

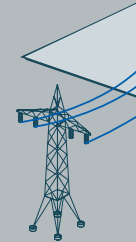
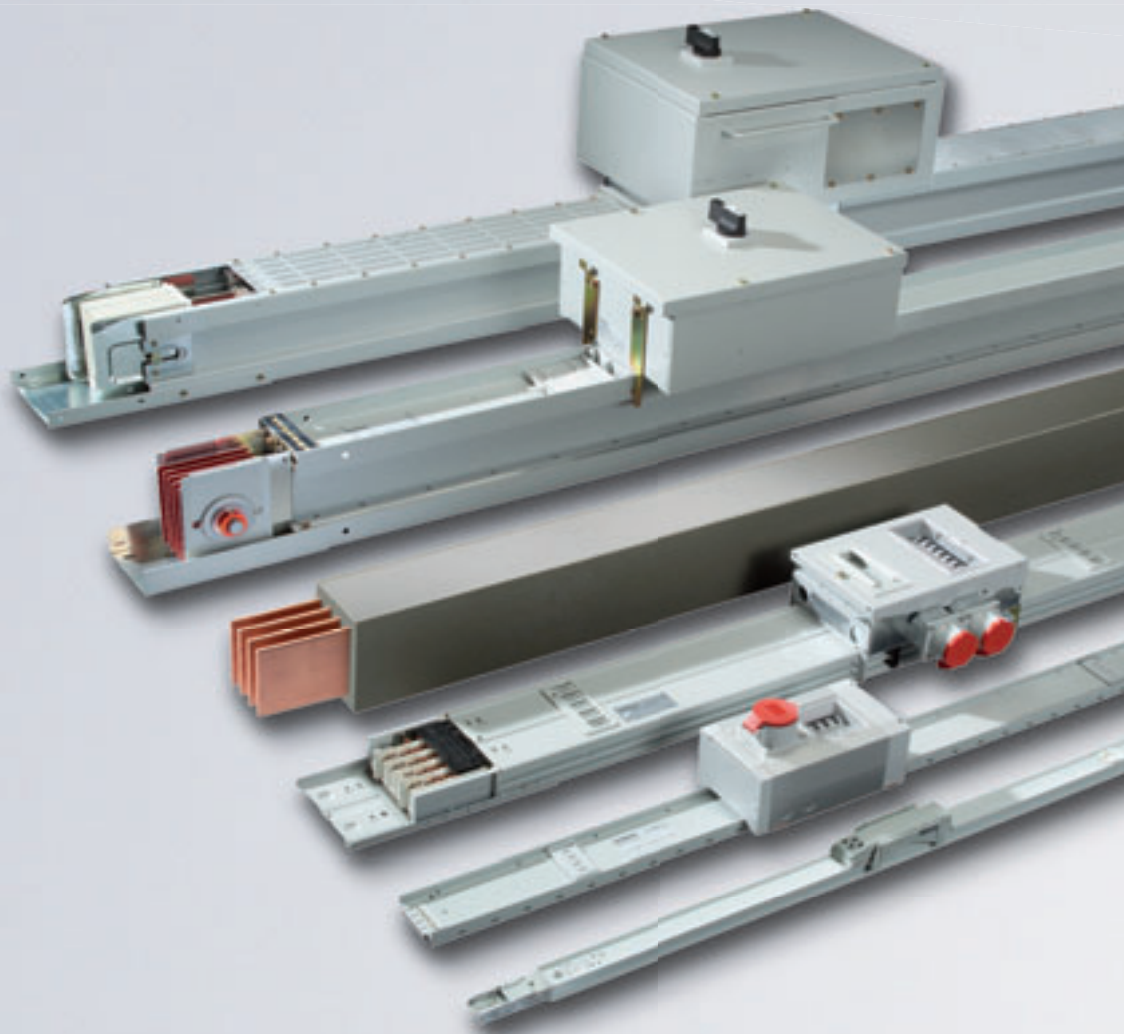
Safe and Flexible Power Distribution in the Automotive Industry



sivacon

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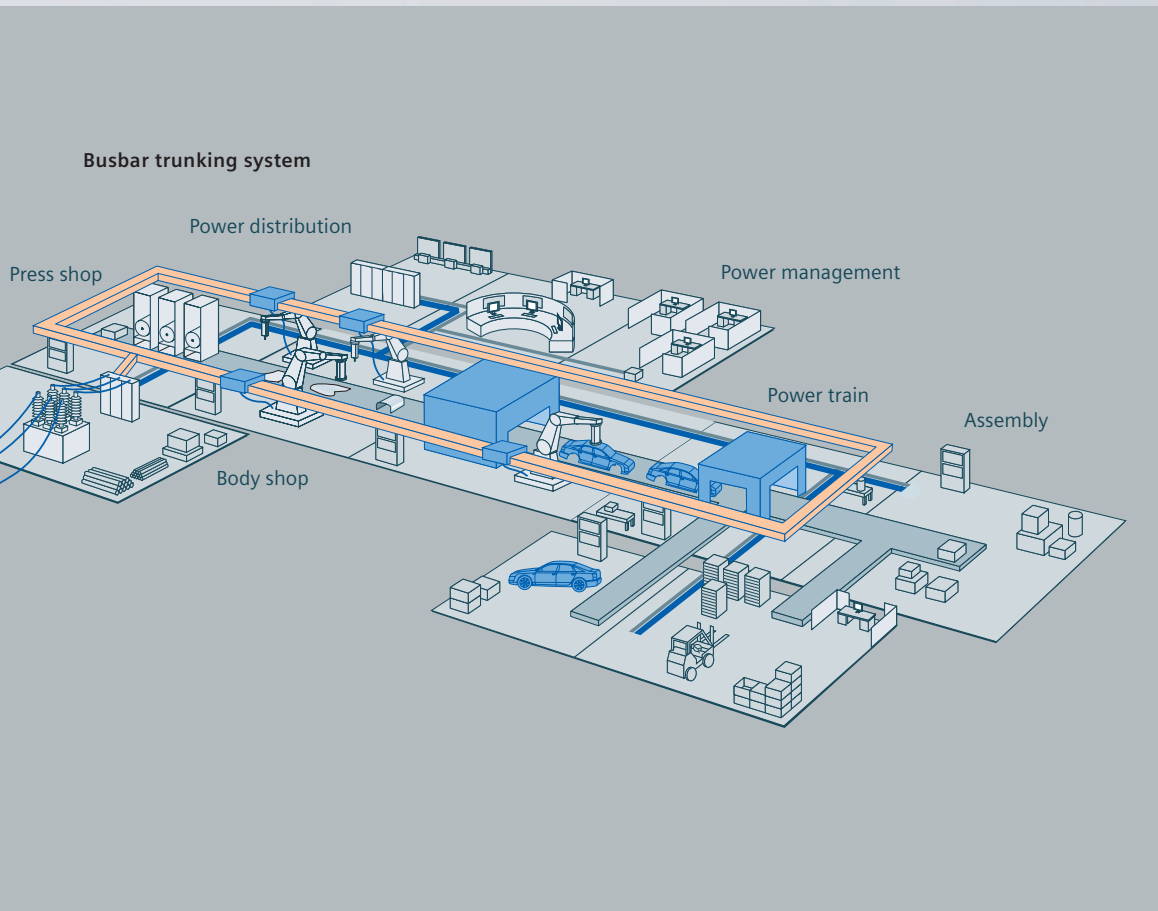
SIEMENS



Transformator

On the Fast Track with SIVACON Busbar Trunking Systems

Whether press shop, body shop or final assembly – every plant component of automotive production has to be reliably supplied with power around the clock. Not only are the power's quantity and quality of the essence – its availability must also be ensured wherever and whenever it is needed. These requirements necessitate a safe and foremost flexible power distribution whose adjustability is matched to today's fast-changing system architectures.



To keep up with the speed at which production plants in the automotive industry are currently changing, innovative busbar trunking systems should be clearly preferred over conventional cable installations. The SIVACON® 8PS busbar trunking system does not only offer a particularly high operational reliability, but can also be easily adjusted to rapidly changing requirements.

Enhanced adjustability

Instead of laboriously calculating and installing new cables in case of production conversions, power connections can be realized directly on the SIVACON 8PS busbar trunking system. For this purpose, the busbar trunking units are equipped with tap-off points on both sides, to which the respective units are simply attached. The modular system can be conveniently adjusted or expanded even during ongoing production, where local regulations allow.

Improved operational reliability

Busbar trunking systems not only support more flexible planning and implementation of modifications and expansions, but also offer an improved operational reliability. Compared to respective cables, they feature a considerably higher current carrying capacity and temperature resistance. They also offer significantly better type-tested short-circuit strength and fire load values. They facilitate an eased, more space-saving and faster installation process.

Integrated power distribution

The SIVACON 8PS busbar trunking system represents an important module of our low-voltage power distribution portfolio which also comprises power distribution boards, protection, switching and measuring devices as well as power management solutions.

The versatile range of our six busbar trunking systems covers various typical applications. All system designs are matched to the respective application requirements. SIVACON 8PS supports Totally Integrated Power, our integrated concept for efficient power distribution from the medium-voltage supply to the socket outlet.

Efficient overall planning

By offering comprehensive personal consulting services and helpful tools, we support you with your power distribution's optimum layout from the very start. For efficient dimensioning, SIMARIS® design offers a tried-and-tested TÜV-certified software for electrical planners. It easily, rapidly and safely guides the user through all planning steps and offers considerable time savings for routine tasks, variant selection and budget calculation.

LD System: The Safe and Flexible Busbar for the Automotive Industry



The LD system offering fast and safe assembly is ideally suited for application in automotive production. It reliably and efficiently distributes power from the transformer to the main distribution down to the sub-distributions in a current range from 1100 A to 5000 A.

Optimal for ring networks

Ring networks consisting of “meshed” load-center substations on the low-voltage side are typical for the automotive industry. Their advantage: All consumers are reliably supplied with power. Their disadvantage: Short-circuit ratings up to 100 kVA are possible.

Conventional cable installations rapidly meet their limits in such applications. Frequently, cables “kick out” in case of short circuits and get damaged on the cable tray’s sharp edges. This problem is a thing of the past with busbar trunking systems as the busbars are permanently mechanically fixed. In addition, busbar trunking systems such as the SIVACON 8PS are characterized by a considerably higher short-circuit strength and significantly lower fire load.

The factory-assembled smoke-proof fire protection bulkheads comply with safety class S120.

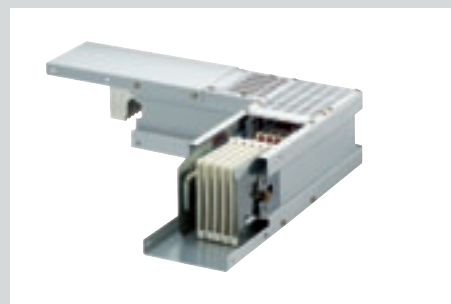


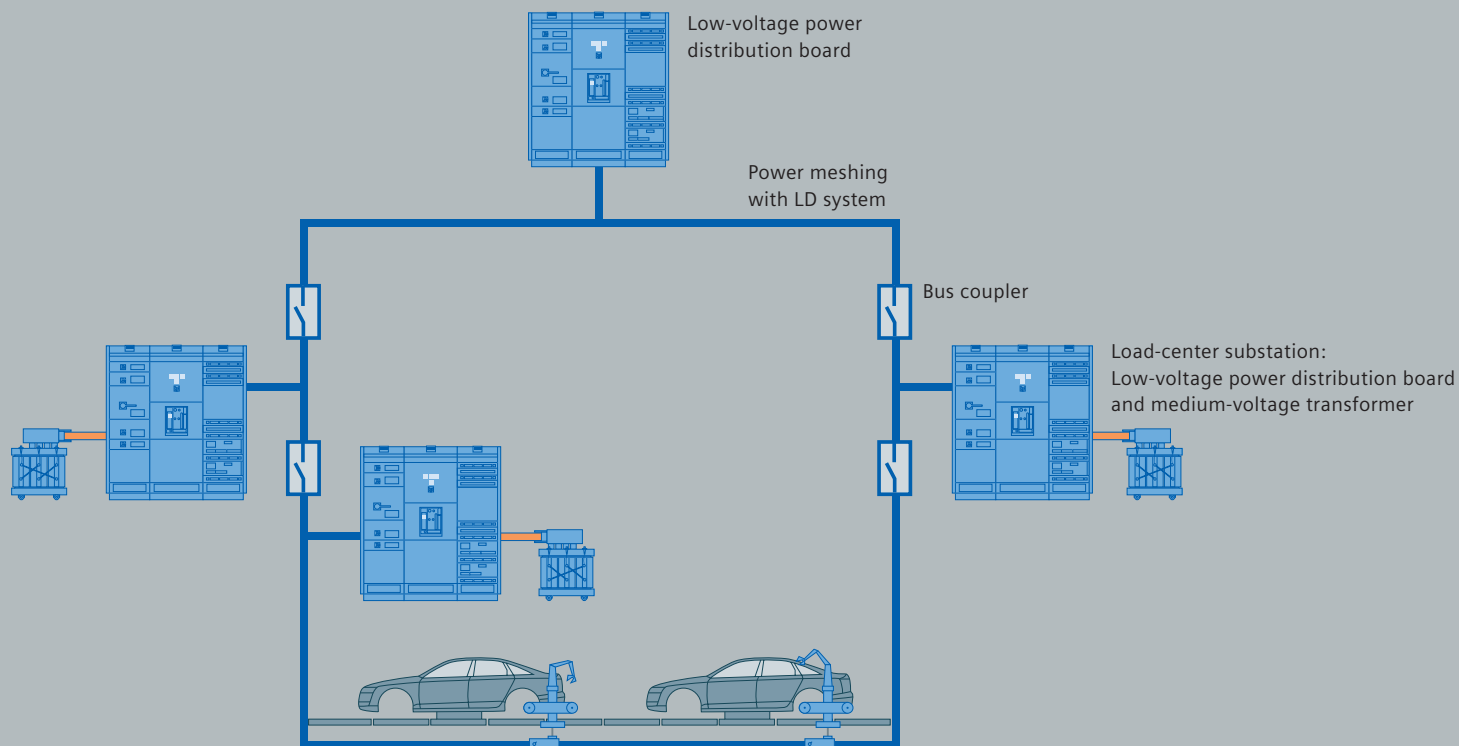
Continuous supply

To restrict the system's short-circuit strength to maximally 100 kVA, rugged SENTRON® 3WL circuit breakers are installed in the busbar route as bus couplers. These couplers not only facilitate a finely adjustable short-circuit and overload release selectivity, but also divide the supply ring in individual network sections, which offers major advantages. If, for example, one of the load-center substations fails or has to be serviced, the bus coupler can be closed and the power demand covered by a different network section. This way, continuous supply reliability is even ensured in service and maintenance cases.

Easy planning, effortless mounting, fast adjustability

The power infeed is simply realized via the respective feeder units which are equipped with special terminal lugs for transformer bushing clearances from 150 to 750 mm. Inside the production halls, the compact busbars are routed in a space-saving and optically appealing manner at a height between four and thirteen meters, mechanically fixed to the walls or in the truss section. The busbar trunking units can be rapidly assembled, adjusted and expanded thanks to the maintenance-free connection technology based on single-stud terminals. Both sides of the modular busbar are equipped with connections for tap-off units in regular distances, via which large consumers such as robot groups, sub-distributions and smaller busbar trunking systems like the SIVACON BD2 and BD01 systems can be fed in. Via a plug connection, the tap-off units can be re-defined or subsequently adjusted as required – even while energized¹⁾.





Schematic illustration of a ring network in the automotive industry

Technical data

Rated insulation voltage U_i	1000 V AC/DC
Rated operational voltage U_e	1000 V AC
Degree of protection	IP34/IP54
Rated current I_e	1100 to 5000 A
Rated peak withstand current I_{pk}	Up to 286 kA
Rated short-time withstand current I_{cw} (0.1s)	Up to 130 kA
Number of poles	4, 5
Fire load	Max. 8.83 kWh/m
Fire load (per tap-off point)	Max. 10.80 kWh
Tap-off point	1 m each one-sided
Tap-off unit adjustable while energized ¹⁾	Up to 1250 A
Connection technology	Single-stud terminal connection with hook/stud technology
Communication capability	<i>instabus EIB</i> , AS-Interface
Conductor material	Al bar or Cu bar, epoxy coating of conductors
Enclosure material	Varnished sheet steel



¹⁾ In acc. with DIN EN 50110-1 (VDE 0105-1); please always observe national regulations/standards.
For further technical data, please ask your Siemens contact partner.



Advantages of the LD System at a Glance

Improved safety

- Safe transmission of high currents
- Safe operation through type-tested low-voltage switchgear and controlgear assembly (TTA) in accordance with IEC/EN 60439-1 and -2
- Type-tested connection to SIVACON distribution boards and transformers
- High water protection of ventilated systems available with IP34 (sprinkler-tested) as well as IP54
- Low fire load through sheet-steel enclosure
- High surface protection of current conductors through non-aging epoxy coating
- High short-circuit strength of busbar trunking units and tap-off units

Improved efficiency

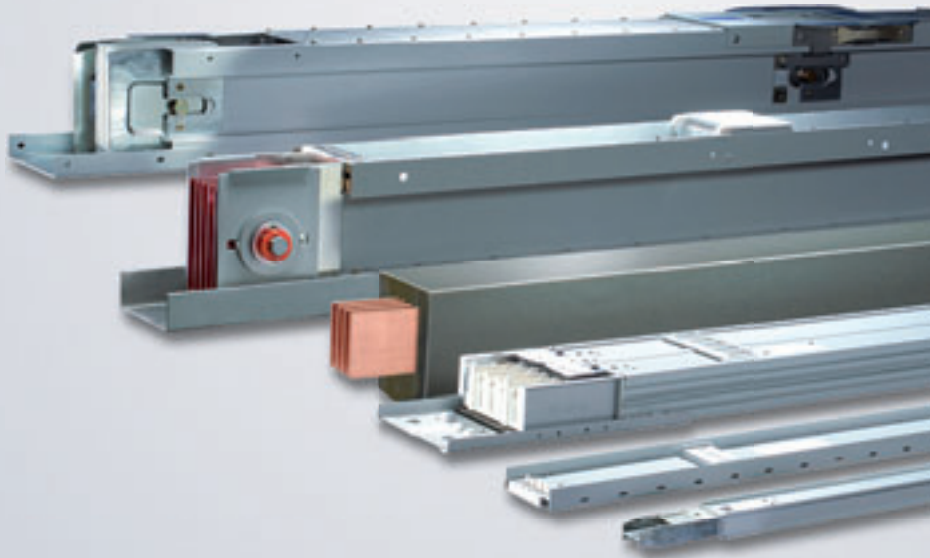
- Optimum and easy planning through only two system enclosure sizes up to 5000 A
- Easy and fast assembly and disassembly through single-stud terminal connection with hook/stud technology
- Considerably reduced planning expenditures compared to conventional cable installations
- Drastically reduced wiring
- High availability through consumer-close tap-off units with circuit breakers up to 1250 A
- High adjustment and expansion flexibility through tap-off units which can be plugging while energized¹⁾

Improved consistency

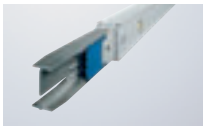
- Easy planning of modern network structures through 4-/5-conductor offer
- Clearly structured power distribution with reduced sub-distributions
- Communication-capable system facilitates operational transparency through consumption detection in the tap-off unit as well as remote switching and monitoring

1) In acc. with DIN EN 50110-1 (VDE 0105-1); please always observe national regulations/standards.

System Overview SIVACON 8PS



CD-K system



The design busbar for lighting systems and small consumers

- 25 A to 40 A
- 400 V Ue max.
- Up to IP55
- *instabus EIB*, Dali

BD01 system



The flexible power supplier for commerce and trade

- 40 A to 160 A
- 400 V Ue max.
- Up to IP55
- *instabus EIB*, AS-Interface

BD2 system



The universal solution for maximum power in minimum space

- 160 A to 1250 A
- 690 V Ue max.
- Up to IP55
- *instabus EIB*, AS-Interface, PROFIBUS

LD system



The safe busbar for production

- 1100 A to 5000 A
- 1000 V Ue max.
- IP34/IP54
- *instabus EIB*, AS-Interface, PROFIBUS

LX system



The flexible system for multiple-storey power supply

- 800 A to 6300 A
- 690 V Ue max.
- Up to IP55
- *instabus EIB*, AS-Interface, PROFIBUS

LR system



The reliable busbar for high protection in harsh environments

- 630 A to 6300 A
- 1000 V Ue max.
- IP68

Communication-capable busbar trunking units



Power distribution

Power transmission

Planning advantages

Feature	Busbar	Cable
Current carrying capacity	High current carrying capacity through TTA; limit values indicated in table p. 6	Limit values have to be determined or calculated in dependence of the routing type and operating temperature
Temperature range	Standard 35 °C in 24-hour average; max. 40 °C; according to EN 60439-1/-2	Standard 30 °C
Derating	Fixed derating factors through TTA	Have to be determined or calculated in dependence of ambient temperature and cumulation; mutual heating must be observed
Electromagnetic impact	Low impact through sheet-steel enclosure	Relatively high with standard cables; no shielding
Planning	Only the total connected load has to be known; low calculation and determination expenditures	Individual tap-offs have to be exactly known for planning; high calculation and determination expenditures
Planning support	Siemens offers planning and tender support	No support by the manufacturer

Installation advantages

Feature	Busbar	Cable
Mounting tools	Only few tools such as torque wrench required; low tool costs; low wear	Numerous tools such as deflection pulleys, cable grips, supports for cable drums, etc., required; high tool costs and wear
Mounting time	Reduced mounting times; higher turnover with identical personnel expenditure; higher added value	Long mounting times; high personnel expenditure with low turnover; low added value
Fire protection bulkhead	Tested fire protection bulkhead ex works according to DIN 4102 Part 9	Depending on the respective workmanship quality
Functional endurance	Tested functional endurance according to DIN 4102 Part 12	Depending on the respective workmanship quality
Line length with parallel routing	Consistently identical line lengths	Various lengths and respectively differing loads depending on the routing
Wage share	Small wage share, low calculation risk; higher material expenditures than with cables, but more accurately calculable in advance	Large wage share, high calculation risk
Material waste	No material waste, resulting in reduced calculation risks	High waste rate resulting in increased calculation risk; waste on both cable sides due to unclear connection situation during the installation phase
Weight	Only ½ to ⅓ of the comparable cable weight	Very high: twice to three times as high as with comparable busbar trunking unit
Excess	No excess as project-specific orders are placed with parts list	As cables are sold in complete drums at marketable prices, most projects result in excess quantities

Operation advantages

Feature	Busbar	Cable
Space requirements	Very low through compact design, angles and current carrying capacity	Very high due to bending radii, routing type, cumulation as well as current carrying capacity
Fire load	Very low; values indicated in table p. 6	Very high; depending on cable type
Absence of PVC / halogen	Trunking units are generally halogen-free	Standard ranges are not PVC- or halogen-free; halogen-free ranges are extremely expensive and have long delivery periods
TTA	High operational reliability and short-circuit strength through type test according to IEC/EN 60439-1/-2	Operational reliability depends on the respective workmanship quality
Flexibility for adjustments, expansions and shifting of load consumer centers	Very high flexibility through variable tap-off units which can be adjusted, expanded or replaced as required, even while energized; no downtimes; adjustable power supply	Mostly new installation or high expenditure required due to new splicers, clamping points, bushings, parallel ranges, etc.; long downtimes; inflexible power supply
Space requirements for LVMD	Reduced space requirements as switching and protection devices can be decentrally arranged in the tap-off units	Large space replacement
Troubleshooting and fault rectification	Easy and fast thanks to transparent installation and consumer-close protective devices	Very time-consuming due to non-transparent installation and consumer-far protective devices
Clear assignment of protective organs	Easy thanks to decentral arrangement	Difficult due to central arrangement

DISTRIBUTING MANAGING	<input type="checkbox"/> Power management system
	<input type="checkbox"/> SIVACON power distribution boards
	<input type="checkbox"/> SIVACON busbar trunking systems
SWITCHING, PROTECTING & MEASURING	<input type="checkbox"/> SIVACON cubicle systems
	<input type="checkbox"/> SENTRON circuit breakers
	<input type="checkbox"/> SENTRON switch disconnectors
POWER DISTRIBUTION SOFTWARE	<input type="checkbox"/> SENTRON multimeters
	<input type="checkbox"/> Dimensioning with SIMARIS design
	<input type="checkbox"/> Power management with SIMATIC powercontrol
	<input type="checkbox"/> Totally Integrated Power

Information material

Please send the selected information material to the following address

Company/department

Name

Street, ZIP/city/country

Telephone/fax

E-mail

Further information on our portfolio on the Internet:

SIVACON 8PS website:
www.siemens.com/busbar

Sector portal automotive industry:
www.siemens.com/automotive

Totally Integrated Power:
www.siemens.com/tip

Download of catalogs and information material:
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For further information, please contact your local Siemens sales partner.

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