

High-Speed, Hybrid, Multi-Protocol Ready

HySpeedVision: All-in-One Performance – Single-Cable Connectivity

INDUSTRIAL CAMERA SOLUTIONS





For OEMs and system integrators, industrial camera systems are at the core of high-performance automation and inspection processes. Requirements for performance, robustness, and integration capability are continuously increasing: high data rates and bandwidths for real-time image transmission, reliable operation in harsh industrial environments, and flexible connection solutions for complex system architectures are now essential.

Rugged Cable Solutions for Robotics and Drag Chain Applications

Compact camera applications require production-ready cabling concepts with tight bending radii, high torsional strength, and support for current protocols such as GMSL3 or FPD-Link. System components must not only be precisely matched – they must also be seamlessly, quickly, and cost-effectively integrated.

Your Partner for Reliable Connectivity

Rosenberger supports OEMs and integrators with a broad portfolio of high-performance coaxial and differential connectivity solutions – ensuring maximum system reliability, easy scalability, and long-term future-proof technology.

Benefits



Maximum System Reliability

Reliable signal and power transmission even under extreme conditions – ensuring maximum operational safety for camera applications



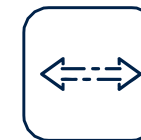
High Data Rates & Bandwidths

Ideally suited for modern high-speed protocols such as GMSL3, FPD-Link, and more – delivering razor-sharp images in real time



Robust in Motion and Under Stress

Cables with high torsional and bending strength ensure long-lasting performance in dynamic environments such as robotics or tracking systems



Extended Transmission Distances

Connectivity solutions for stable data transfer over long distances – without loss of quality



Versatile Connection Options

Coaxial and differential connectors – flexibly combinable and tailored to your requirements



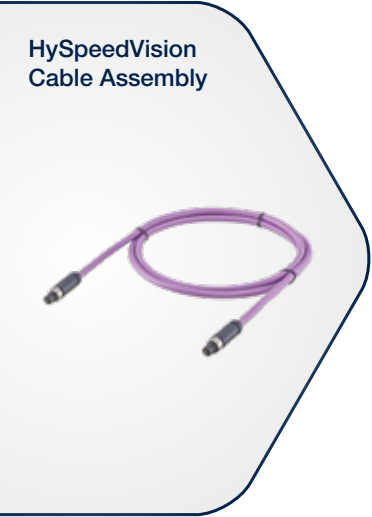
Modularity and System Integration

Compatible with diverse system architectures – enabling fast and secure integration into existing infrastructures



Future-Proof & Scalable

A strong technology foundation for upcoming requirements in industrial image processing and automation



Cable Assembly

Cable type	Hybrid cable
Connector size	M12
Torsional capability	±180° over 1 m; durability: 1 million cycles
Drag chain suitability	Bending radius: 15 × outer diameter durability: 1 million cycles
Attenuation @ 3GHz	<1.89 dB /m
Outer diameter	8.5 mm
Single bend radius	42.5 mm
Shielding	Shielded

Specification

Signal pins	2
Power pins	4
Frequency	up to 3,5 GHz
Data rate	up to 12 Gbps
Transmission length*)	12 Gbps up to 12 m (GMSL3)
Protocols	GMSL1 - 3, FPD Link, APIX®, ASA Motion Link, USB, further protocols on request
Power	1.5 A at 24 V on power pins
IP protection	IP67
Locking mechanism	Push-pull
Environmental temperature	Range -20 °C to +70 °C

* Depending on the cable type and protocol

HySpeedVision –
The Compact Solution for Demanding Camera Connections

With HySpeedVision, Rosenberger introduces a powerful solution for industrial camera applications where maximum speed, reliability, and flexibility are essential. The system leverages the GMSL3 protocol as an established market standard for high-speed data transmission – ideal for modern image processing.

Whether robotic arms, dynamic drag chain applications, or compact manufacturing environments – HySpeedVision is designed for highly dynamic use.

The single-cable technology enables efficient and space-saving camera connections to central hubs – combining power and data transmission in one step.

Benefits

High Transmission Performance with GMSL3

Supports the GMSL3 protocol for high-resolution image data in real time – ideal for demanding machine vision applications

Single-Cable Technology for Data and Power

Reduces cabling effort and saves space – one cable is sufficient for both video signal and power supply

Designed for Dynamic Applications

Robust construction for moving systems such as robotic arms and drag chains – with high torsional and bending strength

Compact, Space-Saving Integration

Perfectly suited for confined installation spaces in modern production or testing environments

Industrial-Grade Reliability

Engineered for long-term use in harsh conditions – resistant to vibration, temperature fluctuations, and EMC influences

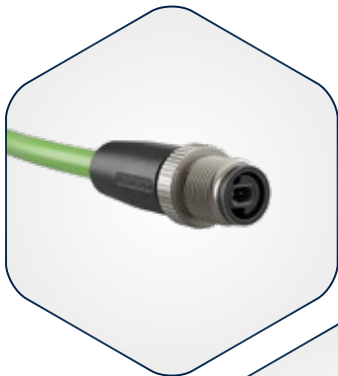
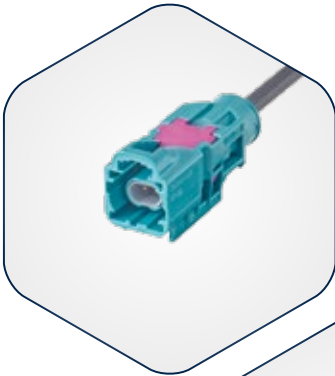
Portfolio Differential Data Connectivity – Multipin

	HySpeedVision High-Speed Vision Hybrid	RosenbergerHSD® High-Speed Data Connector	Circular Connectors Data and power transmission in harsh environments
Signal pins	2	up to 4	4 - 12
Power pins	4	up to 8	2 - 4 (hybrid)
Frequency range	up to 3.5 GHz	up to 6 GHz	up to 600 MHz
Data rate	up to 12 Gbps	up to 8 Gbps	up to 10 Gbps (x-coded)
Transmission length*	12 Gbps up to 12 m (GMSL3)	12 Gbps up to 10 m (APIX 3)	
Protocols	GMSL1 - 3, FPD-Link, APIX®, ASA Motion Link, USB, further protocols on request	GMSL1 - 3, FPD-Link, APIX®, Ethernet, USB, etc.	EtherCAT, EtherNet/IP, Profibus DP, Profinet, etc.
Power	1.5 A at 24 V on power pins	5 A at 60 V on power pins	90 W (PoE, x-coded)
Shielding	Shielded	Shielded / unshielded	Shielded / unshielded
Protection class	IP67	IPX9K	IP67
Locking mechanism	Push-pull	Snap-in with locking	Screw, push-pull
Size	M12	Single, double, quad Comprehensive product portfolio available	M8 / M12



*Depending on cable type and protocol

	H-MTD® High-Speed Modular Twisted-Pair Data	Single Pair Ethernet (SPE) – IEC 63171-7 ED2 SPE Industrial – IP20	SPE Industrial – IP67	SPE Hybrid
Signal pins	up to 6 x 2	2	2	2
Power pins	up to 6 (MQS)	PoDL	PoDL	up to 4
Frequency range	up to 20 GHz	up to 4 GHz (IEC 63171 Class E)	up to 4 GHz (IEC 63171 Class E)	up to 4 GHz (IEC 63171 Class E)
Data rate	up to 56 Gbps	up to 1 Gbps (IEC 63171 Class C) up to 5 Gbps (IEC 63171 Class E)	up to 1 Gbps (IEC 63171 Class C) up to 5 Gbps (IEC 63171 Class E)	up to 1 Gbps (IEC 63171 Class C) up to 5 Gbps (IEC 63171 Class E)
Transmission length*	12 Gbps up to 6 m (GMSL3)	1 Gbps up to 40 m (1000BASE-T1) 10 Mbps up to 1000 m (10BASE-T1L)	1 Gbps up to 40 m (1000BASE-T1) 10 Mbps up to 1000 m (10BASE-T1L)	1 Gbps up to 40 m (1000BASE-T1) 10 Mbps up to 1000 m (10BASE-T1L)
Protocols	GMSL1 - 3, FPD-Link, APIX®, Ethernet, USB, etc.	10BASE-T1L, 10BASE-T1S, 100BASE-T1, 1000BASE-T1, etc.	10BASE-T1L, 10BASE-T1S, 100BASE-T1, 1000BASE-T1, etc.	10BASE-T1L, 10BASE-T1S, 100BASE-T1, 1000BASE-T1, etc.
Power	4 A at 60 V	52 W (PoDL)	52 W (PoDL)	8 - 16 A up to 600 V
Shielding	Shielded / unshielded	Shielded	Shielded	Shielded
Protection class	IPX9K	IP20	IP67	IP67
Locking mechanism	Snap-in with locking	Snap-in	Screw	Screw
Size	Single, double, quad, six Comprehensive product portfolio	Rectangular, single, six		M12



*Depending on cable type and protocol

	HFM® High-Speed FAKRA mini	FAKRA FAchKReis Automobil	Standard Coaxial RF-Connectors for coaxial data / power transmission
Coaxial contacts	up to 6	up to 4	up to 4
Frequency range	up to 20 GHz	up to 6 GHz	up to 40 GHz
Data rate	up to 40 Gbps	up to 12 Gbps	Product range: > 20,000 connector variants (HD-BNC, BNC, SMP, P-SMP, SMA, etc.)
Transmission length*	13.5 Gbps up to 9 m (FPD-Link IV)	10.8 Gbps up to 9 m (FPD-Link IV)	
Protocols	GMSL3, FPD-Link III, MIPI® A-PHY SM , etc.	GMSL2, FPD-Link III, etc.	CoaXPress, etc.
Shielding	Shielded	Shielded	Shielded
Protection class	IPX9K	IPX9K	IP67 (pending on series)
Locking mechanism	Snap-in with locking	Snap-in with locking	Push-pull, screw (pending on series)
Size	Single, double, quad, six	Single, double, quad	typ. single
Drag-chain / robot cable version available	yes	yes	yes
	Comprehensive product portfolio available	Comprehensive product portfolio available	Comprehensive product portfolio available



*Depending on cable type and protocol

Cable Variety for Every Application –
from Dynamic to Static

Whether highly dynamic movements in robotics and drag chains, flexible machine cabling, or fixed installations – Rosenberger offers the right RF cable solution for every industrial camera integration.

Our three proven cable types – for torsion and drag chain applications, classic energy chain routing, or static installations – stand out with application-specific features such as high cycle resistance, low attenuation, and compact designs.

The overview provides a quick guide to identify which cable best meets your technical requirements – powerful, robust, and integration-friendly.



Rugged Cable Solutions for Robotics & Drag Chains

Coaxial Cables

	Drag chain / robot	Drag chain	Static
Cable type / designation	Similar to RG316 (CG: 02)	Similar RG58 (CG: E4)	RTK031 (CG: M4)
Torsional capability	±180° over 1 m durability: 2 million cycles		
Drag chain suitability	Bending radius: 15 × outer diameter durability: 2 million cycles	Bending radius: 15 × outer diameter durability: 5 million cycles	
Attenuation @ 3 GHz	<1.89 dB /m	<1.28 dB /m	<1.15 dB /m
Outer diameter	3.1 mm	5.6 mm	3.3 mm
Single bend radius	15 mm	2 mm	16 mm

A wide range of additional variants is available

Differential Cables

Rosenberger offers a comprehensive portfolio of high-quality differential cables for a wide range of connector types and applications. Our cable solutions ensure optimal electrical performance, signal integrity, and reliability – even under demanding conditions.

For customized solutions or further information, please feel free to contact us.



Rosenberger is a leading provider of impedance-controlled and optical connectivity solutions as well as system components for high-frequency, high-voltage, fiber optic, and electronic technologies.

Rosenberger, a renowned global electronics manufacturer, is synonymous with cutting-edge technologies, exceptional development capabilities, and uncompromising quality. Headquartered in Germany, the Rosenberger Group maintains a worldwide presence through sales and manufacturing facilities, specialized in delivering a diverse array of standardized and tailor-made connectivity solutions across high-frequency, high-voltage, and fiber optic technologies.

Our solutions ensure the reliable transmission of signals, data, and power in the most demanding applications. Trusted by leading high-tech companies in mobile and telecommunications, industrial measurement technology, automotive electronics, medical and industrial electronics, data centers, and aerospace, Rosenberger's products stand out for their precision and unwavering reliability. The custom CNC machining division produces precision parts for various sectors, including automotive, commercial vehicles, shipbuilding, and traditional mechanical and plant engineering.

With a rich history dating back to its founding in 1958, Rosenberger has remained steadfast in its commitment to innovation and highest quality. As a family-owned business, we take pride in our enduring values and our dedication to our customers and employees alike.

Rosenberger maintains its position at the forefront of industry leadership with a dedicated team of approximately 15,000 talented individuals.

To learn more, visit www.rosenberger.com



Website

For more information refer to our website:
www.rosenberger.com/machinevision

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