

Triax passive optical splitter

- for building passive optical networks

The Triax fibre optical TOS passive splitter/coupler units let you build passive optical networks (PON) in virtually any size and split ratio. Using any combination of the 2, 4 and 8-way optical splitters, passive optical networks can be realized that satisfy almost any requirement for network coverage. Using the TOS splitters in tandem with the optical LNB products the link budget allows splitting into 32 ways.

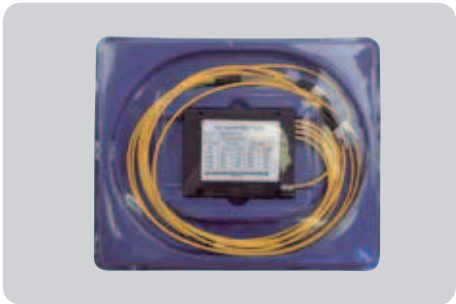
- ✓ For singlemode systems
- ✓ Dual window use (1310nm/1550nm)
- ✓ Uniform splitting ratio (1x2: 50/50%)
- ✓ Excellent environmental & mechanical stability
- ✓ Low insertion loss
- ✓ With 1 meter cables, FC/PC pre-connected



TOS 02 optical splitter



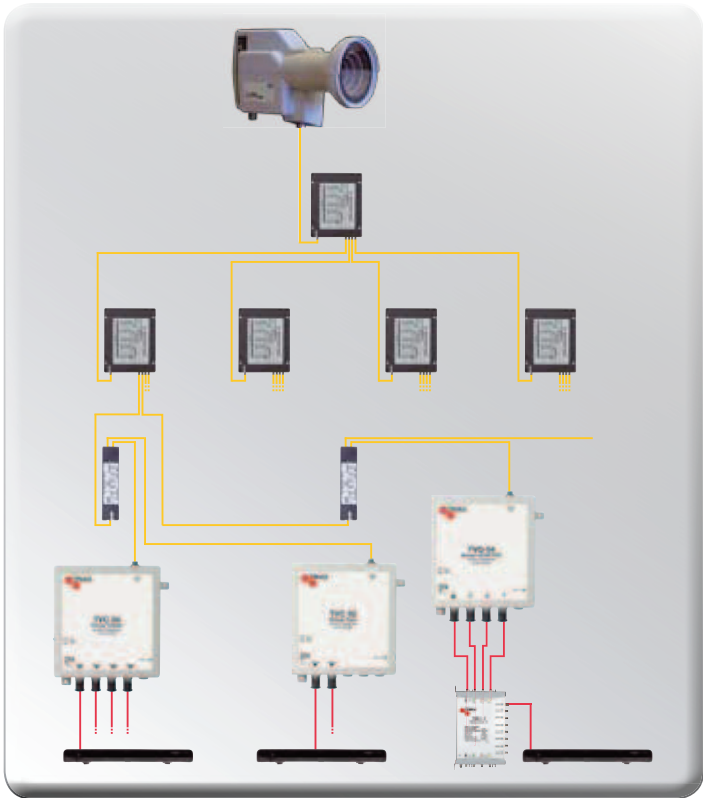
TOS 04 optical splitter



TOS 08 optical splitter

Technical data

Type		TOS 02	TOS 04	TOS 08
Art. No.		307632	307634	307638
Number of inputs		1	1	1
Number of output		2	4	8
Pre-connected with (in and out)		FC/PC	FC/PC	FC/PC
Cable length	m	1	1	1
Coupling ratio	%	50/50	25/25/25/25	8x12,5
Insertion loss (typ.)	dBm	3,8	6,8	10,6
Wavelength	nm	1310/1550	1310/1550	1310/1550
Wavelength bandwidth	nm	± 40	± 40	± 40



Triax virtual optical converter

- IF Receiver Nodes for TWIN, QUAD and QUATTRO use signal

The virtual converter receives an optical signal via a passive optical network (PON) from the optical LNB. It then performs a de-stacking frequency conversion, and outputs two or four universal lines for driving two or four individual set top boxes. A QUATTRO version presents the four individual polarities on separate coax outputs and is suited to drive a normal multi switch system. This effectively eliminates the limitations on cable lengths and number of users everyone has had to live with from the birth of satellite reception.

- ✓ Converts optical SAT-IF signals into IF
- ✓ Solutions for both direct STB connection and multi switch use.
- ✓ Supports from single direct connection and up to a 32 way passive optical network
- ✓ Requires an optical LNB (TOL32) front-end
- ✓ 4 polarities in one single fibre optical cable.



TVC 02 virtual optical converter



TVC 04 virtual optical converter



TVQ 04 virtual optical converter

Technical data

Type		TVC 02	TVC 04	TVQ 04
Art. No.		307620	307622	307624
Input parameters				
RF frequency range, vertical polarities	GHz	0.95 – 3.0	0.95 – 3.0	0.95 – 3.0
RF frequency range, horizontal polarities	GHz	3.4 – 5.45	3.4 – 5.45	3.4 – 5.45
Optical				
Optical RLR (min.)	db	20	20	20
Optical power, small PON setting (min.)/(max.)	dBm	-13/0	-13/0	-13/0
Optical power, large PON setting (min.)/(max.)	dBm	-18/-14	-18/-14	-18/-14
Aggregate equivalent RF power (min.)/(max.)	dBm	-60/-20	-60/-20	-60/-20
Nominal satellite transponder levels (min.)/(max.)	dBm	-80/-40	-80/-40	-80/-40
Satellite transponders		120	120	120
Input connector		FC/PC	FC/PC	FC/PC
RF Frequency Range (Output Parameters)				
Horizontal high band (converted from 4.4 to 5.45 GHz)	MHz	1100-2150	1100-2150	1100-2150
Vertical high band (converted from 1.95 to 3.0 GHz)	MHz	1100-2150	1100-2150	1100-2150
Horizontal low band (converted from 3.4 to 4.4 GHz)	MHz	950-1950	950-1950	950-1950
Vertical high band (converted from 0.95 to 1.95 GHz)	MHz	950-1950	950-1950	950-1950
Return loss (min.)	dB	10	10	10
Gain ripple across band (max.)	dB	4	4	4
Gain ripple across 30MHz (max.)	dB	1	1	1
Nominal output level (per. transponder)	dBm	-65 (min.), -25 (max.)		
OIP3 (min.)	dBm	+10	+10	+10
Isolation (unwanted path to selected path)	dB	30	30	30
In band spurious power (min.)	dBc	-25	-25	-25
Out of band spurious power (max.)	dBm	-60	-60	-60
LO power (max.)	dBm	-60	-60	-60
Integrated phase noise (integrated from 1kHz to 13MHz)	°RMS	4	4	4
Output frequency stability/accuracy (max.)	kHz	320	320	320
Output connectors		2x and 4 x F-female		
Others				
Power consumption (at 12 VDC)	mA	<300	<300	<300
Power supply (QUAD and TWIN versions)		From STB	From STB	From STB
Power supply (QUATTRO versions)		External PSU	External PSU	External PSU
Power input (plug to optionally supply converter externally)	VDC	+20	+20	+20
Level switch				
Passive optic network size switch (levels of splitting)		STD / SML	STD / SML	STD / SML

Triax fibre optical accessories

- for building optical networks

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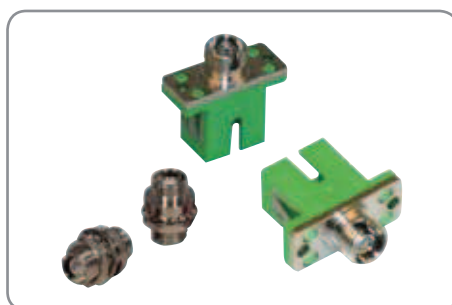
Using any combination of the 2, 4 and 8-way optical splitters, passive optical networks can be realized that satisfy almost any requirement for network coverage.

Using the TOS splitters in tandem with the optical LNB products the link budget allows splitting into 32 ways.

- ✓ Pre-connected cables 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
- ✓ For singlemode use



Steel armored 3.0 fibre optic cable



Fit on site connector



Steel armored 3.0 fibre optic cable

Technical data

Type	TFF 01 Fit-on-site connector	TFF 001 Optical test tool	TFB 001 FC/PC-FC/PC	TFB 002 FC/PC-SC/PC
Art. No.	307680	307682	307684	307686
Remarks			Barrel connector (Optical LNB use)	Barrel connector (HFC system use)

Steel armored 3.0 fibre optic cable - G657A, LSZH

Type	TFC 01	TFC 03	TFC 05	TFC 10	TFC 15	
Art. No.	307661	307662	307663	307664	307665	
Pre-connected with (in and out)	FC/PC	FC/PC	FC/PC	FC/PC	FC/PC	
Cable length	m	1	3	5	10	15



Type	TFC 20	TFC 30	TFC 40	TFC 50	TFC 75	
Art. No.	307666	307667	307668	307669	307670	
Pre-connected with (in and out)	FC/PC	FC/PC	FC/PC	FC/PC	FC/PC	
Cable length	m	20	30	40	50	75



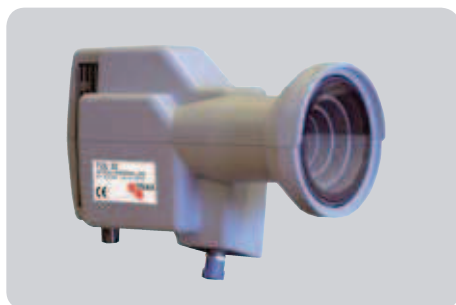
Type	TFC 100	TFC 200	TFC 500	
Art. No.	307671	307672	307675	
Pre-connected with (in and out)	FC/PC	FC/PC	none	
Cable length	m	100	200	500

Triax fibre optical LNB

- a high quality, high performance universal LNB

The Triax TOL32 optical LNB provides a 1310 nm wideband optical output where all four satellite polarities are stacked into one frequency range (950-5450 MHz). Using modern laser technology this frequency range can be transmitted via a single laser over a very large distance, and can sustain splitting into 32 ways. This allows a system setup that can drive a fairly large passive optical network (PON) before the signal is finally fed into a number of virtual converters for traditional coax distribution.

- ✓ Universal LNB with fibre optic output for long range coverage
- ✓ Minimizes losses on long distances (max. 0.3dB/km versus 32dB/100m on coax)
- ✓ 7dBm optical link output supports up to 32 way splitting (32 converters)
- ✓ Uses 1310 nm technology



TOL 32 optical LNB



TOL 32 optical LNB



TOL 32 optical LNB

Technical data

Type	TOL 32	
Art. No.	307610	
Frequencies		
Input frequency range	GHz	10,7 – 12.75
Band stacking, vertical	GHz	0.950 – 3.0
Band stacking, horisontal	GHz	3.4 – 5.45
Polarization	linear	Horizontal and vertical
Optical		
Wavelength	nm	1310
Optical output power, (nominal@25 °C)	dBm	7.0
Variation, output power, (over full temperature range)	dBm	± 0.2
Equivalent split levels possible (max.)	ways	32
Total loss (nominal)	dB	18.3
Noise		
Noise figure (typical@25°C/ max. @25°C)	dB	0.5/1.1
Noise figure (typ. over temperature/ max. over temperature)	dB	0.7/1.3
Gain		
Conversion gain (min. at room temperature/ max.at room temperature)	dB	72/62
Gain variation (-30 to +60 °C)	dB	± 2
Gain flatness (0.95 to 5.45 GHz)	dB	5
Gain ripple (per 26MHz bandwidth segment)	dB	≤0.5
Local Oscillator (L.O.)		
L.O. frequency, vertical/ horisontal	GHz	9.75/ 7.3
L.O. phase noise (offset frequency 1 kHz/ 10 kHz/ 100 kHz/ 1 MHz)	dBc/Hz	-55/ -80/ -100/ -110
L.O. stability, initial setting	MHz	± 1
L.O. temperature drift (-40 °C to +60 °C)	MHz	± 2
L.O. aging and total drift (10 years)	MHz	± 4
Additional		
Image rejection (min.)	dB	40
Cross polar isolation (typ./ min.)	dB	30/25
Spurious output - in band (950MHz-3GHz, 3.4GHz-5.45GHz)	dBc	-25
LNB type	Universal Wholeband	
Supply voltage, nominal/ maximum survival voltage	VDC	12/ 25
Current consumption	mA	< 450
DC-input	F-type, female	
Optical output	FC/PC	
Dimensions / temperature		
Mounting dimensions / neck diameter	mm	40
Ambient operating temperature range	°C	-30 - +60

