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INNOVATION

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**BGB Engineering**

Revolutionary Solutions

Optilinc



## Optilinc - Fibre Optic Rotary Joint (FORJ)



With Flange Mount

The new BGB Optilinc system has been produced to revolutionise the slip ring market. Optilinc is the first of the new generation of contactless slip rings to be produced by BGB Engineering Ltd. The fibre optic rotary joint (FORJ) is ideal for high speed data-transfer on many applications.

Constructed in stainless steel, Optilinc has exceptional durability protecting the unit from dust and water ingress to IP65 and is not influenced by vibration, humidity, heat, magnetism or other typical disturbances.

The Optilinc system has been thoroughly developed in BGB's R&D Lab and is now being implemented in the design stage of leading wind turbine manufacturers.



Without Flange Mount

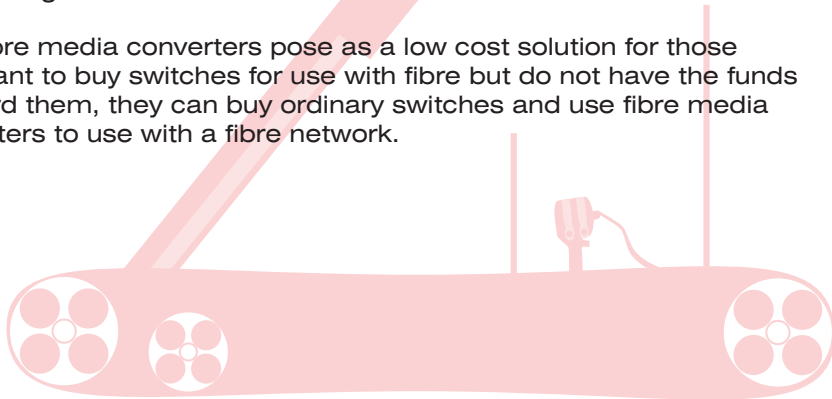
## Media Converters

Fibre media converters are simple networking devices that make it possible to connect two dissimilar media types, such as twisted pair with fibre optic cabling. They were introduced to the industry nearly two decades ago and are important in interconnecting fibre optic cabling-based systems with existing copper-based, structured cabling systems.

Fibre media converters support many different data communication protocols including Ethernet, Fast Ethernet, Gigabit Ethernet, T1/E1/J1, DS3/E3, as well as multiple cabling types such as coax, twisted pair, multi-mode and single-mode fibre optics. Media converter types range from small stand alone devices and PC card converters to high port-density chassis systems that offer many advanced features for network management.

Other benefits of media conversion include providing a gradual migration path from copper to fibre. Fibre connections can reduce electromagnetic interference.

Also fibre media converters pose as a low cost solution for those who want to buy switches for use with fibre but do not have the funds to afford them, they can buy ordinary switches and use fibre media converters to use with a fibre network.



## Media Converters



BGB Media converters are ruggedised and purpose built with hard anodised enclosures. Built for 6kv transient surge protection, BGB Media converters are manufactured to withstand the harshest of environment and conditions.

Temperature:

Operating -40°C through +90°C ambient

Storage -50°C through +125°C ambient

Din-rail mountable on request

Compliance to EN61000-4-2, 3, 4, 5, 6, 8, 12, ENV50204,

EN55024, EN61000-6-2, heavy industry level, criteria A

IEC 61850 and IEEE 1613 Environmental Standard for Electric Power Substations.

\* Full Technical specification available on BGB website: [www.bgbengineering.com](http://www.bgbengineering.com)

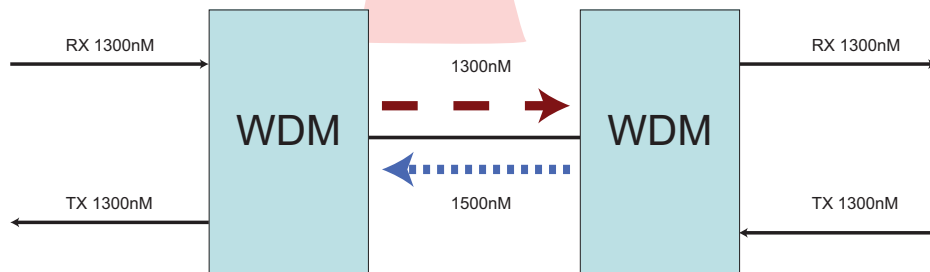
## Wavelength Division Multiplexers

Wavelength Division Multiplexer (WDM) systems are popular with telecommunications companies and some pitch control manufacturers. WDMs allow these companies to expand the capacity of the network without laying more fibre. By using WDM and optical amplifiers, they can accommodate several generations of technology development in their optical infrastructure without having to overhaul the backbone network. Capacity of a given link can be expanded by simply upgrading the multiplexers and demultiplexers at each end.

This is often done by using optical-to-electrical-to-optical (O/E/O) translation at the very edge of the transport network, thus permitting interoperation with existing equipment with optical interfaces.

Most WDM systems operate on single-mode fibre optical cables, whereas BGB Optilinc is designed to operate on both single and multi-mode.

Wavelength-division multiplexing (WDM) technology in the LAN is especially beneficial in situations where fibre is in limited supply or expensive to provision. As well as conventional dual strand fibre converters, with separate receive and transmit ports, there are also single strand fibre converters, which can extend full-duplex data transmission up to 70 kilometres over one optical fibre.



\* Diagram shows WDMs in operation

## Wavelength Division Multiplexers



The new BGB Wavelength Division Multiplexer (WDM) has been designed to compliment the BGB Optilinc FORJ (Fibre Optic Rotary Joint) to convert two fibre (duplex) systems to a single fibre multiwave length system (simplex).

Its unique rugged design has been developed to adapt itself to all environmental conditions. Designed to survive the arduous [physical and electrical] environments found in the wind energy industry (which insist on inbuilt transient surge protection), the WDM protects itself from lightning strikes via inbuilt electronic clamping systems.

When combined with BGBs Optilinc, the WDM lends itself to all applications whether it be light or heavy industry. Available as a 100Mb or GigaBit converter.

\* Full Technical specification available on BGB website: [www.bgbengineering.com](http://www.bgbengineering.com)

## Advantages of Fibre Optics

Why are fibre-optic systems revolutionising the market? When compared to conventional metal wire (copper wire), optical fibres are:

- Thinner - Optical fibres can be drawn to smaller diameters than copper wire.
- Higher carrying capacity - Because optical fibres are thinner than copper wires, more fibres can be bundled into a given-diameter cable than copper wires.
- Less signal degradation - The loss of signal in optical fibre is less than in copper wire.
- Light signals - Unlike electrical signals in copper wires, light signals from one fibre do not interfere with those of other fibres in the same cable.
- Low power - Because signals in optical fibres degrade less, lower-power transmitters can be used instead of the high-voltage electrical transmitters needed for copper wires.
- Digital signals - Optical fibres are ideally suited for carrying digital information.
- Lightweight - An optical cable weighs less than a comparable copper wire cable. Fibre-optic cables take up less space in the ground.
- Flexible - Because fibre optics are so flexible and can transmit and receive light, they are used in many flexible digital cameras for the following purposes:
  - Medical imaging - in bronchoscopes, endoscopes, laparoscopes
  - Mechanical imaging - inspecting mechanical welds in pipes and engines (in airplanes, rockets, space shuttles, cars)
  - Plumbing - to inspect sewer lines

Because of these advantages, you see fibre optics in many industries.

## Slip Ring Assemblies

As well as stand alone media converters and WDMs, BGB can build all Optilinc products into bespoke slip ring solutions incorporating connections to suit each individual requirement.

Data transfer would not be susceptible to electromagnetic interference from high frequencies.

Slip ring assemblies with Optilinc for data would also not be susceptible through data loss due to low resistance contact on an in-frequently used low power data ring.

Key benefits:

- Minimal wired connections
- All encased in an IP rated enclosure
- Easily serviced
- Complete packaged solution
- Adaptable to all environmental conditions
- Tried and tested in the wind industry
- Immune to all forms of electrical interference (Optilinc FORJ)
- Minimal torque
- Future proof - if bandwidth needs increasing in future, electronic components can be changed easily

