Studer Cables
Connected to HARTING

Rolling Stock Solutions

Railway cables for highest requirements

- Cables acc. to EN standards
- Cables acc. to NFPA standards
- Cables acc. to VÖV standards
- Global references
- Halogen-free & low fire load
- Best in aging resistance

Swiss made

A railway cable needs to fulfill various requirements

All Studer Cables railway cables are non-fire-propagating, have low smoke density and are halogen-free. In the event of a fire, no corrosive gases are released, and the railway cable has a low toxicity index. With the low fire load density, the combustion heat is reduced to a minimum.

Thanks to its high media resistance (oils, fuels, alkalis and acids), UV and ozone resistance and abrasion resistance, Studer Cables railway cable can withstand even the most extreme atmospheric influences and installation conditions. Depending on the cable type and standard, the temperature resilience is between −40 °C and +120 °C. In the case of special market requirements the range can even be from −50 °C to +125 °C. An additional important feature is the corona and partial discharge resistance for traction applications with high electrical loads and elevated frequencies.

Properties

- Flame retardant
- Halogen-free
- Low smoke
- Low toxicity
- Excellent electrical properties
- Excellent mechanical properties
- Resistance to chemicals
- Cold resistance
- Excellent UV-Resistance
- Long service life

Compounds for BETAtrans® cables

We already define the outstanding properties of Studer cables during development. Our core competence is to design commodity halogen-free polymers.

Weight optimized and highly flexible cables

Similar to automotive construction, the space available for the installation and laying of cables is becoming increasingly cramped due to the increasing number of electric and electronic systems. Studer's weight optimized cables contributes to the solution of this problem. Despite thin insulation wall thicknesses and reduced outer diameters they have very good dielectric properties without diminished safety and reliability. The BETA-beam cross-linking of proven material combinations makes this possible.

Increasingly more communication systems and electrical signals in trains and locomotives level up the risk of mutual electromagnetic interference. With the use of various shielding techniques and special materials, we give our cable solutions optimal EMC properties. As a result, Studer Cables signal, control and energy cables can be installed in even the most limited space without the risk of mutual interference.

Practice-oriented cable solutions according to international standards

We develop innovative plastic compounds and cables in modern laboratories, focusing on improvements to insulating properties, higher temperature tolerances, longer lifetimes, easy handling and enhanced safety features. Our laboratories for flammability testing, HF technology and optical measurement technology safeguard our quality standards while at the same time promoting innovation. Our products are tested in our in-house test laboratory and meet relevant international standards.

European (EN) standards

EN 45545-2	Fire protection on railway vehicles
EN 50264	Cables with crosslinked medium-wall elastomeric insulation
EN 50288	Cables in analog and digital communication and control
EN 50306	Cables with thin-wall elastomeric insulation

International standards

IEC 62995	Rules for installation of rolling stock cabling
IEC 60216	Thermal endurance properties and long term aging
IEC 60287	Calculation of current ratings
IEC 60332	Fire safety test standards
IEC 60811	Common test methods for materials
IEC 61156	Cables for digital communications
NFPA 130	Fixed guideway transit and passenger rail systems
RTE 49610	Cables on board Swiss passenger trains
UIC 895	Technical leaflet by International Union of Railways

Studer Cables **BETA**trans® ENX product portfolio

Our **BETA**trans® ENX product portfolio has been developed and tested according to the most important standards for all possible uses on and in Rolling Stock vehicles. In addition, together with our customers, we develop project-specific cable solutions from planning to delivery.

U_0/U = 300/500 V
BETAtrans® GKW-ENX EN 50306-2 300 V M
BETAtrans® GKW-ENX C-flex EN 50306-3 300 V MM S
BETAtrans® GKW-ENX flex EN 50306-4 1P 300 V MM
BETAtrans® GKW-ENX flex EN 50306-4 1E 300 V MM
BETAtrans® GKW-ENX C-flex EN 50306-4 3P 300 V MM S
BETAtrans® GKW-ENX C-flex EN 50306-4 3E 300 V MM S
BETAtrans® GKW-ENX C-flex EN 50306-4 5P 300 V MM S
BETAtrans® GKW-ENX C-flex EN 50306-4 5E 300 V MM S
BETAtrans® GKW-ENX Cx EN 50306-4 7P 300 V MM S
BETAtrans® GKW-ENX Cx EN 50306-4 7E 300 V MM S
BETAtrans® GKW-ENX RI FE180 300 V M
BETAtrans® GKW-ENX RI FE180 flex 300 V MM
BETAtrans® GKW-ENX RI FE180 C-flex 300 V MM S
BETAtrans® UIC-ENX C-flex FM 300 V MM S

U_0/U = 600/1000 V
BETAtrans® GKW-ENX R 600 V M
BETAtrans® GKW-ENX flex R 600 V MM 105
BETAtrans® GKW-ENX C-flex R 600 V MM S 105
BETAtrans® 3 GKW-ENX EN 50264-3-1 600 V M
BETAtrans® 3 GKW-ENX FE180 600 V M
BETAtrans® 3 GKW-ENX flex EN 50264-3-2 600 V MM
BETAtrans® 3 GKW-ENX FE180 flex 600 V MM
BETAtrans® 3 GKW-ENX C-flex EN 50264-3-2 600 V MM S
BETAtrans® 3 GKW-ENX FE180 C-flex 600 V MM S
BETAtrans® UIC-ENX C-flex 600 V MM S

U_0/U = 1800/3000 V
BETAtrans® 4 GKW-ENX EN 50264-3-1 1800 V M
BETAtrans® 4 GKW-ENX R 1800 V M (≤16 mm²)
BETAtrans® 4 GKW-ENX R FE180 1800 V M
BETAtrans® 4 GKW-ENX R FER180 1800 V M
BETAtrans® 4 GKW-ENX flex R 1800 V MM
BETAtrans® 4 GKW-ENX C-flex R 1800 V MM S
BETAtrans® 4 GKW-ENX FE180 C-flex R 1800 V MM S
BETAtrans® 4 GKW-ENX FM 1800 V
BETAtrans® 4 GKW-ENX flex FM 1800 V
BETAtrans® 4 GKW-ENX C-flex FM 1800 V

U_0/U = 3600/6000 V
BETAtrans® 9 GKW-ENX EN 50264-3-1 3600 V MM
BETAtrans® 9 GKW-ENX R 3600 V M
BETAtrans® 9 GKW-ENX flex R 3600 V MM
BETAtrans® 9 GKW-ENX C-flex R 3600 V MM S
BETAtrans® 9 GKW-ENX FM 3600 V
BETAtrans® 9 GKW-ENX flex FM 3600 V
BETAtrans® 9 GKW-ENX C-flex FM 3600 V

Ethernet U_0 = 125 V
BETAtrans® DATA-ENX C-flex 100 Ohm CAT5/5e
BETAtrans® DATA-ENX C-flex 120 Ohm MVB
BETAtrans® DATA-ENX C-flex 100 Ohm CAT5/5e FOAM
BETAtrans® DATA-ENX C-flex 100 Ohm CAT5/5e X-FOAM
BETAtrans® DATA-ENX C-flex 100 Ohm GigaCAT 7 FOAM
BETAtrans® DATA-ENX C-flex 100 Ohm SilverCAT 7 FOAM

IRIS – International quality standard for the railway industry

Studer Cables AG is certified according to IRIS. IRIS defines the requirements of the rail industry and fills the gaps of ISO 9001:2000. It is driving topics which were neglected in the past (e. g. configuration and obsolescence management). In addition, Studer Cables AG is certified according to the most important standards.

Challenging space and weight constraints are met with the high-end BETAtrans® GKW-ENX technology

With each new generation of vehicles, the requirements on system available and the equipment level of electrical and electronic assemblies for power distribution, data transmission and control increase. The absolute safety and reliability of the connection technology is prerequisite.

Studer Cables railway cables are used for protected installation in indoor and outdoor areas of railway vehicles, buses and other transport means. This is especially true in places where optimum adaptability and installation friendliness are required and the cable volume has a crucial role to play.

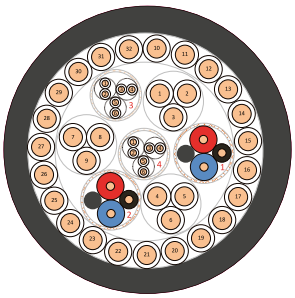
The Studer Cables products stand for a comprehensive product portfolio which meets the most rigorous requirements as specified by manufacturers of railway vehicles. Studer Cables offers single and multi-core control cables, auxiliary operating and main power cables as well as data bus, coaxial and hybrid cables.

Customized BETAtrans® hybrid cables – a specialty of Studer Cables AG

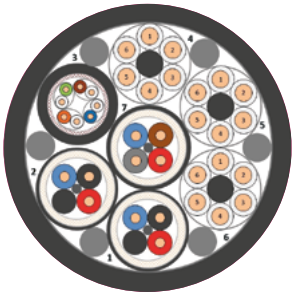
This cables are intended for protected laying inside and outside of rail vehicles and other vehicles. They are suitable for wiring switchgear and distributors. The cable jacket offers additional protection against the effects of mineral oil, liquid fuels and ozone. Due to the additional UV stabilization of the cable sheath, those cables are also suitable for roof top installation.

Examples of **BETA**trans® hybrid cables:

BETAtrans® GKW-ENX flex R black
32 × (1 × 2.5) C + 2 × (3 × 2 × 0.5) +
2 × (2 × 0.5 + 0.5 mm²) C 120 Ω MVB



BETAtrans® GKW-ENX flex R black
3 × (6 × 1.5) + 1 × (4 × (2 × AWG 26/7)St) C
100 Ω GigaCAT 7 +
2 × (2 × 0.5 + 1 × 0.5 mm²) C 120 Ω MVB +
1 × (4 × 0.5) C 120 Ω MVB



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