



# TRIAX

connecting the future



## TRIAX multiswitches

Complete Range from 1 to 4  
Satellite Positions and Terrestrial



[TRIAX.com/multiswitches](https://www.triax.com/multiswitches)

# TRIAX® multiswitch solutions

– Products that create the perfect solution.

## What do you need a multiswitch for ?

- From a technical point of view, multiswitches enable many satellite set-top box users to share a single satellite dish, LNB and cabling installation. Multiswitches are future proofed and can deliver the full signal spectrum, so all users can enjoy full SDTV/HDTV/4K-UHD digital signal quality to a Satellite / Terrestrial set-top box TV
- From an aesthetical and practical point of view, multiswitches can help you avoid both many dishes on a building and avoid a lot of unstructured cabling whilst meeting regional planning regulations

With the introduction of the TRIAX passive multiswitch range, they can now accommodate either Terrestrial or CATV signals offering the end user alternative subscription services.

As these multiswitches are future proofed the system can be expanded for more users however to increase the number of Satellite positions the system would need to be redesigned.

Despite their advanced and technical qualities, all TRIAX products are designed to be easily installed.

## When should you use a multiswitch ?

- Whenever more than four users have their own individual satellite set-top box and need terrestrial signals a Multiswitch offers the best solution to combine the signals on to a single cable.
- When many different channels are required.
- When users live in the same apartment block

The number of satellite positions and polarities, along with user/subscriber outputs, determine the right choice of multiswitch for you. Solutions exist for one to four individual satellite positions or a total of 16 individual satellite polarities. DiSEqC technology is used to select the required satellite.

A multiswitch system is an ideal cost effective solution that offers the end user total flexibility and choice.

**A selection of  
the best**

**DISHES  
LNB UNITS  
AERIALS  
CABLES  
MULTISWITCHES**



## A complete Satellite Reception Solution

The single most important part of an installation is the quality of the incoming signals. As a minimum, we recommend you use a TD78 or larger satellite dish for optimum signal levels depending upon the geographical location of the installation. It is not recommended to compromise on the size of the dish, as the system is dependent on high quality signals from the outset, to do so could introduce rain fade issues caused by bad weather. These issues can't be remedied anywhere along the distribution path as the C/N has been effected. Multiswitch systems require the correct size dish, Quattro band LNB and an LTE aerial such as a the TRIAX UNIX range. Smaller systems up to 4 users could reuse the Quad LNB with the Stand-alone Multiswitch Series that support 22kHz tone selection.



### • TD DISHES

As a leading satellite dish manufacturer, TRIAX produce sturdy and robust satellite dishes for high quality installations. The TD range come part assembled to reduce installtion time and cost.

### • LNB UNITS

TRIAX LNBs employ the latest technology and meet the highest specifications to ensure low noise and high cross polar rejection.

### • AERIALS

TRIAX aerials - are manufactured to the latest LTE specifications and are tested to a rigorous benchmark standard. The TRIAX UNIX LTE range ensure maximum gain and rejection so that they acheive maximum signal transfer from the antenna to amplifiers and switches so that the MER readings are maintained.

### • Coaxial cables

The performance of the multiswitch installation relies heavily on the quality of the distribution cable installed to deliver signal levels and imunity to interference. TRIAX supplies a range of high quality coax cables with Class A++ screening.

### • Fibre Optical cables

TRIAX have introduced a fullll range of fibre optic cables to support the range of optical converters and multiswitches. The converters allow the fibre to be converted back to coax and have a traditional multiswitch distribution system.

### • Multi switches

A multi switch device is the rational way of providing satellite signals to multiple (usually more than four or eight) satellite receivers from a single dish and LNB. Its task is to be 'invisible' to the satellite STB as it mimics all the functions of standard Universal LNB units and optionally DiSEqC switches.

Many versions are available to allow you to customize for many special local needs.




# Focus on Satellite reception solutions

– if a picture is worth a 1000 words, this page will save you a lot of reading.

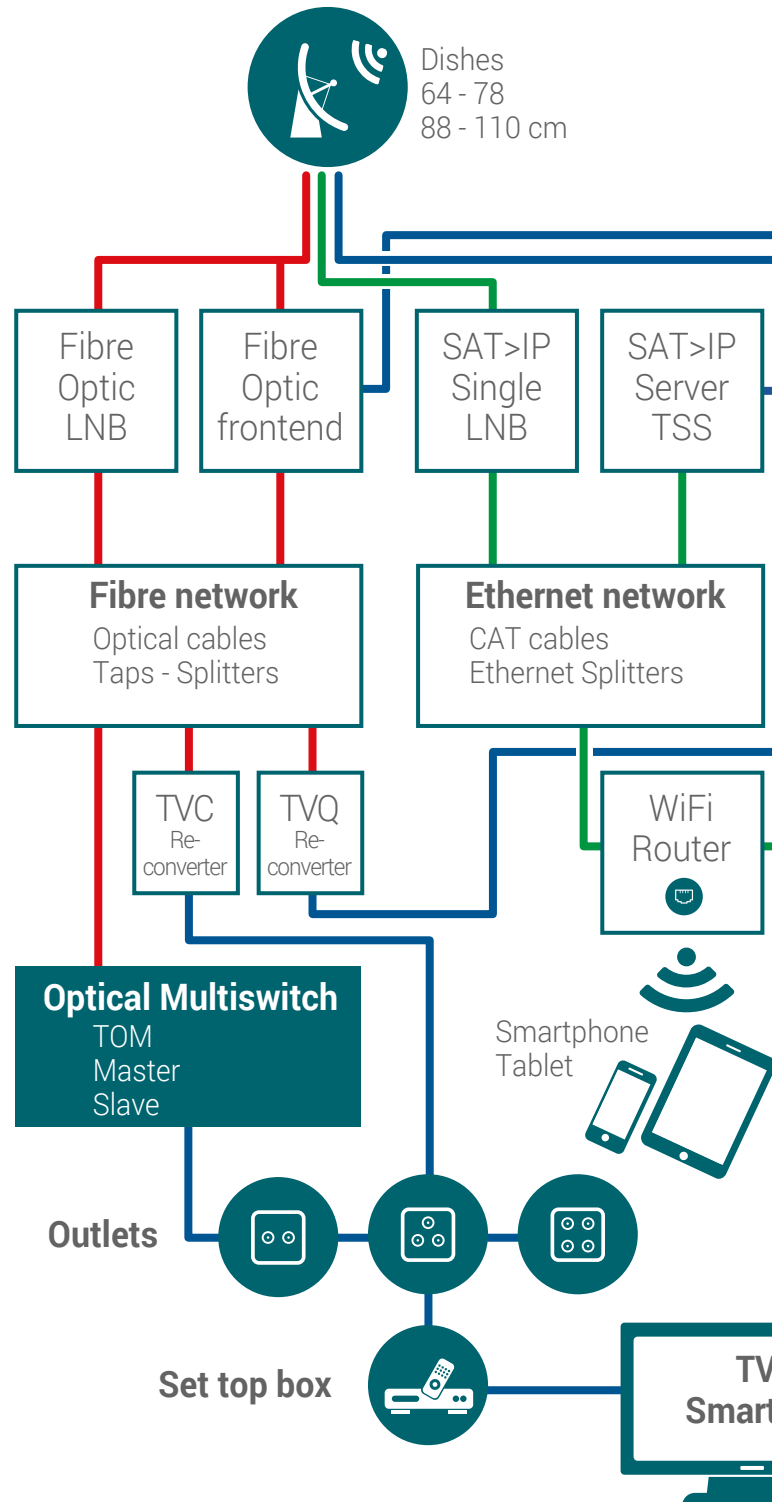
 Fibre Optical Cable system

 Coax Cable system

 CAT Cable system



## Satellite Reception

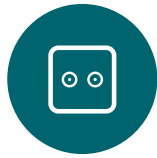


## Terrestrial Reception

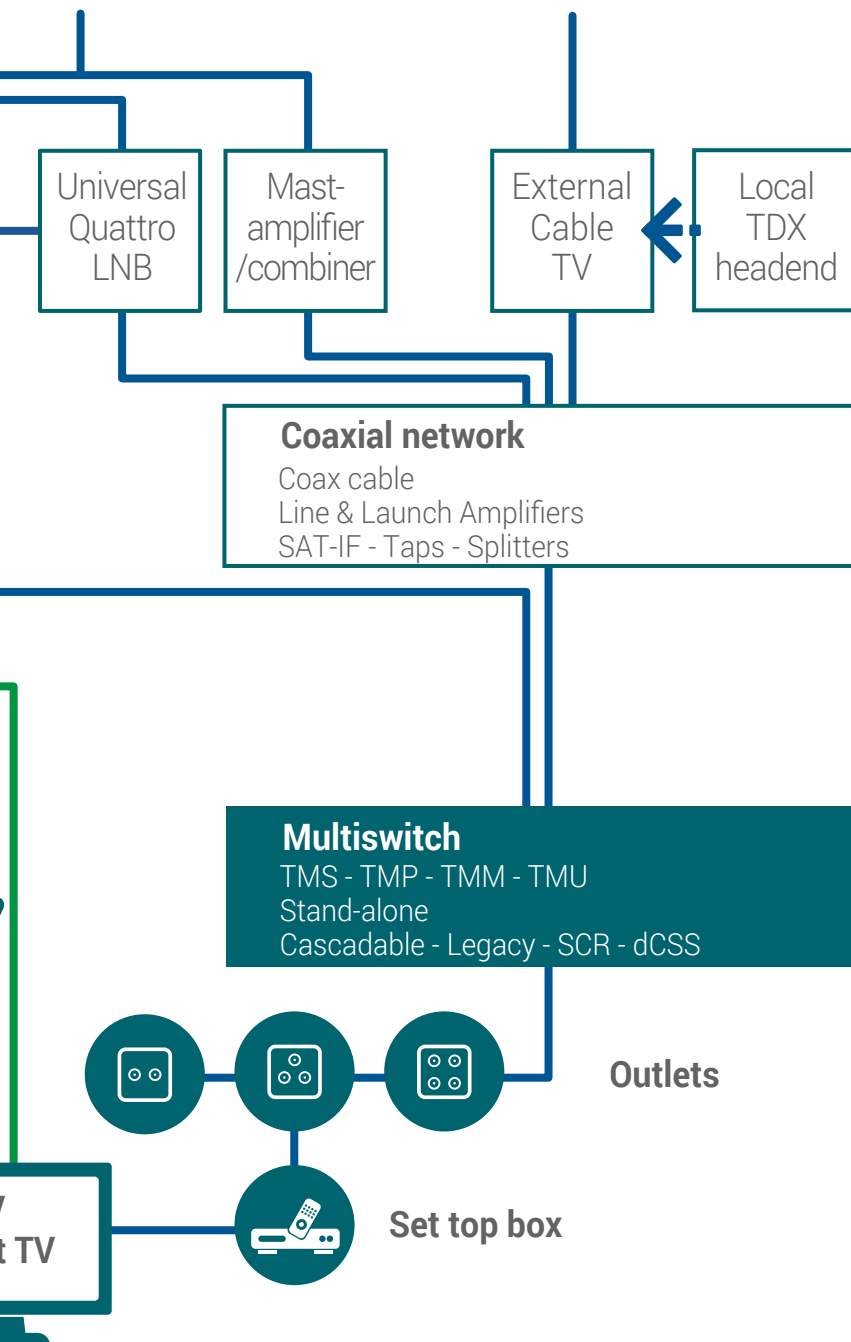


Aerials  
Digi  
UNIX

## CATV Reception



- optional  
incl. DOCSIS

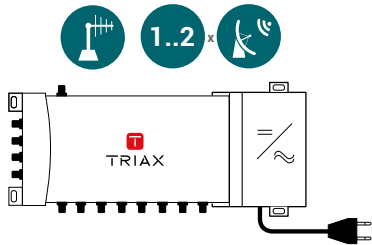


# Multiswitches for all your needs

- let's help you pick the right one

## Stand-alone QUAD

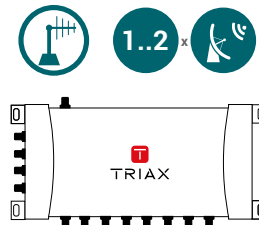
is a stand-alone version for upgrading an existing QUAD LNB installation.



6 8 12 16 24 32

## Stand-alone STB powered

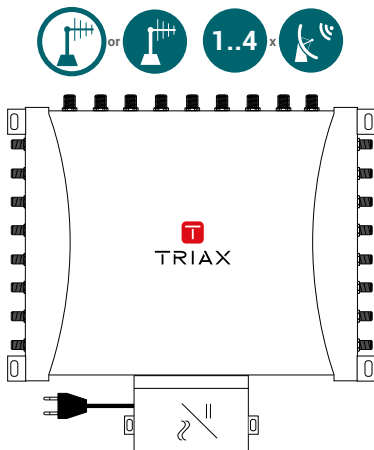
are stand-alone versions powered from set top box



6 8 12 16 24 28 32

## Stand-alone

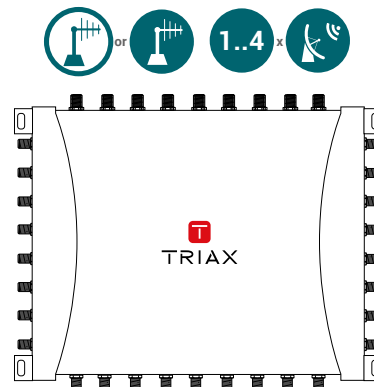
Passive or Active TER  
built-in PSU



6 8 12 16 24 32

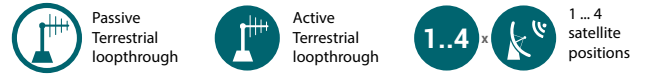
## Cascadable

Passive or Active TER  
for external PSU



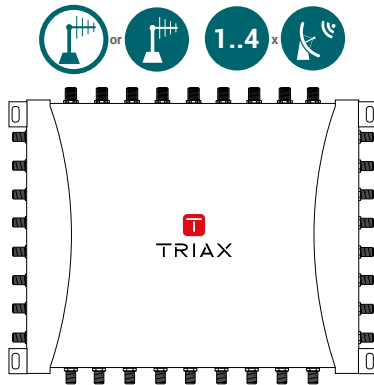
8 12 16 24 28 32

Legend:



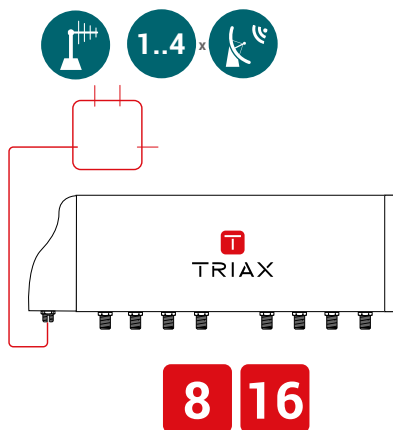
### Cascadable

Sat SCR, passive TER for external PSU



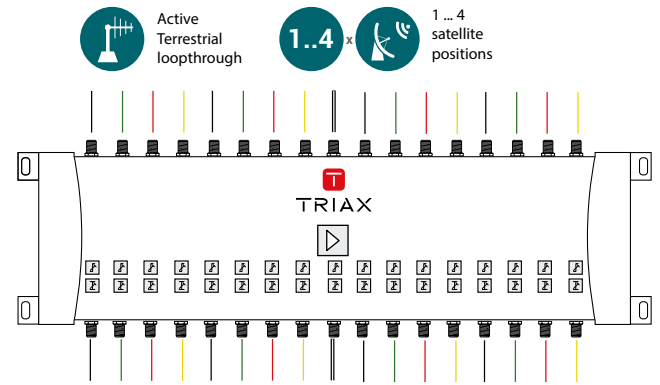
### Cascadable

TOM, optical re-converter with integrated multiswitch



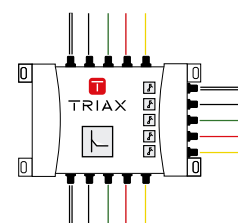
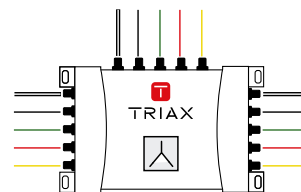
### Line amplifiers

Active SAT and TER for external PSU



### Taps and Splitters

passives



# TRIAX® stand-alone multiswitches

- for every application

TRIAX® multiswitches come in two base configurations: stand-alone and cascadable.

**Stand-alone switches** are a good solution in installations with a need for 6 and up to 32 satellite receivers within a relatively short distance of each other and the switch. A stand-alone multiswitch has its own power supply, and should be mounted in a position with a relatively short distance to the Dish, preferably in the center of where the satellite receivers are situated, and where Mains Power is available, or can be made available to feed the multiswitch unit. A good and simple solution with one single unit, which is easy to install, and there is only one point for installation, Mains power and maintenance.

If you require a terrestrial tv input along with the satellite signal you should choose a version with an active TER path, if a CATV system is available then it is recommended to use a version with a passive TER path.

In contrast, cascadable multiswitches also allow for up to 32 satellite receivers per individual switch, but unlike a stand-alone switch, a cascadable switch system allows many more similar cascadable switches to be added to the system (e.g. one on each floor) to create total systems potentially serving larger buildings and more than 100 satellite receivers (see page 10).

When you plan your stand-alone multiswitch installation, cable lengths from switch to end-user satellite receiver should be no longer than 50m using a high quality coax cable.

Satellite signals are at very high frequencies, where losses in very long coaxial cables can become a problem, if you do not take it into consideration. For this reason it is always a good idea and best practice to make sure subscriber cables are kept short and at a similar length. TRIAX recommend to have a maximum of 50 metre cable from switch to subscriber satellite receiver. This ensures that the system will meet the design criteria if planned correctly and have the correct input levels. Distance over this could possibly compromise the signal levels and some satellite receivers can experience position switching (DiSEqC) problems over very long cables.



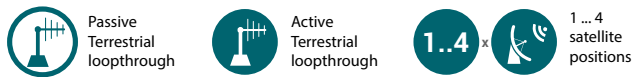
## NOTE

- if your satellite reception solution uses a QUAD LNB for up to four satellite receivers only, Then it would only possible to receive one single satellite position.





## Legend:



If the physical mounting position of your stand-alone multiswitch makes the distance to some of the end-user satellite receivers very much different from others, you should consider splitting it between more switches using a cascade solution, or reconsider your switch mounting position. Sometimes it is tempting to try and stretch the laws of physics and create a central multiswitch setup for MANY users in a star network even if the individual users are with very different cable lengths between them or if the thought of having everything installed in one place outweighs every-thing else. You need to understand that stretching the laws of physics can be very unforgiving and cause you many problems of which not all are solvable, so when you go against the advice of best practice, you need to know what you are doing.



# TRIAX® Cascadable multiswitches

- for every application

## **In contrast to stand-alone multiswitches,**

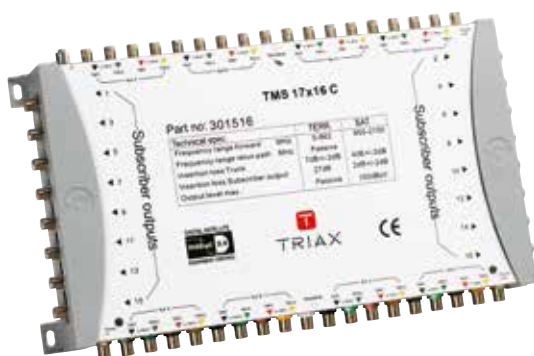
a cascadable system can be extended to become a solution covering a very large number of end-users/satellite receivers. If your building layout means that users live on different floors inevitably causing very different cable lengths from the multiswitch to the end-user apartment, a cascadable multiswitch installation is the best solution.

Cascadable means that every multiswitch has its standard input from the LNBs, but furthermore has outputs, where the LNB signal can be conveyed further down the building floors to more multiswitches.

It is normally best practice to have a multiswitch at every floor covering the resident apartments there, alternatively run cables to the previous and/or next floor. As in stand-alone installations, cable lengths has to be carefully planned and considered, which often will mean that you should serve every floor with its own cascade multiswitch.

Consequently, building a multiswitch system using many cascade multiswitches and put them into one rack in a central installation position is NOT recommended.





Most cascade multiswitches use a DC or an external switch mode power supply. Depending on the size of the system you may only need a single power supply connected to one of the cascade multiswitches. It will automatically feed other switches and even the LNBs via the distribution trunk lines. This allows you to install the power supply where mains voltage is available.

Cascade multiswitch installation also gives you the advantage of being open ended, which means that you can always extend it serving more users should the need arise. This is a very common situation as modern and future satellite receivers offer more and more features for simultaneous viewing and recording options. This means that with a cascadable multiswitch system installed can cope with all future needs for multiroom reception.



# Legacy versus Single cable distribution

- SCR, TMU, TMDS - multi switches

Traditionally satellite reception whether direct single user or multi-user installations via a multiswitch solution, uses one cable per satellite receiver. So, more satellite receivers per end-user apartment also means that more cables will have to go into the individual apartments. TRIAX offers all these solutions in all available variations and options (active/passive TER, stand-alone or cascade), etc.

New technology actually makes it possible to feed several satellite receivers over a single common cable into the apartment. The technology is known as Single Cable Router (SCR), dCSS or UniCable, whereas the standard one-cable-for-one-receiver method is now referred to as 'Legacy'.

## **TRIAX offer solutions for both technologies, and not only that:**

All newer TRIAX SCR multiswitches (TMU and TMDS) has an automatic switch feature switching the multiswitch output between Legacy and SCR without any installer or user intervention only depending of the satellite receiver setup and capability. This means that the switch automatically can serve either or (but not both technologies on one cable).

Please be aware that for SCR to work, the satellite receiver has to specifically support it. In more direct terms, the satellite receiver must support the SCR DiSEqC standards (EN 50494 and/or EN50607) for

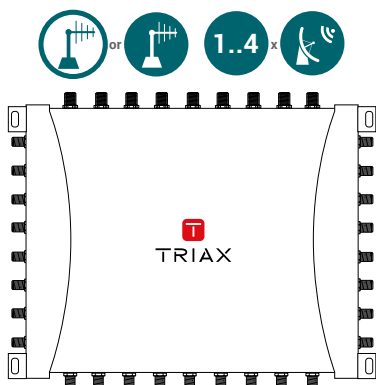
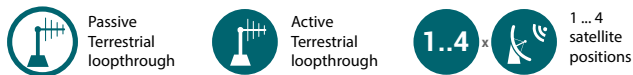
this to work.

TRIAX SCR multiswitches are the ultimate future proof installation you can do, but obviously the value of it is directly proportional to the end-users investing in equivalent SCR capable satellite receivers. With the growing need for more satellite receivers per apartment, the SCR technology has obvious advantages, and TRIAX will help you to fully support this trend.

SCR technology is NOT backward compatible, so a portion of old satellite receivers already in use, unfortunately cannot take advantage of this.



Legend:



This is why TRIAX built the automatic Legacy/SCR switch feature into the TMU/TMDS range of multiswitches, to allow an easy and economical future upgrade path, without the need for more installer work to be done in the future as users upgrade to the new technology.

The TMU/TMDS switch already supports it so it is install-and-forget-it.

<b>4</b> x <b>3x SCR</b>	<b>8</b> x <b>3x SCR</b>	<b>TMU</b>
<b>4</b> x <b>16x SCR</b>	<b>8</b> x <b>16x SCR</b>	<b>TMDS</b>

# Legacy coaxial cable distribution versus Fibre Optic cable distribution.

**Coaxial cables are generally used throughout in TV/Satellite reception and distribution,** and for a very good reason: It is an economical way of distributing a huge Frequency Range over a long distance. Unfortunately its limitations lie in a combination of both. The higher the frequencies, the shorter distribution distance you can reach without using costly active amplifiers to stretch your distance.

Satellite reception does use very high frequencies, so cable runs from the satellite Dish and LNB through the building to the multiswitch can sometimes be extremely challenging, as the building construction and/or the number of users grow.

**Fortunately the solution is obvious and easy** using fibre optical distribution products will remove the distance limitation from the equation, and will allow you very long distances to a large number of multiswitches and users. This means that rather than using few multiswitches with long end-user cables, you can use smaller, even stand-alone, multiswitches, where fibre cables bring them closer to the end-users, so the last 'mile', where coax cables must be used, becomes shorter.



Opto Switch Master



Opto Switch Slave

## SWITCH SLAVES ARE PLUGGED ONTO MASTER



Using fibre optical cables also save on your installation time and costs, because every time you have 4 trunkline coax distribution cables (7 mm, 11 mm or even 21 mm Ø), you only need one single fibre optical cable (3,5mm Ø). TRIAX takes the hassle out of Fibre Optic cable installation by offering an array of pre-terminated Optical cable lengths with pre-mounted connectors. Besides, fibre optical cable costs has dropped dramatically, placing you in the front driver seat with a win-win TRIAX Fibre Optical multiswitch solution.

Fibre Optics is the absolute best practice multiswitch installation method, which will give you all of the advantages, with very few or no limitations at all.

The average user number limitation for a large pure coax-based multiswitch installation, typically covers 100-150 end-user satellite receivers. Using Fibre Optic distribution solutions up to 10.000 receivers are now possible.





# TRIAX

*connecting the future*

## Contact

[TRIAX.com/contact](http://TRIAX.com/contact)

Headquartered in Denmark, TRIAX is an international supplier of innovative, high-tech solutions for the reception and distribution of video, audio and data signals. The company's products and solutions are used by broadcasters, cable operators, local closed networks and domestic dwelling.

TRIAX has 9 sales subsidiaries generating a turnover of approx. €90M and operates in more than 60 distributor countries. The TRIAX team consists of 350 employees and is owned Polaris Private Equity.

See [www.triax.com](http://www.triax.com) for further info.

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