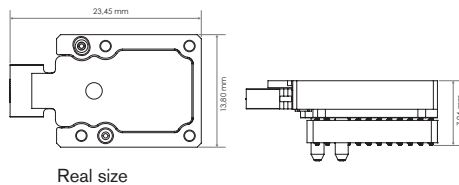
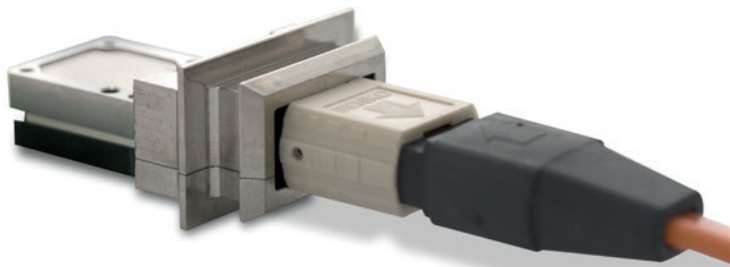


Optical interconnect for high-speed, high-bandwidth 10GigE and 40GigE cameras



Benefits of using Reflex Photonics' industrial *LightVISION*

- Suitable for harsh environment and automotive applications.
- QSFP+ technology replacement.
- New generation of optical engine (*emQSFP+*).
- Interoperability with QSFP+
- Flexible height with LGA interposer.
- Standard MTP/MPO cable connection.
- RoHS, robust, screw-in board-mounted optical module with reduced footprint.
- Performance: up to 50G from $-40\text{ }^{\circ}\text{C}$ to $85\text{ }^{\circ}\text{C}$.
- Low power consumption: $>100\text{ mW}$ per lane.
- Bandwidth of 50G (4TX and 4 RX lane).
- Multimode 850 nm wavelength laser.
- Over 100 m reach on OM3 ribbon fiber.
- Standard MPO parallel fiber connector.
- 100GBASE-SR4 compatible.

The *LightVISION*™ with *emQSFP+*™ acts like a QSFP+ but offers reduced dimensions and power consumption, industrial temperature range, multiple board mounting options, and board mount and edge mount capability. This new optical module will outclass QSFP+ on multiple front and it is backed by Reflex Photonics proven reliability and rugged design. This new device is perfectly suited for 40GigE high-speed camera and demanding machine vision applications.

Description of the application



40GigE camera can generate up to 40 Gbps of data that needs to be transferred from the sensor to servers or computers across a fast and reliable link.

It is well known in the high-bandwidth connectivity world that signal integrity tends to degrade at baud rates higher than 10 Gbps over traditional copper links. At these rates, an optical link is the only viable solution to transfer the information generated by these high-bandwidth devices.

This is why 40GigE camera integrators are now offering cameras that integrate optical modules capable of $>40\text{ Gbps}$ electro-optical conversion. For that purpose, up to now, camera designers were considering QSFP+ devices.

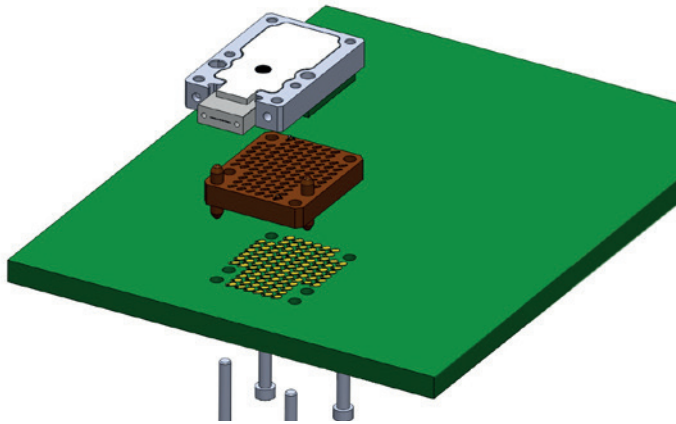
Reflex Photonics is proud to offer an innovative solution that integrates the capabilities of QSFP+, but in a format that occupies 7 times less space, offers multiple board mounting options, and consumes less power. The *LightVISION* is now giving camera designers the ability to envision more compact and more reliable products that can be deployed in harsh environments.

LightVISION with LightSNAP interface

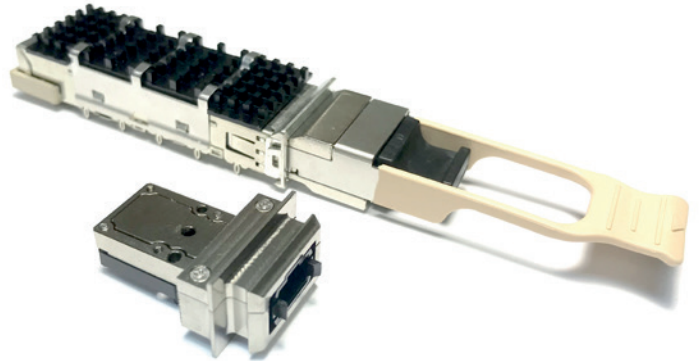
The *LightVISION* is a screw-in, robust, industrial and RoHS optical module with *LightSNAP* interface. *LightSNAP* adds a standard MPO pluggable optical interface to the *LightVISION* optical module. This combination allows a standard MPO cable to be plugged in the camera housing and on a frame grabber card.

This approach offers a standard MPO cable connection with a robust, board mounted optical engine providing small size (footprint) and convenient optical cabling at the same time. In addition, the MPO connector is covered with an outside cover boot addressing the issue of water and dust contamination.

LightVISION is offered as a 2, 4, 6, 8, 10, 12-lane transmitter, 2, 4, 6, 8, 10, 12-lane receiver or a 4+4-lane transceiver.



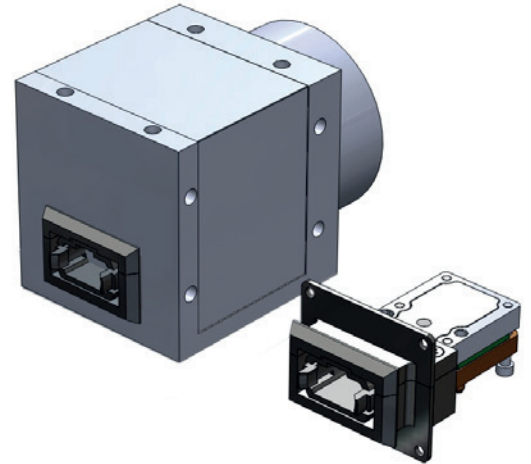
LightVISION LGA interposer and board attachment.



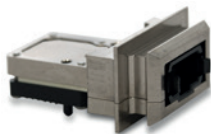
Size comparison between a QSFP+ (top) and a *LightVISION* transducer (bottom). *LightVISION* occupies 7 times less volume than a QSFP+.

LightVISION and QSFP+ feature comparison

| | QSFP+ | LightVISION |
|------------------------------|-------------|-------------|
| Dimensions (L x W x H) in mm | 72 x 18 x 9 | 23 x 14 x 5 |
| Temperature (°C) | 0 to 70 | -40 to 85 |
| Mounting options | Few | Multiple |
| Direct board mounting | No | Yes |
| Power | <1.25 W | <1 W |
| MTP/MPO interface | Yes | Yes |
| RoHS compliance | Yes | Yes |
| Price | Low | Low |
| 100GBASE-SR4 compatibility | Yes | Yes |
| Hot pluggable | Yes | No |
| I2C interface | Yes | Yes |
| 850 nm emission | Yes | Yes |
| OM3 fiber | Yes | Yes |



Example of integration of *LightVISION* in a high-resolution camera.



Transceiver used in this application

LightVISION VMX04, 4TRX

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