

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

Triax multi switches

- your shortcut to the perfect solution



TRIAx - your ultimate connection

We've got multi switches for all your needs.

Now let's help you pick the right one

This folder briefly introduces you to the scope and range of Triax multi switches. We don't want to waste your time – so, to keep things clear and quick to read, not all sub-series are mentioned here. For detailed and technical info, please consult our website,

www.triax.com

or contact us. We'll be happy to help you.

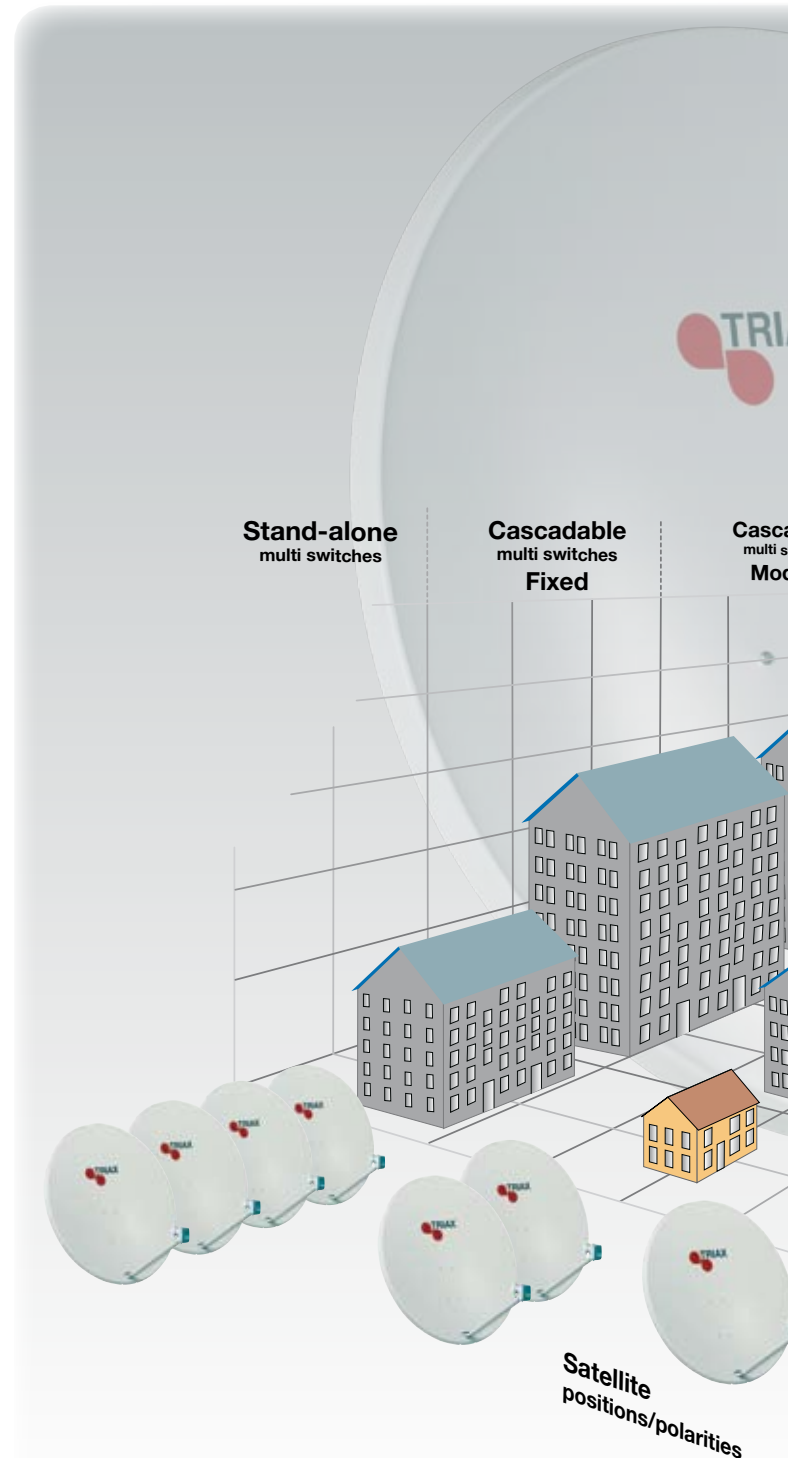
If you've already got a pretty good idea which type(s) of multi switch you need to complete your present project successfully – feel free to skip this short intro and jump straight to your point of interest.

First up – what exactly do you need a multi switch for? From a technical point of view, it enables many set-top box users to share a single dish/LNB installation and cabling. All users will enjoy a full digital signal quality - from satellite to set-top box. And from an aesthetical and practical point of view, multi switches can help you avoid many dishes on a building.

On top of that, you get these benefits with set-top box and multi switch solutions: Full DVD-picture quality, full DVD/CD-sound quality, real 16:9 picture format, high definition capability and surround sound.

So, to cut to the bone, when should you use a multi switch?

- 1 Whenever more than four users have their own individual set-top box – and need a shared dish.
- 2 When many channels are required.
- 3 When users live within a relatively short distance of the dish – and each other.





Generally, the number of satellite positions and polarities – along with user/subscriber outputs – determine the right choice of multi switch for you.

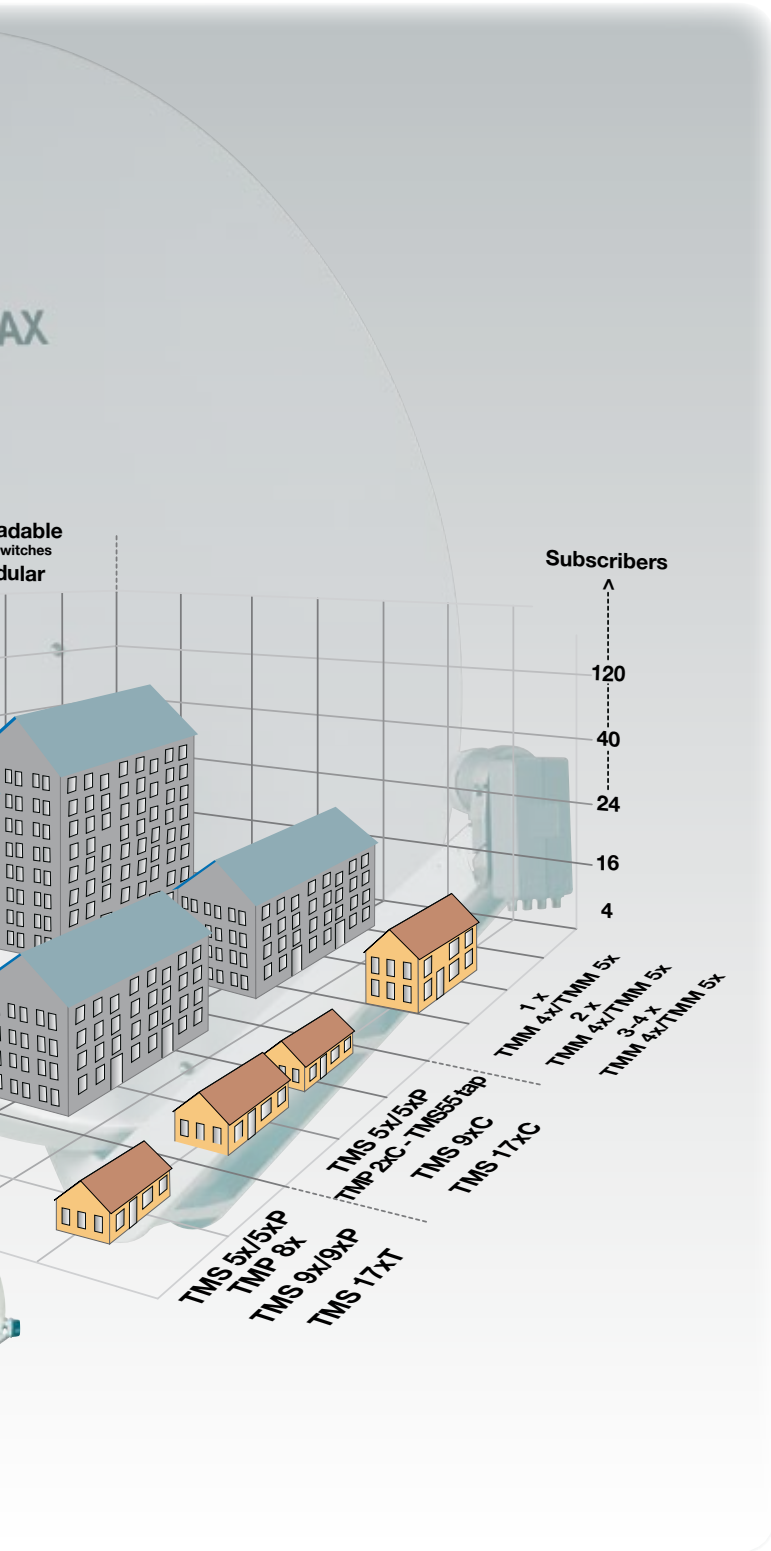
People often ask us if it's possible to receive signals from more than one satellite position. The answer is yes. Solutions exist for one to four individual satellite positions. If you want more than one position, please look for the multi switch solutions that include a DiSEqC-switch.

Another frequently asked question concerns the distribution of different signals. Can terrestrial and cable signals be distributed via a multi switch that already provides satellite signals? Yes they can. Most of the time, both coexist on the very same cable.

Let's just conclude this short intro by letting you know, that whenever you choose a Triax product – including any of our multi switches – you're safe. If you need to expand or change an installation sometime in the future, you can almost always apply new products to existing ones – saving you both time and money. And despite their advanced and complex technical qualities, all Triax products are designed to be easy to install and use.

But – in case something is giving you trouble or you can't seem to find what you're looking for, please call us and let us deal with it.

Want to know more about the dos and don't of perfect multi switch installations – or look up specific terms used in this folder? Please turn to the last couple of pages >>



TRIAx - your ultimate connection

Triax multi switch solutions

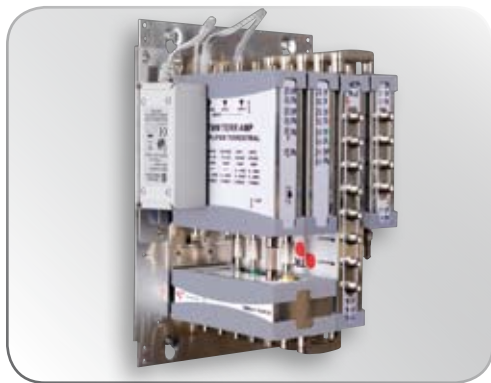
- few to many users

Deliver consistent signals to all your customers – with the TMM 4x and 5x

Both fully modular and cascadable, the TMM 4x and 5x series give you up to four satellite positions with a maximum of 16 polarities. Both are easy to install – even when you're faced with a building that only allows you a small or tight working space.

This series is your preferred choice when you want to:

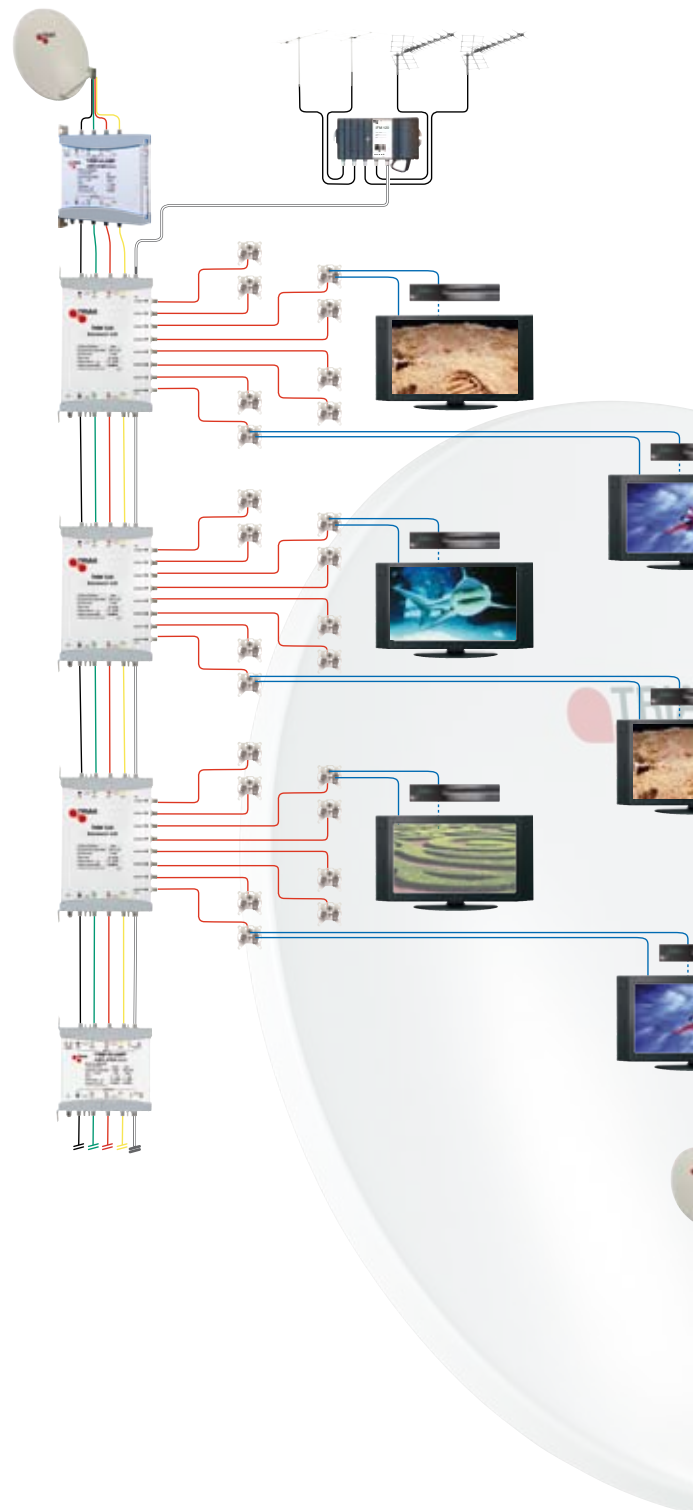
- gradually adjust to changing needs
 - e.g. begin with a few satellite positions or users and add more later, without starting your installation from scratch
- provide a consistent and powerful signal level for all users throughout an entire building
- enjoy up to 16 satellite polarities and one terrestrial input (terrestrial input use TMM 5x)



TMM series of multi switches are the ideal system for providing freedom of choice to the individual subscriber.

User and installer benefits:

- All switch functions are powered and controlled by your set-top box
- Select 4, 6, 8, 12 and 16 outputs to easily adjust to the exact number of users
- Includes terrestrial input and loop-through on all subscriber outputs
- Combines perfectly with the modular TMM 4x and 5 x series



Find the multi switch solution that's right for you at:

www.triax.com

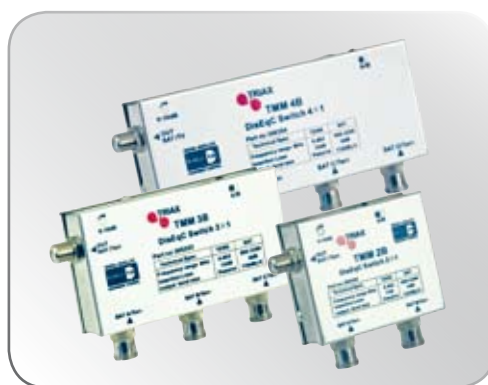
Triax multi switch solutions

- few to many users

Triax multi switch solutions > Easily change satellite position

Switch between satellite positions – with DiSEqC Bridger units for the TMM series

Need to switch between two, three or four satellite positions using just one set-top box? No problem. Pick the TMM 2B, 3B or 4B unit – when you're looking for a 2x1, 3x1 or 4x1 DiSEqC plug-and-switch solution.



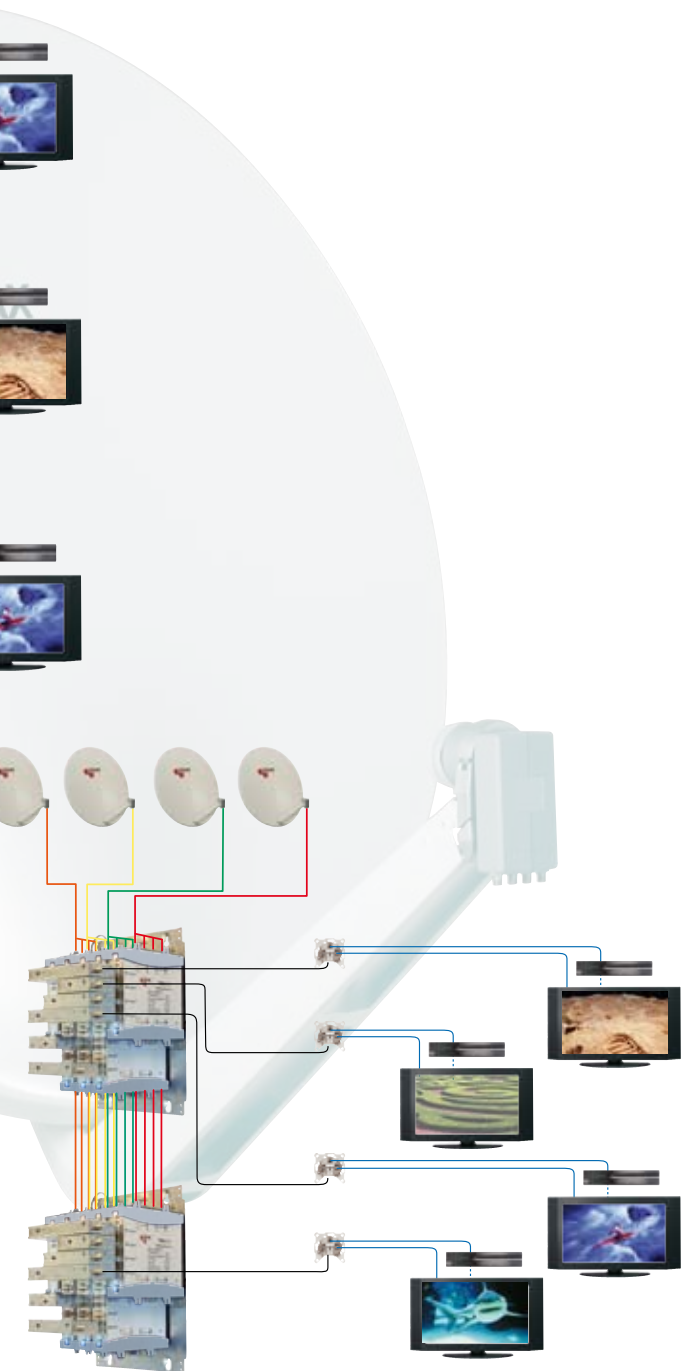
TMM series of DiSEqC switches are the ideal system for providing freedom of choice to the individual subscriber.

User and installer benefits:

- Combine any DiSEqC unit with TMM 4x or 5x (please see above) to build a full multi position multi switch installation
- Achieve terrestrial loop-through, using a DiSEqC with a TMM 5x – no matter where you place it
- Allows a differentiated access for individual users, as the installed switch (TMM 2B, 3B, 4B) decides how many positions are available



Triax can also provide you with all types of outlets for your multi switch system.



Triax multi switch solutions

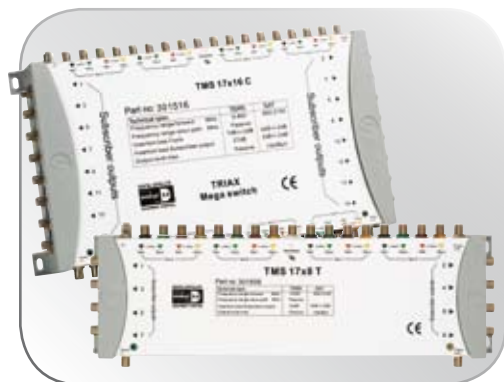
- few to many users

Enjoy TV signals from 9 to 16 polarities

Why restrain yourself? Get ready to build and extend your installations with TMS 17xC (cascadable) and 17xT (terminated, stand-alone) multi switches. Both let you provide up to dozens of individual users with four satellite positions.

This series is your preferred choice when you want to:

- seriously reduce the number of units needed
- include three or four satellite positions in your installation right from the start
- terminate a large cascaded system that already uses TMS 17xC units (install the TMS 17xT)
- cascade your installation to another floor - or different part of the building (use the TMS 17xC)

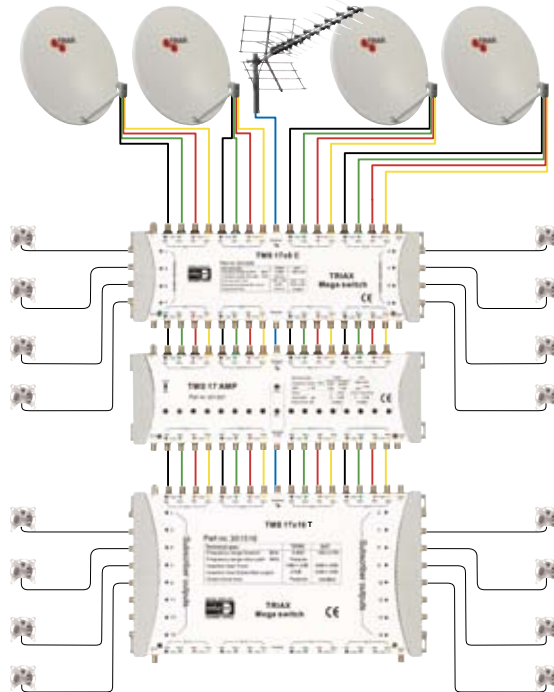


TMS 17xT and TMS 17xC series comprise versions with 6, 8, 12 or 16 subscriber outputs

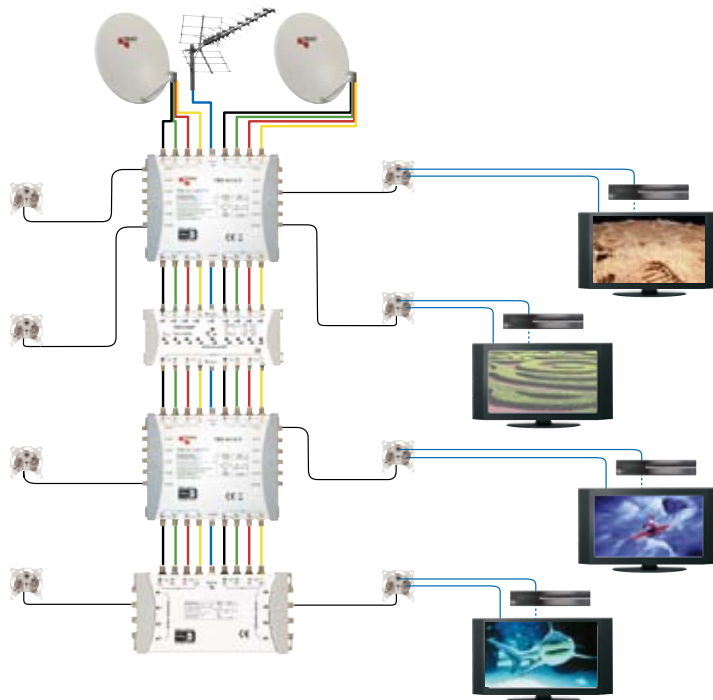
User and installer benefits:

- All switch functions are powered and controlled by your set-top box
- Select 4, 6, 8, 12 and 16 outputs to easily adjust to the exact number of users
- Includes terrestrial input and loop-through on all subscriber outputs
- Includes a DiSEqC switch for position switching

TMS 17xC example



TMS 9xC example



Triax multi switch solutions

- few users

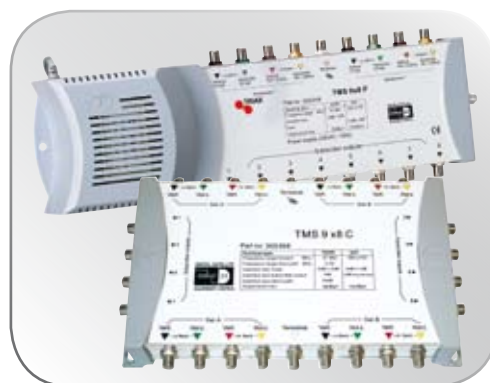
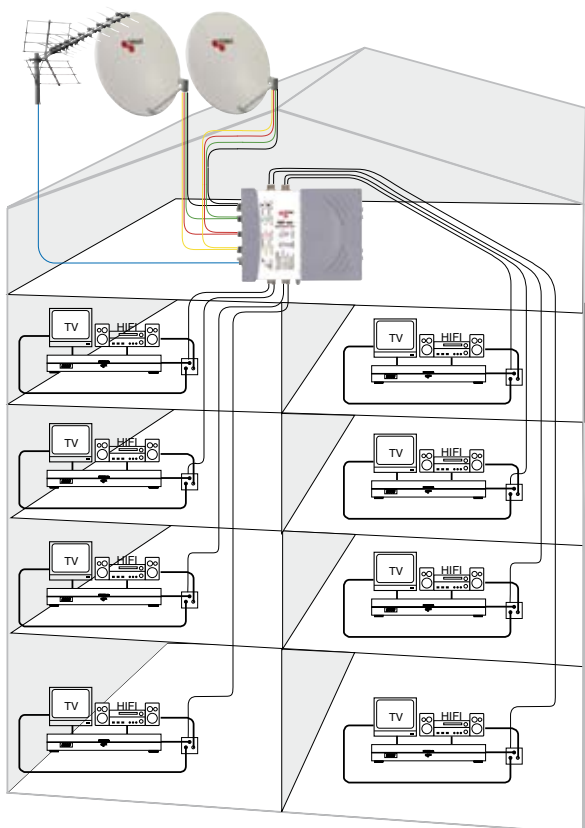
Enjoy TV signals from 4 to 8 polarities

When you work with TMS 9xP (stand-alone) or 9xC (cascadable) multi switches, you're guaranteed a cost efficient solution in small to medium sized networks that receive signals from two satellite positions.

This series is your preferred choice when you want to:

- dramatically cut down the number of units needed in your installation
- keep the door open for future expansions to your present installation (select the TMS 9xC)
- choose freely between a built-in power supply (TMS 9xP) or external power supply solution (TMS 9xC)

TMP 9xP example



TMS 9x, TMS 9xC and TMS 9xP series comprise versions with 6, 8, 12 or 16 subscriber outputs



5 or 9 string special colour labeled multi cable available for multi switch installations

Find the multi switch solution that's right for you at:

www.triax.com

User and installer benefits:

- Hands-on flexibility. Select 4, 6, 8, 12 and 6 outputs to adjust to number of users at any given time
- Includes terrestrial input and loop-through to ensure terrestrial reception without using a set-top box – as well as satellite reception on all subscriber outputs
- Excellent isolation specification – no matter which type you choose
- Includes a DiSEqC switch for position switching

Triax multi switch solutions

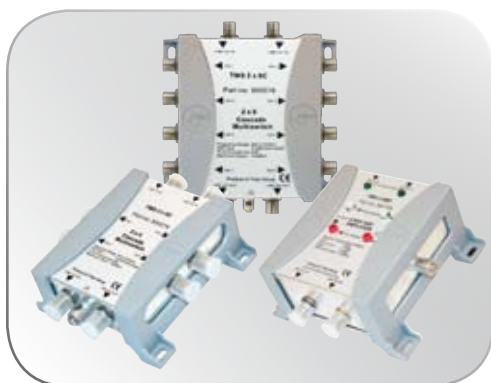
- few polarities, few users

Enjoy TV signals from 2 polarities

Customised as a satellite-only system, TMS 2xC is a cascadable, easy to install two-polarity multi switch. You can use this particular series in areas with one-position, two-polarity satellite reception – e.g. India, The Pacific, Australia etc.

This series is your preferred choice when you want to:

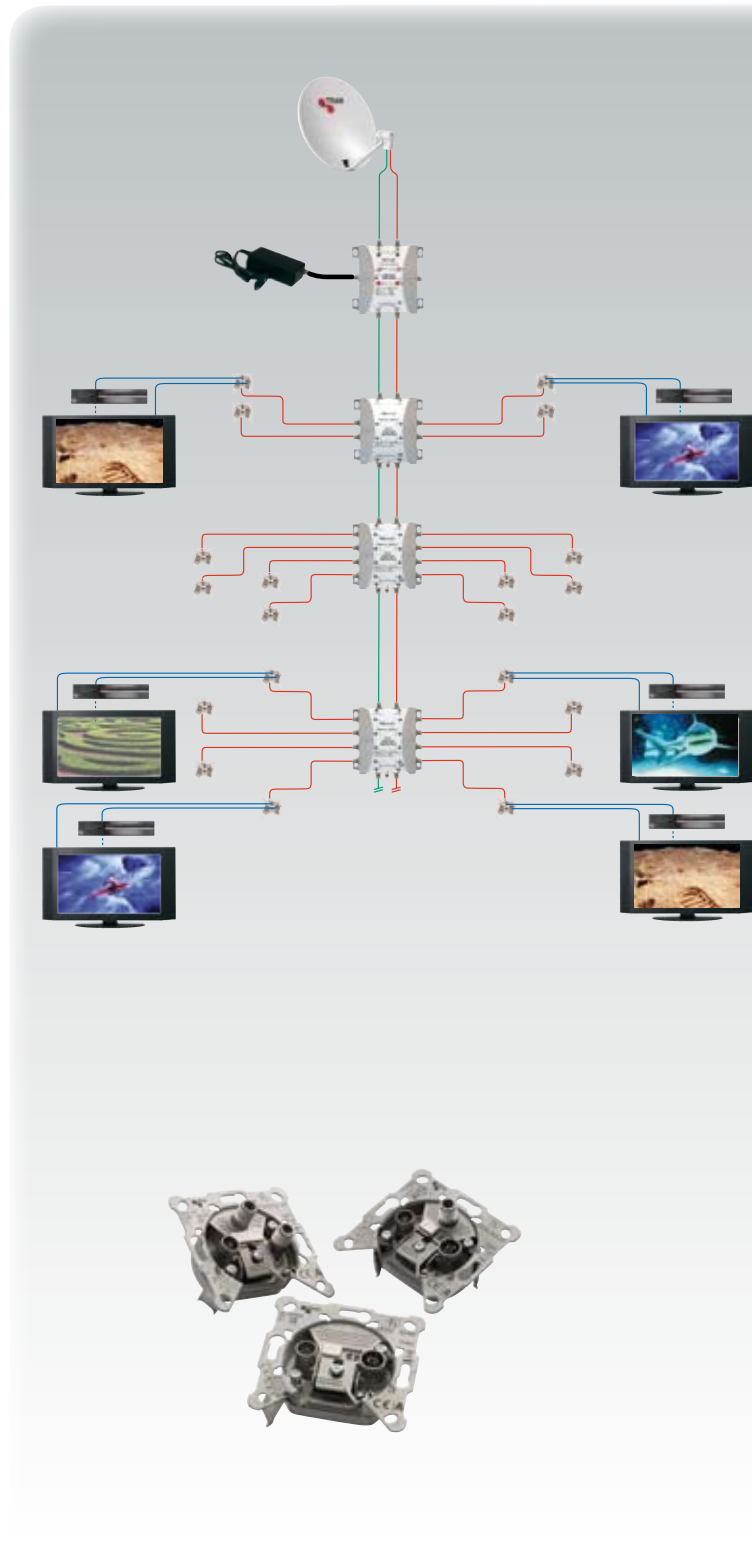
- dramatically cut down on the number of units needed in your installation
- keep the door open for future expansions to your installation



TMS 2xC series comprises versions with 4-8 subscriber outputs

User and installer benefits:

- All switch functions are powered and controlled by your set-top box, so you don't need an external power supply
- Flexible – choose between 4 and 8 user outputs
- No-hassle, cost efficient multi switch



Find the multi switch solution that's right for you at:

www.triax.com

Triax multi switch solutions

- few users



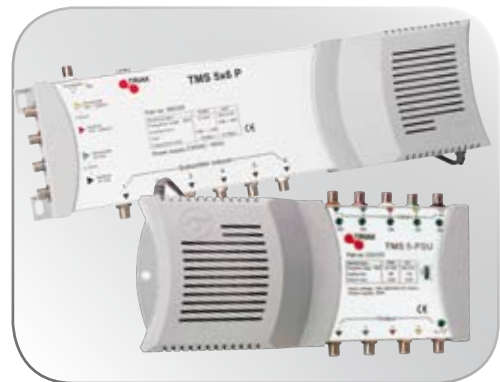
5 or 9 string special colour labeled multi cable available for multi switch installations

Sometimes one satellite is all you need...

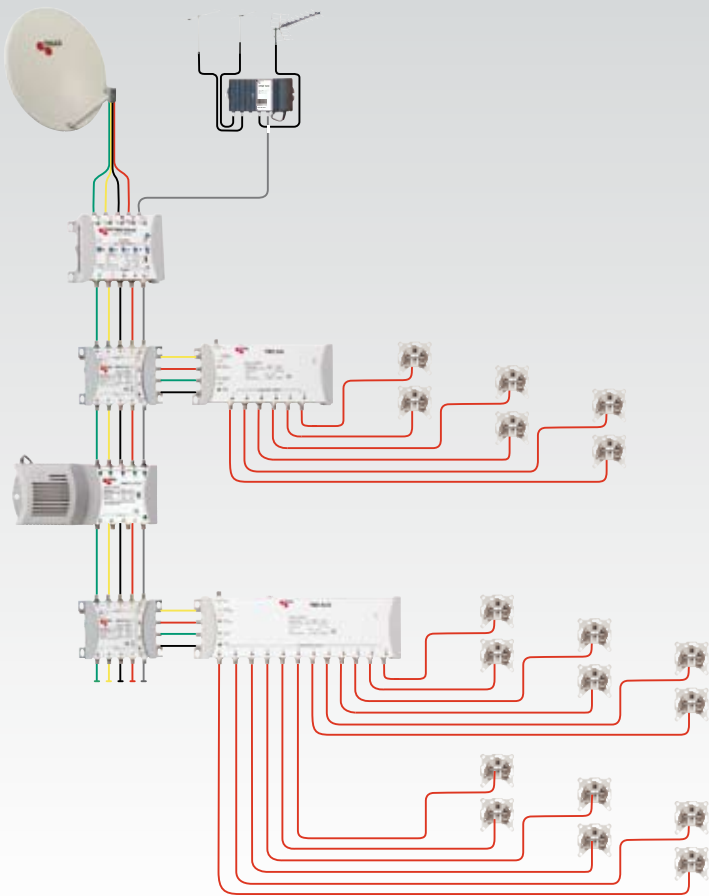
Install the TMS 5x modular or the TMS 5xP stand-alone multi switch, where only one satellite position is required – allowing up to four polarities. Both versions include terrestrial input and loop-through combined to user outputs.

This series is your preferred choice when you want to:

- enjoy great signal performance at a fair price
- cut number of units to an absolute minimum (when you use the TMS 5xP)
- install or expand a large system using TMS TAP components



TMS 5x and TMS 5xP series comprise versions with 6, 8, 12 or 16 subscriber outputs



User and installer benefits:

- You can watch terrestrial signals without using a set-top box
- Excellent isolation specification – no matter which type you choose
- Pick 4, 6, 8, 12 or 16 outputs in a single installation – and easily cascade and expand the system in the future (using TMS TAP units)

Triax multi switch solutions

- few to many users

This is how you keep a growing number of one or two satellite users happy

You're probably familiar with this dilemma. Very often, when you want to supply a growing number of subscribers using stand-alone multi switches – all the different cables tend to grow too. The four-polarity TMP 5x and eight-polarity TMP 9x multi switch comes with internal amplifiers that compensate for the insertion loss. On top of that, the integrated power supply keeps both amplifiers and the LNB powered.

This series is your preferred choice when you want to:

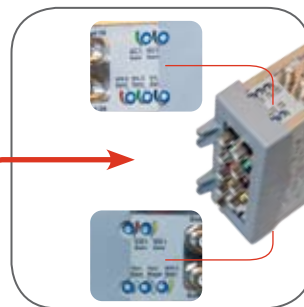
- supply many users at once – and you want excellent and consistent output levels for everyone
- be able to use the very same switch, no matter how close or far away you are from the dish and LNB



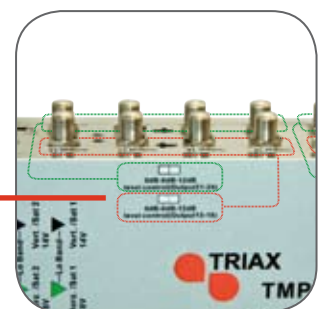
TMP 5x and 9x series comprise versions with 8-32 subscriber outputs

User and installer benefits:

- Do pretty much as you please with 8, 12, 16, 24 and 32 outputs in every single unit
- You can watch terrestrial signals without using a set-top box
- Adjustable outputs to compensate for long cables and distances (24 and 32 users)
- Adjustable inputs per polarity
- Built-in switchmode power supply



Individual polarity attenuators on each input



L-M-S switches (0-6-12 dB) for long, medium and short subscriber lines in pairs of 4



The dos and don'ts of perfect multi switch installations

Often, the main reason people install a multi switch system is to get access to a vast number of TV channels. If, for instance, you live in Europe or the Middle East you can potentially enjoy some 3-4000 channels in just one installation.

Triax offers you a professional, all-encompassing range of multi switches guaranteed to cover whatever need you have – ranging from large cascadable systems for up to 16 polarities and many users to single position multi switches with just a handful of users.

But common mistakes and wrong takes on installing multi switch solutions happen everywhere on a daily basis. And we'd like to cut down on that. Below we've put together a short list to help you and other installers avoid these pitfalls. So – don't try this at home. Or anywhere else.

Don't make compromises at the dish/antenna

Always use a dish size as large as possible. Signal level gained here is basically free, compared to what you may need to amplify later. Go for maximum performance and signal level and quality out of the dish and LNB.

Always do symmetrical designs

When you do large and long-range installations, remember the following. Keep the distribution network balanced and symmetrical by starting from the rooftop dish of high buildings – and go half way down through the building. Then split upwards and downwards from there. And don't be surprised if you even have to split once more.

Always use thickest possible cable in the trunk, and thinner at subscriber

The only way you can minimise large signal losses along a cable is to use a better, often thicker, cable. Avoid amplifiers as far as possible – and keep cascading amplifiers to a minimum.

Keep long cable runs in the trunk, not in subscriber cables

Remember, if you have long subscriber cables, the cable loss itself may force you to use a very high-level signal in the multi switch – just to compensate.

Always carefully adjust the output level of line amplifiers

Whatever you do, NEVER just set line amplifiers for maximum output. First, get your calculations right (or let us help you). And remember – the more transponders you have/use, the lower level you can run into the amplifier to avoid intermodulation.

See the multi switch as a combiner in terms of terrestrial and satellite signals

Don't forget this. RF and IF signals should NOT be distributed equally using multi switches – since cable losses, C/N ratios and signal levels are completely different. Only use the terrestrial input found in most multi switches to combine the two signal sources JUST BEFORE the subscriber cable and subscriber outlet.

Many subscriber outputs do not always mean many outputs per switch

To put it short, if using one single multi switch unit forces you to run excessively long subscriber cables – then you should break it up into more, smaller units and let the trunk take care of the distances.

Be part of the decision-making team from an early stage

All too often, important decisions have already been made before the installer is contacted and asked to – swiftly – install a complex multi switch system in an entire building. We know this is often the reality of things.

But for all the reasons mentioned just above, if you CAN influence these decisions, and thereby improving your chances for a successful installation – by all means speak up. Good luck.

For more info please visit www.triax.com

www.triax.com

"What we mean by..."

- a quick list of terms used in this folder

Footprint

- ground area covered by signal
- The shape and size of an area on Earth where one specific transponder can be received. Footprints vary from simple, circular shapes to highly complex outlines
- following geographical shapes on Earth's surface.

High Band

Frequencies from a European satellite transponder range between 11.7 and 12.75 GHz.

Low Band

Frequencies from a European satellite transponder range between 10.7 and 11.7 GHz.

LNB – converting and amplifying high frequencies
Satellites transmit signals at high frequencies. When a band of satellite signals get reflected by a dish they merge in a focus point where the antenna, or Low Noise Block Converter (called LNB or LNC), is placed. The LNB then down-converts and amplifies the signals, effectively placing them in the useful and convenient 950-2150 MHz IF range.

Polarity – using the same frequency twice
Most satellite transponders transmit frequencies in both horizontal and vertical directions. The 90 degree difference in radiation angle – called horizontal and vertical polarity – isolates the frequencies from each other and prevents interference. Benefit? You can use the same frequency twice – ultimately doubling the number of TV channels available.
In Europe, High and Low Band frequencies are used. And since both come with horizontal and vertical polarity this means that, in total, a satellite transmits four polarities. In the United States and the Pacific, usually only two-polarity satellites are used.

(Satellite) Position – plotting the orbit
Also known as Azimuth, this is the geographical position of the satellite orbit relative to Greenwich; which is designated the 'zero position'.
Now, counting from zero, you can relate satellites to either a specific east or west position – e.g. Astra 19.2 degrees east or Thor 0.8-1 degrees west.

Transponder – transmitting electromagnetic radiation
Another name for the transmitter antennas on a satellite. Each satellite can have more than fifty transponders – transmitting on individual frequencies.

Trunk – cables in a cascade
Also known as the backbone, the trunk refers to cables running between multi switches in a cascade.

Quattro LNB – the customised multi switch solution
Used exclusively with multi switches, this type of LNB gives you four outputs that are fixed individually to each of the four polarities – i.e. Low Band, horizontal polarity; Low Band, vertical polarity; High Band, horizontal polarity; and High Band, vertical polarity. A Quattro LNB needs four cables, one for each polarity.

"What we mean by..."

- a quick list of terms used in this folder

Forgive us for including the following list. Chances are you won't learn anything you don't already know. So, why did we write this list? One reason. To minimise possible misunderstandings.

As you've perhaps experienced yourself, people tend to use the same words, but with slightly different meanings – even among professionals within the same line of work. Consequently, the list is here to specify what WE mean when we say Quattro LNB and footprint...

Azimuth – see (Satellite) Position

13 VDC – selects vertical polarity
Your set-top box usually powers your LNB – and when you select a direct current of approximately 13 volts to reach the LNB it automatically receives vertical polarity signals only.

18 VDC – selects horizontal polarity
Your set-top box usually powers your LNB – and when you select a direct current of approximately 18 volts to reach the LNB it automatically receives horizontal polarity signals only.

22 kHz – switches between High or Low Band
Lets your set-top box tell your LNB to pick the High Band frequency range whenever 22 kHz is present as switching tone/indicator – and the Low Band when it isn't. For more on this, please see DiSEqC below.

Backbone – see Trunk or Cascade

Cascade – a chain of multi switches
You build a cascade, when you link two or more multi switches together in a chain – with the first serving as power source for the next in line. Cables connecting cascaded multi switches are often called the trunk or backbone.

DiSEqC – lets you switch between satellite positions
The Digital Sequence Equipment Control, or simply DiSEqC switch, makes it possible for you to receive signals from more than one satellite position. Dependent on how exactly the 22 kHz tone/indicator is transmitted, this switch determines from which satellite position you'll be picking up signals.

Dish – collects and focuses satellite signals
Roughly speaking, transponders on a satellite send out electromagnetic radiation – which is then picked up by a satellite dish on Earth. The signal collected by the dish is then reflected to a focus point where the antenna, or LNB, is placed.

Elevation – viewing the satellite at the right angle
Specifies the angle of the satellite to the horizon. At the Equator this gives you an elevation of 90 degrees. In Central Germany it's 32. In Denmark 26 – and in Central Sweden it's down to 15 degrees.



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



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

But maybe your present or future project doesn't end with you selecting the perfect amplifier? 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, multiswitches 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.



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

YOUR ULTIMATE CONNECTION

Triax offer you insight, experience and a wide range of solutions



Find more information on....

www.triax.com

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

AB.101.1.02 • Produced in 2008
All specification in this brochure
subject to change without notice

Triax Marketing • © 2008 The Triax Group
All rights reserved. Use of this material
signifies your agreement to the terms of use.