400 Hz CABLES FOR GROUND POWER SUPPLY





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Family business in the third generation

 $75 \ \text{ years of experience in cable and wire manufacturing as well as in temperature measurement technology turned a one-man business into a company with more than 550 employees. We prove our strength every year with more than 1500 special products according to customers' requirements. Each product is a new challenge for our creative technical team. We at SAB see ourselves as a manufacturer and a service provider – in the sense of true partnership and the greatest possible customer orientation.$

Today, the quality of our products is known and appreciated in more than 100 countries around the world. In all product ranges, we are certified according to DIN EN ISO 9001. Furthermore, we have implemented an environmental management system for our company according to DIN EN ISO 14001, an occupational health and safety management system according to NLF/ILO-OSH and DIN ISO 45001, and an energy management system according to DIN EN ISO 50001.

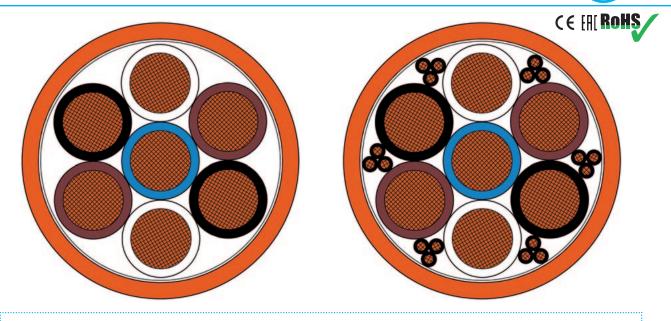
And also for the future, our slogan is: "WE GO FORWARD!"

FOUNDED:	1947 by Peter Bröckskes sen. an independent, medium-sized company.				
CEO:	Peter Bröckskes and Sabine Bröckskes-Wetten				
PLANT/LOCATION:	In Viersen (Lower Rhine) 110.000 m ² company site.				
	Own manufacturing from copper conductor to outer sheath.				
	VDE approved burnchamber and laboratory within the company.				
EMPLOYEES/WORKERS:	approx. 430 at the plant in Viersen, 550 worldwide				
YEARLY SALES:	over 134 Mio. € worldwide				
PRODUCTS:	Special Cables				
	Measurement Technology				
	Cable Harnessing				
CERTIFICATES AND APPROVALS:	Quality management system acc. to DIN EN ISO 9001 for every manufacturing fieldEnvironmental management system acc. to DIN EN ISO 14001Occupational health and safety management acc. to NLF/ILO-OSH and DIN ISO 45001Energy management system acc. to DIN EN ISO 50001				



GP 400 Sy

400 Hz Ground Power supply cable - Symmetrical



Application: For use as fixed installation cable in 400 Hz systems, e.g. between 400 Hz generator and cable dispenser.

	Construction:		Technical Data:
Conductor:	bare copper strands	Nominal voltage:	Uo/U 0,6/1 kV
Insulation	35,0mm ² : PVC	Testing voltage:	core/core 4000 V AC
Colour code:	1,0mm ² : SABIX [®] C control cores: black with numbers 1-18 neutral core: blue	Min. bending radius fixed laying: flexible application:	4 x d 8 x d
	phase core: white, brown, black (two conductors of the same colour form the phase)	Temperature range fixed laying: flexible application:	-40/+70 °C +5/+70 °C
Stranding:	phase conductor concentrically around the neutral conductor, control conductors as triple in the fillers	Absence of harmful substances:	acc. to RoHS directive of the European Union
Sheath material:	PVC		
Sheath colour:	orange		
Marking:	SAB BRÖCKSKES · D-VIERSEN · GP 400 Sy 7x35,0mm ² +6x3x1,0mm ² 3400-7213 C€ and continuous meter marking		



Outstanding features:

reduced outer diameter

Item. no.	no. of cores x cross section n x mm ²	outer-Ø approx. mm	copper figure kg/km	cable weight ≈ kg/km	DC resistance at 20°C max. Ω/km	voltage drop [mV/(A*m)]
34007210	7 x 35,0	37,0	2352,0	3003	35,0 mm ² : 0,554	35,0 mm ² : 1,108
34007213	7 x 35,0 +				35,0 mm ² : 0,554	35,0 mm ² : 1,108
	6 x 3 x 1,0	37,0	2524,8	3125	1,0 mm ² : 19,5	1,0 mm ² : 39,0
				0		

Other dimensions and colours are possible on request.



Also available with 24 control cores!



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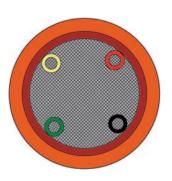
GP 400 SC

400 Hz Ground Power supply cable - SingleCore

GP 400 QF

400 Hz Ground Power supply cable - QuadFlex







Application: For use in flexible applications, e.g. mobile generators, cable dispensers in the ground or on the passenger bridge.

	Construction:		Technical Data:
Conductor:	tinned copper strands	Nominal voltage:	Uo/U 115/200 V
Insulation:	SABIX®	Max. permissible	
Colour code:	control cores: red, black, green, yellow power supply core: red	operating voltage*: Testing voltage:	Uo/U 0,6/1 kV core/core 4000 V AC
Stranding:	control cores within the power supply core	Min. bending radius	
Sheath material:	PUR	fixed laying: flexible application:	4 x d 6 x d
Sheath colour:	orange		0.4.0
Stranding:	GP 400 QF: openly stranded	Temperature range fixed laying:	-50/+90 °C
Marking GP 400 SC:	SAB BRÖCKSKES · D-VIERSEN · GP 400 SC (50,0mm ² +4x1,0mm ²) 3400-1321 (<i>€ and continuous meter marking</i>	flexible application:	-40/+90 °C
		Halogen-free:	acc. to IEC 60754-1 + VDE 0482-754-1
Marking	SABB BRÖCKSKES · D - VIERSEN · GP 400 QF 4x(50,0mm ² +4x1,0mm ²) 3400-4321 L1 resp. L2 resp. L3 resp. N €€	Oil resistance:	very good - TMPU acc. to EN 50363-10-2 + VDE 0207-363-10-2
GP 400 QF:		Weather resistance:	very good
	and continuous meter marking	Absence of harmful substances:	acc. to RoHS directive of the European Union
	Outstanding features:		
•	low capacity insulation		
•	abrasion-resistant PUR sheath		
•	control cores symmetrically arranged		
•	cold flexible		
•	halogen-free		

- naiogen-fr
- oil resistant weather resistant

* using all wires on one potential

Item. no.	no. of cores	outer-Ø	copper	cable	DC resistance	voltage drop
	x cross section n x mm ²	approx. mm	figure kg/km	weight ≈ kg/km	at 20°C max. Ω/km	[mV/(A*m)]
GP 400 SC						
34001321	1 x (50,0 +				50,0 mm ² : 0,393	50,0 mm ² : 0,786
	4 x 1,0)	15,6	524,0	587	1,0 mm ² : 20,0	1,0 mm ² : 40,0
34001421	1 x (70,0 mm ² +				70,0 mm ² : 0,277	70,0 mm ² : 0,554
	4 x 1,0 mm ²)	17,7	739,2	800	1,0 mm ² : 20,0	1,0 mm ² : 40,0
34001521	1 x (95,0 mm ² +				95,0 mm ² : 0,210	95,0 mm ² : 0,420
	4 x 1,0 mm ²)	19,6	940,8	1032	1,0 mm ² : 20,0	1,0 mm ² : 40,0
GP 400 QF						
34004321	4 x (50,0 mm ² +				50,0 mm ² : 0,393	50,0 mm ² : 0,786
	4 x 1,0 mm ²)	37,5	2096,0	2401	1,0 mm ² : 20,0	1,0 mm ² : 40,0
34004421	4 x (70,0 mm ² +				70,0 mm ² : 0,277	70,0 mm ² : 0,554
	4 x 1,0 mm ²)	42,5	2956.8	3264	1.0 mm ² : 20.0	1,0 mm ² : 40,0



GP 400 7F

400 Hz Ground Power supply cable - SevenFlex





Application: Symmetrical construction with high flexibility. Minimum bending radius (easy to coil even in tight spaces) and high quality electrical performance (low voltage drop and low voltage unbalance). Can be used over longer distances.

Construction:		Technical Data:
tinned copper strands	Nominal voltage:	Uo/U 0,6/1 kV
SABIX®	Testing voltage:	core/core 4000 V AC
control cores: red, black, green, yellow power supply core: red	Min. bending radius fixed laying:	4 x d
control cores within the power supply core	flexible application:	6 x d
PUR	Temperature range	50/100 80
orange		-50/+90 °C -40/+90 °C
openly stranded	Absence of	
SAB BRÖCKSKES · D-VIERSEN · Special GP 400 35,0mm ² +4x1,0mm ² 3400-9006 € and continuous meter marking	harmful substances:	acc. to RoHS directive of the European Union
	tinned copper strands SABIX® control cores: red, black, green, yellow power supply core: red control cores within the power supply core PUR orange openly stranded SAB BRÖCKSKES · D-VIERSEN · Special GP 400 35,0mm ² +4x1,0mm ² 3400-9006 (€	tinned copper strands Nominal voltage: SABIX° Testing voltage: control cores: red, black, green, yellow power supply core: red control cores within the power supply core Min. bending radius pUR fixed laying: orange fixed laying: openly stranded Temperature range SAB BRÖCKSKES · D-VIERSEN · Absence of special GP 400 35,0mm²+4x1,0mm² a400-9006 (€

Outstanding features:

- low capacity insulation
- abrasion-resistant PUR sheath
- control cores symmetrically arranged
- cold flexible
- halogen-free
- oil resistant
- weather resistant

ltem. no.	no. of cores x cross section n x mm²	outer-Ø approx. mm	copper figure kg/km	cable weight ≈ kg/km	DC resistance at 20°C max. Ω/km	voltage drop [mV/(A*m)]
34009006	7 x (35,0 mm ² + 4 x 1,0 mm ²)	40,2	2654,4	2969,2	35,0 mm²: 0,554 1,0 mm²: 19,5	35,0 mm ² : 1,108 1,0 mm ² : 39,0

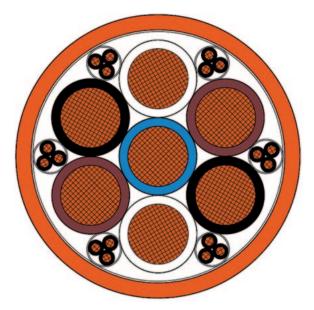


GP 400 SF

400 Hz Ground Power supply cable - SymmetricalFlex







Application: For the application as fixed supply cable easy to install or for flexible use without elevated mechanical stress for hand-held applications for example mobile GPUs. Optimised flexibility due to smooth core and sheath materials that allows easy installation and handling.

Nominal voltage:

Construction: bare copper strands Conductor:

Insulation:	SABIX®	Testing voltage:	core/core 4000 V AC		
Colour code:	control cores: black with numbers 1-18 neutral core: blue phase core: white, brown, black (two cores of the same colour form the phase)	Current carrying capacity:	an application based current time profile as well as the following application condition - ambient temperature up to max. 52°C		
Stranding: Phase conductors concentrically around neutral core, control cores as tripple in the interstices, triple wrapped with non-woven tape, all elements twisted in specially adjusted layers, non-woven tape overlapping wrapped			 two phases of the same colour interconnected to one core further cores (25 mm² blue and 1mm² / 34007123) resp. (35 mm² blue and 1mm² / 34007223) without charge single laying at or on surfaces 		
Sheath material:	special compound		34007123 231 A for max. 10 min.		
Sheath colour: Marking:	orange SAB BRÖCKSKES · D-VIERSEN · GP 400 SF 7x35,0mm ² +6x3x1,0mm ² 3400-7223 C€ and continuous meter marking		34007123 231 A for max. 10 min. 262,5 A for max. 5 min. 294 A for max. 10 sec. 420 A for max. 2 sec. 34007223 326 A for max. 10 min. 325 A for max. 10 min. 326 A for max. 10 min. 326 A for max. 10 sec. 520 A for max. 2 sec. 320 A for max. 2 sec.		
	Outstanding features:	Min. bending radius	4 × 4		

low capacity insulation

- very flexible and smooth handling
- also usable as a supply cable
- directly on the aircraft
- very good installation in narrowest spaces
- good resistance and low wear

	294 A for max. 10 sec. 420 A for max. 2 sec. 34007223 286 A for max. 10 min. 325 A for max. 5 min. 364 A for max. 10 sec. 520 A for max. 2 sec.
Min. bending radius fixed laying: flexible application:	4 x d 6 x d
Temperature range <i>fixed laying:</i> <i>flexible application:</i>	-40/+70 °C -20/+70 °C
Absence of harmful substances:	acc. to RoHS directive of the European Union

acc. to RoHS directive of the European Union

Technical Data:

Uo/U 0,6/1 kV

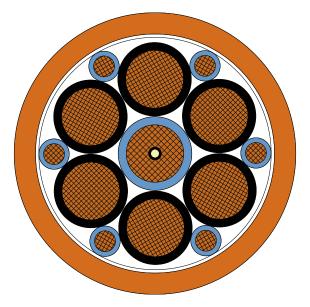
Item. no.	no. of cores x cross section n x mm ²	outer-Ø approx. mm	copper figure kg/km	cable weight ≈ kg/km	DC resistance at 20°C max. Ω/km	voltage drop [mV/(A*m)]		Also available
34007123	7 x 25,0 mm ² + 6 x 3 x 1,0 mm ²	32,4	1852,8	2245,5	25,0 mm²: 0,780 1,0 mm²: 19,5	25,0 mm²: 1,560 1,0 mm²: 39,0	202	with 24
34007223	7 x 35,0 mm ² + 6 x 3 x 1,0 mm ²	37,0	2524,8	2934,5	35,0 mm²: 0,554 1,0 mm²: 19,5	35,0 mm ² : 1,108 1,0 mm ² : 39,0	63	control cores!



GP 400 SF S

400 Hz Ground Power supply cable





Application: For the application as cable chain cables in energy supply chains or as Festoon cable on passenger boarding bridges.

	Construction:				
Conductor:	tinned copper strands, fine wires				
Insulation:	SABIX®				
Colour code:	6,0 mm ² : blue 35,0 mm ² : black with numbers, 2 x 1-3 blue				
Stranding:	35,0 mm ² : neutral core with strain relief in the core, wrapped with non-woven tape				
Wrapping:	non-woven tape				
Sheath material:	PUR				
Sheath colour:	orange				
Marking:	SAB BRÖCKSKES · D-VIERSEN · GP 400 SF S 7x35,0mm ² +6x6,0mm ² 3400-6230 (€ and continuous meter marking				

	Technical Data:
Nominal voltage:	Uo/U 0,6/1 kV
Testing voltage:	core/core 4000 V AC
Min. bending radius continuously flexible:	7,5 x d
Temperature range fixed laying: flexible application:	-50/+90 ℃ -40/+90 ℃
Absence of harmful substances:	acc. to RoHS directive of the European Union



	Absence of harmful substances:	acc. to RoHS directive of the European
m² ter marking		
	C	

Item. no.	no. of cores x cross section n x mm ²	outer-Ø approx. mm	copper figure kg/km	cable weight ≈ kg/km	DC resistance at 20°C max. Ω/km
34006230	7 x 35,0 mm ² + 6 x 6,0 mm ²	38,7	2707,2	3174	35,0 mm ² : 0,565 6,0 mm ² : 3,39
			Other dime	ensions and colou	rs are possible on request.



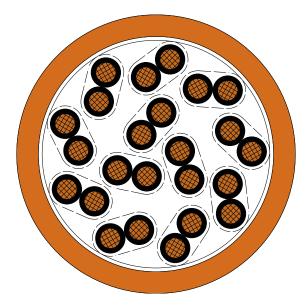


GP 400 SF S

400 Hz Ground Power control cable







Application: For the application as cable chain cables in energy supply chains or as Festoon cable on passenger boarding bridges.

	Construction:			
Conductor:	bare copper strands, fine wires			
Insulation:	SABIX®			
Colour code:	black with numbers 1 - 24			
Stranding:	cores twisted to pairs, optimized twisting of pairs in layers			
Sheath material:	PUR			
Sheath colour:	orange			
Marking:	SAB BRÖCKSKES · D-VIERSEN · GP 400 SF S 12x2x1,5mm ² 3400-9028 C€ and continuous meter marking			

	Technical Data:
Nominal voltage:	300/500 V
Testing voltage:	core/core 4000 V AC
Min. bending radius continuously flexible:	7,5 x d
Temperature range fixed laying: flexible application:	-50/+90 °C -40/+90 °C
Absence of harmful substances:	acc. to RoHS directive of the European Union



Item. no.	no. of cores x cross section n x mm ²	outer-Ø approx. mm	copper figure kg/km	cable weight ≈ kg/km	DC resistance at 20°C max. Ω/km
34009028	12 x 2 x 1,5 mm ²	23,0	345,6	480	12,0 mm ² : 13,7



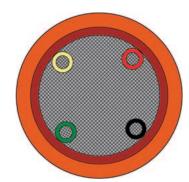


GP 400 SC DC

Ground Power supply cable 28 V DC - SingleCore Direct Current



(**Rohs**



Application: For use in flexible applications, e.g. mobile generators, cable dispensers in the ground or on the passenger bridge at 28 V DC.

	Construction:					
Conductor:	tinned copper strands					
Insulation:	SABIX®					
Colour code:	control cores: red, black, green, yellow power supply core: red					
Stranding:	control cores within the power supply core					
Sheath material:	PUR					
Sheath colour:	orange					
Marking:	SAB BRÖCKSKES · D-VIERSEN · GP 400 SC DC (120,0mm ² +4x1,0mm ²) 3400-1621 and continuous meter marking					

low capacity insulation abrasion-resistant PUR sheath control cores symmetrically arranged

cold flexible halogen-free oil resistant weather resistant

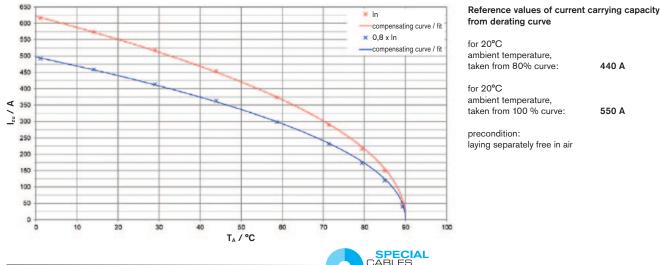
28 V DC core/core 600 V AC 4 x d 6 x d -50/+90 °C -40/+90 °C
4 x d 6 x d -50/+90 ℃
-50/+90 °C
-40/+90 0
acc. to IEC 60754-1 + VDE 0482-754-1
very good - TMPU acc. to EN 50363-10-2 + VDE 0207-363-10-2
very good
acc. to RoHS directive of the European Union

ltem. no.	no. of cores x cross section n x mm ²	outer-Ø approx. mm	copper figure kg/km	cable weight ≈ kg/km	DC resistance at 20°C max. Ω/km	voltage drop [mV/(A*m)]
34001621	1 x (120,0 mm ² + 4 x 1,0 mm ²)	22,2	1296,0	1331	120 mm ² : 0,164 1,0 mm ² : 20,0	120 mm ² : 0,328 1,0 mm ² : 40,0

Other dimensions and colours are possible on request.

Determination of the derating curve acc. to LV112-3 based on item no. 3400-1621

Outstanding features:



GP 400 SF 28V DC

400 Hz Ground Power supply cable 28 V DC



(EROHS



Application: For the application as fixed supply cable with optimised installation or for a flexible hand-held application without elevated mechanical stress for example mobile GPUs. Excellent flexibility due to smooth core and sheath materials make possible an easy laying and handling.

Cor	struction:	

Conductor:	tinned copper strands, fine wires			
Insulation:	SABIX®			
Colour code:	1,0 mm ² : black cores with consecutive numbers 1 - 14 40,0 mm ² : white cores			
	with consecutive numbers 1 - 3, black cores with consecutive numbers 1 - 3			
Stranding:	in layers			
Sheath material:	PVC			
Sheath colour:	orange			
Marking:	SAB BRÖCKSKES · D-VIERSEN · GP 400 SF 28V DC 6x40,0mm²+14x1,0mm² 3400-9020 C€ and continuous meter marking			

28 V DC Voltage: core/core 600 V Testing voltage: Min. bending radius 4 x d fixed laying: flexible application: 6 x d Temperature range -40/+70 °C fixed laying: flexible application: -20/+70 °C Oil resistance: acc. to internal standard Absence of harmful substances: acc. to RoHS directive of the European Union

Technical Data:

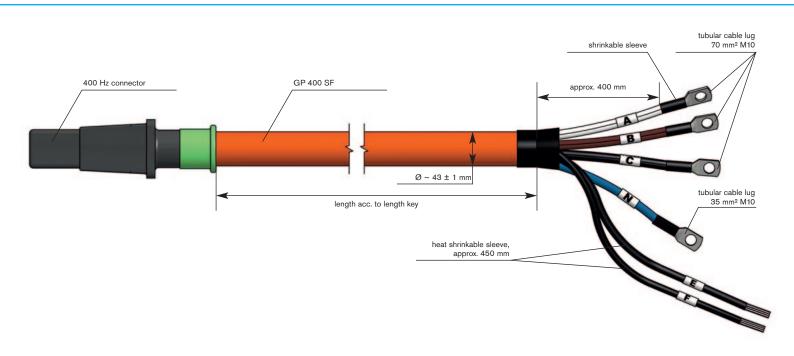
V :	low capacity insulation extremely flexible and smooth handling
•	also usable as supply cable at the aircraft itself
•	very good installation in narrowest spaces
•	good resistance characteristics also against wear and tear

ltem. no.	no. of cores x cross section n x mm ²	outer-Ø	copper figure kg/km	cable weight ≈ kg/km	DC resistance at 20°C max. Ω/km
34009020	6 x 40,0 + 14 x 1,0	min. 36,0 max. 37,99	2438,4	2910	40,0 mm ² : 0,500 1,0 mm ² : 20,0

Outstanding features:



SAB 400 Hz cable for mobile GPUs with connectors



Pin assignment:

400 Hz connector	cable	connection piece
pin A	2 x wh (35 mm²)	tubular cable lug 70 mm², M10
pin B	2 x bn (35 mm²)	tubular cable lug 70 mm ² , M10
pin C	2 x bk (35 mm²)	tubular cable lug 70 mm ² , M10
pin N	1 x bu (35 mm²)	tubular cable lug 35 mm², M10
pin E	cores 1-9 (1 mm ²)	cores pulled into shrinkable sleeves,
pin F	cores 10-18 (1 mm ²)	core ends untreated

Weight:

connector and tubular cable lugs	cable	
approx. 3 kg	approx. 3,2 kg/m	

Configuration examples:

item no.	length "L" in cm
S3400-3003-01000	100
S3400-3003-02000	200



Plug'n'Play - ready harnessed with connector

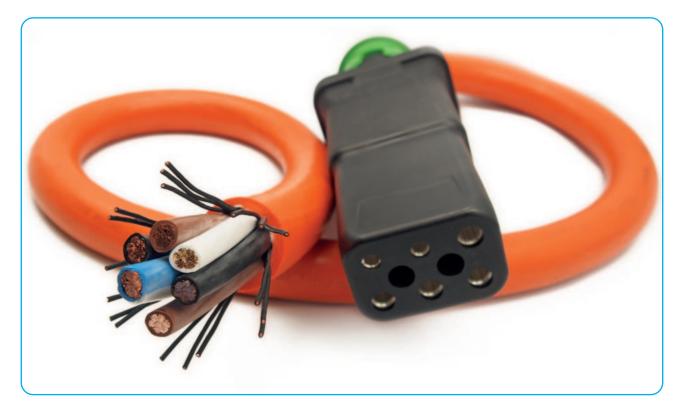
Ready-to-connect ground power cables with connectors



SAB Bröckskes also supplies 400 Hz cables ready for installation. Various 400 Hz connectors available.

- on request also with tubular cable lugs.
- each cable harness is safely and individually packed.
- each product is tested for function.
- on request with test report for 100% documentation.



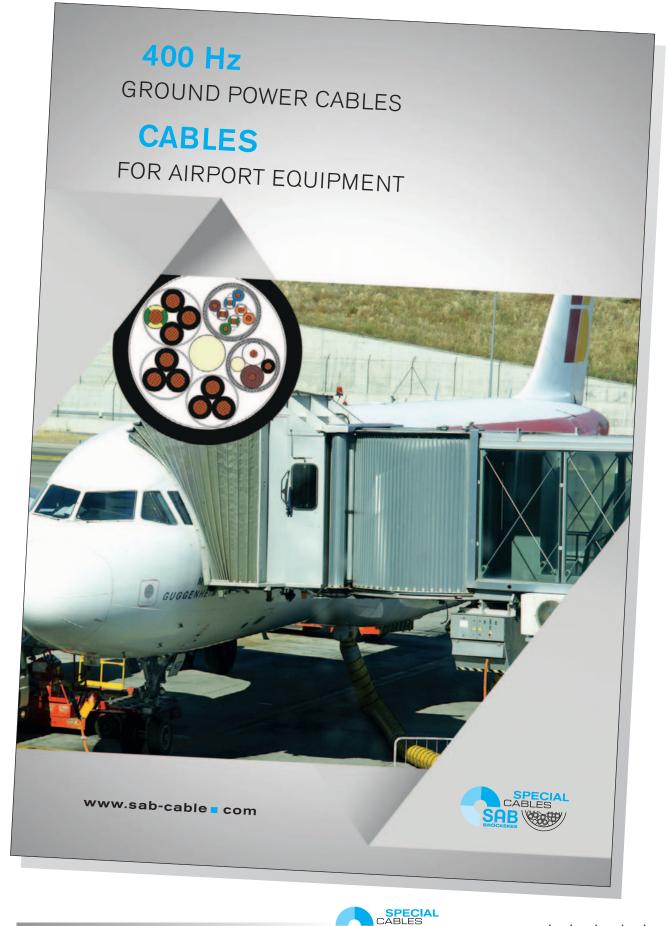








"Cables for Airport Equipment"



SAB (%%)

Content

Cables for Airport Equipment				
	BB 380 Boarding Bridge		cable for the flexible application in passenger bridges	16
	SABFlex	Cable T	rack Cables	
	S 200 SD 200 S 200 C SD 200 C SD 200 C TP		extremely flexible TPE/PUR control cable with numbered cores for continuous movement extremely flexible TPE/PUR data cable with coloured cores for continuous movement continuously flexible TPE/PUR control cable with numbered cores and overall copper screen continuously flexible TPE/PUR data cable with coloured cores and overall copper screen continuously flexible TPE/PUR paired data cable with coloured cores and overall copper screen with coloured cores and overall copper screen	17
	S 910 P	FL ()	continuously flexible TPE/PUR single conductor	18
	S 910 CP	FI (f	continuously flexible TPE/PUR single conductor with overall copper screen	18
	SABServo Servo Motor Cables			
	SL 841 C	91 ()	combined TPE/PUR motor connection cable with overall copper screen 0.6/1 kV	19
	SABBus	Bus Ca	bles	
	S PB 640 UL S PN 667 PN 662 AIR Cable harnessing	91 (f) 91 (f)	highly flexible PUR Profibus-DP cable with UL recognition, CSA approval Profinet type C, continuously flexible with UL recognition, CSA approval Industrial Ethernet Cable CAT 5 - Profinet type B, for flexible applications Ethernet cable on both side 4-pole Lemo male connector	20 20 21 21
				21
	SHDCAILine	-	al Ethernet Leitungen	
	CATLine CAT 6 S CATLine CAT 6A S CATLine CAT 7A S	91 (j) 91 (j) 91 (j)	CAT 6 Gigabit Ethernet cable, suitable for cable tracks with UL recognition, CSA approval . CAT 6A Gigabit Ethernet cable, suitable for cable tracks with UL recognition, CSA approval CAT 7A Gigabit Ethernet cable, suitable for cable tracks with UL recognition, CSA approval	22 22 22
	SABBus	USB 3.() cables	
	USB 3.0 cable USB 3.0 cable		with moulded type A and Micro-B male connector	23 23









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