TELKOM TELMOR

PRODUCT CATALOGUE | 2018/2019

Our company was founded in 1954 and since its beginnings sets the highest standards in terms of creating solutions in the world of signals and technology. Many years of experience, insightful analysis of the market needs and keeping track of the changing trends and technology, allows us to enjoy the recognition of experts in the teletechnical industry. The highest quality and integration of solutions in the area of signal processing is the objective of our business.

Experience and know-how

Over 60 years of activity on the market has allowed us to acquire and develop competences and unique know-how in the design and manufacture of electronic devices for transmitting signals. Our products and solutions have numerous patents, as well as industrial and use copyrights. We employ over 250 experienced people committed to their work. We have our own section R&D department with scientific and research facilities, as well as qualified engineering personnel, who is constantly looking for new solutions to ensure the highest quality of products and services.

Extensive range of products and services

Formerly telephone centres, and today highly specialized electronic devices used in digital technology to handle the HFC network, optical infrastructure, as well as to receive digital television DVB-T in large collective RTV/SAT installations – is our product offer. It is a base for us providing design services of distribution networks of television signals and data transmission, as well as integration of solutions in these areas.

Complexity of service

We provide our clients with full integration of activities essential to realize their ideas – starting from the analysis of the problem, through the designing stage, all the way to production and delivery of the final solution, At every stage of cooperation we provide the highest standards of service and full technical support. Our advantage is speed of response to emerging Customer needs, in which knowledge of the market and understanding the directions of its development undoubtedly helps us. Thanks to this, we minimise the time required, among others: for preparing offers of cooperation or realization of prototypes and sample series of new product.

Trust

We are a European company, therefore, in cooperation with foreign Customers, we respect the laws in force in the European Union. Furthermore, in our business will always follow the highest standards of integrity and business ethics. An honest approach to business has allowed us to acquire a number of testimonials our Customers and re-commendations of contractors.

GZT TELKOM-TELMOR Sp. z o.o.
ul. Mickiewicza 5/7, 80-425 Gdańsk
telmor@telmor.pl
www.telmor.pl

Sales Department:
export@telmor.pl
(+48 58) 382 33 49

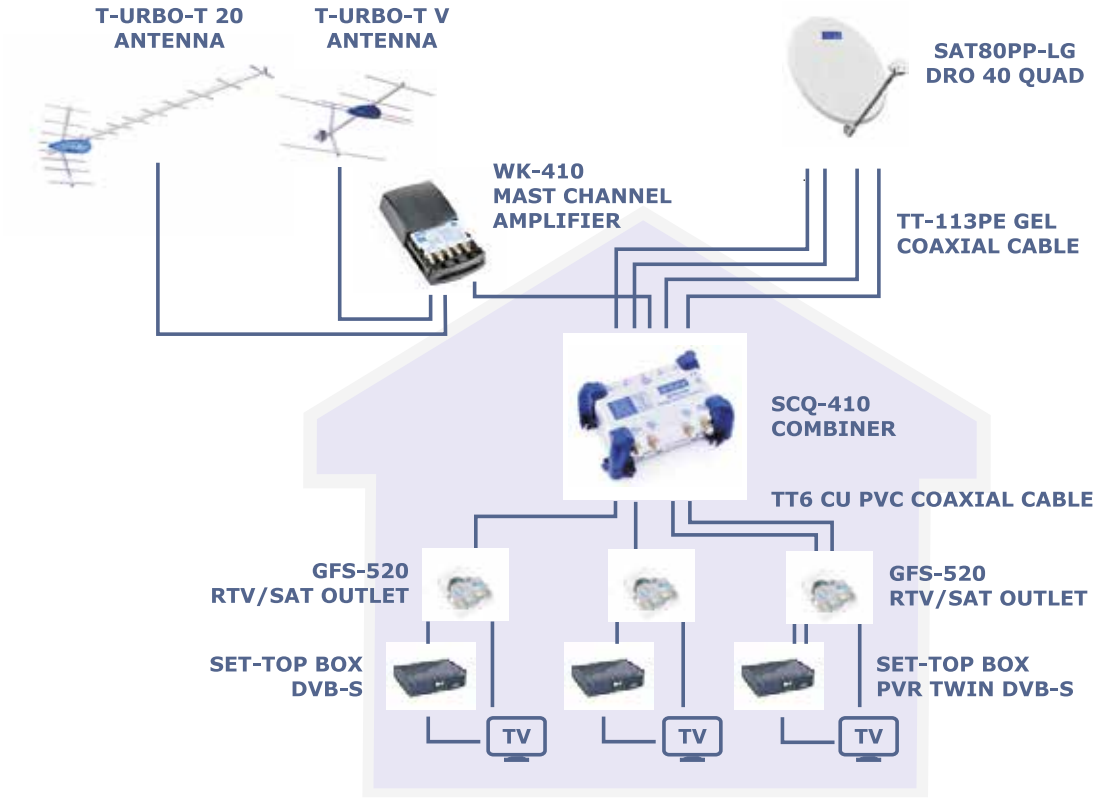
Service Department:
serwis@telmor.pl
(+48 58) 382 33 41

Table of Contents

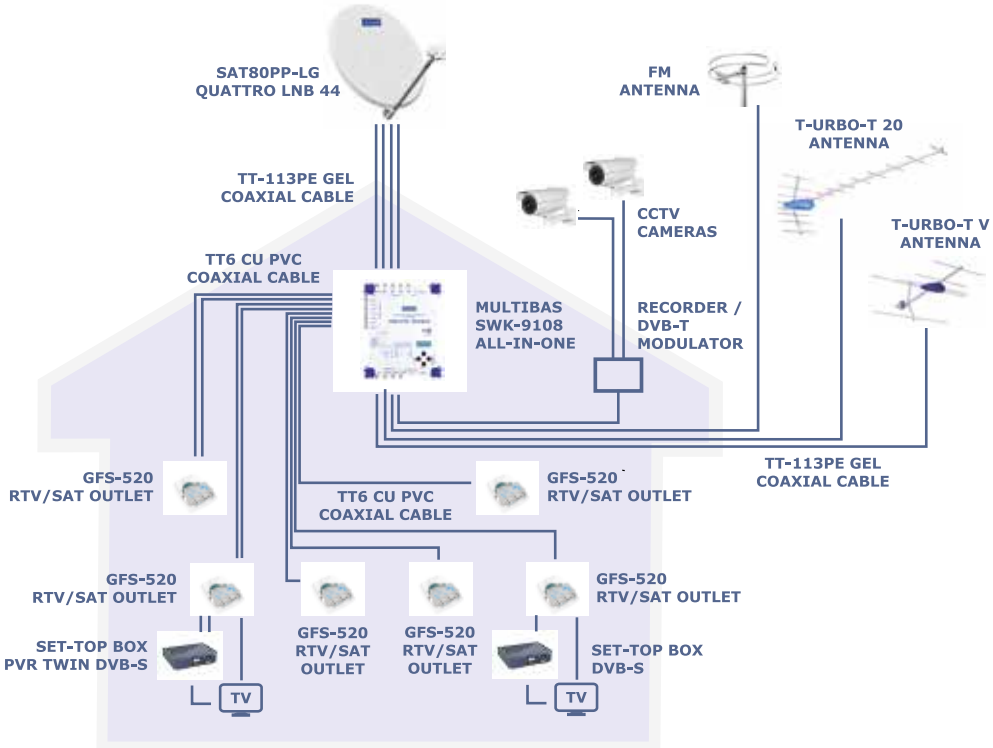
Table of Contents

Table of Contents

Application example 1



Application example 2



ASR ANTENNAS

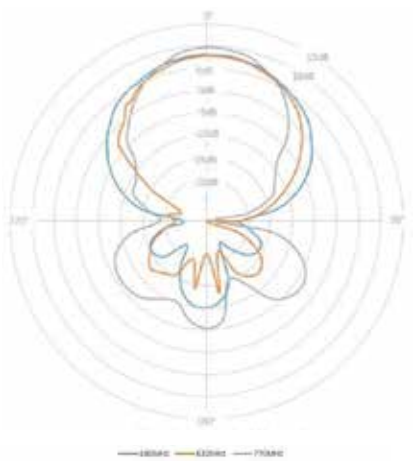
- VHF/UHF, DVB-T, DVB-T2
- High gain (up to 14dBi)
- Wind and weather resistant
- Modern, lightweight and stable design
- Easy installation

	asr	asr LTE PROTECTED	asr classic	asr classic LTE PROTECTED	asr IQ	asr IQ LTE PROTECTED
Bandwidth: VHF*/ UHF	●/ ●	●/ ●	●/ ●	-/ ●	●/ ●	-/ ●
DVB-T/ DVB-T2	●/ ●	●/ ●	●/ ●	●/ ●	●/ ●	●/ ●
HDTV/ UltraHDTV	●/ ●	●/ ●	●/ ●	●/ ●	●/ ●	●/ ●
Filter LTE SAW	-	●	-	●	-	●
Built-in amplifier	-	-	●	●	●	(By-pass)

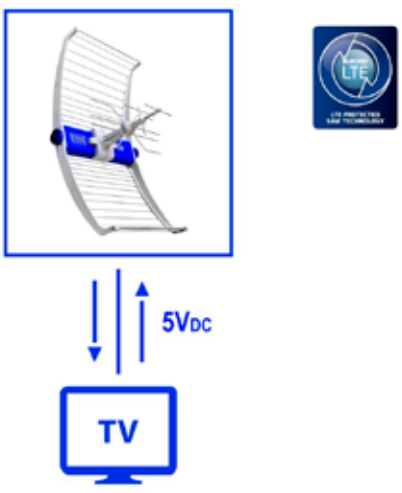
*Signal reception quality in VHF bandwidth depends on the location, power and distance from the transmitter.

PARAMETERS		asr	asr LTE PROTECTED	asr classic	asr classic LTE PROTECTED	asr IQ	asr IQ LTE PROTECTED
Bandwidth	/	VHF/UHF	VHF/UHF	VHF/UHF	UHF	VHF/UHF	UHF
Frequency range	MHz	174-230 470-862	174-230 470-790	174-230 470-862	470-790	174-230 470-790	470-790
Gain	dBi/ dB	6-14/ -	6-14/-5...-1	6-14/20	6-14/14-19	6-14/20-22	6-14/14-21
Impedance	Ohm	75	75	75	75	75	75
Max. mast diameter	mm	25-60	25-60	25-60	25-60	25-60	25-60
Connector	/	F	F	F	F	F	F
Colour	/	blue	blue	blue	blue	blue	blue
Dimensions	mm	820x455x220	820x455x220	820x455x220	820x455x220	820x455x220	820x455x220
Weight	kg	2,48	2,48	2,48	2,48	2,48	2,48
Package	/	box	box	box	box	box	box
Article No.	/	F104-6542-078-04	F117-6542-078-09	F105-6542-078-03	F109-6542-078-06	F108-6542-078-05	F110-6542-078-07
EAN	/	5903953002761	5903953002839	5903953002754	5903953002846	5903953002778	5903953002853

Omnidirectional characteristics



Application example



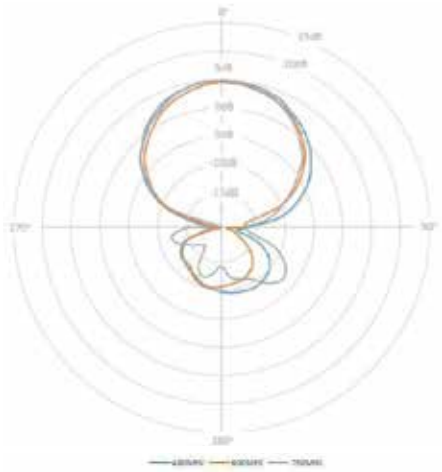
DIGIT ANTENNAS

- UHF, DVB-T, DVB-T2
- Low standing wave ratio SWR ≤2,2
- Weather resistant
- Modern design, solid and robust
- Easy, no tools installation

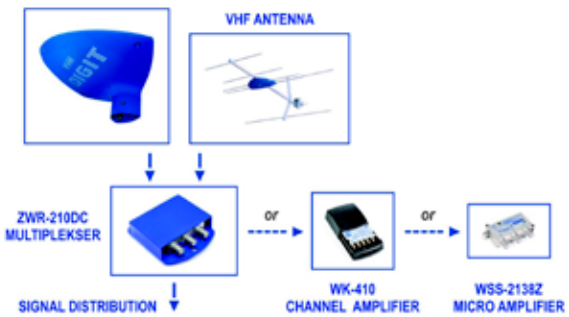
	DIGIT	DIGITactiva	DIGIT LTE PROTECTED SAW	DIGITactiva LTE PROTECTED SAW
Bandwidth: UHF	●	●	●	●
DVB-T/ DVB-T2	●/ ●	●/ ●	●/ ●	●/ ●
HDTV/ UltraHDTV	●	●	●	●
Filter LTE SAW	-	-	●	●
Built-in amplifier	-	●	-	●
Powering 5V-24V	-	●	-	●

PARAMETERS		DIGIT		DIGITactiva		DIGIT LTE PROTECTED SAW		DIGITactiva LTE PROTECTED SAW	
Bandwidth	/	UHF		UHF		UHF		UHF	
Frequency range	MHz	470-862		470-862		470-790		470-790	
Gain	dBi	4,5/ -		4,5/22		4,5/ -5...-1		4,5/17-21	
Impedance	Ohm	75		75		75		75	
Max. mast diameter	mm	25-45		25-45		25-45		25-45	
Connector	/	F		F		F		F	
Colour	/	white	blue	white	blue	white	blue	white	blue
Dimensions	mm	360x335x155	360x335x155	360x335x155	360x335x155	360x335x155	360x335x155	360x335x155	360x335x155
Weight	kg	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19
Package	/	box	box	box	box	box	box	box	box
Article No.	/	F309-6542-075-12	F311-6542-075-02	F307-6542-075-13	F312-6542-075-10	F135-6542-075-16	F136-6542-075-17	F133-6542-075-14	F134-6542-075-15
EAN	/	5903953005304	5903953000705	5903953005298	5903953000699	5903953005311	5903953004291	5903953005328	5903953004284

Omnidirectional characteristics

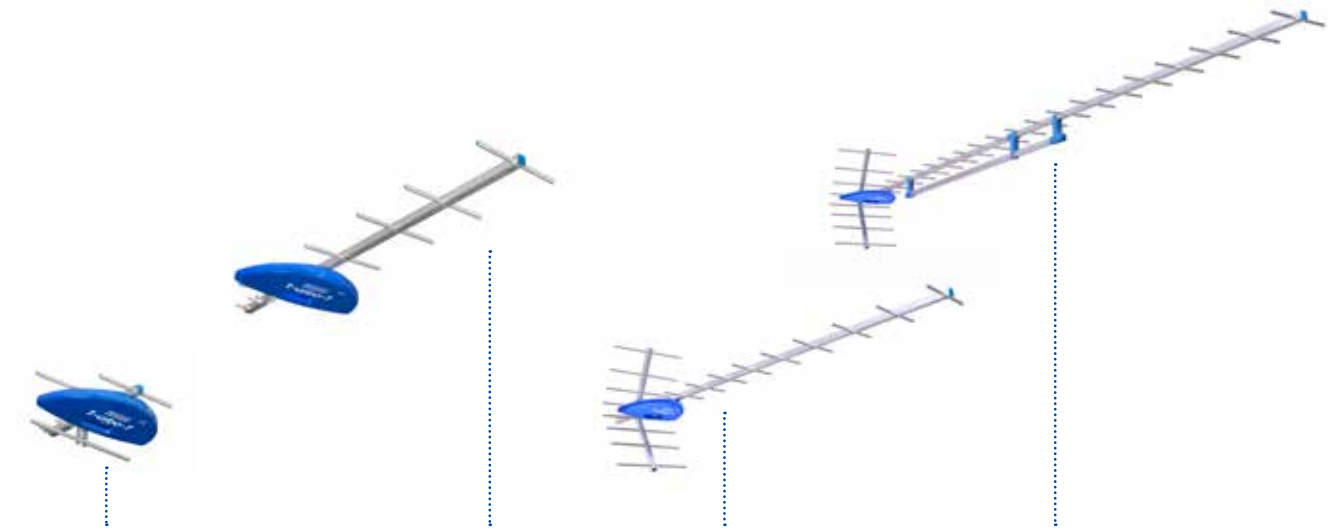


Application example



T-URBO-T UHF, UHF/LTE ANTENNAS

- DVB-T, DVB-T2
- T-urbo-T technology – natural LTE filter
- Solid, robust design



	T-urbo-T 5	T-urbo-T 7	T-urbo-T 20	T-urbo-T 30
Bandwidth:UHF	●	●	●	●
DVB-T/ DVB-T2	●/ ●	●/ ●	●/ ●	●/ ●
HDTV/ UltraHDTV	●/ ●	●/ ●	●/ ●	●/ ●
LTE natural filter	●	●	●	●

PARAMETERS		T-urbo-T 5	T-urbo-T 7		T-urbo-T 20		T-urbo-T 30	
Bandwidth	/	UHF	UHF		UHF		UHF	
Frequency range	MHz	470-790	470-790		470-790		470-790	
Gain	dBi	8-9	8-10		9-14		10,5 -15,5	
Impedance	Ohm	75	75		75		75	
Max. mast diameter	mm	38	38		50		50	
Connector	/	F	F		F		F	
Colour	/	blue	blue		blue		blue	
Dimensions	mm	430x290x50	790x290x50		1500x290x500		2700x290x500	
Weight	kg	0,6	0,85		1,6		3,7	
Package	/	poly bag	box	poly bag	box	poly bag	box	poly bag
Article No.	/	F208-6542-081-01	F209-6542-082-02	F209-6542-082-01	B102-6542-079-01	B101-6542-079-02	B103-6542-080-01	B106-6542-080-02
EAN	/	5903953003850	5903953003867	5903953005434	5903953002860	5903953004475	5903953002877	5903953005168

UHF ANTENNAS

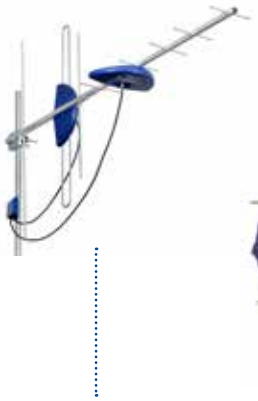
PARAMETERS		TT-355		TT-365	
Bandwidth	/	UHF		UHF	
Frequency range	MHz	470-790		470-790	
Channel range	MHz	21-60		21-60	
Gain	dBi	10		13	
Radiation front/back	dB	14		38	
Half power beamwidth	degrees	42		38	
Polarisation	/	horizontal/ vertical		horizontal/ vertical	
Wind resistance 120km/h	N	20		35	
Impedance	Ohm	75		75	
Max. mast diameter	mm	38		38	
Connector	/	F		F	
Colour	/	blue		blue	
Dimensions	mm	470x470x200		770x470x470	
Length	mm	455		745	
Weight	kg	0,8		1,3	
Package	/	box	poly bag	box	poly bag
Article No.	/	X266 9100-600-32	X271 9100-600-33	X272 9100-600-34	X273 9100-600-35
EAN	/	5903953006240	5903953006257	5903953006264	5903953006271

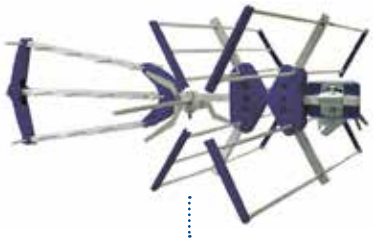
VHF ANTENNAS

PARAMETERS		T-urbo-T V3		T-urbo-T V	
Bandwidth	/	VHF		VHF	
Frequency range	MHz	174-230		174-230	
Gain	dBi	4,5		7-8	
Polarisation	/	horizontal/ vertical		horizontal/ vertical	
Impedance	Ohm	75		75	
Max. mast diameter	mm	38		50	
Connector	/	F		F	
Colour	/	blue		blue	
Dimensions	mm	900x550x80		900x960x422	
Weight	kg	1,020		1,4	
Package	/	box	poly bag	box	poly bag
Article No.	/	F-127-6542-085-01	F128-6542-085-02	F211-6542-083-01	B105-6542-083-02
EAN	/	590395 3005342	590395 3005281	590395 3005021	590395 3005151

VHF/UHF COMBO ANTENNAS

- VHF/UHF DVB-T
- Modern design, solid and robust
- Weather resistant





PARAMETERS		T-urbo-T COMBO		T-urbo-T COMBO Smart		TT-345	
Bandwidth	/	VHF	UHF	VHF	UHF	VHF	UHF
Frequency range	MHz	174-230	470-790	174-230	470-790	174-230	470-790
Polarization	/	V	H	V lub H	H	H	H
Gain	dBi	7-8	8-10	4,5	8-10	8,5	15
Impedance	Ohm	75		75		75	7
Power switch included	/	yes		yes		integrated dipole VHF + UHF	
Signal connector	/	2xF		F		F	
Max. mast diameter	mm	50		50		58	
Colour	/	blue		blue		blue	
Dimensions	mm	960x900x430		1382x85x900 (consistent polarity) 1382x900x185 (non-consistent polarity)		917x713x318	
Weight	kg	2,25		2,25		1,94	
Package	/	box	poly bag	box	poly bag	box	
Article No.	/	F138-6542-084-01	F138-6542-084-02	F139-6542-086-01	F139-6542-086-02	X265-9100-600-29	
EAN	/	5903953005274	5903953005427	5903953005397	5903953005403	5903953005120	

FM/DAB ANTENNAS

- Weather resistant
- Easy installation

PARAMETERS		FM-1	DAB-1
Bandwidth	/	FM	VHF
Frequency range	MHz	87,5-108	174-230
Polarization	/	H	V or H
Gain	dBi	1	1
Impedance	Ohm	75	75
Max. mast diameter	mm	50	50
Connector	/	F	F
Dimensions	mm	500x530x100	660x77x360
Weight	kg	0,65	0,52
Package	/	poly bag	poly bag
Article No.	/	X247-9100-601-37	X246-9100-601-38
EAN	/	5903953004574	5903953004581

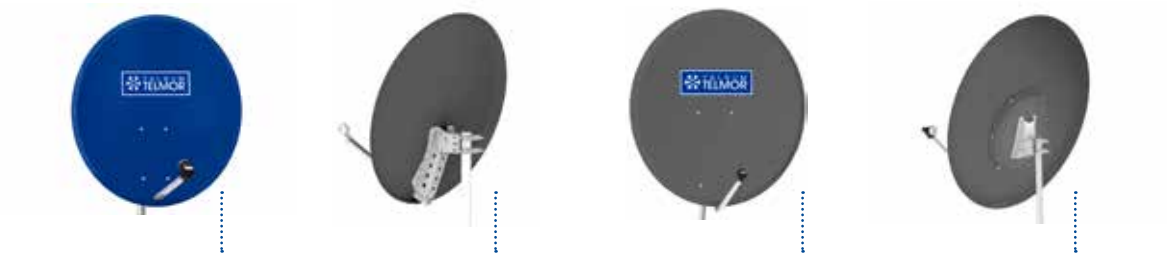
INDOOR ANTENNAS

- Compact housing
- Easy installation
- Optional external power supply

	BASCO FM	AP-108CF	AP-136	AP-310	DSP-860	DSP-860 LTE PROTECTED
Bandwidth: FM/ VHF/ UHF	●/ -/ -	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●
DAB/ DVB-T/ DVB-T2	-/ -/ -	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●
HDTV/ UltraHDTV	-/ -	●/ ●	●/ ●	●/ ●	●/ ●	●/ ●
LTE filter	-	●	●	●	-	●
Built-in amplifier	●	●	●	●	●	●
Gain control	-	-	-	●	-	-
Powered from tuner	-	●	●	●	●	●
External power supply	●	●	●	●	●	●

PARAMETERS		BASCO FM	AP-108CF	AP-136	AP-310	DSP-860	DSP-860 LTE PROTECTED
Bandwidth	/	FM	FM/VHF/UHF	FM/VHF/UHF	FM/VHF/UHF	FM/VHF/UHF	FM/ VHF/ UHF
Frequency range	MHz	88-108	87,5-230 470-790	87,5-230 470-790	87,5-230 470-790	88-862	88-790
Gain	dB	18	28	30	28..30	20..30	30
Impedance	Ohm	75	75	75	75	75	75
Connector	/	Built-in cable with IEC connector	Built-in cable with IEC connector	Built-in cable with IEC connector	Built-in cable with IEC connector	Built-in cable with IEC connector	Built-in cable with IEC connector
Colour	/	black	black	black	black	black	black
Dimensions	mm	290x87x78	115x23x180	230x85x103	70x310x110	255x500x230	255x500x230
Weight	kg	0,45	0,20	0,25	0,18	0,64	0,64
Package	/	box	box	box	box	box	box
Article No.	/	X332-9100-603-04	X263-9100-600-18	X264-9100-600-19	X262-9100-600-17	F305-6542-073-01	F302-6542-073-02
EAN	/	5903953003997	5903953004444	5903953004383	5903953004390	5903953002648	5903953004338

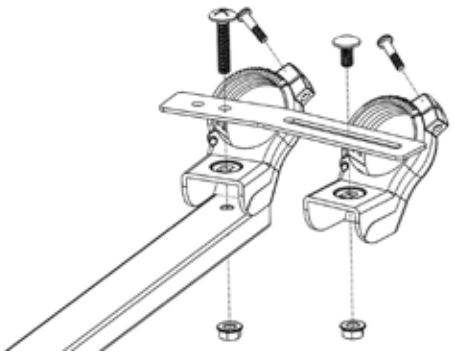
OFFSET ANTENNAS



PARAMETERS		80 TT STANDARD	80 TT PREMU	120 TT STANDARD	120 TT PREMU
Offset angle	°	26		22	
Frequency range	GHz	10,70-12,75		10,70 – 12,75	
Gain@10.7 Gain@11.7 Gain@12.7	GHz (dBi)	36,8 37,5 38,1		40,8 41,5 42,0	
Reflector dimension	mm	730 x 800		1100x1200	
Focal distance	mm	467		710	
F/D	/	0,64		0,64	
Efficiency	%	>70		>70	
Reflector material	/	galvanised steel/aluminium		galvanised steel	
Reflector thickness	mm	0,6/ 1,0		0,8	
Elevation angle adjustment range	°	min 15/ max 56	min 10/ max 90	min 10/ max 90	
Azimuth angle range	°	360		360	
Mast diameter	mm	40		40	
Mast diameter	mm	40/ 50		50/ 60	
Half-power beam horizontally (-3dB)	/	2,5° for 12,75 GHz	3,2° for 12,75GHz	2,5° for 12,75	
Half-power beam vertically (-3dB)	/	2,6" for 12,75 GHz	3,3° for 12,75GHz	2,6° for 12,75	
Wind resistance: - admissible wind power - max wind force - damaging wind force	km/h	77 144 216		77 144 216	
Colour	/	white, graphite, blue		white, graphite, blue	
Weight	kg	3,61	4,70	13,20	
Article No.	/	X802-9100-603-14 (white) X803-9100-603-15 (graphite) X804-9100-603-16 (blue)	X807-9100-603-22 (white) X805-9100-603-20 (graphite) X806-9100-603-21 (blue)	Q132-9100-603-35 (white) Q124-9100-603-13 (graphite) Q129-9100-603-26 (blue)	Q313-9100-603-36 (white) Q130-9100-603-27 (graphite) Q127-9100-603-19 (blue)
EAN	/	5903953005878 (white) 5903953005885 (graphite) 5903953005892 (blue)	5903953005991 (white) 5903953006977 (graphite) 5903953005984 (blue)	5903953005861 (graphite) 5903953005946 (blue)	5903953005960 (graphite) 5903953005953 (blue)

MOUNTING

PARAMETERS		Multifeed for 80/120
LNBF bracket	mm	40
Material	/	galvanised steel
Thickness	mm	2
Second LNB	°	6° - 9°
Article No.	/	Q125-9100-603-17
EAN	/	5903953005908



LIGHTNING CURRENT AND SURGE ARRESTER

PARAMETERS		DGA FF TV DEHN	DGA GFF TV DEHN
Max. continuous operating voltage DC U_C	V	24	24
Nominal current I_L	A	2	2
D1 Lightning impulse current D1 Prąd udarowy (10/350) I_{imp}	kA	0,2	2,5
C2 Nominal discharge current (8/20 µs) I_n	kA	1,5	10
Voltage protection level for Iimp D1 U_p	V	≤ 230	≤ 230
Voltage protection level for I_n C2 U_p	V	≤ 300	≤ 300
Voltage protection level at 1 kV/µs C3 U_p	V	≤ 60	≤ 60
Frequency range	MHz	DC, 5-3000	DC, 5-2400
Characteristic impedance	Ohm	75	75
Operating temperature range	°C	-40 ... +80	-20 ... +55
Protection class	/	IP 30	IP 30
Connection (input / output)	/	F / F	F / F
Enclosure material	/	metal	metal
Dimensions	mm	59x90x27	59x131x27
Weight	kg	0,233	0,283
Accessories included	/	2x F connectors	2x F connectors
Package	/	box	box
Article No.	/	X903-9100-610-37	X904-9100-610-39
EAN	/	5903953005076	5903953005083

MULTIBAND AMPLIFIERS, SOFTWARE

- Adapted to receive DVB-T signals
- Built-in USB port for URC-100 programmer
- Each of these filters can have 1...6 channels (8...48MHz) bandwidth
- Selective amplification of up to 5 UHF signals. Filters bandwith 1...6 channels (8...48MHz)
- Higher number of filters on request

PARAMETERS		WWK-9NGV				
Bandwidth	/	BI / FM	VHF DAB	VHF DVB-T	UHF1	UHF2
Frequency range	MHz	87,5-108	174-230	174-230	470-790	
Possible combinations of filters	/	-	2	1	5	0
			2	1	4	1
			2	1	3	2
Programmable filter band	/	-	-	1x channel (7 MHz)	1...5 channels (8...48 MHz)	
Gain	dB	40 / 30	40 / 34	44 / 38	44 / 30	
Gain adjustment	dB	20				
Selectivity	dB	-	-	≥ 20 ±7 MHz	≥ 16 ±16 MHz	
Min. output level	dBµV	50				
Max. output level (DIN 45004B)	dBµV	112				
Return loss	dB	10				
Preamplifier power supply	V/mA	-	-	-	12 / 50	
Impedance input/output	Ohm	75 / 75				
OTHERS						
Operating temperature	°C	-5....+50				
Operating voltage	V_{AC}/ Hz	230 / 50-60				
Power consumption	VA	20				
Connector type	/	F				
Dimensions	mm	223x182x50				
Weight	kg	0,55				
Package	/	box				
Article No.	/	B134-7538-3-60-01				

MULTIBAND AMPLIFIERS, SOFTWARE

- Digital terrestrial TV transmission DVB-T, DVB-T2
- Independent, selective amplification for UHF signals
- Low power consumption
- Easy installation
- PC software included

PARAMETERS		WWK-982			WWK-982 LTE		
Bandwidth	/	BI/FM	VHF	UHF	BI/FM	VHF	UHF
Frequency range	MHz	47-108	174-230	470-862	47-108	174-230	470-790
No. of filters	/		8			8	
Gain	dB	26	45	30-44	26	45	30-44
Max. output level	dBµV		114			114	
Power supply	V_{AC}/ Hz		230/ 50-60			230/ 50-60	
Connector type	/		F			F	
Dimensions	mm		369x128x51			369x128x51	
Weight	kg		0,84			0,84	
Package	/		box			box	
Article No.	/		B132-7538-306-01			B133-7538-306-10	
EAN	/		5903953002495			5903953004482	

PARAMETERS	SWWK-982	SWWK-982 STANDARD-1	SWWK-982 STANDARD-2	SWWK-982 STANDARD-3
Maximum number of controlled amplifiers	1	1-50	50-250	>250
Amplifier control via RS-232/IP/ GPRS	●/ -/ -	●/ ●/ ●		
Off-line mode – possibility of learning software operation by using block diagram interface and observing results on diagrams	-/ ●	●		
Loading settings via MMC card	●	●		
Storing settings via MMC card	●	●		
Amplifier on-line control via RS-232 port levels and temperature monitoring	●	●		
Firmware upgrade via RS-232	●	●		
Amplifier on-line control via TELMOX with TCP/IP protocol – levels and temperature monitoring	-	●		
Firmware upgrade via TELMOX with TCP/IP protocol	-	●		
Task schedule planning capability for ex. firmware upgrades, channel plan changing at specific time or for specific group of devices. Group of devices may consist of devices from specific location (city, district) and/or certain amplifier type for ex. WWWK-892	-	●		

- Local (PC+WWK) or remote (PC+TELMOX+WWK) amplifier control
- Adjustment of all amplifier parameters: gain, preamplifier power suply, key settings for UHF1-UHF3 inputs, channel filter bandwidth, path gain, etc.
- Amplifier management via GUI
- Control of over 250 amplifiers in different locations
- Alarm range defined for measuement output level
- Remote measurement of amplifier output level
- Individual amplifier configuration capability (key settings, active TV channels)
- Amplifier firmware upgrade capability

MULTIBAND AMPLIFIERS, SOFTWARE

- Digital terrestrial TV transmission DVB-T, DVB-T2
- Independent, selective amplification
- Low power consumption
- Easy instalation

	WWK-861U	WWK-951	WWK-982	WWK-982 LTE	WWK-9NGV
Bandwidth: FM/ VHF/ UHF	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●
FM/ DAB/ DVB-T/ DVB-T2/	●/ ●/ ●/ ●	●/ ●/ ●/ ●	●/ ●/ ●/ ●	●/ ●/ ●/ ●	●/ ●/ ●/ ●
HDTV/ UltraHDTV	●/ ●	●/ ●	●/ ●	●/ ●	●/ ●
PARAMETERS control	manual	electronic	electronic	URC-100 programmer	electronic
No. of UHF channel filters	6	5	8	8	5
LTE SAW filter on UHF inputs	–	–	–	●	–
Power supply	built-in	built-in	built-in	built-in	external PSU
Powering of preamplifiers in UHF	●	●	●	●	●

PARAMETERS		WWK-861U			WWK-951		
Bandwidth	/	BI/FM	VHF	UHF	BI/FM	VHF	UHF
Frequency range	MHz	47-108	174-230	470-862	47-108	174-230	470-862
No. of filters	/	6			5		
Gain	dB	24	35	31-45	21	35	45
Max. output level	dBµV	104	108	107-112	107		116
Power supply	V_{AC}/ Hz	230 V_{AC}/ 50-60			230 V_{AC}/ 50-60		
Connector type	/	F			F		
Dimensions	mm	225x130x50			256x128x51		
Weight	kg	0,75			0,62		
Package	/	box			box		
Article No.	/	B135-7538-302-08			P126-7538-314-01		
EAN	/	5903953002471			5903953002747		

MULTIBAS

- Channel amplifier and multiswitch in a single device
- Short circuit protection at UHF and SAT inputs
- UHF preamplifiers powering with +12V/+24V
- LED indicated work status
- Dedicated housings: AIZ-100/201/210 cabinet or drawer applicator for 19'' Rack

T-urbo-T

PARAMETERS		SWK-9108		SWK-9216	
Band	/	RTV	SAT	RTV	SAT
Frequency range	MHz	47-230	950-2150	47-230	950-2150
Gain - subscribers output	dB	12...35	5	9...28	3...12
Gain - through output	dB	-	-	9...28	2...8
No. of filters	/	UHF -5	-	VHF -1, UHF -8	-
Gain adjustment	dB	0...20	-	20...25	11 (equalizer)
Isolation between UHF inputs	dB	-	-	25	
Isolation between RF+SAT outputs	dB	26		33	
Isolation between SAT inputs	dB	-	26	41	
Return loss on inputs	dB	>6	>8	8...11	6
Return loss on outputs	dB	>6	>8	10...11	6
Noise figure	dB	≤6...8	≤10	5...12	15
Max. output level	dBµV	96-100	100,0	84-92	98
Voltage, max. current on inputs	V_{DC}/mA	14/300		12,3...23,4/50	13,7/300
Power supply, consumption; max. power	V/mA/W	230/.../15		12/2000/23	
Recommended installation	/	AIZ cabinets		AMK-SZ Hanger 19" applicator, AIZ cabinet	
Dimensions	mm	290x220x50		365x245x51	
Weight	kg	1,0		1,4	
Package	/	box		box	
Article No.	/	P451-7538-322-01		B152-7538-331-01	
EAN	/	5903953003119		5903953003522	

SAT SPLITTERS

- Easy installation
- DC current pass

PARAMETERS		SSK-918	
Band	/	RTV	SAT
Frequency range	MHz	47-862	950-2150
No. of input/output	/	1/2	8/16
DC pass	yes/no	yes	
Insertion loss	dB	≤4,5	≤5,5
Isolation	dB	>30	>35
Dimensions	mm	227x130x50	
Weight	kg	0,43	
Package	/	box	
Article No.	/	B180-7531-036-01	
EAN	/	5903953004772	

SAT/TV TAPS

- Dedicated to large multiswitch/cascadable installations
- High isolation:>65dB
- DC pass – up to 24V/500mA

PARAMETERS		STK-91810	STK-91815	STK-91820
Frequency range	MHz	5-2150	5-2150	5-2150
No. of input/output	/	SAT+Terr: 9+1/2x(9+1)	SAT+Terr: 9+1/2x(9+1)	SAT+Terr: 9+1/2x(9+1)
DC pass	yes/no	yes	yes	yes
Insertion loss	dB	0,7-2,0	0,7-1,8	0,7-1,8
Tap loss	dB	10-12	14-16,5	18,5-22,5
Isolation	dB	>65	>65	>65
Current pass (max)	V/mA	24/500	24/500	24/500
Dimensions	mm	170x82x47	170x82x47	170x82x47
Weight	kg	0,4	0,4	0,4
Package	/	box	box	box
Article No.	/	Q243-9100-032-17	Q244-9100-032-18	Q245-9100-032-19
EAN	/	5903953004789	5903953004796	5903953004802

SAT DISTRIBUTION AMPLIFIERS

- SMATV amplifier for two LNBs + TERR
- Discrete gain and tilt adjustment of each single output
- Local or remote power supply
- Vertically or horizontally mounted
- High SAT and terrestrial signal levels

	WS-909	STWK-810
Local power supply	-	●
Remote power supply	●	●
Digital parameters control	●	●

PARAMETERS		WS-909		STWK-810	
Band	/	TERR	SAT	TERR	SAT
Frequency range	MHz	47-862	950-2150	47-862	950-2150
No. of input/output	/	1/1	9/9	1/1	8/8
Gain	dBi	20	20..30	30	33
Max. output level	dBµV	110	112	117	115
Gain cotrol	dB	adjustuble: 0..20		switch: 0-15	
Tilt control	dB	-	-	discrete: 0/6/12/18	discrete: 0/3/6/9
Power consumption	V_{DC}/mA	from OUT		local +12/3000; remote	
Recommended installation	/	AIZ cabinet		AMK-SZ Hanger 19"" applicator, AIZ cabinet	
Dimensions	mm	170x115x40		223x113x40	
Weight	kg	0,45		0,55	
Package	/	box		box	
Article No.	/	Q350-9100-032-08		B139-7538-348-01	
EAN	/	5903953003591		5903953004567	

T-urbo-T MULTISWITCHES

- Dedicated housings: AIZ-100/201/210 cabinet or Drawer Applicator for 19'' Rack

UNIVERSAL MOUNTING

LESS INSTALLATION SPACE

T-urbo-T

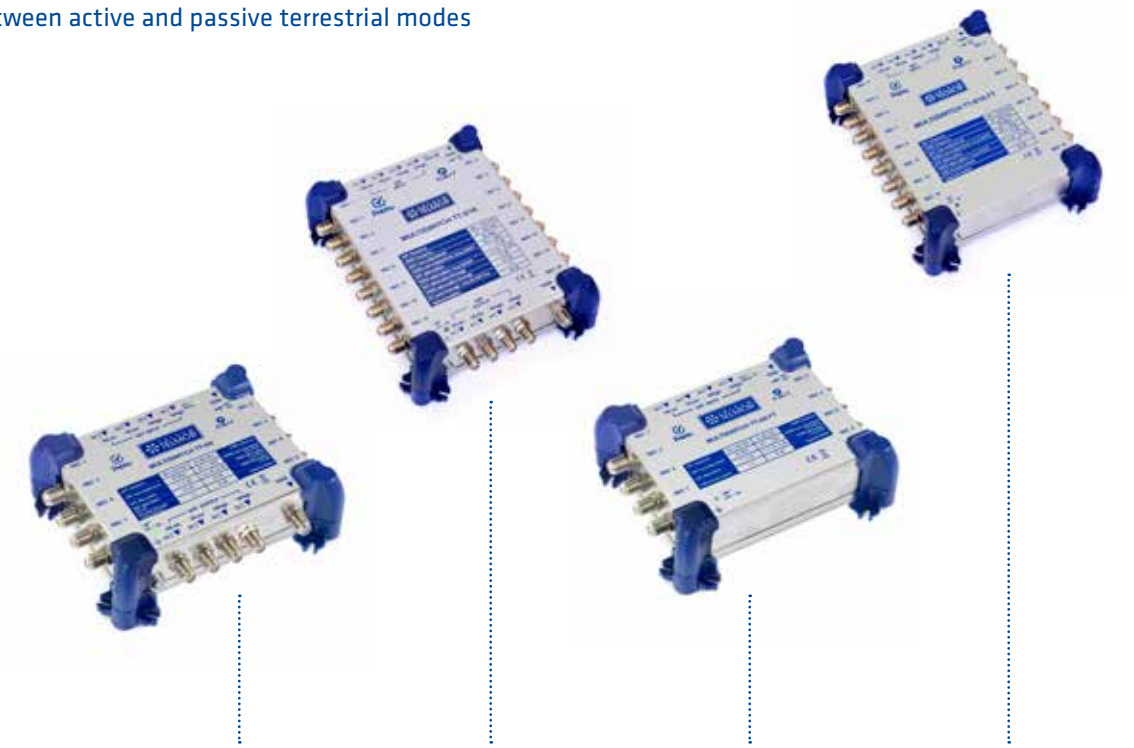
class A

PARAMETERS		SMK-216P	SMK-216A
Inputs	/	1xTerr + 8xSAT	1xTerr + 8xSAT
Outputs	/	16	16
Pass through attenuation SAT	dB	3,5	9...10
Pass through attenuation TERR*	dB	-4,5/-1,0	-4,5/-1,0
Attenuation SAT output	dB	-2...3	7...11
Attenuation TERR output*	dB	25/0	25/0
Max. output level in SAT band	dBµV	107	94
Max. output level in RTV band	dBµV	95	95
Power consumption	V_{DC}/mA	12/170 or with LNB 12/1000	12/510 or with LNB 12/1320
Recommended installation	/	AMK-SZ Hanger 19"" applicator, AIZ cabinet	
Dimensions	mm	250x246x51	250x246x51
Weight	kg	0,975	1,02
Package	/	box	box
Article No.	/	B218-7538-384-02	B219-7538-384-01
EAN	/	5903953004833	5903953004840

*amplifier on

CASCADE AND END MULTISWITCHES

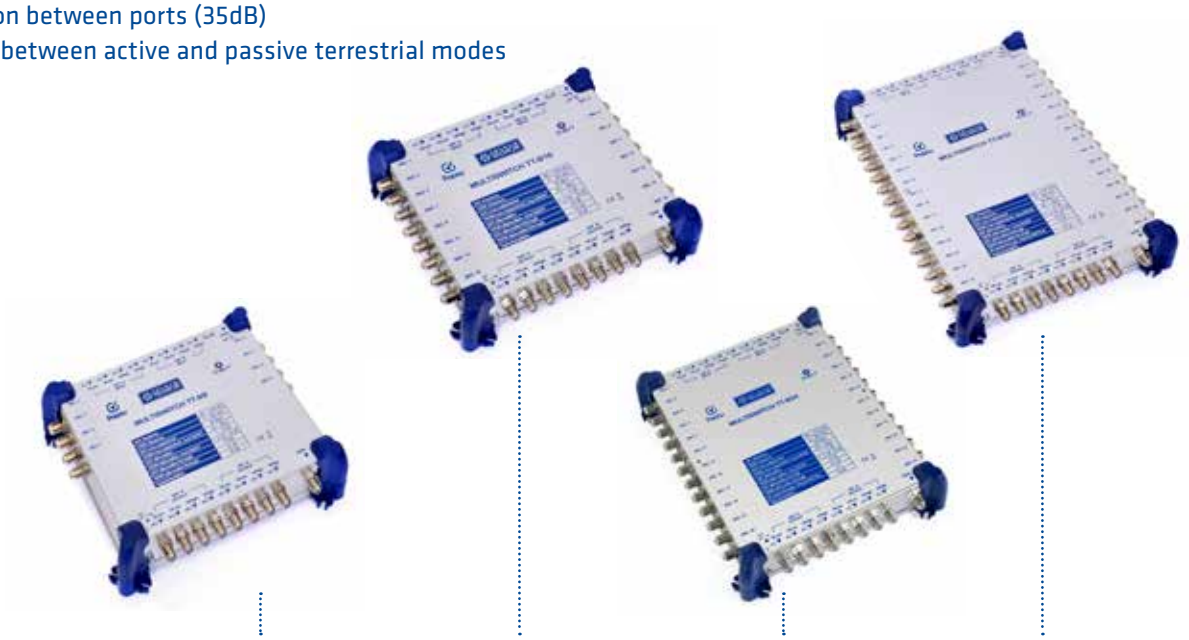
- Development and production in EU
- Signal reception from one satellite
- Very low attenuation in SAT path
- Safe and durable connectors
- Built-in cable equalizer
- Very high isolation between ports (35dB)
- Ability to switch between active and passive terrestrial modes



PARAMETERS		PREMU TT 5/8	PREMU TT 5/16	PREMU TT 5/8FT	PREMU TT 5/16 FT
Frequency range SAT	MHz	950-2150			
Frequency range TERR	MHz	47-862			
Number of inputs SAT	/	4			
Number of inputs TERR	/	1			
Number of outputs	/	8	16	8	16
Attenuation TERR output (active path)	dB	-7...0			
Attenuation TERR output (passive path)	dB	-30...-23			
Pass through attenuation TERR	dB	- 4		???	???
Attenuation SAT output	dB	-1...+3			
Pass through attenuation SAT	dB	- 3		???	???
Return loss TERR IN /OUT	dB	10			
Return loss SAT IN/OUT	dB	10			
Max. output level TERR	dBµV	95			
Max. output level SAT	dBµV	100			
Isolation TERR to SAT	dB	35			
Isolation SAT to TERR	dB	50			
Power supply (active/passive)	V_{DC}/mA	13/ 135			
Power consumption	mA/V	35/ 13 and 50/18			
Switching commands	/	DiSEqC 1.0 (13V/18V, 0/22kHz tone)			
Dimensions	mm	155x125x51	155x193x51	155 x125x51	155x193x51
Weight	kg	0,4	0,6	0,35	0,55
Package	/	box	box	box	box
Article No.	/	B187-7538-385-01	B160-7538-376-01	B188-7538-385-02	B162-7538-376-02

CASCADE AND END MULTISWITCHES

- Development and production in EU
- Signal reception from two satellites eg. ASTRA and HotBird
- Very low attenuation in SAT path
- Safe and durable connectors
- Built-in cable equalizer
- Very high isolation between ports (35dB)
- Ability to switch between active and passive terrestrial modes



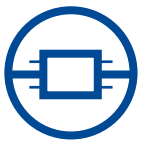
PARAMETERS		PREMU TT-9/8	PREMU TT-9/16	PREMU TT-9/24	PREMU TT-9/32
Frequency range SAT	MHz	950-2150			
Frequency range TERR	MHz	47-862			
Number of inputs TERR	/	1			
Number of inputs SAT	/	8			
Number of outputs	/	8	16	24	32
Attenuation TERR output (active path)	dB	-7...0		-11...-3	
Attenuation TERR output (passive path)	dB	-30...-23		-36...-29	
Pass through attenuation TERR	dB	-4,5			
Attenuation SAT output	dB	-2...+7		-3,5...+7	
Pass through attenuation SAT	dB	-3,5...-1		-5...-2	-6,5...-2,5
Return loss TERR IN /OUT	dB	12		10	
Return loss SAT IN/OUT	dB	12		10	
Max. output level TERR	dBµV	95/ 170-862, 90/ 47-170		90/170-862, 87/47-170	
Max. output level SAT	dBµV	98			
Isolation TERR to SAT	dB	≥30			
Isolation SAT to TERR	dB	≥45			
Isolation cross polarization H/V	dB	35			
Power supply	V_{DC}/mA	13/160			
Power consumption	mA	50			
Switching commands	/	DiSEqC 1.0 (13V/18V, 0/22kHz tone)			
Dimensions	mm	215x193x51	215x193x51	215x261x51	215x330x51
Weight	kg	0,7	0,7	1,0	1,1
Package	/	box	box	box	box
Article No.	/	B157-7538-373-01	B155-7538-356-01	B169-7538-379-01	B166-7538-371-01
EAN	/	5903953005564	5903953005588	5903953005601	5903953005625

CASCADE AND END MULTISWITCHES

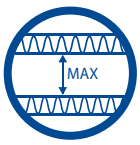
- Development and production in EU
- Signal reception from two satellites eg. ASTRA and HotBird
- Very low attenuation in SAT path
- Safe and durable connectors
- Built-in cable equalizer
- Very high isolation between ports (35dB)
- Ability to switch between active and passive terrestrial modes

PARAMETERS		PREMU TT-9/8 FT	PREMU TT-9/16 FT	PREMU TT-9/24 FT	PREMU TT-9/32 FT
Frequency range SAT	MHz	950-2150			
Frequency range TERR	MHz	47-862			
Number of inputs TERR	/	1			
Number of inputs SAT	/	8			
Number of outputs	/	8	16	24	32
Attenuation TERR output (active path)	dB	-7...0		-11...-3	
Attenuation TERR output (passive path)	dB	-30...-23		-36...-29	
Pass through attenuation SAT	dB	-2...+7		-3,5...+7	
Return loss TERR IN /OUT	dB	12		10	
Return loss SAT IN/OUT	dB	12		10	
Max. output level TERR	dBµV	95/ 170-862, 90/ 47-170		90/170-862, 87/47-170	
Max. output level SAT	dBµV	98			
Isolation TERR to SAT	dB	≥30			
Isolation SAT to TERR	dB	≥45			
Isolation cross polarization H/V	dB	35			
Power supply	V_{DC}/mA	13/160			
Power consumption	mA	50			
Switching commands	/	DiSEqC 1.0 (13V/18V, 0/22kHz tone)			
Dimensions	mm	215x193x51	215x193x51	215x261x51	215x330x51
Weight	kg	0,7	0,7	1,1	1,1
Package	/	box	box	box	box
Article No.	/	B158-7538-373-02	B156-7538-356-02	B178-7538-379-02	B168-7538-371-02

END MULTISWITCHES 1-SAT



VERTICAL MOUNTING

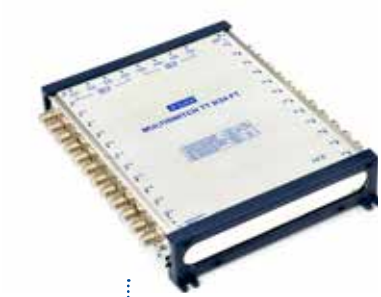


HIGH ISOLATION BETWEEN BANDS

PARAMETERS		TT 5/8FT	TT 5/16FT
No. of RTV/SAT inputs	/	1/4	1/4
No. of RTV+SAT outputs	/	8	16
Insertion loss in SAT band	dB	-2...+2	-3...+1
Insertion loss in RTV band	dB	passive mode-22...-18, active mode-3...+1	passive mode-22...-18, active mode-3...+1
Max. output level in SAT band	dBµV	100	100
Max. output level in RTV band (actv)	dBµV	96	96
Power supply	V_{DC}/mA	External power supply+13/1500	External power supply+13/1500
Dimensions	mm	110x130x40	170x130x40
Weight	kg	0,26	0,39
Package	/	box	box
Article No.	/	Q236-9100-032-11	Q237-9100-032-12
EAN	/	5903953004109	5903953004499

END MULTISWITCHES 2-SAT

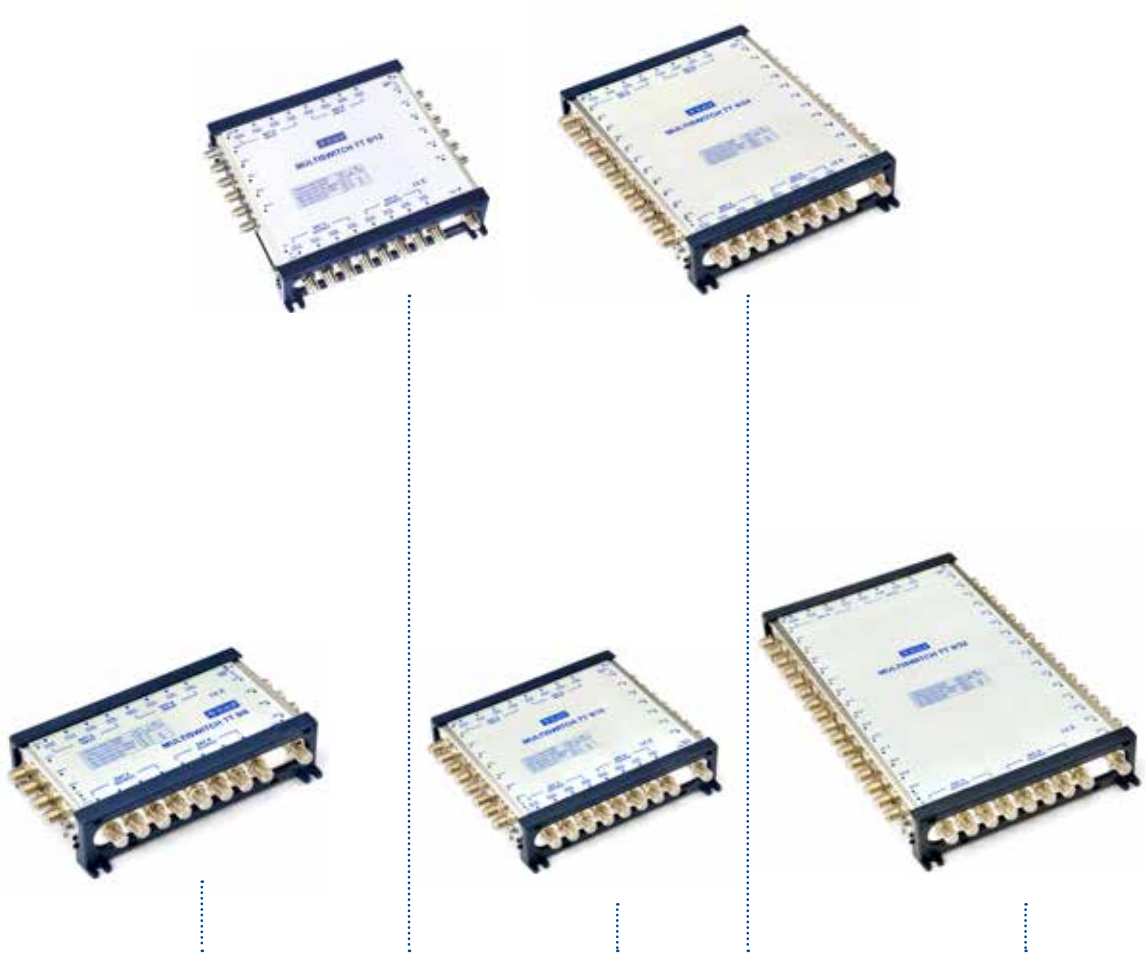
VERTICAL MOUNTING



PARAMETERS		TT 9/8FT	TT 9/12FT	TT 9/16FT	TT 9/24FT	TT 9/32FT
No. of RTV/ SAT inputs	/	1/8	1/8	1/8	1/8	1/8
No. of RTV+SAT outputs	/	8	12	16	24	32
Insertion loss in SAT band	dB	0...+4	-1...+3	-1...+3	-2...+2	-2...+1
Insertion loss in RTV band	dB	-1...+3	-2...+2	-2...+2	-4...+1	-5...+1
Max. output level in SAT band	dBµV	92	92	92	92	92
Max. output level in RTV band (actv)	dBµV	95	95	95	95	95
Power supply	V_{DC}/mA	13/1500	13/1500	13/1500	13/1500	13/1500
Preamplifier power supply	V/mA	12/50	12/50	12/50	12/50	12/50
Dimensions	mm	110x190x40	170x190x40	170x190x40	230x190x40	300x90x40
Weight	kg	0,38	0,52	0,53	0,72	0,89
Package	/	box	box	box	box	box
Article No.	/	Q238-9100-032-13	Q242-9100-032-16	Q233-9100-032-07	Q234-9100-032-06	Q235-9100-032-05
EAN	/	5903953004543	5903953004550	5903953003560	5903953003577	5903953003584

CASCADE MULTISWITCHES 2-SAT

VERTICAL MOUNTING



PARAMETERS		TT 9/8	TT 9/12	TT 9/16	TT 9/24	TT 9/32
No. of RTV/ SAT inputs	/	1/8	1/8	1/8	1/8	1/8
No. of RTV+SAT outputs	/	8	12	16	24	32
Insertion loss in SAT band	dB	-1...-2	-2...-3	-2...-3	-2...-4	-2...-5
Insertion loss in RTV band	dB	-3...-4	-4...-5	-4...-5	-4...-5	-4...-5
Max. output level in SAT band	dB	0...+4	-1...+3	-1...+3	-2...+2	-2...+1
Max. output level in RTV band (active)	dB	-4...0	-5...-1	-5...-1	-7...-2	-8...-2
Max. output level in SAT band	dBµV	92	92	92	92	92
Max. output level in RTV band (actv)	dBµV	95	95	95	95	95
Power supply	V_{DC}/mA	13/1500	13/1500	13/1500	13/1500	13/1500
Dimensions	mm	110x190x40	170x190x40	170x190x40	230x190x40	300x90x40
Weight	kg	0,4	0,56	0,58	0,75	0,92
Package	/	box	box	box	box	box
Article No.	/	Q230-9100-032-02	Q241-9100-032-15	Q231-9100-032-01	Q239-9100-032-14	Q232-9100-032-04
EAN	/	5903953003539	5903953004529	5903953003546	5903953004536	5903953003553

ACCESSORIES

PARAMETERS		F-75 END RESISTOR
Article No.	/	Q293-9100-032-10

PARAMETERS		URC-100 PROGRAMMER
Connectors	/	USB, USB mini
Compatible with	/	WWK-9NGV, SWK-9216
Dimensions	mm	113x82x30
Weight	kg	0,2
Package	/	box
Article No.	/	B153-6538-494-01
EAN	/	5903953004857

PARAMETERS		TT 13V/1,5A POWER SUPPLY	STWK-810 POWER SUPPLY	13V/4A POWER SUPPLY
Range of AC input voltage	V	100...240	220-230	100...240
DC output voltage	V_{DC}	13	12	13
Output current	mA	1500	3000	4000
Power	W	20	36	36
Dimensions	mm	73x48x33	94x30x27	130x80x60
Weight	kg	0,14	0,19	0,32
Package	/	box	box	box
Article No.	/	Q246-9100-032-20	Q373-9100-100-28	Q247-9100-032-21
EAN	/	5903953004826	5903953005052	5903953995366

19"

STANDARD 19"

PARAMETERS		AMK-SZ HANGER	AMK-SZ DRAWER
Dimensions (external)	mm	482x210x27	482x132x340
Space reservation in 19'' rack (height)	/	5U	3U
Material	/	aluminum	aluminum
Weight	kg	1,9 (ncluding cables and power supply)	3,6
Installation	/	RACK cabinet, telecommunication cabinet, wall	RACK cabinet, telecommunication cabinet
Additional features	/	Power supply 12V/5A/60W, 8 x connecting cable with Jack plugs	Installation of up to 2 equipments
Article No.	/	B154-3631-055-01	-
EAN	/	5903953005090	5903953005106

TELECOMMUNICATION CABINETS

GALVANIZED STEEL

PREFABRICATED HOLES

EASY MOUNT

PARAMETERS		AIZ-100	AIZ-200	AIZ-210
External dimensions	mm	445 x 577 x 180	482 x 587 x 407	482 x 899 x 407
Application	/	Universal	dedicated for T-urbo-T multiswitches	
No. of slots	/	2	5	10
Socket 230V	/	yes	yes	yes
Power supply 230V	/	yes	yes	yes
Material	/	galvanised steel		
Wall-mounting/19' rack	/	yes / yes		
Weight	kg	8,5	13,5	17
Package	/	bubble wrap	bubble wrap	bubble wrap
Article No.	/	B037-4771-038-01	B076-4771-054-01	B039-4771-039-01
EAN	/	5903953003508	5903953005663	5903953006004

PATCH PANELS

19″

STANDARD 19″

PARAMETERS	24xF	24xSC/APC	24xRJ45
Adapter type	19", 24xF	19", 24xSC/APC	19", 24xRJ45
Mounted adapters (yes/no)	yes	no	yes
No. of adapters	24 F/F	-	24 RJ45
Dimensions (WxH)	19" x 1U	19" x 1U	19" x 1U
Weight	0,485	2,4	1,2
Package	box	box	box
Article No.	Q201-9100-604-04	Q202-9100-604-05	Q203-9100-604-06
EAN	5903953003430	5903953003447	5903953003454

OPTICAL CONVERTER

PARAMETERS		LNBF
Optical output level	dBm	7
Wavelength	/	Single mode fiber (1310nm)
Noise figure	dB	0,5
Gain	dB	62 - 72
Power supply	V	12
DC Current consumption	mA	< 450
Connector power supply	/	F-female
Optical output	/	FC/PC
Operating temperature range	°C	-30 ... + 70
Package	/	box
Article No.		X772-9100-172-08

FIBRE INTEGRATED RECEPTION SYSTEM

PARAMETERS		ODU32 SET
Optical output level	dBm	7.0
		DVB-T/DAB/FM
Input frequency	MHz	88 - 854
DVB-T	MHz	470 - 854
DAB	MHz	174 - 230
FM	MHz	88 - 108
Input power range[1)]	dBµV	67 - 97
Recommended DVB-T input[2)]	dBµV	70
Optical output power	dBm	7.0
		DC specification
Input voltage range	V	12 - 20
LNBF supply voltage	/	directly from ODU-32
Terrestrial supply voltage	V	12
Current consumption[3)]	mA	< 500
		Others
Operating temperature	°C	-10 do 50
Optical connectors	/	FC/PC
Fibre type	/	single mode G.657a
Dimensions	mm	140 x 145 x 30
Weight	kg	0,30
Package	/	box
Article No.	/	X766-9100-172-06

(1) – DAB power level has to be adjusted 12dB below DVB-T. FM power level has to be set as the same level as DVB-T.
(2) – For 6 multiplexes.
(3) – Including LNBF.

OPTICAL SPLITTERS

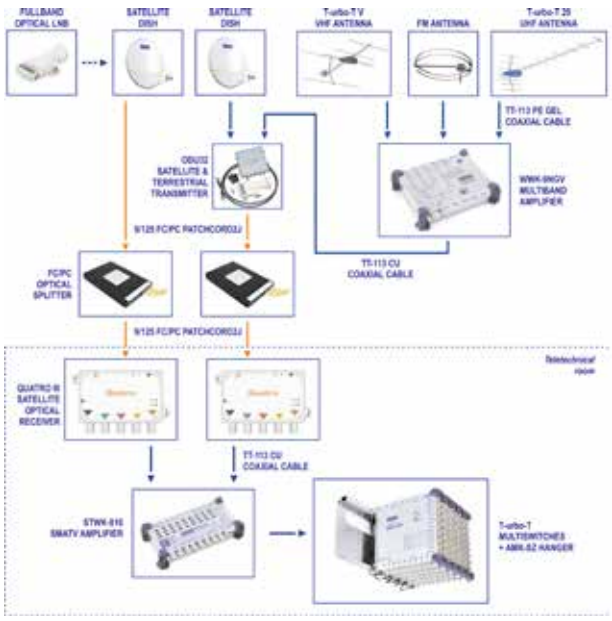
PARAMETERS		1/2 FC/PC	1/3 FC/PC	1/4 FC/PC	1/8 FC/PC
Split ratio	/	1x2	1x3	1x4	1x8
Operating wavelength	nm	1260 - 1650			
Insertion loss	dB	4,3	6,2	7,4	10,7
Return loss	dB	≥ 50			
Operating temperature range	°C	40 to +85			
Dimensions	mm	90 x 20 x 10	100 x 80 x 10		
Article No.	/	X768 9100-166-48	X769 9100-166-49	X770 9100-166-50	X771 9100-166-51

OPTICAL RECEIVER

PARAMETERS		QUATRO III
Bandwidth	dBm	FM / DAB / DVB-T /SAT
INPUT PARAMETERS		
Optical wavelength	nm	1100-1650
Optical input power	dBm	-12[4] do -3
SAT OUTPUT PARAMETERS		
RF frequency range	MHz	950-2150
Nominal output level	dBµV	79[5]
Gain variation across band	dB	5
Output impedance	Ohm	75
Return loss	dB	10
Terrestrial rejection	dB	35
DVB-T, DAB, FM OUTPUT PARAMETERS		
Frequency range: DVB-T DAB FM	MHz	 470 – 790 174 – 240 88 – 108
Nominal output level	dBµV	78[7]
Nominal impedance	Ohm	75
Return loss	mm	10
Terrestrial rejection	kg	35
OTHERS		
Current consumption 10.5VDC(max.)	mA	490
Input voltage range	V	10,5 – 21
Operating temperature	°C	-15 ... +50
Optical connectors	/	FC/PC
Fibre type	/	single mode G.657
Dimensions	mm	120,8x80,1x26,3
Weight	kg	0,175
Package	/	box
Article No.	/	X787-9100-611-21

(4) – For systems with 19,2dB optical balance.
(5) – For 30 transponders.
(6) – Additional variation can occur due to satellite transmitted signal levels.
(7) – For 6 multiplexes.

Application example



MAST, CHANNEL AMPLIFIERS

- Filter set dedicated to operation with DVB-T/T2 signals
- Mast multiband amplifier
- Remote powering through the output

	WK-310	WK-410
Bandwidth: FM/ VHF/ UHF	-/ -/ ●	●/ ●/ ●
FM/ DAB/ DVB-T/ DVB-T2	-/ -/ ●/ ●	●/ ●/ ●/ ●
HDTV/ UltraHDTV	●/ ●	●/ ●
Preamplifier power supply	-	●
Gain control: FM/ VHF/ UHF	-/ -/ ●	-/ -/ ●
LTE filter	-	●
No. of UHF channel filters	3	4
IN: FM/VHF/UHF	-/ -/ 1	1/ 1/ 2
Remote power supplier	●	●
Mast housing, splash-proof	●	●

PARAMETERS		WK-310	WK-410
Bandwidth	/	UHF	FM-VHF-UHF*
Inputs	/	1	1/1/2
Frequency range	MHz	47-862	47-790
Other inputs (fed as a crossover)	/	-	VHF,FM
No. of UHF filters	/	3	4
Gain	dB	(14-16)±2	15
Adjusting the gain in UHF	dB	-20	-20
Max. output level	dBµV	73 (86)	86
Selectivity	dB for +/- 24dB	15	15
Powering	V_{DC}	12	12
Powering from UHF 1	V/mA	-	12/50
Dimensions	mm	80x70x35	80x70x35
Mast housing dimensions	mm	108x125x45	108x125x45
Weight with mast housing	kg	0,22	0,28
Package	/	box	box
Article No.	/	F035-6538-757-01	F036-6538-791-01
EAN	/	5903953003089	5903953004505

*SAW LTE filter only on UHF 2 input

MICRO AMPLIFIERS

- High output level and gain
- LTE protected
- Small die-cast housing





	RTA-120	RTA-140	WSS 1138 ULTRA JET	WSS 2138 ULTRA JET	WSS 2138Z SAW
Bandwidth: FM/VHF/UHF	-/ ●/ ●	-/ ●/ ●	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●
DAB/ DVB-T/ DVB-T2	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●
HDTV/ UltraHDTV	●/ ●	●/ ●	●/ ●	●/ ●	●/ ●/ ●
Independent gain control: FM+VHF+UHF	-	-	-	-	-
Independent gain control: VHF/UHF	-	-	-	●	●
Preamplifiers power supply	●	●	-	●	●
LTE filter	-	-	●	●	●
Number of outputs	2	4	1	1	2
Built-in power supply	-	-	-	-	-
External power supply	●	●	●	●	-

PARAMETERS		RTA-120	RTA-140	WSS 1138 ULTRA JET		WSS 2138 ULTRA JET		WSS 2138Z SAW
Bandwidth	/	VHF/UHF	VHF/UHF	FM/VHF/UHF		FM/VHF/UHF		FM/ VHF/ UHF
Frequency range	MHz	47-862	47-862	47-790		47-790		47-790
Gain	dB	14±2	10±2	38		27-38		27-38
Max. output level	dBµV	106	102	114		114		114
Connector type	/	F	F	F		F		F
Preamplifiers power supply	/	yes	yes	no		yes		yes
Powering	V	9...12 V_{DC}	9...12 V_{DC}	12 V_{DC}		12 V_{DC}		12 V_{DC} (remote)
Dimensions	mm	78x47x20	78x60x20	80x52x19		80x52x19		80x52x19
Weight	kg	0,09	0,1	0,09		0,09		0,09
Package	/	blister	blister	poly bag	blister	poly bag	blister	blister
Article No.	/	P001-6531-016-02	P002-6531-016-01	P011-6538-771-03	P013-6538-771-06	P012-6538-769-02	P014-6538-769-05	P015-6538-769-09
EAN	/	5903953000507	5903953000514	5903953004079	5903953004123	5903953004086	5903953004130	5903953005137

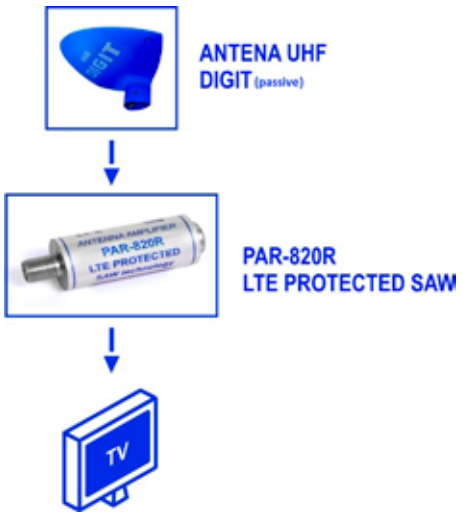
TV PREAMPLIFIERS

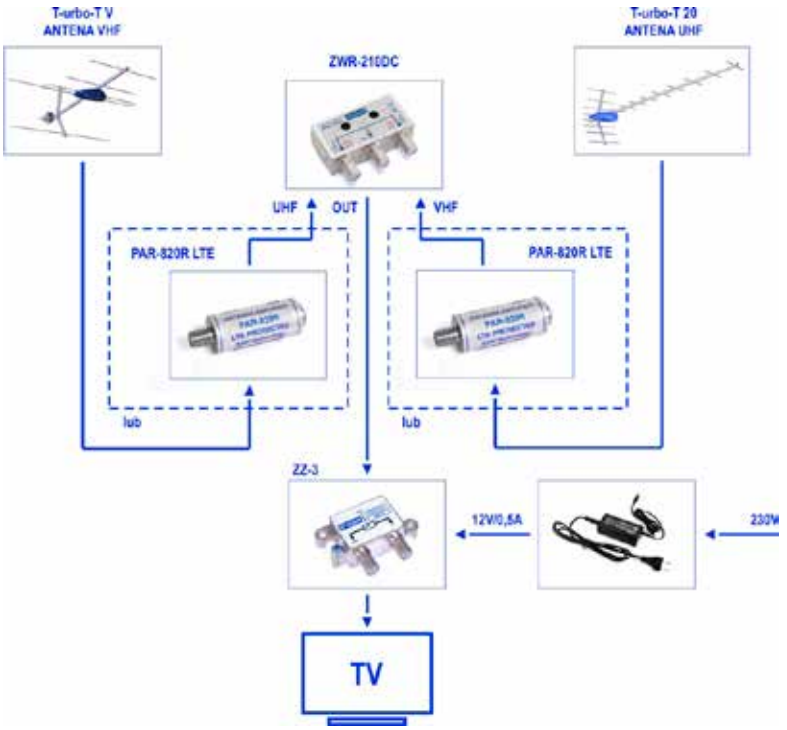
- Wide range of power supply voltages
- Low noise technology
- Low current consumption
- Resistance to external electromagnetic fields (solid metal die-cast housing)

	PAR-820	PAR-820 LTE PROTECTED	PAR-820R LTE PROTECTED
Bandwidth: FM/ VHF/ UHF	● / ●/ ●	-/ -/ ●	●/ ●/ ●
FM/ DAB/ DVB-T/ DVB-T2	●/ ●/ ●/ ●	-/ -/ ●/ ●	●/ ●/ ●/ ●
HDTV/ UltraHDTV	●/ ●	●/ ●	●/ ●
Remote powering	●	●	●
SAW LTE filter	-	●	●

PARAMETERS		PAR-820	PAR-820 LTE PROTECTED	PAR-820R LTE PROTECTED
Bandwidth	/	FM/VHF/UHF	UHF	FM/VHF/ UHF
Frequency range	MHz	88-862	470-790	47-790
Gain	dB	19±2	19±2	18
Gain out of bandwith	dB@MHz	not specified	-10@900	-10@500
Max. output level	dBµV	100	99	93
Power supply	V_{DC}	5...24	5...24	5...24
Connector input/output	/	F-male/ F-female	F-male/ F-female	F-male/ F-female
Dimensions	mm	Ø20 x 62	Ø20 x 62	Ø20 x 62
Weight	kg	0,05	0,06	0,06
Package	/	blister	blister	blister
Article No.	/	F023-6538-758-01	F024-6538-780-01	F027-6538-819-01
EAN	/	5903953002815	5903953004512	5903953005441

Application example





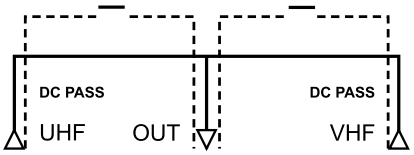
FILTERS

	FAR 50 LTE	FAR 50 LTE DC	FAR 60 LTE	FAR 60 LTE DC	FPL 2160
SAW technology	●	●	●	●	–
LC technology	–	–	–	–	●

PARAMETERS		FAR 50 LTE	FAR 50 LTE DC	FAR 60 LTE	FAR 60 LTE DC	FPL-2160	
Frequency range	MHz	47-690		47-790		470 - 790	
Loss at pass band	dB	4,0		4,0		3 ±1,0	
Stop band attenuation	dB	>18/ 698-718 >26/ 718-725 >30/ 725-2600		>18/800-803 >26/803-900 >30/900-2600		0-450 / 820-1000	
DC pass (yes/no)	/	no	yes	no	yes	yes	
Connector type	/	F		F		F	
Dimensions (W x H x D)	mm	64 x Ø20		64 x Ø20		70 x Ø20	
Weight	kg	0,045		0,045		0,05	0,055
Package	/	bag		bag		bag	blister
Article No.	/	F029-6527-277-02	F022-6527-277-01	F019-6538-795-01	F018-6538-795-02	0185-6527-252-01	0186-6527-252-02
EAN	/	–	–	5903953005014	5903953004895	590 395 300 3492	590 395 300 3492

MULTIPLEXERS

- Outdoor installation (optional splash-proof housing)
- DC pass from output to selected inputs



PARAMETERS		ZWR-210 DC		
Bandwidth	/	FM	VHF	UHF
Frequency range	MHz	47-230		470-790
No. of inputs	/	1		1
No. of outputs	/	1		
DC transition on/off	/	yes		yes
Option to disable the DC transition	/	yes		yes
Dimensions	mm	60x58x19		
Mast housing dimensions	mm	85x105x26		
Weight including mast housing	kg	0,14		
Package	/	box		
Article No.	/	F037-6527-031-05		
EAN	/	5903953005069		

MUX-DEMUX RTV/SAT

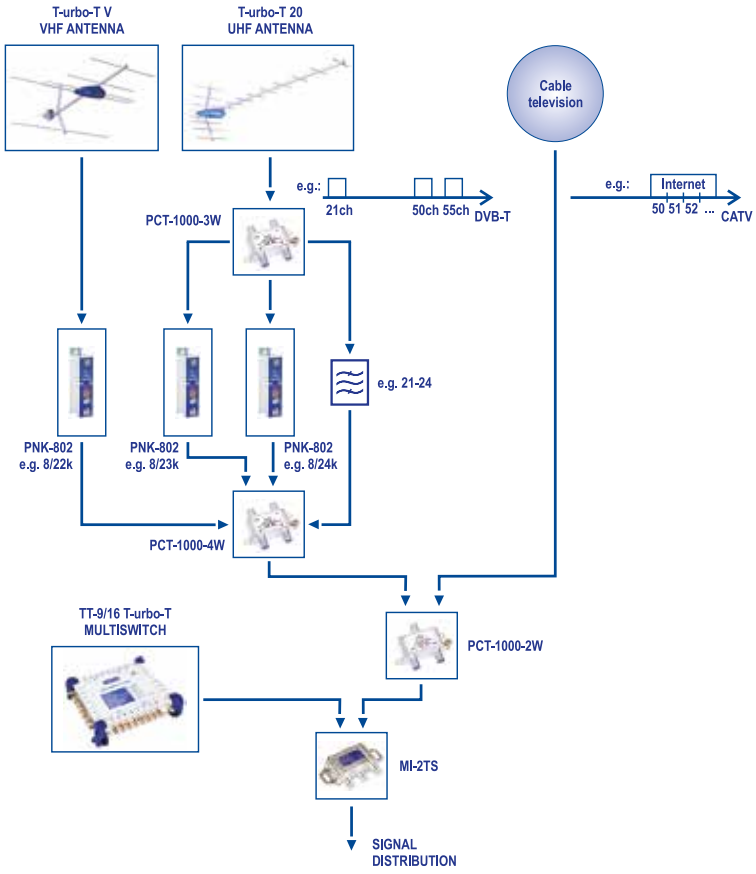
- Automatic 12V DC pass for TV band
- Dedicated to QUAD LNB

PARAMETERS		SCQ-410	
Frequency range	MHz	TV: 47-790 SAT: 950-2150	
No. of inputs	/	5 (1x TV, 4x SAT)	
No. of outputs	/	4 (TV+SAT)	
Insertion loss	dB	for TV: 9 for SAT: 1	
Dimensions (W x H x D)	mm	148x105x24	
Weight	kg	0,27	
Package	/	box	blister
Article No.	/	B173-7531-038-01	B174 7531-038-02
EAN		5903953005045	5903953005113

RF CONVERTER

PARAMETERS		PNK-802
Input channel range	MHz	S01-K69, S1-K69, S1-S8, K5-K12, K6-K12, S9-S38, K21-K69
Output channel range	MHz	S01-K69, S1-K70, S1-S8, K5-K12, K6-K12, S9-S38, K21-K69
Max. input level - DVB-T	dBµV	80
Max output level – DVB-T	dBµV	80 ±3
Adjustment of output level	dB	20
Stability of vision carrier frequency	kHz	±50
Selectivity of filters at indirect path (versus fo)	dB/MHz	35/12
Interference level at the 16dBc audio subcarrier distance for PAL	dB	58
C/N ratio for PAL at the 70dBµV input level	dB	53
Phase noise Uout = 100dBµV @1kHz	dBc	65
I/O impedance	/	75/75
Power supply	V_{DC} / mA	12,0/250
Input/ output connectors	/	F/F
Operating temperature	°C	-10...+55
Dimensions	mm	30 x 133 x 88
Weight	kg	1,1
Package	/	box
Article No.	/	0173-6538-763-01

Application example



ACTIVE RTV SPLITTERS

- Designed for individual and collective application
- 1 input / 2 (RTA-120) or 4 (RTA-140) RTV outputs
- Built-in variable attenuators
- Low noise
- Power supply via coaxial cable (OUT)
- DC power pass from OUT to IN
- Metal die-cast housing
- High screening factor





	RTA-120	RTA-140	WSS 1138 ULTRA JET	WSS 2138 ULTRA JET	WSS 2138Z SAW
Bandwidth: FM/VHF/UHF	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●
DAB/ DVB-T/ DVB-T2	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●	●/ ●/ ●
HDTV/ UltraHDTV	●/ ●	●/ ●	●/ ●	●/ ●	●/ ●/ ●
Independent gain control: VHF/UHF	-	-	-	●	●
Preamplifiers power supply	●	●	-	●	●
LTE filter	-	-	●	●	●
Number of outputs	2	4	1	1	2
External power supply	●	●	●	●	-

PARAMETERS		RTA-120	RTA-140	WSS 1138 ULTRA JET		WSS 2138 ULTRA JET		WSS 2138Z SAW
Bandwidth	/	FM/VHF/UHF	FM/VHF/UHF	FM/VHF/UHF		FM/VHF/UHF		FM/VHF/UHF
Frequency range	MHz	47-862	47-862	47-790		47-790		47-790
Gain	dB	14±2	10±2	38		27-38		27-38
Max. output level	dBµV	106	102	114		114		114
Connector type	/	F	F	F		F		F
DC pass	/	yes	yes	no		yes		yes
Powering	V_{DC}	9...12 (remote)	9...12 (remote)	12		12		12
Dimensions	mm	78x47x20	78x60x20	80x52x19		80x52x19		80x52x19
Weight	kg	0,09	0,1	0,09		0,09		0,09
Package	/	blister	blister	poly bag	blister	poly bag	blister	blister
Article No.	/	P001-6531-016-02	P002-6531-016-01	P011-6538-771-03	P013-6538-771-06	P012-6538-769-02	P014-6538-769-05	P015-6538-769-09
EAN	/	5903953000507	5903953000514	5903953004079	5903953004123	5903953004086	5903953004130	5903953005137

SPLITTERS

- Even signal power split between 2 or 3 outputs
- High isolation between outputs
- High shielding effectiveness
- Solid, metal, die-cast housing

PARAMETERS		RA-2F	RA-3F	RM-2F	RM-3F	RM-4F
Frequency range	MHz	5-862		5-1006		
No. of inputs	/	1	1	1	1	1
No. of outputs	/	2	3	2	3	4
Insertion loss: 5-862 MHz 1GHz	dB	4,0 ±1,5	8,5 ±2,0	4,0 5,5	6,5 7,0	8,0 9,0
Outputs isolation	dB	>20	>20	>20	>20	>20
Return loss • in • out	dB	 >5 >5	 >5 >5	 28 – 22 24 – 19	 24 – 16 27 – 15	 21-18 21-18
Dimensions (W x H x D)	mm	58x59x18	79x59x18	58x59x18	79x59x18	79x59x18
Weight	kg	0,06	0,095	0,06	0,095	0,095
Package	/	blister	blister	blister	blister	blister
Article No.	/	K130-6527-066-02	K131-6527-069-02	K101-6527-115-03	K102-6527-080-01	K103-6527-061-01
EAN	/	5903953003201	5903953003218	5903953003164	5903953003133	5903953003140

PCT PASSIVES

- Excellent parameters, technology optimized for DOCSIS 3.1
- Operating frequency up to 1218 MHz
- Increased resistance to intermodulation and harmonic iinterferences
- High isolation between outputs
- Soldered housing ensures high RFI level – 120 dB
- Surge protection up to 6 kV
- Meets SCTE standards

DOCSIS 3.1

PARAMETERS		PCT-NGN3M-2W	PCT-NGN3M-3W	PCT-NGN3M-3WB	PCT-NGN3M-4W	PCT-NGN3M-6W	PCT-NGN3M-8W
Frequency range	MHz	5-1218					
No. of inputs	/	1					
No. of outputs	/	2	3	3	4	6	8
Insertion loss: 5 - 10 MHz 10 - 65 MHz 65 - 470 MHz 470 - 862 MHZ 862 - 1006 MHz 1006 - 1200 MHz	dB	 3,5 3,5 3,6 3,8 3,9 4,2	 3,5/6,8 3,5/6,8 3,6/7,0 3,7/7,5 3,8/7,8 4,0/8,1	 5,1 5,1 5,4 5,8 6,1 6,6	 7,4 7,3 7,3 7,5 7,7 8,1	 8,4 8,4 9,1 9,8 10,0 10,8	 10,8 10,6 10,8 11,2 11,5 12,2
Outputs isolation: 5 - 10 MHz 10 - 65 MHz 65 - 470 MHz 470 - 862 MHZ 862 - 1006 MHz 1006 - 1200 MHz	dB	 30 36 30 28 26 23	 30 36 30 28 26 23	 30 35 29 25 25 23	 30 36 30 28 26 23	 28 33 29 25 24 23	 28 33 29 25 24 23
Return loss: 5 - 10 MHz 10 - 65 MHz 65 - 1006 MHz 1006 - 1200 MHz	dB	 22 25 22 22	 22 25 22 22	 22 25 22 22	 22 25 22 22	 22 25 22 22	 22 25 22 22
Type	/	horizontal	horizontal	vertical	vertical	vertical	vertical
Package	/	blister	blister	blister	blister	blister	blister

OPTICAL PASSIVE SPLITTERS, MUX/DEMUX

PARAMETERS			Splitter 1x2	Splitter 1x4	Splitter 1x8	Splitter 1x16	Splitter 1x32	Splitter 1x64	Splitter 1x128
Operation wavelength		nm	1260-1650						
Insertion IOSS (IL)	Max (≤)	dB	3,8	7,4	10,5	13,6	17,0	20,5	23,6
	Uniformity (≤)	dB	0,6	0,6	0,8	1,0	1,3	2,0	2,0
Polarization dependent loss (PDL) (≤)		dB	0,2	0,2	0,2	0,3	0,3	0,3	0,4
Return loss (RL)		dB	≥55						
Directivity		dB	≥55						
Enclosure		/	ABS						
Connector		/	SC/APC						
Pigtail length		m	1						
Package		/	blister						
Article No.		/	L001-9100-166-40	L003-9100-166-42	L004-9100-166-43	L005-9100-166-44	L006-9100-166-45	L007-9100-166-46	L008-9100-166-47

PARAMETERS			MUX 1/4	DEMUX 1/4	MUX 1/8	DEMUX 1/8
No of outputs		MHz	4		8	
Wavelength		/	1310/1510/1530/1550/1570		1310/1470/1490/1510/1530/1570/1590/1610	
Channel width		nm	λC ± 6,5		λC ± 6,5	
Insertion loss		dB	≤ 1.3		≤ 1,8	
Isolation / attenuation	neighboring	dB	≥ 30		≥ 30	
	between channels		≥ 40		≥ 40	
Uniformity (room temp.)		dB	0,43		0,8	
Pass band ripple		dB	≤ 0,3		≤ 0,8	
Polarization dependent loss (PDL)		dB	< 0,2		< 0,2	
Return loss		dB	> 45		> 45	
Directivity		dB	> 50		> 50	
Max optical power		mW	300		300	
Operating temp.		0C	- 5 ...+75			
Storage temp.		0C	- 40...+85			
Connectors			SC/APC			
Fiber type		/	ITU-T SMF-28, YOFC657A2 input: 900µm - black / output: 900µm - white			
Pigtail length		/	1,4 ±0,2			
Package		/	box (47x30,5x8)		box (44x25x6)	
Article No.		/	L009-9100-111-61	L011-9100-111-63	L010-9100-111-62	L012-9100-111-64

FTTH OUTLETS

PARAMETERS		FTTH FOS-2	FTTH FOS-4
No of outputs	szt.	2	4
Connector	/	SC/APC	
Type of fiber	/	fiber SM (single mode)	
Connector attenuation	dB	≤ 0,20 (+/- 0,1dB)	
Operating temp.	°C	od -25 do +70	
Enclosure	/	ABS	
Dimensions	mm	85x85x25	150x110x30
Weight	kg	0,08	0,14
Package	/	poly bag	poly bag
Article No.	/	X591-9100-001-87	X590-9100-001-86

R/TV OUTLETS

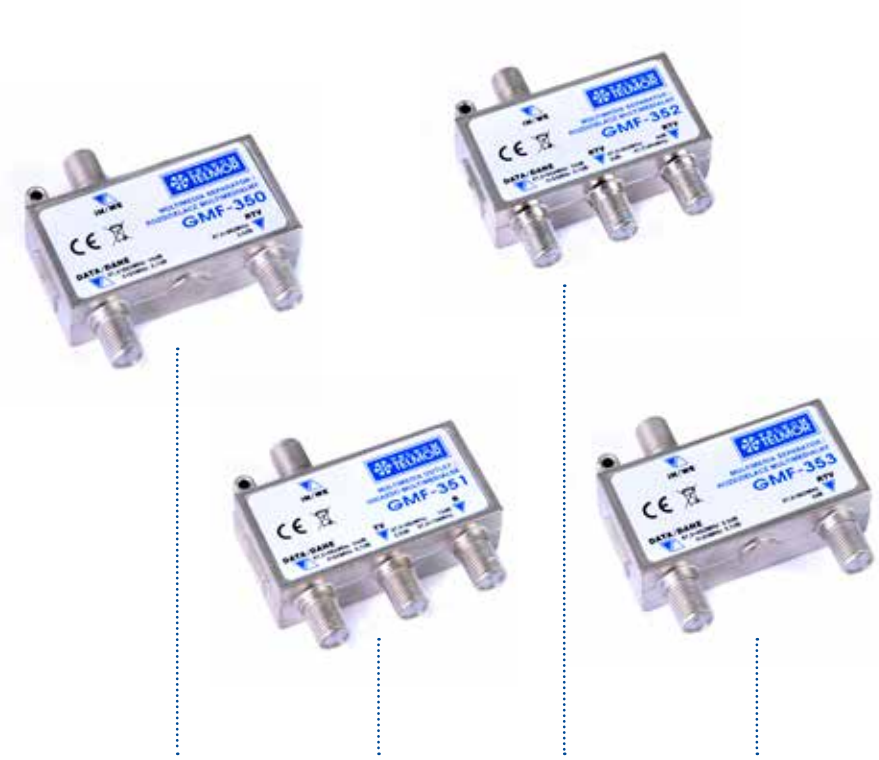
PARAMETERS			GA-26FB
Frequency range	WE → TV	MHz	118-862
	WE → R	MHz	87-108
Insertion loss	WE → TV	MHz	2±0,5
	WE → R	MHz	7±1
Isolation	WYJ TV	dB	>30,0
	WYJ R	dB	>25,0
Return path filter		/	<87MHz
Shielding efficiency		dB	>86
Impedance		Ohm	75
Connector		/	F
Dimensions		mm	60x58x18
Weight		kg	0,07
Package		/	poly bag
Article No.		/	K605-6526-036-01

RTV/ SAT OUTLETS

PARAMETERS			GFS-520
Frequency range		MHz	47-2400
Insertion loss	IN1 → SAT1	MHz	<1,5
	IN1 → RTV	MHz	<1,5
	IN2 → SAT2	MHz	<1,0
Max voltage / current		V/mA	+20/250 (DC PASS)
Impedance		Ohm	75
Output connector type		/	F
Dimensions		mm	100x80x25
Weight		kg	0,14
Package		/	poly bag
Article No.		/	K633-6526-073-01
EAN		/	5903953003843

MULTIMEDIA OUTLETS

- Full range of work frequencies: 5-862 MHz
- Solid, die-cast housing
- Simple installation



PARAMETERS				GMF-350	GMF-351	GMF-352	GMF-353
Type of outlets			/	DATA/RTV	DATA/TV/RADIO	DATA/RTV/RTV	DATA/RTV
Stop band	RTV->IN		MHz	5-65	5-65	5-65	5-65
Frequency range	IN->RTV		MHz	87-862	-	87-862	87-862
	IN->TV			-	87-862	-	-
	IN->R			-	87-140	-	-
	IN->D			87-862	87-862	87-862	87-862
	D-> IN			5-65	5-65	5-65	5-65
Return loss	RTV-> IN		dB	> 45	-	> 50	> 45
	TV i R-> IN			-	> 45	-	-
Insertion loss	IN->RTV		dB	3,0	/	2 x 6,0	4,0
	TV			/	4,0 ±1,0	/	
	R			/	13,0 ± 1,0	/	
	IN->D			max.10,5	max.10,5	max.10,0	max. 4,5
	D-> IN			max.1,0!	max.1,0!	max.1,0!	max.1,0!
Isolation	RTV-D	5-65 MHz	dB	> 50	-	> 50	> 45
		87-862 MHz		> 25	-	> 25	> 20
	D-TV	5-65 MHz		-	> 40	-	-
		87-862 MHz		-	> 25	-	-
	D-R	5-65 MHz		-	> 45	-	-
		87-140 MHz		-	> 35	-	-
	R-TV	87-862 MHz			> 25	-	-
Signal level modem to DATA (5-65 MHz)			dBµV	≤ 120			
Impedance			Ohm	75			
Connector type			/	3x F	4x F	4x F	3x F
Product dimensions			mm	60x58x19			
Housing dimensions			mm	100x80x25			
Weight including housing			kg	0,12			
Package			/	poly bag			
Article No.			/	K421-6526-064-01	K422-6526-065-01	K423-6526-066-01	K424-6526-067-01

MULTIMEDIA OUTLETS

- Double galvanic isolation between the input and outputs
- Input high-voltage protection – 2,12 kV / DC
- Die-cast, metal housing
- Optional plastic enclosure

PARAMETERS				GMDF-350	GMDF-351	GMDF-352	GMDF-353	GMDF-354
Type of outlets			/	DATA/RTV	DATA/TV/RADIO	DATA/RTV/RTV	DATA/RTV	DATA/DATA/RTV
Frequency range	IN->RTV		MHz	87-1000	-	87-1000	87-1000	87-1000
	IN->TV			-	87-1000	-	-	
	IN->R			-	87-139	-	-	
	IN->D			87-1000	87-1000	87-1000	87-1000	87-1000
	RTV/TV -> IN			5-65	5-65	5-65	5-65	5-65
	D-> IN			5-65	5-65	5-65	5-65	5-65
Insertion loss	IN->R	5-65MHz	dB		40			
		87-139MHz			≤13,0; typ. 12,5			
	IN->TV	5-65MHz			40			
		87-862MHz			≤4,0; typ. 3,0			
		862-1000MHz			≤5,0; typ. 4,5			
	RTV/TV-> IN	5-65MHz		40	40	40	40	40
	IN->D	87-862MHz		≤10,0; typ. 9,5	≤10,0; typ. 9,5	≤10,0; typ. 9,5	≤5,0; typ. 4,5	≤9,5; typ. 8,5
		862-1000MHz		≤10,5; typ. 10,0	≤10,5; typ. 10,0	≤10,5; typ. 10,0	≤5,5; typ. 5,0	≤10,0; typ. 9,0
	D-> IN	5-65MHz		≤2,0; typ. 1,5	≤2,0; typ. 1,5	≤2,0; typ. 1,5	≤2,0; typ. 1,5	≤5,5; typ. 4,5
	IN->RTV	5-65MHz		> 40	-	> 40	> 40	> 40
		87-862MHz		≤2,5; typ. 2,0	-	≤8,5; typ. 7,5	≤4,5; typ. 4,0	≤5,0; typ. 4,0
		862-1000MHz		≤3,2; typ. 2,5	-	≤9,5; typ. 8,5	≤5,0; typ. 4,5	≤6,0; typ. 5,5
Isolation	D-RTV	5-65MHz	dB	40	-	40	40	40
		87-1000MHz		20	-	20	20	20
	D-TV	5-65MHz		-	40	-	-	-
		87-1000MHz		-	20	-	-	-
	D-R	5-65MHz		-	20	-	-	-
		87-1000MHz		-	40	-	-	-
	D-D	5-65MHz		-	-	-	-	20
		87-1000MHz		-	-	-	-	20
	RTV-RTV	5-65MHz		-	-	-	-	-
		87-1000MHz		-	-	20	-	-
	R-TV	87-1000MHz		-	20	-	-	-
Impedance			Ohm	75				
Connector type			/	3x F	4x F	4x F	3x F	4x F
Product dimensions			mm	60x58x19				
Housing dimensions			mm	100x80x25				
Weight including housing			kg	0,12				
Package			/	poly bag				
Article No.			/	K330-6526-049-01	K331-6526-050-01	K332-6526-051-01	K333-6526-052-01	K335-6526-068-02

RTV/SAT OUTLETS

PARAMETERS			GFS-520
Frequency range		MHz	47-2400
Tap loss	IN1 → SAT1	MHz	<1,5
	IN1 → RTV	MHz	<1,5
	IN2 → SAT2	MHz	<1,0
Max voltage / current		V/mA	+20/250 (DC PASS)
Impedance		Ohm	75
Output connector type		/	F
Dimensions		mm	100x80x25
Weight		kg	0,14
Package		/	bag
Article No.		/	K633-6526-073-01
EAN		/	5903953003843

OUTLET ENCLOSURES

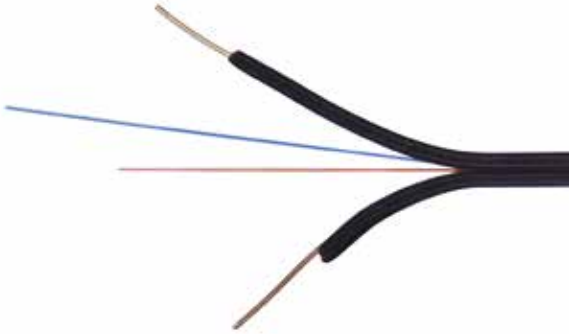
PARAMETERS		OGF-116	OGF-316	OGC-121
Dimensions	mm	95x70x25	100x80x25	80x80x28
Material	/	ABS	ABS	ABS
Weight	kg	0,045	0,055	0,04
Package	/	bag	bag	bag
Article No.	/	K902-3780-009-03	K933-3780-010-03	K942-3780-011-14

COAXIAL CABLES 75 OHM

	TT6 LSZH CCS 305	TT6 Cu 100	TT6 LSZH Cu 305	TT113 LSZH Cu 305	TT113 LSZH Cu 500	TT113 Cu, PE GEL 100	TT113 Cu, PE GEL 305	TT11 CCS 305
Type	RG6	RG6	RG6	RG6	RG6	RG6	RG6	RG11
Tri- Shield	●	●	●	●	●	●	●	●
% braid	80	77	77	77	77	77	77	67
A - shielding class	●	●	●	●	●	●	●	-
Inner conductor - copper-plated steel	●	-	-	-	-	-	-	●
Inner conductor - copper	-	●	●	●	●	●	●	-
Dielectric	●	●	●	●	●	●	●	●
Stable parameters	●	●	●	●	●	●	●	●
Fire resistance class	Eca	Eca	Dca	Eca	Eca	F	F	Eca
Use	indoor	indoor	indoor	indoor	indoor	outdoor	outdoor	outdoor

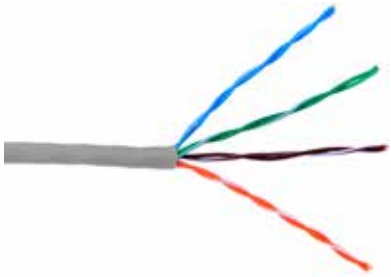
PARAMETERS		TT6 LSZH CCS 305	TT6 Cu 100	TT6 LSZH Cu 305	TT113 LSZH Cu 305	TT113 LSZH Cu 500	TT113 Cu, PE GEL 100	TT113 Cu, PE GEL 305	TT11 CCS 305
Frequency range	MHz	5 – 3000							
Attenuation	dB/100m	5,25 (55MHz) 9,35 (187MHz) 14,43 (450MHz) 18,54 (750MHz) 33,96 (2250MHz) 37,50 (3000MHz)	5,25 (55MHz) 9,35 (187MHz) 14,43 (450MHz) 18,54 (750MHz) 30,64 (2150MHz) 36,93 (3000MHz)		5,25 (88MHz) 7,64 (174MHz) 12,26 (470MHz) 16,48 (790MHz) 28,10 (2150MHz) 34,90 (3000MHz)				3,15 (55MHz) 6,72 (250MHz) 9,02 (450MHz) 11,97 (750MHz) 14,27 (1000MHz)
Impedance	Ohm	75 ±3							
Diameter Over Jacket	mm	7,57	6,93		7,0				10,2
Diameter Over Dielectric	mm	4,57			4,8				7,11
Inner Conductor diameter	mm	1,02			1,13				1,63
Reel	mm	305	100	305	305	500	100	305	305
Weight	kg	14,8	10	13,2	15,1	24,2	9,4	12,3	29,2
Package (reel)	/	wooden	plastic	wooden	wooden		plastic	wooden	wooden
Article No.	/	Q332-9100-028-05	X581-9100-028-04	Q331-9100-028-03	Q329-9100-028-01	Q330-9100-028-02	Q326-9100-001-20	Q325-9100-001-19	X582-9100-028-06
EAN	/	5903953005731	5903953005724	5903953005717	5903953005694	5903953005700	5903953004963	5903953004956	5903953005687

FIBER CABLES



PARAMETERS		GJXH-2B6 1km	GJXH-2B6 1km	GJXH-2B6 2km
Fiber type	/	9/125 (G.657A2)		
No of fibers	/	2		
Coating	/	LSZH		
Attenuation	dB/km	≤0,336 @1310nm; ≤0,198 @1550nm		
Min. bending radius	mm	10 mm (static), 25 mm (dynamic)		
Crush resistance	N/mm	2200/100		
Operation temperature range	°C	-20...+70		
Weight	kg	9	9	18
Colour	/	black	white	black
Article No.	/	X574-9100-001-92	X578-9100-001-96	X575-9100-001-93

LAN CABLES



PARAMETERS		TT-UTP 5E CU	TT-UTP 6E CU
Frequency range	MHz	4-100	4-250
Water vapour resistance	Ohm/km	200	
Impedance	Ohm	100 ±0,5	
Propagation delay skew	ns	175 (dla 35m)	535 (dla 100m)
Conductor	/	AWG 24 (0,51mm)	AWG 23 (0,55mm)
Weight	kg	8,5 (305m)	11,6 (305m)
Package	/	box	box
Dimensions (W x H x D)	mm	350x350x230	350x350x230
Article No.	/	Q310-9100-001-51	Q328-9100-000-23
EAN	/	5903953003027	5903953006011

TELECOMMUNICATION CABINETS





PARAMETERS		TeSM-101	TeSM-101E	TeSM-104	TeSM-106	TeSM Smart P/T
Type	/	flush - mounted				
Min. wall opening dimensions	mm	380 x 430		313 x 430	305 x 305	265 x 305
Flange dimensions	mm	408 x 452		348 x 452	320 x 320	280 x 320
External dimensions	mm	373 x 426 x 93		313 x 426 x 93	300 x 300 x 93	260 x 300 x 93
Connectors chamber (no. of slots)	/	5x F, 4x RJ45, 1x SC/APC	8x F, 8x RJ45	7x F, 7x RJ-45, 1x SC/APC dual	4x F, 4x RJ45, 4x SC/APC	6x F, 5x RJ45, 1x SC/APC
Cable hole dimensions	mm	54x51 + 2x Ø30	325 x 60	60x260	140 x 51 + 2x Ø30	200 x 51
Socket 230V	/	yes	no	yes	yes	no
Cabinet mounting	/	construction foam				
Installation inside cabinet	/	velcro or mounting tape				sheet-metal screw
Lock	/	yes				no (“click”)
Weight	kg	4,60	4,50	3,70	2,90	1,80
Package	/	box	box	box	box	box
Article No.	/	B052-4771-046-01	B060-4771-046-03	B054-4771-045-04	B023-4771-047-02	B073-4771-056-01
EAN	/	5903953002983	5903953006028	5903953006035	5903953006042	5903953006059




PARAMETERS		TeSM-110	TeSM-111A	TeSM-111DD	TeSM Smart N/T
Type	/	wall - mounted	wall – mounted with plinth	wall – mounted with plinth	wall - mounted
Min. floor opening dimensions	mm	-	305 x 105	305 x 105	-
External dimensions	mm	300x420x99	300 x 525 x 99	300 x 445 x 99	250 x 300 x 100
Plinth height	mm	-	120	40	-
Connectors chamber (no. of slots)	/	5x F, 4x RJ45, 1x SC/APC	4x F, 4x RJ45, 2x SC/APC	4x F, 4x RJ45, 2x SC/APC	6x F, 5x Keystone RJ45, 1x SC/APC
Cable hole dimensions	mm	187x60	230 x 84	230 x 89	200 x 51
Socket 230V	/	yes			157 x 55
Cabinet mounting	/	wall surface, expansion bolts			
Installation inside cabinet	/	velcro or mounting tape			sheet-metal screw
Lock	/	tak			no (“click”)
Weight	kg	3,20	3,74	3,61	1,60
Package	/	box	box	box	box
Article No.	/	B059-4771-044-03	B061-4771-048-03	B057-4771-048-02	B069-4771-057-01
EAN	/	5903953004864	5903953006066	5903953006073	5903953006080

* If you require other cabinets dimensions, please contact export@telmor.pl

"IEC" TYPE CONNECTORS

TYPE	Cable type	Assembly	Article No.	EAN
PCT-DRS59IMNT	RG59	Compression	L192-9100-020-06	
PCT-DRS59IFNT			L193-9100-020-07	
PCT-DRS6IMNT	RG6		L189-9100-020-03	
PCT-DRS6IFNT			L190-9100-020-04	
F-114	RG6	Compression	L201-9100-001-67	
F-114 RG6/BLISTER			W130-9100-001-89	5903953004239
F-115			L202-9100-001-68	
F-115/BLISTER			W131-9100-001-90	5903953004246
WPW-306	RG6 cable diameters (5,4...6,0) (6,2...6,8) (6,6...7,2)	Screw-on	W105-4569-042-02	5903953003379
WPW-307			W106-4569-042-03	5903953003386
WPW/G-306/BLISTER			W121-4569-042-08	5903953000439
WPG-305			W110-4569-043-01	5903953003393
WPG-306			W111-4569-043-02	5903953003409
WPG-307			W112-4569-043-03	5903953003416
WPW-306/BLISTER			W115-4569-042-07	5903953000392
WPG-305/BLISTER			W117-4569-043-10	5903953002402
WPG-306/BLISTER			W118-4569-043-07	5903953000408
WKW-505/BLISTER	RG6 cable diameters (5,4...6,0) (6,2...6,8) (6,6...7,2)	Screw-on	W170-4569-048-06	5903953002372
WKW-506/BLISTER			W172-4569-048-07	5903953000279
WKW/G-506/BLISTER			W181-4569-048-09	5903953000361
WKW-505			W250-4569-048-01	5903953000255
WKW-506			W251-4569-048-02	5903953003935
WKW-507			W252-4569-048-03	5903953003942
WKG-505			W260-4569-049-01	5903953000262
WKG-506			W261-4569-049-02	5903953003959
WKG-507			W262-4569-049-03	5903953003966
WKG-505/BLISTER			W178-4569-049-06	5903953002389
WKG-506/BLISTER			W175-4569-049-07	5903953000286

PCT-DRS6IMNT

PCT-DRS6IFNT

PCT-DRS59IFNT

PCT-DRS59IMNT

WKW-, WKG-507

WKW-, WKG-505

WKW-, WKG-506

F-115

F-114

WPW i WPG

"F" TYPE CONNECTORS

WKS-106

WKS-107

PCT-TRS11LMG

PCT-TRS6L

PCT-TRS9LNT

PCT-ERS6

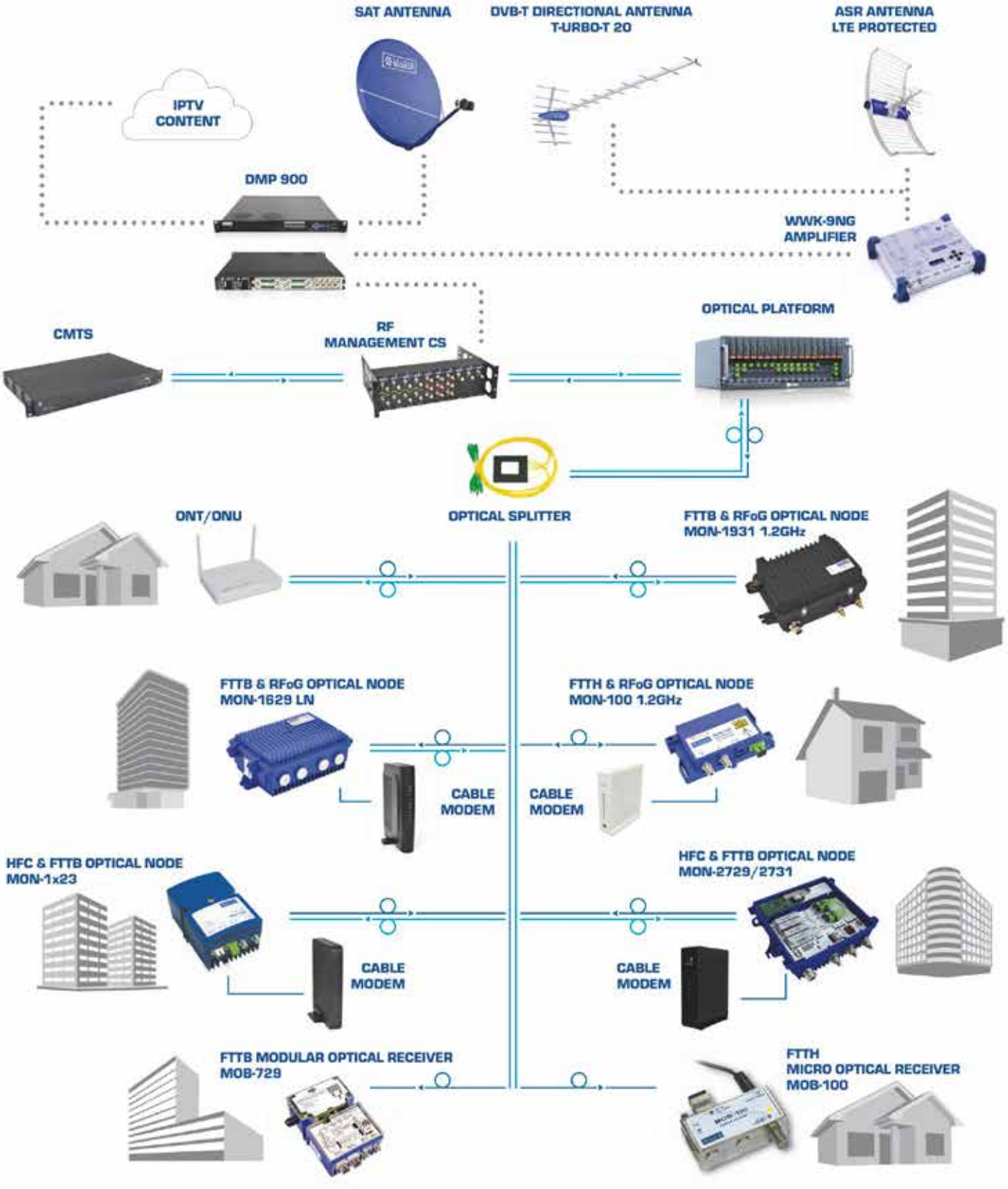
TYPE	Cable type	Assembly	Article No.	EAN
WKS 106	RG6 - 1.02 mm wire (6,2...6,8) (6,6...7,2)	Screw-on	W302-4569-046-02	5903953003621
WKS 107			W304-4569-046-03	5903953003638
WKS 106/BLISTER			W309-4569-046-06	5903953002426
PCT-TRS59LMG	RG59	Compression	L195-9100-020-09	-
PCT-TRS6L	RG6		L187-9100-020-01	-
PCT-TRS9LNT	RG6 - 1.13 mm wire		L191-9100-020-05	-
PCT-ERS6	RG6		L194-9100-020-08	-
PCT-ERS6/BLISTER			W136-9100-021-03	5903953004307
PCT-TRS11LMG	RG11		L188-9100-020-02	-

TV ADAPTERS

PARAMETERS	FFP-110B	FIP-110B	FIP-120B
Rodzaj	F - F	F - IEC male	F - IEC female
Indeks	W800-9100-019-01	W805-9100-001-21	W808-9100-001-26
EAN	5903953000750	5903953000484	5903953000477

Application example

CATV NETWORK SIGNAL DISTRIBUTION



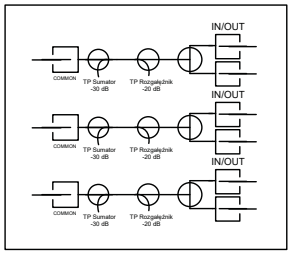
RF MANAGEMENT HFC

- Universal CATV signal distribution system
- High isolation between ports
- Modular design
- New cabinet design with cable organizer
- Expandable system that evolves with your needs

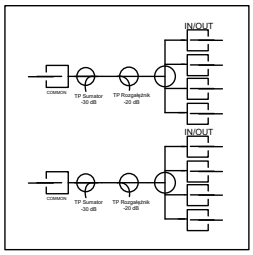
MEASUREMENT		TT-1x2T CS	TT-1x4DCS	TT-1x8CS
Frequency range	MHz	5...1218		
Insertion Loss	dB	≤6	≤9	≤14
Return Loos	dB	≥20	≥18	≥18
Port to Port Isolation	/	≥32		
Connectors	/	F female		
Impedance of RF ports	Ohm	75		
Operating temperature	°C	0...+55		

MODULES

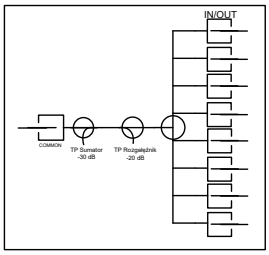
TT-1x2T CS



TT-1x4D CS



TT-1x8 CS



RF MANAGEMENT SAT

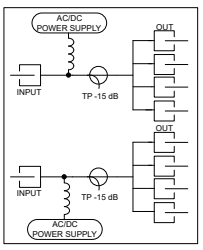
- Satellite signals distribution system
- Modular design
- Scalable to meet your needs
- Low noise amplification
- Equal level from each output
- Frequency range 950-2150MHz
- 1 input can be split up to 32 outputs

PARAMETERS		TT-1x4D SS	TT-1x8 SS
Bandwidth	MHz	950-2150	950-2150
Gain/Attenuation	dB/ MHz	-9/950...-13/2150	9/950...13/2150
Return loss	db	>12	>12
Separation between outputs	dB	>25	>20
TP Attenuation	dB	15	15
Noise figure	dB	-	<4
Powering	V/mA	15/30	15/155

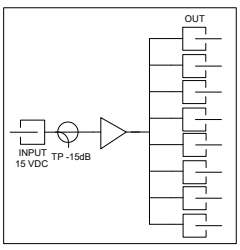
PARAMETERS		TT-ZASDSS
Input Voltage	V_{AC}	85..264
Output Voltage	V_{DC}	15
Output Current	A	2
Output Power	W	30
No. of Power Suppliers	/	2

MODULES

TT-1x4D SS



TT-1x8 SS



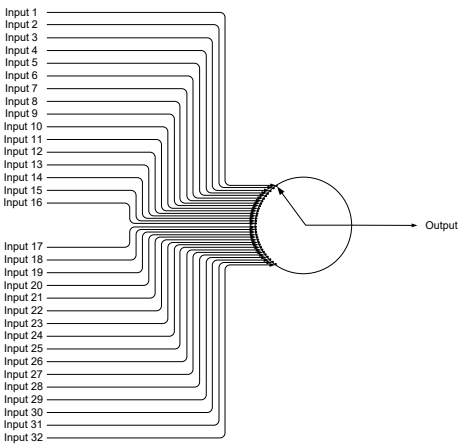
TT-ZASDSS

Power supply module for RF Management SAT system. Includes two redundant power supplies to ensure powering of 8 active TT-1x8SS modules.

RF MATRIX

- Electronically controlled
- 32 RF inputs
- 1 RF output
- Remote control via www and SNMP protocol
- 3 digit display
- Local manipulator
- Local powering

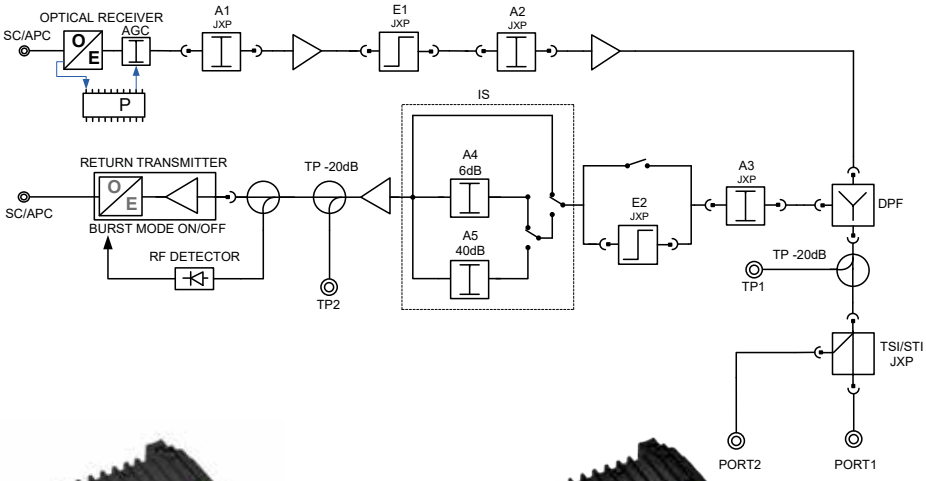
TECHNICAL PARAMETERS		TT-RFM
Frequency range	MHz	5...250
Switch on/off isolation	dB	>55
Return loss	dB	18
Gain characteristic flatness	dB	±0,75
Gain	dB	9
Local Powering	V	180...253 (50-60Hz)
Connectors	Type	"F"
Dimensions	WxHxD	19"x1,78"x20"



DOCSIS 3.1 FTTB OPTICAL NODES

MON-1931/ 1925

- Low-noise receiver
- Dedicated for FTTB and RFoG networks
- High output RF level – 116 dBµV
- Frequency range 1.2 GHz
- Built-in AGC (Automatic Gain Control)
- Compatible with SCTE 174 Standard
- DOCSIS 3.1
- Modular optical return path transmitter FP, DFB or CWDM



DOCSIS 3.1

PARAMETERS		MON-1931	MON-1925
		FORWARD PATH	
Input level range	dBm	-10...+3	-10...+3
AGC range	dBm	-6...0	
Optical return loss	dB	>45	> 45
Optical input wavelength	nm	1100 ... 1650	1100...1610
Equivalent input noise current	pA/√Hz	<6	<6
Optical connector	/	SC/APC	SC/APC
Frequency range	MHz	85/102/110/256...1218	85/102/110/256...1218
Flatness	dB	< ±1	< ±1
Max. output level[1)]	dBµV	116	112
Equalizer	dB	JXP plug-in: 0...15, step 1	JXP plug-in: 0... 15, step 1
Attenuator A1	dB	JXP plug-in: 0... 20, step 1	JXP plug-in: 0...20, step 1
Output test point	dB	-20 ± 1	-20 ± 1
Return loss at RF output[3)]	dB	≥ 18 @40 MHz -1,5 / oct.	
		RETURN PATH	
Frequency range	MHz	5...65/85/204	5...65/85/204
Flatness	dB	± 1	± 1
Attenuator A3	dB	moduł JXP: 0...20, step 1	moduł JXP: 0...20, step 1
		OTHERS	
Power supply	V_{AC}/Hz	180...253 / 50-60 (local) 30...65 / 50-60 (remote)	
Power consumption[4)]	W	<23	< 18
Connector	/	5/8", (other on request)	5/8", (other on request)
Protection class	/	IP65	IP65
Operating temperature	°C	-20... +65	
Weight	kg	1,6	
Dimensions (W x H x D)	mm	223x151x98	223x151x98
Package	/	box	box
Article No.	/	D911-7538-280-01	-

(1) – CENELEC 42: 1310nm@ -3dBm E1 =0dB, CTB ≤ -60dBc, CSO ≤ -60dBc
3) – 18 dB for f≤ 40MHz,
18 dB-1,5dB/oct. for f>40MHz
(4) – Without return path transmitter

DOCSIS 3.1 FTTB/FTTH/RFoG OPTICAL NODES

MON-210/ 100/ 110

- Dedicated to FTTB/FTTH/RFoG networks
- Downstream bandwith up to 1218 Mhz
- 1310 nm, 1610 nm or other CWDM wavelength in return path
- Compact housing
- Burst mode ON/OFF
- Low power consumption

DOCSIS 3.1

RFoG

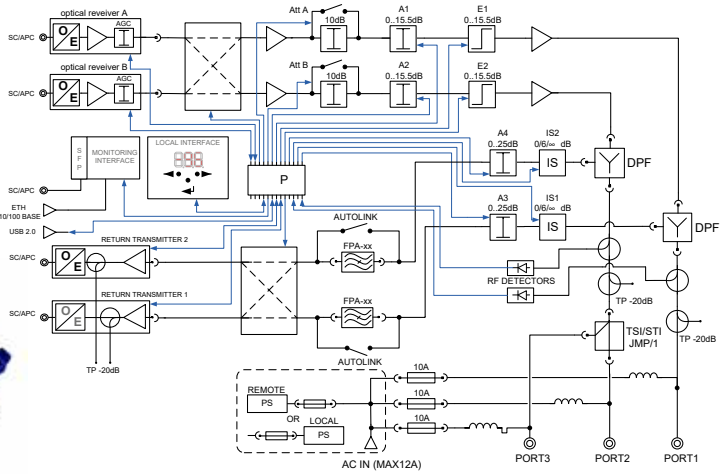
PARAMETERS		MON-210	MON-100	MON-110
		FORWARD PATH		
Input level range	dBm	-9...+2	-9...+2	-10...+1
AGC range	dBm	-6...0	-6...0	
Optical return loss	dB	>40	≥40	
Optical input wavelength	nm	1550±10 or 1100-1650	1550 ±10	
Equivalent input noise current	pA/√Hz	<6,5	<7	<6,0
Optical connector	/	SC/APC	SC/APC	
Frequency range	MHz	54/85/102/ 110/258...1218	110...1218	87/254...1218
Flatness	dB	± 0,75	± 0,75	± 1
Max. output level[1]	dBµV	112	80	
Equalizer	dB	JXP plug-in: 0...20, step 1	5	fixed 5
Output test point	dB	-20 ± 1	-20 ± 1	
Return loss at RF output	dB	18@40MHz-1,5dB / oct.	≥ 18 @40 MHz -1,5 / oct.	> 16dB (40 MHz) -1,5 / oct.
		RETURN PATH		
Frequency range	MHz	5...45/65/85/204	5...85	5...65/204
Flatness	dB	± 0,75	± 0,75	± 1,0
Attenuator	dB	moduł JXP: 0...20, step 1	fixed 0/5	
		OTHERS		
Power supply local remote	V_{AC}/Hz	180...253/ 50-60 30...90 / 50-60	9 VDC	external PS 9V/490mA
Power consumption	W	<12	<4,6	<4,6
Minimum signal level for laser switch on (burst mode)	dBµV	75 ±1	75 ±1	
Connector	/	F	F	
Protection class	/	IP54	IP54	IP 65
Operating temperature	°C	-20... +55	-20... +55	-20... +65
Weight	kg	1,1	0,3	
Dimensions (W x H x D)	mm	107x155x75	100 x 130 x 30	128x95x32
Package	/	box	box	
Article No.	/	-	D389-6535-796-01	-
Optical output wavelength[2]	nm	1310 / 1610 / CWDM[2]	1310 / 1610 / CWDM[2]	
Optical output power	dBm/mW	3/2	3/2	

(1) – (CENELEC 42) 3,5% OMI, -3dBm, CTB≤60dBc; CSO≤-60dBc
(2) – 18 wavelenght (from 1270 nm to 1610 nm) to be defined during order

OPTICAL NODES

MON-2727A

- Dedicated to HFC and FTTB networks
- Full intelligent redundancy and segmentation in forward and reverse path
- Automatic Gain Control
- Local or remote powering
- Ethernet monitoring
- Modular optical transmitters and receivers
- Modular optical return path transmitter FP, DFB or CWDM



PARAMETERS		MON-2729 AZ	MON-2729 A
FORWARD PATH			
Input level range	dBm	-10...+3	
AGC range	dBm	-7...0	
Optical return loss	dB	≥45	
Optical input wavelength	nm	1100-1650	
Equivalent input noise current	pA/√Hz	< 7,5	
Optical connector	/	SC/APC	
Frequency range	MHz	87...1006, 110...1006	
Flatness	dB	± 1	
Max. output level[1]	dBµV	2x114	
Inter-stage adjustment: – attenuator – equalizer	dB	electronic: 0...25,5[2] electronic: 0...15,5	
Output test point	dB	-20 +/- 1	
Return loss at RF output	dB	≥ 18 @40 MHz -1,5 / oct.	
RETURN PATH			
Frequency range	MHz	5...65, 5...85	
Gain	dB	22	
Flatness	dB	± 0,75	
Level adjustment	dB	electronic: 0...25, step 1	
OTHERS			
Power supply Local Remote	V_{AC}/Hz	180...253 / 50-60 30...90 / 50-60	
Power consumption[3]	W	<36	<38
Connector	/	PG11, 5/8"	
Monitoring Module	/	Eth + SFP	
Protection class	/	IP52	
Operating temperature	°C	-20... +55	
Weight	kg	2,75	
Dimensions (W x H x D)	mm	262x215x102	
Package	/	box	box
Article No.	/	D331-7538-271-02	D330-7538-271-01

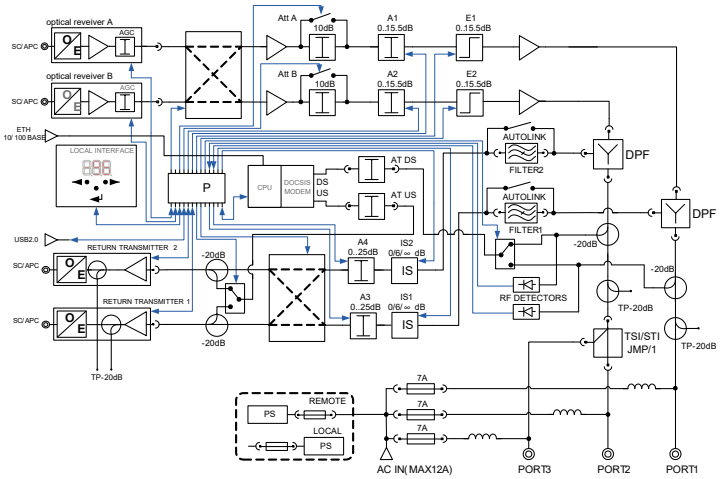
RETURN PATH TRANSMITTERS		TX-1310FP	TX-1310DFB	TX-1550DFB	TX-1xxxCWDM
Optical output wavelength[4]	nm	1310	1310	1550	CWDM[4]
Optical output power	dBm/mW	0/1	3/2		3/2
Optical connector	/	SC/APC			

(1) – CENELEC 42: 1310nm@ -3dBm E1 i E2=0dB, CTB ≤ -60dBc, CSO ≤ -60dBc
(2) – set by A1 - 0...15,5dB and Att A - 10 dB step by 0,5dB
(3) – with 2x RX and 2 x TX + monitoring module
(4) – wavelenght (from 1430nm do 1610nm) to be defined during order

OPTICAL NODES

MON-2731

- Dedicated to HFC and FTTB networks
- Full redundancy and segmentation in forward and reverse path
- Automatic Gain Control
- Local or remote powering
- Ethernet or DOCSIS monitoring
- Modular optical transmitters and receivers
- Modular optical return path transmitter FP, DFB or CWDM



PARAMETERS		MON-2731	MON-2731 Z
		FORWARD PATH	
Input level range	dBm	-10...+3	
AGC range	dBm	-7...0	
Optical return loss	dB	>45	
Optical input wavelength	nm	1100-1650	
Equivalent input noise current	pA/√Hz	< 4	
Optical connector	/	SC/APC	
Frequency range	MHz	87...1006, 110...1006	
Flatness	dB	± 0,75	
Max. output level[1]	dBµV	2x114	
Inter-stage adjustment: – attenuator – equalizer	dB	electronic: 0...25,5[2] electronic: 0...15,5	
Output test point	dB	-20 ±1	
Return loss at RF output	dB	≥ 18 @40 MHz -1,5 / oct.	
		RETURN PATH	
Frequency range	MHz	5...65, 5...85	
Flatness	dB	± 0,75	
Level adjustment	dB	electronic: 0...25, step 1	
		OTHERS	
Power supply Local Remote	V_{AC}/Hz	180...253 / 50-60 30...90 / 50-60	
Power consumption[3]	W	<39	<43
Connector	/	PG11, 5/8"	
Monitoring Module	/	Eth + DOCSIS	
Protection class	/	IP52	
Operating temperature	°C	-20...+ 55	
Weight	kg	3,65	
Dimensions (W x H x D)	mm	262x212x125	
Package	/	box	box
Article No.	/	D372-7538-270-03	D388-7538-270-12

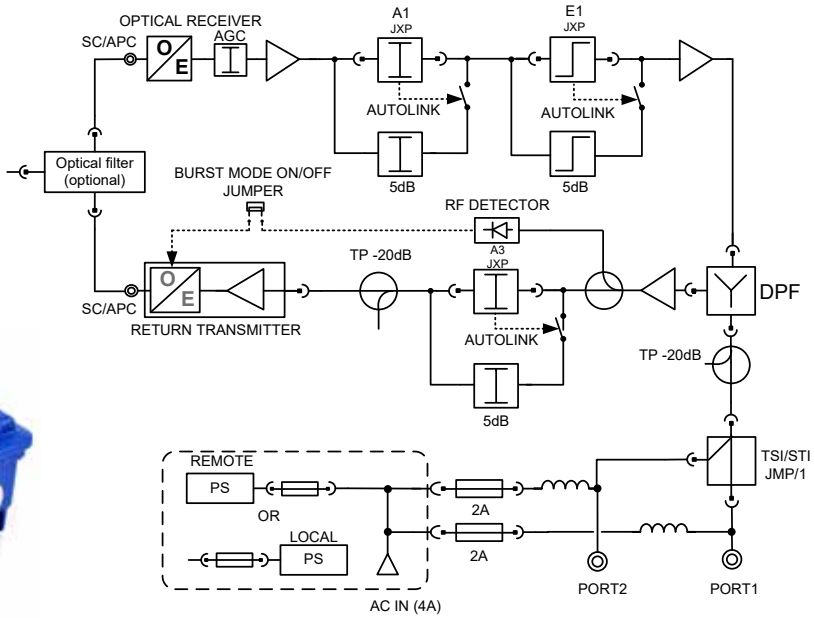
RETURN PATH TRANSMITTERS		TX-1310FP	TX-1310DFB	TX-1550DFB	TX-1xxxCWDM
Optical output wavelength[4]	nm	1310	1310	1550	CWDM[4]
Optical output power	dBm/mW	0/1	3/2		3/2
Optical connector	/	SC/APC			

(1) – CENELEC 42: 1310nm@ -3dBm E1 i E2=0dB, CTB ≤ -60dBc, CSO ≤ -60dBc
(2) – set by A1 - 0...15,5dB and Att A - 10 dB step by 0,5dB
(3) – with 2x RX and 2 x TX + monitoring module
(4) – wavelenght (from 1430nm do 1610nm) to be defined during order

OPTICAL NODES

MON-1629LN

- Dedicated to HFC and FTTB networks
- Compatible with SCTE 174 Standard, can operate in RFoG network
- Return path switchable burst mode
- Simple uninterruptible settings
- Local or remote powering, current pass
- Selectable input level
- Modular optical return path transmitter FP, DFB or CWDM



PARAMETERS		MON-1629LN	MON-1629LNZ
FORWARD PATH			
Input level range	dBm	-10...+3	
AGC range	dBm	-6...0	
Optical return loss	dB	>45	
Optical input wavelength	nm	1100-1650	
Equivalent input noise current	pA/√Hz	≤ 7	
Optical connector	/	SC/APC	
Frequency range	MHz	87...1006, 110...1006	
Flatness	dB	± 0,75	
Max. output level[1)]	dBµV	114	
Inter-stage adjustment: – attenuator – equalizer		JXP plug-in: 0...15 JXP plug-in: 0...15	
Output test point	dB	-20 ±1	
Return loss at RF output	dB	≥ 18 @40 MHz -1,5 / oct.	
RETURN PATH			
Frequency range	MHz	5...65, 5...85	
Nierównomierność charakterystyki	dB	± 1,0	
Level adjustment	dB	JXP plug-in: 0...20, step 1	
Minimum signal level for laser switch on (burst mode)	dBµV	71, 75, 79, 82 (adjustable)	
OTHERS			
Power supply	V_{AC}/Hz	180...253 / 50-60 (local)	28...65 / 50-60 (remote and RF)
Power consumption[2)]	W	<17	<18
Connector	/	PG11, 5/8"	
Protection class	/	IP52	
Operating temperature	°C	-20...+ 55	
Weight	kg	1,3	
Dimensions (W x H x D)	mm	235x148x80	
Package	/	box	box
Article No.	/	D364-7538-333-01	D365-7538-333-02

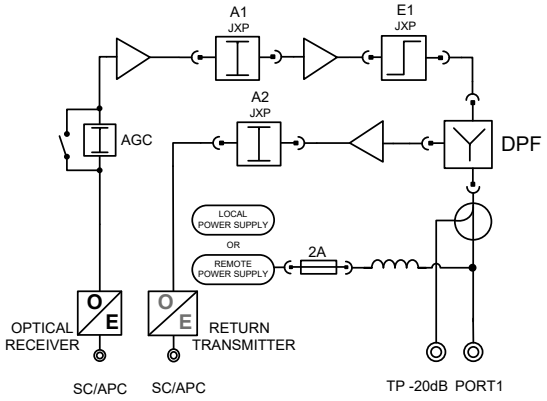
RETURN PATH TRANSMITTERS		OTBM-1310 FP	OTMB-1310 DFB	OTBM-1550 DFB	OTBM-1xxxCWDM
Optical output wavelength[3)]	nm	1310 FP	1310	1550	CWDM DFB[3)]
Optical output power	dBm/mW	0/1	3/2		3/2

(1) – CENELEC 42: 1310nm@ -3dBm E1 i E2=0dB, CTB ≤ -60dBc, CSO ≤ -60dBc
(2) – with OTBM return path transmitter
(3) – wavelenght (from 1430nm do 1610nm) to be defined during order

OPTICAL NODES

MON-1923

- Dedicated to HFC or FTTB networks
- Easy settings using potentiometer or JXP=plug ins
- Automatic Gain Control
- Modular optical return path transmitter FP, DPF or CWDM
- Remote or local powering



PARAMETERS		MON-1923M	MON-1923ME
		FORWARD PATH	
Input level range	dBm	-9...+2	
AGC range	dBm	-6...0	
Optical return loss	dB	≥40	
Optical input wavelength	nm	1100 -1650	
Equivalent input noise current	pA/√Hz	< 7	
Optical connector	/	SC/APC	
Frequency range	MHz	87...1006	
Flatness	dB	± 0,75	
Max. output level[1]	dBµV	109	
Equalizer	dB	JXP plug-in: 0...20, step 1	
Attenuator	dB	JXP plug-in: 0...20, step 1	
Output test point	dB	-20 ± 1	
Return loss at RF output	dB	≥ 18 @40 MHz -1,5 / oct.	
		RETURN PATH	
Frequency range	MHz	5...65	
Flatness	dB	± 1,0	
Level adjustment	dB	JXP plug-in: 0...20, step 1	
		OTHERS	
Power supply	V_{AC}/Hz	180...253/50-60 (local)	RF: 24...65/ 50-60 (remote)
Power consumption	W	< 8[2]	
Connector	/	F	
Protection class	/	IP41	
Operating temperature	°C	-20...+ 60	
Weight	kg	1,1	
Dimensions (W x H x D)	mm	107x155x75	
Package	/	box	
Article No.	/	D310-7538-238-01	D328-7538-252-01

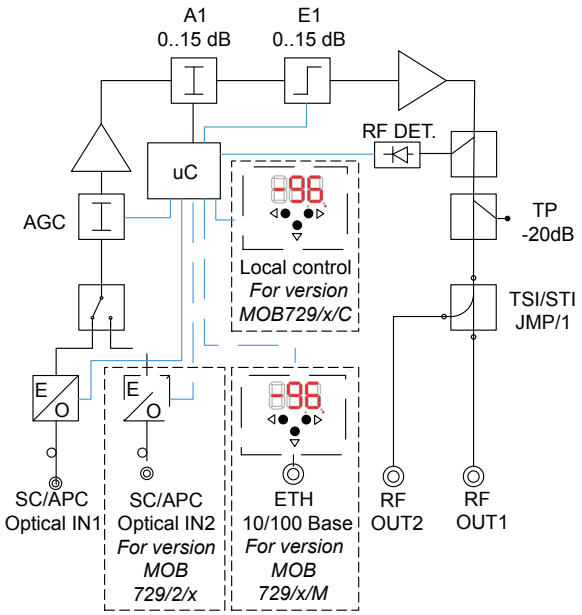
RETURN PATH TRANSMITTERS		OTBM-1310FP	OTBM-1310DFB	OTBM-1550DFB	OTBM-1xxxDFB
Optical output wavelength[3]	nm	1310	1310	1550	CWDM[3]
Optical output power	dBm/mW	0/ 1	3/2		3/ 2
Optical connector	/	SC/APC			

(1) – CENELEC 42: 1310nm@ -3dBm E1=0dB, CTB ≤ -60dBc, CSO ≤ -60dBc
(2) – with OTBM return path transmitter
(3) – wavelenght (from 1430nm do 1610nm) to be defined during order

OPTICAL RECEIVERS

MOB-729

- Dedicated to FTTH/FTTB architecture
- Uninterruptible local or remote electronic adjustment
- Monitoring via SNMPv2c and WWW interface
- Measurement of the RF output signal level
- Optional second input with redundancy



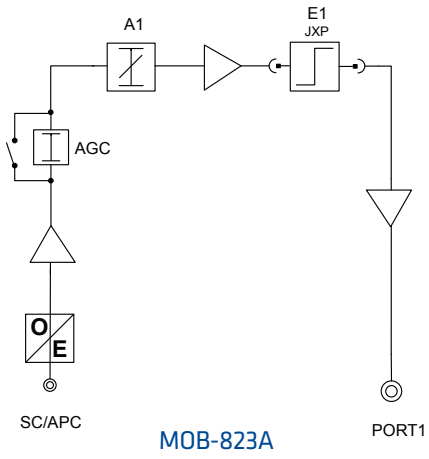
PARAMETERS		MOB-729/1	MOB-729/2
		FORWARD PATH	
Input level range	dBm	-10...+3	
AGC range	dBm	-6...0	
Optical return loss	dB	≥40	
Optical input wavelength	nm	1100-1650	
Optical connector	/	SC/APC	
Frequency range	MHz	47...862	
Flatness	dB	± 0,75	
Max. output level[1)]	dBµV	114	
Regulacja międzystopniowa: - tłumik - korektor	dB	 electronic: 0...15 electronic: 0...15	
Output test point	dB	-20 ±1	
Return loss at RF output	dB	≥ 18 @40 MHz -1,5 / oct.	
		OTHERS	
Power supply	V_{AC}/Hz	180...253 / 50-60	
Power consumption	W	<13,5	
Connector	/	F	
Protection class	/	IP41	
Operating temperature	°C	-20...+ 55	
Weight	kg	1,1	
Dimensions (W x H x D)	mm	107x155x75	
Package	/	box	
Article No.	/	D201-7538-251-02	D202-7538-251-01
		CONTROL MODULES	
Module	/	D200-6538-774-03 (monitoring module for M-729) D208-5538-459-01 (local control module for C-729)	

(1) – CENELEC 42: 1310nm@ -3dBm E1=0 dB, CTB≤-60dBc, CSO≤-60dBc

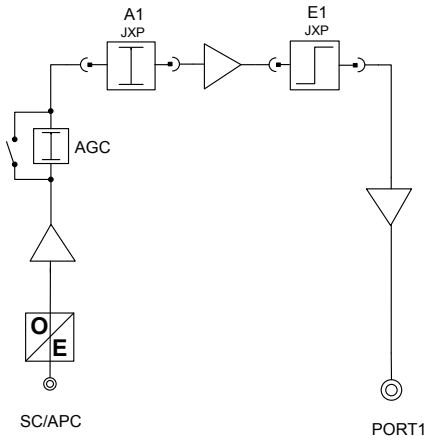
OPTICAL RECEIVERS

MOB-823A/ 923A

- Built-in AGC
- 3-stages LED indication of optical input power level
- Easy configuration – universal plug-in modules



MOB-823A



MOB-923A

PARAMETERS		MOB-823A	MOB-923A
		FORWARD PATH	
Input level range	dBm	-10...+3	
AGC range	dBm	-6...0	
Optical return loss	dB	≥40	
Optical input wavelength	nm	1100-1650	
Optical connector	/	SC/APC	
Frequency range	MHz	47...862	
Flatness	dB	± 0,75	
Max. output level[1)]	dBµV	107	
Equalizer	dBµV	JXP plug-in: 0...15, step 1	JXP plug-in: 0...15, step 1
Attenuator	dB	adjustable: 0...15	JXP plug-in: 0...15, step 1
Return loss at RF output	dB	≥ 18 @40 MHz -1,5 / oct.	
		OTHERS	
Power supply	V_{AC}/Hz	180...253 / 50-60	
Power consumption	W	5,5	
Connector	/	F	
Protection class	/	IP20	
Operating temperature	°C	-20...+ 55	
Weight	kg	0,76	0,76
Dimensions (W x H x D)	mm	148x85x56	148x85x56
Package	/	box	box
Article No.	/	D211-7538-223-01	D210-7538-222-01

(1) – CENELEC 42: 1310nm@ -3dBm E1=0 dB, CTB≤-60dBc, CSO≤-60dBc

OPTICAL RECEIVERS

MOB-100

- Built-in AGC
- Low noise receiver
- 3-stage indicator of optical input power
- Solid die-cast aluminium housing
- Dedicated plastic housing for indoor installation

PARAMETERS		MOB-100	MOB-100 xPON
		FORWARD PATH	
Input level range	dBm	-10...+2	
AGC range	dBm	-10...-3	
Optical return loss	dB	>45	
Optical input wavelength	nm	1100-1650	1550 ±10
Max. input level	dBm	+3	
LED indication of optical input power	dBm	- orange: PIN < -10 - green: -10 < PIN < -3 - red: PIN > -3	
Equivalent input noise current	pA/√Hz	<4	
Connectors	/	SC / APC	
Frequency range	MHz	47-862[1)]	
Flatness	dB	± 1,0	
AGC efficiency	dB	±1	
C/N (input power -3dBm and OMI 3,5%)	dB	52	
Max. output level[2)]	dBµV	80	
Output connector	/	F	
Output impedance	Ohm	75	
		OTHERS	
Operating voltage (external power supply)	V_{DC} / mA	9 / 150	
Power consumption	W	< 1,0	
Operating temperature	°C	-20...+55	-20...+55
Dimensions (W x H x D)	mm	63x60x19	63x60x19
Weight	kg	0,1	0,1
Package	/	box	box
Article No.	/	D112-7538-228-06	D225-7538-228-13

(1) – 47...1006 available on request
(2) – CENELEC 42: 1310nm@ -3dBm, CTB≤-60dBc, CSO≤-60dBc

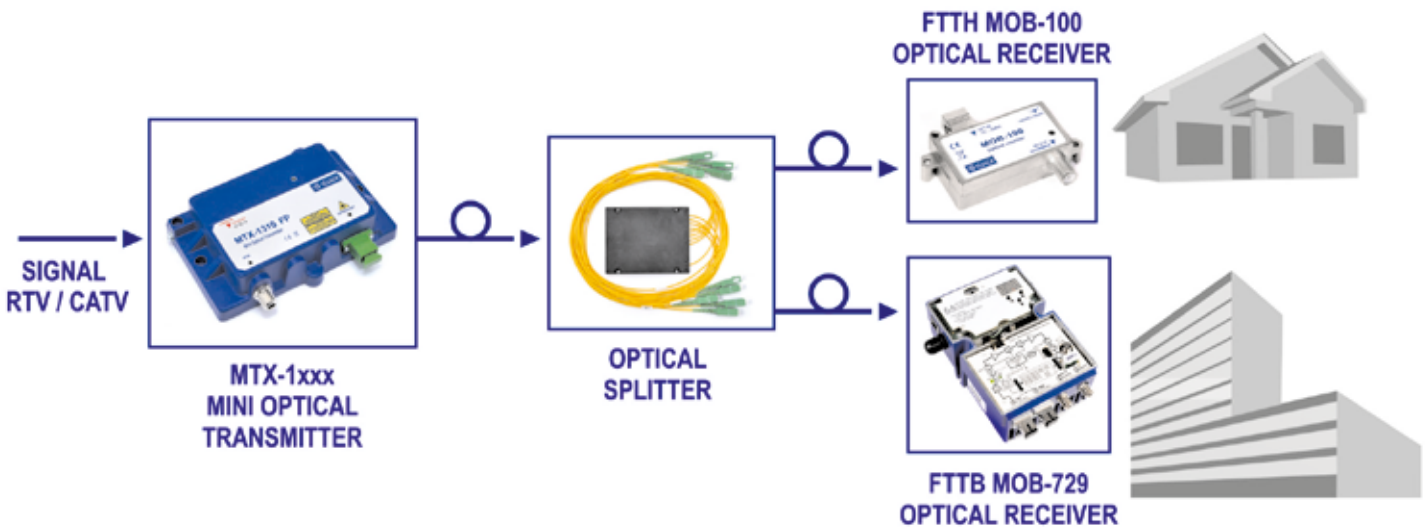
MINI OPTICAL TRANSMITTERS

MTX-1xxx

- 1 x RF input
- 1 x SC/APC optical output
- Optical output power – 0dBm or 6dBm
- Die-cast, metal housing
- Local powering (power supply included)

PARAMETERS		MTX-1310FP	MTX-1310DFB	MTX-1550DFB	MTX-1xxxDFB CWDM
Frequency range	MHz	47 – 1006			
Flatness	dB	±1			
CSO (CENELEC 42 channels), OMI 4% CTB (CENELEC 42 channels), OMI 4%	dBc	60 60			
Optical output wavelength	nm	1310	1310	1550	1270-1610
Laser type	/	FP	DFB	DFB	DFB
Optical output power	dBm	0	3	3	3 lub 6
Input impedance	Ohm	75			
		OTHERS			
Power supply	V_{DC} / mA	12/250			
Power consumption	W	3			
Type of Input/Output connectors	/	F / SC/APC			
Dimensions (W x H x D) with connectors	mm	128x95x32			
Weight without power supply	kg	0,28			
Package	/	box			
Article No.	/	D700-7538-254-01	D701-7538-254-02	D702-7538-254-03	–

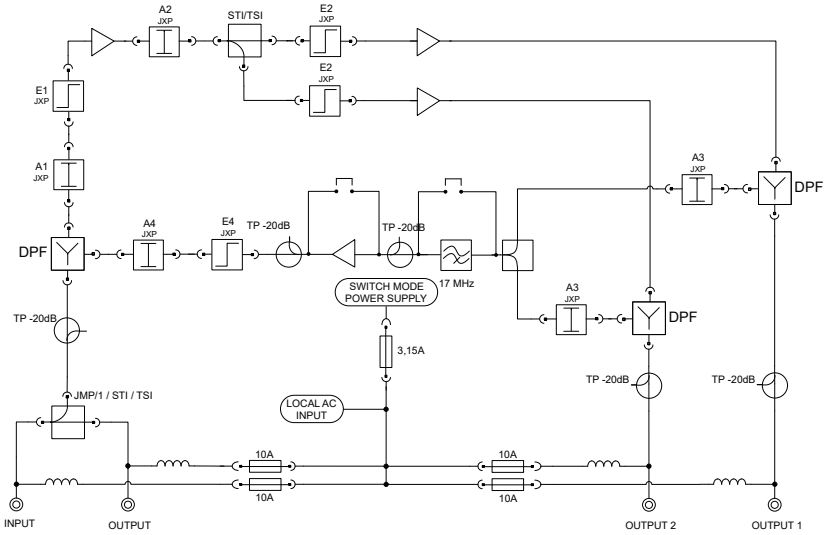
Application example



DISTRIBUTION AMPLIFIERS

WHU-927NG

- High output level: 2 x 114 dBµV
- Two independent GaAs outputs
- Active/passive return path module
- Input/Output triple overvoltage protection
- Power pass to any port



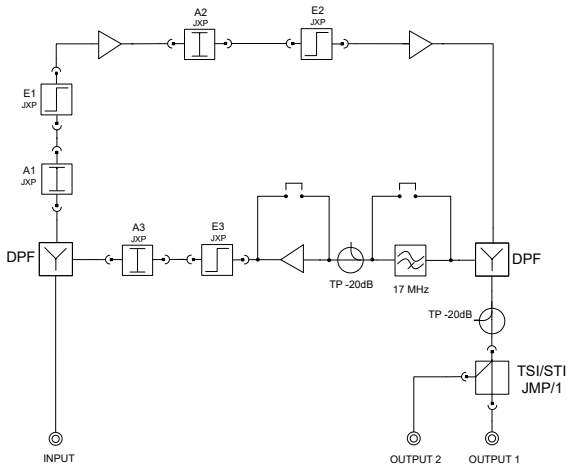
PARAMETERS		WHU-927NG
		FORWARD PATH
Frequency range	MHz	54...1006, 85...1006, 110...1006
Gain	dB	2 x 38 (with inter-stage STI-3,5 splitter)
Flatness	dB	± 1
Max. output level[1)]	dBµV	2 x 114
Input attenuator	dB	JXP plug-in: 0...20, step 1
Input equalizer	dB	JXP plug-in: 0...20, step 1
Inter-stage attenuator	dB	JXP plug-in: 0...20, step 1
Inter-stage equalizer	dB	JXP plug-in: 0...20, step 1
Test point	dB	-20 ± 1
Noise figure	dB	<7,5
Return loss at all Inputs/Outputs: - in the frequency range of 5 - 40MHz -in the frequency range of 40 - 1006MHz	dB	18 ≥ 18 @40 MHz -1,5 / oct.
		RETURN PATH
Frequency range	MHz	5...42, 5...65, 5...87
Gain (*passive)	dB	-6* lub 20
Flatness	dB	± 1
Input attenuator	dB	JXP plug-in: 0...20, step 1
Output attenuator	dB	JXP plug-in: 0...20, step 1
Output equalizer	dB	JXP plug-in: 0...20, step 1
Test point	dB	-20 ± 1
Noise figure	dB	< 6
		OTHERS
Operating voltage	V_{AC}/Hz	28...65 / 50 – 60
Power consumption	W	< 30
Max. supply current on any RF port	A	max. 7
Connectors	/	5/8
Protection class	/	IP52
Operating temperature	°C	-20...+ 55
Weight	kg	3,3
Dimensions (W x H x D)	mm	255x202x95
Package	/	box
Article No.	/	I307-7538-216-03

(1) – (CENELEC 42) with interstage equalization 6 dB - CTB 60dBc; CSO60 dBc

DISTRIBUTION AMPLIFIERS

WHO-929NG

- High output level 114 dBµV
- Easy configuration – universal JXP plug-ins
- Active or passive plug-in return path module
- Input/Output triple overvoltage protection
- Remote power supply transferable to any output
- Robust, shock resistant metal housing
- Built-in 17 MHz ingress filter



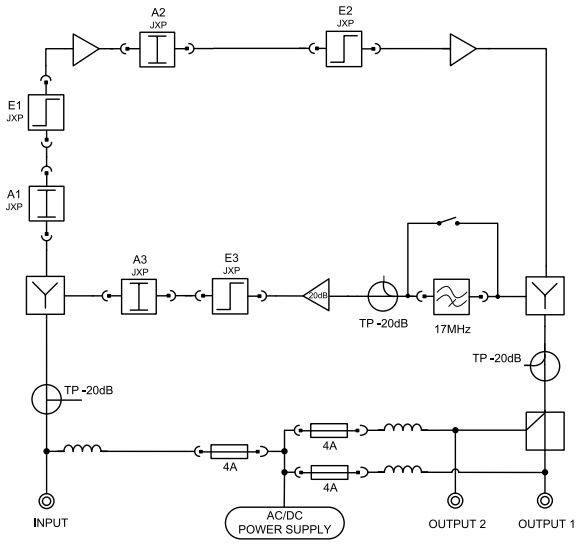
PARAMETERS		WHO-929NG
		FORWARD PATH
Frequency range	MHz	87...1006, 110...1006
Gain	dB	39
Flatness	dB	± 1
Max. output level[1)]	dBµV	114
Input attenuator	dB	JXP plug-in: 0...20, step 1
Input equalizer	dB	JXP plug-in: 0...20, step 1
Inter-stage adjustment: – attenuator – equalizer	dB	 JXP plug-in: 0...20, step 1 JXP plug-in: 0...20, step 1
Test point	dB	-20 ± 1
Noise figure	dB	<8
Return loss at all Inputs/Outputs: - in the frequency range of 5 - 40MHz -in the frequency range of 40 - 1006MHz	dB	 18 ≥ 18 @40 MHz -1,5 / oct.
		RETURN PATH
Frequency range	MHz	5...65, 5...85
Gain	dB	-2,5 / 25
Flatness	dB	± 1
Output attenuator	dB	JXP plug-in: 0...20, step 1
Output equalizer	dB	JXP plug-in: 0...20, step 1
Test point	dB	-20 ± 1
Noise figure	dB	< 6
		OTHERS
Operating voltage	V_{AC}/Hz	30...90 / 50 – 60
Power consumption (passive/active return path)	W	14 / 16
Max. supply current on any RF port	A	max.7
Connectors	/	5/8 or PG11
Protection class	/	IP52[2)]
Operating temperature	°C	-20...+ 55
Weight	kg	1,4
Dimensions (W x H x D)	mm	219 x 134 x 96
Package	/	box
Article No.	/	I314-7538-217-01

(1) – (CENELEC 42) with interstage equalization 0dB, CTB≤60dBc; CSO≤60dBc
(2) – available version with IP67

DISTRIBUTION AMPLIFIERS

WXO-919NG

- Output level: 2 x 104 dBµV
- Easy configuration – universal JXP plug-ins
- Input/Output triple overvoltage protection
- Built-in ingress filter (17 MHz)
- Remote power supply
- Robust, shock resistant housing



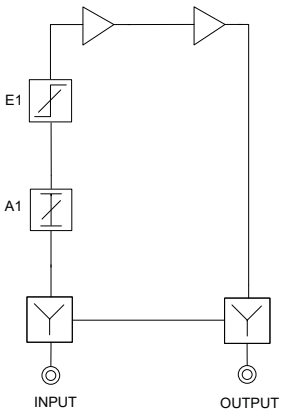
PARAMETERS		WXO-919NG
		FORWARD PATH
Frequency range	MHz	87..1006
Gain	dB	2 x 33
Flatness	dB	±1,0
Max. output level[1)]	dBµV	2x104
Input attenuator	dB	JXP plug-in: 0...20, step 1
Input equalizer	dB	JXP plug-in: 0...20, step 1
Inter-stage adjustment: – attenuator – equalizer	dB	 JXP plug-in: 0...20, step 1 JXP plug-in: 0...20, step 1
Test point	dB	-20 ± 1
Noise figure	dB	<7
Return loss at all Inputs/Outputs: - in the frequency range of 5 - 40MHz -in the frequency range of 40 - 1006MHz	dB	 18 ≥ 18@40MHz – 1,5 / oct.
		RETURN PATH
Frequency range	dB	5...65
Gain	dB	25
Flatness	dB	± 1
Output attenuator	dB	JXP plug-in: 0...20, step 1
Output equalizer	dB	JXP plug-in: 0...20, step 1
Test point	dB	-20 ± 1
Noise figure	dB	< 6
		OTHERS
Operating voltage	V_{AC}/Hz	28...65 / 50 – 60
Power consumption (passive/active return path)	W	<10,0
Max. supply current on any RF port	A	0,66 / 0,3
Connectors	/	5/8 or PG11
Protection class	/	IP52[2)]
Operating temperature	°C	-20...+ 55
Weight	kg	1,0
Dimensions (W x H x D)	mm	219 x 134 x 96
Package	/	box
Article No.	/	I321-7538-363-01

(1) – (CENELEC 42) with interstage equalization 0dB, CTB≤60dBc; CSO≤60dBc
(2) – available version with IP67

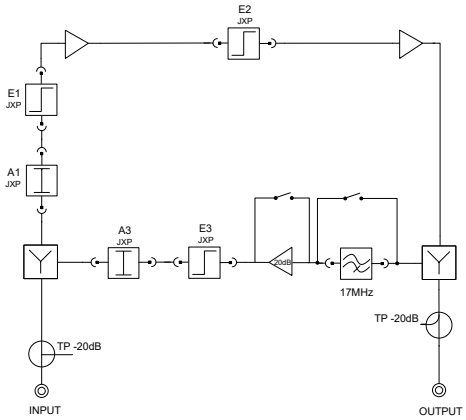
DISTRIBUTION AMPLIFIERS

WHX-823/ 923/ 829/ 929

- Easy configuration
- Output stage amplifier – GaAs hybrid
- Local or remote power suply
- Switchable return path: passive/off/active



WHX-82x



WHX-92x

PARAMETERS			WHX-823	WHX-923	WHX-829	WHX-929
FORWARD PATH						
Frequency range		MHz	87...1006		87...1006	
Gain		dB	36		38	
Flatness		dB	±0,75		±1,0	
Max. output level[1)]		dBµV	107		114	
Input attenuator		dB	adjustable 0...20	JXP plug-in: 0...20, step 1	adjustable 0...20	JXP plug-in: 0...20, step 1
Input equalizer		dB	adjustable 0...20	JXP plug-in: 0...20, step 1	adjustable 0...20	JXP plug-in: 0...20, step 1
Inter-stage equalizer		dB	JXP plug-in: 0...12, step 1		JXP plug-in: 0...12, step 1	
Test point		dB	-20 ±1,0		-20 ±1,0	
Noise figure		dB	<7,5		<7,5	
Return loss at all Inputs/Outputs: - in the frequency range of 5 - 40MHz -in the frequency range of 40 - 1006MHz		dB	18 ≥ 18@40MHz – 1,5 / oct.		18 ≥ 18@40MHz – 1,5 / oct.	
RETURN PATH						
Frequency range		MHz	5...65		5...65	
Gain		dB	-50 lub -2,5 or 20		-50 lub -2,5 or 20	
Flatness		dB	± 1		± 1	
Output attenuator		dB	adjustable 0...20	JXP plug-in: 0...20, step 1	adjustable 0...20	JXP plug-in: 0...20, step 1
Output equalizer		dB	adjustable 0...10	JXP plug-in: 0...10, step 1	adjustable 0...10	JXP plug-in: 0...10, step 1
Test point		dB	-20 ± 1		-20 ± 1	
Noise figure		dB	< 7		< 7	
OTHERS						
Operating voltage	Local: AC/Hz	V_{AC}/Hz	180...253 / 50 – 60		180...253 / 50 – 60	
	Remote: AC/Hz	V_{AC}/Hz	24...65 / 50 – 60		24...65 / 50 – 60	
Power consumption (passive return path)		W	<6,5		<13	
Current consumption at $28V_{AC}$ / $65V_{AC}$		A	0,165 / 0,4		0,165 / 0,4	
Connectors		/	F		F	
Protection class		/	IP52		IP52	
Operating temperature		°C	-20... +55		-20... +55	
Weight		kg	1,0		1,0	
Dimensions (W x H x D)		mm	107x155x75		107x155x75	
Package		/	box		box	
Article No.		/	I770-7538-213-01 (local) I780-7538-207-01 (remote)	I751-7538-234-02 (local) I761-7538-205-04 (remote)	I773-7538-235-03 (local) I783-7538-211-03 (remote)	I753-7538-235-01 (local) I763-7538-211-01 (remote)

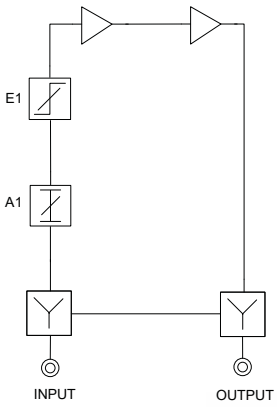
(1) – (CENELEC 42) with interstage equalization 0dB, CTB≤60dBc; CSO≤60dBc

BROADBAND BUILDING AMPLIFIERS

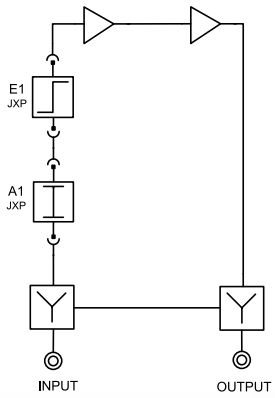
WMX-822/ 922/ 922A

- Easy configuration
- Input/Output double overvoltage protection
- Active or passive return path
- Metal die-cast housing

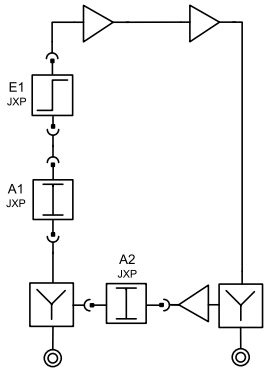
WMX-822



WMX-922



WMX-922A



PARAMETERS			WMX-822 MZ/M	WMX-922 M/MZ	WMX-922 AM/AMZ
FORWARD PATH					
Frequency range		MHz	87...862	87...1006	
Gain		dB	34,5 ± 1		
Flatness		dB	±0,75	±1,0	±0,75
Max. output level[1)]		dBµV	105		
Input attenuator/equalizer		dB	adjustable 0...20	JXP plug-in: 0...20, step 1	JXP plug-in: 0...20, step 1
Input equalizer		dB	adjustable 0...20	JXP plug-in: 0...20, step 1	JXP plug-in: 0...20, step 1
Test point		dB	-		-20 ± 1
Noise figure		dB	<7,5		
Return loss at all Inputs/Outputs: - in the frequency range of 5 - 40MHz -in the frequency range of 40 - 1000MHz		dB	18 ≥ 18@40MHz – 1,5 / okt.		
RETURN PATH					
Frequency range		MHz	5...65		
Type of return path/attenuation		dB	passive / -2		active / JXP plug-in: 0...20, step 1
Gain		dB	-2 ± 1		19 ± 1
Noise figure		dB	< 3		< 7
OTHERS					
Operating voltage	Local:	V_{AC}/Hz	187...250 / 50 – 60	190...253/ 50-60	
	Remote:	V_{AC}/Hz	30...60/ 50-60	28...65/ 50-60	
Power consumption		W	<5,5		<8
Connectors		/	F		
Protection class		/	IP20		
Operating temperature		°C	-20...+55		
Weight		kg	0,7		
Dimensions (W x H x D)		mm	155x80x53		155x80x53
Package		/	box		box
Article No.		/	I120-7538-187-04 (M) I144-7538-188-04 (MZ)	I102-7538-184-06 (M) I140-7538-185-01(ZM)	I112-7538-189-01(AM) I136-7538-189-02 (AMZ)

(1) – (CENELEC 42) with interstage equalization 0dB, CTB≤60dBc; CSO≤60dBc

FEATURES

NEW NAVIGATION ICON MENU

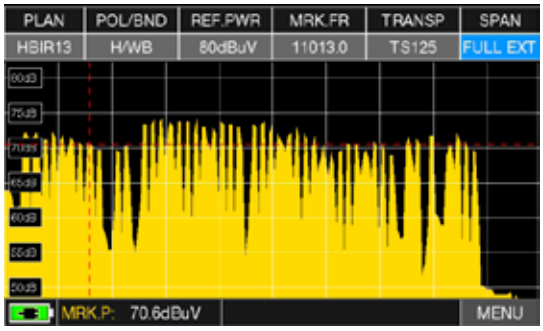
A new user interface very intuitive. It allow the fast selection of the function and of the measure you need with one click.

WI-FI ANALYSIS

Analyze all the wi-fi networks in the building and than check the power of the signal.

WIDE BAND RECEPTION

Compatible with the new systems WIDE BAND LNB, our equipments are able to measure the full band from 230 to 2.340 MHz.



SATELLITE FAST TEST

Thanks to this function the user can check up to 4 satellite transponders quality at the same time. Also usefull to check the correct function of the LNB in all the polarities.

NETWORK DELAY

The Network Delay measurement is indispensable when operating in DVB-T SFN networks. It measures the Transport Stream Network Delay and checks that it does not exceed the TS MIP packet maximum value.

ETR101-290 T.S. ANALYZER

The meter has a built-in TS analyzer that provides complete ETR101-290 priority 1-2-3 alarms monitoring. It analyses the transport streams, either demodulated from one of the RF inputs, injected via the ASI input connector or received via the GbE interface.

FEATURES

GPS

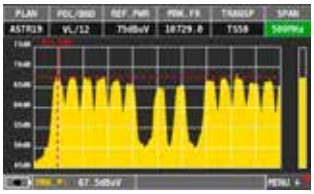
The meter has an internal GPS receiver. It allows you to carry out the analysis of a GPS reception antenna quality. It also provides time reference for the Network Delay function and location data when performing on-field measurement loggers when driving in a car or standing on. This is practical for Network Operators because it allows signal verification coverage in specific areas and simulaneous comparison of several signals.

BARSCAN LEVEL GRAPH

Simultaneously check the level/power of all analog & digital channels. In TV standard canalization the meter displays the level/power of all channels as a bar graph. In AUTOMEMORY or MANUMEMORY PLAN the meter displays only the memorized channels and distinguishes Analog and Digital signals using two different colours (shows audio level).

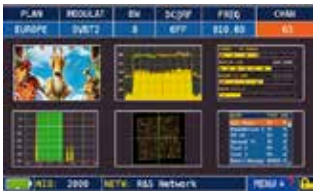
SAT EXPERT FUNCTION

The “SATEXPERT SW” function, is a valuable aid for a fast satellite antenna pointing to a wanted satellite. Through text messages, which appear from time to time on the screen, the measuring instrument will indicate in which direction to move the satellite dish, to the east or to the west, until you reach the wanted satellite.



MER VS CARRIER

The MER measurement, performed for every single carrier in a DVB-T & T2 COFDM mux, is an indispensable tool to spot the impairments on the received digital signal.



OPTIC

The meter has an internal optical to RF converter. Can measures the OPTICAL POWER and OPTICAL ATTENUATION, carries out RF measurements (from the optical input), decodes the services and visualizes the spectrum.

LONG TERM CHANNEL LOGGER OR QoS

Record the Quality of Service (QoS) using the WEEKLY CHANNEL LOGGER SW application (supplied with the ROVER HD Series). This useful tool monitors and records the trend of the main parameters of a digital signal over time (from 30 minutes to 7 days): TV, Cable, Satellite, Radio or FM (DAB option available for specific models). It is excellent for reception problems that occur occasionally. The application allows you to measure, store and display (locally or remotely*) the parameters of the digital signals under test: DVB-S/T/C = Power, MER, ERROR, bBer, aBer; DVB-S2/T2/C2 = Power, MER, ERROR, aBer, Lber, PER, Ldcp. Each recorded parameter is graphically represented on the display using different colors for easy identification.











PARAMETERS	HD TAB 4 EASY	HD TAB 4 TOUCH	HD TAB 7 LITE	HD TAB 7 EVO	HD TAB 700	HD TAB 700 PLUS	HD TAB 900 PLUS	HD TAB 9	HD TAB 9 PLUS	OMNIA 7000	EXAMINER Probe
FREQ. RANGE	44 - 2.250 MHz	44 - 2.250 MHz	4 - 2.600 MHz	4 - 2.600 MHz	4 - 2.600 MHz	4 - 2.600 MHz	4 - 2.600 MHz	4 - 2.600 MHz	4 - 2.600 MHz	5-1250 MHz	48-2250 MHz
LEVEL RANGE	30 - 100 dBµV	30 - 100 dBµV	28 - 130 dBµV	28 - 130 dBµV	28 - 130 dBµV	28 - 130 dBµV	28 - 130 dBµV	28 - 130 dBµV	28 - 130 dBµV	1-125dBµV	40-120dBµV
STANDARD DVB-T/S/S2/C/C2	• (no C2)	• (no C2)	• (no C2)	• (no C2)	• (no C2)	• (no C2)	• (C2 opt.)	• (C2 opt.)	• (C2 opt.)	• (C2 opt.) (no S/S2)	• (C2 opt.)
STANDARD DVB-T2/T2 LITE	–	opt.	opt.	opt.	opt.	opt.	opt.	opt.	opt.	opt.	opt.
STANDARD DVB-S2 MULTISTREAM	–	–	•	•	–	–	•	•	•	-	•
WIDE BAND IN	–	–	–	–	opt.	opt.	•	–	•	•	•
DAB	–	–	opt.	opt.	–	–	opt.	opt.	opt.	-	•
CAM C.I.	–	–	–	–	–	–	–	•	•	-	•
LTE ANALYSIS	–	–	•	•	•		•	•	•	•	•
OPTICAL INPUT	–	–	opt.	•	–		•	opt.	•	opt.	-
H265 HEVC	–	–	–	–	–	–	opt.	opt.	opt.	-	opt.
SAT EXPERT	–	–	opt.	•	•	•	•	•	•	-	•
TS ANALYZER ETR 101 290	–	–	–	–	–	–	–	opt.	•	-	opt.
MER VS CARRIER	–	–	opt.	•	•	•	•	•	•	opt.	•
MER	•	•	•	•	•	•	•	•	•	•	•
CONSTELLATION	• ONLY CATV/SAT	•	•	•	•	•	•	•	•	•	•
DiSEqC - dCSS - SCR	•	•	•	•	•	•	•	•	•	-	•
REFLECTOMETER	–	–	opt.	•	opt.	opt.	•	•	•	opt.	opt.
MINISPECTRUM	–	–	–	–	–	–	–	opt.	•	opt.	-
ECHOES ANALYSIS	–	–	•	•	•	•	•	•	•	•	•
ANALOG TV	MEAS only	MEAS & PICT	MEAS only	MEAS & PICT	MEAS only	MEAS & PICT	MEAS & PICT	MEAS & PICT	MEAS & PICT	•	opt.
WI-FI	–	–	–	–	–	–	opt.	–	–	-	-
GPS	–	–	–	–	–	–	–	opt.	opt.	-	-
NOISE MARGIN GRAPH	–	–	•	•		•	•	•	•	•	•
IPTV	–	–	–	–	–	–	opt.	opt.	opt.	-	•
ASI IN-OUT	–	–	–	–	–	–	–	opt.	•	-	•
LAN	–	–	–	•	–	•	•	•	•	•	•
REMOTE MONITORING	–	–	–	opt.	–	opt.	•	•	•	opt.	•
DRIVE TEST	–	–	–	–	–	–	–	opt.	opt.	-	-
DOLBY AC3DD +	opt.	opt.	opt.	opt.	opt.	opt.	opt.	opt.	opt.	opt.	opt.
VIDEO IN RCA (CVBS)	–	•	•	•	•	•	•	•	•	•	•
HDMI OUT	–	–	–	•	–	–	•	•	•	-	-
USB	B	B	A + B	A + B	A + B	A + B	A + B	A + B	A + B	A+B	A+B
TFT	4,3 "	4,3 " Touch	7 " Touch	7 " Touch	7 " Touch	7 " Touch	9 " Touch	9 " Touch	9 " Touch	7" Touch	-
TOUCH SCREEN DISPLAY	–	•	•	•	•	•	•	•	•	•	-
WEIGHT & DIMENSIONS	1 Kg /12 x 18,5 x 4,5 cm	1 Kg /12 x 18,5 x 4,5 cm	2 Kg /14 x 24 x 4 cm	2 Kg /14 x 24 x 4 cm	1,4 Kg /13 x 25,5 x 4 cm	1,4 Kg /13 x 25,5 x 4 cm	1,8 Kg /15,5 x 27 x 4 cm	2,6 Kg / 29 x 17 x 5,5 cm	2,6 Kg /29 x 17 x 5,5 cm	2kg/24x14x5cm	0,7kg/13,9x34,5x3,7cm
BATTERY CAPACITY	2,2 A h	2,2 A h	2,2 A h	4 A h	2,2 A h	2,2 A h	4 A h	6 A h	6 A h	4 A h	-
BAG	EASY BAG	EASY BAG	RUGGED BAG	RUGGED BAG	EASY BAG	RUGGED BAG	RUGGED BAG	RUGGED BAG	RUGGED BAG	RUGGED BAG	-
DOCSIS	DOWN STREAM	DOWN STREAM	DOWN STREAM	DOWN STREAM	DOWN STREAM	DOWN STREAM	DOWN STREAM	DOWN STREAM	DOWN STREAM	DS+VS MOD 8.4	DOWN STREAM

DIGITAL VIDEO SYSTEM MONITORING

The complexity of today's video delivery chain makes troubleshooting more difficult and monitoring more important than ever before. With effective monitoring, broadcast, cable, DSL, and telco operators can isolate and troubleshoot video signal problems before they interfere with the viewer experience. Therefore, advanced signal monitoring technology is crucial for delivering the absolute highest quality of experience (QoE) for audiences watching at home, on computers, or even on mobile devices.

Our comprehensive digital video system monitoring products ensure consistent, high-quality content delivery by providing continuous logging and monitoring of multiple signal types in both digital TV and IPTV networks. Broadcast engineers can remotely identify and resolve problems before they occur, respond to alerts and alarms, and quickly isolate the cause of outages with real-time system metrics and comparative analysis of critical measurements and system logs.

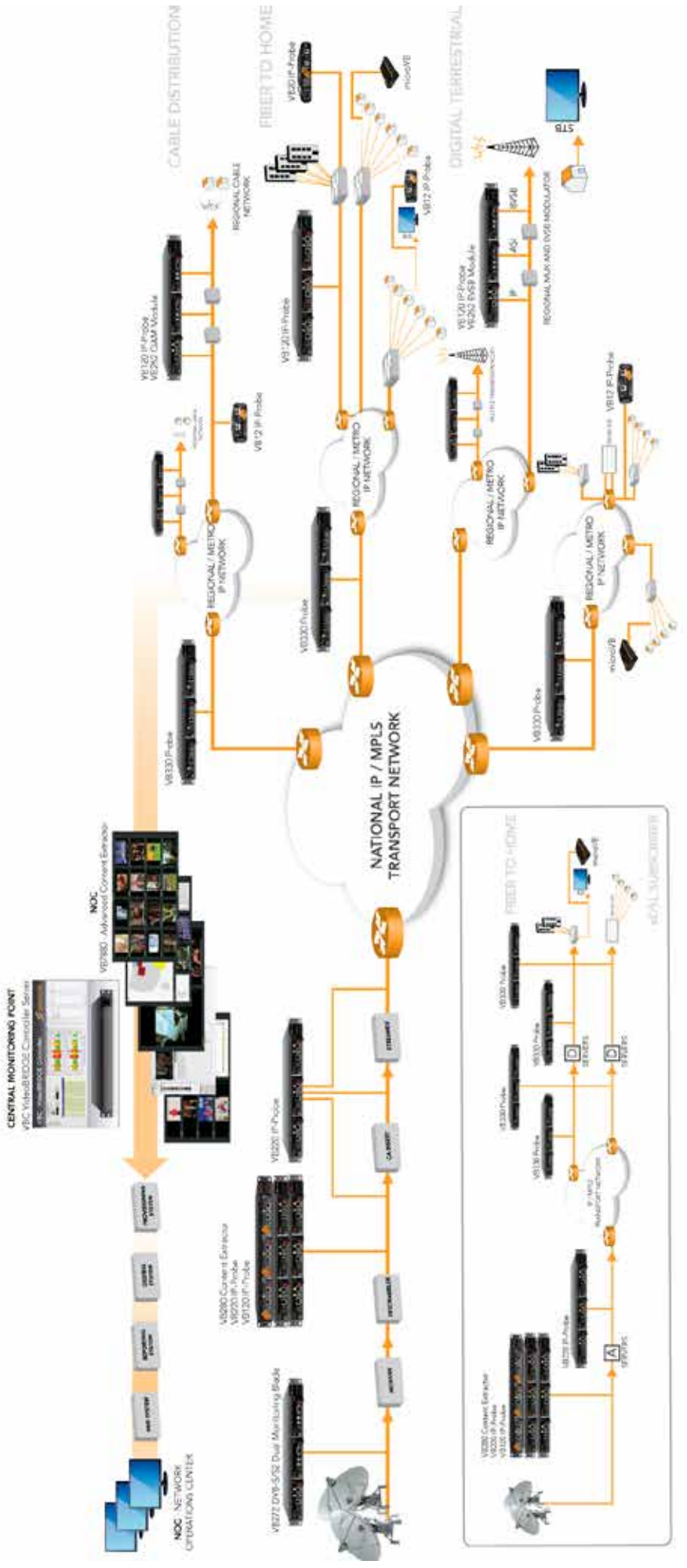
Sencore's signal monitoring solutions include the MPEGScan Compressed Media Compliance Analyzer, providing in-depth analysis of all compressed video media, as well as signal monitoring products for RF, IP, and MPEG2/4 transport streams.

HEADEND

Sencore's family of headend monitoring solutions enable engineers to identify and troubleshoot transmission problems before they turn into outages and customer complaints – with the ability to monitor compressed audio, video, and data services on any cable headend, satellite, or telco network. All Sencore monitors provide full support for ASI, SMPTE310M, 8VSB, QAM, and Ethernet physical inputs, with detailed transport stream and physical layer monitoring for complete system confidence.

PORTABLE

Sencore's portable monitoring and measurement appliances are the industry's most rugged and versatile, designed to stand up to the rigors of real-world troubleshooting in even the harshest field environments. These units give field engineers the perfect fault-finding tool, with all of the interfaces needed for broadcast or IP analysis at any location in the transmission chain of both cable and terrestrial broadcast operations. Designed with a compact and rugged chassis smaller than most laptop computers, Sencore portable monitors require no extra equipment or power supply.


CABLE DISTRIBUTION
FIBER TO HOME
DIGITAL TERRESTRIAL
NATIONAL IP / MPLS
TRANSPORT NETWORK
REGIONAL / METRO
IP NETWORK
REGIONAL CABLE
NETWORK
REGIONAL MUX AND DVB MODULATOR
STB
CENTRAL MONITORING POINT
NOC
NOC NETWORK
OPERATIONS CENTER

VIDEOBRIDGE PRODUCT FAMILY

IP Core Monitoring Probe
VB20

The VB20 provides the ability to continuously monitor 260 services for critical measurements. This makes the portable VB20 invaluable for field use. Its ruggedized exterior and fan-less design make this probe the perfect fault-finding tool for the field engineer. With full support for both the MPEG2 TS and MFRTP encapsulation standards and all current codecs, the VB20 is the tool of choice.

Advanced Content Extractor
VB7880

The VB7880 Objective QoE Content Extractor performs objective video and audio measurements of MPEG-2, H.264 and HEVC streams and offers remote video-wall capability. The VB7880 content extractor offers thumbnail and metadata extraction for up to 100 TV multicast streams concurrently via GigE interfaces. The VB7880 content extractor is ideal for visual at-a-glance monitoring in the NOC, VOC, head-end or remotely via any standard web browser.

IP Distribution Monitoring Probe
VB12

The VB12 is the most portable GigE broadcast monitoring and measurement platform available. Featuring both optical and electrical GigE Ethernet inputs, separate management port and both ASI input and output.

IP 10G Core Monitoring Blade
VB330

The VB330 Probe is the flagship in Sencore's VideoBridge product line. It can be equipped with up to two 10GB Ethernet inputs providing the capability to monitor thousands of IP streams in central head-ends and network back-bone architecture. The VB330 utilizes a patented easy-to-use visual interface for measuring and monitoring IP signals throughout the entire network.

IP & QAM/8VSB Monitoring Probe
VB12-RF

Sencore has extended its award-winning VideoBridge™ product line with VB12-RF, a highly portable RF/IP monitoring appliance for terrestrial and cable applications. With complete ETR101-290 analysis and alarming, the VB12-RF includes an interface for RF, ASI, GigE and IP in a compact and ruggedized chassis smaller than most laptop computers.

IP Core Monitoring Blade
VB220

The VB220 is a GigE monitoring platform for all applications in any network where digital video is carried across an IP infrastructure. This network service tool is ideal for both pure IPTV networks and hybrid networks with IP transport cores (such as digital cable and terrestrial networks).

IP Edge Monitoring Probe
microVB

The microVB is a breakthrough in both form-factor and functionality for real-time analysis of customer home network performance. This unobtrusive device provides deep packet inspection and end-to-end visibility in broadcast quality media delivery over any IP based infrastructure including OTT media in unmanaged networks.

IP Distribution Monitoring Blade
VB120

The VB120 broadcast probe is a real-time GigE monitoring platform with applications in any network where digital video is carried across IP infrastructure. Built specifically to industry needs, this network service tool is ideal for both pure IPTV networks and hybrid networks with IP transport cores such as digital cable and terrestrial networks where it is used as a controller for the RF interfaces including the VB252, VB262 and VB270 blades.

DMP900 DIGITAL MEDIA PLATFORM

Introduction

- DMP900 is a powerful, platform-based and multipurpose video-processing product targeted for the most video delivery requirements.
- Equipped with six hot-swappable modules, DMP900 can support almost any video delivery requirement with any combination of receiving de-scrambling/transcoding, re-multiplexing/grooming, scrambling, modulation and IP/ASI turn around for service providers.
- With built-in service/stream level redundancy, monitoring and grooming functions, DMP900 can integrate with any video solutions/systems and support 24 hours non-stop operation for years to come.

Key Features

- Dense modular design: 1 RU with 6 hot-swappable module slots
- Supports up to 6 Gbps TS stream multiplexing/grooming
- Stream/Port/Service level redundancy
- Supports EIT multiplexing (optional) and PSI/SI table edition/insertion (both DVB and ATSC standard)
- Hot swappable and dual redundant power supply design
- Multiple configuration/monitoring tools: Web-UI, NMS and SNMP
- Supports configuration without service interuption
- Easy upgrade to new technologies with only module replacement
- Low power consumption and high reliability with MTBF (Mean Time Between Failure) ≥100,000 Hours

Applications

- Broadcasting, primary/secondary distribution, video delivery, Telecom/IPTV/OTT.
- Up-link/down-link, content preparation/compression, digital turnaround, trans-modulation, IP-ASI gateway, program insertion, multi-screen delivery, etc.

SMP 100 COST-EFFECTIVE MEDIA PLATFORM

Introduction

SMP100 is a cost-effective, platform-based and multipurpose video processing equipment targeted for various video delivery application.
With multiplexing/ASI/IP built in the platform, SMP100 supports 3 functional modules for receiving, de-scrambling, encoding, transcoding, decoding, scrambling, modulation and streaming.
Customers can easily adopt an analog-to-digital video service or turn around your service into IP-based network or leverage its high density to support multi-channel video processing with less investment.

Key Features

- Compact modular design: 1RU with 3 modules (see available modules in 'ordering information')
- Supports up to 4Gbps video multiplexing and TS stream multiplexing/grooming
- Supports EIT multiplexing (optional) and EPG/SI insertion (both DVB and ATSC standard)
- Embedded ASI/IP interfaces in the main chassis
- Dual redundancy power supply (optional)
- Easy configuration tools: Web-UI and SNMP
- Easy upgrade to new technologies with only module replacement
- Low power consumption and high reliability with MTBF (Mean Time Between Failure) ≥100,000 hours

Applications

- Distribution/delivery, digital turn-around, local program insertion, MDU, etc

WELLAV MODULES

RECEIVING

- DVB-S2 (4CH per module)
- DVB-C (4CH per module)
- DVB-T or DVB-T2 (4CH per module)
- ATSC (4CH per module)
- ISDB-T (4CH per module)

ENCODING

- CVBS MPEG2/4 SD encoder (max.4CH per)
- SDI SD/HD encoder (2CH, MPEG 2/H.264)
- HDMI SD/HD encoder (max.4CH, MPEG 2 SD, H.264 SH/HD)
- HEVC encoder (4CH SD/HD or 1 CH UHD)

SCRAMBLING AND DE-SCRAMBLING

- Scrambling module for DVB (CAS) and IPTV (AES)
- CI module with 2 CAM slots (optional BISS descrambling)

MODULATING

- QAM/OFDM module (8xQAMs or 4xOFDM)
- LQAM module ($xQAM, local frequency combination)
- IQAM module (max.16QAM, non-adjacent frequencies)
- ATSCM module (2CH, *VSB modulating)
- ISDBTM (1CH, ISDB-T modulating)

TS INTERFACE & DECODING

- IP & ASI integrated module (64 TS/IP In & 32 Out, 2xASI In or Out)
- IP module (up to 2xRJ45 & 2xSFP 256 TS In & Out, UDP/RTP/RTSP/HLS
- ASI module (4 CH per module, flexible Input/output selectable)
- DS3 module (4CH per module)
- Decoding module for monitoring or analog output (2 HDMI/SDI or 4 CVBS)
- ASI switch module (ASI TS switching for redundancy)

TRANSCODING

- Transcoder to MPEG 2 H.264 SD/HD program (2xHD, H.264 or 4xSD, MPEG 2 /H.264)
- Transcoder to MPEG2/4 SD program (max. 4CH)
- Multiscreen transcoder (2CH with up to six profile output per CH)
- Dense low bit-rate transcoder to MPEG2/4 SD/HD program (2xHD or 8xSD)

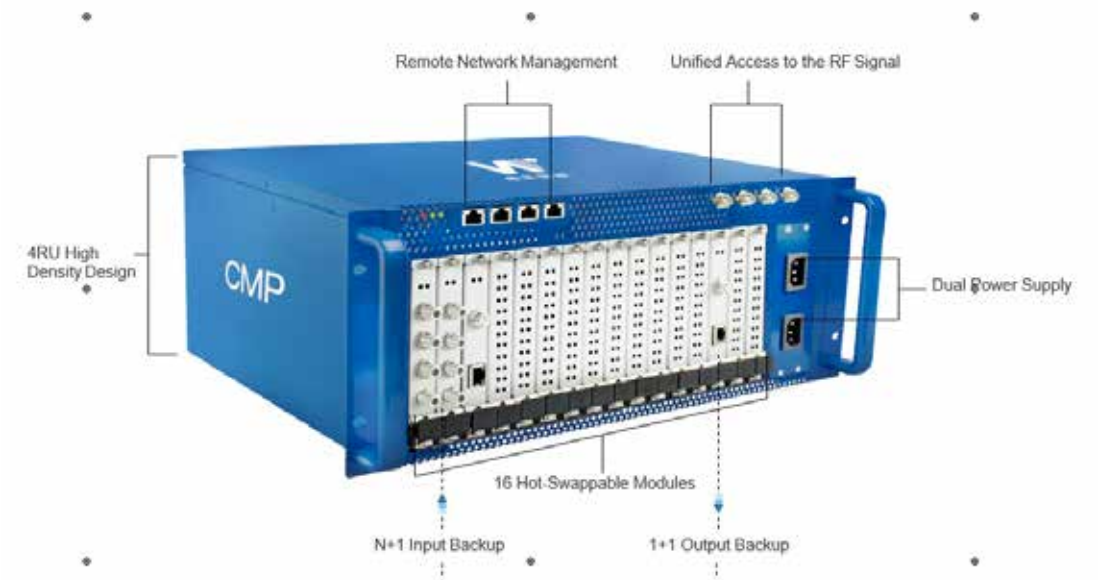
StreamCast -- Network encoder/broadcaster

StreamCast is a multi-function encoder/streamer for audio and video processing in a cost-effective way. It supports professional encoding, modulation and IP streaming for live encoding uploading, channel insertion, live broadcasting, AD/local program playback streaming, remote meeting and more...

Features

- 1CH of H.264 SD/HD (up to 1080p) encoding/transcoding via HDMI, SDI, CVBS, YPbPr or TSIP
- IP streaming through UDP, HLS, RTSP, RTMPand more (including embedded streaming server)
- QAM modulation for RF modulation (optional)
- Support WiFi and 3G connection (VSB)
- Support TS recording and local file playback and offline transcoding (future option)
- Support external audio combination
- Support Uploading to live platform or social platmorm (Youtube, Facebook, future option)
- Easy to use with non- professional UI

CMP100



Introduction

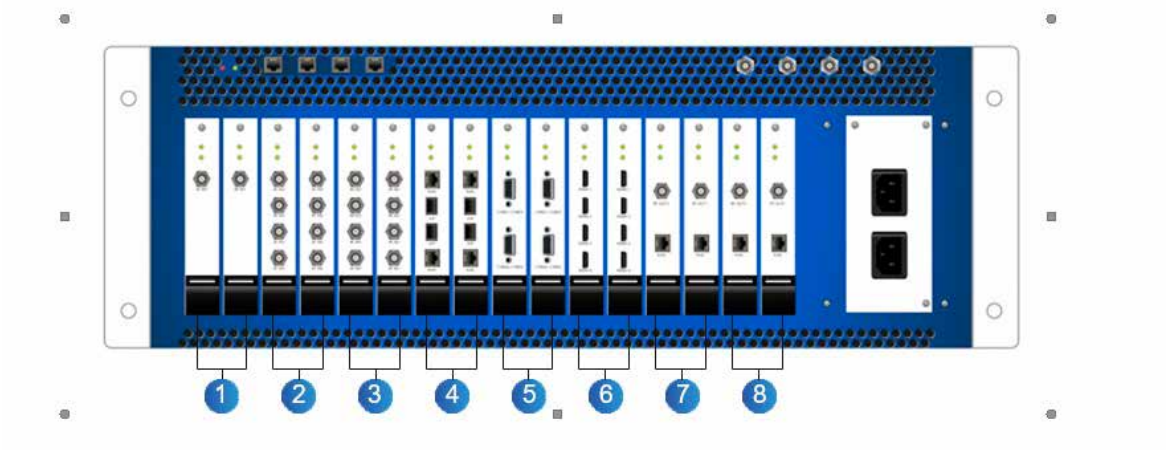
CMP100 is a brand new Common Media Platform dedicated to commercial market, using the latest commercial product design concept, with high density, high performance and high flexibility. By carrying different types of function module, CMP100 can support almost any commercial application with any combination of receiving, descrambling, encoding, multiplexing and modulation in one device.

The CMP100 chassis has a unified access to the RF signal to reduce the complexity of device installation, configuration and maintenance. Its redundant backup mechanism ensures high stability of device operation.

Key Features

- High dense modular design: 4 RU with 16 hot-swappable modules Hot-swappable and dual redundant power supply design
- Easy to install and modular design to provide the highest flexibility and scalability Redundant backup mechanism to ensure high stability of device operation Supports PSI/SI/PSIP analysis and regeneration
- We Supports alarms and logs b interface with SNMP status and configuration Supports alarms and logs
- Supports TS, Service, PID multiplexing
- Supports up to 60 channels DVB-C/S/S2 Receiving
- Supports up to 60 channels HD Encoding
- Supports up to 90 channels SD Encoding
- Supports up to 240 channels QAM Modulation
- LOW power consumption and high reliability with MTBF (Mean Time Between Failure) ≥100,000 hours

CMP100



DVB-C Receiver Module

- 4 channels receiving, 2 CI slots descrambling Frequency range: 47~862 MHz
- Band width: 6, 7 & 8 MHz
- Up to 32 SD or 20 HD services receiving and descrambling

DVB-S/S2 Receiver Module

- 4 channels receiving, 2 CI slots descrambling
- Frequency range: 950~2150 MHz
- Up to 32 SD or 20 HD services receiving and descrambling

8VSB Receiver Module

- 4 channels receiving, 2 CI slots descrambling
- Frequency range: 57~803 MHz
- Band width: 6MHz

IP Input and Output Module

- 2Gbit RJ45 interface
- MPEG TS over UDP/RTP multicast/unicast TS format supports SPTS or MPTS
- Max. 800Mbps per port

CVBS SD Encoder Module

- 6 channels SD Encoding
- Support resolution 576i@25fps, 480i@29.97fps Support H.264 SD and MPEG-2 SD
- Stereo audio

HDMI HD Encoder Module

- 4 channels HD/SD Encoding
- Support resolution up to 1080p@30fps
- Support H.264 HD/SD and MPEG-2 SD
- Stereo audio

QAM Modulation Module

- 16 non-adjacent channels
- 1 RF Female output
- 1 RJ45 monitor output
- Frequency range: 47~862 MHz

COFDM Modulation Module

- 4 channels
- 1 RF Female output
- 1 RJ45 monitor output Frequency range: 48~862 MHz

DTV RACK

- Basic rack to incorporate other modules from the DTVRack system
- Maximum 11 modules can be put into one Rack
- USB for connection between PC and Rack for control
- Ethernet connection for web control or control over local network
- Wall mount or mounting possible in a 19 inch rack (height 3U)
- Powersupply : 125 Watt

- Semi rack to incorporate other modules from the DTVRack system
- Maximum 5 modules can be put into one CMIRack
- USB for connection between PC and Rack for control
- Ethernet connection for web control or control over local network
- Wall mount
- Powersupply : 125 Watt

PARAMETERS		DTVRack	CMIRack
Power	W	125	125
Input	V/A/Hz	100...240/1,7/50-60	100...124/1,7/50-60
Output	V/A	5/11,5; 12/3,0	5/11,5; 12/3,0
No. of modules	/	11	5
Dimensions	mm	483 (19") x 195 x 133	269 (10``) x 195 x 133
Article No.	/	U540-9100-611-01	U631-9100-605-01

DTV ACCESORIES

DTVCC

- CAM cover (for use with DTVCI1, DTVCI2)
- EAN code: 5420037699384

DTVCP

- Coverplate to close unused slots in a rack.
- EAN code: 5420037699384

INPUT MODULES

DTVRR2/ DTVRR7

- Module for the reception of DVBS/ S2 satellite signals
- Two (DTVRR2) or three (DTVRR7) inputs with integrated multiplexer
- The programs of the two satellite inputs can be 'remuxed' (mixed) with programs coming from a preceding DTVRRx, DTVHD4, DTVAV2, DTVIPi
- 13/18 V - 22 kHz - DiSEqC control for each input

DTVAV2

- Module for MPEG2 encoding of audio/video sources
- Two inputs with integrated remuxer
- The digitised audio/video sources can be remuxed with program coming from a preceding DTVAV2 module. In this way a multisource
- (2-4-6-8 etc.) can be realised

DTVRR8

- Module for the reception of DVBT/ T2/C or DVBS/S2 signals
- PLP support in DVB-T2 mode
- Three (DTVRR8) inputs with integrated multiplexer
- The programs of the three inputs can be 'remuxed' (mixed) with programs com- ing from a preceding DTVRRx, DTVHD4, DTVAV2, DTVIPi (cascadable)
- DiSEqC control for each SAT input

DTVHD4

- Module for MPEG4 (H.264) encoding of HDMI sources
- Four inputs with integrated remuxer
- Resolutions up to 1080p (x4)

DTVRR9

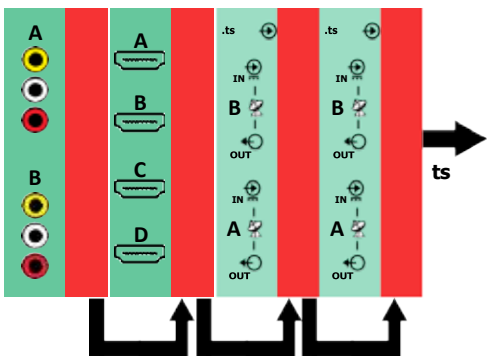
- Module for the reception of DVBS/ S2 satellite signals
- Two inputs with integrated multiplexer
- The programs of the satellite inputs can be 'remuxed' (mixed) with programs coming from a preceding DTVRRx, DTVHD4, DTVAV2, DTVIPi (cascadable)
- 13/18 V - 22 kHz - DiSEqC control for each input
- DTVRR9 has an HDMI or .ts (via USB) input. This allows insertion of the HDMI source or info channel (via USB) in the .ts output

DTVIPi

- The DTV-IPi module purpose is to capture SPTS/MPTS services from several ethernet unicast and/or multicast ports, multiplex them in a single TS that is provided to the DTVRack backplane. The extracted services can then be reorganized in multiple TS and modulated in DVB-C, DVB-T or even streamed again in IP using various output modules

DTVRR10

- Module for the reception of DVBS/ S2/S2X – multistream satellite signals
- Four inputs with integrated multiplexer
- The programs of the four satellite inputs can be 'remuxed' (mixed) with programs coming from a preceding DTVRRx, DTVHD4, DTVAV2, DTVIPi
- 13/18 V - 22 kHz - DiSEqC control for each input



DECODING

DTVCI1

- CI module
- Allows the decryption of multiple channels (quantity depending on CARD and CAM used)
- 4 modules can be put in cascade to augment the number of programs to be decrypted

DTVCI2

- Dual CI module (accepts two CAM modules)
- Allows the decryption of multiple channels (quantity depending on CARD and CAM used)
- 2 modules can be put in cascade to augment the number of programs to be decrypted

OUT PUT MODULES

DTVDM4: quad DVBT/DVBC modulator

- Quad DVBT/DVBC modulator module for DTVRack
- Four adjacent channels
- Channels are only active if services (programs) added to the channel (single channel, dual or triple operation possible)
- Can be reconfigured in the field to DVBC or DVBT modulator

DTVDM3: triple DVBT/ quad DVBC modulator

- Triple DVBT/ quad DVBC modulator module for DTVRack
- Three/four adjacent channels
- Channels are only active if services (programs) added to the channel (single channel possible)
- Can be reconfigured in the field to DVBC or DVBT modulator

DTVIP: IP to DVB streamer

- Standard: RJ45 ethernet 10/100 base T
- Rate: up to 100 Mbps
- Number of programmes at output: up to 16 SPTS (single program transport stream) or 16 MPTS (multiple programs transport stream)
- Transmission protocol: UDP/RTP (TTL & QoS configurable) - SDP/SAP to ease automatic selection of programmes on the settop box
- IP configuration: fixed or DHCP
- IP addressing: multicast - unicast
- DVB: PID filtering, SI/PSI analysis – PAT/PMT table regeneration

DIGITAL MODULATORS DVB-T/ DB-C/ IP

TM 160 HD

The TM160HD is a HD encoder. The video and audio are taken from HDMI.
After compressing the video into H264 and audio in AAC or MPEG1-L2, the output signal is available in DVBT format.
Standalone configuration is made easy through 3 tact switches.
Extended configuration of the TM160HD is possible using the special software TMHDIface

TM4 HDV

• The TM4HDV encoder/ modulator allows to encode up to 4 HDMI sources and this with a resolution of up 1080P for each input.
• The 4 sources are then available in DVBT or DVBC at the output on 3 or 4 adjacent channels.

TM 220HD

The TM220HD is a HD encoder, the video input can be taken from HDMI. The audio can be taken from HDMI or analog audio.
After compressing the video into H264 or MPEG2 and audio in AAC, or MPEG1-L2 the output can be configured as DVB-T or DVB-C modulator.
Standalone configuration is made easy through 4 tact switches and ergonomic menu's. To make the configuration of the TM220HD ultra simple, a special software TMHDIface is available

TM 250HD

The TM250HD is a HD encoder, the video input can be taken from HDMI, PC or Component Video.
The audio can be taken from HDMI or analog audio.
After compressing the video into H264 or MPEG2 and audio in AAC, or MPEG1-L2 the output can be configured as DVB-T, DVB-C modulator or as IP streamer.
Standalone configuration is made easy through 4 tact switches and ergonomic menu's. To make the configuration of the TM250HD ultra simple, a special software TMHDIface is available.

DIGITAL MODULATORS DVB-T/ DB-C/ IP

PARAMETERS		TM 160 HD	TM 190 HD	TM 220 HD	TM 250 HD	TM 4 HDV
				INPUT VIDEO		
Resolution modes	/	480p -576p -720p -1080i -1080p	480p -576p -720p -1080i -1080p	480p -576p -720p -1080i	480p -576p -720p -1080i VGA –SVGA - XGA -SXGA	720p – 1080p
Inputs	/	HDMI	HDMI	HDMI	HDMI, VGA, Component	4xHDMI
				INPUT AUDIO		
Inputs	/	HDMI	HDMI	HDMI	HDMI, RCA	4xHDMI
Sample rate	kHz	32 / 44,1 / 48	32 / 44,1 / 48	32 / 44,1 / 48	HDMI (32 / 44,1 / 48) – analog (48)	32 / 44,1 / 48
				USB		
Recording and playback from USB	/	nie	tak	nie	nie	nie
				DVB > DVB PROCESSING		
Video Compresion	/	H.264	H.264	H.264	H.264	H.264
Video bitrate	Mb/s	5-15	5-15	5-15	5-15	5-15
Compression Audio	/	AAC-LC lub MPEG1-L2	AAC-LC lub MPEG1-L2	AAC-LC	AAC-LC	AAC-LC lub MPEG1-L2
Audio bitrate	Kbit/s	128-384	128-384	128-384	128-384	128-384
Table insertion	/	PAT, PMT, SDT, NIT	PAT, PMT, SDT, NIT	PAT, PMT, SDT, NIT	PAT, PMT, SDT, NIT	PAT, PMT, SDT, NIT
Configuration	/	Channel/ network name, SID, LCN, TSID, ONID, NID, versions Video PID, audio PID				
				RF > OUTPUT RF		
Modulator type	/	DVB-T (COFDM)	DVB-T (COFDM)	DVB-T/C	DVB-T/C i IP	DVB-T/C
ODFM mode	/	2k/8k	2k/8k	2k/8k	2k/8k	2k/8k
Channel bandwidth	MHz	6/7/8	6/7/8	6/7/8	6/7/8	6/7/8
MER	dB	31	31	35	35	35
Guard interval	/	1/4. 1/8, 1/16, 1/32	1/4. 1/8, 1/16, 1/32	1/4. 1/8, 1/16, 1/32	1/4. 1/8, 1/16, 1/32	1/4. 1/8, 1/16, 1/32
Constellation	/	QPSK/16QAM/64QAM	QPSK/16QAM/64QAM 16/32/64/128/256 QAM	QPSK/16QAM/64QAM 16/32/64/128/256 QAM	QPSK/16QAM/64QAM 16/32/64/128/256 QAM	QPSK/16QAM/64QAM 16/32/64/128/256 QAM
FEC	/	1/2, 2/3, 3/4, 5/6, 7/8	1/2, 2/3, 3/4, 5/6, 7/8	1/2, 2/3, 3/4, 5/6, 7/8	1/2, 2/3, 3/4, 5/6, 7/8	1/2, 2/3, 3/4, 5/6, 7/8
Output frequency	MHz	170-230, 470-862	170-230, 470-862	170-230, 470-862	170-230, 470-862	170-230, 470-862
Output level	dBµV	>85	>85	>80	>80	>95
Output level adjustment	dB	0-20	0-20	0-20	0-20	0-20
Attenuation RF INPUT/ RF OUTPUT	dB	<3,0	<3,0	<3,0	<3,0	<3,0
				OTHER		
Powering - external PS: – intput – output	V/A V	100-240/0,5 (50-60Hz) +5	100-240/0,5 (50-60Hz) +5	100-240/0,5 (50-60Hz) +5	100-240/0,5 (50-60Hz) +5	100-240/0,5 (50-60Hz) +5
Power consumption	W	6	6	10	10	17
Dimensions	mm	150x130x35	150x130x35	170x130x35	170x130x35	65x103x181
Weight	kg	0,45	0,45	0,6	0,6	0,6
Package	/	box	box	box	box	box
Article No.	/	U659-9100-610-53	U638-9100-610-43	U572-9100-610-30	U588-9100-610-35	U539-9100-610-34

OPTICAL PLATFORM AIMA3000

The AIMA3000 platform is PBN's newly developed high-density, lowpower consumption headend platform that enables MSOs to build or upgrade their networks to meet the demands of today as well as future multi-services access requirements.

The AIMA3000 simplifies the transition to IP Networks by providing a complete range of intelligent, interoperable, RF and optical modules for HFC, RFoG, PON video overlay, and other applications.

The design employs a 19" rack of 4RU height, with 17 slots for highdensity application modules and integrated front and rear fiberaccess panel for easy fiber management. Slot 0 is used for a System Management Module (ASMM). In total, one 4RU AIMA3000 chassis allows for configurations of up to 64 forward-path laser transmitters or 64 return path receivers.

ASMM

The AIMA3000 System Management Module (ASMM) is the system controller module for the PBN's latest generation Advanced Intelligent Multi-services Access Platform - the AIMA3000.

The ASMM control module supervises all Application Modules (AMs), power supplies, and fan modules within the AIMA3000 chassis. It also serves as a communications interface between all the modules and user interfaces.

- Plug-and-play AIMA3000 platform module
- Hot-swappable
- Embedded web server
- SNMPv2c compatible
- Provides firmware and device management for all modules
- Alarm and log management
- Maintenance management
- Three fast Ethernet ports for communication with local PCs and PBN's NMSE management software
- Standard USB 2.0 type A port for PBN's hand-held controller (AHHC) connectivity
- Remote firmware upgrade and auto upload/download of configuration files through ASMM web interface or using PBN's NMSE
- Bulk firmware updates through PBN's NMSE
- Battery back-up for maintaining the Real Time Clock (RTC)
- Fully FCC, CE, and RCM compliant

FOWARD TRANSMITTERS 1550 NM

AIMA-FT5S 1550 nm Forward Transmitter – Standard

- Plug-and-play with the AIMA3000 platform
- High quality 1550 nm, isolated low-chirp analog DFB laser
- RF amplifier gain blocks with advanced GaAs technology for better performance
- Conforms to the ITU DWDM standards
- Frequency response from 45 MHz to 1218 MHz fit for both broadcast and narrowcast applications
- Alarm monitoring via ASMM web interface and PBN NMSE
- Automatic gain control (AGC) for a consistent optical modulation index (OMI
- Automatic thermo-cooler control (ATC) for a consistent laser temperature
- Automatic power control (APC) for a consistent optical output power
- Available in single, dual transmitter configurations
- Up to 64 transmitters per chassis
- Remote firmware upgrade and auto upload/download of configuration files through ASMM web interface or using PBN's NMSE
- Fully FCC, CE, and RCM compliant

AIMA-FT5E1550 nm Forward Transmitter – Enhanced

- DOCSIS 3.1 Compatible with operating bandwidth up to 1218 MHz
- Plug-and-play AIMA3000 platform, forward-path optical transmitter module
- High quality 1550 nm low-chirp analog DFB laser
- RF amplifier gain blocks with advanced GaAs technology for better performance
- Conforms to ITU wavelength DWDM standards
- Frequency response of 45 MHz to 1218 MHz for both broadcast and narrowcast applications
- Alarm monitoring via ASMM web interface and PBN's NMSE
- Automatic gain control (AGC) for a consistent optical modulation index (OMI)
- Automatic thermo-cooler control (ATC) for a consistent laser temperature
- Automatic power control (APC) for a consistent optical output power
- Remote firmware upgrade and auto upload/download of configuration files through ASMM web interface or using PBN's NMSE
- Fully FCC, CE, and RCM compliant

AIMA-FT5X 1550 nm Forward Transmitter - Externally Modulated

- Plug-and-play AIMA3000 platform module with up to 4 independent forward path transmitters
- Suitable for DWDM applications supporting ITU optical frequency grid wavelength channels 21 to 51 (1560.61 nm to 1536.61 nm)
- Tunable wavelength between channel 21 and 51 in 200 GHz increments, reducing the quantity of transmitters at different fixed wavelengths
- All-digital QAM loading from 45 MHz to 1218 MHz
- Link distance of up to 60 kilometers without any dispersion compensation required
- High-density up to 64 transmitters in a 4RU chassis
- Automatic gain control (AGC) for a consistent optical modulation index (OMI)
- Automatic laser power control for consistent optical output
- Comprehensive alarm reporting and monitoring
- Remote firmware upgrade and auto upload/download of configuration files through ASMM web interface or using PBN's NMSE
- Fully FCC, CE, and RCM compliant

AIMA-FT5P 1550 nm Forward Transmitter – Performance

- DOCSIS 3.1 Compatible with operating bandwidth up to 1218 MHz
- Suitable for DWDM applications
- All-digital QAM loading from 45 MHz to 1218 MHz
- Link distance of up to 60 kilometers without any dispersion compensation required
- High SBS suppression level to allow launch power up to +20 dBm
- Automatic gain control (AGC) for a consistent optical modulation index (OMI)
- Automatic laser power control for consistent optical output
- Comprehensive alarm reporting and monitoring
- Remote firmware upgrade and auto upload/download of configuration files through ASMM web interface or using PBN's NMSE
- Bulk firmware updates through PBN's NMSE
- Fully FCC, CE, and RCM compliant

FORWARD TRANSMITTER 1310

AIMA-RT3S 1310 nm Return Transmitter – Standard

- Plug-and-play with the AIMA3000 platform
- High-quality 1310 nm isolated low-chirp analog DFB lasers
- RF amplifier gain blocks with advanced GaAs technology for better performance
- Frequency response of 5 MHz to 204 MHz
- Local laser shutdown via web interface or optional hand-held controller (AHHC)
- Totally independent and controllable circuits in one module slot
- Alarm monitoring via ASMM web interface and PBN NMSE
- Automatic thermo-cooler control (ATC) for a consistent laser temperature
- Automatic power control (APC) for a consistent optical output power
- Remote firmware upgrade and auto upload/download of configuration files through ASMM web interface or using PBN's NMSE
- Bulk firmware updates through PBN's NMSE
- Fully FCC, CE, and RCM compliant

RETURN RECEIVERS

AIMA-RRAG Analog Return Receiver – RfoG

- Upstream bandwidth 5 - 204 MHz with EuroDOCSIS and DOCSIS 3.0 support
- RF output 48 dBmV with a -20 dBm optical input and an OMI of 10%
- 1260 - 1620 nm operating wavelength, to suit CWDM, DWDM, and RFoG applications
- Wide optical input from -28 dBm to -12 dBm
- 19-inch 4RU chassis supports up to 16 Application Modules
- A single RRAG module has 4 optical inputs; a full chassis supports up to 64 channels
- Real-time alarm monitoring
- Remote firmware upgrade and auto upload/download of configuration files through ASMM web interface or using PBN's NMSE
- Plug-and-play hot-swappable
- Easy to install, with blind mate RF connectors
- Independent RF test points for ease of setup and maintenance
- A single receiver consumes less than 2 W of power
- Fully FCC, CE, and RCM compliant

AIMA-RRAS Analog Return Receiver – Standard

- Bandwidth 5 ~ 204 MHz to meet EuroDOCSIS and DOCSIS3.0/3.1 frequency band requirements
- RF output 47.5 dBmV at -6 dBm optical input and OMI of 6%
- Wide band receiver (1260 ~ 1620nm) to suit CWDM and DWDM applications
- Allows up to 64 receivers (4x16 Modules) in only 4 RU of space
- User-selectable MGC or AGC
- Easy to install due to RF-Paddle board backplane design
- Plug-and-play and hot-swappable
- Dedicated testport per return channel
- Fully FCC, CE, and RCM compliant
- Real-time alarm monitoring
- Full Band Capture offers automated and 7*24 return path/ upstream RF and data performance monitoring and analysis
- Help operators preemptively identify and address spectrum variances
- Lower capital expenses by eliminating the need for expensive test equipment
- Web-browser access eliminates the need for a thick client and a mobile APP is available
- An intuitive user interface similar as meter adapt to user's operating habits
- Improve network maintenance efficiency and Increase customer satisfaction
- FBC software which can work independently, in PBN NMSE or be integrated into third-party systems

AIMA-RRAR Analog Return Receiver – Redundant

- Bandwidth 5 ~ 204 MHz to meet EuroDOCSIS and DOCSIS 3.1 frequency band requirements
- RF output 48 dBmV with a -6 dBm optical input and an OMI 6%
- Operates between 1260 ~ 1620 nm wavelength, to suit CWDM and DWDM applications
- 19-inch 4RU chassis supports up to 16 Application Modules
- A single RRAR module has 4 optical inputs; the full chassis supports up to 64 channels
- User-selectable MGC or AGC
- Real-time alarm monitoring
- Remote firmware upgrade and auto upload/download of configuration files through ASMM web interface or using PBN's NMSE
- Plug-and-play and hot-swappable
- Easy to install, with blind mate RF connectors
- Independent RF test points for ease of setup and maintenance
- A single receiver consumes less than 4 W of power
- Fully FCC, CE, and RCM compliant

For other Modules please contact...

RETURN RECEIVERS

AIMA-EDFA Erbium Doped Fiber Amplifier

- Plug-and-play AIMA platform optical signal amplifier
- Suits 1550 nm DWDM applications
- Adjustable optical outputs for dynamic link configurations
- Low noise profile and gain flattening
- Suitable for large scale FTTx deployment
- Automatic power control (APC) for a consistent optical output power (A-EDFA-x-x-P-x only)
- Automatic Gain Control (AGC) for maintaining a consistent amount of power amplification for each wavelength (A-EDFA-x-x-G-x only)
- Automatic thermo-cooler control (ATC) for a consistent laser temperature
- Remote firmware upgrade and auto upload/download of configuration files through ASMM web interface or using PBN's NMSE
- Bulk firmware updates through PBN's NMSE
- Fully FCC, CE, and RCM compliant

OPTICAL PLATFORM 1RU

LT1550 1550nm Direct Mod Transmitter with or without Build in EDFA

- Analogue InGaAsP DFB low-chirp laser with optical isolator and thermoelectric cooler.
- Handles legacy analogue cable television as well as digital DVB-T or DVB-C formats.
- 45 MHz to 1000 MHz forward path RF amplifier with automatic gain control (AGC) for a constant optical modulation index (OMI).
- Automatic Peltier thermo-cooler control and automatic laser power control for constant laser temperature and optical output.
- Option for integrated Erbium Doped Fibre Amplifier (EDFA) to achieve the very high optical power levels as required for FTTH systems.
- Self-contained 19" sub rack 1 RU with integrated universal mains power supply.
- Backlit LCD display provides status monitoring and control.
- Front panel mounted USB craft port with optional Ethernet port on the rear panel for SNMP/HTTP network management.

LTE153-6000 Externally-modulated Laser Transmitter for 1550nm Wavelength

- RF pre-distortion circuit for excellent CSO and CTB performance together with a low distortion profile
- Versions for both long-haul applications and short-haul FTTH customer access networks
- Can be optimized for 60 PAL channels, 89 PAL channels, 80 NTSC channels or 110 NTSC channels. Flat response between 45~1003 MHz
- Dual redundant hot-swappable power supplies for universal mains or for telecom battery
- Field-adjustable Stimulated Brillouin Scattering (SBS) suppression for optimized CSO to suit 13~19 dBm fiber line drive levels.
- Field-adjustable Electronic Dispersion Compensation (EDC)
- Front panel LCD for local monitoring. Integrated SNMP agent for Serial (RS-232) Ethernet (RJ-45) port and remote monitoring
- Front-panel RF Test Point for easy access

EDFA

EDFA-R 19" Erbium Doped Fiber Amplifier with Redundant Power Supplies

- Low noise signature: Typically < 4.5 dB (@ 0 dBm input, output < 25 dBm)
- Dual redundant power supplies can use 220 V mixed interpolation with 48 V
- High stability and reliability: MTBF over 100,000 hours
- A variety network management interfaces: RJ-45
- Integrated web control and SNMP interface for remote control and monitor
- High precision APC circuit
- Intelligent temperature control system reduces power consumption and heat
- Flexible mechanical and circuit structure
- 19'' 1RU sub-rack, hot-plugging fan and power supply unit
- Bellcore GR-1312-CORE compliant

PARAMETERS	EDFA-R		
OPTICAL		ELECTRICAL	
Optical wavelengh	1530-1565 nm (standard 1550 nm)	Power supply	85 ~ 264 V_{AC}
Saturated Output Power (total power)	13-32 dBm	Maximum Power Consumption	≤18 W
Adjustable Range od Output Power	-3...+10 dBm	Typical Operation Power Consumption[2)]	1RU
Gain	20 dB		
Noise figure	4,5 dB	GENERAL	
Output Power Stability	±0,05.... ±0,1dB	Operation Temperature	-5.....+60 °C
Input Isolation	>30 dB	Storage Temperature	-40.....+80 °C
Output Isolation	>30 dB	Humidity[3)]	10.....90 %
Return loss	<-45 dB	Dimensions (HxWxD)	44x483x220 mm
PDG	0,3 dB	Weight	6,0 kg
PMD	0,5 ps	(1) Customer optional (2) The actual power consumption is relative to output power, the operating environment, and temperature.	
Optical connector[1)]	SC/APC, E2000/APC, FC/APC, LC/APC		

EDFA-R-[U-V]-[W]-[X]-[Y]-[Z] 19'' Erbium Doped Fiber Amplifier with Redundant Power Supplies					
OPTIONS			NUMBER OF OUTPUT PORTS AND OUTPUT POWER		
1RU height					
1 output			13-24 dBm		
2 outputs			13-21dBm		
4 outputs			13-20dBm		
6 outputs			16dBm		
8 outputs			13-21dBm		
1A	Single mains power supply 220 VAC	1D	Single mains power supply -48 Vdc	AD	With two mains power supplies of 220 VAC and -48 Vdc
2A	Dual mains power supplies 220 VAC	2D	Dual mains power supplies -48 Vdc		

GOLT 8PON

GOLT 8PON
(8 GPON ports, Uplink: 6x GE (SFP) + 2x10GE (SFP+) + 8GE)

- Very fast log-in of the ONU
- Automatic detection and updating of ONU software
- Free management system via WEB / CLI / EMS
- Power redundancy
- L2 and L3 support
- Interoperability with other suppliers ONU

Chassis	Rack	1U 19 inch standard box
1000M Uplink Port	QTY	16
	Copper	8*10/100/1000M auto-negotiation
	SFP (SFP+) (independent)	6*SFP and 2SFP+ slots (SFP+ is 10GE port)
GPON Porta	QTY	8
	Physical Interface	SFP Slots
	Connector Type	Class B+/C+
	Max splitting ratio	1:128
Management Ports		1*10/100BASE-T out-band port, 1*CONSOLE port
PON Port Specification	Transmission Distance	20KM
	GPON port speed	Upstream 1.244G, Downstream 2.488G
	Wavelength	TX 1490nm, RX 1310nm
	Connector	SC/PC
	Fiber Type	9/125μm SMF
	TX Power	+1~+5dBm
	Rx Sensitivity	-28dBm
	Saturation Optical Power	-8dBm

Management Mode	SNMP, Telnet, CLI, WEB
Management Function	Fan Group Detecting; Port Status monitoring and configuration management; Layer2 switch configuration such as VLAN, Trunk,RSTP,IGMP,QOS, etc; EPON management function: DBA,ONU authorization, ACL,QOS,etc; Online ONU configuration and management; User management; Alarm management.
Layer2 Switch	16K Mac address; Support port VLAN and protocol VLAN; Support 4096 VLANs; Support VLAN tag/Un-tag ,VLAN transparent transmission, QinQ; Support storm control based on port; Support port isolation; Support port rate limitation; Support 802.1D and 802.1W; Support static LACP. QOS based on port,VID,TOS and MAC address. Access control list. IEEE802.x flow control. Port stability statistic and monitoring.
Multicast	IGMP snooping; 256 IP Multicast Groups;
DHCP	DHCP server; DHCP relay; DHCP snooping;

Layer 3Route		Arp proxy; Static route; 512 hardware Subnet Routes; 1024 hardware Host Routes;
GPON Function		Tcont dba; Gemport traffic; In compliant with ITUT984.xstandard; Up to 20KM transmission Distancec; Support data encryption, multi-cast, port VLAN, separation,RSTP,etc; Support ONU auto-discovery/link detection/remote upgrade of software; Support VLAN division and user separation to avoid broadcast storm; Support power-off alarm function,easy for link problem detection; Support broadcasting storm resistance function; Support port isolation between different ports; Support ACL and SNMP to configure data packet filter flexibly; Specialized design for system breakdown prevention to maintain stable system; Support dynamic distance calculation on EMS online; Support RSTP,IGMP Proxy.
Dimension(L*W*H)		442mm*320mm*43.6mm
Power Supply	220VAC	AC:90~264V, 47/63Hz; Double Power Module/Hot Backup
Power Consumption		25W
Operating Environment	Working Temperature	-10~+55 °C
	Storage Temperature	-40~+85 °C
	Relative Humidity	5~90%(non-conditioning)

GPON ONU

GONT G1

1 GE por

- Simple and reliable ONU
- Router or bridge mode
- Layer 2 - 802.1D & 802.1ad bridging, 802.1p CoS, 802.1Q VLAN
- Layer 3 - IPv4 / IPv6, DHCP Client / Server, PPPOE, NAT, DMZ, DDNS

GONT G1 F1 T1

GE port + 1 FE port + 1 VoIP port

- Simple terminal with RF port
- Supports VoIP telephony
- Router or bridge mode
- Layer 2 - 802.1D & 802.1ad bridging, 802.1p CoS, 802.1Q VLAN
- Layer 3 - IPv4 / IPv6, DHCP Client / Server, PPPOE, NAT, DMZ, DDNS

GONT G4 T2 Wac

4 GE ports + 2 VoIP + WiFi ports b / g / n / ac

- Simple and reliable ONU
- Router or bridge mode
- Layer 2 - 802.1D & 802.1ad bridging, 802.1p CoS, 802.1Q VLAN
- Layer 3 - IPv4 / IPv6, DHCP Client / Server, PPPOE, NAT, DMZ, DDNS

GONT G4 T2 RF1 Wn

4 GE ports + 2 VoIP ports + RF + WiFi port b / g / n

- Simple terminal with RF port
- Supports VoIP telephony
- Router or bridge mode
- Layer 2 - 802.1D & 802.1ad bridging, 802.1p CoS, 802.1Q VLAN
- Layer 3 - IPv4 / IPv6, DHCP Client / Server, PPPOE, NAT, DMZ, DDNS

CONFIGURATION AVAILABLE

TYPE	DESCRIPTION
GONT G1	1 GE
GONT G1 Bridge	1 GE
GONT G1 Wn	1 GE + WiFi 2,4GHz b/g/n
GONT G1 F1 Wn	1 GE + 1 FE + WiFi 2,4GHz b/g/n
GONT G1 F1 RF1 Wn	1 GE + 1 FE + 1 RF + WiFi 2,4GHz b/g/n
GONT G1 F3 Wn	1 GE + 3 FE + WiFi 2,4GHz b/g/n
GONT G1 F3 RF1 Wn	1 GE + 3 FE + 1 RF + WiFi 2,4GHz b/g/n
GONT F8 POE	8x FE + POE
GONT G1 F1 T1 Wn	1 GE + 1 FE + 1 VoIP + WiFi 2,4GHz b/g/n
GONT G1 F1 T1 RF1 Wn	1 GE + 1 FE + 1 VoIP + 1 RF + WiFi 2,4GHz b/g/n
GONT G1 F3 T2 Wn	1 GE + 3 FE + 2 VoIP + WiFi 2,4GHz b/g/n
GONT G4 T2 Wac	4 GE + 2 VoIP + WiFi 2,4 + 5 GHz b/g/n/ac
GSFP C+	SFP C+ for GPON
GSFP C++	SFP C++ for GPON
USFP 1G Fiber	SFP Fiber 1 GE – uplink
USFP 1G RJ45	SFP RJ45 1 GE – uplink
USFP 10G Fiber	SFP Fiber 10 GE – uplink

EONT G1	1 GE
EONT G1 Bridge	1 GE
EONT G1 Wn	1 GE + WiFi 2,4GHz b/g/n
EONT G1 F1 Wn	1 GE + 1 FE + WiFi 2,4GHz b/g/n
EONT G1 F1 RF1 Wn	1 GE + 1 FE + 1 RF + WiFi 2,4GHz b/g/n
EONT F4	4 FE
EONT G1 F3 Wn	1 GE + 3 FE + WiFi 2,4GHz b/g/n
EONT G1 F3 RF1 Wn	1 GE + 3 FE + WiFi 2,4GHz b/g/n
EONT F8 POE Bridge	8x FE + POE
EONT F8 POE Router	8x FE + POE
EONT G1 F1 T1 Wn	1 GE + 1 FE + 1 VoIP + WiFi 2,4GHz b/g/n
EONT G1 F1 T1 RF1 Wn	1 GE + 1 FE + 1 VoIP + 1 RF + WiFi 2,4GHz b/g/n
EONT G1 F3 T2 Wn	1 GE + 3 FE + 2 VoIP + WiFi 2,4GHz b/g/n
ESFP PX20+	SFP PX20+ for GEPON
ESFP PX20++	SFP PX20++ for GEPON
USFP 1G Fiber	SFP Fiber 1 GE – uplink
USFP 1G RJ45	SFP RJ45 1 GE – uplink
USFP 10G Fiber	SFP Fiber 10 GE – uplink