Aerials | Dishes | Receivers | Headends | Fibre optic | Multi switches | Amplifiers | Outlets | Home accessories | Fibre cabinets | Enclosures

Discover the fortune that lies hidden in your future installations

- a general introduction to Triax fibre optics

"We can just imagine the smiles that this system will put on the installers' faces who, up until now, have always had to take into account attenuation, interference, tap or switch gain flatness and so on when distributing satellite signals to multiple outlets. To sum up, we were totally impressed with how well this new technology performed in a real world setup."

TELE-Satellite & Broadband 2008

TRIAX - your ultimate connection

“Who wants to squeeze a full satellite into one tiny fibre cable?”

IF YOU THINK fibre optics is expensive and mind-bogglingly complicated technology you are … wrong. Sure, making laser light carry virtually any type of media content safely through a really thin glass cable is, well, rather complex. But - -

- - in a few minutes, when you have read this short introductory folder, you will know three business benefits about fibre optics that are still unknown to most people:

1. Why it will save you hours and hours of work during every installation.
2. Why it will save you so much money.
3. And why it will allow you to take on installations far bigger than anything you ever thought possible.

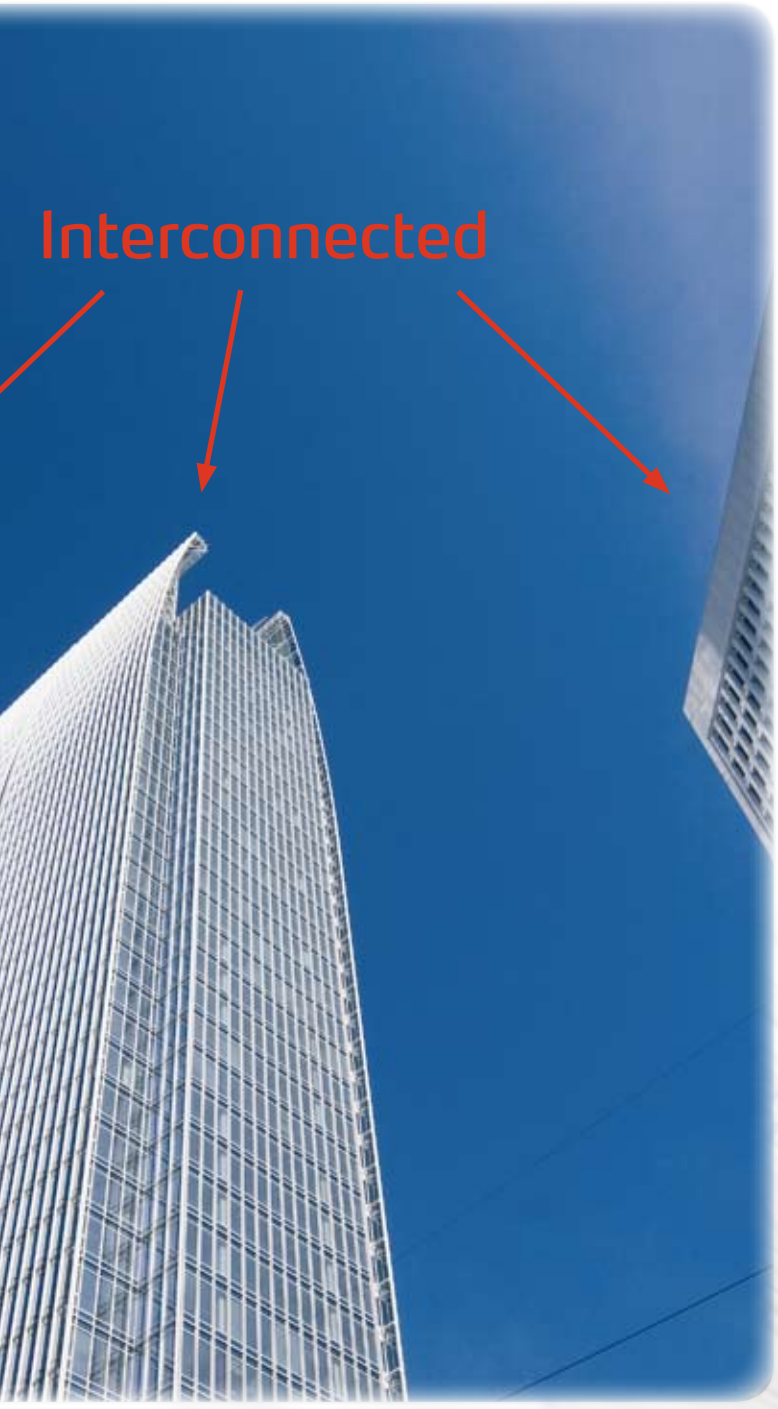
How to magnify your business options with fibre optics

Imagine you are holding a long extension cord in your hands, for instance a coax cable used somewhere in your latest multi dwelling installation. Now imagine that same extension cord was 5, 15 or 200 times longer – but without cable loss. Science fiction, you say? No, it’s science fact.

Yes, it does sound impossible at first – at least when you consider everything you know from the realm of traditional coax cable installations. But with fibre optics you have to rethink satellite and cable TV installations completely. Can you do that? Well, let’s find out.

Try this. Think of the highest possible number of outlets you can supply when installing a traditional LNB and multiswitch solution in a huge building with a large number of apartments. OK, got that? Now multiply it by 8, 16 or 32. Oh – and while you are at it, cut the installation time needed by 20 to 40 percent … In short: This is what your future fibre installations look like.

- a general introduction to Triax fibre optics



Truth is, there is virtually no signal loss in optical fibres, so you can cover BIG distances – even several kilometres – in just one installation. But that's not all, just -

- take a look at the following pages and get introduced to:

- **Triax TOL 32 Optical LNB Transmitter**
  – "a full satellite in a single fibre", transmits all four polarities simultaneously.
- **Triax Virtual Optical Converters**
  – enjoy the endless benefits from a passive optical network
- **Triax TOS Optical Splitters**
  – easily split each optical signal into as many as 32 ways
- **Triax HFC Hybrid Fibre Coax Optical Transmitter**
  – converts CATV signals into optical loss-free signals
- **Triax HFC – Hybrid Fibre Coax Optical Receiver**
  – for improved CATV installations and convenient internet access
- **Triax customised fibre cabinets**
  – we can also offer you customised enclosure solutions designed to meet your specific needs and requirements. Our manufacturing lines are designed to combine flexibility with the economic advantages of a highly automated production.

But first, let's put you through a test to see if you are actually ready for fibre >>

Find out more about fibre optic on:

www.triax.com

To all professional cable and satellite distributors and installers

Test yourself: Are you too sentimental for Triax fibre optics?

IF YOU FIND IT HARD TO say goodbye to accepted technical facts you have known for years, please pay attention to the following checklist – before you go any further.

Attention: The minute you choose fibre optics for your cable or satellite installations, you will **no** longer experience …

- cable loss – even when you distribute signals to thousands of users
- signals that are vulnerable to electromagnetic interference, power surges and lightning
- endless time – and frustration – spent calculating and projecting your installations

Here is what they have in common:

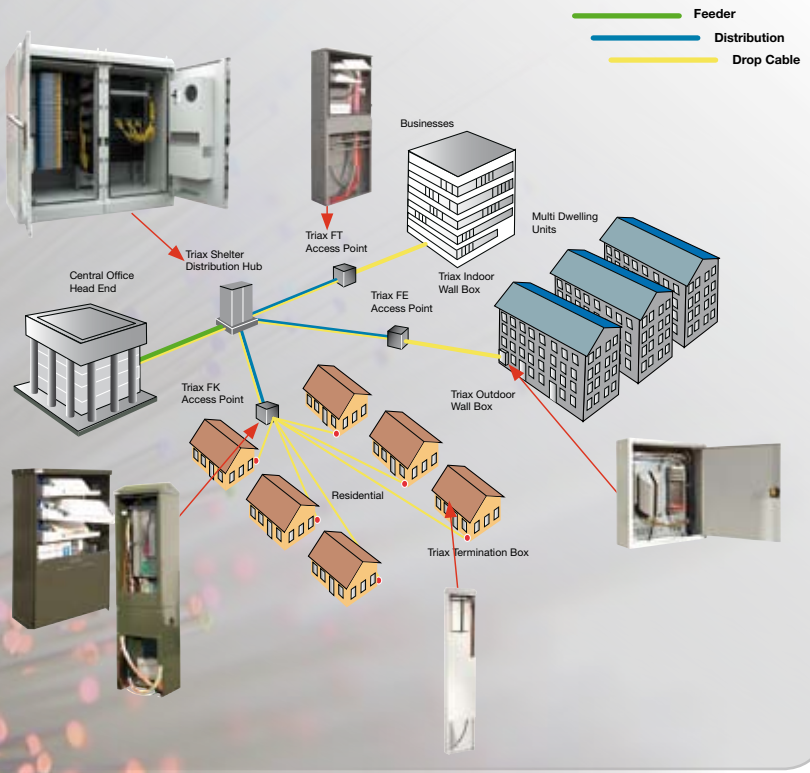
- inside a thin fibre cable, laser light carries the TV signals from a transmitter to a receiver
- since the signal is made of light it is almost immune to attenuation and interference
- even if you are forced to run a fibre cable close to heavy or magnetic machinery – it still distributes the signal perfectly

If you **can do** without those things in your life, Triax now offers two different types of fibre optic solutions:
Triax HFC for cable TV
– and TOL 32 Optical LNB for satellite TV.

Find out more about fibre optic on:

www.triax.com

Example on how to build up a HFC system

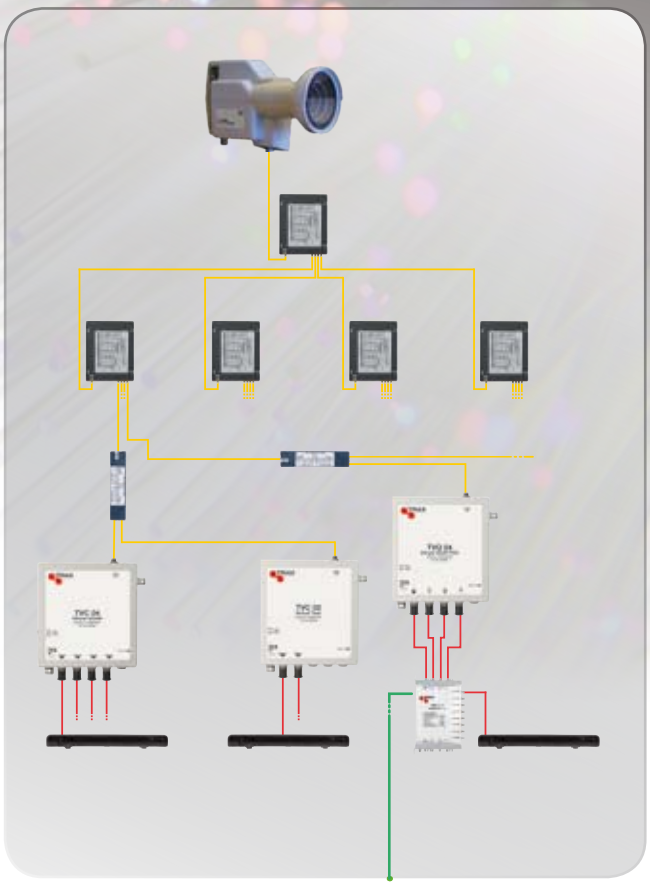


- a general introduction to Triax fibre optics

SAT-IF solution..

This is when you should choose Triax TOL 32 Optical LNB Transmitter – and passive power-neutral distribution:

- when you want up to four satellite polarities stacked in just one optical fibre (frequency range: 950-5450 MHz)
- when your satellite signals have to cover a great distance of perhaps hundreds or even thousands of metres – without the all-too-familiar loss or disturbance of the traditional coax cable
- when you want to distribute signals to A LOT of individual set top boxes, e.g. in large building complexes or small cities



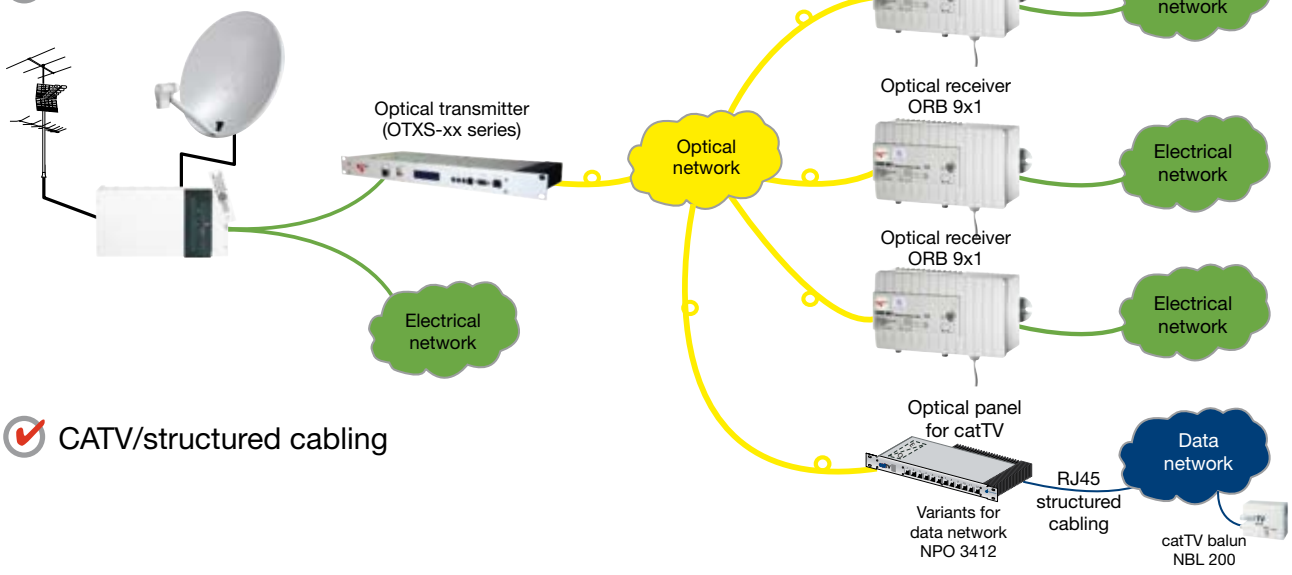
- supply of SAT-IF system with terrestrial signal

HFC solution..

Situations where HFC (hybrid fibre/coax) is the right choice for you and your customers:

- when you want to distribute CATV (frequency range: 47-862 MHz)
- when you want to keep an internet return path ready should your customers suddenly need one
- when you want to add cable TV to a SAT-IF installation

HFC (hybrid fibre/coax)



CATV/structured cabling

So far so good

- but....

- fibre optic installations still belong to the big unknown to most installers and distributors – and perhaps to you too? Well, let's discuss two of the concerns you might have.

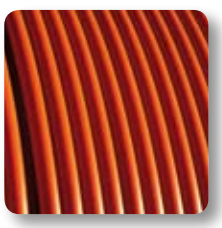
"So, I guess a Triax fibre optic solution is expensive?"

No! Sure, the technology within is advanced. But one of the biggest advantages of fibre optics is achieved when a large – and perhaps geographically scattered – group of people share a TV distribution network. The price per user is relatively, and surprisingly, small.

"But surely, the tools for handling fibre on-site will ruin my business?"

Of course not. But it sounds like you heard those scary rumours about the need for a really expensive fusion splicer – when working with fibre? Don't worry. Forget the splicer, simply use pre-configured Triax connector cables at lengths from 5, 10, 15 and all the way up to 100, 200 or 500 metres – all fully equipped with "fibre-connectors" at both ends.

Or, to get the exact cable length you want, use an inexpensive, easy-to-use fibre cleaver on-site. Once you have cut the fibre, simply fix fast-fit connectors to the cable ends. Seriously, it's that simple.



Let's take a closer look..

Triax TOL 32 Optical LNB transmitter.

First of its kind, with four polarities in one fibre cable. One laser only. A customised satellite solution. Fully passive cabling/ distribution in the fibre optic domain. If you want to add CATV to your installation simply run one more fibre – and use it with the HFC (see below).
Need more positions? - Simply use one more TOL 32 and cabling for each.

Triax TOS – Optical Splitters.

Choose between 2, 4 and 8 way optical splitters – and split your signal into as many as 32 ways in a single MDU installation. They fit both HFC and Optical LNB ranges. All splitters are dual-windows technology (1310 and 1550 nm) which allows you full upward compatibility when used in HFC networks. By the way, if what you really want is an LNB unit that can handle an overwhelming 128 optical splits, just let us know. We can help you with that too.

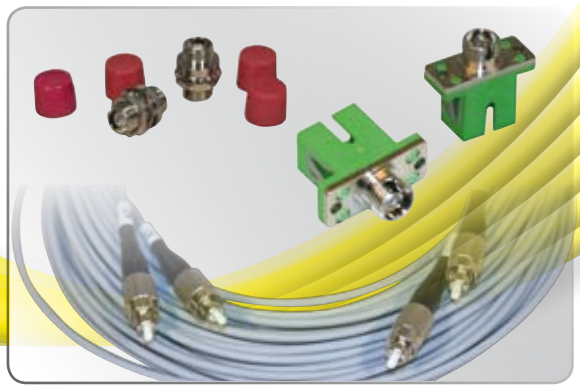
A look at the new fibre products
– this is what we are talking about

Triax Virtual Optical Converters.

SAT-IF receiver nodes for TWIN, QUAD and QUATTRO signals. Receives optical signal from LNB via the passive optical network – and then turns the signal into a coax output through two or four (TWIN or QUAD) universal lines, each linked to a set top box. The QUATTRO version presents the four individual polarities on separate coax outputs – and are perfectly capable of driving a regular multiswitch system. Generally, these converters accept and bridge an optical link budget from the optical LNB transmitter (see above) equivalent of splitting into 32 ways – and still they can cover distances of more kilometres.

Triax Fibre Optical connectors

Steel armored 3.0 mm fibre optic cable (G657A, LSZH) pre-connected for easy installation. On-site-connectors for use with unterminated cables (No need for fusion-splicing). Barrel connectors allow components to be used with all products.



Triax HFC Hybrid Fibre Coax Optical Transmitter (OTXS-xx series).

Converts electrical CATV signals into intensity modulated optical signals for transmission via optical fibre cables. Signal distribution over distances from 200 metres to 10-15 kilometres. Splits into several directions if needed. Fibre optic cable is terminated at fibre optic receiver nodes (ORB 9X1) – from where traditional coax based MATV/CATV can be realised. Remote controllable via the internet.

Triax HFC Hybrid Fibre Coax Optical Receiver (ORB 9X1 series).

Fibre optic receiver node. For CATV installations. Return path possible via separate laser. Use HFC as in a regular coax installation – but with the benefit of using fibre as an extension cord. Perfect, if you need islands of CATV installations without having to worry about the distance from the headend and fibre optic transmitter.

Why fibre optics will..
- save you so much time and money

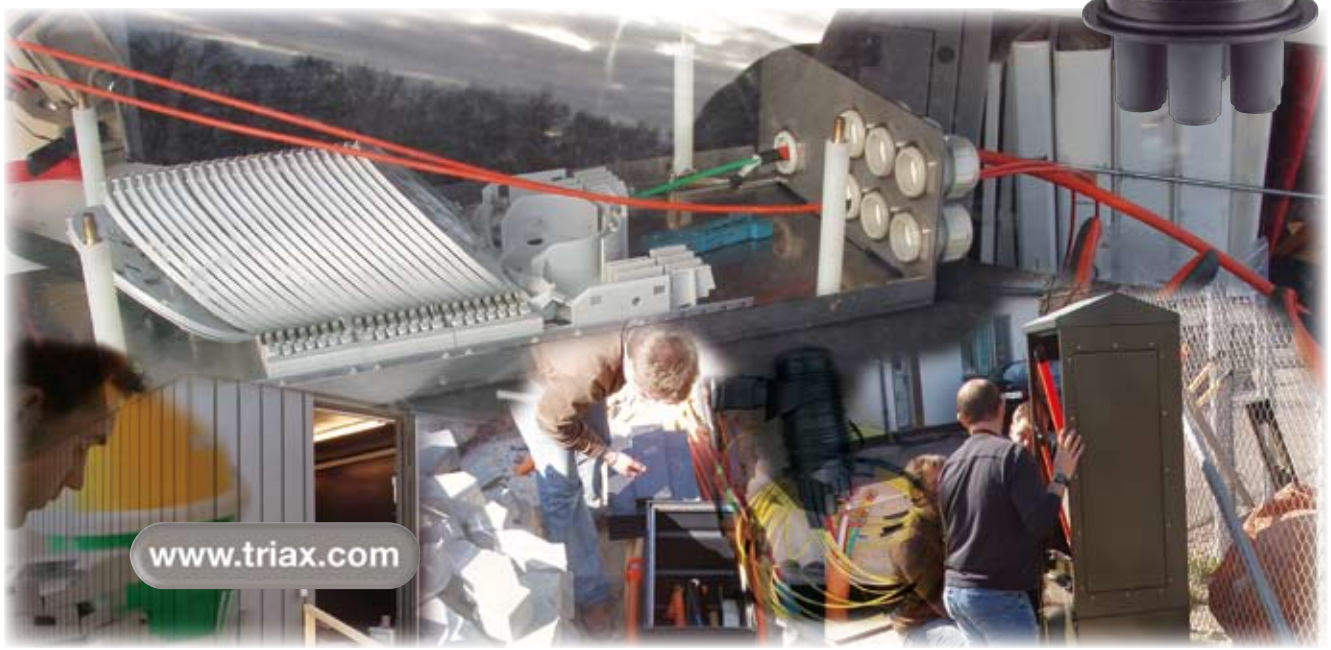
Independent calculations indicate that you could reduce the time traditionally spent installing coax cable connections by up to 30, 35 or 40 percent. And already at 20 percent reduced installation time your new fibre optic installation can have paid for itself. Go ahead, read that last bit again.

Once you start working with fibre you will probably develop your own new ways to speed up your installation routines – besides those few listed here. This is just to give you an idea:

- **Save time I**
  Your time spent surveying, projecting and calculating a full installation is practically zero as there is no cable loss to work out – or worry about
- **Save time II**. You can now install a converter at the receiving end – inside the individual apartments. It is both easier and faster
- **Save time III**. Don't spend any time earthing your installation. Bond bars and earthing are not needed – as the fibre systems provide 100 percent galvanic isolation
- **Save time IV**. Splitting can be done anywhere – and does not have to be done in the middle of the building to be most effective signal-wise. Just split the signal when and where you want

...more ideas

- **Save money I**.
  Since installation time drops dramatically so does salary expenses
- **Save money II**.
  Since installation time drops dramatically you can book more customers
- **Save money III**.
  As you know, line amplifiers are often necessary in traditional MDU installations – consuming power 24/7/365.
  Fibre installations don't need line amplifiers – so you save both product and power expenses. In your next installation, why not try to calculate how much is saved in the first year alone …
- **Save money IV**.
  Fibre signals are distributed through a passive optical network (PON) – so no extra power is used to carry the signal all the way from the optical LNB to the virtual receivers, no matter how far apart. Good news for both wallet and environment.



How to turn fine fibre features
- into brilliant business benefits

Fibre optics, in the satellite and cable TV field, is not standard procedure and has a lot of explaining to do. We all probably know coax cable installations like the back of our hand. Not so (yet) with fibre optics. So, whenever someone tells you of all the wonderful features associated with fibre optics, it is only natural to think, What's in it for me?

That's why we have included the following list – translating product features to installer benefits:

- **Feature:** No cable loss – or, if you want to get nitty-gritty about it: 0.3 dBm per kilometre compared to coax: 18-32 dB per 100 metres.

✔ **Benefit I:** With fibre optics you can go anywhere.

✔ **Benefit II:** You can build unbelievably large installations – up to 32 x 128 outputs per optical LNB. Build solutions today that were unthinkable only yesterday

- **Feature:** Pre-configured connector cables.

✔ **Benefit:** Save time on-site. Freely compose your installation – using only cables and splitters in a passive optical network. You have virtually no cable restrictions, and no need for expensive splicing tools

- **Feature:** "... optical cables are immune to any kind of interference".

✔ **Benefit:** Run your cables wherever you want – with no interference and loss of signal

- **Feature:** Signals are distributed through a passive optical network (PON).

✔ **Benefit:** No extra power used to carry signal from the optical LNB to the virtual receivers

- **Feature:** Triax TOL 32 Optical LNB transmitter gives you a full satellite in a single fibre cable – all four polarities are sent through simultaneously.

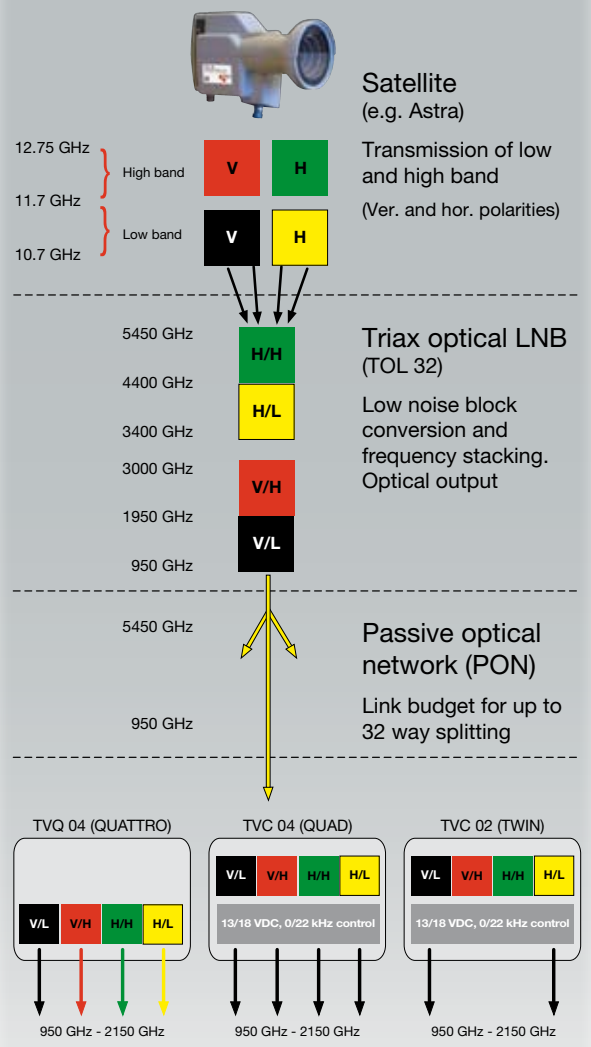
✔ **Benefit:** With coax you would need three additional cables – one for each polarity. And cabling is a lot easier – trunks of four fairly thick coax cables are down to one fibre cable .

- **Feature:** TOL 32 Optical LNB only needs one laser to transmit all four polarities.

✔ **Benefit:** You save three extra – and expensive – lasers. Traditional fibre optical solutions require one laser per polarity, so here is yet another substantial cost saving – without compromising the quality of the satellite signals

How it works

High frequency down conversion and stacking/de-stacking



Triax virtual converters
(TVQ 04 - TVC 04 - TVC 02)

Optical Receivers with de-stacking. Universal output via coax controlled by receiver (13/18 VDC, 0/22kHz), or direct for multi switch (QUATTRO)

A general introduction
- let's sum up..

When you switch to fibre – you get these new business options:

You can reach A LOT more users – and cover larger distances, even kilometres, without jeopardising the signal.

Flexibility doesn't begin to describe it.
On top of this, your installations will be future friendly and internet/broadband ready – you get full scalability, so you can extend the installation at a later time.
With coax that is usually impossible.

What else? Well, fibre optics will allow you to gain a larger market share in the field of satellite IF-distribution – leaving old-fashioned 'multiswitch competitors' behind at the Museum of Coax Installations …
"Distribution switches, as used in most MDU networks today are no longer required with this system," ref.: *TELE-satellite & Broadband 2008*.

Fibre installation on-site..

For most installations our fibre-optics cables with pre-fitted connectors are the easiest and fastest solution.

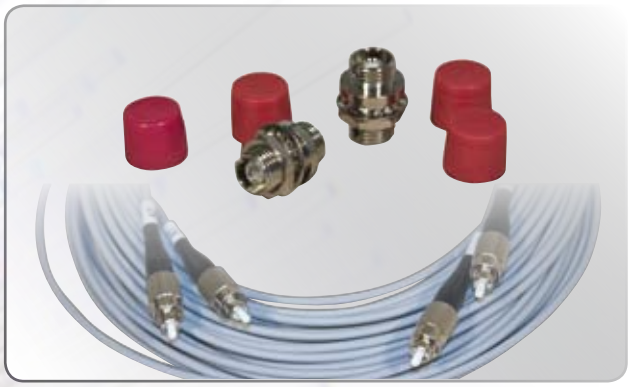
If you don't find the correct length, simply add two or more cables together using the small barrel connector.

For tight spaces and odd lengths use our 500 m fibre optics cable roll and fit it with fast-fit connectors in the field using inexpensive fibre optics cutting, stripping and cleaning tools.

No need for expensive fusion-splicer equipment. But if you have one already you are of course free to use it.

Agreed: this is different from coax cabling and you probably will spend some more time on your first installation. But once you get used to working with fibre cables, you will find it hard to go back.

- now the rest is up to you



Make fibre optics your business. Call your local Triax distributor/dealer now.

For more on fibre optics please visit

www.triax.com

Glossary - A...Z
- what it means

ADSS	All-dielectric self-supporting
APC	Angle polished connector
ATM	Asynchronous transfer mode Bps bit per second (bit/s)
CATV	Cable television
CWDM	Coarse wavelength division multiplexing
DWDM	Dense wavelength division multiplexing
FCP	Fibre concentration point
FCPM	Fibre concentration point multiple
FBT	Fused biconic tapered
FDF	Fibre distribution field
FttC	Fibre to the Curb
FttB	Fibre to the Building
FttH	Fibre to the Home
FttN	Fibre to the Node
FttX	Generic term for all of the Fibre-to-the-xxx above
FWA	Fixed wireless access
G.650	ITU Rec.G.650 Definition and testing methods for single mode fibres
G.651	ITU Rec. G.652 - 50/125µm raded – index multimode fibres
G.652	ITU Rec. G.652 Single mode fibre
G.655	ITU Rec. G.652 On-zero dispersion shifted single mode fibre
G.657A	ITU Rec. G.657 Super bend (30 mm) single mode fibre
Gbps	Gigabit per second
HDPE	High density polyethylene
IEEE	Institute for electrical and electronics engineers
IL	Insertion loss
ISO	International organisation for standardisation
IEC	International electro technical commission
ITU	International telecommunication unit
LAN	Local area network
LSZH	Low smoke, zero halogen
Mbps	Megabits per second
MMF	Multimode fibre
MDU	Main distribution unit
MDU	Multi-dwelling unit
ODF	Optical distribution frame
OLT	Optical line terminal
ONT	Optical network terminal
OPGW	Optical power ground wire
OTDR	Optical time domain reflectometer
PE	Polyethylene
PMD	Polarisation mode dispersion
PON	Passive optical network
POP	Point of presence
PTP	Point-to-Point
P2P	Point-to-Point
PVC	Polyvinylchlorine
RL	Return loss

What's next on your agenda
... dishes, multiswitches, headends?

TRIAX

This Triax brochure briefly introduces you to the range of fibre optical solutions on the world market today.

But maybe your present or future project doesn't end with you selecting the perfect fibre solution?
Don't worry. We'll be happy to guide you – step by step – till your project has successfully reached its goal.

Please browse through the various Triax product brochures to find everything that's relevant to you – from aerials, multiswithes to dishes, headends and more.

Visit www.triax.com and download all the relevant brochures.
Or just call us – and we'll send you a paper version right away.

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TRIAX A/S
Bjørnkærvej 3 • DK-8783 Hornsyld
+45 76 82 22 00 • +45 75 68 79 66
mail: triax@triax.dk • www.triax.com

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