

RADOX® SOLAR cables

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 weather-proofing 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.

General features

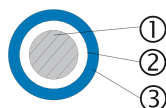
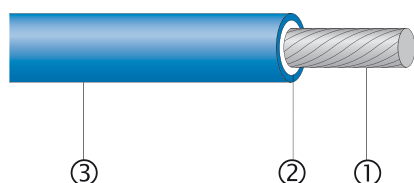
- Temperature range for applications -40°C to +120°C
- Short circuit resistance up to +280°C
- RADOX® electron-beam cross-linked materials do not melt or flow, even at high temperatures
- High resistance against UV, ozone- and hydrolyses
- Very high mechanical robustness and resistance against water, oil and chemicals
- Compact and flexible
- Decades of approved applications worldwide
- TÜV and UL approval

RADOX® SOLAR cables

RADOX® SOLAR cable single core	14–15
RADOX® SMART	16–17
RADOX® SolarLink	18–19
RADOX® SOLAR cable multi core	20–21
RADOX® SOLAR cable multi core, screened	22–23

RADOX® SOLAR cable

Single core cable



- Nominal cross sections with TÜV approval
- Space saving outer diameter
- Long service life, extremely robust
- Electron beam, crosslinked insulation and sheath
- High resistance against heat, cold, oil, abrasion, ozone, UV and weather
- Improved characteristics in case of fire
- Halogen free, flame retardant
- Flexible, easy to strip

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.

Composition of cable

① Conductor	stranded tin plated copper, fine wired, acc. to IEC 60228, class 5
② Insulation	RADOX®
③ Sheat	RADOX®
Colours	see table

Technical data

Conductor resistance at 20 °C

TÜV:

voltage rating line to ground	U_o	see table
voltage rating 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
		+110°C

Min. bending radius

$D < 8 \text{ mm}$	4 x cable-Ø
$D \geq 8 \text{ mm}$	6 x cable-Ø

RADOX® SOLAR cable

Single core cable

Fire tests

Flame propagation:

Vertical of a single cable

IEC 60332-1, EN 50265-2-1

Content of halogen acid gas

IEC 670754-1, EN 50267-2-1

0mg/g

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 photovoltaic-systems

RADOX® SOLAR cable

TÜV Rheinland 2 Pfg 1169
certificate R02210086

Extract from our delivery programme

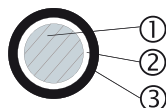
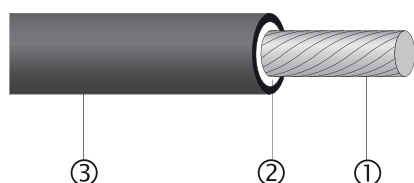
Cross section	Conductor		Cable	Weight	Colour	Item no.
mm ²	Construction nom. n x mm	R ₂₀ IEC 60228 max. Ω/km	Ø nom. mm	nom. kg/100m		
1.5	30 x 0.25	1.52 ± 0.05	4.3 ± 0.15	3.2	black	12558072
2.5*	48 x 0.25	2.01 ± 0.05	5.2 ± 0.15	4.6	red	12529712
2.5*	48 x 0.25	2.01 ± 0.05	5.2 ± 0.15	4.6	blue	12529713
2.5*	48 x 0.25	2.01 ± 0.05	5.2 ± 0.15	4.6	black	12529714
4.0*	56 x 0.30	2.54 ± 0.05	5.8 ± 0.15	6.6	red	12545801
4.0*	56 x 0.30	2.54 ± 0.05	5.8 ± 0.15	6.6	blue	12537896
4.0*	56 x 0.30	2.54 ± 0.05	5.8 ± 0.15	6.6	black	12545802
6.0*	81 x 0.30	3.30 ± 0.10	6.9 ± 0.20	9.2	red	12568182
6.0*	81 x 0.30	3.30 ± 0.10	6.9 ± 0.20	9.2	blue	12568183
6.0*	81 x 0.30	3.30 ± 0.10	6.9 ± 0.20	9.2	black	12552756
10	78 x 0.40	4.30 ± 0.10	8.1 ± 0.15	14.4	black	12537897
16	119 x 0.40	5.30 ± 0.10	9.5 ± 0.20	21.0	black	12567377
25	182 x 0.40	6.60 ± 0.10	11.1 ± 0.20	29.6	black	12567378
35	266 x 0.40	7.80 ± 0.10	12.8 ± 0.25	41.7	black	12567379
50	378 x 0.40	9.30 ± 0.10	15.0 ± 0.25	60.2	black	12567380
70	348 x 0.50	11.40 ± 0.10	17.5 ± 0.30	80.8	black	12567381
95	444 x 0.50	12.80 ± 0.10	19.3 ± 0.30	103.1	black	12567382
120	551 x 0.50	14.60 ± 0.10	21.8 ± 0.30	126.0	black	12567383
150	722 x 0.50	16.80 ± 0.10	24.4 ± 0.30	161.7	black	12567384

*Approvals: TÜV Rheinland design-tested, certificate R 02210086

Other cross sections and colours on request.

RADOX® SMART

Single core cable



- For all climate zones
- For reliable and durable connections
- With UL and TÜV approvals
- Halogen free, flame retardant
- Lean, powerful and flexible
- Of proven RADOX® quality

Composition of cable

- ① Conductor
- ② Inner insulation
- ③ Outer insulation
- Colour

stranded tin plated copper, fine wired, acc. to IEC 60228, class 5
 RADOX® FI
 RADOX® FS
 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:

Voltage rating line to ground	U_o	600 V AC
Voltage rating 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 cable-Ø

Application

- 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 section 5.2; DE: DIN VDE 0100-520).

RADOX® SMART

Single core cable

Fire tests

flame propagation:

Vertical FT1

UL 1581 # 1060

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

Vertical

EN 60332-1-2

IEC 60332-1-2

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

Content of halogen acid gas

EN 50267-2-1, IEC 60754-1

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

Corrosivity of combustion gases

EN 50267-2-2, IEC 60754-2

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

Approvals

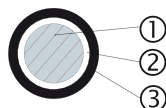
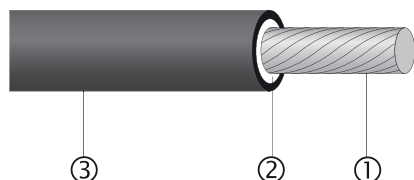
UL	Photovoltaic Wire	Type PV, UL subject 4703, UL listed E305787
UL	Thermoset-insulated Wires and Cables	Type RHH and RHW-2, UL 44, listed E310273
TÜV Rheinland	Wires for photovoltaic-systems	2 Pfg 1169, certificate R60017683

Extract from our delivery programme

Cross section		Conductor			Cable	Weight	Item no.
nom. AWG	mm ²	Constr. nom. n x mm	Ø nom. nom. mm	R ₂₀ IEC 60228 max. Ω/km	Ø mm	nom. kg/100 m	
14	2.5	48 x 0.26	2.0	8.21	5.3 5± 0.10	5.1	12583222
12	4.0	56 x 0.30	2.5	5.09	6.05 ± 0.10	7.1	12583780
10	6.0	82 x 0.30	3.2	3.39	7.15 ± 0.15	9.9	12583781

RADOX® SolarLink

Single core cable



- UL and TÜV approval
- Double insulated construction allows for installation without a conduit
- Smaller outer diameter
- Of proven RADOX® quality
- Very flexible

Composition of cable

- ① Conductor
- ② Inner insulation
- ③ Outer insulation
- Colour

stranded tin plated copper, fine wired, acc. to IEC 60228, class 5
 RADOX® 155
 RADOX® 155
 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:

voltage rating line to ground	U ₀	600 V AC
voltage rating line to line	U	1000 V AC
maximum voltage line to ground	V ₀	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 cable-Ø

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

Single core cable

Fire tests

Flame propagation:

Vertical FT1

UL 1581 # 1060

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

Vertical

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

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

Approvals

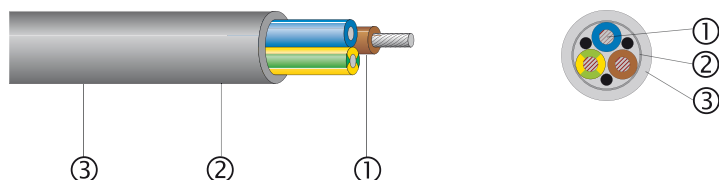
UL	Photovoltaic Wire	Type PV, UL subject 4703, UL listed E305787
UL	Thermoset-insulated Wires and Cables	Type RHH and RHW-2, UL 44, listed E310273
TÜV Rheinland	Wires for photovoltaic-systems	2 Pfg 1169, certificate R60017683

Extract from our delivery programme

Cross section		Conductor			Cable	Weight	Item no..
nom.		Constr. nom.	Ø max.	R_{20} IEC 60228	Ø	nom.	
AWG	mm ²	n x mm	nom. mm	max. Ω/km	mm	kg/100 m	
14	2.5	48 x 0.26	2.0	8.21	5.35 ± 0.10	5.1	12582664
12	4.0	56 x 0.30	2.5	5.09	6.05 ± 0.10	7.1	12582665
10	6.0	82 x 0.30	3.2	3.39	7.15 ± 0.15	9.9	12583784

RADOX® SOLAR cable

Multi core cable



- High resistance against heat, ozone and weatherproof
- Extremely mechanically robust, very long lifetime
- Halogen free
- Space saving, easy to install
- Flame retardant
- No corrosive gases and low smoke occurrence in case of fire
- Soldering resistant
- Flexible, easy to strip

Application

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

Composition of cable

① Conductor	stranded tin plated copper, fine wired, acc. to IEC 60228, class 5
② Insulation	RADOX® 125
Colour	2 - 5 cores acc. to CENELEC, HD 308 S2 (see page 40) as of 6 cores black-numbered with earth conductor yellow-green (other colours on request)
③ Sheat	RADOX® 125
Colour	black

Technical data

Voltage rating	1000 V DC or 600 / 1000 V AC
Test voltage	3500 V AC
Temperature range	-40 up to +125 °C
Min. operating temperature	-25 °C
Max. conductor temperature	+ 280 °C (short circuit at max. 5s)
Min. bending radius	fixed flexing 3 x cable-Ø 5 x cable-Ø

RADOX® SOLAR cable

Multi core cable

Fire tests

Flame propagation:

Vertical of a single cable

EN 50265-2-1, IEC 60332-1

Vertical of bunched cable

EN 50266-2-4, IEC 60332-3-24

Category C

Content of halogen acid gas

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

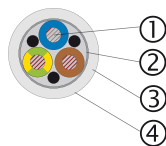
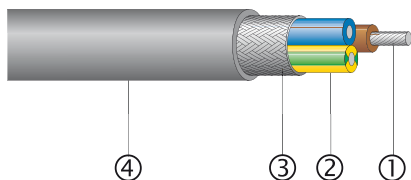
Extract from our delivery programme

Cross section	Conductor		Core	Cable	Weight
mm ²	Construction nom. n x mm	Ø nom. mm	Ø nom. mm	Ø nom. mm	nom. 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	11.4 ± 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	15.6 ± 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	18.9 ± 0.5	77.5
5 x 10.0	78 x 0.40	4.40	6.15 ± 0.15	21.4 ± 0.5	98.3

Other cross sections and colours on request.

RADOX® SOLAR cable

Multi core cable – screened



- High resistance against heat, ozone and weatherproof
- Extremely mechanically robust, very long lifetime
- Halogen free
- Space saving, easy to install

Application

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

Composition of cable

① Conductor	stranded tin plated copper, fine wired, acc. to IEC 60228, class 5
② Insulation	RADOX® 125
Colour	2 – 5 cores acc. to CENELEC, HD 308 S2 (see page 40) as of 6 cores black-numbered with earth conductor yellow-green (other colours on request)
③ Screening	tin plated copper braid
④ Sheat	RADOX® 125
Colour	black

Technical data

Voltage rating	1000 V DC or 600 / 1000 V AC
Test voltage	3500 V AC
Temperature range	-40 up to +125 °C
Min. operating temperature	-25 °C
Max. conductor temperature	+280 °C (short circuit at max. 5s)
Min. bending radius	fixed 3 x cable-Ø flexing 5 x cable-Ø

RADOX® SOLAR cable

Multi core cable – screened

Fire tests

Flame propagation:

Vertical of a single cable

EN 50265-2-1, IEC 60332-1

Vertical of bunched cables

EN 50266-2-4, IEC 60332-3-24

Category C

Content of halogen acid gas

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

Extract from our delivery programme

Cross section	Conductor		Core	Screening	Cable	Weight
mm ²	Construction nom. n x mm	Ø nom. mm	Ø nom. mm	Ø nom. mm	Ø nom. mm	nom. 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	12.0 ± 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	4.15 ± 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

Other cross sections and colours on request.

