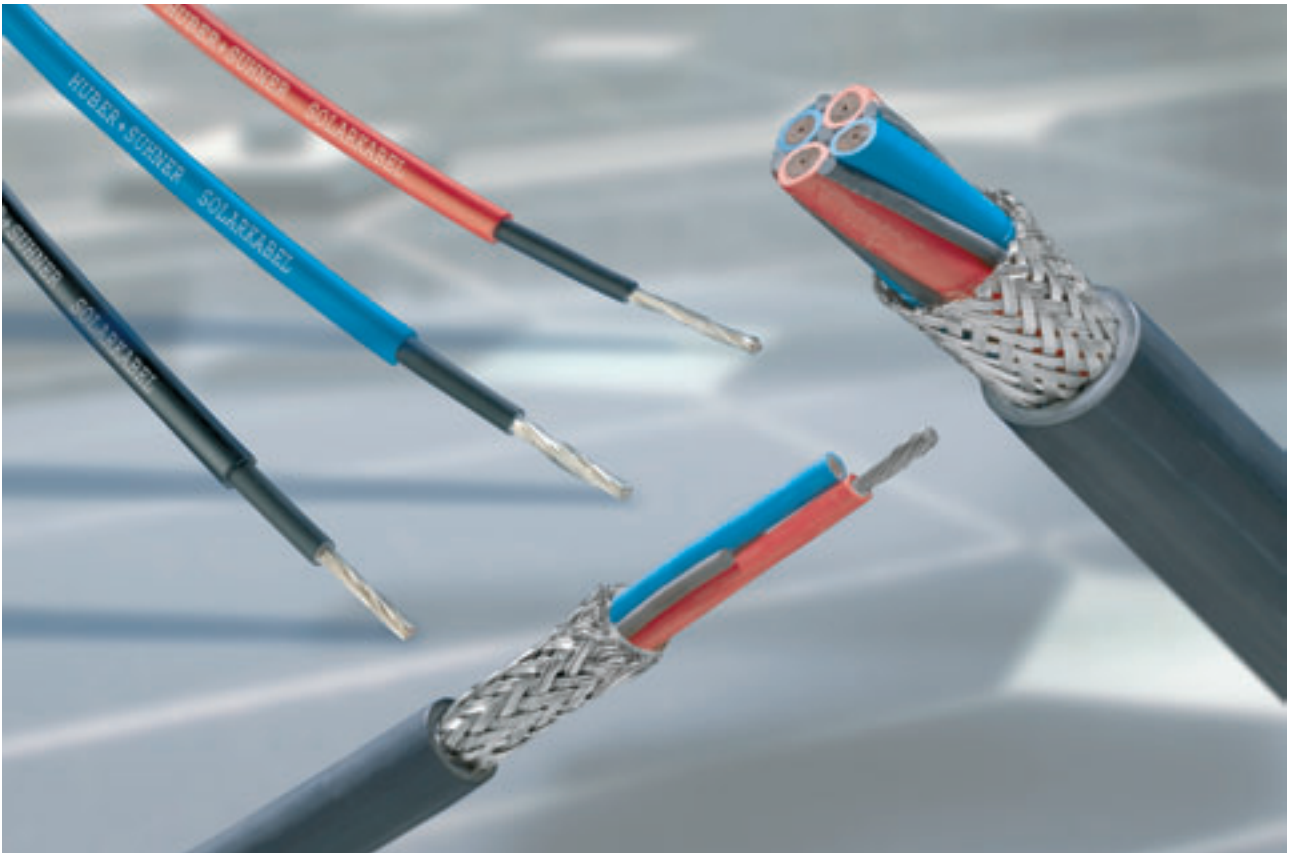


RADOX® SOLAR SINGLE-CORE AND MULTI-CORE CABLES



Halogen free, high temperature resistance, weatherproof and extremely robust

RADOX® solar cable means flexible single and multi-core cables specially designed for wiring solar plants.

RADOX® solar cables are extremely robust and resist high mechanical load and abrasion. High temperature resistance and excellent weatherproofing characteristics provide a long service life. Due to RADOX® technology, these outstanding properties have been achieved with small cable diameters.

Tight production tolerances – specifically for automated processes – enable easy assembly of cables. This represents a special advantage for molding, casting or soldering with no shrinking or other changes in electron-beam cross-linked material. There is no cold flow with RADOX® cables which guarantees long-term, optimum tightness for connectors or transitions.

In case of fire there is no occurrence of corrosive or toxic gases. Smoke production in case of fire is very low.

Characteristics

- temperature range for application -40°C up to +120°C
- short circuit resistance up to +280°C
- RADOX® electron-beam cross-linked materials do not melt or flow, even at high temperatures
- high resistance against UV, ozone and hydrolysis
- very high mechanical robustness and resistance against water, oil and chemicals
- compact and flexible
- years of approved applications worldwide
- TÜV and UL approval

RADOX® SOLAR CABLES

RADOX® solar cables single core	12 - 13
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RADOX® solar cables multi core, screened	20 - 21

RADOX® SOLAR CABLE SINGLE CORE

- the approved PV core
- nominal cross section with TÜV approval
- space saving outer diameter
- long service life, extremely robust



Conductor	stranded tin-plated copper, fine wired acc. to IEC 60228, class 5
Insulation	RADOX® black
Coating	RADOX®, see table for colours

General characteristics

Cable made of electron-beam cross-linked insulation and coating; high resistance against heat, cold, oil, abrasion, ozone, UV and weather; with improved reaction in case of fire, low smoke, halogen free, flame retardant; flexible, easy to strip, very low space requirement, extremely mechanically robust, very long lifetime.

Application

Specifically designed for connecting photovoltaic system components inside and outside of buildings and equipment with high mechanical requirements and extreme weather conditions. For permanent installations.

Extract from our delivery programme

Cross section mm ²	Conductor design n x mm	Conductor diameter rated mm	Cable diameter rated mm	Colour	Weight rated kg/100m	Item no.
1.5	30 x 0.25	1.52 ± 0.05	4.3 ± 0.15	3.2	schwarz	12558072
2.5*	48 x 0.25	2.01 ± 0.05	5.2 ± 0.15	4.6	rot	12529712
2.5*	48 x 0.25	2.01 ± 0.05	5.2 ± 0.15	4.6	blau	12529713
2.5*	48 x 0.25	2.01 ± 0.05	5.2 ± 0.15	4.6	schwarz	12529714
4.0*	56 x 0.30	2.54 ± 0.05	5.8 ± 0.15	6.6	rot	12545801
4.0*	56 x 0.30	2.54 ± 0.05	5.8 ± 0.15	6.6	blau	12537896
4.0*	56 x 0.30	2.54 ± 0.05	5.8 ± 0.15	6.6	schwarz	12545802
6.0*	81 x 0.30	3.30 ± 0.10	6.9 ± 0.20	9.2	rot	12568182
6.0*	81 x 0.30	3.30 ± 0.10	6.9 ± 0.20	9.2	blau	12568183
6.0*	81 x 0.30	3.30 ± 0.10	6.9 ± 0.20	9.2	schwarz	12552756
10	78 x 0.40	4.30 ± 0.10	8.1 ± 0.15	14.4	schwarz	12537897
16	119 x 0.40	5.30 ± 0.10	9.5 ± 0.20	21.0	schwarz	12567377
25	182 x 0.40	6.60 ± 0.10	11.1 ± 0.20	29.6	schwarz	12567378
35	266 x 0.40	7.80 ± 0.10	12.8 ± 0.25	41.7	schwarz	12567379
50	378 x 0.40	9.30 ± 0.10	15.0 ± 0.25	60.2	schwarz	12567380
70	348 x 0.50	11.40 ± 0.10	17.5 ± 0.30	80.8	schwarz	12567381
95	444 x 0.50	12.80 ± 0.10	19.3 ± 0.30	103.1	schwarz	12567382
120	551 x 0.50	14.60 ± 0.10	21.8 ± 0.30	126.0	schwarz	12567383
150	722 x 0.50	16.80 ± 0.10	24.4 ± 0.30	161.7	schwarz	12567384

Selection from range; different sizes and colors on request

*Approvals: TÜV Rheinland design tested, certificate R 02210086

RADOX® SOLAR CABLE SINGLE CORE

Technical data

Conductor resistance at 20 °C

TüV:	nominal voltage line to ground	U_o	see table
	nominal voltage line to line	U	600 V AC
	maximum voltage line to ground		1000 V AC
	maximum voltage line to line	U_m	660 V AC
	maximum voltage line to ground	V_o	1100 V AC
	maximum voltage line to line		1000 V DC
	test voltage AC		1650 V DC
	test voltage DC		3.5 kV
	lower ambient temperature		8.4 kV
	upper ambient temperature		- 40°C
	max. conductor temperature		+ 85°C

Min. bending radius	$D < 8 \text{ mm}$	$4 \times D$
	$D \geq 8 \text{ mm}$	$6 \times D$

Cables have passed the following fire tests:

Vertical flame spread of a single cable IEC 60332-1, EN 50265-2-1

Content of halogen hydracid 0mg/g IEC 670754-1, EN50267-2-1

Corrosivity of combustion gases IEC 60754-2, EN 50267-2-3

Smoke density IEC 61034-2, EN 50268-2

Approvals

(2.5 – 6.0 mm²)

Wires for photovoltaik systems

RADOX® solar cable

TüV Rheinland 2 Pfg 1169,
certificate R02210086

RADOX® SMART

- for all climate zones
- for reliable and durable connections
- with UL and TÜV approvals
- lean, powerful and flexible
- of proven RADOX® quality



Conductor	stranded tin-plated copper, IEC 60228 class 5
Inner insulation	RADOX® FI
Outer insulation	RADOX® FS, colour: black

Technical data

UL:	voltage rating		600 V AC
	test voltage		3.0 kV AC
	temperature rating		90 °C wet or dry, sunlight resistant
TÜV:	nominal voltage line to ground	U _o	600 V AC
	nominal voltage line to line	U	1000 V AC
	maximum voltage line to ground	V _o	1000 V DC
	maximum voltage line to line		1650 V DC
	test voltage AC		3.5 kV AC
	test voltage DC		8.4 kV DC
	lower ambient temperature		-40 °C
	upper ambient temperature		+85 °C
	maximum conductor temperature		+110 °C
Minimum bending radius			4 x D

Application

United States:

- Type PV: Suitable for interconnection wiring of grounded and ungrounded photovoltaic power systems as described in section 690.31 (A) and other parts of the National Electrical Code (NEC), NFPA 70. For single conductor, double-insulated wires installation without using a conduit is permitted according to section 690.35 (D) of the NEC.
- Type RHH oder RHW-2: Suitable for any of the wiring methods recognised in chapter 3 and as specified in their respective tables or as permitted elsewhere in the NEC.

Europe:

- Suitable for the installation methods reference no. 2, 3A, 4A, 5A, 11, 11A, 12, 13, 14, 15, 16, 21, 22A, 23A, 24A, 25, 31A, 32A, 33A, 41, 43, 51, 72, 73, 75 in table 52H of HD 384.5.52 (CH: SEV 1000 Abs. 5.2; DE: DIN VDE 0100-520).

RADOX® SMART

Approvals

UL	Photovoltaic Wire	Type PV, UL subject 4703, UL listed E305787
UL	Thermoset-insulated Wires and Cables	Type RHH and RHW-2, UL 44, listed E310273
TÜV Rheinland	Wires for Photovoltaic Systems	2 Pfg 1169, certificate R60017683

Extract from our delivery programme

Cross section		Conductor construction	Conductor diameter	Wire diameter	R ₂₀ IEC 228	Weight	Item no.
AWG	nom. mm ²	nom. n x mm	max. nom. mm	D mm	max. Ω/km	nom. kg/100 m	
14	2.5	48x0.26	2.0	5.35±0.10	8.21	5.1	12583222
12	4.0	56x0.30	2.5	6.05±0.10	5.09	7.1	12583780
10	6.0	82x0.30	3.2	7.15±0.15	3.39	9.9	12583781

Cables have passed the following fire tests:

Vertical flame spread FT1

Vertical flame spread

Amount of halogen acid gas

Corrosivity of combustion gases

$L \leq 250 \text{ mm}$, $T \leq 60 \text{ s}$

$50 < L \leq 540 \text{ mm}$

$\text{HCl} + \text{HBr} \leq 0.5\%$

$\text{pH} \geq 4.3$, $\sigma \leq 10 \text{ } \mu\text{S/mm}$

UL 1581 # 1060

EN 60332-1-2, IEC 60332-1-2

EN 50267-2-1, IEC 60754-1

EN 50267-2-2, IEC 60754-2

RADOX® SOLARLINK

- UL and TÜV approval
- double insulated construction allows for installation without a conduit
- smaller outer diameter
- of proven RADOX® quality
- very flexible



Conductor	stranded tin-plated copper, IEC 60228 class 5
Inner insulation	RADOX® 155
Outer insulation	RADOX® 155, colour: black

Technical data

UL:	voltage rating		600 V AC
	test voltage AC		3.0 kV AC
	temperature rating		90 °C wet or dry, sunlight resistant
TÜV:	nominal voltage line to ground	U_o	600 V AC
	nominal voltage line to line	U	1000 V AC
	maximum voltage line to ground	V_o	1000 V DC
	maximum voltage line to line		1650 V DC
	test voltage AC		3.5 kV AC
	test voltage DC		8.4 kV DC
	lower ambient temperature		-40 °C
	upper ambient temperature		+85 °C
	maximum conductor temperature		+110 °C
Min. bending radius			4 x D

Application

United States:

- Type PV: suitable for interconnection wiring of grounded and ungrounded photovoltaic power systems as described in section 690.31 (A) and other parts of the National Electrical Code (NEC), NFPA 70. For single conductor, double insulated wires installation without using a conduit is permitted according to section 690.35 (D) of the NEC.
- Type RHH or RHW-2: suitable for use in any of the wiring methods recognized in chapter 3 and as specified in their respective tables or as permitted elsewhere in the NEC.

Europe:

- suitable for the installation methods reference no. 2, 3A, 4A, 5A, 11, 11A, 12, 13, 14, 15, 16, 21, 22A, 23A, 24A, 25, 31A, 32A, 33A, 41, 43, 51, 72, 73, 75 given in table 52H of HD 384.5.52 (CH: SEV 1000 cl. 5.2; DE: DIN VDE 0100-520).

RADOX® SOLARLINK

Approvals

UL	Photovoltaic Wire	Type PV, UL subject 4703, UL listed E305787
UL	Thermoset-insulated Wires and Cables	Type RHH and RHW-2, UL 44, listed E310273
TÜV Rheinland	Wires for Photovoltaic Systems	2 Pfg 1169, certificate R60017683

Extract from our delivery programme

Cross section		Conductor construction	Conductor diameter	Cable diameter	R ₂₀ IEC 228	Weight	Item no.
AWG	nom. mm ²	nom. n x mm	max. nom. mm	D mm	max. Ω/km	nom. kg/100 m	
14	2.5	48 x 0.26	2.0	5.35 ± 0.10	8.21	5.1	12582664
12	4.0	56 x 0.30	2.5	6.05 ± 0.10	5.09	7.1	12582665
10	6.0	82 x 0.30	3.2	7.15 ± 0.15	3.39	9.9	12583784

Cables have passed the following fire tests:

Vertical flame spread FT1

Vertical flame spread

$L \leq 250 \text{ mm}$, $T \leq 60 \text{ s}$

$50 < L \leq 540 \text{ mm}$

UL 1581 # 1060

EN 60332-1-2, IEC 60332-1-2

RADOX® SOLAR CABLE MULTI CORE

- high resistance against heat and weathert
- extremely mechanically robust, very long lifetime
- halogen free
- space saving, easy to install



Conductor	stranded tin-plated copper, fine-wired, IEC 60228, class 5
Insulation	RADOX® 125
Coating	RADOX® 125 black
Core colors	2-5 cores acc. to CENELEC, HD 308 S2 (see page 36) as of 6 cores black-numbered with protection conductor yellow-green (different colors on request)

General characteristics

High resistance against heat, cold, ozone and weather, halogen free, flame retardant, no corrosive gases and low smoke occurrence in case of fire, soldering iron resistant, flexible, easy to strip, extremely mechanically robust, very long lifetime.

Application

For connecting photovoltaic system components inside and outside of buildings and equipment with high mechanical requirements and extreme weather influences. For permanent installations.

Extract from our delivery programme

Cross section mm ²	Conductor design n x mm	Conductor diameter rated mm	Core diameter rated mm	Cable diameter rated mm	Weight rated kg/100 m
2 x 2.5	48 x 0.25	2.05	3.50 ± 0.10	9.1 ± 0.3	13.0
3 x 2.5	48 x 0.25	2.05	3.50 ± 0.10	10.1 ± 0.4	16.6
4 x 2.5	48 x 0.25	2.05	3.50 ± 0.10	11.3 ± 0.4	20.9
5 x 2.5	48 x 0.25	2.05	3.50 ± 0.10	12.4 ± 0.4	24.9
7 x 2.5	48 x 0.25	2.05	3.50 ± 0.10	15.3 ± 0.5	37.9
2 x 4.0	56 x 0.30	2.60	4.15 ± 0.15	11.0 ± 0.4	18.7
4 x 4.0	56 x 0.30	2.60	4.15 ± 0.15	13.0 ± 0.4	29.8
5 x 4.0	56 x 0.30	2.60	4.15 ± 0.15	14.6 ± 0.4	36.7
4 x 6.0	81 x 0.30	3.40	4.95 ± 0.15	15.5 ± 0.5	41.8
2 x 10.0	78 x 0.40	4.40	6.15 ± 0.15	15.8 ± 0.5	50.4
3 x 10.0	78 x 0.40	4.40	6.15 ± 0.15	17.0 ± 0.5	62.0
4 x 10.0	78 x 0.40	4.40	6.15 ± 0.15	19.0 ± 0.5	77.5
5 x 10.0	78 x 0.40	4.40	6.15 ± 0.15	21.4 ± 0.5	98.3

RADOX® SOLAR CABLE MULTI CORE

Technical data

Nominal voltage		1000V DC oder 600/1000V AC
Test voltage		3500V AC (50Hz 1min.)
Temperature range	fixed	- 40 bis + 125 °C
Min. temperature	flexing	- 25 °C
Max. conductor temperature at short circuit (max. 5s)		+ 280 °C
Min. bending radius	fixed	3 x cable - Ø
	flexing	5 x cable - Ø

Cables have passed the following fire tests:

Vertical flame spread of a single cable EN 50265-2-1, IEC 60332-1

Vertical flame spread of bunched cables EN 50266-2-4, IEC 60332-3-24 test type C

Content of halogenous hydracid EN 50267-2-1, IEC 60754-1 0mg/g

Corrosivity of combustion gases EN 50267-2-2, IEC 60754-2

Smoke density EN 50268-2, IEC 61034-2

RADOX® SOLAR CABLE MULTI CORE SCREENED

- high resistance against heat and weathert
- extremely mechanically robust, very long lifetime
- halogen free
- space saving, easy to install



Conductor	stranded tin-plated copper, fine-wired, IEC 60228, class 5
Insulation	RADOX® 125
Screen	copper braid tin-plated
Coating	RADOX® 125 black
Core colors	2-5 cores acc. to CENELEC, HD 308 S2 as of 6 cores black-numbered with protective conductor yellow-green (different colors on request)

General characteristics

High heat, cold, ozone and weather resistance, halogen free, flame retardant, no corrosive gases and low smoke occurrence in case of fire, soldering iron resistant, flexible, easy to strip, with compensation of potential difference within the cable or screening. Screening also retards effects of rodents.

Application

For connecting photovoltaic systems inside and outside of buildings and equipment with high mechanical requirements and extreme weather influences. For permanent installations.

Extract from our delivery programme

Cross section mm ²	Conductor design n x mm	Conductor diameter rated mm	Core diameter rated mm	Screen	Cable diameter rated mm	Weight rated kg/100 m
2 x 2.5	48 x 0.25	2.05	3.50 ± 0.10	7.7	10.2 ± 0.4	17.5
3 x 2.5	48 x 0.25	2.05	3.50 ± 0.10	8.3	10.8 ± 0.4	20.6
4 x 2.5	48 x 0.25	2.05	3.50 ± 0.10	9.8	12.4 ± 0.4	26.8
5 x 2.5	48 x 0.25	2.05	3.50 ± 0.10	10.4	13.1 ± 0.4	30.9
7 x 2.5	48 x 0.25	2.05	3.50 ± 0.10	13.2	16.3 ± 0.5	45.9
2 x 4.0	56 x 0.30	2.60	4.14 ± 0.15	9.2	11.9 ± 0.4	24.4
4 x 4.0	56 x 0.30	2.60	4.15 ± 0.15	11.2	14.1 ± 0.4	37.1
3 x 6.0	81 x 0.30	3.40	4.95 ± 0.15	11.6	14.5 ± 0.4	38.8
4 x 6.0	81 x 0.30	3.40	4.95 ± 0.15	13.3	16.5 ± 0.5	51.7

RADOX® SOLAR CABLE MULTICORE SCREENED

Technical data

Nominal voltage		1000V DC oder 600/1000V AC
Test voltage		3500V AC (50Hz 1min.)
Temperature range	fixed	- 40 bis + 125 °C
Min. temperature	flexing	- 25 °C
Max. conductor temperature at short circuit (max. 5s)		+ 280 °C
Min. bending radius	fixed	3 x cable - Ø
	flexing	5 x cable - Ø

Cables have passed the following fire tests:

Vertical flame spread of a single cable EN 50265-2-1, IEC 60332-1

Vertical flame spread at bunched cables EN 50266-2-4, IEC 60332-3-24 test type C

Content of halogenous hydracid EN 50267-2-1, IEC 60754-1 0 mg/g

Corrosivity of combustion gases EN 50267-2-2, IEC 60754-2

Smoke density EN 50268-2, IEC 61034-2