

PTFE insulated cables and wires



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1. Product overview

HV cables	Insulated wires	Coaxial cables	Customized cables
			
Insulation sleeves	Flat cables	Multicore cables	Assembling
			

Minimum order quantity (MOQ)

• Multicore cables	100 m
• High voltage cables	100 m
• Flat cables	100 m
• Coaxial cables	100 m
• Insulated wires	500 m
• Insulation sleeves	500 m

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(<https://telemeter.eu/en/ptfe-cables>)

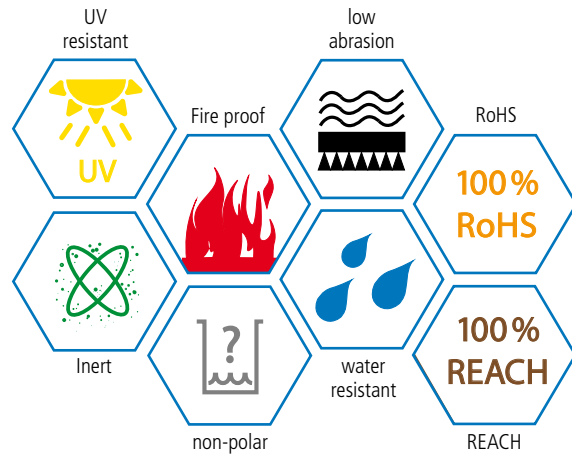




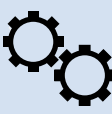

2. PTFE insulation

Advantages of PTFE as insulation material for cables

Since the discovery of poly tetra fluoro ethylene (PTFE) almost hundred years ago, many applications have been realized for this outstanding material.

Due to its physical characteristics, this material is a perfect solution e.g. for a cable insulation.



	Thermally:	<ul style="list-style-type: none"> -200 °C to + 260 °C
	Chemically:	<ul style="list-style-type: none"> Inert (unresponsive) Resistant i.e. for oil, alcohol, gasoline Water resistant (low outgasing) UV resistant Non-polar (anti adhesive – none wettable) Fire proof None fusible REACH/ RoHS compatible
	Mechanically:	<ul style="list-style-type: none"> Low abrasion coefficient Low abrasion Low particulation Low weight
	Electrically:	<ul style="list-style-type: none"> High dielectric strength High insulation resistance High surface resistance Dielectric constant of 2.1 (low field impact) Low dissipation factor (low power loss) CR-Tape („corona resistant“ = partial discharge reducing)



Picture: iStock.com/1309779867








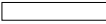




Cable manufacturing

PTFE can either be wrapped or extruded on wires or cables as an insulation. For wrapped designs, PTFE tapes with a thin layer of adhesive (e.g. FEP) are helically wrapped around the conductor in several layers.

Afterwards they are sintered (submerged in a salt bath at high temperatures) to bond the adhesive layers. With this manufacturing process, it is possible to keep wallthicknesses centered and very precise. The layer design also allows to have customized wallthicknesses manufactured.

3. Cable design

Conductor material	Specification	Characteristics	Temperature range
SPC Silver plated copper	ASTM-B-298	<ul style="list-style-type: none"> • High conductivity • Good solderable • Corrosion resistant 	-65 °C to +200 °C
NPC Nickel plated copper	ASTM-B-355	<ul style="list-style-type: none"> • Higher temperature range • Low cost/inespensive • Best for crimping/screw connection 	-65 °C to +260 °C
SCHSCA Silver plated high strength copper alloy	ASTM-B-624	<ul style="list-style-type: none"> • Good conductivity • solderable • high tensile strength • good flexlife 	-65 °C to +200 °C
SPCCS Silver plated copper covered steel	ASTM-B-501	<ul style="list-style-type: none"> • high tensile strength • good solderable 	-65 °C to +200 °C

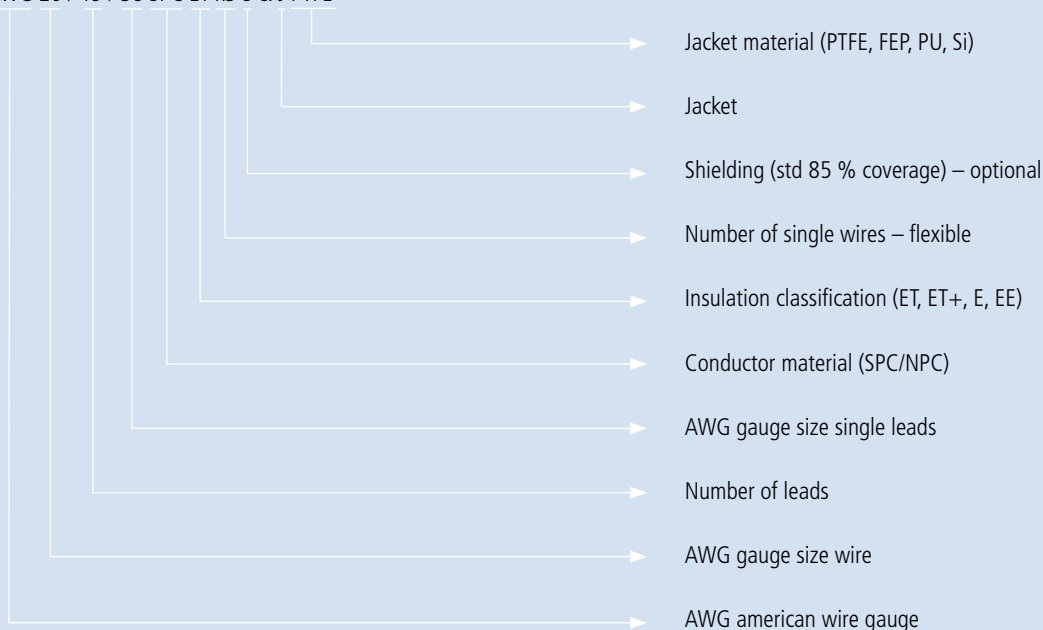
	black (BK)		blue (BL)
	brown (BR)		violett (VT)
	red (RD)		grey (GR)
	orange (OR)		white (WT)
	yellow (YL)		pink (PN)
	green (GN)		natural (TR)

Insulation color for cables, wires and jacket material can be chosen according to MIL-STD-104 (see also table on the lefthandside). Additionally more colors can be realized by adding colored stripes.

Colour coding according to MIL-W-22759 available
(Please contact us for the minimum order quantities)

Type code

AWG 26 / 19 / 38 SPC ET x3 S & J PTFE



Gauge size

AWG-Table

These parameters refer to page 12 and 13

Insulation type				Description	AWG	Number of leads	AWG single leads	Diameter wire	Cross section wire	DC resistance @ 20 °C
ET	ET+	E	EE							
			+	6/133/27	6	133	27	0,36 mm	13,80 mm ²	1,37 Ω/km
			+	6/60/24	6	60	24	0,51 mm	12,30 mm ²	1,54 Ω/km
			+	7/133/28	7	133	28	0,32 mm	10,70 mm ²	1,81 Ω/km
			+	7/60/25	7	60	25	0,45 mm	9,75 mm ²	1,94 Ω/km
			+	8/133/29	8	133	29	0,29 mm	8,60 mm ²	2,16 Ω/km
			+	8/60/26	8	60	26	0,40 mm	7,70 mm ²	2,4 Ω/km
			+	9/60/27	9	60	27	0,36 mm	6,10 mm ²	3,1 Ω/km
			+	9/37/25	9	37	25	0,45 mm	6,00 mm ²	3,1 Ω/km
			+	9/19/22	9	19	22	0,64 mm	6,10 mm ²	3,1 Ω/km
		+	+	10/60/28	10	60	28	0,32 mm	4,64 mm ²	4,0 Ω/km
		+	+	10/37/26	10	37	26	0,40 mm	4,70 mm ²	3,9 Ω/km
		+	+	11/60/29	11	60	29	0,29 mm	3,90 mm ²	4,7 Ω/km
		+	+	11/37/27	11	37	27	0,36 mm	3,80 mm ²	4,9 Ω/km
		+	+	12/60/30	12	60	30	0,25 mm	3,00 mm ²	6,2 Ω/km
		+	+	12/37/28	12	37	28	0,32 mm	3,00 mm ²	6,23 Ω/km
		+	+	12/19/25	12	19	25	0,45 mm	3,10 mm ²	5,94 Ω/km
		+	+	13/19/26	13	19	26	0,40 mm	2,40 mm ²	7,3 Ω/km
		+	+	14/37/30	14	37	30	0,25 mm	1,90 mm ²	9,9 Ω/km
		+	+	14/19/27	14	19	27	0,36 mm	1,90 mm ²	9,5 Ω/km
		+	+	15/19/28	15	19	28	0,32 mm	1,50 mm ²	12,5 Ω/km
		+	+	16/37/32	16	37	32	0,20 mm	1,20 mm ²	16,3 Ω/km
		+	+	16/19/29	16	19	29	0,29 mm	1,20 mm ²	14,9 Ω/km
		+	+	18/19/30	18	19	30	0,25 mm	0,96 mm ²	19,0 Ω/km
		+	+	18/7/26	18	7	26	0,40 mm	0,90 mm ²	20,6 Ω/km
		+	+	18/1/18	18	1	18	1,02 mm	0,82 mm ²	21,7 Ω/km
		+	+	19/19/31	19	19	31	0,23 mm	0,76 mm ²	26,0 Ω/km
		+	+	19/7/27	19	7	27	0,36 mm	0,71 mm ²	26,7 Ω/km
+	+	+	+	20/19/32	20	19	32	0,20 mm	0,61 mm ²	30,2 Ω/km
+	+	+	+	20/7/28	20	8	28	0,32 mm	0,56 mm ²	32,8 Ω/km
+	+	+	+	20/1/20	20	1	20	0,81 mm	0,52 mm ²	34,5 Ω/km
+	+	+	+	22/19/34	22	19	34	0,16 mm	0,38 mm ²	49,6 Ω/km
+	+	+	+	22/7/30	22	7	30	0,25 mm	0,35 mm ²	52,2 Ω/km
+	+	+	+	22/1/22	22	1	22	0,64 mm	0,32 mm ²	55,8 Ω/km
+	+	+	+	24/19/36	24	19	36	0,13 mm	0,24 mm ²	78,8 Ω/km
+	+	+	+	24/7/32	24	7	32	0,20 mm	0,23 mm ²	82,7 Ω/km
+	+	+	+	24/1/24	24	1	24	0,51 mm	0,21 mm ²	87,9 Ω/km
+	+	+	+	26/19/38	26	19	38	0,10 mm	0,16 mm ²	126,0 Ω/km
+	+	+	+	26/7/34	26	7	34	0,16 mm	0,14 mm ²	132,9 Ω/km
+	+	+	+	26/1/26	26	1	26	0,40 mm	0,13 mm ²	140,1 Ω/km
+	+	+	+	28/19/40	28	19	40	0,08 mm	0,09 mm ²	202,0 Ω/km
+	+	+	+	28/7/36	28	7	36	0,13 mm	0,09 mm ²	209,3 Ω/km
+	+	+	+	28/1/28	28	1	28	0,32 mm	0,08 mm ²	223,1 Ω/km
+	+	+	+	30/19/42	30	19	42	0,06 mm	0,06 mm ²	315,0 Ω/km
+	+	+	+	30/7/38	30	7	38	0,10 mm	0,06 mm ²	330,3 Ω/km
+	+	+	+	30/1/30	30	1	30	0,25 mm	0,05 mm ²	354,3 Ω/km
+	+	+	+	32/7/40	32	7	40	0,08 mm	0,03 mm ²	567,5 Ω/km
+	+	+	+	32/1/32	32	1	32	0,20 mm	0,03 mm ²	554,5 Ω/km
+	+	+		34/7/42	34	7	42	0,06 mm	0,02 mm ²	880,0 Ω/km

Specifications

Test specifications

Test parameter	Specification
Conductor material	ASTM-B-298
Number of leads	ASTM-B-286
Diameter leads	ASTM-B-286
Diameter wire	Nema HP3
DC resistance 20 °C max.	Nema HP3
Insulation type	Nema HP3
Core diameter	Internal standard
Color coding	Customized
Spark-Test (100 % wire)	Internal standard
Dielectric strength (wire – wire)	Internal standard
Breakdown voltage (1 m sample)	Internal standard
Shielding	Nema WC 27500
Jacket material and color coding	Nema WC 27500
Dielectric strength (cable)	Nema WC 27500
Overall jacket spark test (100 %)	Nema WC 27500

Crosssection amperage

AWG	Single lead	Diameter in mm	Crosssection in mm ²	DC resistance in Ω/km	Amperage in air @ ~ 80 °C*
26	1/26	0,4	0,13	133,9	1 A
26	19/38	0,5	0,151	113,8	1 A
24	1/24	0,51	0,205	84,3	1,6 A
24	19/36	0,64	0,251	71,5	1,6 A
22	1/22	0,64	0,326	52,8	2,5 A
22	19/34	0,8	0,383	44,9	2,5 A
20	1/20	0,81	0,518	33,5	4 A
20	19/32	1,01	0,609	28,2	4 A
18	1/18	1,02	0,823	21	4 A
18	19/30	1,27	0,968	17,7	4 A
16	1/16	1,29	1,309	14,1	10 A
16	19/29	1,43	1,22	14,1	10 A
14	1/14	1,63	2,081	8,2	15 A
14	19/27	1,8	1,94	8,9	15 A
12	19/25	2,27	3,085	5,6	20 A

All data in the table above are according to MIL-W-5088 for single wires in air @ 80 °C.

4. High Voltage cables

The requirements to high voltage cables are very demanding. High voltage applied and thus the resulting electrical field have a direct impact on the lifetime of the cables. Depending on the environmental conditions, these effects can moreover be amplified. Humidity and the temperature for instance do have play a significant role as well as the application itself.

Are the HV cables used in pulsating conditions, or is a high frequent alternating current applied or „just“ a continuous direct current. All these criteria come into play when specifying the optimized cable design regarding lifetime and performance.



Design parameter for high voltage cables	Test parameters for high voltage cables
<ul style="list-style-type: none"> • Crosssection • Operating voltage (dielectric strength) • Wallthickness • Shielding 	<ul style="list-style-type: none"> • Spark test (flaw test) • Dielectric strength • PST progressive stress test (breakdown voltage) • Insulation resistance • Visual inspection

Overall table

Article #	Conductor					Overall design			
	AWG #	Number of single wires x AWG NR (Ø in mm)	Diameter in mm	Crosssection in mm ²	Shielding	Outer diameter in mm	Max. operating voltage		Dielectric strength test
						Nominal (± 15 %)	kV AC	kV DC	kVA eff
11815	24	19 x 36 (0,13)	0,64	0,24	none	1,6	4	9	5,4
11816	24	19 x 36 (0,13)	0,64	0,24	yes	2,4	6	13	7,6
11817	24	19 x 36 (0,13)	0,64	0,24	yes	3,7	6	13	7,6
11818	22	19 x 34 (0,16)	0,80	0,38	none	2,3	6	13	7,6
11819	22	19 x 34 (0,16)	0,80	0,38	yes	3,1	8	18	9,8
11820	22	19 x 34 (0,16)	0,80	0,38	none	4,4	8	18	9,8
10922	20	19 x 32 (0,20)	1,00	0,61	none	3,0	8	18	9,8
11821	20	19 x 32 (0,20)	1,00	0,61	none	3,8	10	22	12
11822	20	19 x 32 (0,20)	1,00	0,61	yes	5,3	10	22	12
13626	18	19 x 30 (0,25)	1,30	0,96	none	3,8	10	22	12
11823	18	19 x 30 (0,25)	1,30	0,96	none	4,8	12	27	14,2
11824	18	19 x 30 (0,25)	1,30	0,96	yes	6,4	12	27	14,2
10924	16	19 x 29 (0,29)	1,40	1,20	none	4,4	12	27	14,2
11825	16	19 x 29 (0,29)	1,40	1,20	none	5,4	14	31,5	16,4
11826	16	19 x 29 (0,29)	1,40	1,20	yes	7,0	14	31,5	16,4
11827	14	19 x 27 (0,36)	1,80	1,90	none	5,5	14	31,5	16,4
10926	14	19 x 27 (0,36)	1,80	1,90	none	5,8	16	36	18,6
11828	14	19 x 27 (0,36)	1,80	1,90	yes	7,4	16	36	18,6
11829	12	37 x 28 (0,32)	2,20	3,00	none	6,0	16	36	18,6
10927	12	37 x 28 (0,32)	2,20	3,00	none	6,7	18	40,5	20,8
11830	12	37 x 28 (0,32)	2,2	3,00	yes	8,6	18	40,5	20,8
11831	10	37 x 26 (0,40)	2,8	4,70	none	6,8	18	40,5	20,8
11832	10	37 x 26 (0,40)	2,8	4,70	none	7,3	20	45	20,8
10929	10	37 x 26 (0,40)	2,8	4,70	none	7,8	22	49,5	20,8

Red highlighted constructions are on stock and short term available.

5. Corona resistant tape vs partial discharge

The demanding operating voltage which high voltage cables have to withstand, is causing a plasma (in this case ionized, conductive gas) due to an intense electrical field.

These criteria result in a so called partial discharge that can erode the insulation over time and is most severe for alternating current.

Intrinsic discharge is also deteriorating the insulation from inside. Small voids (cavities) in the insulation can enlarge over time (by erosion) and lead to a discharge.

These phenomena are well known and can be minimized with a suitable design.

For instance a „corona resistant“ CR PTFE tape with additives can basically reduce the partial discharge, but also shielded cable design is able to reduce the electrical field density to a more homogeneous field. All these aspects lead to a better performance and also a longer lifetime of the high voltage cables.

HV cable without shielding

Inhomogeneous electrical field

The image on the lefthandside shows an electrical field for a non-shielded hv cable, where a inhomogeneous field leads to a high field density. This density is causing a higher stress to the insulation. Partial discharge or voltage breakdown mostly occur at these spots.

HV cables with shielding

Homogenous electrical field (radially symmetrical)

A shielding as shown in the picture to the left leads to a homogeneous electrical field. This avoids hotspots of the electrical field. Therefore intrinsic effects but also surface discharge can be reduced significantly.

6. Mutlicore cables

Multicore cable include customized designs as well as standard cable design like twinax, triax or quads.

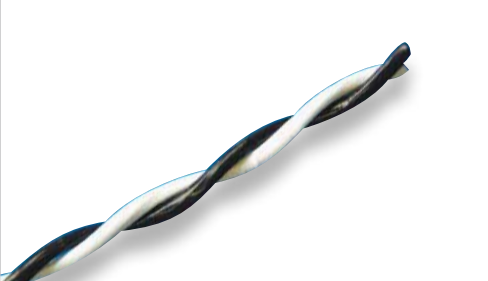



Single wires of various AWG sizes can be twisted and combined to signal or power cables (as known as Hybrid cables) or used as multicore high voltage cables (e.g. HV switching matrix).



6.1. Customized designs

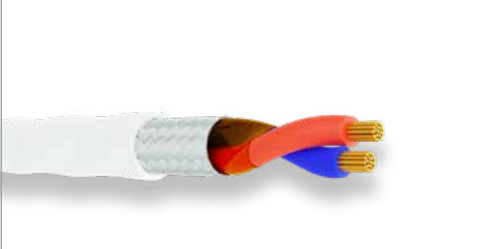
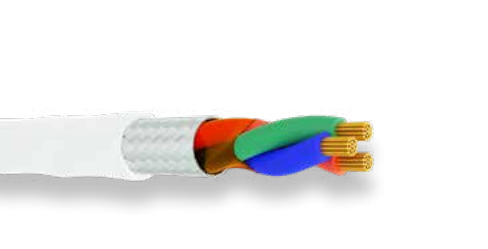
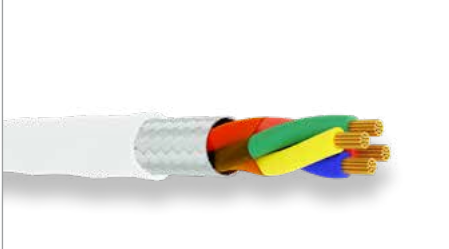
- Standardized design see below
- Insulation class: ET, ET+, E,EE
- Gauge sizes: AWG20 – AWG24
- Number of single wires: ≤ 50

A hybrid design of twisted pairs, coax cables and shielded/unshielded components but also multicore designs can be customized and manufactured.

Twisted pairs	Hybrid construction (Signal/Power)
	
Shielded	Unshielded
	

6.2. Standard designs

- Standardized design see below
- Insulation class: ET, ET+, E,EE
- Gauge sizes: AWG20 – AWG24
- Number of single wires: ≤ 50

Twinax twisted pair, shielded	Triax three wires, shielded	Quad four wires, shielded
		

7. PTFE-cables for vacuum applications

Vacuum applications have a high degree of requirements to materials in term of outgasing behaviour. The higher the vacuum, the longer time it takes to reach the vacuum level and the more challenging it is to keep the level.

Low and medium vacuum of up to 10e-3 mbar do have only low requirements regarding outgasing behaviour.

For high vacuum applications of up to 10e-8 mbar, only materials with almost no outgasing performance are acceptable.

This is were PTFE comes into play, as there are only bonded hydrogen molecules and volatile hydrocarbons outgasing over time.

However this can be significantly reduced by an additional outbaking process. Due to its inert behaviour to other materials there is almost no contamination. As it is also hydrophobic, PTFE is often used for high vacuum applications as a cable insulation.

The average outgasing rate for PTFE is 2x10e-8 l/sec cm² after 24h, post outbaking it can be reduced to 8x10e-9 l/sec cm².

More specific requirements to the outgasing behaviour are i.e. TML (Total mass loss) respectively RML (Recovered Mass loss). The conventional average values for PTFE are < 1,0 % TML and < 1,0 % RML and < 0,01 % CVCM (Collected Volatile Condensable Material). In UHV (ultra high vacuum) applications an overall system evaluation has to take place prior considering implementing a PTFE insulated cable in the system.

In general PTFE insulated cables e.g. as power cables for actors, signal cables for sensors, PTFE tubes or PTFE insulated wires can be used in vacuum in processing devices as for R&D equipment.

8. PTFE Data cables (CAT5e, CAT6A, CAT7)



Patch-cables from Telemeter Electronic can be used in applications , when standard cables can't be used due to the high requirements, like elevated temperature of up to +200°C, high environmental humidity or outdoors. By using PTFE cables from Telemeter you can benefit from the advantages of this high end material.

CAT5e	CAT6A	CAT7
Design: AWG26/19/38 SPC ET+ 4TWP+S+J	Design: AWG26/19/38 SPC ET+ 4TWP ALU-KPT+S+J	Design: AWG24/19/36 SPC x 4 TWP ALU-KPT +S+J
Overall jacket PTFE	Overall jacket PTFE	Overall jacket FEP
Data rate: 1000base-T (< 100 MHz 100 m)	Data rate: 1Gbase-T (< 250 MHz 80 m)	Data rate: 10Gbase-T (< 600 MHz 65 m)
DC resistance: 126 /km (max.)	DC resistance: 79,7 /km (max.)	DC resistance: 79,7 /km (max.)
Impedance: 100 Ω ± 15 Ω	Impedance: 100 Ω ± 10 Ω	Impedance: 100 Ω ± 15 Ω
Attenuation: (für 100 m max.) 40,0 dB by 100 MHz	Attenuation: 25,0 dB by 10 MHz 18,0 dB by 100 MHz 17,3 dB by 250 MHz	Attenuation: 20,8 dB by 100 MHz 33,8 dB by 250 MHz 54,6 dB by 600 MHz
Time delay (Skew): ≤ 45 ns/100 m max. by 100 MHz	Time delay (Skew): ≤ 45 ns/100 m max. by 250 MHz	Time delay (Skew): ≤ 30 ns/100 m max. by 600 MHz
Article #: 49028	Article #: 50957	Article #: 50084

9. Insulated wires – Insulation class ET(+)

Insulation class ET for operating voltages up to max. 250 VAC eff				
Silver plated copper lead, colour white, jacket material PTFE				
Article #	Description	Outer diameter in mm	Weight in g/m	Specification (Nema HP3)
11223	AWG 20/19/32	1,22 – 1,32	7	+
11132	AWG 20/7/28	1,22 – 1,32	6,4	+
42075	AWG 20/1/20	1,07 – 1,17	5,8	+
11273	AWG 22/19/34	1,02 – 1,12	4,5	+
11133	AWG 22/7/30	1,02 – 1,12	4,2	+
42076	AWG 22/1/22	0,89 – 1,02	3,8	+
11262	AWG 24/19/36	0,86 – 0,97	3	+
42077	AWG 24/7/32	0,86 – 0,97	2,8	+
42078	AWG 24/1/24	0,76 – 0,87	2,5	+
10907	AWG 26/19/38	0,74 – 0,84	2,1	+
11123	AWG 26/7/34	0,74 – 0,84	1,9	+
42079	AWG 26/1/26	0,66 – 0,76	1,7	+
11224	AWG 28/19/40	0,63 – 0,74	1,4	-
32353	AWG 28/7/36	0,63 – 0,74	1,3	+
10911	AWG 28/1/28	0,58 – 0,69	1,2	+
42080	AWG 30/19/42	0,56 – 0,66	1,07	-
32356	AWG 30/7/38	0,56 – 0,66	1,02	+
42081	AWG 30/1/30	0,51 – 0,61	0,89	+
42082	AWG 32/7/40	0,51 – 0,61	0,73	+
42083	AWG 32/1/32	0,46 – 0,66	0,64	+
42084	AWG 34/7/42	0,46 – 0,66	0,54	-
40190	AWG 34/1/34	0,41 – 0,51	0,49	-

Insulation class ET+ for operating voltages up to max. 250 VAC eff				
Silver plated copper lead, colour white, jacket material PTFE				
Article #	Description	Outer diameter in mm	Weight in g/m	Specification (Nema HP3)
11645	AWG 20/19/32	1,33 – 1,44	7	-
11646	AWG 20/7/28	1,26 – 1,4	6,4	-
11647	AWG 20/1/20	1,11 – 1,25	5,8	-
11648	AWG 22/19/34	1,1 – 1,24	4,5	-
11649	AWG 22/7/30	1,08 – 1,22	4,2	-
11650	AWG 22/1/22	0,94 – 1,08	3,8	-
11651	AWG 24/19/36	0,94 – 1,08	3	-
11652	AWG 24/7/32	0,91 – 1,05	2,8	-
11653	AWG 24/1/24	0,81 – 0,95	2,5	-
11654	AWG 26/19/38	0,81 – 0,95	2,1	-
11655	AWG 26/7/34	0,78 – 0,92	1,9	-
11656	AWG 26/1/26	0,69 – 0,84	1,7	-
11657	AWG 28/19/40	0,69 – 0,83	1,4	-
10853	AWG 28/7/36	0,68 – 0,82	1,3	-
43400	AWG 28/1/28	0,62 – 0,76	1,2	-
32576	AWG 30/19/42	0,61 – 0,75	1,19	-
10913	AWG 30/7/38	0,61 – 0,75	1,13	-
10914	AWG 30/1/30	0,55 – 0,69	0,85	-
36506	AWG 32/7/40	0,55 – 0,69	0,69	-
35663	AWG 32/1/32	0,5 – 0,64	0,64	-
37590	AWG 34/7/42	0,5 – 0,64	0,54	-
37898	AWG 34/1/34	0,46 – 0,6	0,49	-

Please find details to the conductor dimensions in table on page 6. Red highlighted designs are on stock and short term available.

10. Insulated wires – Isolation class E & EE

Insulation class E for operating voltages up to max. 600 VAC eff				
Silver plated copper lead, colour white, jacket material PTFE				
Article #	Description	Outer diameter in mm	Weight in g/m	Specification (Nema HP3)
10869	AWG 10/37/26	3,22 – 3,58	50	+
10874	AWG 12/19/25	2,72 – 3,07	33	+
10878	AWG 13/19/26	2,42 – 2,77	27	-
10880	AWG 14/19/27	2,23 – 2,59	22	+
10882	AWG 15/19/28	2,03 – 2,39	18	-
10885	AWG 16/19/29	1,85 – 2,21	14	+
10843	AWG 18/19/30	1,62 – 1,88	11,6	+
10890	AWG 19/19/31	1,52 – 1,79	9,7	-
10895	AWG 20/19/32	1,37 – 1,58	8	+
10896	AWG 20/7/28	1,37 – 1,58	7,4	+
10897	AWG 20/1/20	1,22 – 1,42	6,6	+
10900	AWG 22/19/34	1,17 – 1,37	5,2	+
10904	AWG 24/19/36	1,02 – 1,22	3,6	+
11661	AWG 26/19/38	0,89 – 1,09	2,7	+
10854	AWG 28/19/40	0,8 – 1,01	1,9	-
11422	AWG 30/19/42	0,74 – 0,94	1,5	-

Other AWG sizes available on request.

Insulation class EE for operating voltages up to max. 1000 VAC eff				
Silver plated copper lead, colour white, jacket material PTFE				
Article #	Description	Outer diameter in mm	Weight in g/m	Specification (Nema HP3)
10863	AWG 6/133/27	6,43 – 6,93	149	+
10865	AWG 8/133/29	5,05 – 5,56	97	+
11662	AWG 10/60/28	3,54 – 3,9	55	-
11664	AWG 11/60/29	3,28 – 3,7	45	-
11667	AWG 12/37/28	2,92 – 3,33	35	+
11671	AWG 14/19/27	2,49 – 2,9	24	+
11672	AWG 15/19/28	2,26 – 2,67	20	-
11674	AWG 16/19/29	2,11 – 2,41	16	+
11676	AWG 18/19/30	1,88 – 2,13	13	+
11679	AWG 19/19/31	1,78 – 2,03	11,2	-
11681	AWG 20/19/32	1,62 – 1,83	9,4	+
11684	AWG 22/19/34	1,42 – 1,63	6,4	+
11687	AWG 24/19/36	1,27 – 1,47	4,7	+
11690	AWG 26/19/38	1,14 – 1,35	3,6	+
11693	AWG 28/19/40	1,06 – 1,26	2,8	-
11696	AWG 30/19/42	0,99 – 1,19	2,3	-
11700	AWG 32/1/32	0,86 – 1,07	1,8	+

Please find details to the conductor dimensions in table on page 6.

11. Coaxial cable

Coaxial cables with wrapped PTFE as dielectric material for signal cables.



Characteristics

- Impedance: 50, 75 or 95

Article #	Type	Frequency (GHz max.)	Outer diameter in mm	Outer jacket material*	Dielectric material***	Outer shield inner shield**	Conductor****	Capacitance in pF/m	Impedance in Ω	Attenuation in dB		
										Number of single wires x ϕ (mm)	at 400 MHz	at 3 GHz
28066	RG-196 A/U	3	1,82	PTFE	- / S	0,86 / T	7 x 0,1/SCW	100	50	95	-	-
28049	RG-188 A/U	3	2,54	PTFE	- / S	1,52 / T	7 x 0,17/SCW	98	50	54	-	-
28050	RG-141 A/U	3	4,57	VFG	- / S	2,95 / T	1 x 0,94/SCW	95	50	27,6	-	-
28069	RG-142 A/U	12,4	5,00 max.	VFG	S / S	2,95 / T	1 x 0,94/SCW	95	50	27,6	-	-
28077	RG-142 B/U	-	4,95	PTFE	S / S	2,95 / T	1 x 0,94/SCW	96	50	-	-	-
28051	RG-143 A/U	12,4	8,25	VFG	S / S	4,70 / T	1 x 1,5/SCW	105	50	21	72	144
28067	RG-115 A/U	12,4	10,50	VFG	S / S	6,48 / T	19 x 0,43/SCW	96	50	18	51	98
28052	RG-225 /U	-	10,92	VFG	S / S	7,23 / T	7 x 0,79/S	106	50	16,4	-	-
28060	RG-187 A/U	3	2,64	PTFE	- / S	1,52 / T	7 x 0,1/SCW	63	75	53	-	-
28075	RG-140 /U	3	5,91	VFG	- / S	3,71 / T	1 x 0,63/SCW	64	75	26	85	-
28064	RG-195 A/U	3	3,68	PTFE	- / S	2,59 / T	7 x 0,1/SCW	51	95	46	-	-
28058	GLN-188	-	2,54	PTFE	- / S	1,65 / TSC	7 x 1,70/SCW	-	50	-	-	-
28059	GLN-196 RG404	-	2,03	PTFE	- / S	0,86 / TSC	7 x 0,1/SCW	-	50	-	-	-
28063	GLN-187	-	2,79	PTFE	- / S	1,52 / TSC	7 x 0,1/SCW	-	75	-	-	-

* PTFE (Poly tetra fluoro ethylene), VFG = fibre glas;
** S for silver plated copper braid;

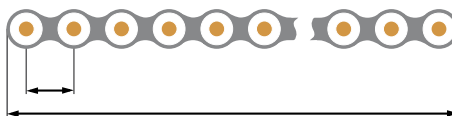
**** T for solid PTFE, TSC for PTFE semiconductive coated;

**** S for silver plated copper conductor, SCW for silver plated steel conductor

12. PTFE-Flat cable

Characteristics

- Temperatur range: -200 °C bis +200 °C
- Conductor: SPC
- Insulation classification: E (600 V AC eff)



PTFE flat cables are not IDC connector compatible!

Article #	Number of conductors*	AWG #***	Number of single leads in a wire x AWG # (lead diameter in mm)***	Overall width B (in mm)	Pitch** R (in mm)
11833	10	24	7 x 32 (0,36)	14	1,4
11834	14	24	7 x 32 (0,36)	19,6	1,4
11835	16	24	7 x 32 (0,36)	22,4	1,4
11836	20	24	7 x 32 (0,36)	28	1,4
11837	25	24	7 x 32 (0,36)	35	1,4
11838	36	24	7 x 32 (0,36)	50,4	1,4
11839	40	24	7 x 32 (0,36)	56	1,4
11840	10	28	7 x 36 (0,13)	11,4	1,14
11841	14	28	7 x 36 (0,13)	16	1,14
11842	16	28	7 x 36 (0,13)	18,2	1,14
11843	20	28	7 x 36 (0,13)	22,8	1,14
11844	25	28	7 x 36 (0,13)	28,5	1,14
11845	36	28	7 x 36 (0,13)	41	1,14
11846	40	28	7 x 36 (0,13)	39,6	1,14

* on request two wire design available

** on request also a pitch of 1.27mm available

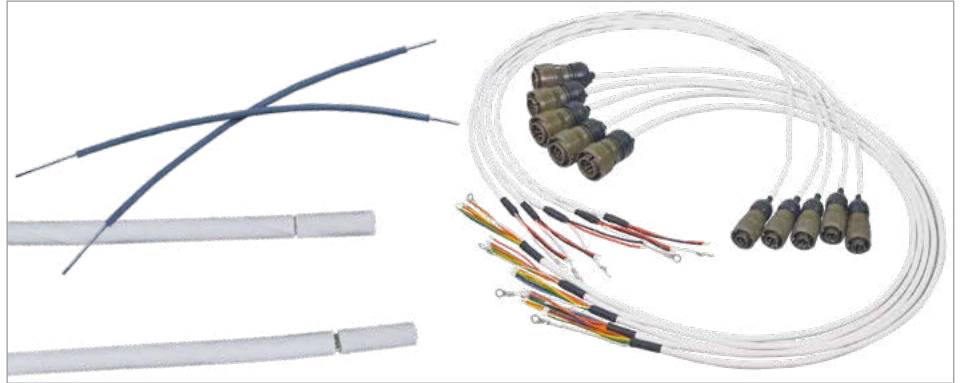
*** on request other AWG sizes available

13. Cable assembling

Cable design and configurations can according to your application furthermore be assembled.

For instance:

- Dismantle (outer jacket material, single wires)
- Assembling (soldering of wires, shielding, connections)
- Assembling of connectors (plug-in solution)



14. PTFE sleeves

Characteristics

- Temperature range: -200 °C bis + 260 °C
- Resistant versus oil, alcohol or gasoline
- UV resistant
- Fire proof
- Non fusible
- Water proof
- REACH & RoHS conform



Remark:
these PTFE tubes
are no shrink sleeves

Article #	AWG #	Inner diameter in mm			Walthickness	
		Nom.	Min.	Max.	Nom.	Tolerance
11893	0	8,38	8,26	8,81	0,51	±0,10
11892	1	7,47	7,34	7,90	0,51	±0,10
11891	2	6,68	6,55	7,06	0,51	±0,10
11852	3	5,94	5,82	6,32	0,51	±0,10
11890	4	5,28	5,18	5,69	0,51	±0,10
11889	5	4,72	4,62	5,03	0,51	±0,10
11888	6	4,22	4,11	4,52	0,51	±0,10
11887	7	3,76	3,66	4,01	0,51	±0,10
11849	8	3,38	3,28	3,58	0,51	±0,10
10970	9	3,00	2,90	3,15	0,51	±0,10
11886	10	2,69	2,59	2,84	0,41	±0,08
11885	11	2,41	2,31	2,57	0,41	±0,08
10967	12	2,16	2,06	2,31	0,41	±0,08
11884	13	1,93	1,83	2,08	0,41	±0,08
11883	14	1,68	1,63	1,88	0,41	±0,08
10964	15	1,50	1,45	1,70	0,41	±0,08
11882	16	1,35	1,30	1,55	0,41	±0,08
11881	17	1,19	1,14	1,37	0,41	±0,08
10961	18	1,07	1,02	1,24	0,41	±0,08
11880	19	0,97	0,91	1,12	0,41	±0,08
11879	20	0,86	0,81	0,99	0,41	±0,08
11878	22	0,71	0,64	0,81	0,30	±0,05
11877	24	0,56	0,51	0,69	0,30	±0,05
11876	26	0,46	0,41	0,56	0,23	±0,05
11875	28	0,38	0,33	0,48	0,23	±0,05
10954	30	0,30	0,25	0,38	0,23	±0,05

15. Applications



Test cables



Microscopy



Climate chambers



Wind turbines



Military



Helicopter



Vacuum chambers



HV switching matrix

16. Questionnaire



1. Cable design

1.1 Cable type

- Multi core Single wire

1.2 Cable construction

- Shielded Unshielded

1.3 Conductor

Wire:

AWG:

Number of leads:

Coating:

- SPC NPC

1.4 Insulation of the conductor/ wire

Material:

- PTFE FEP
 SI PU

Outer diameter: (in mm):

1.5 Outer jacket material

Material:

- PTFE FEP
 SI PU

Colour:

Outer diameter: (in mm):

2. Electrical characteristics

2.1 Voltage

Operating voltage (in V):

- DC AC

Operation mode:

- Continuous operation test operation

2.2 Current

Amperage (in A):

2.3 Various

Impedance (in Ω):

Attenuation (in dB/m):

3. Generic conditions

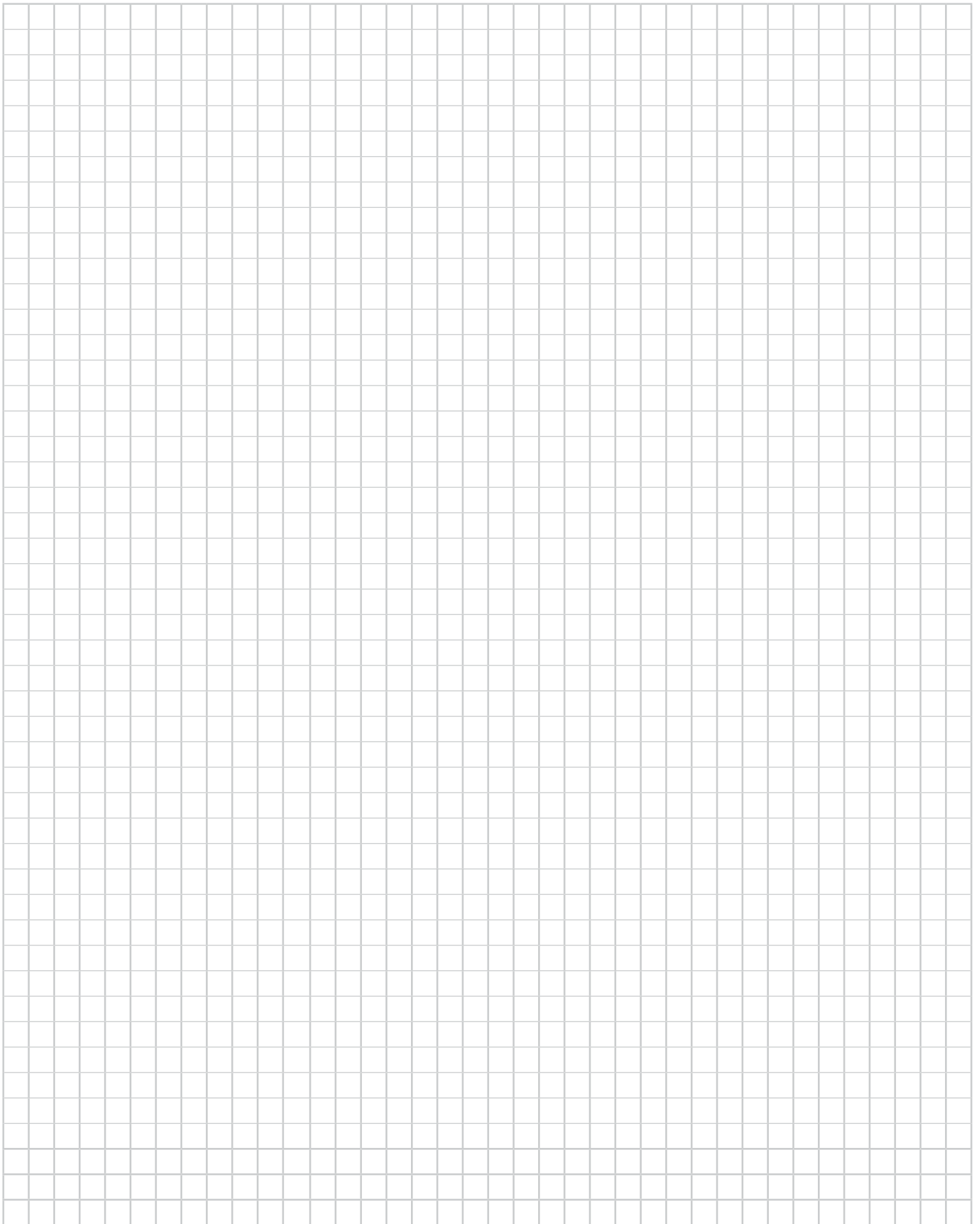
Quantity:

- On spool Assembled

Lead time:

Specification/drawing (NEMA/ASTM/ Mil):

17. Notes





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