

FLAMEBLOCKER N2XCH 0,6/1kV

VDE 0276-604, VDE 0276-627

– Halogen- free low smoke power and control cables with concentric copper conductor



Applications:

For the supply of electrical energy, especially for installations where fire and emissions of smoke and toxic fumes create a potential threat. The concentric conductor with a traverse spiral of copper serves as a screen and can be used as PE or PEN conductor. Special for installations in the open air, indoors, in concrete and in the ground. Not suitable for use in water.

Standard length cable packing: 500 m on drums. Other forms of packing and delivery are available on request

Construction

Conductors

Bare annealed copper conductor, circular solid class 1 (RE) or circular compacted stranded class 2 (RM) or stranded sector - shaped conductor class 2 (SM) according to EN 60228

Insulation

Cross-linked polyethylene XLPE type 2X1I according to DIN VDE 0276-604

Inner covering

Special flame-retardant and halogen-free compound

Concentric conductor

Inner layer - round copper wires, outer layer - copper tape

Separator

Tape

Sheath

Thermoplastic halogen - free compound type HM4 according to DIN VDE 0276-604

Colour of sheath:

Black (other colours, included in standard RAL pallet available at customer request as (N)2XCH)

Core identification

According to HD 308 S2 or EN 50334 (other colours available at customer request as (N)2XCH)

1-core

Black

2-core

Blue, brown

3-core

Brown, black, grey

3-core*

Blue, brown, black

4-core

Blue, brown, black, grey

5-core

Blue, brown, black, grey, black

6 core and more

Black with numbering

* For certain applications only.

Characteristic

Maximum conductor operating temperature

+90°C

Lowest ambient temperature for fixed installation

-40°C

Lowest installation temperature

-5°C

Maximum short-circuit conductor temperature

+250°C

Minimum bending radius

15 x D single core cables, 12 x D multicore cables,
D - overall diameter

Max. permissible tensile stress with cable grip for Cu-conductor

50 N/mm²

UV resistant

EN ISO 4892-2

Fire performance

Flame retardant

IEC 60332-1-2, IEC 60332-3-24

Smoke density

IEC 61034-2 light transmittance values: s1, s1b, without CPR class >60 % s1a >80 %

Gases evolved during combustion

BS EN 60754-2, EN 60754-2, pH ≥ 4,3; conductivity ≤ 2,5 µS/mm
BS EN 60754-1 HCL ≤ 0,5 %

CPR - class reaction to fire (acc EN 50575)

B2ca for cables with SM conductor
Cca for cables 2-5 cores, RM conductor
Dca for cables with 7 and higher cores

Approvals

VDE

Parameters

Number and cross-sectional area of conductor	Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at temperature 20°C	CPR – class reaction to fire	Caloric load
n × mm²	mm	mm	mm	kg/km	Ω/km		kWh/m
1x25RM/16	0.9	1.2	12.7	464	0.727 / 1.15	-	0.68
1x35RM/16	0.9	1.2	13.8	560	0.524 / 1.15	-	0.77
1x50RM/16*	1	1.2	15.3	685	0.387 / 1.15	-	0.89
1x70RM/16*	1.1	1.3	17.0	894	0.268/ 1.15	-	1.11
1x95RM/16*	1.1	1.3	19.0	1146	0.193/1.15	-	1.29
1x120RM/35*	1.2	1.3	21.1	1568	0.153 / 0.524	-	1.49
1x150RM/16*	1.4	1.4	22.6	1669	0.124 / 1.15	-	1.8
1x150RM/25*	1.4	1.4	23.1	1758	0.124 / 0.727	-	1.8
1x185RM/25*	1.6	1.4	25.2	2115	0.0991 / 0.727	-	2.12
1x240RM/16*	1.7	1.5	27.6	2569	0.0754 / 1.15	-	2.52
1x240RM/25*	1.7	1.5	28.1	2659	0.0754 / 0.727	-	2.54
1x240RM/35*	1.7	1.5	28.1	2752	0.0754 / 0.524	-	2.54
1x300RM/16*	1.8	1.5	29.6	3141	0.0601/1.15	-	2.84
1x300RM/25*	1.8	1.5	30.1	3230	0.0601 / 0.727	-	2.85
1x300RM/35*	1.8	1.5	30.1	3324	0.0601 / 0.524	-	2.86
1x300RM/70*	1.8	1.5	30.8	3652	0.0601 / 0.268	-	2.9
1x400RM/35*	2	1.6	33.4	4185	0.047 / 0.524	-	3.45
1x500RM/16*	2.2	1.6	36.5	5043	0.0366 / 1.15	-	4.07
1x500RM/25*	2.2	1.6	37.0	5132	0.0366/0.727	-	4.13
1x500RM/50*	2.2	1.6	37.0	5356	0.0366 / 0.387	-	4.13
1x500RM/95*	2.2	1.6	37.7	5780	0.0366 / 0.193	-	4.13
2x1.5RE/1.5	0.7	1.2	10.6	160	12.1 / 12.1	Oca	0.55
2x1.5RM/1.5	0.7	1.2	11	169	12.1 / 12.1	Oca	0.6
2x1.5RE/2.5*	0.7	1.2	10.6	167	12.1 / 7.41	-	0.55
2x2.5RE/2.5	0.7	1.2	11.4	200	7.41 / 7.41	Oca	0.62
2x2.5RM/2.5	0.7	1.2	11.9	212	7.41 / 7.41	Oca	0.68
2x4RE/4	0.7	1.2	12.7	265	4.61 / 4.61	Oca	0.72
2x4RM/4	0.7	1.2	13.3	282	4.61 / 4.61	Oca	0.8
2x6RE/6	0.7	1.2	14	340	3.08 / 3.08	Oca	0.83
2x6RM/6	0.7	1.2	14.3	350	3.08 / 3.08	Oca	0.87
2x10RE/10	0.7	1.2	15.7	485	1.83 / 1.83	Oca	0.99
2x10RM/10	0.7	1.2	16.3	505	1.83 / 1.83	Oca	1.07
2x16RE/16	0.7	1.3	17.7	697	1.15 / 1.15	Oca	1.23
2x16RM/16	0.7	1.3	18.5	729	1.15 / 1.15	Oca	1.36
2x25RM/16	0.9	1.3	22.6	1017	0.727 / 1.15	Oca	1.98
2x35RM/16	0.9	1.4	24.5	1256	0.524 / 1.15	Oca	2.50
2x50RM/25	1.0	1.4	28.4	1755	0.387 / 0.727	Oca	2.89
2x70RM/35	1.1	1.5	31.7	2298	0.268 / 0.524	-	3.72
3x1.5RE/1.5	0.7	1.2	11	177	12.1 / 12.1	Oca	0.61
3x1.5RM/1.5	0.7	1.2	11.5	187	12.1 / 12.1	Oca	0.67
3x2.5RE/2.5	0.7	1.2	12.3	237	7.41 / 7.41	Oca	0.69
3x2.5RM/2.5	0.7	1.2	12.4	238	7.41 / 7.41	Oca	0.76
3x4RE/4	0.7	1.2	13.3	304	4.61 / 4.61	Oca	0.81
3x4RE/16*	0.7	1.2	15.6	517	4.61/1.15	-	0.84
3x6RE/6	0.7	1.2	14.6	394	3.08 / 3.08	Oca	0.92
3x10RE/10	0.7	1.2	16.4	572	1.83 / 1.83	Oca	1.1
3x10RM/10	0.7	1.2	17.1	594	1.83 / 1.83	Oca	1.2
3x16RE/16	0.7	1.3	18.6	833	1.15 / 1.15	Oca	1.36
3x16RM/16	0.7	1.3	19.5	868	1.15 / 1.15	Oca	1.51

Parameters

Number and cross-sectional area of conductor	Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at temperature 20°C	CPR – class reaction to fire	Caloric load
n × mm²	mm	mm	mm	kg/km	Ω/km		kWh/m
3x25RM/16	0.9	1.4	24	1273	0.727 / 1.15	Cca	2.27
3x25RM/25*	0.9	1.4	24.5	1359	0.727/0.727	-	2.30
3x35RM/16	0.9	1.4	26.3	1607	0.524 / 1.15	Cca	2.64
3x50RM/25	1	1.5	30.2	2170	0.387 / 0.727	Cca	2.62
3x50SM/25	1	1.5	26.5	1912	0.387 / 0.727	B2ca	2.62
3x70SM/35	1.1	1.5	30.4	2678	0.268 / 0.524	B2ca	3.32
3x95SM/50	1.1	1.6	33.5	3601	0.193 / 0.387	B2ca	3.91
3x120SM/70	1.2	1.7	37.3	4564	0.153 / 0.268	B2ca	4.69
3x150SM/70	1.4	1.8	42.2	5558	0.124 / 0.268	B2ca	5.95
3x185SM/95	1.6	1.9	45.6	6870	0.0991 / 0.193	B2ca	7.17
3x240SM/120	1.7	2	52.1	8976	0.0754 / 0.153	B2ca	8.7
3x300SM/120*	1.8	2.1	56.5	10805	0.0601/0.153	-	10.25
3x300SM/150	1.8	2.1	56.5	11080	0.0601/0.124	B2ca	10.25
4x1.5RE/1.5	0.7	1.2	11.8	209	12.1 / 12.1	Cca	0.7
4x1.5RM/1.5	0.7	1.2	12.2	219	12.1 / 12.1	Cca	0.76
4x2.5RE/2.5	0.7	1.2	12.7	260	7.41 / 7.41	Cca	0.79
4x2.5RE/6*	0.7	1.2	13.8	310	7.41/3.08	-	0.85
4x2.5RM/2.5	0.7	1.2	13.3	275	7.41 / 7.41	Cca	0.88
4x4RE/4	0.7	1.2	14.2	353	4.61 / 4.61	Cca	0.92
4x4RM/4	0.7	1.2	14.9	372	4.61 / 4.61	Cca	1.04
4x6RE/6	0.7	1.2	15.7	463	3.08 / 3.08	Cca	1.05
4x6RM/6	0.7	1.2	16.1	475	3.08 / 3.08	Cca	1.12
4x10RE/10	0.7	1.3	17.9	687	1.83 / 1.83	Cca	1.31
4x10RM/10	0.7	1.3	18.6	711	1.83 / 1.83	Cca	1.43
4x16RE/16	0.7	1.3	20.1	993	1.15 / 1.15	Cca	1.56
4x16RM/16	0.7	1.3	21.1	1034	1.15 / 1.15	Cca	1.74
4x25RM/16	0.9	1.4	26.1	1535	0.727 / 1.15	Cca	2.64
4x35RM/16	0.9	1.5	28.8	1981	0.524 / 1.15	Cca	3.24
4x35SM/16	0.9	1.5	26.3	1803	0.524 / 1.15	B2ca	2.72
4x50SM/25	1	1.5	29.6	2408	0.387 / 0.727	B2ca	3.3
4x70SM/35	1.1	1.6	34.1	3391	0.268 / 0.524	B2ca	4.25
4x95RM/50	1.1	1.7	42.2	4995	0.193 / 0.387	-	5.55
4x95SM/50	1.1	1.7	38.5	4650	0.193 / 0.387	B2ca	5.03
4x120SM/70	1.2	1.8	43.3	5877	0.153 / 0.268	B2ca	6.17
4x150SM/70	1.4	1.9	47.4	7058	0.124 / 0.268	B2ca	7.57
4x185SM/95	1.6	2	51.8	8784	0.0991 / 0.193	B2ca	9.1
4x240SM/120	1.7	2.1	58.5	11398	0.0754 / 0.153	B2ca	11.27
4x300SM/120*	1.8	2.2	63.2	13782	0.0601 / 0.153	-	12.99
4x300SM/150	1.8	2.2	63.2	14056	0.0601 / 0.124	-	12.71
5x1.5RE/1.5	0.7	1.2	12.6	238	12.1 / 12.1	Cca	0.82
5x1.5RM/1.5	0.7	1.2	13.1	251	12.1 / 12.1	Cca	0.9
5x2.5RE/2.5	0.7	1.2	13.6	300	7.41 / 7.41	Cca	0.94
5x2.5RM/2.5	0.7	1.2	14.3	318	7.41 / 7.41	Cca	1.05
5x4RE/4	0.7	1.2	15.2	409	4.61 / 4.61	Cca	1.09
5x4RE/16*	0.7	1.2	15.6	517	4.61/1.15	-	1.13
5x6RE/6	0.7	1.3	17	547	3.08 / 3.08	Cca	1.31
5x10RE/10	0.7	1.3	19.3	807	1.83 / 1.83	Cca	1.59
5x16RE/16	0.7	1.4	21.9	1182	1.15 / 1.15	Cca	1.97
5x25RM/16	0.9	1.4	28.3	1829	0.727 / 1.15	Cca	3.3

Parameters

Number and cross-sectional area of conductor	Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at temperature 20°C	CPR – class reaction to fire	Caloric load
n × mm²	mm	mm	mm	kg/km	Ω/km		kWh/m
5x25RM/25	0.9	1.4	25.8	1923	0.727/1.15	-	3.22
5x35RM/16	0.9	1.5	31.4	2368	0.524 / 1.15	Cca	3.94
5x50RM/25	1	1.6	36.5	3221	0.387 / 0.727	Cca	5.03
5x50RM/35	1	1.6	36.5	3324	0.387 / 0.524	-	5.08
5x70RM/35	1.1	1.7	41.7	4547	0.268/0.524	-	6.25
5x70SM/35*	1.1	1.7	36.4	4075	0.268 / 0.524	-	4.99
5x95SM/50*	1.1	1.8	41.3	5562	0.193/0.387	-	6.13
5x120SM/70*	1.2	1.9	46	7010	0.153/ 0.268	B2ca	7.34
5x150SM/70*	1.4	2	50.9	8460	0.124/ 0.268	-	9.1
5x185SM/95*	1.6	2.1	55.8	10563	0.0991/ 0.193	-	10.98
5x240SM/120*	1.7	2.2	62.5	13658	0.0754 / 0.153	-	13.1
6x1.5RM/2.5*	0.7	1.2	14	283	12.1 / 7.41	-	1.05
6x2.5RM/2.5*	0.7	1.2	15.3	362	7.41 / 7.41	-	1.23
6x4RE/4*	0.7	1.2	16.3	466	4.61 / 4.61	-	1.28
6x6RM/6*	0.7	1.3	18.8	646	3.08 / 3.08	-	1.65
6x10RE/10*	0.7	1.3	20.7	937	1.83 / 1.83	-	1.78
6x25RM/16*	0.9	1.5	30.9	2144	0.727 / 1.15	-	4.08
6x35RM/16*	0.9	1.5	34.5	2807	0.524 / 1.15	-	4.89
7x1.5RE/1.5*	0.7	1.2	13.8	292	12.1/12.1	-	0.97
7x1.5RE/2.5	0.7	1.2	13.8	292	12.1 / 7.41	Dca	0.93
7x1.5RM/2.5	0.7	1.2	14	294	12.1 / 7.41	Dca	1.03
7x2.5RE/2.5	0.7	1.2	14.5	360	7.41 / 7.41	Dca	1.06
7x2.5RM/2.5	0.7	1.2	15.3	381	7.41 / 7.41	Dca	1.2
7x4RE/4	0.7	1.2	16.3	497	4.61 / 4.61	Dca	1.24
7x4RE/16*	0.7	1.2	16.9	613	4.61/1.15	-	1.29
7x6RE/6*	0.7	1.3	18.3	673	3.08 / 3.08	-	1.48
8x1.5RE/1.5*	0.7	1.2	14	307	12.1/12.1	-	1.06
8x1.5RM/2.5	0.7	1.2	14.7	325	12.1 / 7.41	Dca	1.18
8x2.5RE/2.5	0.7	1.2	15.2	398	7.41/7.41	-	1.22
8x2.5RM/4*	0.7	1.2	16.4	443	7.41 / 4.61	-	1.4
8x6RM/6*	0.7	1.3	19.8	773	3.08 / 3.08	-	1.85
10x1.5RE/2.5	0.7	1.3	16.3	381	12.1 / 7.41	Dca	1.29
10x1.5RM/2.5	0.7	1.3	17.1	402	12.1 / 7.41	Dca	1.43
10x2.5RE/4	0.7	1.3	18.3	518	7.41 / 4.61	Dca	1.5
10x2.5RM/4	0.7	1.3	19.3	548	7.41 / 4.61	Dca	1.7
10x4RE/6	0.7	1.3	20.4	706	4.61 / 3.08	Dca	1.75
12x1.5RE/2.5	0.7	1.3	16.8	418	12.1 / 7.41	Dca	1.41
12x1.5RM/2.5	0.7	1.3	17.6	440	12.1 / 7.41	Dca	1.57
12x2.5RE/4	0.7	1.3	18.7	571	7.41 / 4.61	Dca	1.64
12x2.5RM/4	0.7	1.3	19.8	604	7.41 / 4.61	Dca	1.86
12x4RE/6	0.7	1.3	21	787	4.61 / 3.08	Dca	1.91
12x6RM/6*	0.7	1.4	23.6		4.61/4.61	-	2.41
12x6RM/10*	0.7	1.4	24	1113	3.08 / 1.83	-	2.43
14x1.5RE/2.5	0.7	1.3	17.5	460	12.1 / 7.41	Dca	1.55
14x1.5RM/2.5	0.7	1.3	18.4	485	12.1 / 7.41	Dca	1.73
14x1.5RE/16*	0.7	1.3	18.7	605	12.1/1.15	-	1.62
14x2.5RE/4*	0.7	1.3	19.6	634	7.41 / 4.61	-	1.8
14x2.5RE/6	0.7	1.3	19.9	652	7.41 / 3.08	Dca	1.82
14x2.5RM/6	0.7	1.3	21	687	7.41 / 3.08	Dca	2.07

Parameters

Number and cross-sectional area of conductor	Nominal thickness of insulation	Nominal thickness of sheath	Approximate overall diameter	Approximate net weight of cables	Maximum conductor resistance at temperature 20°C	CPR – class reaction to fire	Caloric load
n × mm²	mm	mm	mm	kg/km	Ω/km		kWh/m
14x4RE/6	0.7	1.4	22.1	888	4.61/3.08	Dca	2.16
15x1.5RE/2.5	0.7	1.3	18.3	496	12.1/7.41	Dca	1.69
16x1.5RE/1.5*	0.7	1.3	18.3	505	12.1/12.1	-	1.72
16x1.5RE/4*	0.7	1.3	18.7	526	12.1/4.61	-	1.74
16x1.5RM/4*	0.7	1.3	19.6	554	12.1/4.61	-	1.95
16x2.5RE/6	0.7	1.3	20.8	719	7.41/3.08	Dca	2.03
16x2.5RM/6	0.7	1.3	21.9	757	7.41/3.08	Dca	2.31
18x1.5RE/4	0.7	1.3	19.5	574	12.1/4.61	-	1.93
18x1.5RM/4	0.7	1.3	20.5	604	12.1/4.61	-	2.16
19x1.5RE/4	0.7	1.3	19.5	586	12.1/4.61	Dca	1.91
19x1.5RM/4	0.7	1.3	20.5	616	12.1/4.61	Dca	2.15
19x2.5RE/6	0.7	1.3	21.7	806	7.41/3.08	Dca	2.22
19x2.5RE/10*	0.7	1.4	22	852	7.41/1.83	-	2.28
19x2.5RM/6	0.7	1.3	22.7	847	7.41/3.08	Dca	2.53
19x4RE/10	0.7	1.4	24.3	1151	4.61/1.83	Dca	2.65
20x1.5RM/6*	0.7	1.3	21.7	682	12.1/3.08	-	2.41
20x2.5RM/10*	0.7	1.4	24.3	962	7.41/1.83	-	2.94
21x1.5RE/6	0.7	1.4	20.8	670	12.1/3.08	Dca	1.92
21x2.5RE/6	0.7	1.4	22.7	902	7.41/3.08	Dca	2.55
24x1.5RE/6	0.7	1.4	22.5	742	12.1/3.08	Dca	2.4
24x1.5RM/6	0.7	1.4	23.7	780	12.1/3.08	Dca	2.7
24x2.5RE/10	0.7	1.4	25.1	1036	7.41/1.83	Dca	2.79
24x2.5RM/10	0.7	1.4	26.6	1091	7.41/1.83	Dca	3.2
24x4RE/10*	0.7	1.5	28.1	1430	4.61/1.83	-	3.33
27x1.5RE/6	0.7	1.4	22.9	795	12.1/3.08	Dca	2.57
27x1.5RM/6	0.7	1.4	24.1	836	12.1/3.08	Dca	2.9
27x2.5RM/10	0.7	1.4	27.2	1177	7.41/1.83	Dca	3.45
30x1.5RE/6	0.7	1.4	23.6	856	12.1/3.08	Dca	2.77
30x1.5RM/6	0.7	1.4	24.9	900	12.1/3.08	Dca	3.13
30x2.5RE/10	0.7	1.4	26.4	1206	7.41/1.83	Dca	3.22
37x1.5RM/10	0.7	1.4	27	1087	12.1/1.83	-	3.67
37x2.5RM/10	0.7	1.5	30.2	1503	7.41/1.83	Dca	4.44
40x1.5RE/10	0.7	1.4	26.3	1101	12.1/1.83	Dca	3.48
40x2.5RE/10	0.7	1.5	29.2	1523	7.41/1.83	Dca	4.13

*based on norm

Current ratings*

Operating temperature at conductor 90°C; ambient air temperature 30°C

Installation		
Number of loaded cores	3	3
Laying in air		
Cross-section, mm²	Current ratings in Ampere (A)	
1,5	25	27
2,5	33	36
4	43	47
6	54	59
10	75	81
16	100	109
25	136	146
35	165	179
50	201	218
70	255	275
95	314	336
120	364	388
150	416	438
185	480	501
240	565	580
300	-	654
400	-	733
500	-	825

Current ratings for control cables – HD 627 S1

Number of loaded cores	3
Laying in air	
Cross-section, mm²	Current ratings in Ampere (A)
1.5	25
2.5	33
4	43

The values are referred to the following basic conditions

Laying in air	
Ambient temperature	30°C
Load factor	1.0
Arrangement	Free in air, protection against direct solar radiation, no external heat sources, unrestricted dissipation of heat

Correction factors for various ambient air temperatures

Ambient temperature, °C	10	15	20	25	30	35	35	45	50
Rating factor	1.15	1.12	1.08	1.04	1.00	0.96	0.96	0.87	0.82

Conversion factors for multicore cable (≥ 5 cores)

The conversion factors are to be used for laying the cables in air, to the values given in above tables

Number of loaded cores	Laying in air
5	0.75
7	0.65
10	0.55
14	0.50
19	0.45
24	0.40
40	0.35
61	0.30

Note: valid for cross-section 1.5 to 10 mm²

* As defined in DIN VDE 0276-604, DIN VDE 0276-627, HD 604-S1, HD 627 S1.

Conversion factors for deviating ambient temperature defined in DIN VDE 0298 part 4.