)
- Chartered Semiconductor Manufacturing (Singapore)
- Intel Plant (Malaysia)
- Infineon Plant (Malaysia)
- Seagate Korat (Thailand)
- ST Microelectronics (Singapore)
- Jabil Plant (India)
- Seagate Factory (Singapore)

Light Industry
- 3M Tuas Factory & Warehouse (Singapore)
- Bosch (Korea)

Energy & Infrastructure

Energy Power
- Three Gorges Power Station (China)
- Wind Farm (China)
- Qatar Petrol GTC (Qatar)
- ExxonMobil Chemical plant (Malaysia)
- Petro Rabigh (Saudi Arabia)
- Hysco Steel (India)
- Shell Chemical plant (Malaysia)

Airport
- Beijing Capital New International Airport (China)
- Suvarnabhumi Airport (Thailand)
- Tan Son Nhat Airport (Vietnam)
- India Ahmedabad Airport (India)
- Cairo Airport (Egypt)
- Dubai Airport (UAE)
- Jebel Ali Airport (UAE)
- Aircargo Bangkok Air (Thailand)

Metro
- Guangzhou Metro (China)
- Singapore Metro (Singapore)
- Metro Abdibina (Indonesia)
- Dubai Metro (UAE)

Data Center & Networks
- Saudi Telecom Company (Saudi Arabia)
- Bharti Data Centre (India)
- CICC Data Center (China)
- IBM, PUNE (India)
- SM E-COM Project (Philippines)
- True IDC (Thailand)

Residential
- Mita Koyamacho Apartment (Japan)
- City Garden (UAE)
- Regatta (Indonesia)
- Cybergate 2 (Philippines)
- Farm House (Thailand)
- Golden West Lake (Vietnam)

High Power busway (630A-6000A)
I-LINE II Copper Busway

General Info (I-LINE II CFC)	
Ampere Rating:	630 - 6000A
IP Rating:	IP40 - IP67
System:	3L+N+PE/3L+N
Operation Voltage:	1000V
Insulation Voltage:	1000V
Frequency:	50/60 Hz
Standard Length:	10 feet
Max/Min length:	10 feet/16 inch
Finish:	ANSI49
Tap-off Intervals:	610mm/1219mm
Neutral Capacity:	100% as phase bar
Earth bar:	50% Capacity, Integral/Internal
Tap-off unit Ampere Rating:	16A - 1600A

		Unit	Busbar trunking rating (A)													
			630	800	1000	1250	1350	1600	2000	2500	3000	3200	4000	5000	6000	
Short-circuit current Withstand																
Allowable rated short-time withstand current (t=1s)	Icw	kA	40	40	50	65	65	65	65	75	80	90	100	120	120	
Allowable rated peak current	Ipk	kA	84	84	105	143	143	143	143	165	176	198	220	264	264	
Conductor characteristics																
Phase Phase conductors																
Average resistance at an ambient temperature of 20˚C	R20	mΩ/m	0.059	0.050	0.045	0.037	0.028	0.024	0.020	0.014	0.012	0.011	0.009	0.008	0.006	
Average resistance at Inc	R1	mΩ/m	0.074	0.068	0.056	0.049	0.037	0.034	0.026	0.018	0.016	0.014	0.012	0.011	0.008	
Average reactance at Inc and at 50 Hz	X1	mΩ/m	0.031	0.029	0.027	0.026	0.018	0.016	0.015	0.012	0.010	0.009	0.007	0.006	0.005	
Average impedance at Inc and at 50 Hz	Z1	mΩ/m	0.080	0.074	0.062	0.055	0.041	0.037	0.030	0.021	0.019	0.017	0.014	0.012	0.009	
Protective conductor (PE)																
Average resistance at an ambient temperature of 20˚C		mΩ/m	0.177	0.155	0.166	0.146	0.122	0.11	0.095	0.075	0.071	0.047	0.046	0.041	0.035	
Voltage drop																
			Line-to-line voltage drop, in volts(V) per meter at 50 Hz with concentrated load. For the case of loads distributed over the run, the voltage drops need times the load distribution factor.													
For a cosine φ of	1	V/m	0.081	0.094	0.097	0.105	0.086	0.094	0.091	0.078	0.085	0.076	0.082	0.094	0.083	
	0.95		0.087	0.102	0.107	0.118	0.095	0.103	0.102	0.090	0.097	0.088	0.094	0.106	0.094	
	0.9		0.087	0.102	0.108	0.120	0.096	0.103	0.104	0.093	0.100	0.091	0.096	0.108	0.096	
	0.85		0.087	0.101	0.107	0.120	0.095	0.102	0.104	0.094	0.100	0.091	0.096	0.108	0.096	
	0.8		0.085	0.099	0.106	0.118	0.094	0.101	0.103	0.094	0.100	0.091	0.096	0.108	0.095	

High Power busway (630A-5000A)
I-LINE II Copper Contact Busway

General Info (I-LINE II BFC)	
Ampere Rating:	800 - 5000A
IP Rating:	IP40 - IP67
System:	3L+N+PE/3L+N
Operation Voltage:	1000V
Insulation Voltage:	1000V
Frequency:	50/60 Hz
Standard Length:	10 feet
Max/Min length:	10 feet/16 inch
Finish:	ANSI49
Tap-off Intervals:	610mm/1219mm
Neutral Capacity:	100% as phase bar
Earth bar:	50% Capacity, Integral/Internal
Tap-off unit Ampere Rating:	16A - 1600A

		Unit	Busbar trunking rating (A)									
			800	1000	1250	1350	1600	2000	2500	3200	4000	5000
Short-circuit current Withstand												
Allowable rated short-time withstand current (t=1s)	Icw	kA	40	50	50	50	65	65	90	100	120	150
Allowable rated peak current	Ipk	kA	84	105	105	105	143	143	198	220	264	330
Conductor characteristics												
Phase Phase conductors												
Average resistance at an ambient temperature of 20˚C	R20	mΩ/m	0.071	0.057	0.043	0.038	0.032	0.025	0.021	0.016	0.012	0.01
Average resistance at Inc	R1	mΩ/m	0.073	0.064	0.055	0.049	0.035	0.033	0.029	0.02	0.017	0.014
Average reactance at Inc and at 50 Hz	X1	mΩ/m	0.043	0.042	0.013	0.013	0.025	0.012	0.01	0.008	0.008	0.005
Average impedance at Inc and at 50 Hz	Z1	mΩ/m	0.085	0.076	0.056	0.051	0.043	0.035	0.031	0.021	0.018	0.015
Protective conductor (PE)												
Average resistance at an ambient temperature of 20˚C		mΩ/m	0.186	0.168	0.120	0.118	0.107	0.117	0.065	0.047	0.039	0.036
Voltage drop												
			Line-to-line voltage drop, in volts(V) per meter at 50 Hz with concentrated load. For the case of loads distributed over the run, the voltage drops need times the load distribution factor.									
For a cosine φ of	1	V/m	0.102	0.111	0.118	0.115	0.096	0.113	0.127	0.109	0.114	0.118
	0.95		0.115	0.128	0.121	0.119	0.113	0.121	0.133	0.117	0.126	0.126
	0.9		0.118	0.131	0.119	0.117	0.116	0.12	0.132	0.117	0.127	0.125
	0.85		0.118	0.132	0.115	0.114	0.118	0.118	0.129	0.115	0.127	0.123
	0.8		0.117	0.132	0.111	0.111	0.118	0.116	0.126	0.113	0.125	0.121

Medium Power busway (100A-800A)
Canalis Copper busway

General Info (Canalis KSC)	
Ampere Rating:	100 - 800A
IP Rating:	IP40 - IP54
System:	3L+N+PE
Operation Voltage:	690V
Insulation Voltage:	690V
Frequency:	50/60Hz
Standard Length:	1.5/2/3 meter
Max/Min length:	3 meter/0.375 meter
Finish:	White RAL 9001
Tap-off Intervals:	1000 mm on each face
Neutral Capacity:	100% as phase bar
Earth bar:	50% Capacity, Integral/Internal
Tap-off unit Ampere Rating:	25A - 400A

		Unit	Busbar trunking rating (A)						
			100	160	250	400	500	630	800
Short-circuit current Withstand									
Allowable rated short-time withstand current (t=1s)	Icw	kA	2.6	4	10	21.5	25	31	34
Allowable rated peak current	Ipk	kA	17	20	22	45	52.5	65	71.5
Conductor characteristics									
Phase Phase conductors									
Average resistance at an ambient temperature of 20˚C	R20	mΩ/m	0.972	0.625	0.206	0.118	0.054	0.067	0.029
Average resistance at Inc	R1	mΩ/m	1.224	0.854	0.275	0.154	0.071	0.090	0.039
Average reactance at Inc and at 50 Hz	X1	mΩ/m	0.457	0.233	0.192	0.112	0.116	0.070	0.071
Average impedance at Inc and at 50 Hz	Z1	mΩ/m	1.307	0.885	0.335	0.190	0.136	0.114	0.081
Protective conductor (PE)									
Average resistance at an ambient temperature of 20˚C		mΩ/m	0.273	0.243	0.243	0.105	0.105	0.061	0.061
Voltage drop									
		Line-to-line voltage drop, in volts(V) per meter at 50 Hz with concerntrated load. For the case of loads distributed over the run, the voltage drops need times the load distribution factor.							
For a cosine φ of	1	V/m	0.106	0.074	0.024	0.013	0.006	0.008	0.00334
	0.9		0.113	0.075	0.029	0.016	0.010	0.010	0.00568
	0.8		0.106	0.071	0.019	0.016	0.011	0.010	0.00636
	0.7		0.102	0.066	0.029	0.016	0.011	0.010	0.00673

Medium Power busway (100A-800A)
Canalis Copper Contact busway

General Info (Canalis KSA)	
Ampere Rating:	100 - 800A
IP Rating:	IP40 - IP54
System:	3L+N+PE
Operation Voltage:	690V
Insulation Voltage:	690V
Frequency:	50/60 Hz
Standard Length:	1.5/2/3 meter
Max/Min length:	3 meter/0.375 meter
Finish:	White RAL 9001
Tap-off Intervals:	1000 mm on each face
Neutral Capacity:	100% as phase bar
Earth bar:	50% Capacity, Integral/Internal
Tap-off unit Ampere Rating:	25A - 400A

		Unit	Busbar trunking rating (A)						
			100	160	250	400	500	630	800
Short-circuit current Withstand									
Allowable rated short-time withstand current (t=1s)	Icw	kA	2.6	4	10	18.8	27.1	32.1	37.4
Allowable rated peak current	Ipk	kA	15.7	22	17	37.6	56.9	67.4	78.5
Conductor characteristics									
Phase Phase conductors									
Average resistance at an ambient temperature of 20˚C	R20	mΩ/m	1.059	0.490	0.206	0.142	0.091	0.074	0.045
Average resistance at Inc	R1	mΩ/m	1.395	0.661	0.294	0.190	0.123	0.101	0.061
Average reactance at Inc and at 50 Hz	X1	mΩ/m	0.457	0.233	0.192	0.112	0.110	0.070	0.071
Average impedance at Inc and at 50 Hz	Z1	mΩ/m	1.468	0.701	0.351	0.221	0.165	0.123	0.094
Protective conductor (PE)									
Average resistance at an ambient temperature of 20˚C		mΩ/m	0.279	0.216	0.216	0.105	0.105	0.061	0.061
Voltage drop									
		Line-to-line voltage drop, in volts(V) per meter at 50 Hz with concerntrated load. For the case of loads distributed over the run, the voltage drops need times the load distribution factor.							
For a cosine φ of	1	V/m	0.121	0.057	0.025	0.016	0.011	0.009	0.00528
	0.9		0.126	0.060	0.030	0.019	0.014	0.011	0.00743
	0.8		0.120	0.058	0.030	0.019	0.015	0.011	0.00792
	0.7		0.113	0.054	0.030	0.018	0.015	0.010	0.00805

Lighting busway (25A-40A)
Canalis KBB/KBA

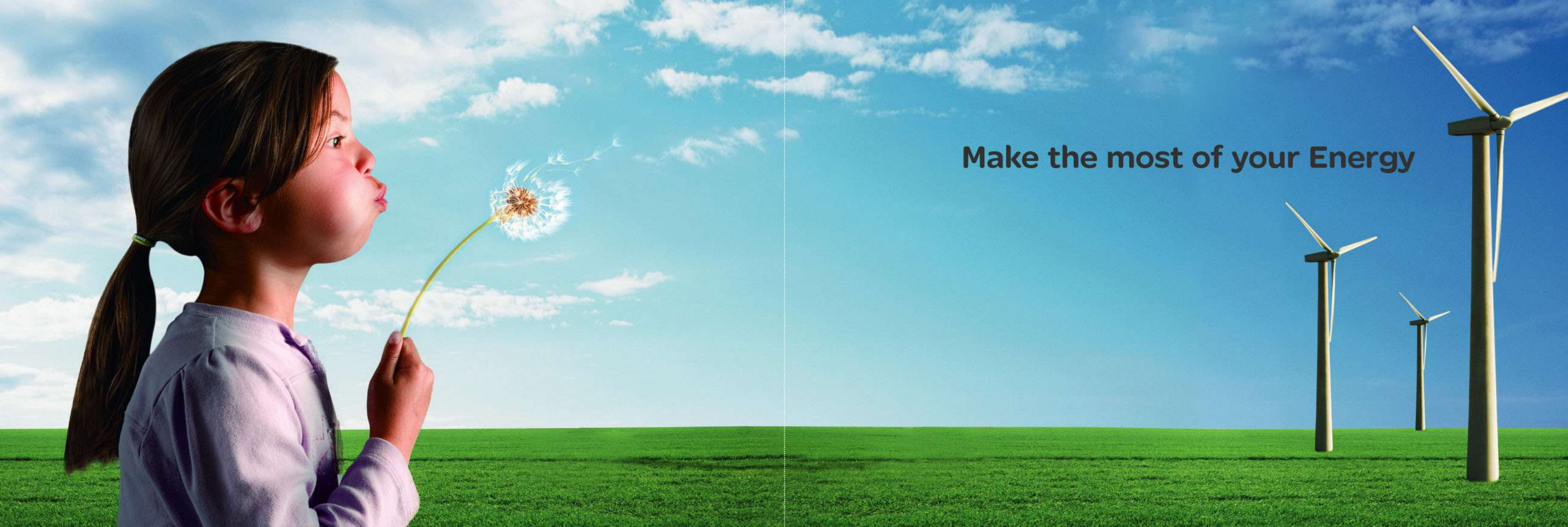
General Info (KBA/KBB)	
Ampere Rating:	25/40A
Number of circuits:	1 or 2
IP Rating:	IP55
Operation Voltage:	230 - 400V
Insulation Voltage:	690V
Frequency:	50/60 Hz
Standard Length:	2/3 meter
Finish:	Galvanized steel
Tap-off Intervals:	500/1000/1500 mm
Tap-off unit Ampere Rating:	10A/16A
Maximum distance between fixing points:	3/5 meter

		Unit	Busbar trunking rating (A)	
			25	40
Short-circuit current Withstand				
Allowable rated short-time withstand current (t=1s)	Icw	kA	0.44	0.94
Allowable rated peak current	Ipk	kA	4.4	9.6
Conductor characteristics				
Phase Phase conductors				
Average resistance at an ambient temperature of 20˚C	R20	mΩ/m	6.800	2.830
Average resistance at Inc	R1	mΩ/m	8.300	3.460
Average reactance at Inc and at 50 Hz	X1	mΩ/m	0.020	0.020
Average impedance at Inc and at 50 Hz	Z1	mΩ/m	8.330	3.460
Protective conductor (PE)				
Average resistance at an ambient temperature of 20˚C		mΩ/m	0.80/1.570	0.80/1.570
Voltage drop				
	Line-to-line voltage drop, in volts(V) per meter at 50 Hz with concerntrated load. For the case of loads distributed over the run, the voltage drops need times the load distribution factor.			
For a cosine φ of	1	V/m	0.720	0.300
	0.9		0.670	0.280
	0.8		0.610	0.250
	0.7		0.540	0.220

Lighting busway (20A)
Canalis KDP

General Info (KDP)	
Ampere Rating:	20A
Number of circuits:	1
IP Rating:	IP55
Operation Voltage:	230 - 400V
Insulation Voltage:	690V
Frequency:	50/60 Hz
Standard Length:	24/192 meters per roll
Tap-off Intervals:	1200/1350/1500/2400/2700/3000mm
Tap-off unit Ampere Rating:	10A/16A
Maximum distance between fixing points:	0.7 meter

		Unit	Busbar trunking rating (A)
			20
Short-circuit current Withstand			
Allowable rated short-time withstand current (t=1s)	Icw	kA	0.34
Allowable rated peak current	Ipk	kA	3.6
Conductor characteristics			
Phase Phase conductors			
Average resistance at an ambient temperature of 20˚C	R20	mΩ/m	6.800
Average resistance at Inc	R1	mΩ/m	8.300
Average reactance at Inc and at 50 Hz	X1	mΩ/m	0.020
Average impedance at Inc and at 50 Hz	Z1	mΩ/m	8.300
Protective conductor (PE)			
Average resistance at an ambient temperature of 20˚C		mΩ/m	7.250
Voltage drop			
	Line-to-line voltage drop, in volts(V) per meter at 50 Hz with concerntrated load. For the case of loads distributed over the run, the voltage drops need times the load distribution factor.		
For a cosine φ of	1	V/m	0.720
	0.9		0.650
	0.8		0.580
	0.7		0.500


Make the most of your Energy