

Li-Fi Optical Wireless Communication

Li-Fi (Light Fidelity) is an innovative wireless communication technology that transmits data using light. A high-speed modulator switches an LED or laser diode on and off faster than the human eye can perceive, while a photodetector captures these pulses and converts them into electrical signals. Requiring a direct line of sight between transmitter and receiver, Fraunhofer IPMS Li-Fi delivers deterministic, low-latency, highly reliable links that can bridge industrial real-time buses (PROFINET, PROFIsafe, EtherCAT, FSoE, EtherNet/IP™, Ethernet POWERLINK, EtherCAT) over a robust wireless connection, outperforming Wi-Fi and 5G in latency and reliability, and in some solutions also in data rate.

Advantages of our Li-Fi technology

- Fast wireless data transmission
- Real-time communication
- High data security due to need for line of sight
- No interferences



QUALITY

High-quality IP-Core design for accelerated product integration with lowest integration risk



INNOVATION

High-quality IP-Core design for accelerated product integration with lowest integration risk



SAFETY & SECURITY

Functional safety and security design in accordance with IEC 61508, ISO 21434 standards



CUSTOMIZATION

Tailored integration solutions for specific customer applications and industries



SUPPORT

Expert support for efficient integration and maintenance



CUSTOMER BASE

More than 200 trusted global licensees across various industries and applications

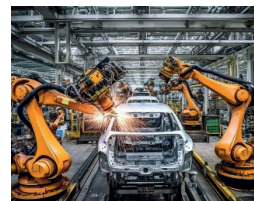
Contact

Stephan Kube
+49 351 8823 - 1211
stephan.kube@ipms.fraunhofer.de

Fraunhofer Institute for Photonic
Microsystems IPMS
Maria-Reiche-Str. 2
01109 Dresden, Germany

www.ipms.fraunhofer.de

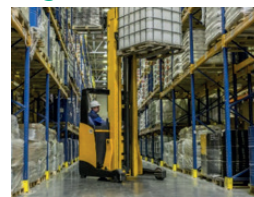
Automation



Energy



Logistics



Telecommunication



Space



Naval



Our Li-Fi Technology Portfolio

Our Li-Fi product portfolio offers a range of solutions tailored to different needs in latency, maximum range, and data rate. Whether you're designing for ultra-low latency control systems, high-throughput data links, or long-range communication, we have the right technology for your application.

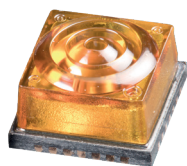
					
 Range	mm – 10 cm	mm - 10 cm	cm – 200 m	cm – 30 m	cm – m
 Data Rate	up to 10 Gbps	up to 10 Gbps	>1 Gbps	up to 1 Gbps	10 & 100 Mbps
	Point-to-Point	Point-to-Point	Point-to-Point	Point-to-Point, Point-to-Multipoint	Point-to-Point
	High Performance, Real-Time, Short Range Data Link	High-Speed, Short Range Optocoupler	High Performance, Real-Time Data Link	Robust, Versatile Data Link	Low-Cost, Real-Time Data Link

					
 Range	mm – 2 m	up to 300m	up to multiple cm	up to 1m	up to 100 m
 Data Rate	Up to 20 Mbps	≥1 Gbps	Multi Gbps	up to 10 Mbps	up to 1 Gbps
	Point-to-Point	Point-to-Point	Point-to-Point	Point-to-Point	Point-to- Multipoint
	Ultra-Low Power Data Link	Directional High Performance Data Link	Contactless Off-Axis Rotary Data Link	Power & Data Dual Link	High Performance Underwater Link

Selected Li-Fi TechnologyNodes

GigaDock®

5x5 mm optical transceiver for near filed high-speed communication up to 10 Gbps for industrial communication e.g. on rotating axis.



TinySpot

Ultra-compact, ultra-low power transceiver for near field communication up to 2 m as IRDA replacement or ultra low power sensor nodes.



PoL (Power of Light)

Simultaneous data and energy transfer for near-field data communication for self-sufficient sensor-nodes in industry, retail, logistics.

