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**WANs/MANs/LANs for signaling  
and communications  
for headroom, longevity and quality of service**

# Nexans, worldwide leader in cables and cabling systems

As a global expert in cables and cabling systems, Nexans brings an extensive range of advanced copper and optical fiber solutions to three key sectors of the economy: **infrastructure, industry and buildings.**

Its cables and systems can be found in every area of people's lives, from rolling stock and railway infrastructure to telecommunications and energy networks, aeronautics, aerospace, automobiles,

petrochemicals, windmills, medical applications, etc.

The presence of Nexans in over 65 countries gives it a full mastery of both national and international standards. Its 10 Competence Centers and International Research Center work closely with customers to constantly improve its standard range of products and technologies and to develop customized, country and industry-specific solutions.



# WANs/MANs/LANs to assure your infrastructure growth

The efficiency of any train system is dependent on an infrastructure which provides reliable energy for rolling stock, and data and telecommunications for train management and control. Whether for a tramway, subway or high-speed train, operators are anxious to streamline costs, future-proof their systems, upgrade customer services, and assure a high level of public safety.

Nexans produces a wide range of energy and telecommunication cables and components specifically adapted to the various rail environments, many with enhanced fire-performance characteristics. We also give expert advice about network architecture and evolving standards, and can provide customized engineering, installation and maintenance worldwide.

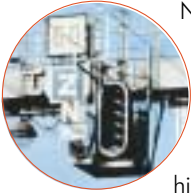
Train telecommunications are based on four network and transmission levels: Wide Area Networks which are trunk lines for long haul and main line functions (fiber links of +200 km); Metropolitan Area Networks for metros, light rail and intercity arrivals/departures (fiber links of -10 km); station range outdoor subscriber access cables (usually copper); and Local Area Networks which are also typically indoor copper and fibre based solutions used in station and mass transport control centers. It is essential that these four levels of transmission have optimum electrical homogeneity so that all critical functions and communications are secure from signal loss, reflection and interference.

To help you achieve this, Nexans offers advanced fiber and copper solutions for railway **WANs, MANs, and LANs**.

## WANs/MANs/LANs (Wide, Metropolitan and Local Area Networks) for signaling and communications



# WANs/MANs/LANs for signaling and communications: telecommunications security all down the line



Nexans is one of the few cable suppliers to serve each link in the railway infrastructure chain, ensuring uniform and high transmission quality. Not only do we supply singlemode fiber meeting international ITU-T G 652 specifications, we also provide advanced copper solutions, often going far beyond required standards, to guarantee headroom for future growth. Our custom-tailored, fire-performance cables assure the highest levels of public safety.

## This Nexans solution gives you:

- **Headroom and longevity** which guarantees the cost of installation, 85% of your network's value
- **High Quality of Service (QOS)** level for extremely reliable operations

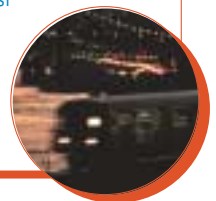
- **Homogeneity** throughout the network for transmission effectiveness
- **Low interference** from electromagnetic fields due to cable core symmetry
- **Constant innovation** to keep your system at the forefront
- **Conformity** to international standards
- **Special sheathing** for protection against rodent attack, lightning, aggressive chemicals, acids, ultraviolet light
- **A full range of cables & components** according to need: all-fiber, all copper, all fiber and copper connectivity products for LAN, optical-copper hybrids, with fiber used for point to point, and copper branched to inputs-outputs along the line
- **Enhanced public safety** through Halogen-Free, Fire-Retardant (HFFR) designs



## Nexans provides Deutsche Bahn with reliable long haul standbys





These paper-insulated copper cables have been used by DB for over 40 years now. Running over long distances,

they are used for a double function: telecommunications for telephone devices along the link, and also energy for control and power feeding. The cable comes in 42-50 pairs, which can even carry TV signals at railway crossings to a central control center. Unbeatable in cost terms, paper-insulated copper cables are also widely used by the UK, France and Austria.









# WAN/MAN/LAN cabling for signaling and communications

## WAN/MAN cabling

Product families	Product family names	Standards / Specs
<p><b>Copper multiquad cables, armoured, to be laid along trackside</b></p>  <p>Paper insulated long distance cable</p>	<p><b>Communication and PCM operation</b>  <b>Paper insulated long distance cables</b></p> <p><b>Plastic insulated, dry filled, long distance cables</b></p> <p><b>Communication</b>  <b>Paper insulated long distance cables</b></p>	<ul style="list-style-type: none"> <li>• Dlk1.01.106 y Paper insulated trunk cables</li> <li>• VDE 0816 part 3 Paper insulated VF cables</li> <li>• Dlk1.010.010 y Paper (HF)</li> <li>• Dlk1.010.011 y Paper (HF)</li> <li>• Dlk1.010.020 y Coaxial pairs</li> <li>• TNP 002/005</li> <li>• CT 227 Paper</li> <li>• CT 237 Paper</li> <li>• CT 295 Paper</li> <li>• CT 2005 Metallic and plastic sheathing and armouring</li> </ul>
<p><b>Copper multipair/multiquad cables, for outdoor plant</b></p>  <p>Twisted pairs or quads</p>	<p><b>Communication</b>  <b>Serie 88 copper local</b></p> <p><b>Serie 75 armoured cables</b></p> <p><b>Unit Twin</b></p> <p><b>EAPSP/EATST</b></p>	<ul style="list-style-type: none"> <li>• NFC 93526/93527</li> <li>• NFC 93526/93527</li> <li>• RT/E/PS/00015</li> <li>• RENFE E.T. 03.365.051.6</li> </ul>
<p><b>Enhanced multipair communication cables</b></p>  <p>Copper Plus cable</p>	<p><b>Communication cables</b>  <b>Premium copper cables (up to 30MHz)</b></p> <p><b>Copper Plus cables (up to 100MHz)</b></p>	<ul style="list-style-type: none"> <li>• EN50173, TIA/EIA 568-B.2, EN 50406-2, EN 50407-1</li> <li>• EN50173, TIA/EIA 568-B.2, EN 50406-2, EN 50407-1</li> </ul>
<p><b>Copper multipair/multiquad cables, for indoor plant</b></p>  <p>PVC indoor cable</p>	<p><b>PVC indoor cables</b>  <b>HFFR-LS indoor cables</b></p>	<ul style="list-style-type: none"> <li>• IEC or EN relevant fire behaviour</li> </ul>

## LAN cabling

Product families	Product family names	Standards / Specs
<b>Unshielded systems UTP</b> 	<b>LANmark-6 snap-in connector</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; EN50173; TIA/EIA 568-B.2</li> </ul>
	<b>LANmark-6 cable</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; ISO/IEC 61156-5; EN50173; TIA/EIA 568-B.2</li> </ul>
	<b>LANmark-6 patch cord</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; EN50173; TIA/EIA 568-B.2</li> </ul>
	<b>LANmark-5 snap-in connector</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; EN50173; TIA/EIA 568-B.2</li> </ul>
	<b>LANmark-5 cable</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; EN50173; TIA/EIA 568-B.2</li> </ul>
	<b>LANmark-5 patch cord</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; EN50173; TIA/EIA 568-B.2</li> </ul>
	<b>Accessories</b>	
<b>Screened systems F-FTP</b> 	<b>LANmark-6 snap-in connector</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; EN50173; TIA/EIA 568-B.2</li> </ul>
	<b>LANmark-6 cable</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; ISO/IEC 61156-5; EN50173; TIA/EIA 568-B.2</li> </ul>
	<b>LANmark-6 patch cord</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; EN50173; TIA/EIA 568-B.2</li> </ul>
	<b>LANmark-5 snap-in connector</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; EN50173; TIA/EIA 568-B.2</li> </ul>
	<b>LANmark-5 cable</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; EN50173; TIA/EIA 568-B.2</li> </ul>
	<b>LANmark-5 patch cord</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; EN50173; TIA/EIA 568-B.2</li> </ul>
	<b>Accessories</b>	

Product families	Product family names	Standards / Specs
<b>Shielded systems STP</b>   	<b>LANmark-7 GG45 snap-in connector</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; EN50173</li> </ul>
	<b>LANmark-7 cable</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; ISO/IEC 61156-5; EN50173</li> </ul>
	<b>LANmark-7 GG45 patch cord</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; EN50173</li> </ul>
	<b>Accessories</b>	
<b>Fibre systems</b>   	<b>LANmark-OF snap-in adapter</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; EN50173; TIA/EIA 568-B.2</li> </ul>
	<b>LANmark-OF cable</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; EN50173; TIA/EIA 568-B.2</li> </ul>
	<b>LANmark-OF patch cord &amp; pigtail</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; EN50173; TIA/EIA 568-B.2</li> </ul>
	<b>LANmark-OF patch panel</b>	<ul style="list-style-type: none"> <li>• ISO/IEC 11801:2002; EN50173; TIA/EIA 568-B.2</li> </ul>
	<b>Accessories</b>	



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[www.nexans.com](http://www.nexans.com)

[www.nexans.com/e-service](http://www.nexans.com/e-service)

[marcom.info@nexans.com](mailto:marcom.info@nexans.com)

Nexans S.A. - 16, rue de Monceau - 75008 Paris - France  
Tel.: +33 (0)1 56 69 84 00 - Fax: +33 (0)1 56 69 84 84