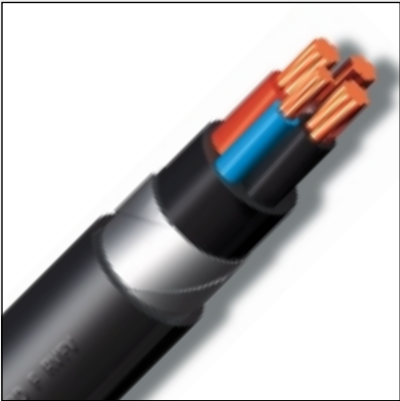


# POWERHARD F

## RVFV & VV FV 0,6/1 kV

Protected power transmission



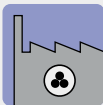
### a Applications

Due to its design, this cable is especially suitable for fixed installations that may be subject to mechanical aggression. It is highly recommended for use in installations in warehouses, production plants and agricultural facilities where the presence of rodents could imply a threat to cable integrity. At the same time, its use is recommended for street lighting installations.

### b Characteristics

- 1.- Protection:** The special PVC mix outer sheath provides a high level of protection against hydrocarbon and mineral oils.
- 2.- Excellent mechanical protection:** The double steel tape armour (or aluminium in single-core cables) guarantees that the internal conductors are protected from damage caused by rodents, accidental knocks or possible perforation, avoiding dangerous short-circuits or the eventual costs of replacing and reinstalling the cable.
- 3.- Excellent crush resistance:** The Powerhard F cable can withstand being crushed by vehicles, merchandise or warehouse machinery passing over it, thanks to its especially robust design.
- 4.- Cost effective:** In those applications where a reinforced cable is required, the Powerhard F cable represents savings with respect to cables with another type of reinforcement while offering similar mechanical protection.
- 5.- Great power:** The cross linked polyethylene insulation (XLPE) in RVFV cables allows greater power transmission as well as a higher resistance to overloads. Additionally, it raises the maximum conductor temperature to 90° C (vs. 70° C in type NYY or VV cables).

### Applications



Heavy Duty



Open air



Buried



In Conduit



Rodent Proof



No flame propagation



No fire propagation

### C Technical data

The table shows diameter, weight, current-carrying capacity and voltage drop detailed for each cable.

Current-carrying capacities shown in the table are calculated according to IEC 60364 and for the following conditions:

- **Open air installation:** it is supposed an installation which allows effective air renewal with ambient temperature of 30 °C (reference method F for single core and E for multi core cables).

- **Buried installation:** cable in a duct buried at 70 cm depth, with ground thermal resistivity of 2,5 °K·m/W and ground temperature of 20 °C (reference method D).

- For cables with 2 conductors and for cables with 3 conductors up to 6 mm<sup>2</sup> it is supposed a single-phase circuit. A three-phase circuit it is supposed for all other cables (up to 5 conductors).

- For cables with 6 or more conductors it is supposed a single-phase circuit where not all conductors are fully loaded simultaneously.

Voltage drop, is the maximum that may occur. It is calculated to the maximum conductor temperature and for  $\cos \phi = 1$ .

### Environmental conditions



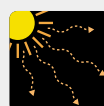
No flame propagation:  
IEC 60332-1  
EN 50265



No fire propagation:  
IEC 60332-3  
EN 50266



Impact resistance:  
AG 3  
Strong impact



Outdoor installation:  
permanent



Water resistance:  
AD 7 Immersion



Chemical & oil attack  
resistance: good

Dimensions					
Cross-section	Diameter	Weight	Open air	Buried	Voltage drop
mm <sup>2</sup>	φ mm	kg/km	at 30°C A	at 20°C A	V/A km
1 x 16	14,4	370	101	79	2,68
1 x 25	16,0	485	135	101	1,73
1 x 35	17,1	593	169	122	1,23
1 x 50	18,6	727	207	144	0,860
1 x 70	20,3	958	268	178	0,603
1 x 95	22,4	1.251	328	211	0,457
1 x 120	24,4	1.509	383	240	0,357
1 x 150	26,3	1.807	444	271	0,286
1 x 185	28,3	2.215	510	304	0,235
1 x 240	31,3	2.803	607	351	0,178
2 x 1,5	12,3	225	26	26	34,0
2 x 2,5	13,2	267	36	34	20,4
2 x 4	14,1	320	49	44	12,7
2 x 6	15,7	416	63	56	8,45
2 x 10	17,1	529	86	73	4,89
2 x 16	18,6	686	115	95	3,10
3 G 1,5	12,8	251	26	26	34,0
3 G 2,5	13,8	300	36	34	20,4
3 G 4	15,1	376	49	44	12,7
3 G 6	16,4	482	63	56	8,45
3 x 10	17,8	628	75	61	4,23
3 x 16	19,6	843	100	79	2,68
3 x 16/10	20,5	957	100	79	2,68
3 x 25/16	25,0	1.352	127	101	1,73
3 x 35/16	27,3	1.693	158	122	1,23
3 x 50/25	31,5	2.315	192	144	0,860
3 x 70/35	36,0	3.117	246	178	0,603
3 x 95/50	41,6	4.421	298	211	0,457
3 x 120/70	46,8	5.893	346	240	0,357
3 x 150/70	51,5	7.004	399	271	0,286
3 x 185/95	56,5	8.726	456	304	0,235
3 x 240/120	63,4	11.036	538	351	0,178
4 G 1,5	13,7	284	23	22	29,5
4 G 2,5	14,6	344	32	29	17,7
4 G 4	16,1	436	42	37	11,0
4 G 6	17,2	560	54	46	7,32
4 x 10	18,9	748	75	61	4,23
4 x 16	21,0	1021	100	79	2,68
5 G 1,5	14,3	315	23	22	29,5
5 G 2,5	15,6	395	32	29	17,7
5 G 4	17,0	499	42	37	11,0
5 G 6	18,6	625	54	46	7,32
5 G 10	20,7	900	75	61	4,23
5 G 16	23,1	1.242	100	79	2,68
6 G 1,5	15,3	373	22	22	31,9
7 G 1,5	15,3	387	22	22	31,9
10 G 1,5	17,3	488	22	22	31,9
12 G 1,5	18,0	542	22	22	31,9
16 G 1,5	20,1	667	22	22	31,9
19 G 1,5	20,8	735	22	22	31,9
24 G 1,5	22,8	867	22	22	31,9
27 G 1,5	24,0	943	22	22	31,9
30 G 1,5	24,7	1.002	22	22	31,9

\*Top Cable reserves the right to carry out any modification whatsoever without giving previous notice.

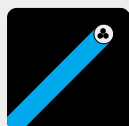
## d Design

- **Conductor:** Electrolytic annealed copper conductor.
  - RVFV: Rigid conductors, class 2 according to IEC 60228.
  - RVFV-K & VVfV-K: Flexible conductors, class 5 according to IEC 60228.
  
- **Insulation:** XLPE insulation (type DIX 3 according to HD 603) for RVFV & RVFV-K cables; PVC insulation (type A according to IEC 60502) for VVfV-K cables. The standard identification according to HD 308 or EN 50334, is the following:
  - Up to 5 conductors: by colours.
  - 6 or more conductors: black numbered + green/yellow.
  
- **Armour bedding:** Extruded continuous PVC bedding, fully complying with type ST1/ ST2 according to IEC 60502.
  
- **Armour:** Double steel or aluminium tape armour. Aluminium armour is used in single-core cables to avoid parasite currents that may overheat the cable.
  
- **Outer sheath:** Flexible PVC outer sheath, black color, type ST1/ST2 according to IEC 60502. The special PVC compound provide excellent resistance to chemical corrosion and water absorption.

## Characteristics



According to IEC 60502



RVFV:  
Rigid conductor  
class 1 or 2



RVFV-K y VVfV-K:  
Flexible conductor  
class 5



Rated voltage:  
0.6/1 kv



Maximum service  
temperature  
90°C / 70°C



Minimum  
bending radius  
10 x  $\phi$  cable



Meter by meter  
marking