

Cables for robots




www.sab-worldwide.com



■ The company	3
■ SAB - worldwide	4
■ Clientele / supplier numbers	5
■ Cables for dress package	6

Robot cables

■ PUR welding cables	7-8
■ PUR control cables	9-12
■ Special PUR cable	13
■ Regulated voltage cable	14
■ Regulated voltage / medium frequency cables	15-16
■ PUR hybrid cable (PNZ cable for welding control)	17
■ PUR hybrid cable (EMZ cable for welding control)	18
■ PUR hybrid cable (divided EMZ cable for welding control)	19
■ Interbus hybrid cable	20
■ PUR multi bus cable	21
■ IBS cable rugged line	22
■ Proportional valve cable	23
■ RT profinet cable	24
■ RT-CAT 6 Hybrid Ethernet cable 	25
■ USB 2.0 cable	26
■ DeviceNet™ cable - robot cable/Drop	27
■ SAB-Product range see overleaf	



DIN EN ISO 9001

More than 60 years of experience in temperature measurement and control technique as well as in cable production have made a one man business a company with nearly 500 staff members. Our strength is not only the production of standard products but also the development and manufacturing of special products acc. to customers' specifications. Every year we manufacture more than 1500 special products on our customer's request. Every single product is a challenge for our technical team.

We at SAB Bröckskes see ourselves as manufacturer and service provider - in the sense of real partnership and customer oriented work. The quality of our products is known in more than 40 countries of the world. Our customers have tested our products intensively and confirm that they have a longer service life than others. In all product ranges we are certified acc. to ISO 9001:2008. Besides we established an environmental management system for our company acc. to ISO 14001:2004, an occupational health and safety management acc. to NLF/ILO-OSH 2001 and OHSAS 18001:2007 as well as an energy management system acc. to DIN EN 16001:2009. And our future slogan is: **We go forward!**

founded:

- 1947 by Peter Bröckskes sen.
- an independent, middle sized company

CEO:

- Peter Bröckskes

plant/location:

- in Viersen (lower Rhine) 110.000 m² company site
- manufacturing from copper conductor to outer sheath,
- own VDE proofed burnchamber and laboratory

employees/workers:

- approx. 420 at the plant in Viersen, 500 worldwide

yearly sales:

- approx. 95 Mio. € worldwide

products:

- Special Cables ■ Temperature Measurement ■ Cable Harnessing

certificates and approvals:

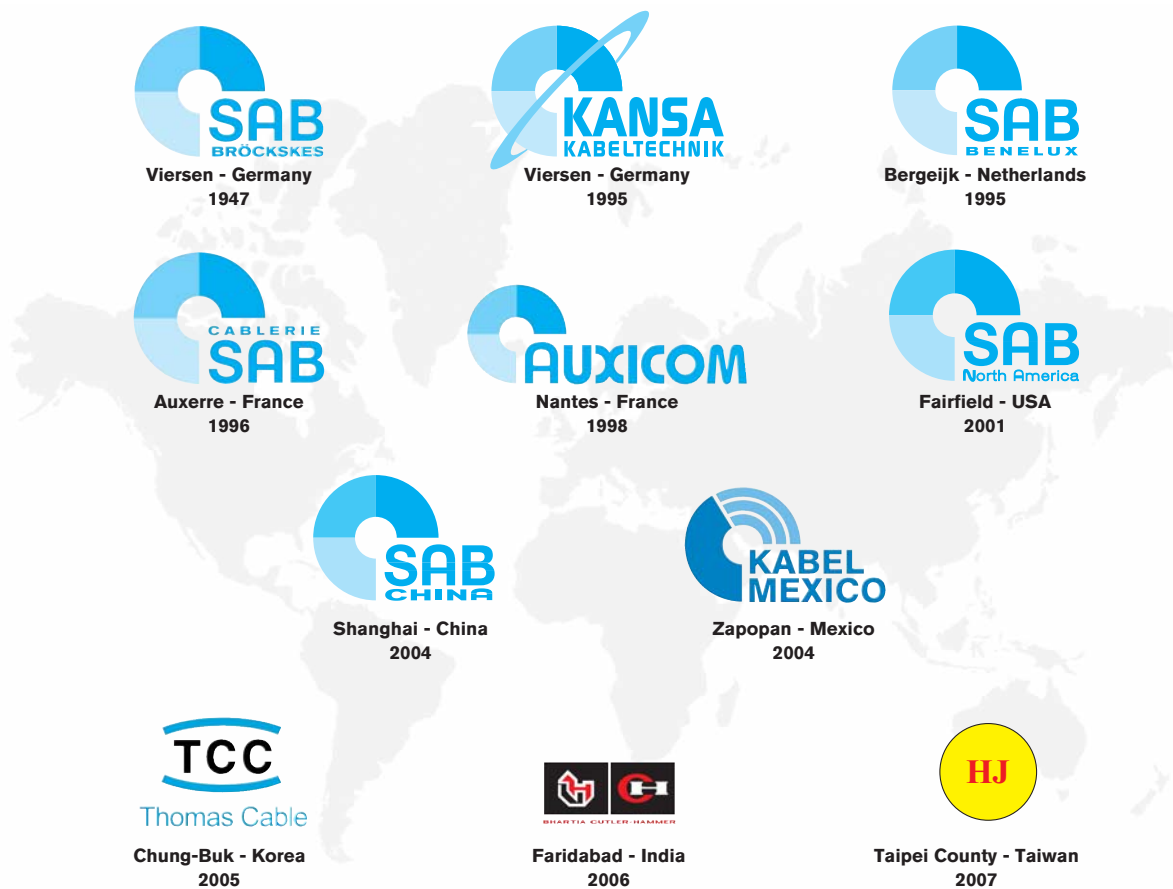
- quality management system acc. to ISO 9001:2008 for every manufacturing field
- environmental management system acc. to ISO 14001:2004
- occupational health and safety management acc. to NLF/ILO-OSH 2001 and OHSAS 18001:2007
- energy management system acc. to DIN EN 16001:2009



**MIL, VDE, HAR, IEC, GL, DNV, BV, KR,
ABS, NK, RINA, LR, CE**



From our central stock in Viersen-Süchteln or our external stocks we supply standard lengths as well as special dimensions, often within 24 hours. It is our strength to be at different places at the same time. This shows also our wide product range. Being always ready to deliver our products of constant quality is one of the premises at SAB BRÖCKSKES. Challenge, obligation - but also guarantee at the same time. This is your advantage - we are present whenever you need our assistance.



VW Ford
 Daimler
Automotive Industry
 Audi Opel
 BMW

KUKA
 ABB Cloos
Robotics industry
 Motoman
 Reis b & m

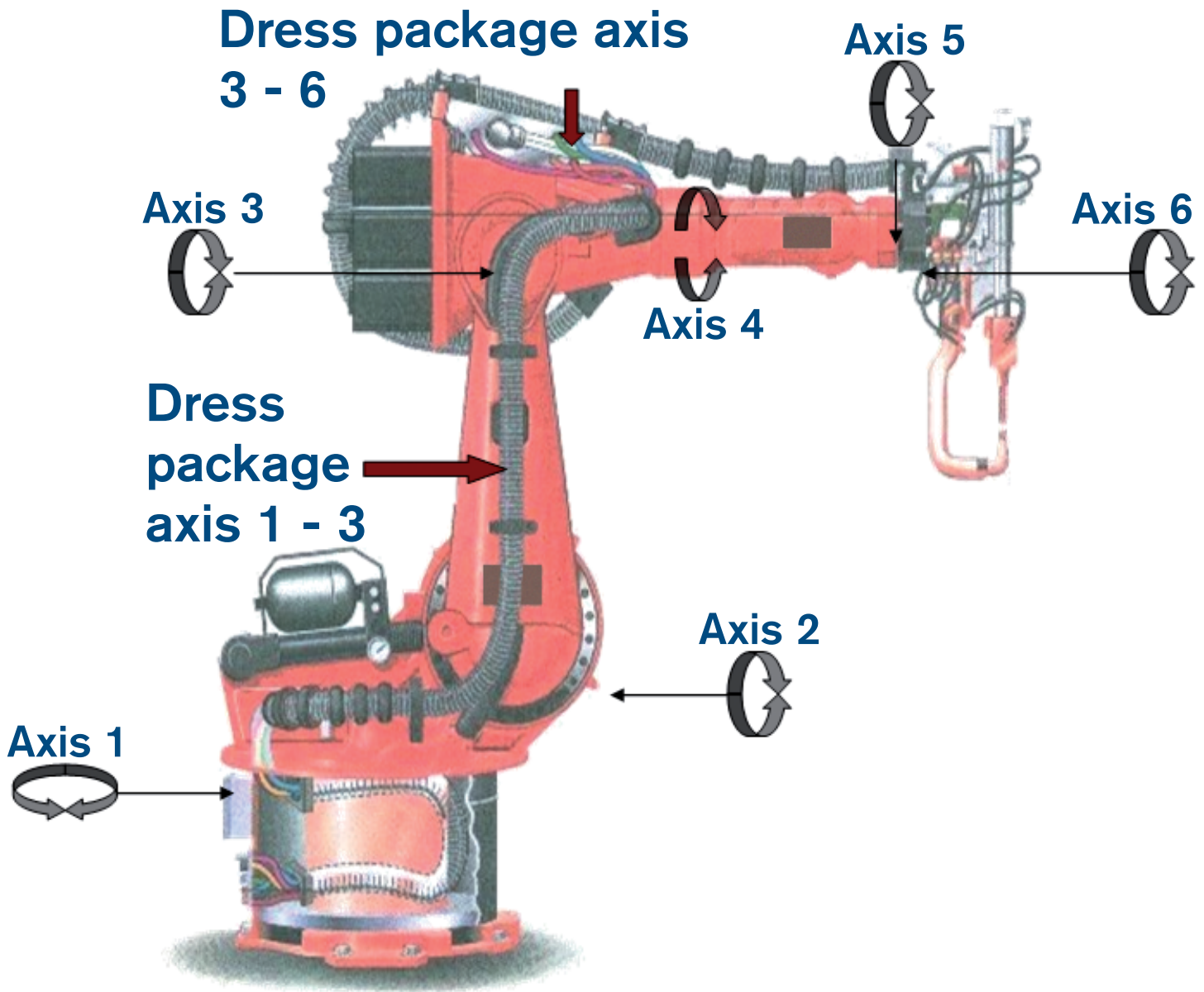
Dürr Schuler
 Liebherr
Automation Technology
 ThyssenKrupp EMAG
 Felsomat

Lenze
 Ferrocontrol
Drive Technology
 Stöber Moeller
 ELAU

Supplier Numbers

AUDI	1917/0	
BMW	609 213-10	
Daimler	102 218 10	
Ford	DJM5A	
Opel	1 950 428	
Porsche	11 901	
VW	1917-0	
VW Mexico	600 200 57 70	

D-U-N-S® number
 315 499 111
 worldwide

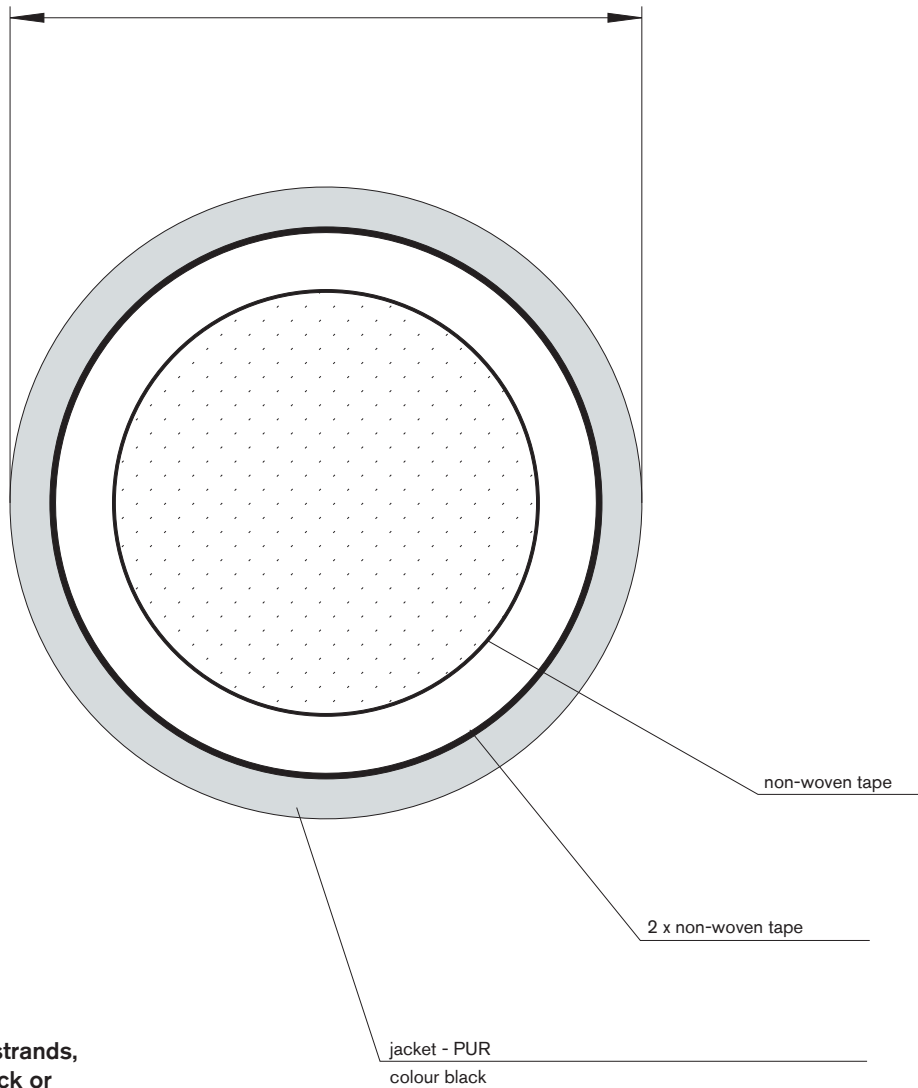


Cables for dress package

- SAB Item no.: 0774-9084 3 x 25,0 mm²
- SAB Item no.: 0737-9005 + 5 x 1,5 mm² +
0664-9001 2 x POF
- SAB Item no.: 0764-9086 7 x 1,0 mm² + (2 x 0,5 mm²)
- SAB Item no.: 0764-9065 23 x 1,0 mm² + (2 x 1,0 mm²) D

PUR WELDING CABLE

- Item no.: 0761-9052 1 x 25,0 mm² black = approx. Ø 11.1 mm
 Item no.: 0761-9050 1 x 25,0 mm² green/yellow = approx. Ø 11.1 mm
 Item no.: 0761-9048 1 x 35,0 mm² black = approx. Ø 13.3 mm
 Item no.: 0761-9054 1 x 50,0 mm² black = approx. Ø 15.8 mm



strand; bare copper strands,
 insulation PUR in black or
 green/yellow

Technical Data

Operating voltage:	750 V (DC)
Testing voltage:	2000 V (AC)
Temperature range:	
flexible application:	-40°C up to +90°C
fixed laying:	-50°C up to +90°C
Min. bending radius:	7,5 x outer diameter
Halogen-free:	acc. to DIN VDE 0472 part 815 and IEC 60754-1

Further technical information on request

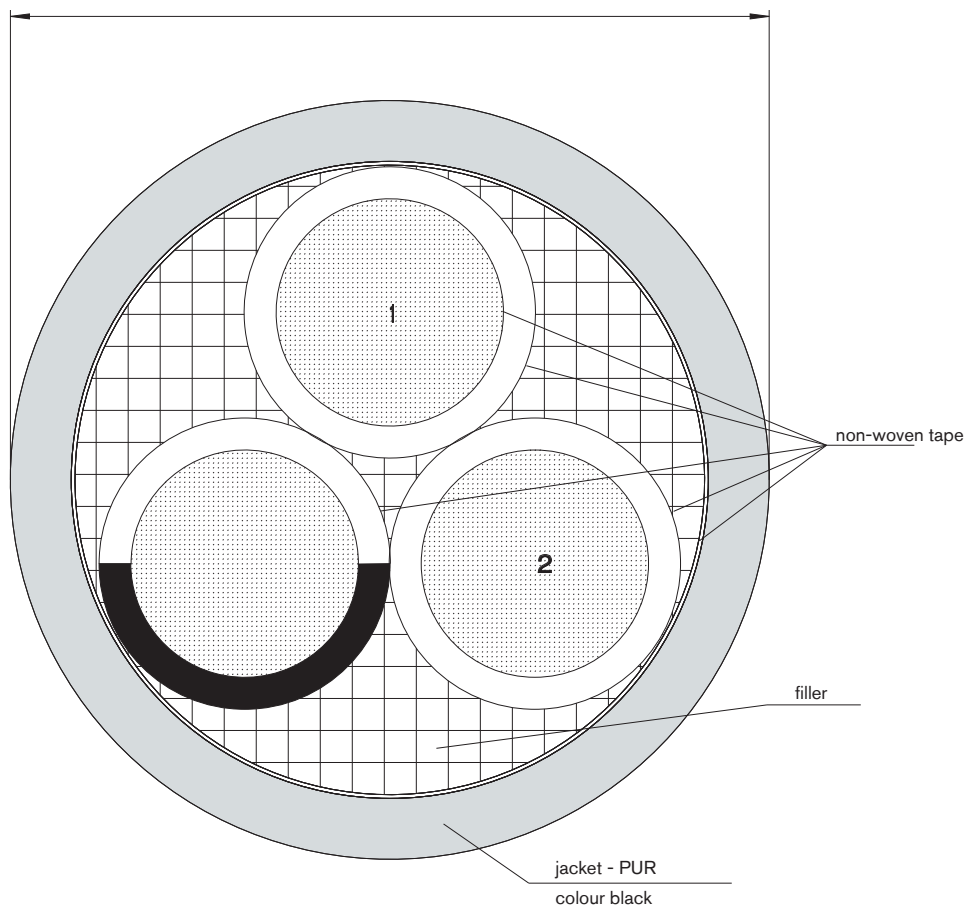
PUR WELDING CABLE

Item no: 0774-9111 3 x 16,0 mm² = approx. Ø 19.3 mm

Item no: 0774-9084 3 x 25,0 mm² = approx. Ø 23.3 mm

Item no: 0774-9085 3 x 35,0 mm² = approx. Ø 26.6 mm

Item no: 0774-9088 3 x 50,0 mm² = approx. Ø 30.8 mm



conductors; bare copper strands, insulation PUR in black
with numbers 1 - 2 + green/yellow

Technical Data

Operating voltage: 3 x 16 mm ² 3 x 25 mm ² , 3 x 35 mm ² + 3 x 50 mm ²	500 V (DC) 750 V (DC)
Testing voltage: 3 x 16 mm ² 3 x 25 mm ² , 3 x 35 mm ² + 3 x 50 mm ²	1500 V (AC) 2000 V (AC)
Temperature range: flexible application: fixed laying:	-40°C up to +90°C -50°C up to +90°C
Min. bending radius: static: continuously flexing:	5 x outer diameter 7,5 x outer diameter
Halogen-free:	acc. to DIN VDE 0472 part 815 and IEC 60754-1



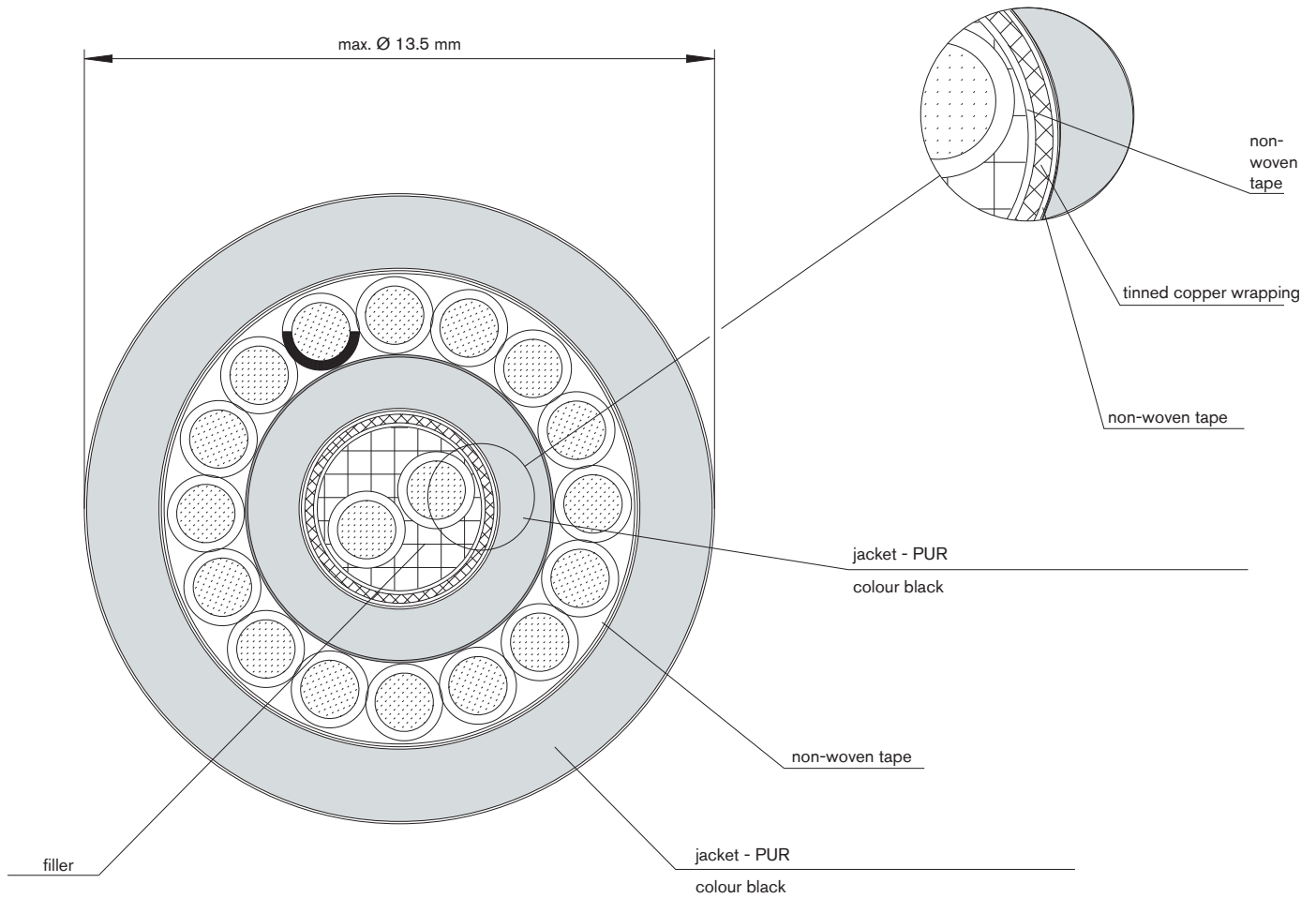
Sheath also possible
in orange or yellow!

Further technical information on request

PUR CONTROL CABLE

Item no.: 0764-9079

16 x 1,0 mm² + (2 x 1,0 mm²) D mm²



conductors 1,0 mm²; tinned copper strands,
insulation TPE in black with numbers 1 - 17 + green/yellow

Technical Data

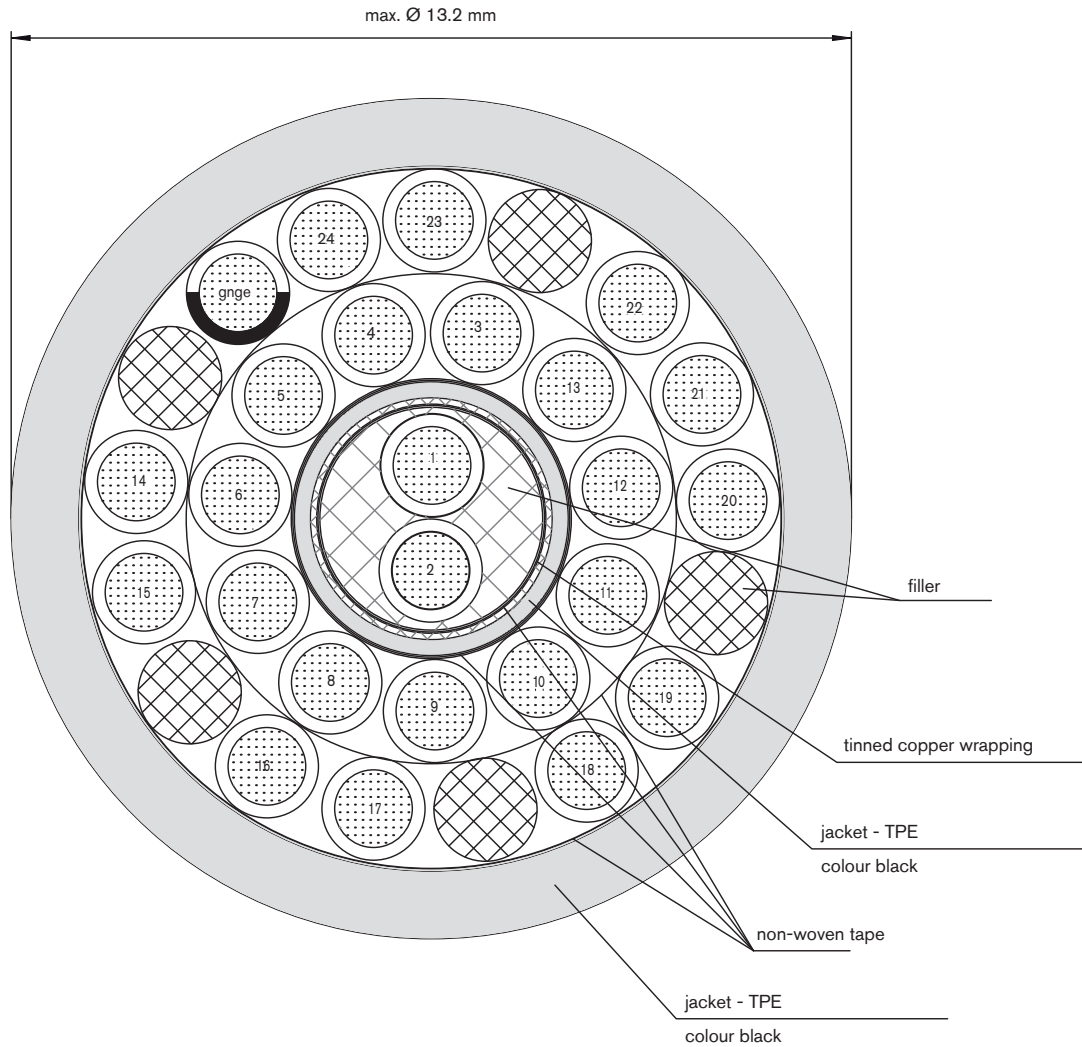
Peak operating voltage:	max. 350 V
Testing voltage:	cond./cond. 1500 V cond./screen 1000 V
Temperature range:	
flexible application:	-40°C up to +90°C
fixed laying:	-50°C up to +90°C
Min. bending radius:	
flexing:	10 x outer diameter

Further technical information on request

PUR CONTROL CABLE

Item no.: 0764-9065

23 x 1,0 mm² + (2 x 1,0 mm²) D



conductors 1,0 mm²; tinned copper strands,
insulation TPE in white with numbers 1 - 24 + green/yellow

Technical Data

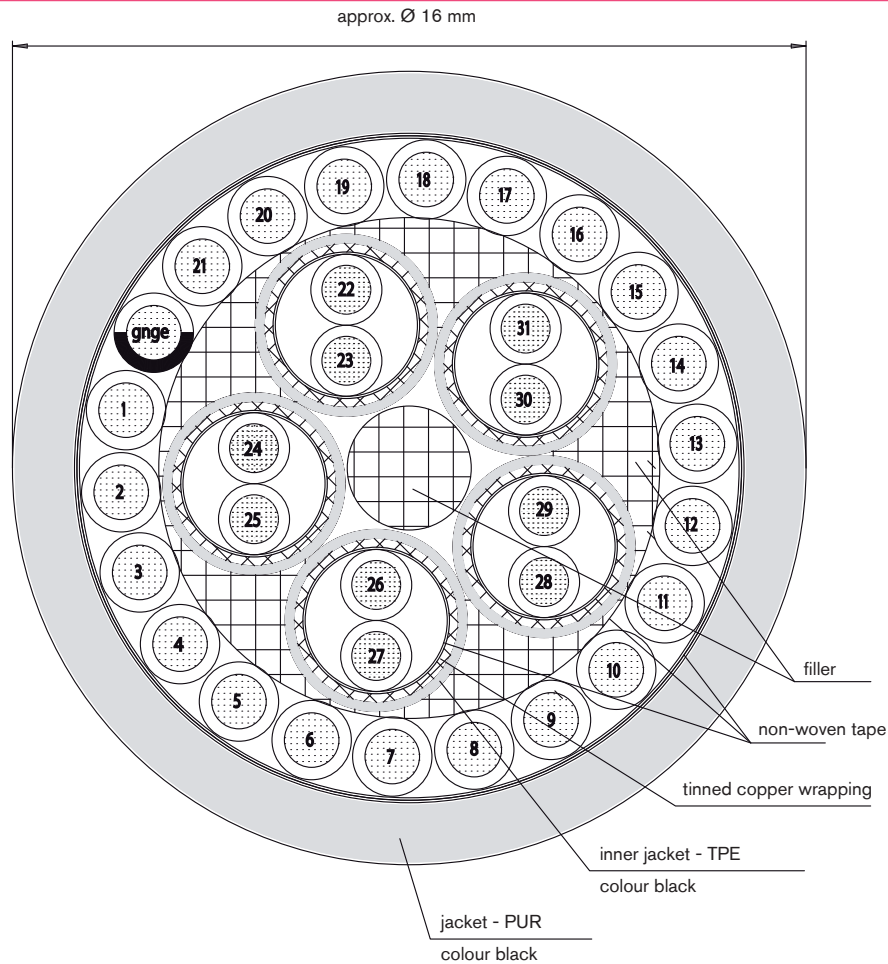
Peak operating voltage:	max. 350 V
Testing voltage:	cond./cond. 1500 V cond./screen 1000 V
Temperature range:	
flexible application:	-40°C up to +90°C
fixed laying:	-50°C up to +90°C
Min. bending radius:	
flexing:	10 x outer diameter

Further technical information on request

PUR CONTROL CABLE

Item no.: 0796-9081

5 x (2 x 0,75 mm²)D + 22 x 0,75 mm²



conductors 0,75 mm²;

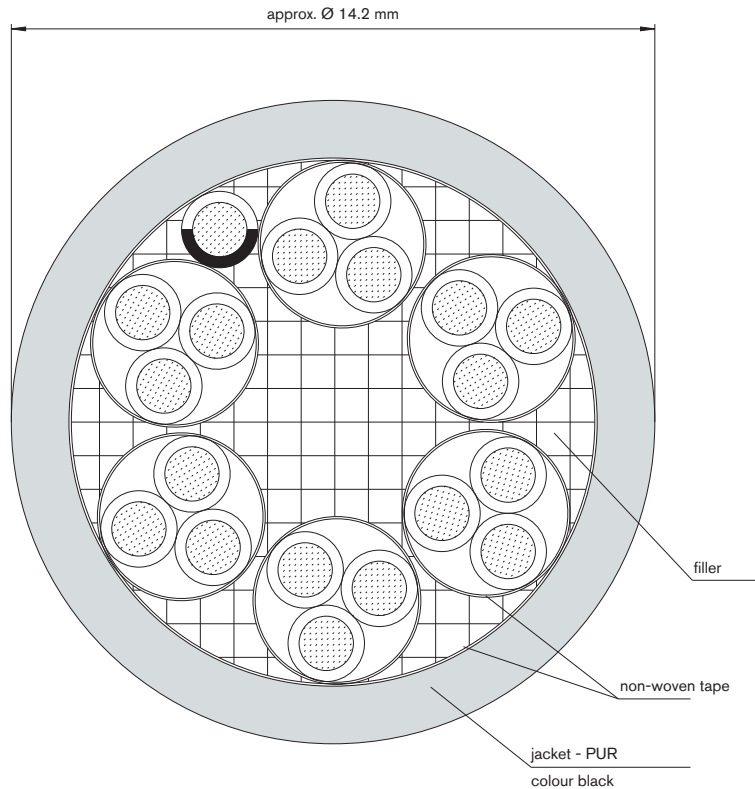
insulation TPE in white with numbers 1 - 31 + green/yellow

Technical Data

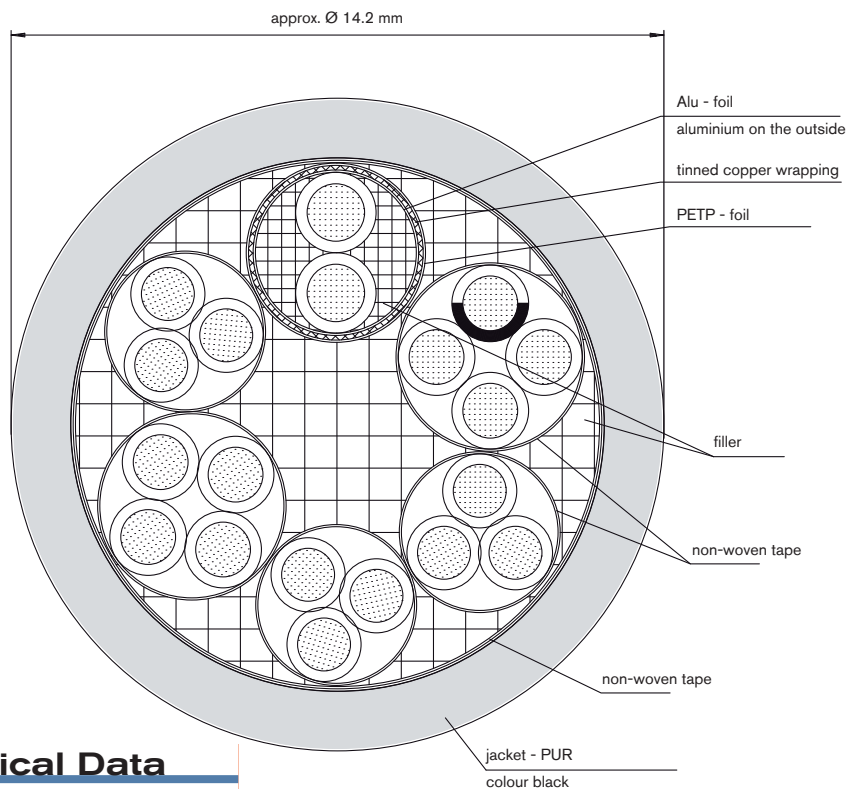
Nominal voltage:	VDE U ₀ /U 300/500 V
Testing voltage:	cond./cond. 2000 V (AC) cond./screen 2000 V (AC)
Temperature range:	
flexible application:	-40°C up to +80°C
fixed laying:	-40°C up to +80°C
Min. bending radius:	
flexing:	10 x outer diameter

Further technical information on request

Item no.: 0760-9056
19 x 1,0 mm²



Item no.: 0760-9061
19 x 1,0 mm²



Technical Data

Peak operating voltage:	max. 350 V
Testing voltage:	cond./cond. 1500 V
Temperature range:	
flexible application:	-40°C up to +90°C
fixed laying:	-50°C up to +90°C
Min. bending radius:	
flexing:	6 x outer diameter
static:	4 x outer diameter

Further technical information on request

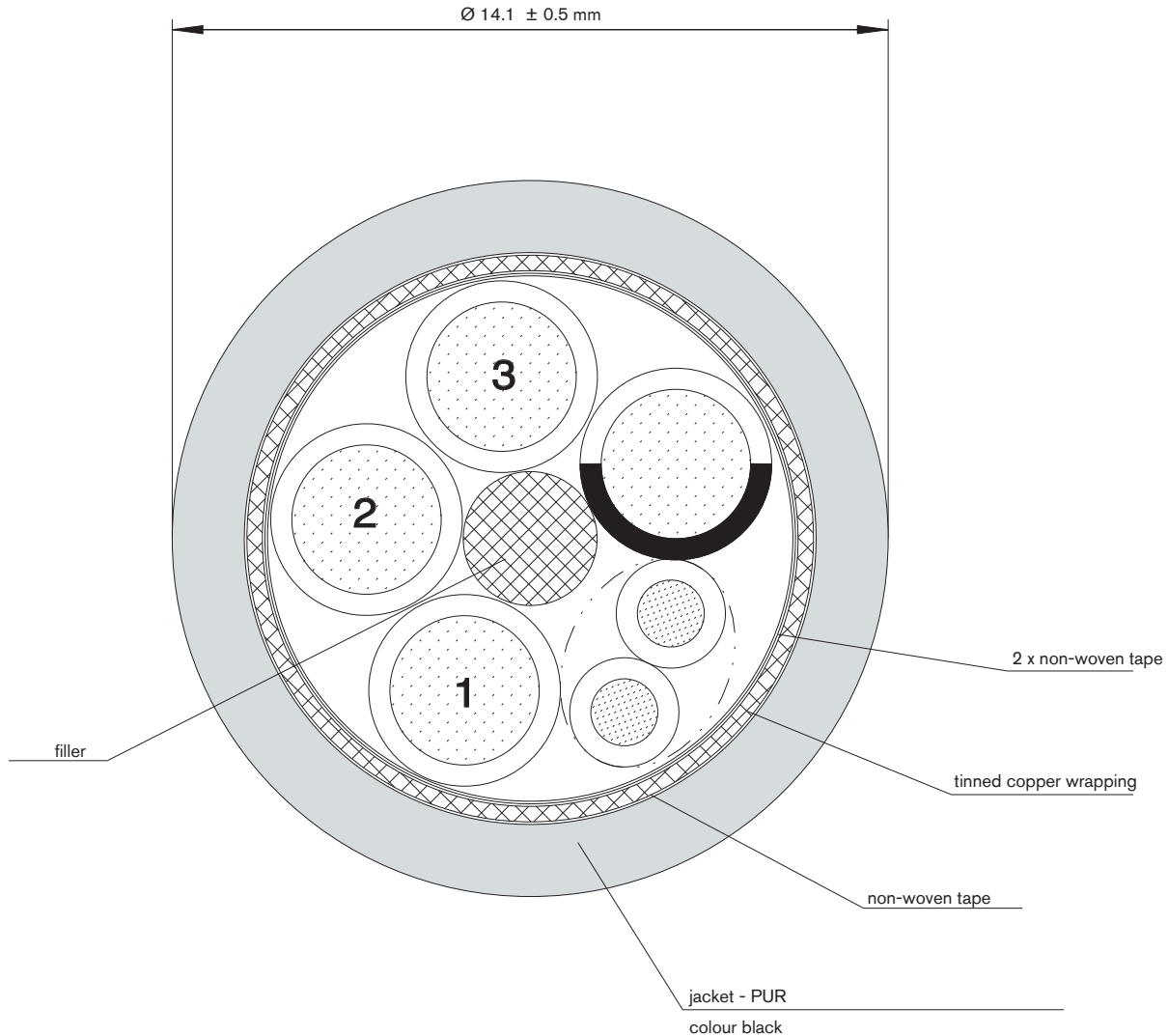
Item no.: 0760-9056:
conductors 1,0 mm²; bare copper strands,
insulation TPE in black, numbers 1 - 18 + green/yellow

Item no.: 0760-9061:
conductors 1,0 mm²; bare copper strands,
insulation TPE in black, numbers 1 - 18 + green/yellow



Item no.: 0779-9003

2 x 1,0 mm² + 4 x 4,0 mm²



conductors 1,0 mm²; bare copper strands, insulation TPE in red, blue

conductors 4,0 mm²; bare copper strands, insulation TPE in white
with black numbers (s/w) 1 - 3 + green/yellow

Technical Data

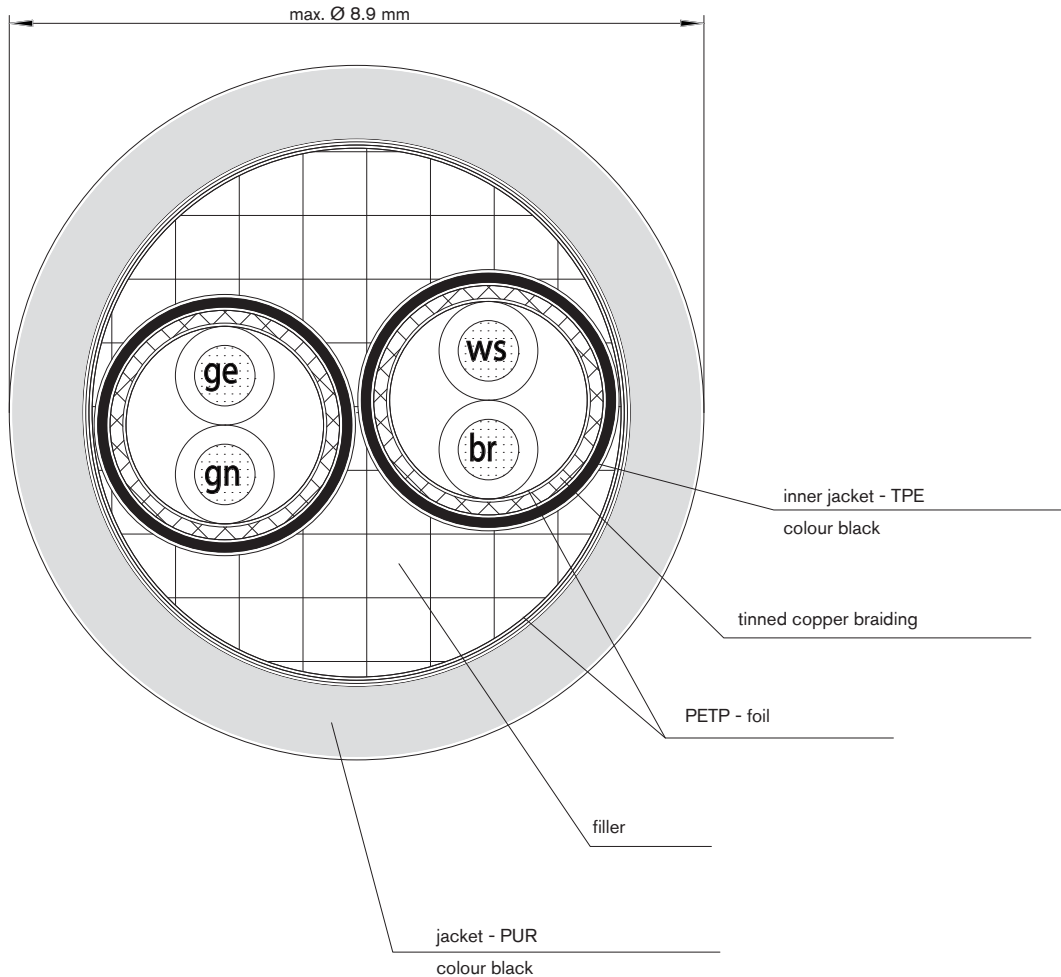
Nominal voltage:	VDE U ₀ /U 450/750 V
Voltage:	acc. to UL & CSA 600 V
Testing voltage:	cond./cond. 3000 V cond./screen 2000 V
Temperature range:	
flexible application:	-40°C up to +90°C
fixed laying:	-50°C up to +90°C
acc. to UL:	up to +80°C
acc. to CSA:	up to +75°C
Min. bending radius:	7,5 x outer diameter

Further technical information on request

REGULATED VOLTAGE CABLE

Item no.: L 0795-9035

(2 x 0,50 mm²) D + (2 x 0,50 mm²) D



conductors 0,50 mm²; bare copper strands, wires Ø 0,15 mm,
insulation TPE, colour code DIN 47100

Technical Data

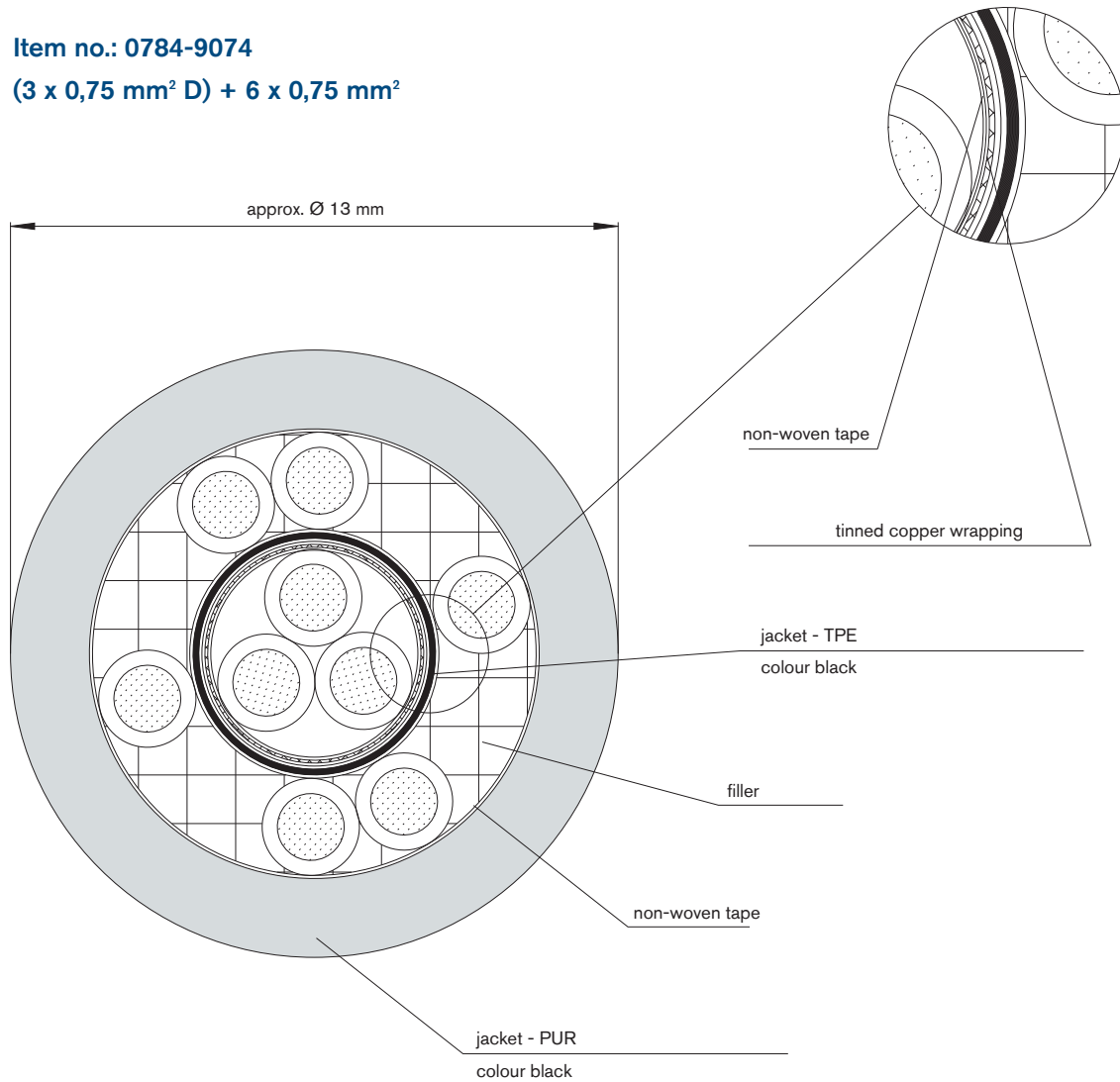
Operating voltage $U_{b \text{ max}}$:	600 V DC (conductor-conductor)
AC testing voltage:	core/core 2500 V DC core/screen 1250 V DC
Temperature range:	
flexible application:	-40°C up to +90°C
fixed laying:	-50°C up to +90°C
Min. bending radius:	
flexing:	5 x outer diameter
static:	10 x outer diameter

Further technical information on request

REGULATED VOLTAGE / MEDIUM FREQUENCY CABLE

Item no.: 0784-9074

(3 x 0,75 mm² D) + 6 x 0,75 mm²



conductors 0,75 mm²; tinned copper strands,
insulation TPE in white with numbers 1 - 9

Technical Data

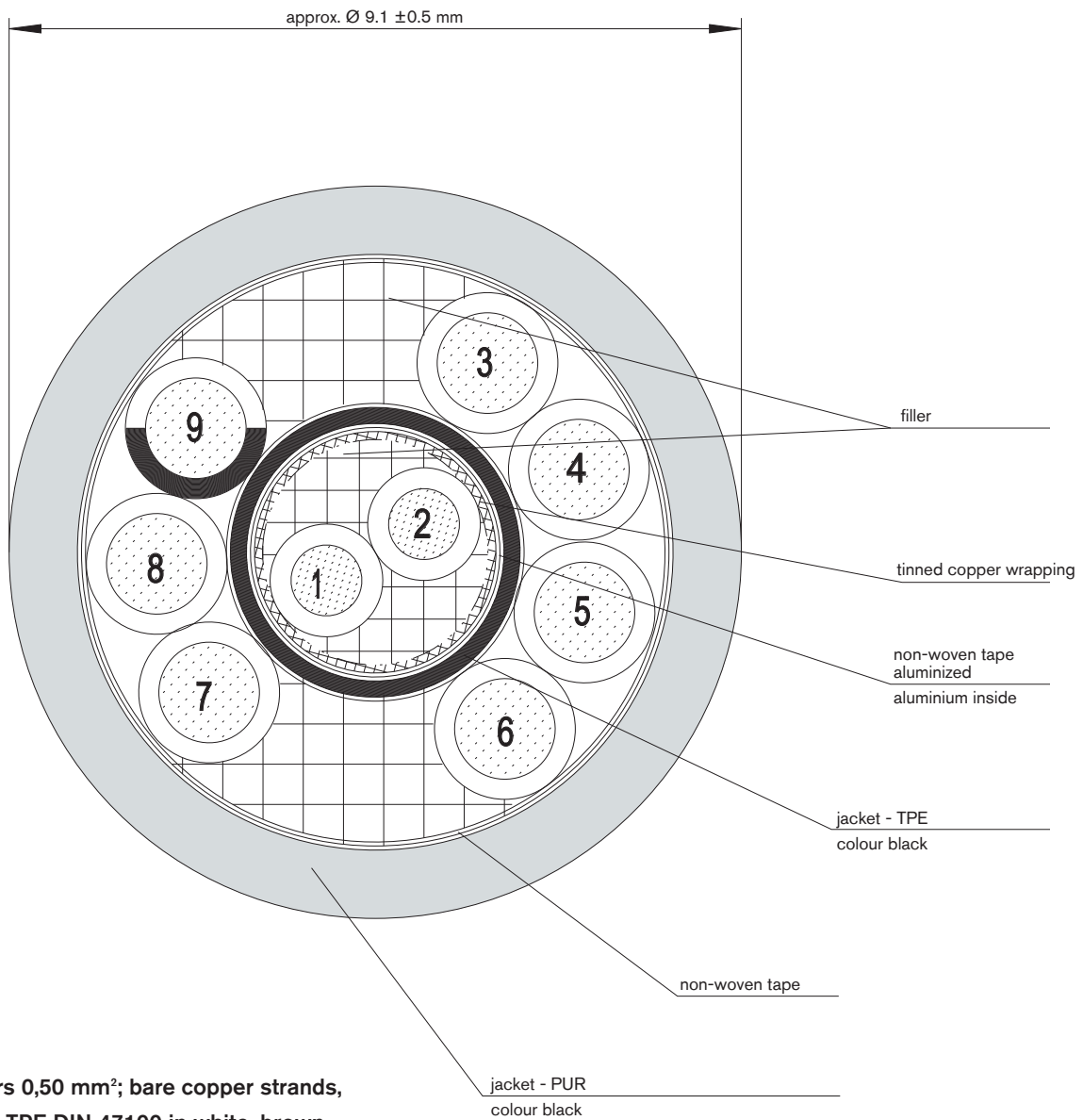
Peak operating voltage:	max. 350 V
Testing voltage:	cond./cond. 1500 V cond./screen 1000 V
Temperature range:	
flexible application:	-40°C up to +90°C
fixed laying:	-50°C up to +90°C
Min. bending radius:	
continuously flexing:	12 x outer diameter
flexing:	7,5 x outer diameter
static:	5 x outer diameter

Further technical information on request

REGULATED VOLTAGE / MEDIUM FREQUENCY CABLE

Item no.: 0764-9086

(2 x 0,50 mm²) D + 7 x 1,0 mm²



conductors 0,50 mm²; bare copper strands,
insulation TPE DIN 47100 in white, brown

conductors 1,0 mm²; bare copper strands,
insulation TPE in black with numbers 1 - 6 + green/yellow

Technical Data

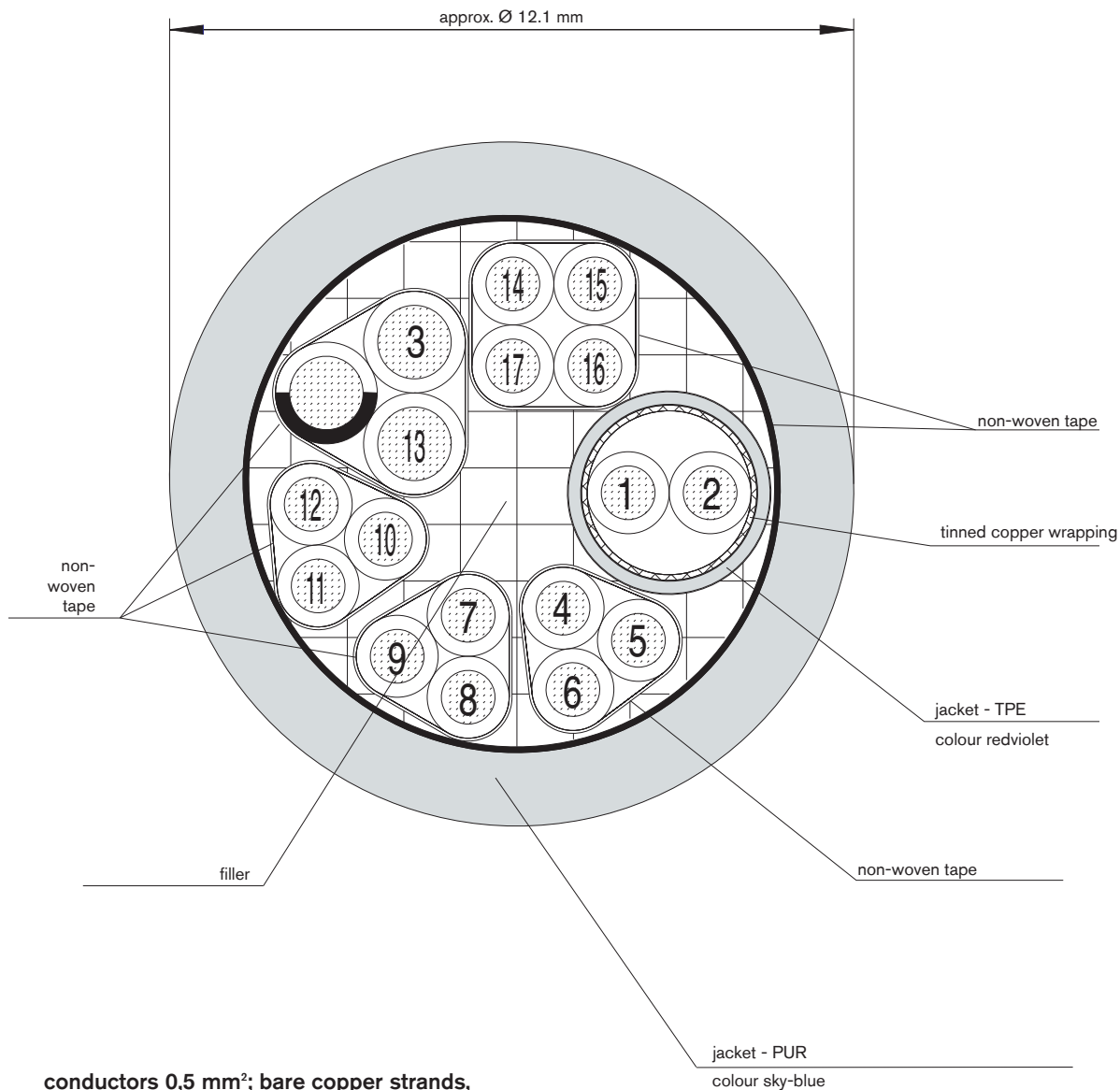
Peak operating voltage:	max. 600 V
Testing voltage:	cond./cond. 3000 V cond./screen 2000 V
Temperature range:	
flexible application:	-40°C up to +90°C
fixed laying:	-50°C up to +90°C
short-time use:	+125°C
Min. bending radius:	7,5 x outer diameter

Further technical information on request

PUR HYBRID CABLE (PNZ CABLE FOR WELDING CONTROL)

Item no.: 0399-0157

13 x 0,5 mm² + 3 x 1,0 mm² + (2 x 0,5 mm²) D



conductors 0,5 mm²; bare copper strands,
insulation TPE in white with numbers 1 - 2, 4 - 12, 14 - 17

conductors 1,0 mm²; bare copper strands,
insulation TPE in white with numbers 3, 13 + green/yellow

Technical Data

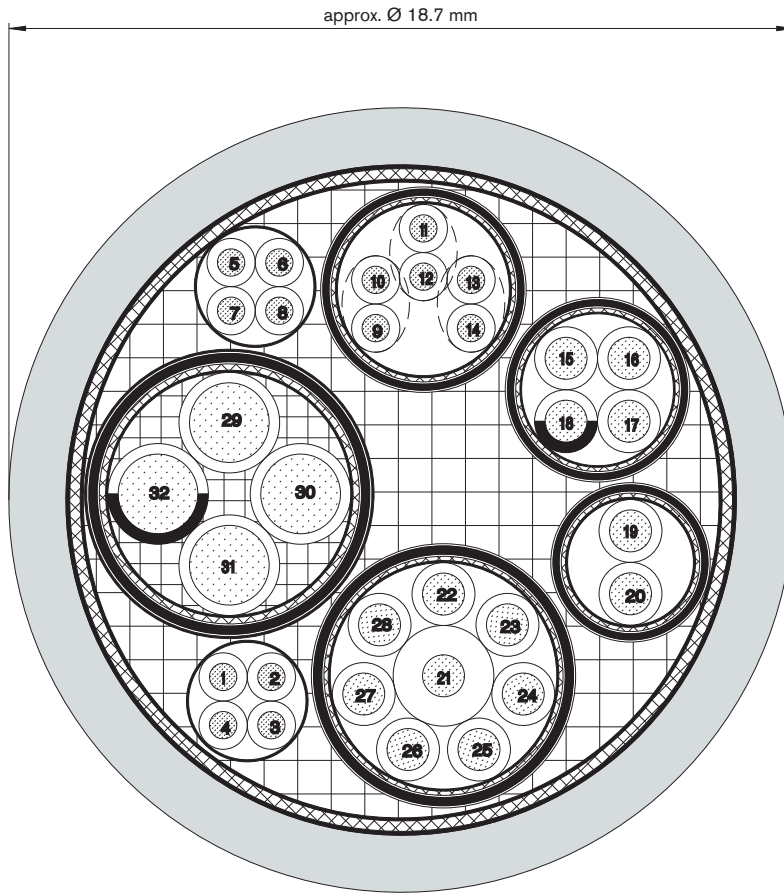
Peak operating voltage:	max. 500 V
Testing voltage:	cond./cond. 1500 V cond./screen 1000 V
Temperature range:	
flexible application:	-40°C up to +90°C
fixed laying:	-50°C up to +90°C
Min. bending radius:	10 x outer diameter

Further technical information on request

PUR HYBRID CABLE (EMZ CABLE FOR WELDING CONTROL)

32 conductors

Item no.: 0803-9081 $(3 \times 2 \times 0,25 \text{ mm}^2) \text{ D} + 2 \times 4 \times 0,25 \text{ mm}^2 + (4 \times 0,5 \text{ mm}^2) \text{ D} + (2 \times 0,5 \text{ mm}^2) \text{ D} + (4 \times 1,5 \text{ mm}^2) \text{ D} + (8 \times 0,5 \text{ mm}^2) \text{ D}$



Pos. 1 - 14 conductors 0,25 mm²; bare copper strands, DIN 47100 1-8, DIN 47100 1-6

Pos. 15 - 28 conductors 0,5 mm²; bare copper strands, in black conductors with numbers 1-3, 7-8, 10-16 and green/yellow

Pos. 29 - 32 conductors 1,5 mm²; bare copper strands, in black conductors with numbers 4-6 and green/yellow

Technical Data

Nominal voltage U ₀ /U:	300/500 V
Testing voltage:	cond./cond. 3000 V (DC) cond./screen 1500 V (DC) screen/screen 2000 V (DC)
Temperature range:	
flexible application:	-40°C up to +90°C
fixed laying:	-50°C up to +90°C
Min. bending radius for continuously flexible application:	10 x outer diameter

Further technical information on request



Also available as version
with 31 conductors!

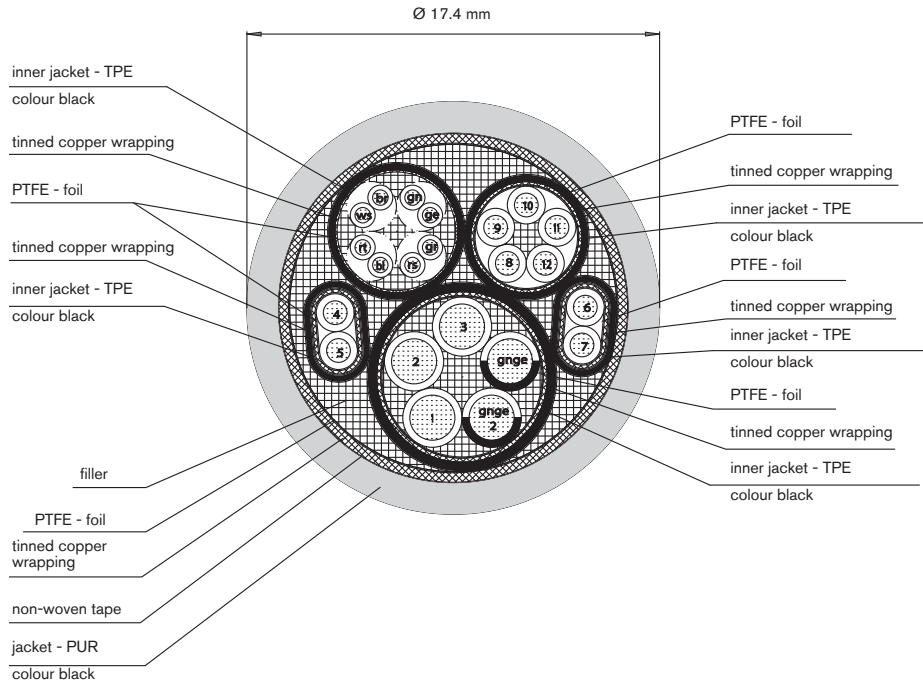
Item no. 0803-9123

Dimension:

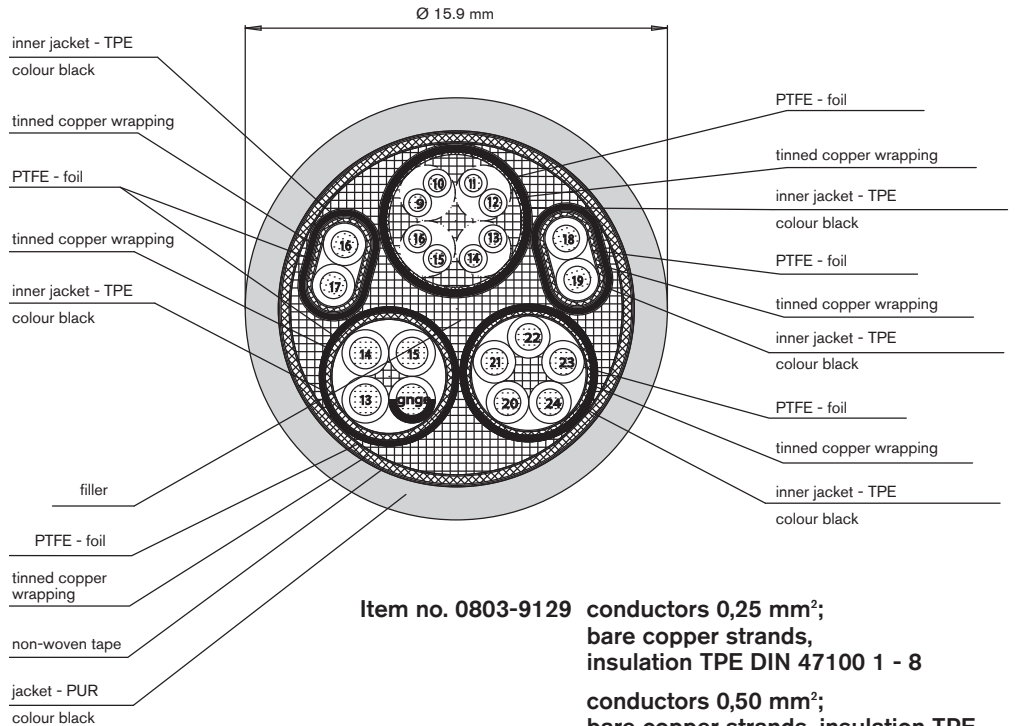
$(3 \times 2 \times 0,25 \text{ mm}^2) \text{ D} + 2 \times 4 \times 0,25 \text{ mm}^2$
 $+ (4 \times 0,5 \text{ mm}^2) \text{ D} + 2 \times (2 \times 0,5 \text{ mm}^2) \text{ D}$
 $+ (4 \times 1,5 \text{ mm}^2) \text{ D} + (5 \times 0,5 \text{ mm}^2) \text{ D}$

PUR HYBRID CABLE (DIVIDED EMZ CABLE FOR WELDING CONTROL)

Item no.: 0803-9129
(4 x 2 x 0,25 mm²)D +
2 x (2 x 0,50 mm²)D +
(5 x 0,50 mm²)D +
(5 x 1,50 mm²)D



Item no.: 0803-9130
(4 x 2 x 0,25 mm²)D +
2 x (2 x 0,50 mm²)D +
(5 x 0,50 mm²)D +
(5 x 0,75 mm²)D



Technical Data

Peak operating voltage:	max. 450 V (0,25 mm ²) max. 600 V (0,50 mm ² + 1,50 mm ²)
AC testing voltage:	cond./cond. 2500 V (0,25 mm ²) 3000 V (0,50 mm ² + 1,50 mm ²) cond./screen 1500 V (0,25 mm ²) 2000 V (0,50 mm ² + 1,50 mm ²) screen/screen 2000 V
Temperature range:	
flexible application:	-40°C up to +80°C
fixed laying:	-50°C up to +80°C
Min. bending radius:	
flexing:	10 x outer diameter
static:	5 x outer diameter

Further technical information on request

Item no. 0803-9129 conductors 0,25 mm²;
bare copper strands,
insulation TPE DIN 47100 1 - 8

conductors 0,50 mm²;
bare copper strands, insulation TPE
in white with numbers 4 - 12

conductors 1,50 mm²;
bare copper strands, insulation TPE
in white with numbers 1 - 3
+ green/yellow + green/yellow

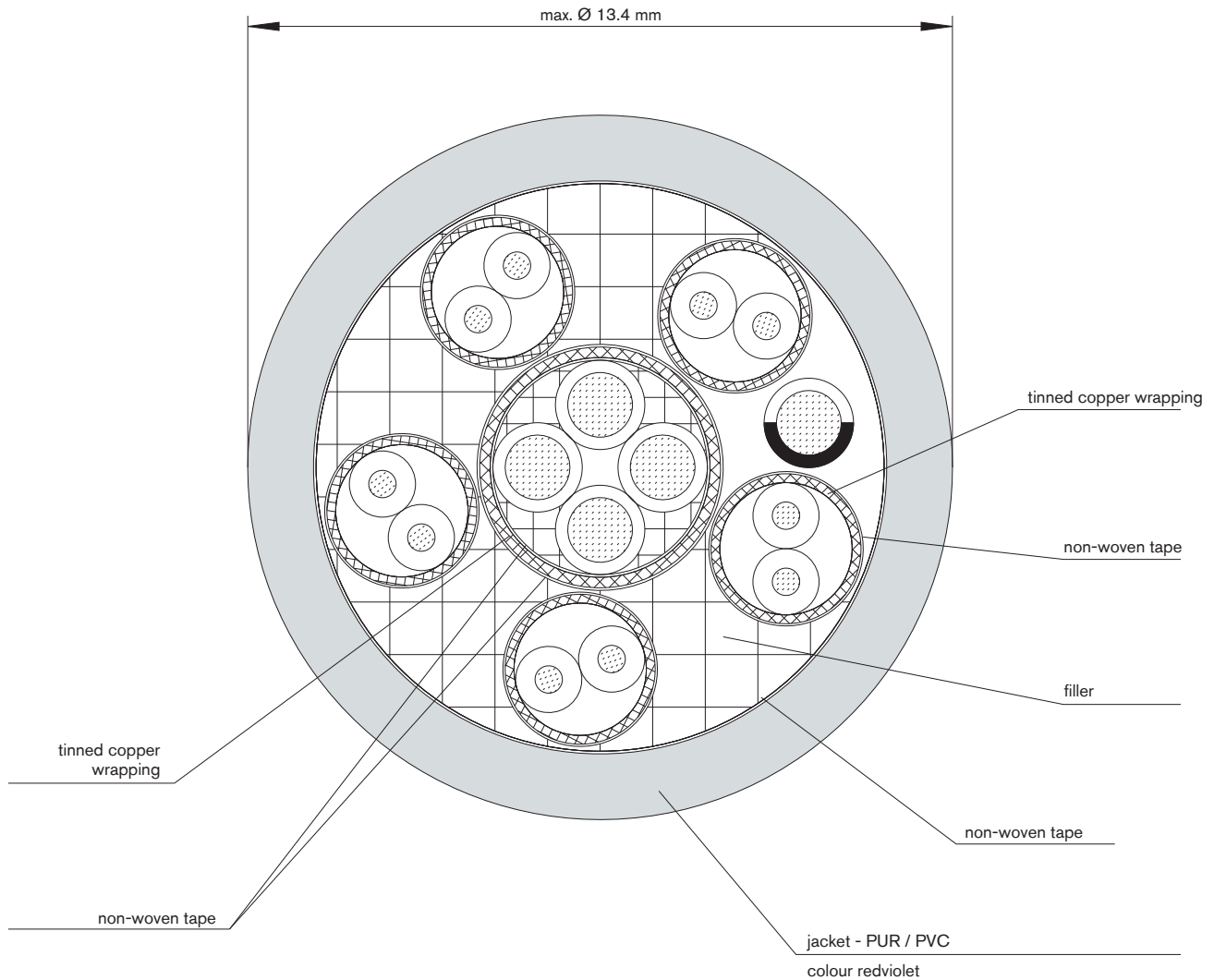
Item no. 0803-9130 conductors 0,25 mm²;
bare copper strands,
insulation TPE DIN 47100 9 - 16

conductors 0,50 mm²;
bare copper strands, insulation TPE
in white with numbers 16 - 24

conductors 1,50 mm²;
bare copper strands, insulation TPE
in white with numbers 13 - 35
+ green/yellow

Item no.: 0367-9048

4 x 1,0 mm² + 5 x 2 x 0,25 mm² + 1 x 1,0 mm²



conductors 0,25 mm²; bare copper strands,
insulation special Polymer colour code DIN 47100 1 - 10

conductors 1,00 mm²; bare copper strands,
insulation TPE in black, blue, red, brown, green/yellow

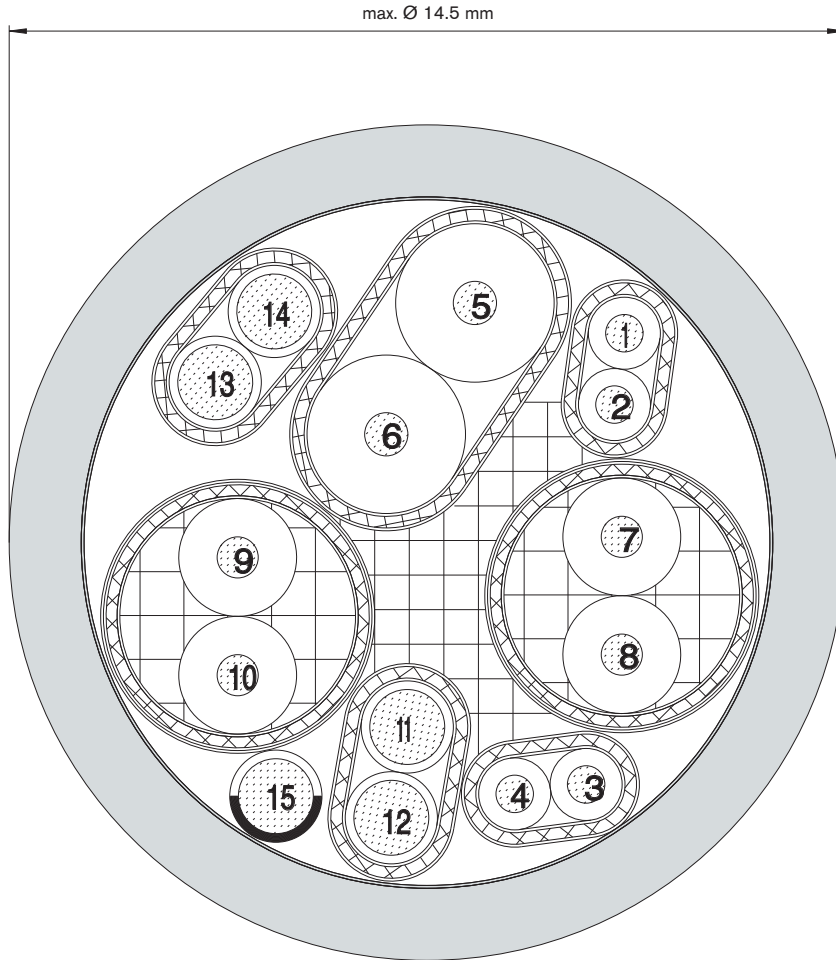
Technical Data

Peak operating voltage:	max. 350 V
Testing voltage:	screen/screen 1700 V (AC) cond./screen 1000 V (AC) cond./cond. 2500 V (DC) cond./screen 1500 V (DC)
Temperature range:	
flexible application:	-40°C up to +70°C
fixed laying:	-40°C up to +70°C
Min. bending radius:	7,5 x outer diameter

Further technical information on request



Item no.: 0616-9028 $2 \times (2 \times 0,25 \text{ mm}^2) \text{ D} + 2 \times (2 \times 0,34 \text{ mm}^2) \text{ D} + 1,0 \text{ mm}^2 + (2 \times 0,34 \text{ mm}^2) \text{ D} + 2 \times (2 \times 1,0 \text{ mm}^2) \text{ D}$



Interbus-S	Pos. 1 - 4	conductors $0,25 \text{ mm}^2$; bare copper strands, in green, yellow, grey, pink
Profibus-DP	Pos. 5 - 6	conductors $0,34 \text{ mm}^2$; bare copper strands, in red, green
DeviceNet	Pos. 7 - 10	conductors $0,34 \text{ mm}^2$; bare copper strands, in blue + white, blue + red
	Pos. 11 - 15	conductors $1,0 \text{ mm}^2$; bar copper strands, in red + black, brown + blue, green/yellow

Technical Data

Voltage:	UL 30 V
Temperature range:	
flexible application:	-40°C up to +80°C
fixed laying:	-40°C up to +80°C
Min. bending radius:	12 x outer diameter

Further technical information on request

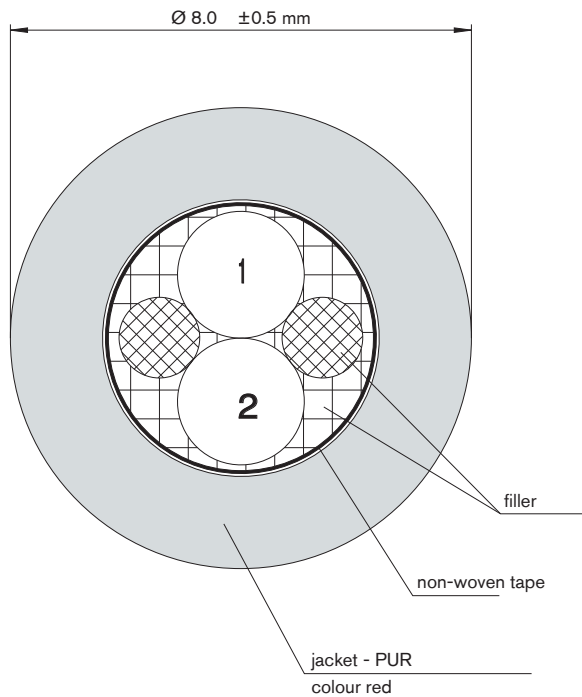


**Also available
for fixed installation!**

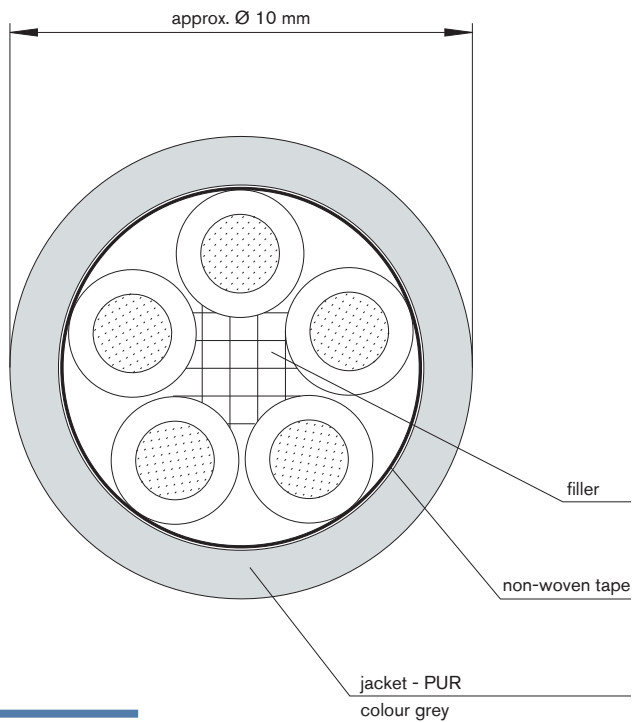
Item no. 0616-9032

Item no.: 0664-9001 and 0737-9005
 2 x POF and 5 x 1,5 mm²

Pos. 1 - 2 POF polymeric optical fibers in black and orange



conductors 1,5 mm²; bare copper strands, insulation special Polymer in black, with numbers 1 to 4 and one yellow with numbers 5 in black



Technical Data

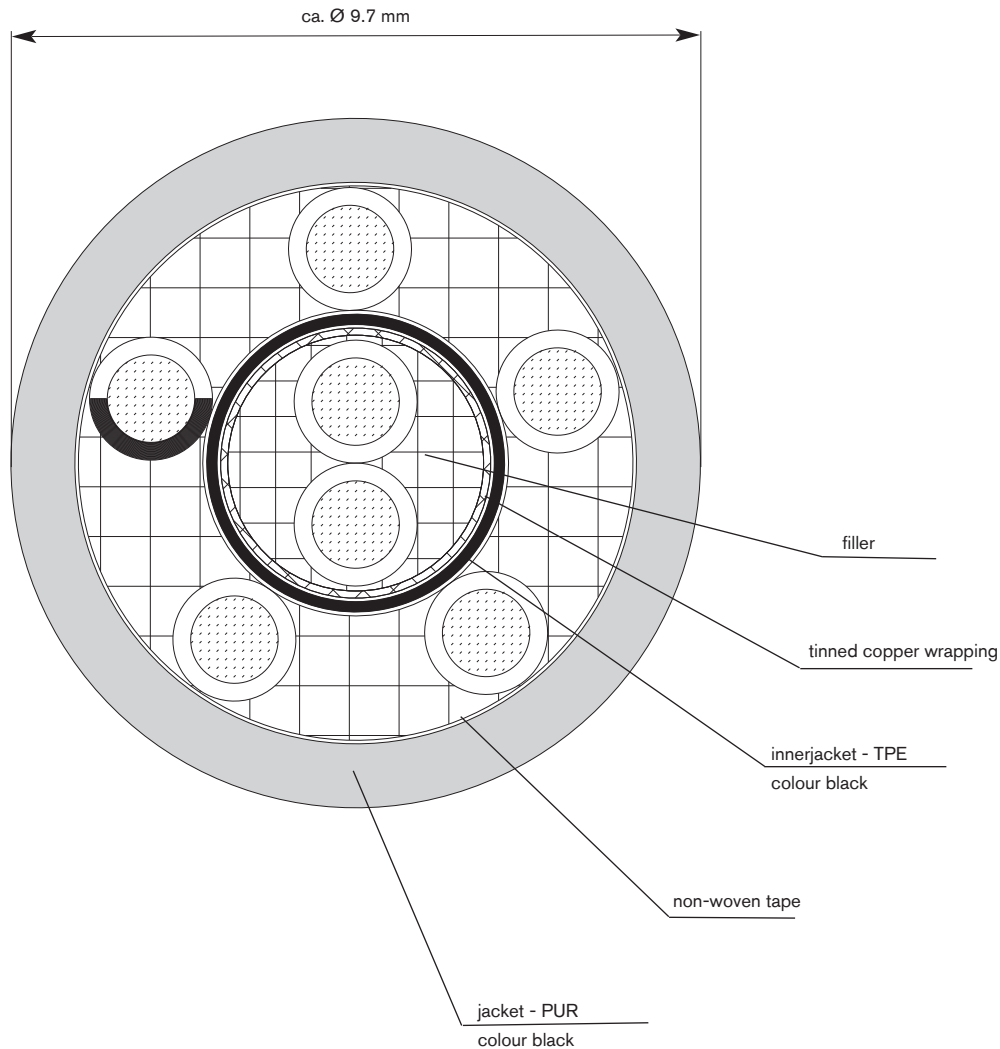
	item no. 0664-9001	item no. 0737-9005
Nominal voltage:		DIN VDE U ₀ /U 300/500 V
Testing voltage:		2000 V
Temperature range:		
flexible application:	+ 5°C up to +50°C	-30°C up to +70°C
fixed laying:	-20°C up to +70°C	-30°C up to +70°C
Min. bending radius:	POF min. 30 mm	7,5 x outer diameter
Overall cable:	10 x outer diameter	

Further technical information on request

PROPORTIONAL VALVE CABLE

Item no.: 0760-9057

(2 x 1,0 mm²) D + 5 x 1,0 mm²



conductors 1.0 mm²; bare copper,
insulation TPE in black with numbers 1 - 6 + green/yellow

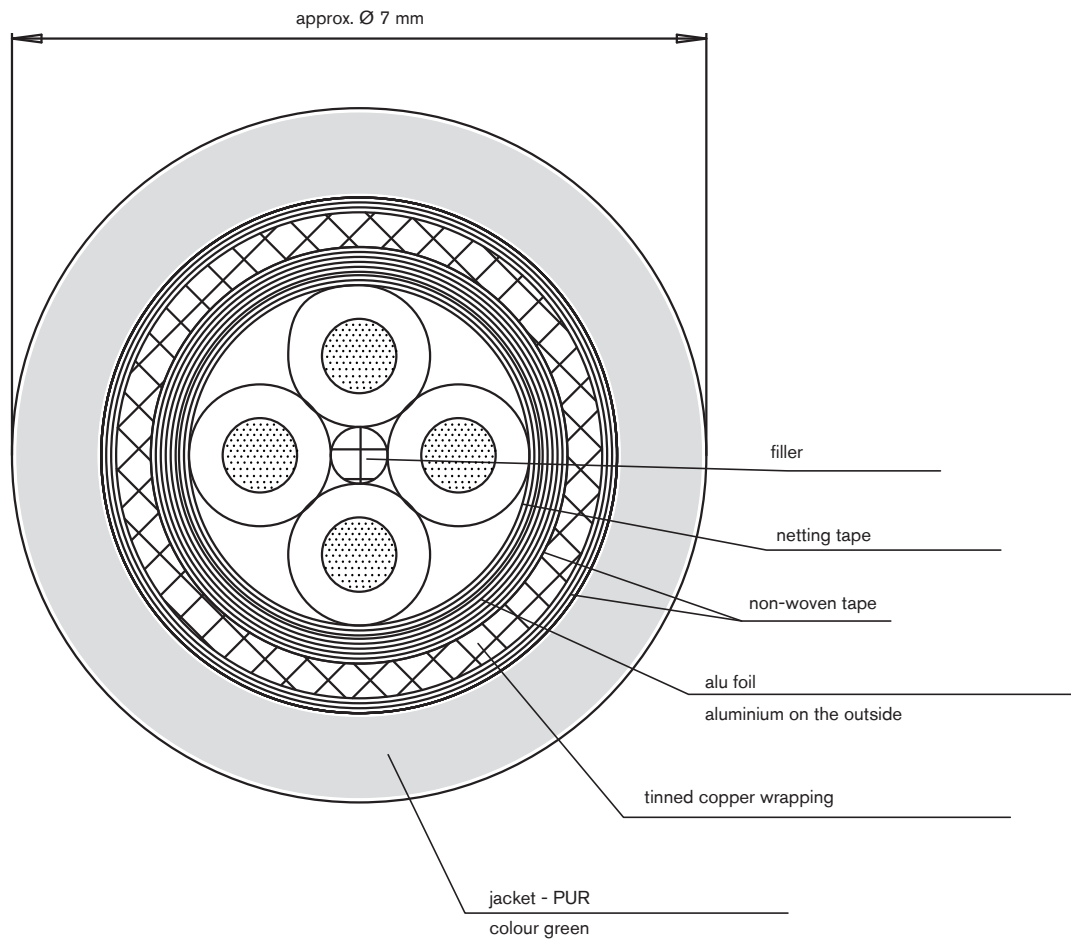
Technical Data

Peak operating voltage:	max. 350 V
Testing voltage:	conductor/conductor 1500 V conductor/conductor 1200 V
Temperature range :	
flexingt:	-40°C up to +90°C
static:	-50°C up to +90°C
Min. bending radius:	
flexing:	10 x outer diameter
static:	5 x outer diameter

Further technical information on request

Item no.: 0668-9001

2 x 2 x AWG 22



conductors AWG 22; tinned copper strands,
insulation PE in white, blue, orange, yellow

Technical Data

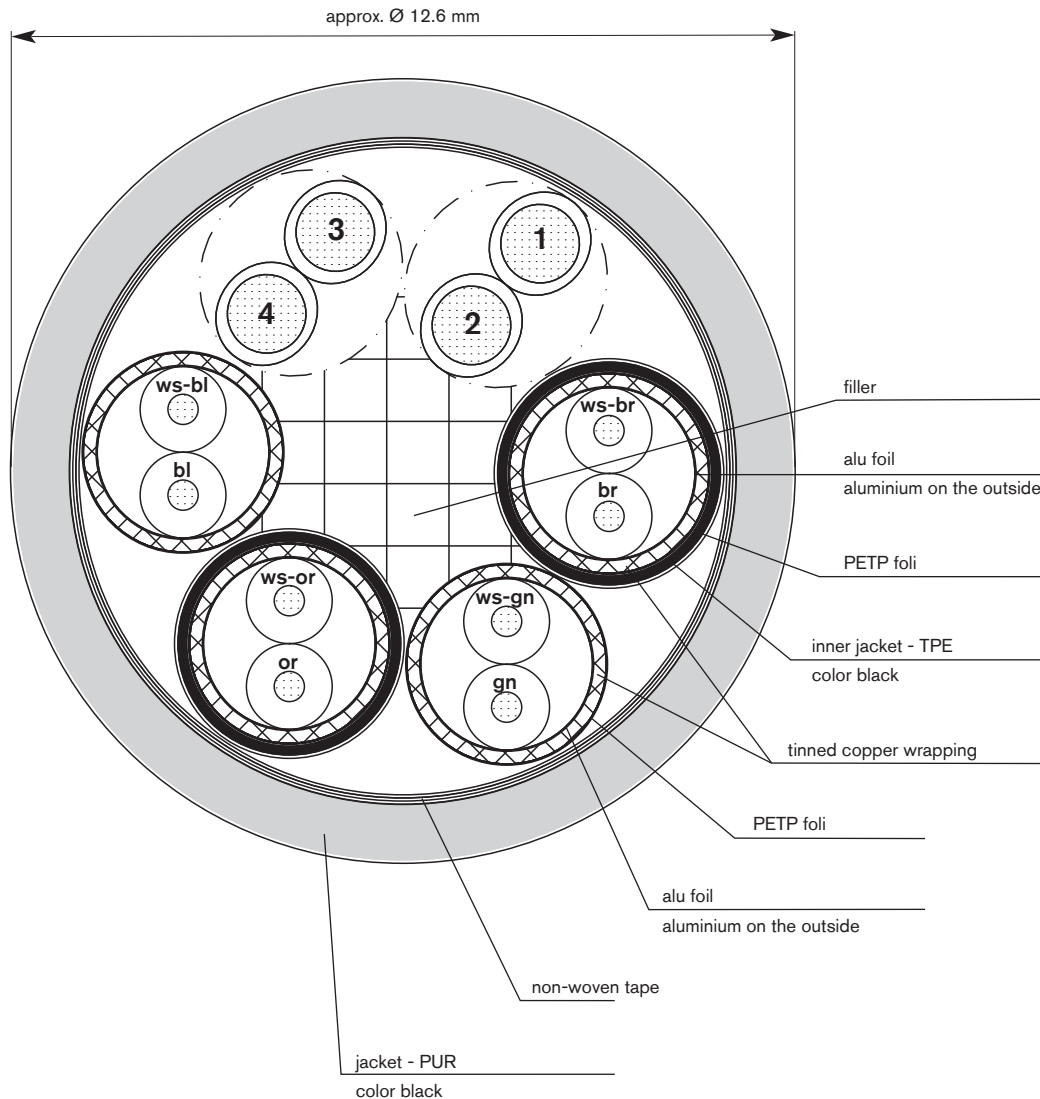
Peak operating voltage:	max. 350 V
Testing voltage:	cond./cond. 1500 V cond./screen 1200 V
Temperature range:	
flexible application:	-30°C up to +90°C
fixed laying:	-40°C up to +90°C
Min. bending radius:	
flexing:	10 x outer diameter
static:	5 x outer diameter

Further technical information on request

RT-CAT 6 HYBRID ETHERNET CABLE

Item no.: 0696-9002

4 x 2 x 26 AWG + 4 x 1,0 mm²



conductors 4 x 2 x 26 AWG + 4 x 1,0 mm²: tinned copper strands

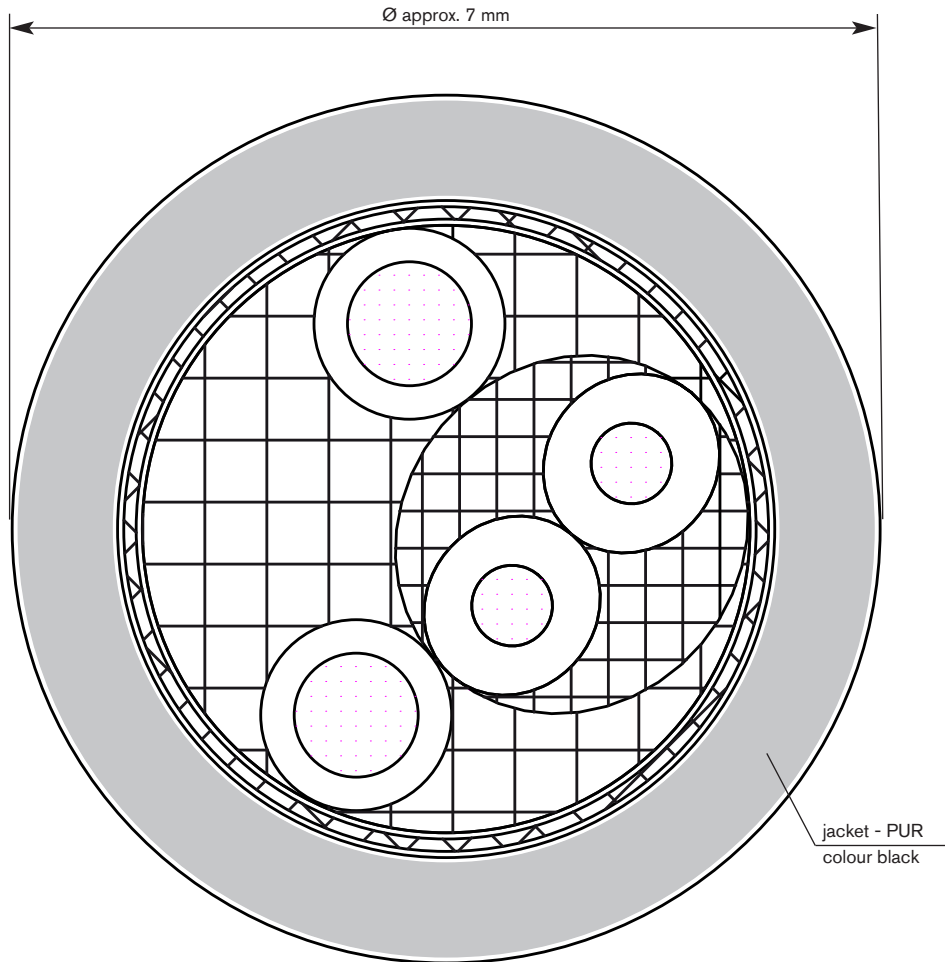
insulation 4 x 1,0 mm²: TPE in black with numbers 1 - 4

insulation conductors 4 x 2 x 26 AWG: FEP, ws-bl/bl, ws-or/or, ws-gr/gr, ws-br/br

Technical Data

Peak operating voltage:	AWG 26: max. 350 V
Nominal voltage:	1,0 mm ² : 300/500 V
Testing voltage:	cond./cond. 1500 V (AWG 26) 2000 V (1,0 mm ²) cond./screen 1200 V (AWG 26)
Temperature range:	
flexible application:	-40°C up to +90°C
fixed laying:	-50°C up to +90°C
Min. bending radius:	
flexing:	10 x outer diameter
static:	5 x outer diameter

Further technical information on request



Construction:

Dimension:	(2 x 0,22 mm ²) ST + 2 x 0,5 mm ²
Conductor:	0,50 mm ² : bare copper strands 0,22 mm ² : silver-plated strands
Insulation:	SABIX® 151
Colour code:	0,50 mm ² : black, red 0,22 mm ² : white, green
Stranding:	2 x 0,22 mm ² wrapped with alu foil, together with 0,5 mm ²
Wrapping:	PTFE foil
Screen:	tinned copper braiding
Wrapping:	non-woven tape
Sheath material:	PUR
Sheath colour:	black (RAL 9005)

Technical data:

Voltage UL:	300 V
Peak operating voltage:	max. 350 V
Testing voltage:	core/core 2000 V core/screen 2000 V
Min. bending radius	fixed laying: 5 x d flexible application: 7,5 x d continuously flexible: 10 x d
Temperature range	UL: up to +80 °C <i>fixed laying:</i> -50/+90 °C <i>flexible application:</i> -40/+90 °C
Torsion angle:	up to ± 180°/m
Oil resistance:	TMPU acc. to DIN VDE 0282 part 10 + HD 22.10
Absence of harmful substances:	acc. to RoHS directive of the European Union

item no.	type	dimension mm ²	outer-ø approx. mm	copper figure kg/km	cable weight ≈kg/km
06012022	robot cable with UL/CSA	(2x0,22) ST + 2x0,50	7,0	34,3	64,0

Other dimensions and colours are possible on request.



Marking for DN 658 06589007:

SAB BRÖCKSKES · D-VIERSEN · DN 658 robot cable/Drop 2x0,24mm²+2x0,38mm² 24AWG/1pr+22AWG/1pr UL AWM Style 21198 80°C 300V 06589007 CE

Construction:

Conductor:	tinned copper strands, fine wires
Insulation:	0,24 mm ² : Foam-Skin 0,38 mm ² : SABIX® 151
Colour code	0,24 mm ² : white, blue 0,38 mm ² : black, red
Wrapping:	each pair wrapped with alu foil
Stranding:	pairs in a specially adjusted layering, tinned copper drain wire in the core
Screen:	tinned copper braiding
Wrapping:	non-woven tape
Outer sheath:	PUR, TMPU acc. to EN 50363-10-2
Sheath colour:	redlilac (RAL 4001)

Technical data:

Voltage UL:	300 V
Peak operating voltage:	max. 350 V
Testing voltage U:	core/core 1500 V core/screen 1200 V
Min. bending radius	fixed laying: 7,5 x d flexible application: 15 x d
Temperature range	UL: up to +80 °C <i>fixed laying:</i> -40/+80 °C <i>flexible application:</i> -30/+80 °C
Torsion angle:	up to ± 180°/m
Characteristic impedance at 1 MHz:	120 Ω ± 10%
Absence of harmful substances:	acc. to RoHS directive of the European Union

item no.	no. of conductors	nominal cross-section mm ²	outer-ø	copper figure kg/km	cable weight ≈kg/km	ohmic resistance at 20°C max.Ω/km
06589007	2	0,24	min. 6,1	32,9	64	83,3
	2	0,38	max. 7,1			52,6

Other dimensions and colours are possible on request.



DN 658
highly flexible
DeviceNet™ cable,
suitable for robots with overall
copper screen and UL approval



FLEXIBLE CABLES

- Halogen-free cables ■ Cable track cables
- Servo motor cables ■ ETFE, FEP, PFA cables
 - Bus cables ■ Torsion cables
- Hybrid and special cables ■ Control and connection cables
 - Data cables ■ Besilen® (Silicone) cables
- Compensating and extension cables ■ Tray cables

TEMPERATURE MEASUREMENT

- Protecting armatures and gauge slides
- Mineral insulated thermocouples and Mineral insulated resistance thermometers
- Temperature measurement in plastic processing industry/Hot runner technique
 - Diesel thermocouples ■ Probe with stainless steel sleeve
 - Temperature measurement in test vehicles
 - Measurement techniques

CABLE HARNESSING

- Harnessed cables acc. to customer's specification
 - Harnessed cable track cables
 - Helix cables ■ Cable harnesses
- Harnessed motor and transmission cables for Siemens and Indramat drives