

NEXANS, EVERY CABLE THAT MAKES A TRAIN ROLL



Whoever you are, rolling stock OEM, subsystem supplier or operator, Nexans provides everything from energy & telecom cable to integrated cabling systems, respecting national and international standards.

With a complete range of cables, backed by engineering services and tailored logistics, Nexans helps you achieve sustainable mobility and profitability.

Customized solutions are fundamental for your business. That is why you better rely on a partner with a proven track record. Our longstanding experience is your best guarantee to achieve your goals.

ROLLING STOCK RANGE OF CABLES FOR ITALY

STANDARDS

Nexans is qualified :

- EN 50306 for low voltage cables with a double layer insulation and a multicore identification by colors.
- EN 50264-2 and EN 50264-3 for standard power cables
- EN50382 for silicone power cables



JUMPER CABLES

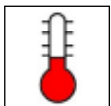
Designed to conform to the railway standards, Nexans proposes a complete offer of jumper cables. Halogen free and extra-flexibles they are used for power and data transmission between cars, chassis and bogie.

Specific models have been developed for ERTMS.

MULTIMEDIA & DATA TRANSMISSION

For multimedia and data transmission cables, Nexans cables meet different protocols :

- MVB (Multifunction Vehicle Bus) defined by IEC 61375 standard
- WTB (Wire Train Bus) defined by IEC 61375 standard
- Profibus
- Ethernet
- Etc.



NEXANS RANGE OF CABLES

Strictly halogen free, these wires combine the advantages of

- small size,
- lightweight,
- high chemical resistance
- and high mechanical properties.

They are recommended for installation in railway vehicles (locomotives, trains, trolleybuses, etc.).



LOW VOLTAGE CABLES - EN 50306 TYPE

A 125°C conductor temperature is allowed for a 20.000 hours cumulative working time.

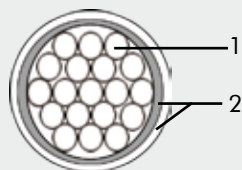
Cables with a special fire performance and a thin wall insulation dual layer.

Construction according to Alstom, AnsaldoBreda, Bombardier, Firema, etc. specifications and are IMQ qualified.



Example of single core cable: 2PG385

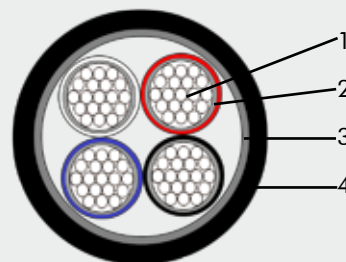
Operating temperature: -40°C to +105°C
 Operating voltage: 300 V
 Extra fuel resistant (IRM 902 + IRM 903)



- 1- Tin plated copper conductor
- 2- Halogen free insulation

Example of multicore cable: 2PG376

Operating temperature: -40°C to +105°C
 Operating voltage: 300 V
 Extra fuel resistant (IRM 902 + IRM 903)



- 1- n cores assembly, numbered 1 to n
- 2- Polyester tape
- 3- Tinned copper braid
- 4- Halogen free jacket

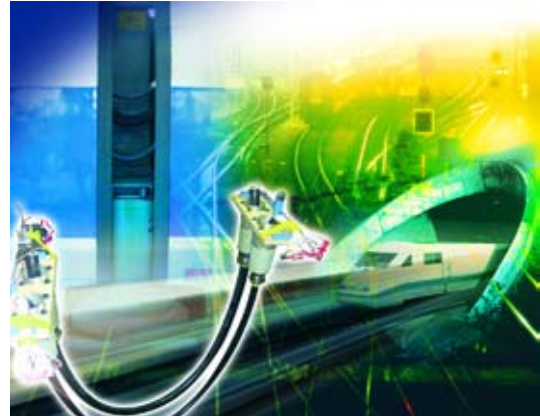
JUMPER CABLES

Main characteristics

Jumper cables are available in every type of construction according to customer specifications with :

- single and multicore (unscreened and unsheathed, and/or screened and sheathed),
- coaxial or data bus cables
- optical elements.

Very high flexibility level (class 6 stranded conductor)
 High reliability : flex life guarantee > 1 million cycles
 Excellent mechanical and chemical resistance
 Operating voltage : from 250 to 3000 volts (power).

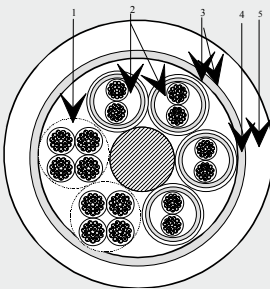


Flex life guarantee

In order to guarantee more than 1 million flex cycles, we have developed our own test equipment. Each jumper cable is tested to simulate all specific movements endured during operation. The complex movements are controlled on two horizontal and perpendicular axes and can be customized according to specific client needs.

Example: 2PB681

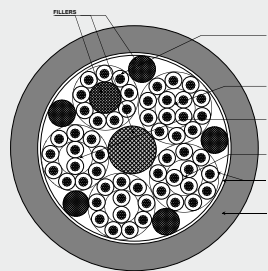
Operating temp.: -30°C to +105°C
 Operating volt.: 250 V (NFF63808)



- 1- 2 quads:
4 cores class 6 tinned copper
Halogen free insulation
- 2- 4 pairs:
2 cores class 6 tinned copper
Halogen free insulation
Tapes + braid + Halogen free jacket
- 3- Tapes
- 4- Screen : tinned copper braid
- 5- Halogen free jacket

Example: 2PH929

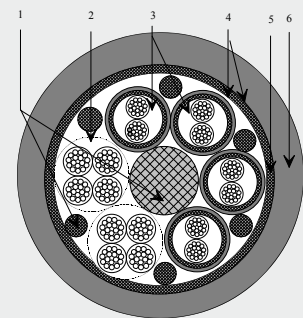
Operating temp.: -40°C to +105°C
 Operating voltage: 300 V



- 1- 46 singles conductors :
1.50mm² class 6 tin plated copper core + halogen free insulation
- 2- 1x(4x1.50mm²)
class 6 tin plated copper core + halogen free insulation + tape
- 3- 2x(1.50mm²)
class 6 tin plated copper core + halogen free insulation + tape
- 4- 1x(3x1.50mm²)
class 6 tin plated copper + halogen free insulation + tape
- 5- Tape
- 6- Halogen free jacket

Example: 2PI547

Operating temp.: -40°C to +105°C
 Operating voltage: 300 V



- 1- Fillers (optional)
- 2- 2 quads : 4 tinned copper cores,
1.50mm² class 6 + halogen free insulation
- 3- 4 pairs : 2 tinned copper cores class 6 + halogen free insulation + tapes + braid + halogen free jacket
- 4- Tapes
- 5- Screen : tinned copper braid
- 6- Halogen free jacket

MULTIMEDIA AND DATA TRANSMISSION

Application

Nexans produces a range of Multimedia and data transmission cables for on-board railway equipments. These halogen free cables are intended for applications where flame retardancy is required.

Advantages

This range of products meets the current needs of the market especially regarding the interoperability of trains and railway equipments throughout Europe (ERTMS).

These cables are adapted for data transmission up to 100 MHz, with performance close to that of 'CAT5' cables.

Nexans experience in the design of shielding technology enables us to propose all constructions with high EMC protection.

Connector compatibility

Nexans cables are compatible with :

- most available connectors for rolling stock,
- 'Field RJ 45' connectors,
- shielded connectors.



Supported protocols

WTB (Wire Train Bus)

- connectivity between coaches, Plug & Play concept
- coaches can be coupled and uncoupled while in service

MVB (Multifunction Vehicle Bus)

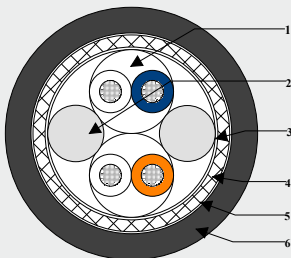
- connectivity within one car
- can be used within a set of cars (TGV)

MVB and WTB are a part of the TCN protocol defined in the IEC 61375.

Profibus, video on request, audio, etc.

Example: 2PC912

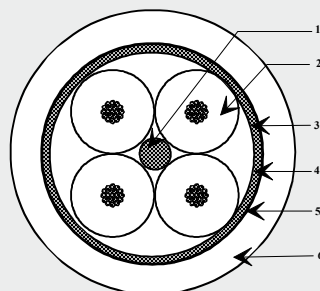
Operating temp.: -30°C to +70°C
 Operating volt.: 300 Vac max.
 Capacitance: 50.4 pF/m at 1 MHz
 Impedance: 100Ω ±15 between 1 to 6 MHz
 Propagation velocity : 65% nom.



- 1- 2 pairs: tinned copper conductors + PE insulation
- 2- Fillers
- 3- Aluminium foil
- 4- Screen : tinned copper braid
- 5- Separator tape
- 6- Cross linked LSZH jacket

Example: 2PE993

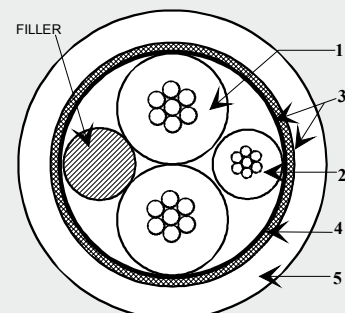
Operating temp.: -40°C to +85°C
 Capacitance: 46 pF/m between cores at 1KHz
 Impedance: 120Ω ±10% between 0.50 to 2 MHz



- 1- 1 filler (optional)
- 2- 4 cores : 19x0.18 tinned copper core + Foam skin PE insulation
- 3- Tape
- 4- Screen : tape and tinned copper braid
- 5- Tape
- 6- Halogen free jacket

Example: 2PF860

Operating temp.: -30°C to +85°C
 Operating voltage: 300 V



- 1- 2 cores : Twinax 19x0.18mm tinned copper, 0.50mm² + foam polyolefin insulation
- 2- 1 core : 19x0.18mm tinned copper + halogen free insulation
- 3- Tapes
- 4- Screen : tinned copper braid
- 6- Halogen free jacket

POWER CABLES - EN 50264-2 AND EN 50264-3

A 120°C conductor temperature is allowed for a 20.000 hours cumulative working time.

The external sheath is oil and diesel oil resistant, ozone and UV resistant.

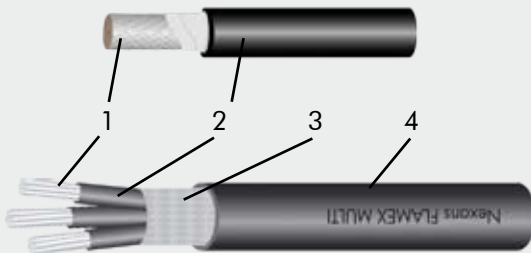
For standard wall power cables, use EN 50264-2.

For reduced thickness power cables, use EN 50264-3.



Example: EN 50264-2

Operating temp.: -40°C to +85°C



1- Conductor

Flexible stranded tinned copper class 5 according to IEC 60228 with optional separator tape

2- Insulation

Type EI 104, Cross-linked halogen free rubber, FLAMEX Z

3- Screen (for screened versions)

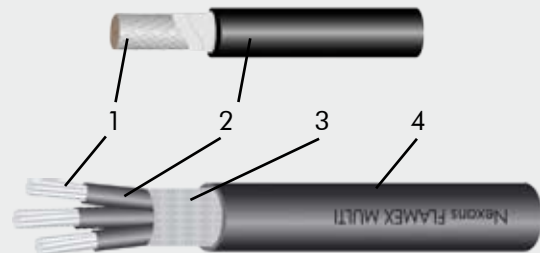
Tinned copper braid according to EN 50264-2-1 & 2-2 with separator tapes

4- Sheath (for sheathed versions)

Type EM 104 according to EN 50264-2, special cross-linked halogen free black rubber, FLAMEX Z

Example : EN 50264-3

Operating temp.: -30°C to +85°C



1- Conductor

Flexible stranded tinned copper class 5 according to IEC 60228 with optional separator tape

2- Insulation

Type EI 109 / EI 110, Cross-linked halogen free rubber, FLAMEX Z

3- Screen (for screened versions)

Tinned copper braid according to EN 50264-3-1 & 3-2 with separator tapes

4- Sheath (for sheathed versions)

Type EM 104 according to EN 50264-1, special cross-linked halogen free black rubber, FLAMEX Z

ROOF CABLES

- Medium and high voltage

- Rigid or flexible types

- Single core cables.

These cables are used for electrical links to transformer.



Example : Roof cable

Operating temp.: -25°C to +90°C

1- Conductor:

Rigid (class 2) or flexible (class 5) annealed plain copper

2- Semi-conducting layer:

Semi-conducting tapes + semi-conducting and cross-linked rubber

3- Insulation: Special cross-linked synthetic HV EPR rubber

4- Strippeable semi-conducting layer:

Semi-conducting cross-linked rubber + Semi-conducting tape

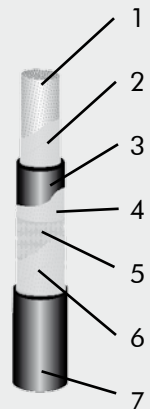
5- Metallic screen:

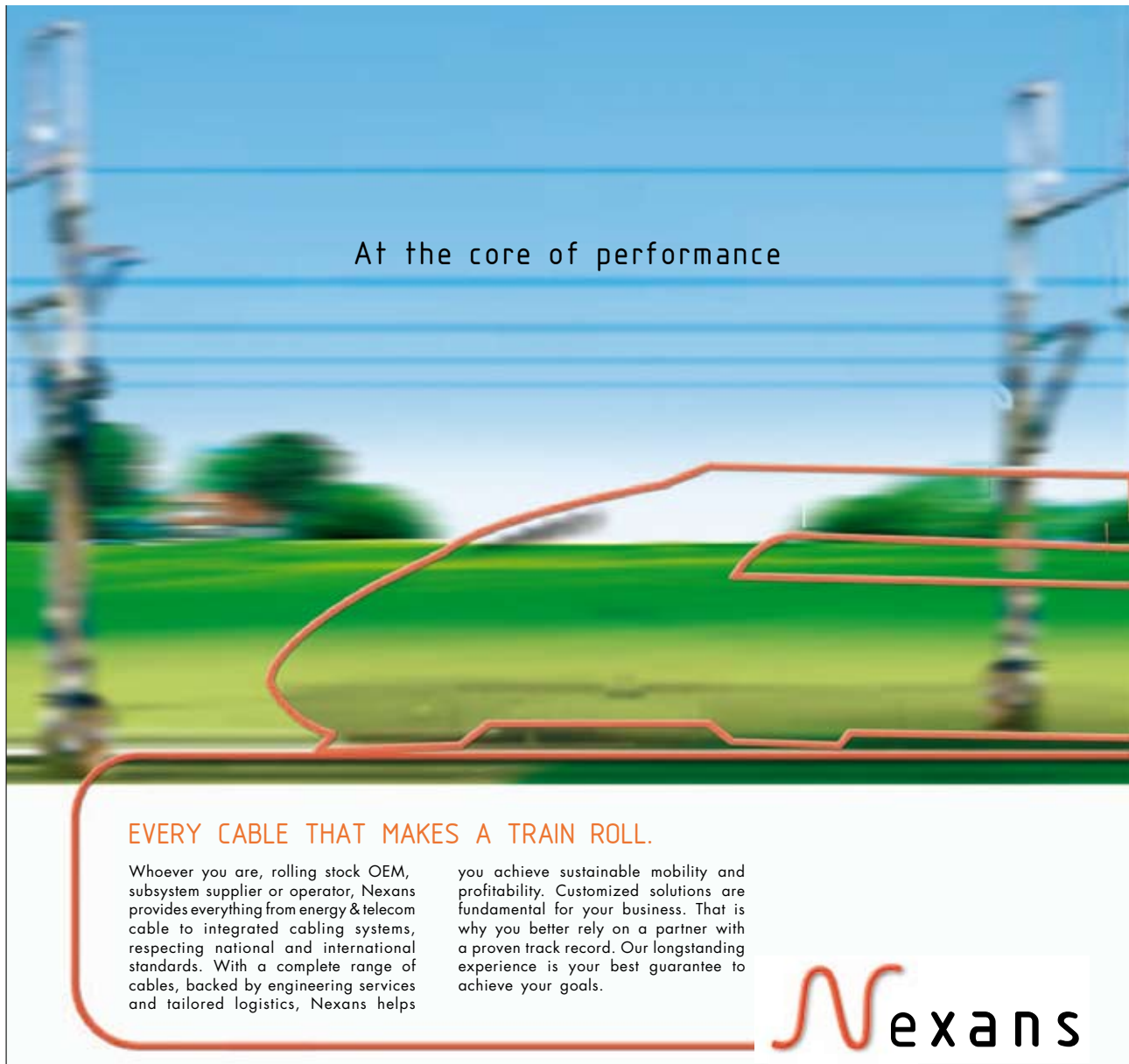
For rigid type : annealed plain copper tape

For flexible type : 40 copper wires

6- Textile tape

7-External sheath : based on black PVCmaterial






At the core of performance

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you achieve sustainable mobility and profitability. Customized solutions are fundamental for your business. That is why you better rely on a partner with a proven track record. Our longstanding experience is your best guarantee to achieve your goals.



About Nexans

With energy as the basis of its development, Nexans, the worldwide leader in the cable industry, offers an extensive range of cables and cabling systems. The Group is a global player in the infrastructure, industry, building and Local Area Network markets. Nexans addresses a series of market segments from energy, transport and telecom networks to shipbuilding, oil and gas, nuclear power, automotive, electronics, aeronautics, handling and automation.

With an industrial presence in more than 30 countries and commercial activities worldwide, Nexans employs 22,000 people and had sales in 2007 of 7.4 billion euros. Nexans is listed on Euronext Paris, compartment A. More information on <http://www.nexans.com/>

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