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# Mbryonics

Ireland · founded 2014 · mbryonics.com

**10**
PRODUCTS

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as of 20 August 2026

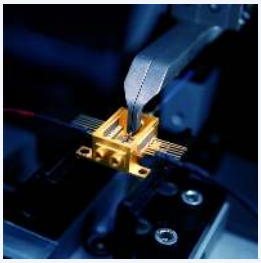
ABOUT

# Mbryonics

Mbryonics is Ireland's largest photonics company, founded in Galway in 2014. The company positions itself as a world leader in photonic satellite communications hardware, software, and technology, describing its mission as "building the internet in space." It develops fully integrated, end-to-end optical solutions spanning on-board laser communication terminals, AI-optimized network management software, and optical ground infrastructure, serving telecommunications, Earth observation, and science missions. The company's product line includes STARCOM, an optical communications terminal for inter-satellite and Earth-to-satellite links supporting data rates up to 400 Gbps and link distances beyond 80,000 km; STARGATE, an optical ground station designed to bridge space-based and terrestrial networks with greatly increased data throughput; STARLIGHT, a fiber-coupled digital optical modem and amplifier system operating in the 1550nm C-band for LEO, MEO, and GEO inter-satellite and space-to-ground links; TeraBIX, a radiation-hardened silicon photonic transceiver for high-speed, low-power payload and chip-to-chip optical interconnects; and PakPIC, a high-precision packaging service for photonic integrated circuits, including fiber array attachment, flip-chip bonding, and design consultancy for space-qualified hardware. Mbryonics employs more than 100 people, including over 30 PhD holders, and has built a portfolio of 35 patent applications and trade secrets alongside an EU-trademarked brand with international applications pending. Its customers and collaborators include organizations such as DARPA, ESA, SpeQtral, Airbus Defence and Space, and Viasat, reflecting its role as a deep-tech supplier of harsh-environment fiber optic and photonic components for the space, aerospace, a

PRODUCTS

# Product catalogue



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## PAKPIC

PAKPIC offers high-precision packaging services for photonic integrated circuits (PICs), including fibre array attachment, mechanical mounting, and flip-chip bonding, tailored for

| | |
|---|---|
| Fibre Array Attach Process - Lidded and lidless fibre arrays | Yes |
| Fibre Array Attach Process - Channel configurations | 8, 12, 16 channel (32-channel by request) |
| Fibre Array Attach Process - Pitch | 127 µm or 250 µm |
| Fibre Array Attach Process - Fibre types | UHNA (3 µm SSCs) or SSMF (6–10 µm SSCs) |
| Fibre Array Attach Process - Electrical connections | DC and FR supported |
| Mechanical Mounting - Bonding materials | Silver epoxy or thermally conductive epoxy bond |
| Mechanical Mounting - Placement method | Pick and place or manual |

price on request

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## PakPIC Photonic Packaging Services

High-precision photonic packaging service — fibre array attachment, flip-chip bonding with sub-micron accuracy, and mechanical package design for SOI, SiN, and InP photonic integra

| | |
|---|---|
| Fibre array channel counts | 8, 12, 16 (32-channel by request) |
| Pitch | 127 µm or 250 µm |
| Spot-size converters | UHNA (3 µm) or SSMF (6-10 µm) |
| Flip-chip placement accuracy | < 1 µm |
| Supported material systems | SOI, SiN, InP |
| Design options | Vacuum-compatible, radiation-hardened by design |

price on request

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## StarCom

StarCom is an industry-leading optical communication system for Earth-link and inter-satellite links, featuring full duplex fiber coupling, advanced PAT, and high data rates.

| | |
|---|---|
| Link Distances | 80,000+ km |
| Data Rates (current) | Flexible |
| Data Rates (by 2027) | Up to 400Gbps |
| Aperture | 50% larger usable aperture than competitors |
| Compatibility | EST, SDA, ESTOL, and CCSDS standards |
| Flight Heritage | Selected by DARPA, ESA, SpeQtral, Airbus Defence and Space and European Defence Agency. |

price on request

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## STARCOM Optical Communications Terminal

Laser communications terminal for optical inter-satellite links and space-to-ground links — up to 400 Gbps, 80,000+ km link distance, selected by DARPA, ESA, and Airbus Defence and

| | |
|---|---|
| Usable aperture | 50% larger than competitors (per manufacturer) |
| Link distance | 80,000+ km |
| Data rate | Up to 400 Gbps (by 2027) |
| Standards compatibility | SDA Standard v3.0, EST, ESTOL, CCSDS |
| Wavelength | 1550 nm (third-party modem compatible) |
| Selected by | DARPA, ESA, SpeQtral, Airbus Defence and Space, European Defence Agency |

price on request

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## STARGATE

STARGATE is an Optical Ground Station that provides a 1000x larger data transmission pipeline for space-to-earth communication compared to traditional methods, offering universal c

price on request

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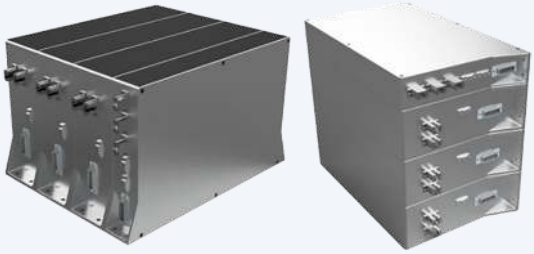
## STARGATE Optical Ground Station

Optical Ground Station providing the space-to-Earth last-mile laser link — 1000x larger data transmission capacity than traditional methods, universal satellite network compatibili

| | |
|---|---|
| Data transmission capacity | 1000x larger than traditional methods |
| Technology basis | Space BACN |
| Compatibility | Universal — any satellite network |
| Key feature | State-of-the-art adaptive optics for atmospheric compensation |

price on request



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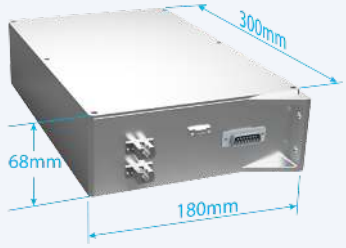
## StarLight Modem, Amplifiers and Antenna Control Unit

The StarLight is an optical modem that supports various data modulation formats within the 1550nm (ITU C-band) range, compatible with SDA 3.1 and IEEE803.2 Ethernet standards for o

| | |
|---|---|
| Operating Wavelength | 1550nm (ITU C-band) |
| Compatibility | SDA 3.1 and IEEE803.2 Ethernet standards |
| Modulation Schemes | Polarization modulation, On-Off Keying (OOK), coherent modulation |
| Integrated Modem and ACU Mass | < 3.5kg |
| Modem + ACU + Booster + LNA Mass | < 4kg |
| Total Mass Of OCT With 1 x STARCOM Optical Head | < 14Kg |
| ACU Control Capacity | Up to four STARCOM units |

price on request

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## STARLIGHT Optical Modem and Amplifier

Fibre-coupled optical modem and Antenna Control Unit for LEO/MEO/GEO optical inter-satellite and space-to-ground links — under 3.5 kg for modem+ACU, controls up to 4 STARCOM units.

| | |
|---|---|
| Modem + ACU mass | < 3.5 kg |
| Modem + ACU + Booster + LNA mass | < 4 kg |
| Total OCT mass (1x STARCOM optical head) | < 14 kg |
| Standards | SDA 3.1, IEEE 802.3 Ethernet, FEC |
| Orbit compatibility | LEO, MEO, GEO |
| ACU capacity | Controls up to 4 STARCOM units |

price on request

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## TERABIX

TERABIX is a radiation-hardened silicon photonic transceiver designed for high-speed data transmission with low power consumption, operating at data rates up to 112Gb/s PAM4.

| | |
|---|---|
| Format | 10GBASE Ethernet |
| Bitrate / Gbps | 10 |
| Typical power consumption / W | 3 |
| Energy Consumption per bit / pJ | 300 |
| Format | TeraBIX (56 Gb/s/ channel NRZ) |
| Bitrate / Gbps | 224 |
| Typical power consumption / W | 0.735 |

price on request

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## TeraBIX Silicon Photonic Transceiver

Radiation-hardened silicon photonic transceiver for space and HPC optical data transmission — up to 112 Gb/s PAM4, under 5 mW/Gb/s power, hermetically sealed, SDA Standard 3.1 comp

| | |
|---|---|
| Data rate | Up to 56 Gb/s NRZ or 112 Gb/s PAM4 |
| Power consumption | < 5 mW/Gb/s |
| Standards | SDA Standard 3.1 |
| Design | Radiation-hardened, hermetically sealed, pluggable fiber connectors |
| Power (224 Gbps total, NRZ) | 0.735 W typical, 3.3 pJ/bit |
| Power (448 Gbps total, PAM-4) | 1.916 W typical, 4.3 pJ/bit |

price on request

## Contact Mbryonics

Open the company profile on NewSpace Market to see full specifications and datasheets, and to send a request for quotation that reaches the manufacturer directly.

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