



SAT Optics

Triax offer a complete range of solutions for your fibre IRS installation.

Your preferred choice when you want:

- One discreet headend - distribute satellite, digital terrestrial and radio signals from a single location
- Design a system over a large area without jeopardising signal and quality
- Install a single fibre cable only rather than multiple coaxial cables

Key features:

- Reduced cabling
- Negligible cable loss
- High quality signal levels
- Excellent C/N
- Scalable and expandable
- No earth bonding required
- Low power consumption
- A passive fibre optic network (with no active components) means there is little chance of failure when installed



Optical transmission - the sophisticated SAT/Terr TV distribution for everybody

Television at the speed of light - the transmission choice for the future

SAT-IF and Terr distribution over Fibre provides reception in large developments over long distances from a central headend with multiple splits.

- Less insertion loss of approx. 0,3 dB/km for light modulated SAT, DVB-T and DAB signals
- All of the 4 satellite bands over one fibre by frequency stacking in the transmitter and de-stacking in the optic re-converter.
- Fibre cables are galvanic isolated. Provides better protection against lightning and avoids disturbances caused by grounding loops.
- Saves space by using a single fibre cable for each satellite position (diameter 3mm 5 coaxial cables 5x7 mm)
- Easy installation by using pre-assembled fibre cables from TRIAX

System		Opto-IES 1 1 x SAT + Terr. Optical Integrated Reception system
Transmission capabilities	SAT Terrestrial	1 SAT position with 4 polarities FM, DVB-T, DAB
Technical concept		Stacking-LNB with external optical transmitter 1310 nm
System components	Stacking LNB Optical transmitter Optical re-converter	TWL 01 with N connector TOU 232 SA with 2 x opt. output TVC 05/TVQ 05
Components for extension		TAS 04 coaxial splitter to 4 opt. transmitters N-cables TUC xx TOU 232 SA
Optical budget (max.)		2 x 19 dB
LWL (max. Splitting = connectable re-converters)		2x32=64
	with extension TAS 04	8x32=256

Integrated Reception System 1 x SAT + Terr.

Opto IRS 1 Integrated Reception System for 1 Sat-Position + Terrestrial. 2x32 fibre splits, 1310 nm.

The TOU 232 kit consists of the stacking LNB TWL 01, Optical Transmitter TOU 232 SA (SAT + Terrestrial), N-cable TUC 02 (2m), PSU 20 V, Mast clamping plate, FC/PC-terminator.



- The 4 SAT bands are stacked in the full-band LNB TWL 1. The SAT IF signal 950...5450 MHz is connected via the high performance coaxial N-cable TUC to the optical transmitter TOU 232 SA.
- The terrestrial signals are connected to the optical transmitter directly.
- The optical transmitter converts the SAT and Terr signal into 2 optical output signals with 1310 nm wavelength
- Each optical output can be split upto 32 ways with each output feeding a TVC 05 or TVQ 05 converter.
- The optical signal can be split upto 8 x 32 ways by using the active coaxial splitter TAS 04 that can drive upto 4 optical transmitters
- External PSU 20 V (included)

Type		TWL 01	TOU 232 SA	TOU 232 Kit
Part No.		307612	307615	307614
Design		Full stacking LNB, coaxial output	Opt. transmitter for 1xSAT + terr. splitting 2 x 32	Kit, consisting of TWL 01, TOU 232 SA, N-cable, PSU, accessories
SAT range				
Input frequency range	GHz	10,7 – 12,75		
Output frequency range LNB	GHz	0,95...5,450	0,95...5,450	
frequency range vertical, stacked, VL+VH	GHz	0,950 – 3,0		
frequency range horizontal, stacked, HL+HH	GHz	3,4 – 5,45		
Polarisation	Linear	horizontal and vertical		
Terrestrial range				
Terrestrial input frequency range DVB-T	MHz		470...854	
Terrestrial input frequency range DAB	MHz		213...230	
Terrestrial input frequency range DTT (FM)	MHz		87...108	
Technical data				
Wavelength	nm		1310	
Optical output level (nom. @25 °C)	dBm		2 x 3.5	
Optical budget for PON (with TVQ/TVC05)	dB			19
Noise figure (typ. @25°C)	dB	0,5		
Gain	dB	62...72		
L.O frequency, vertical	GHz	9,75		
L.O frequency, horizontal	GHz	7,3		
Image frequency rejection (min.)	dB	40		
Isolation (typ.)	dB	30		
Spurious output (950MHz-3GHz, 3,4GHz-5,45GHz)	dBc	-25		
LNB				
Connector RF output, DC	mm	N female		
Diameter feed	°C	40		
Operating temperature range		-30 - +60		
Power supply		via power inserter		
Optical transmitter				
Port SAT in			N female	
Port DTT/DAB in			F female	
Port Opt out1 and Opt out 2			2 x FC/PC	
Operating temperature range			-30 - +60	
Power supply (via opt. receiver)				
Power supply, nominal	VDC		20	
Power consumption	mA		< 450	

Optical Re-Converters

Optical Re-Converters 1 x SAT + DTT/DAB/FM for Optical LNB and TOU 232 Kit



The TVC 05 and TVQ 05 Virtual Optical Receiver Nodes are optical-to-coax converters which convert frequency stacked optical signals from a TOL32 LNB or a TOU232-Kit (IRS 1) Sidecar unit into a traditional universal single coax signal. The converters also provide a coax DTT/DAB/FM signal diplexed onto each output (TVC 05), or onto a separate output (TVQ 05) when inserted into the optical transmitter TOU 232 SA.

- Compatible with the TOU 232 kit (and the optical LNB TOL 32)
- Built in AGC which allows a wide dynamic range of optical signals without impact to output level and quality.
- Two LED indicators display operation status.
- Easy mounting via a wall baseplate
- Power supply via RF output by SAT receiver (TVC 05) or by multiswitch (TVQ 05).
- Optional external power supply for continuous operation available: TPS 323 PSU
- Attention: Please insert an attenuator TFA (5/10/15) dB in if the optical attenuation of the passive optical network (PON) is less than 10 dB

		TVC 05	TVQ 05
Part No.		307627	307629
Design		Quad + terrestrial	Quattro + terrestrial for use with multiswitches
Optical Input			
Input Power	dBm	0...-15	
Wavelength	nm	1310/1550	
Input frequency range, vertical	GHz	0,95 – 3,0	
Input frequency range, horizontal	GHz	3,4 – 5,45	
Terrestrial frequency range, DVB-T	MHz	470...854	
Terrestrial frequency range, DAB	MHz	174...241	
Terrestrial frequency range, DTT	MHz	88...108	
Input connector		FC/PC	
Outputs SAT			
Horizontal High Band (4.4 to 5.45 GHz)	MHz	1100-2150, > 15,5 V 22 kHz	fix
Vertical High Band (1.95 to 3.0 GHz)	MHz	1100-2150, < 14,5 V 22 kHz	fix
Horizontal Low Band (3.4 to 4.4 GHz)	MHz	950-1950, > 15,5 V	fix
Vertical Low Band (0.95 to 1.95 GHz)	MHz	950-1950, < 14,5 V	fix
Impedance, nominal	Ohm	75	75
Return loss (min.)	dB	10	10
Automatic Gain Control (AGC)	dB	30	30
Output Level SAT	dBμV	ca. 75	ca. 79
Outputs Terrestrial			
Terrestrial frequency range, DVB-T	MHz	470...854	470...854
Terrestrial frequency range, DAB	MHz	174...240	174...240
Terrestrial frequency range, DTT	MHz	87...108	87...108
Output Level	dBμV	ca. 68	ca. 68
Common Data			
Output connectors		4 x F (4 x SAT/terr.)	5 x F (4xSAT+1xterr.)
Current consumption	mA	<220 @ 10 V	<220 @ 10 V
Input Voltage	V	10...20 from receiver	10...20 V from multiswitch
Operating temperature	°C	-15...+60	-15...+60
Weight	kg	0,8	0,8
Dimensions	mm	110 x 136 x 50	110 x 136 x 50
Accessories			
Power supply TPS 323 PSU (please order separately)		TPS 323 PSU (100-240 VAC +20VDC/1,2A), Part No. 307657	

Optical Splitters / Couplers

- For singlemode fibre systems
- Excellent mechanical stability
- Low insertion loss
- TOS 02D...08D: symmetrical splitter with FC/PC-ports at input and outputs
- Wavelength 1310 and 1550 nm



Type		TOS 02 D	TOS 03 D	TOS 04 D	TOS 08 D
Part No.		307636	307637	307635	307639
No. of inputs		1	1	1	1
No. of outputs		2	3	4	8
Connection		FC/PC	FC/PC	FC/PC	FC/PC
Coupling ratio	%	50/50	33/33/33/33	25/25/25/25	8x12,5
Insertion Loss	dB	4,0	5,5	7,0	10,1
Wavelength	nm	1310/1550	1310/1550	1310/1550	1310/1550
Wavelength band width	nm	± 40	± 40	± 40	± 40

Fibre Cable

Optical Cables, Assembled

Pre-assembled with optical connectors on both sides for easy and reliable installation.

- FC/PC connectors on both ends of the cable
- Monomode-Faser 9/125
- Low attenuation 0,3 dB per km
- Max. bending radius: 5 mm
- UV resistant for outdoor use
- Steel re-inforced jacket for protection and tension
- LSZH jacket in grey colour

Type		TFC 01	TFC 03	TFC 05	TFC 10	TFC 15
Part No.		307661	307662	307663	307664	307665
Assembled with		FC/PC	FC/PC	FC/PC	FC/PC	FC/PC
Diameter cable	mm	3				
Diameter connector	mm	10				
Cable length	m	1	3	5	10	15

Type		TFC 20	TFC 30	TFC 40	TFC 50	TFC 75
Part No.		307666	307667	307668	307669	307670
Assembled with		FC/PC	FC/PC	FC/PC	FC/PC	FC/PC
Diameter cable	mm	3				
Diameter connector	mm	10				
Cable length	m	20	30	40	50	75

Type		TFC 100	TFC 200
Part No.		307671	307672
Assembled with		FC/PC	FC/PC
Diameter cable	mm	3	
Diameter connector	mm	10	
Cable length	m	100	200



Fibre Cables, Connectors, Attenuators and Terminators

- Pigtails for assembling of monomode fibre cables by fuse splicing
- Adaptors to connect fibre lines with equal or different connectors
- Fibre patch cable FC/PC, SC/APC
- Optical attenuators for limiting the optical input level of optical receivers



Non-assembled cable

Type	TFC 500	FC/PC-Pigtail
Part No.	307675	307581
Description	500m Fibre cable	Pigtail-Cable
Connection	-	FC/PC
Length	500 m	1 m

Optical patch cords

Type	SC/APC-SC/APC fibre patch cord	FC/PC-SC/APC fibre patch cord
Part No.	307580	307582
Connection	SC/APC - SC/APC	FC/PC - SC/APC
Length	2 m	2 m

Optical adaptors

Type	TFB 001	TFB 002
Part No.	307684	307686
Connection	FC/PC-FC/PC	FC/PC-SC/PC
Description	Adaptor	Adaptor

Optical attenuators

Type	TFA 05 FC/PC	TFA 10 FC/PC	TFA 15 FC/PC
Part No.	307688	307690	307692
Attenuation	5 dB	10 dB	15 dB

Optical terminator

Type	TOT 02
Part No.	307644
Connector	FC/PC



Accessories

Active coaxial splitter with N connector

TAS 04 is an active coaxial splitter to drive up to 4 optical transmitters TOU 232 SA via N-cable TUC xx

- Active splitter without insertion loss
- Increase the network up to 264 splits/optical receivers by using the 4-way splitter TAS 04 and 4 x TOU 232 SA.
- Fit RF cable with N-connectors TUC xx

Type	TAS 04	
Part No.	307616	
No. of inputs		1
No. of outputs		4
Connection		N
Coupling ratio	%	25/25/25/25
Frequency range	GHz	0,95...5,5

Coaxial cable with N connector

Coaxial link between

- Stacking LNB TWL 01 and optical transmitter TOU 232 SA
- Stacking LNB TWL 01 and coaxial splitter TAS 04
- TAS 04 and optical transmitter TOU 232 SA

Type		TUC 002	TUC 003	TUC 005	TUC 010
Part No.		307601	307603	307604	307605
Length	m	2	3	5	10
Connection		N female	N female	N female	N female

SAT Optics Installation Example

