Established in 2008

For Railway Market

OPTIMAL CONNECTIVITY

Connecting your Solutions

2024

برنامج المحتوى الوطني

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OPTIMAL CONNECTIVITY LLC

OPTIMAL CONNECTIVITY LLC is certified according to ISO 9001:2015, ISO 14000:2015 and ISO 45001:2018




Designed for Railway Applications

HARTING connectors are known for the core competence in connectivity for power, signal and control applications on board trains and at track site. HARTING's connectivity technology provides complete connector and installation concepts for transportation infrastructures compliant with EN 45545, IEC 61076-3-124, EN 50155.

HARTING's product quality and installation technology has set global standards with connectors, such as the Han® series. For this reason HARTING products are found in nearly every train and in every coach.

HPR Power Connectors

The power supply to for example transformers and electric motors is designed to be pluggable for pre-assembled installation, testing and for highly reliable quick system replacement. Han® HPR EasyCon series offer a modular design and an innovative shielding connection concept. Han® HPR Train Power Line provides a plug-in solution for all connection points for high-current contacts carrying Han® HC Modular power transmission, which can transmit up to 800A and up to 5.1kV DC / 3kV AC with up to 25kV surge voltage proof.

Connectors for Inter-Car Coupling

For Data, signals and power:

- Internal train bus (MVB) with the Han-Quintax® module or Han® Megabit module
- Video and other data transmission using Han® Gigabit modules
- Low voltage supply and digital signals with Han DD® modules
- Transmission of mid-range power with Han® EE modules
- Transmission of higher power loads (batteries, air condition units) with modules for power levels: 40A to 200A (UIC 552)
- Han® Eco product range complies with standards IEC 61948 and EN 45545-2 HL3 and is fire-resistant according to UL94 V.

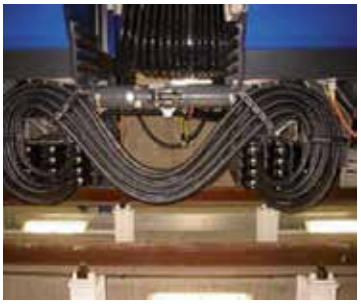
Hoods and housings from the Han® HPR series in size 24 B are providing reliable IP69 protection against environmental factors and adverse weather conditions.

Fiberoptic Cable Assemblies

Using HARTING connectors and cables OPTIMAL CONNECTIVITY is manufacturing cable assemblies designed for use in mostly challenging environments like underfloor, inter-car junctions or at bogies.

We are addressing with our Solution Specific Product Designs the most typical requirements like resistance against heat, fire, mechanical stress, vibration, bending, water, humidity, oils and other fluids. Thanks to short manufacturing times and stock levels we can address request for assembly production within days.





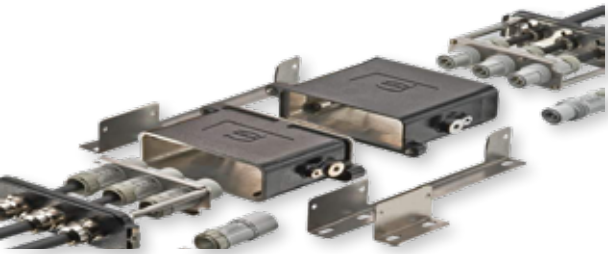

Custom-Design Assemblies

Manufacturing of custom-designed cable assemblies for inter-car couplings is part of success story. For these projects we create technical drawings, data packages and procurement services in close cooperation with the customer.

Traceability of material, QC, job cards, environmental tests and 100% test procedures are our strengths.

OPTIMAL CONNECTIVITY has production and logistics sites in UAE for local manufacturing and storage which guarantees shortest delivery times and a minimum of logistic cost.

Han® HPR EasyCon and HPR Slim



HARTING Han® EasyCon and HPR Slim Connector Assemblies are a family of hood and housing options designed for Han-Modular® contacts featuring a two-part hood and two-part housing design, plus visible internal wiring for hassle-free assembly. EasyCon comes with a flexible contact arrangement, including six different Han-Modular modules, providing design flexibility and combining power, signal, and data transmission into one HC connector.

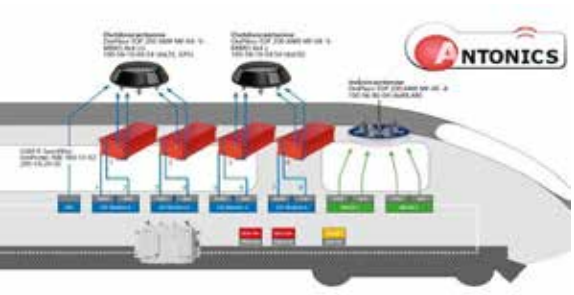
The HARTING HPR Slim series is optimized for up to 4x Han HC Modular 250 contacts and offers a compact, flat form factor to accommodate height-restricted areas. Separate mounting panels enable a variety of installation orientations, eliminating the need to customize design profiles for specific applications. The HPR 22 Slim connectors are stainless steel and IP66 / IP68 / IP69K rated, making them ideal for rail transportation, oil and gas, and power generation and transmission applications.

HARTING Han EasyCon and HPR Slim Connector Assemblies operate in a temperature range of -40°C to +125°C.

Han® ES/ES Press/ESS

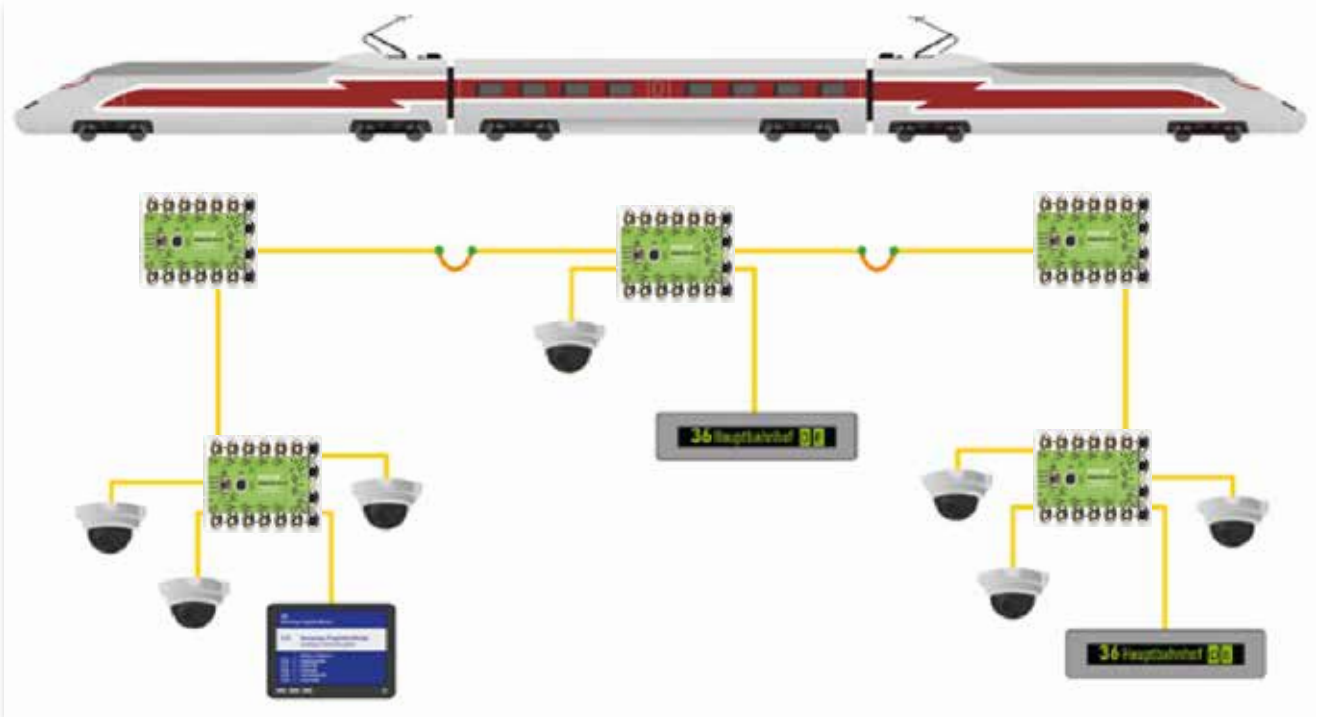
Manufacturing of custom-designed panels and junction boxes for connecting sensors and other on-board electrical and electronic devices using a variety of different Han connector types.

- Rapid termination technology without tools for a time saving assembly and for optimal process reliability
- Han® ES Press: Easy bridging functionality of contacts by means of plug-in jumpers directly on the connector
- Han® ES Press: Fast realization of potential multiplication as
- well as star and delta bridges
- Han® ESS: two termination points per contact.



Inter-Car and Intra-Car Connectivity

HARTING connectors, cables and assemblies are key elements for a life-long, secure and seamless backbone network operation between all cars of a train and their on-board electronic assets.

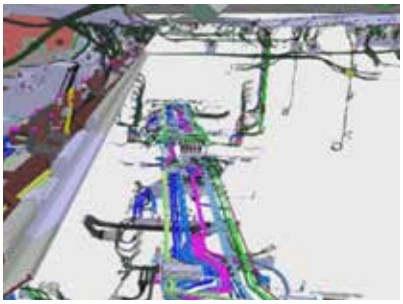


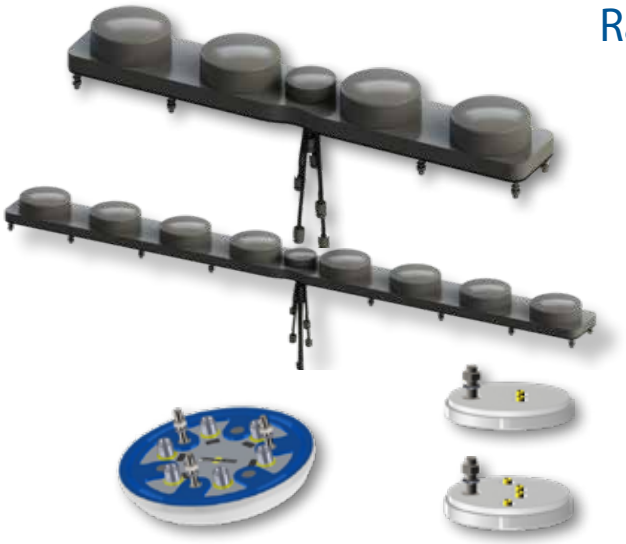
Gigabit Data Backbone Network

Reliable high-speed data backbones are built with HARTING connectors, cables and assemblies and TRONTEQ managed Ethernet switches. Further components are 5G routers, rooftop antennas and RF cable assemblies which provide wireless connectivity through mobile networks to train operators control infrastructure.

Using EN 50155-certifyed ROQSTAR M12 Managed Gigabit Ethernet Switches to enable consistently reliable connections on board of trains, metros and other rail vehicles.
Designed for public transport vehicles, the devices are light weight, compact and extremely robust.

Due to integrated bypass relays, a fail-safe daisy-chain topology can be used, sharing the backbone traffic with all devices or the preferred star topology. All printed circuit boards (PCB) are protected against condensing humidity and dust.

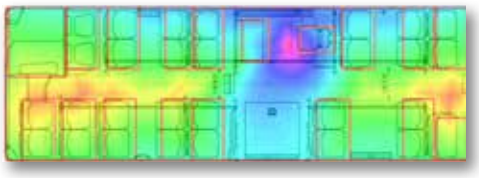


Railway Approved Antenna Systems EN45545

For Public Transport approved 5G antennas ANTONICS is the leading manufacturer of highly sophisticated EN 45545 antenna systems like OmPlecs and X-Plecs model. Based on latest technologies ANTONICS designs mostly planar antennas for mobile system solutions on trains and buses with 4x4, 6x6, 8x8, 10x10, 12x12 and 16x16 MiMo LTE/5G networks.

WiFi coverage is provided by a wide selection 2x2, 3x3, 4x4, 8x8 and 16x16 WiFi antenna systems with highest integration of multi-band radiator with horizontal, vertical and cross-polarized pattern.
Using antennas from ANTONICS and OmProCab-5, EN45545 approved cables we are able to create innovative communication solutions for train operators, passengers and telecoms alike.

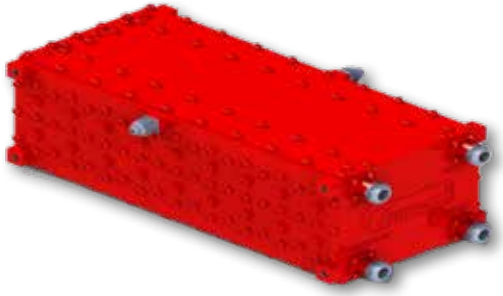


Approvals of ANTONICS Antennas

- High speed test 770km/h EN 14067
- High voltage test 25 kV AC - DIN EN 50124 / DIN EN 50122-1
- High voltage test 3 kV DC - DIN EN 50124 / DIN EN 50122-2
- Temperature test - IEC 60068-2
- Cold up to-60° - DIN EN 50155
- Dry heat up to +85° - DIN EN 50155
- Humid heat, cyclic - DIN EN 50155
- Mechanical Test - DIN EN 50155
- Vibration bond band - IEC 61373
- Shock, half sine - IEC 61373
- Salt mist spray, constant - ISO 9227
- Protection against water jets - ISO 20653
- High-pressure steam jet ISO 20653
- Fire behavior EN 45545-2
- Electromagnetic compatibility EN50121-3-2

Railway Approved WiFi 6E Access Points

Our WiFi6E Access Points provide multi-band MiMo On-board technology using triple band WiFi 6E which provides up to 5 Gbps data rates, PoE and 8x8 MiMo spacial diversity for best user performance.



Interference Filters

Spurious interferences can be originating from various sources like WiFi access points, 5G modems, GNSS amplifiers and other transmitting devices.

OPTIMAL CONNECTIVITY offers Cavity, SAW, BAW and Dielectric band-pass filters for various frequency bands, like for 433MHz, 868MHz, 1575 MHz, 2400 MHz, 5800MHz. Unwanted inference intermodulation frequencies, are canceled, compliant to EN 45545-2, R22-24.

Railway Approved 4G/5G/IoT Gateways

Passengera's certified communication systems combine latest technologies with highest reliability to connect devices in railway, public transportation and enable wireless communication all over. The modular Infotainment platform keeps passengers entertained and informed throughout their journey.
From movies, kids' games, multimedia content, PIS, RTI, destination based content and more, Passengera is ready to be cast either on built-in screens or passengers' own devices.

Passengera's Infotainment solution integrates communication and follow standards like ISO, EN50155, EN 45545, E-mark, ECE-R118, IPxPT and CAN-Bus ISO 11898.

Railway Approved Ethernet Switches

TRONTEQ's managed railway switches series are designed for mobile communication in public transportation (e.g. in trains, metros, trams and buses). These switches are the communication backbone and connect all on-board systems from Fleet, ATC, AC, cameras, routers etc.

Signal & Data Connectors

OPTIMAL CONNECTIVITY and HARTING provide the system components for IP networks, consisting of routers, switches, access points, antennas, connectors and system cables.

Our solutions allow error-less data and signal transfer, EMC and EMI protection, easy and fast termination HARTING Ha-VIS preLink® for RJ45 and for M12 connectors are one of the key advantages of HARTING data connectors according to ISO/IEC 61918, with the advantages of generic cabling in accordance with ISO/IEC 24702 and EN50173-3.

The preLink® cabling system has been designed from performance level 100 Mbps Cat.5 for D-coded preLink® connectors up to 10 Gbps Cat.6A or Cat.7 is applicable for all Ethernet-based applications.

M12 PushPull connectors are also available in A, D, and X-coded versions and suitable for up to 10 GB for the X-coded version. M12 PushPull are featuring 360° shielding.

OPTIMAL CONNECTIVITY provides standard lengths cable assemblies, we also offer manufacturing of customized cabling solutions for applications in rugged environment, power distribution, control rooms etc. using also Ethernet Cat.6 or Cat.7 data cable with RJ45, M8, M12, M23 and other Han® connectors.




Installation & Maintenance - Commissioning

OPTIMAL CONNECTIVITY is recognized for its excellence in deployment of solutions and its commissioning of on-site systems.

Projects are defined as a multi-step process with the goal to test a system to verify that it functions in accordance with the design intent.

In projects, we begin with pre-design (HLD) phase and continue through all project phases like Low Level Design (LLD), Implementation and Operation until the final acceptance is achieved.

Pre-design phase determines design objectives, operational intent, the commissioning scope and budget for the project.
In the main design phase all requirements are translated into Low Level Design documents.

Implementation phase starts when the system is manufactured, inspected, installed and tested in accordance with the LLD documents. In this phase we execute FAT and SAT.

Operation phase begins when installed equipment and systems are tested to verify and ensure that they perform in accordance with the design intent comprising of individual equipment tests and finally integrated system tests.

O&M personnel is involved in training and all testing, hence they can gain experience with the deployed systems.

Management of spare parts, technically skilled staff and constant monitoring are keys to successful operation in the field.

How to find our office:

GPS coordinates: N 25° 10′ 53.00″ E 55° 22′ 46.00″

Makani Code: 40R CN 36679 86045

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Edition 2024-01
Design: www.oc2me.com