RAIL INFRASTRUCTURE CABLE SOLUTIONS

FOR A SAFELY CONNECTED JOURNEY

Nexans

BRINGS ENERGY TO LIFE

Rail provides an answer to sustainable travel and land movement of people and goods across New Zealand. It ensures energy-efficient suburban commuting in our major cities with regular high-speed travel, and economical freight transport across regions.

Nexans New Zealand is a highly-experienced market supplier, who have provided cables and conductors used for major projects such as the Auckland Electrification and the Wellington Metro Upgrade Program.

With our global capabilities within the wider Nexans group, we manufacture and supply many specialty cables and products needed for Traction, Tunnels and Signalling, assuring operational performance and safety by working closely with our team to meet our customers' requirements.

What you can expect from Nexans New Zealand

- Comprehensive range of high-quality specialty products for Traction, Signalling and Infrastructure.
- Long-life cables for cost savings and lower maintenance as well as easy upgrades
- Quality and compliance with national and international standards
- Fire-performance cables to protect equipment and people
- Expertise and service throughout life-cycle, from conception to replacement/ recycling

Railway networks probably contain the broadest range of cabling solutions, covering a lot of different functions:

- Catenary lines and their contact wires to power the train traction.
- High voltage and medium voltage power feeder.
- High, medium and low voltage distribution networks, as well as earthing/grounding connections.
- Signalling and control cables.
- Supervision and Communication cables with twisted pairs, coaxial or optical elements, LAN cables and radiating cables.

Every cable family is linked to bundles of technical requirements based upon local or international standards, simultaneously fulfilling safety functionalities, like for instance fire behaviour.

SIGNALLING & CONTROL CABLES

Signalling cables over a wide range of control command and signalling applications from plain electrical interconnect of line-side equipment to LF analog and HF digital data transmission up to 90 kHz.

Domains covered by this kind of cabling are:

Signals

Level crossings

Axle counters

Balises

Signalling cables interconnect electronic interlocks with signals and level crossings, supervision and control signals, axle counters and the speed and traffic control balises.

These cables are classified in 2 categories: multicore cables and twisted pairs.

FIRE RATED CABLES

Safety requirements for tunnels, stations and public areas can rely on both Nexans fire rated Alsecure® cables and LSZH Envirolex® cables.

Alsecure® fire rated cables are designed to preserve circuit integrity of essential services and electrical equipment during fire. Alsecure® has a MICA tape layer that acts as a protective barrier during fire. These cables meet the WS52W fire test in accordance with AS/NZS 3013.

Envirolex® cables are made with low smoke zero halogen (LSZH) materials, making them PVC free and engineered to reduce environmental impact under fire conditions.

Both Alsecure® and Envirolex® cables reduce emissions of harmful gases that may hinder an evacuation process during fire. They have been designed with safety in mind whilst retaining excellent mechanical and electrical properties and have a Red List Free Declare status by the International Living Future Institute, making them environmentally friendly products for sustainable buildings.

Indoor and tunnel cablings are submitted to more stringent requirements concerning their behaviour in a fire. Envirolex® and Alsecure® standards can be summarised by the following table:

Description	AS/NZS/ISO
Gas and Smoke	AS/NZS 60754
Smoke Density	AS/NZS 61034
Flame retardant Single cable test	AS/NZS 60332-1
Fire Retardant bunched cables test	AS/NZS 60332-3-23/-24/-25
Fire resistance Single cable test (Alsecure®)	AS/NZS 60331-1/-2/-3

**For more information on fire rating of cable testing, contact a Nexans representative.*

TRACTION CABLES & COMPONENTS

1

HIGH VOLTAGE (HV) CABLES

Underground cables generally feed the substations for traction power feeding. They deliver alternative currents with voltages up to 48 kV/66 kV.

Application examples:

Long-distance transmission networks power supply to the catenaries. To AS/NZS 1429.2.

2

MEDIUM VOLTAGE (MV) CABLES

Medium-voltage cables are deployed to feed the transformer stations of the standard power distribution network designed to power all lighting, security, supervision, ventilation or information systems of the railroad networks, typically with operation voltages between 11-33 kV.

Application examples:

Power supply to the catenary. To AS/NZS 1429.1.

3

MEDIUM-VOLTAGE POWER DISTRIBUTION CABLES

Application examples:

Medium-voltage distribution near the stations or underground tunnels. To AS/NZS 1429.1.

4

CONTACT WIRE

Contact wires for catenary lines, made out of pure or alloyed copper, are based generally on national standards that integrate the type of engines, the frequency of the power feeding network and the climatic conditions.

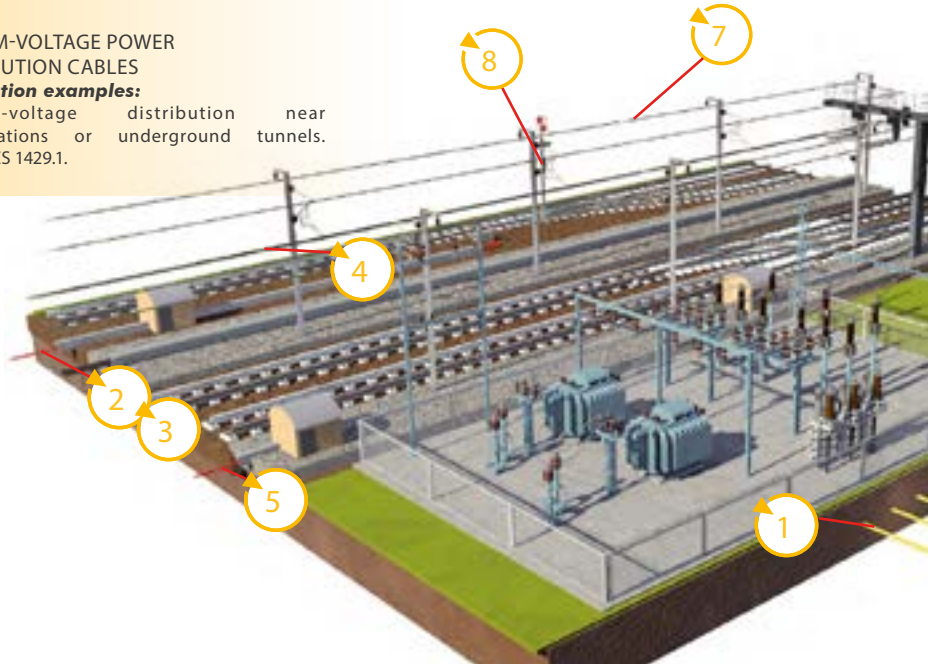
And the mechanical requirements linked with the vibrations induced by the pantographs, has steadily increased proportionally with the historical development of the high-speed traffic.

The whole product family include:

- Feeding wires in continuous contact with the pantograph, according to European EN50149 – Auckland (107mm^2) or British Standard BS23.1970 – Wellington (161mm^2).
- Suspension cables maintaining the contact wires.
- Earthing cables.

Application examples:

Traction power (train, tramway systems) through the pantog
To EN50149 – Auckland (107
BS23.1970 – Wellington (16



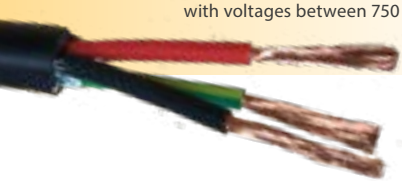
5

LOW-VOLTAGE POWER CABLES

Application examples:

1. To distribute current from the transformer stations to all lighting, security, supervision or information systems of the railroad networks, typically with standard voltage 0.6/kV, and distribution within the stations.

2. To feed Direct Current (DC) powered regional or local public transport systems, with voltages between 750 and 1500V.



6

EARTH CABLES

Application examples:

Grounding for electrical sys
parts to guarantee the
electrical systems and humar

7

CATENARY CABLES

Application examples:

Provides power to contact wire.

8

RISERS/DROPPERS

Product Description	Product Code
AL MV48 1C 630^# 25.4 CAS MDPE SC	XOZA32AQMX1CXAA
AL MV48 1C 630^# 5.8 ALPE MDPE SC	XOYA32WNMX1CXAA
CU AERIAL 77mm 7/3.75	ACUT63AA001AAAA
AL AERIAL HORNET 19/3.25 CVD 1.9	BAAJ31AA001CXAA
AL AERIAL HORNET 19/3.25 HFS CVD 1.9	BAAJ31HF001CXAA
CU 37x 2.5mm² JUMPER	ACUC67AA001AAAA
HDCU (SOL) TROLLEY WIRE 107mm²	ACUT78AA001AAAA
HDCU (SOL) TROLLEY WIRE 161mm²	ACUT81AA001AAAA
TBHDCu DROPPER-HD 9.6mm2	ACUJ97AA001AAAA
CU DROPPER-SD 52.7mm2	ACUC68AA001AAAA

**For datasheets, please contact your Nexans Representative*

SIGNALLING CABLES & COMPONENTS

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

1 AXLE COUNTER CABLES

Application examples:

Special cables for repatriating signals, axle counters.

2 BA…

…ples:

…linking between control …n tags.

3 CONTROL CABLES

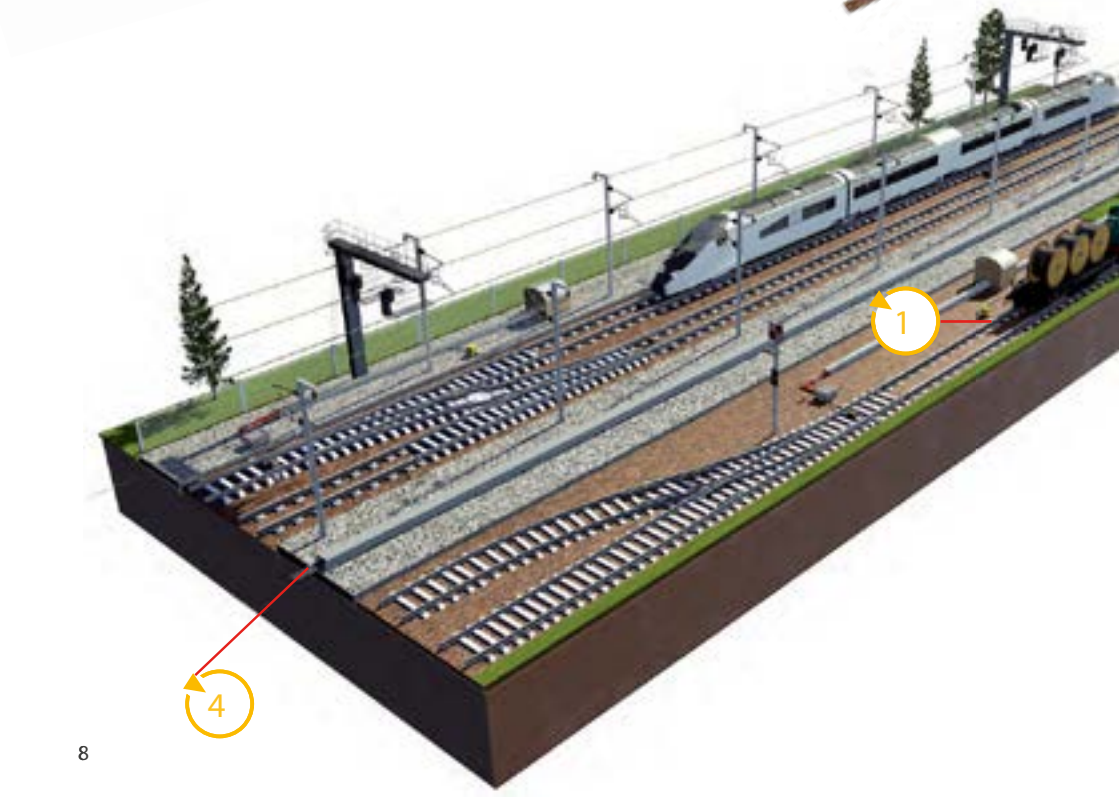
Application examples:

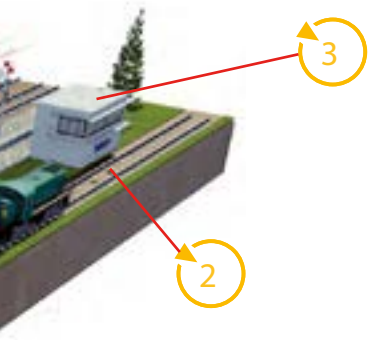
Linking of control between various devices.

4 LOW VOLTAGE POWER CABLES

Application examples:

Low-voltage distribution for installations.





Product Description	Product Code
INSTRM'N CS 1.5 X 2 PR PVCHDPE	IEC184AN002CXAA
CU BALISE-NZR 4/1.53 CS STA	NEX-10178681
CU CNTRL-NZR 2.5 X 4	HAHP07AA004CXWW
CU CNTRL-NZR 1.5(7w) X 4	HAHP05AA004CXWW
CU DISTRN-NZR XL 2X 25^ 3.2	XEDP17AA002CXJB
CU TPS-NZR 2X 4 LT BU 1.8	DACP07AA002BFHF
CU TPS-NZR 2X 6 RD 1.8	DACP09AA002JBHF
CU CNTRL-NZR 2.5 X 7	BPAP07AA007CXWW
CU CNTRL-NZR 1.5(7w) X 12	BPAP05AA012CXWW
CU CNTRL-NZR 1.5(7w) X 19	BPAP05AA019CXWW
CU CNTRL-NZR 1.5(7w) X 30	BPAP05AA030CXWW
CU CNTRL-NZR 1.5(7w) X 50	BPAP05AA050CXWW
CU CNTRL-NZR 1.5(7w) X 7	BPAP05AA007CXWW
CU DISTRN-NZR 3X 4	FAHP09AA003CXRJ
CU DISTRN-USC XL 2X 16	DEHP15AA002CXAC
CU DISTRN-USC XL 2X 25^	DEHP16AA002CXAC
CU DISTRN-USC XL 2X 35^	DEHP38AA002CXAC

**For datasheets, please contact your Nexans Representative*

STATION & TUNNEL POWER CABLES & COMPONENTS

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

1

RADIATING COAXIAL CABLES

The growing demand for wireless services obliges all railways and telecom operators to deploy solutions to cover also difficult areas like buildings and tunnels. In order to transmit various kinds of radio signals in tunnels, the most adapted broadband solution is radiating cable also sometimes known as "Leaky" cable. Based upon a pair of concentric conductors, they are used for the radiowave transmission of voice and data up to high frequencies (up to 2600 MHz). Thanks to apertures in the outer conductor, they allow to transmit a broad range of radio frequencies in confined environment like tunnels and buildings. They have been successfully deployed for GSM, GSM-R, tetrapol systems, as well as all the radio frequencies of emergency services (fire brigade, police etc).

Application examples:

dio transmission in confined spaces (tunnels and buildings) for all frequency ranges (the FM band up to ′600 MHz).

2

ESISTANT MEDIUM-VOLTAGE LES

*e retardant or fire-resistant distribution MV cables. *For product codes and datasheets, please contact your Nexans Representative*

3

ALSECURE® - FIRE-RATED LOW-VOLTAGE CABLES

Fire rated cables for low-voltage distribution in and around stations, fire resistant version rity systems (video, ventilation, d emergency lighting).

4

ENVIROLEX® - LSZH LOW-VOLTAGE CABLES

Application examples:

Low-voltage distribution for installations (lighting).

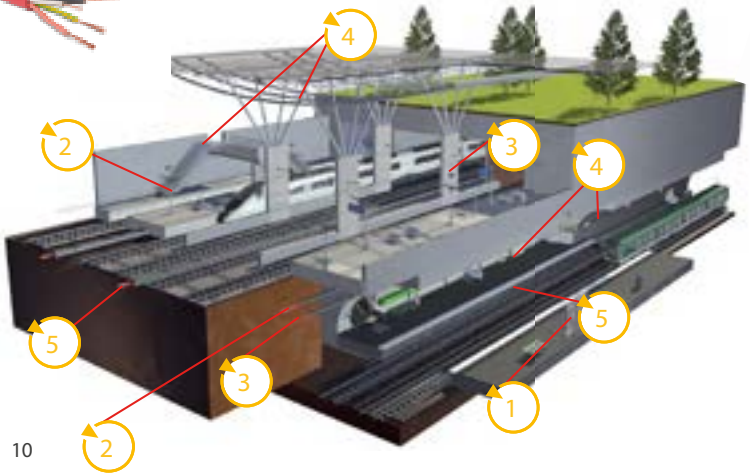
5

EARTH CABLES

Application examples:

Grounding for electrical metal parts to guarantee the electrical systems ar

**For product codes and data your Nexans Representative*



ALSECURE®

Product Description	Product Code
CU ALSEC RHE-1 2X 2.5+E 110	PDGP07AA002JBAA
CU ALSEC RHE-1 2X 2.5+E 110	PDGP07AA002JBAA
CU ALSEC RHE-1 4X 2.5+E 110	PDGP07AA004JBAA
CU ALSEC RHE-1 FLEX 4X10+E 110	PDGX01AA004JBAA
CU ALSEC RHE-1 FLEX 4X16+E 110	PDGX02AA004JBAA
CU ALSEC RHE-1 FLEX 4X16+E 110	PDGX02AA004JBAA
CU ALSEC RHE-1 FLEX 4X25+E 110	PDGX03AA004JBAA
CU ALSEC RHE-1 FLEX 4X25+E 110	PDGX03AA004JBAA
CU ALSEC RHE-1 FLEX 4X35+E 110	PDGX04AA004JBAA
CU ALSEC RHE-1 FLEX 4X50+16E 110	PDGX05AA004JBAA
CU ALSEC RHE-1 FLEX 1x 16 110	PFLX02AA001JBNA
CU ALSEC RHE-1 FLEX 1x 25 110	PFLX03AA001JBNA
CU ALSEC RHE-1 FLEX 1x 35 110	PFLX04AA001JBNA
CU ALSEC RHE-1 FLEX 1x 50 110	PFLX05AA001JBNA
CU ALSEC RHE-1 FLEX 1x 70 110	PFLX06AA001JBNA
CU ALSEC RHE-1 FLEX 1x 95 110	PFLX07AA001JBNA
CU ALSEC RHE-1 FLEX 1x120 110	PFLE87AA001JBNA
CU ALSEC RHE-1 FLEX 1x150 110	PFLE88AA001JBNA
CU ALSEC RHE-1 FLEX 1x185 110	PFLE89AA001JBNA
CU ALSEC RHE-1 FLEX 1x240 110	PFLE90AA001JBNA
CU ALSEC RHE-1 FLEX 1x300 110	PFLE91AA001JBNA
CU ALSEC RHE-1 FLEX 1x400 110	PFLE92AA001JBNA
CU ALSEC RHE-1 FLEX 1x400 110	PFLE92AA001JBNA
CU ALSEC RHE-1 FLEX 1x500 110	PFLE93AA001JBNA
CU ALSEC RHE-1 FLEX 1x630 110	PFLE94AA001JBNA

**For datasheets, please contact your Nexans Representative*

ENVIROLEX®

Product Description	Product Code
CU ENVIRO RHE-1-FLEX 2X1.5+E OG	DTHR04HF002OMHF
CU ENVIRO RHE-1-FLEX 2X2.5+E OG	DTHR05HF002OMHF
CU ENVIRO RHE-1-FLEX 2X4+2.5E OG	DTHR06HF002OMHF
CU ENVIRO RHE-1-FLEX 2X6+2.5E OG	DTHR07HF002OMHF
CU ENVIRO RHE-1-FLEX 3X1.5+E OG	FTHR04HF003OMRJ
CU ENVIRO RHE-1-FLEX 3X2.5+E OG	FTHR05HF003OMRJ
CU ENVIRO RHE-1-FLEX 3X4+2.5E OG	FTHR06HF003OMRJ
CU ENVIRO RHE-1-FLEX 3X6+2.5E OG	FTHR07HF003OMRJ
CU ENVIRO RHE-1-FLEX 3X10+4E OG	FTHX01HF003OMRJ
CU ENVIRO RHE-1-FLEX 4X1.5+E OG	HTHR04HF004OMEM
CU ENVIRO RHE-1-FLEX 4X2.5+E OG	HTHR05HF004OMEM
CU ENVIRO RHE-1-FLEX 4X4+2.5E OG	HTHR06HF004OMEM
CU ENVIRO RHE-1-FLEX 4X6+2.5E OG	HTHR07HF004OMEM
CU ENVIRO RHE-1-FLEX 4X10+4E OG	HTHX01HF004OMEM
CU ENVIRO RHE-1-FLEX 4X16+6E OG	HTHX02HF004OMEM
CU ENVIRO RHE-1-FLEX 4X25+6E OG	HTHX03HF004OMEM
CU ENVIRO RHE-1-FLEX 4X35+10E OG	HTHX04HF004OMEM
CU ENVIRO RHE-1-FLEX 16 BK 110	BZHX02AA001CXNA
CU ENVIRO RHE-1-FLEX 16 GNYE 110	BZHX02AA001HTNA
CU ENVIRO RHE-1-FLEX 25 BK 110	BZHX03AA001CXNA
CU ENVIRO RHE-1-FLEX 25 GNYE 110	BZHX03AA001HTNA
CU ENVIRO RHE-1-FLEX 35 BK 110	BZHX04AA001CXNA
CU ENVIRO RHE-1-FLEX 35 GNYE 110	BZHX04AA001HTNA
CU ENVIRO RHE-1-FLEX 50 BK 110	BZHX05AA001CXNA
CU ENVIRO RHE-1-FLEX 50 GNYE 110	BZHX05AA001HTNA
CU ENVIRO RHE-1-FLEX 70 BK 110	BZHX06AA001CXNA
CU ENVIRO RHE-1-FLEX 70 GNYE 110	BZHX06AA001HTNA
CU ENVIRO RHE-1-FLEX 95 BK 110	BZHX07AA001CXNA
CU ENVIRO RHE-1-FLEX 95 GNYE 110	BZHX07AA001HTNA
CU ENVIRO RHE-1-FLEX 120 BK 110	BZHE87AA001CXNA
CU ENVIRO RHE-1-FLEX 120 GNYE 110	BZHE87AA001HTNA
CU ENVIRO RHE-1-FLEX 150 BK 110	BZHE88AA001CXNA
CU ENVIRO RHE-1-FLEX 185 BK 110	BZHE89AA001CXNA
CU ENVIRO RHE-1-FLEX 240 BK 110	BZHE90AA001CXNA
CU ENVIRO RHE-1-FLEX 300 BK 110	BZHE91AA001CXNA
CU ENVIRO RHE-1-FLEX 400 BK 110	BZHE92AA001CXNA
CU ENVIRO RHE-1-FLEX 500 BK 110	BZHE93AA001CXNA
CU ENVIRO RHE-1-FLEX 630 BK 110	BZHE94AA001CXNA

Local Expertise,

global capabilities.

As New Zealand's largest power cable supplier, Nexans New Zealand manufactures a wide range of quality electrical cable. We have a proven track record of providing quality cable solutions to customers throughout New Zealand and the Pacific.

We are a vibrant and dynamic company who supply to all sectors of industry: building and construction, utilities, industrial, infrastructure projects and more.

Our company thrives on repeat business and is relentless in its endeavour to protect its reputation for delivering high quality products which our customers rely on.

We are committed to investing in our people, our customers and our communities.

Call 0508 NEXANS or visit www.nexans.co.nz

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