Primary switch mode power supplies
CP-E, CP-S and CP-C range

2CDC 275 002 F0006

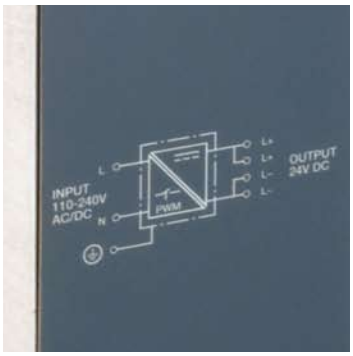
ABB power supplies: CP-E, CP-S and CP-C range

Modern power supplies are a vital component in most areas of energy management and automation technology. ABB as your global partner in these areas pays the utmost attention to the resulting requirements. Innovation was the key to a substantial enlargement of our power supply product program:

The CP-E range offers enhanced functionality while the number of different types has been considerably reduced. Now all power supplies can be operated at an ambient temperature of up to +70 °C.

The CP-C range's pluggable function modules adapt these power supplies exactly to your application's needs.

Of course, all ABB power supplies feature primary switch mode – environmentally sound and cost-efficient. Innovative industry electronic at the highest stage.



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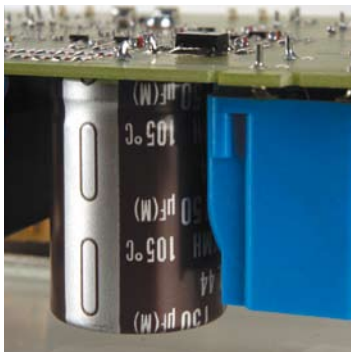

2CDC 273 056 F0004

Primary switch mode for the highest efficiency

All CP-E, CP-S and CP-C types are power supplies with primary switch mode. This technology reduces heat losses and ensures maximal efficiency.

Ambient temperature range during operation of up to +70 °C

The components used in our power supplies are rated for up to +105 °C. Thus, the ambient temperature range during operation has been increased to +70 °C. This guarantees a „long" life time.

2CDC 275 003 F0006

Safety

Approvals by independent testing institutes to all world-wide relevant standards guarantee highest safety in operation.

2CDC 276 006 F0006

Application manual

For today's applications, e.g. in control engineering, it is essential to take the right decision regarding the selection and planning of the power supply. Incorrect dimensioning or wrong connection of a power supply can seriously affect the safety and/or the availability of an entire installation.

The ABB application manual „Power Supply Units" provides a general overview of switch mode power supplies and thus helps to choose the optimal power supply and to avoid problems during engineering and commissioning. The manual generally shows and explains the fundamentals of and the differences between power supplies, and gives a detailed introduction to the ABB product range on the basis of the selection criteria. Finally, it describes and explains application examples for engineering.

The manual is available in English and German language.
English Version: 2CDC 114 048 M0201
German Version: 2CDC 114 048 M0101

2CDC 271 007 F0006

Fast mounting

Fast, easy and failure-safe mounting on DIN rail by means of sturdy metal snap sliders.

2CDC 273 032 F0004

Clear labelling

High ease of use because of clearly labelled terminals, thus further facilitating wiring campaigns.

The CP-E range power supplies

The CP-E range power supplies are an imposing addition to the ABB power supply program. This range offers types with output voltages from 5-48 V DC at output currents of 0.625-3 A. The high thermal efficiency of up to 89 %, corresponding with very low power and heat dissipation, allows the operation without forced cooling. Functionality has been enhanced while the number of different types has been considerably reduced. Of course, all power supplies of the CP-E range are approved to all relevant world-wide standards.

2CDC 276 008 F0006

2CDC 276 009 F0006

"DC OK" output

The 24 V devices of the CP-E range offer a semiconductor output for function monitoring and remote diagnosis.

Wide input range

Designed for global input voltages: The CP-E power supplies can operate with input voltages from 85-265 V AC or 90-375 V DC.

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Characteristics of the CP-E range

- Output voltage 5 V, 12 V, 24 V, 48 V DC
- Adjustable output voltages
- Output current 0.625 A, 0.75 A, 1.25 A, 2.5 A, 3 A
- Power range 15 W, 18 W, 30 W, 60 W
- Wide input range 100-240 V AC
  (90-265 V AC / 120-370 V DC,
  85-265 V AC / 90-375 V DC)
- High efficiency of up to 89 %
- Low power dissipation and low heating
- Free convection cooling (no forced cooling with ventilators)
- Ambient temperature range during operation -10...+70 °C
- Open-circuit, overload and short-circuit stable
- Integrated input fuse
- U/I characteristic curve for devices > 18 W
  (fold-forward behaviour at overload – no shutdown)
- Redundancy unit CP-RUD offering true redundancy
- LED(s) for status indication
- Signalling output (transistor) for output voltage OK
  on 24 V devices > 18 W

2CDC 276 008 F0006

2CDC 271 006 F0003

Adjustable output voltage

The CP-E range types feature a continuously adjustable output voltage. Thus, they can be optimally adapted to the application, e.g. compensating the voltage drop caused by a long line length.

Redundancy unit CP-RUD

- 1SVR 423 418 R9000
- For decoupling of parallelized power supply units < 48 W. Thus, true redundancy can be achieved.

Approvals / Marks of the power supplies

UL 508, CAN/CSA C22.2 No.14 [1],

UL 1310, CAN/CSA C22.2 No.223
(Class 2 Power Supply),

ANSI/ISA-12.12
(Class I, Div. 2 hazardous locations),

UL 60950, CAN/CSA C22.2 No.60950 [1],

GOST,

CCC [1] /

CE,

C-Tick [2]

[1] Approvals refer to rated input voltage U_{IN}
[2] pending

The proven high performance power supplies of the CP-S and CP-C range

Characteristics of the CP-S and CP-C range

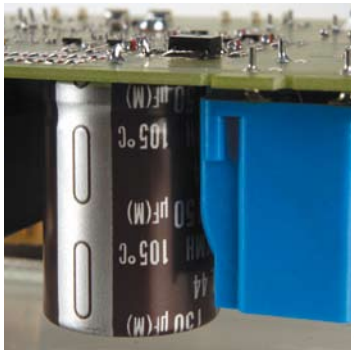
- Output current 5 A, 10 A and 20 A
- Integrated power reserve of up to 50 %
- High efficiency of approx. 89 %
- Low power dissipation and low heating
- Open-circuit, overload and short-circuit stable, automatic recovery
- Integrated input fuse
- Redundancy unit CP-A RU offering true redundancy
- Control module (voting unit) CP-A CM pluggable onto CP-A RU
- Pluggable output terminals for up to 10 A
- Status LED “OUTPUT OK”

CP-S range

- Wide range input 110-240 V AC (85-264 V AC, 100-350 V DC) 5 A version
- Input voltage adjustable via front-face selector switch (10 A, 20 A version)
- Output voltage fixed at 24 V DC
- Parallel operation for redundancy

CP-C range

- Wide range input 110-240 V AC (85-264 V AC, 100-350 V DC)
- Output voltage adjustable in a range of 22-28 V DC
- Parallel operation for increased capacity and redundancy
- Power factor correction (PFC) acc. to EN 61000-3-2
- Function modules pluggable onto the front side



2CDC 273 056 F0004

2CDC 273 057 F0004

Approvals / Marks of the power supplies

UL 508, CAN/CSA C22.2 No.14 [1],

UL 1604 (Class I, Div. 2, hazardous locations), CAN/CSA C22.2 No.213[1],

UL 60950, CAN/CSA C22.2 No.60950 [1],

GOST, CB scheme, CB scheme,

[1] [2] /

CE, C-Tick

[1] Approvals refer to rated input voltage U_{IN}

[2] not for CP-S 24/10.0 and CP-S 24/20.0

Integrated power reserve

The CP-S and CP-C range power supplies feature an integrated power reserve of up to 50 %. No oversized electricity supply is needed, especially under heavy load conditions.

Double terminal assignment + pluggable terminals

The double assignment of the output terminals considerably reduces the amount of wiring by eliminating the need for potential multiplication. Extended flexibility in operation due to pluggable output terminals (this feature is not offered on all devices).

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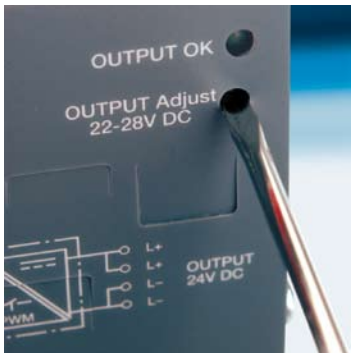

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2CDC 273 060 F0004

Adjustable output voltage

The CP-C range types feature a continuously adjustable output voltage. Thus, they can be optimally adapted to the application, e.g. compensating the voltage drop caused by a long line length.

Pluggable function modules for highest flexibility

The CP-C range power supplies can be equipped with pluggable modules to add specific functions.
The result: a superior cost to performance ratio. A future-proof solution for highest flexibility without any sacrifices in user comfort.

Messaging module CP-C MM for CP-C devices

- 1SVR 427 081 R0000
- LED display and relay outputs for “INPUT OK” and “OUTPUT OK”
- REMOTE ON/OFF function to remotely switch on and off the device
- Pluggable on the front of every CP-C power supply

2CDC 273 058 F0004

Extension devices for CP-S and CP-C devices

Redundancy unit CP-A RU

- 1SVR 427 071 R0000
- For decoupling of parallelized power supply units. Thus, true redundancy can be achieved.
- 2 inputs, each up to 20 A
- Output up to 40 A
- 2 integrated diodes for decoupling
- Control module CP-A CM can be mounted on the front of the unit (accessory)

2CDC 271 010 F0005

Control module CP-A CM

- 1SVR 427 075 R0000
- Plugs onto the redundancy unit CP-A RU to allow monitoring of the voltage in each channel of the CP-A RU.
- Adjustable threshold values (14-28 V) and one relay output per input / circuit

2CDC 271 003 F0005

Of course all devices are fully operational in all basic functions without any module attached. The module attaching points are factory-covered.

Selection guide and order references

CP-E range

		CP-E 24/0.75	CP-E 24/1.25	CP-E 24/2.5	CP-E 5/3.0	CP-E 12/2.5	CP-E 48/0.62	CP-E 48/1.25
Rated output voltage / rated output current		**24 V / 0.75 A**	**24 V / 1.25 A**	**24 V / 2.5 A**	**5 V / 3.0 A**	**12 V / 2.5 A**	**48 V / 0.62 A**	**48 V / 1.25 A**
Order code		**1SVR 427 030 R0000**	**1SVR 427 031 R0000**	**1SVR 427 032 R0000**	**1SVR 427 033 R3000**	**1SVR 427 032 R1000**	**1SVR 427 030 R2000**	**1SVR 427 031 R2000**
Technical data, Input								
Rated input voltage U_{IN}		100-240 V AC						
Input voltage range	AC	90-265 V AC	85-264 V AC		90-265 V AC	85-264 V AC		
	DC	120-370 V DC	90-375 V DC		120-370 V DC	90-375 V DC		
Input frequency (AC)		47-63 Hz						
Power failure buffering		min. 75 ms	min. 30 ms		min. 75 ms	min. 30 ms		
Typical current consumption	at 110 V AC	336 mA	568 mA	1080 mA	310 mA	580 mA	566 mA	1080 mA
	at 230 V AC	197.4 mA	326.6 mA	570 mA	183.2 mA	328 mA	320 mA	573 mA
Inrush current		18 A (max. 3 ms)	40 A (max. 3 ms)	60 A (max. 3 ms)	18 A (max. 3 ms)	40 A (max. 3 ms)		60 A (max. 3 ms)
Internal input fuse		2 A slow-acting / 250 V AC						
Technical data, Output								
Rated output voltage		24 V DC ± 1 %			5 V DC ± 1 %	12 V DC ± 1 %	48 V DC ± 1 %	
Adjustable range of the output voltage		21.6-28.8 V DC	24-28 V DC		4.7-6 V DC	12-15 V DC	48-55 V DC	
Rated output power		18 W	30 W	60 W	15 W	30 W		60 W
Rated output current I_r ($T_a \leq 60$ °C)		0.75 A	1.25 A	2.5 A	3.0 A	2.5 A	0.625 A	1.25 A
Derating of the output current (60 °C < $T_a \leq$ 70°C)		3 %/K	2.5 %/K		3 %/K	2.5 %/K		
Short-circuit protection		continuous short circuit stability						
Output curve		hiccup mode	U/I characteristic curve		hiccup mode	U/I characteristic curve		
Parallel operation		yes, to enable redundancy						
Other data								
Efficiency		typ. 77 %	typ. 86 %	typ. 89 %	typ. 75 %	typ. 84 %	typ. 86 %	typ. 89 %
Protection enclosure / terminals		IP20 / IP20						
Ambient temperature range during operation		-10...+70 °C						
Dimensions (W x H x D)		23.9 x 88.5 x 115 mm	43.5 x 88.5 x 115 mm		23.9 x 88.5 x 115 mm	43.5 x 88.5 x 115 mm		
Weight		approx. 0.15 kg	approx. 0.29 kg	approx. 0.36 kg	approx. 0.15 kg	approx. 0.29 kg	approx. 0.29 kg	approx. 0.36 kg

Data at T_a = 25 °C, U_{IN} = 230 V AC and rated values, if nothing else indicated

CP-S and CP-C range

		CP-S 24/5.0	CP-S 24/10.0	CP-S 24/20.0	CP-C 24/5.0	CP-C 24/10.0	CP-C 24/20.0
Rated output voltage / rated output current		**24 V / 5 A**	**24 V / 10 A**	**24 V / 20 A**	**24 V / 5 A**	**24 V / 10 A**	**24 V / 20 A**
Order code		**1SVR 427 014 R0000**	**1SVR 427 015 R0100**	**1SVR 427 016 R0100**	**1SVR 427 024 R0000**	**1SVR 427 025 R0000**	**1SVR 427 026 R0000**
Technical data, Input							
Rated input voltage U_{IN}		110-240 V AC	switch setting 115: 110-120 V AC switch setting 230: 220-240 V AC		110-240 V AC		
Input voltage range	AC	85-264 V AC	switch setting 115: 85-132 V AC switch setting 230: 184-264 V AC		85-264 V AC		
	DC	100-350 V DC	220-350 V DC		100-350 V DC		
Input frequency (AC)		47-63 Hz					
Power failure buffering		typ. > 100 ms	typ. > 50 ms		typ. > 100 ms	typ. > 40 ms	
Typical current consumption	at 110-240 V AC	2.2-1.2 A	-	-	2.2-1.2 A	3.5-1.6 A	5.5-2.5 A
	at 110-120 V AC	-	4.2-4.0 A	9.0-8.0 A	-	-	-
	at 220-240 V AC	-	2.4-2.2 A	4.5-4.0 A	-	-	-
Inrush current / i^2t (cold start)		< 23 A / approx. 0.9 A^2s	< 40 A / approx. 1.8 A^2s	< 70 A / approx. 8 A^2s	< 23 A / approx. 0.9 A^2s	< 33 A / approx. 0.2 A^2s	< 40 A / approx. 1.9 A^2s
Internal input fuse		4 A slow-acting [1]	6.3 A slow-acting [1]	12 A fast-acting [1]	4 A slow-acting [1]	6.3 A slow-acting [1]	12 A fast-acting [1]
Technical data, Output							
Rated output voltage		24 V DC ± 1 %					
Adjustment range of the output voltage		fixed			22–28 V, default setting 24 V ± 0.5%		
Rated output current ($T_a \leq 60$ °C)		5 A	10 A	20 A	5 A	10 A	20 A
Derating of the output current (60 °C < $T_a \leq 70$ °C)		2.5 %/K					
Peak output current (power reserve at $T_a \leq 40$ °C)		typ. ≤ 7.25 A	typ. ≤ 12.25 A	typ. ≤ 22.5 A	typ. ≤ 7.25 A	typ. ≤ 12.25 A	typ. ≤ 22.5 A
Short-circuit / overload protection		continuous short-circuit stability, thermal protection					
Output curve		U/I characteristic curve					
Current limitation at short circuit		approx. 11 A	approx. 19 A	approx. 25 A	approx. 11 A	approx. 19 A	approx. 25 A
Parallel operation		yes, up to 5 devices					
Other data							
Efficiency		typ. 88-89 %					
Power factor correction (EN 61000-3-2)		no			yes		
Protection enclosure / terminals		IP20 / IP20					
Ambient temperature range during operation		-25...+70 °C					
Dimensions (W x H x D)		56.6 (60[2]) x 130 x 137 mm	90 (93.5[2]) x 130 x 137 mm	200 (203.5[2]) x 130 x 137 mm	56.6 (60[2]) x 130 x 137 mm	90 (93.5[2]) x 130 x 137 mm	200 (203.5[2]) x 130 x 137 mm
Weight		approx. 0.96 kg	approx. 1.07 kg	approx. 2.83 kg	approx. 0.96 kg	approx. 1.34 kg	approx. 3.15 kg

Data at T_a = 25 °C, U_{IN} = 230 V AC and rated values, if nothing else indicated
[1] internal device protection, not accessible
[2] including lateral screw

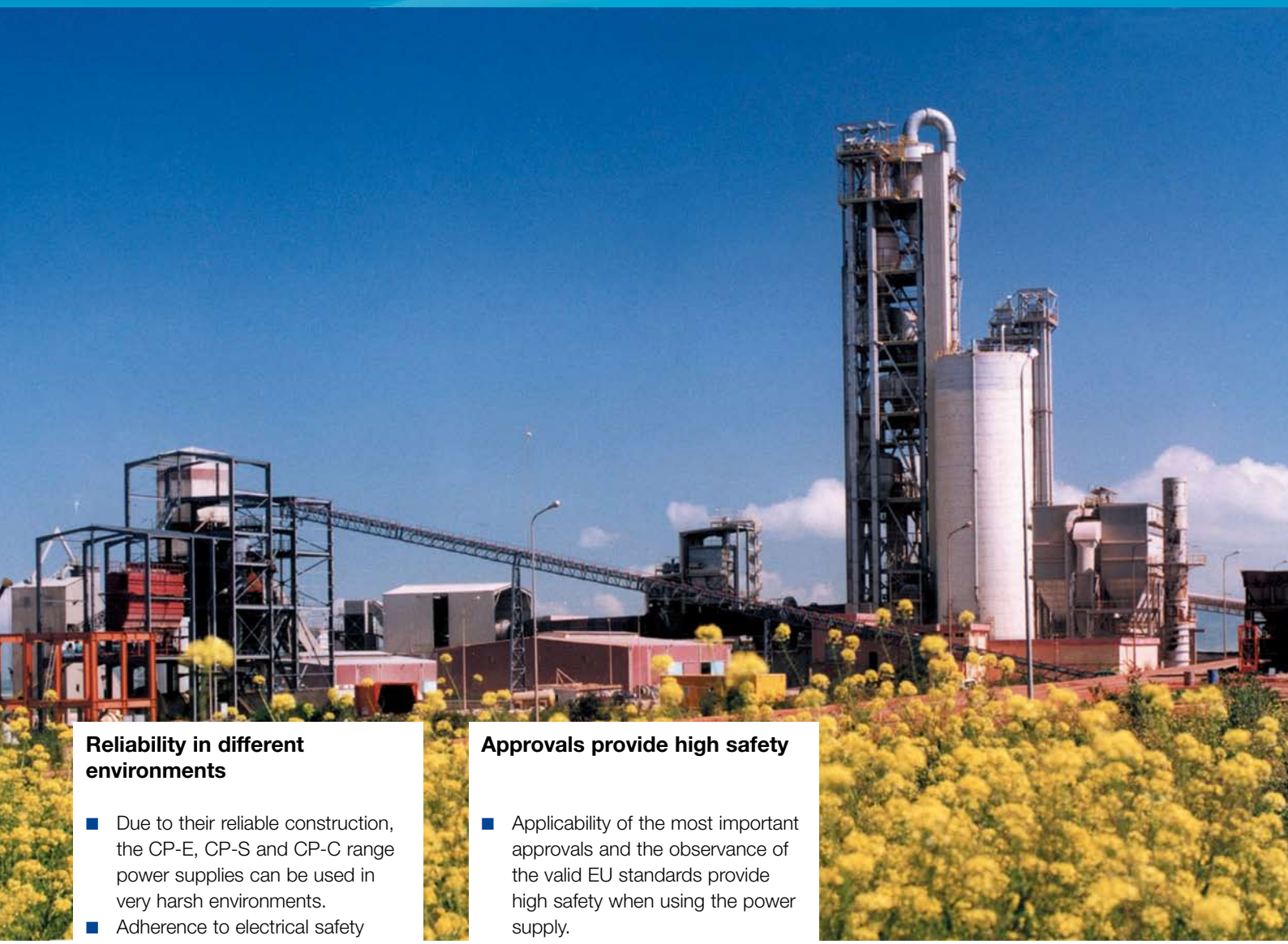
Enviroment protection, applications and approvals

Environment protection thanks to modern technology

- The ABB power supplies of the CP-E, CP-S and CP-C range also persuade unconfined in consideration of effective and sustainable environment protection. This is because their primary switch mode design does not only stand for outstanding efficiency but also for a noteworthy relief of the environment.
- Power supplies with primary switch mode are characterised by their exceptional efficiency of up to 89 %: A remarkable difference to conventional power supplies that often only operate with 50 % efficiency.

High efficiency of up to 89 %

- The high efficiency of the ABB power supplies means that only 10-12 % of the input energy are lost in dissipated heat.
- Thanks to the low dissipated heat, other advantages result. For example it is often possible to dispense with costly extern cooling systems when the power supplies are used in cabinets.
- Also, the ABB power supplies with primary switch mode feature an outstanding durability. This improves the operating efficiency and means further relief of the environment.



Reliability in different environments

- Due to their reliable construction, the CP-E, CP-S and CP-C range power supplies can be used in very harsh environments.
- Adherence to electrical safety standards makes these power supplies very safe and well-suited for industrial equipment while also allowing their use in domestic applications, wherever automation is important.
- The wide AC/DC range of input power makes these power supplies very flexible and offers a perfect solution for DC networks, power failure back-up systems, and much more.
- The pluggable function modules of the CP-C range power supplies allow a perfect adaptation for special application needs.
- Adjustable output voltage compensates for drops in the DC power line.

Approvals provide high safety

- Applicability of the most important approvals and the observance of the valid EU standards provide high safety when using the power supply.
- High interference immunity combined with reduced interference emission acc. to EN 61000-6-4 enable the use in rough industrial environments as well for building installations.

Document number 2CDC 114 038 B0204 (06/08)
Printed in the Federal Republic of Germany

ABB STOTZ-KONTAKT GmbH

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