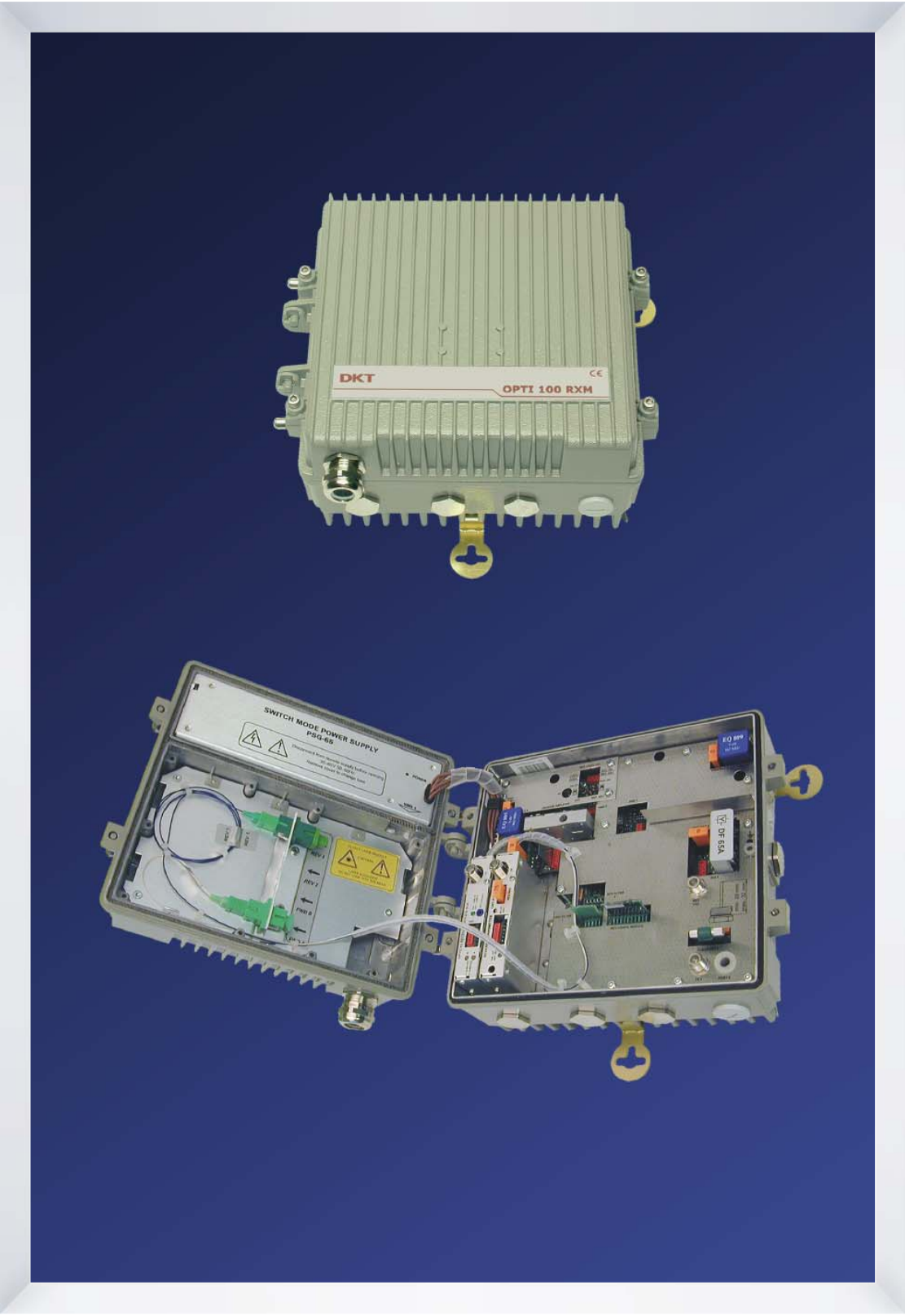
OPTICAL NODE

TRUNK & DISTRIBUTION



OPTI 100RX - OPTI 200RX - OPTI 300RX

Version 2

DKT

OPTI INTRODUCTION

"OPTI" is a broadband distribution node designed to be used as a compact, multiport optical node in HFC network. Modern technology applied in "OPTI" supports very high output RF levels with low intermodulation distortion while consuming little power.

"OPTI" used as a compact optical node allows full redundancy and AGC in forward path as well as redundancy or segmentation in reverse path.

"OPTI" with its modular design allows flexible configuration and step-by-step development of the system. The use of universal plug-in modules leads to convenient maintenance and operational costs reduction.

Highly adjustable and configurable reverse path in "OPTI" can be either active or passive. Ingress switch and ingress filter plug-in modules are helpful when eliminating problems with reverse path interferences. Availability of DWDM & CWDM technology enables implementation of modern concepts of optical access network.

"OPTI" can be powered locally up to 15A or remotely with 12A current passing by each RF port. Multistage overvoltage protection of all RF ports increases durability of the appliance resulting in higher reliability of the network.

"OPTI" is prepared to work with different Network Management Systems and has the facility to be remotely monitored and controlled. It enables an operator to:

- control three-state ingress switch and receiver redundancy configuration
- monitor input/output optical power of the receiver/transmitter
- supervise AC and DC voltage as well as DC current
- check external contacts and temperature inside the housing

Available in 6 standard versions with outstanding IP67 compact housing, "OPTI" is the optimum solution for HFC network.

GaAs Fet Power Doubler technology allows to achieve *one high output signal* level while reducing amplifier power consumption. OPTI 100 RX is available in remote (L) or local powering (M) versions.

GaAs Fet Power Doubler technology allows to achieve *two high output signal* levels while reducing amplifier power consumption. OPTI 200 RX is available in remote (L) or local powering (M) versions.

GaAs Fet Push Pull technology allows to achieve *three high output signal* levels while reducing amplifier power consumption. OPTI 300 RX is available in remote (L) or local powering (M) versions.

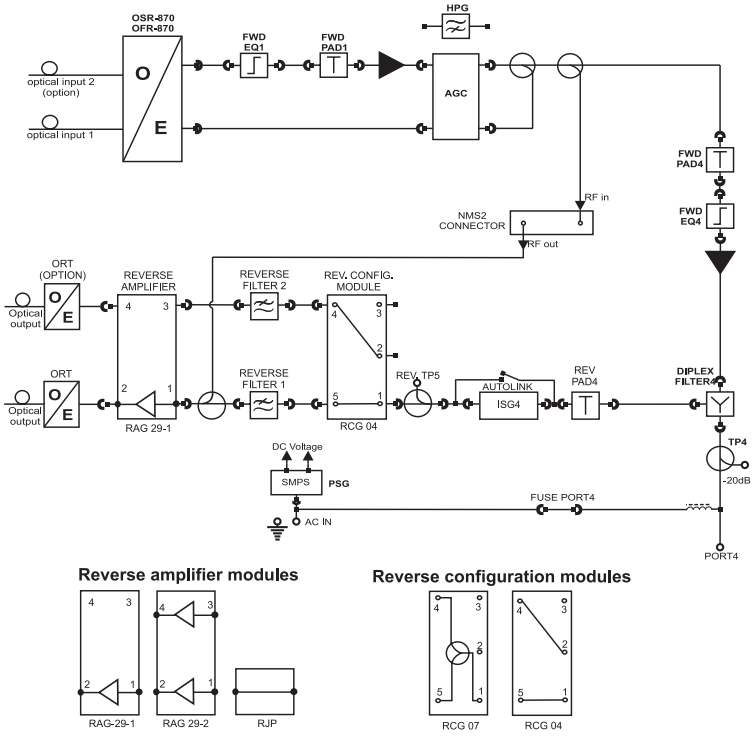
Both OPTI 100, 200 and 300 allows flexible configuration and step by step development of the HFC network. The use of universal colour coded plug-in modules leads to a convenient maintenance and operational costs reduction.

OPTI 100RX

· Output level typ. 1 x 112 dBµV
· Forward path redundancy
· Reverse path redundancy
· Network Management System ready
· AGC controlled by pilot tone or optical power
· Separate RF slope and level control
· Remote or local powering and low power consumption
· IP 67 compact housing
· GaAs FET power doubler technology
· Line or mains powered

TYPE	ORDER NO.	SPECIFICATIONS
DKT OPTI 100RXM	65904	1 output, 1*129 dBµV output level, mains powered
DKT OPTI 100RXL	65901	1 output, 1*129 dBµV output level, line powered

Block Diagram



OPTI 100RX

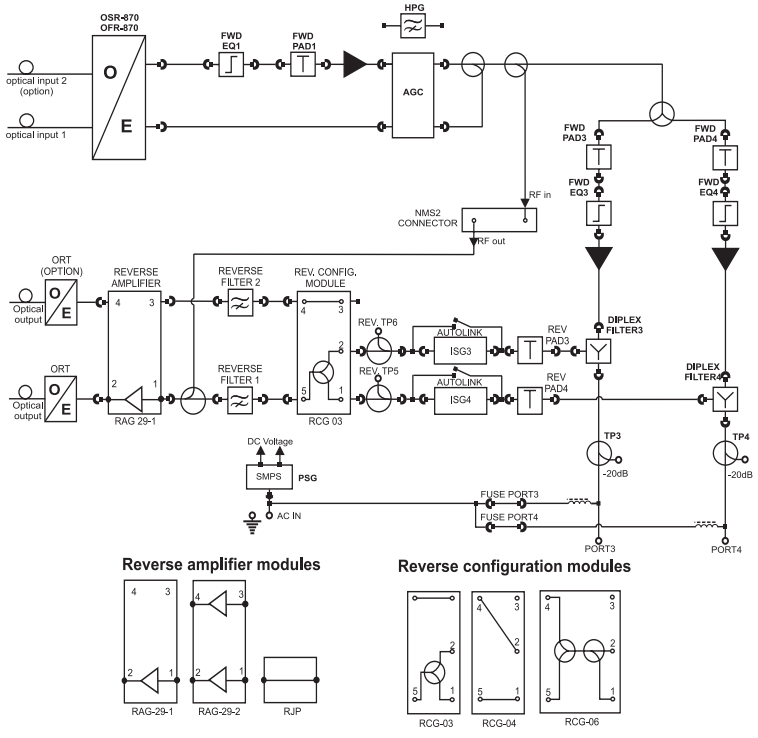
OPTICAL PARAMETERS	VALUE	COMMENT
Wavelength [nm]	1100 ÷ 1600	
Optical input power range [dBm]	-5 ÷ +2	
Equivalent input noise [pA$\sqrt{Hz}$]	≤8	
Optical connector	SC/APC	Others on request
Optical power test point [V/mW]	1 ± 0.1	
RF level at the output of the OFR receiver [dBμV]	78 ± 1	4.5% OMI/channel, 0dBm input optical power
Optical power indicator [dBm]	- 5	Green – optical power > -5dBm Red – optical power < -5dBm
RF PARAMETERS	**VALUE**	**COMMENT**
Forward bandwidth [Mhz]	47...85 ÷ 862	DF diplex filters
Maximum output RF level [dBμV]	117 ± 1	0dBm input optical power, 4.5% OMI/channel
Flatness [dB]	±0.75	DF diplex filters, AT 800 and ATG 800 jumpers
Slope [dB]	±1	DF diplex filters, AT 800 and ATG 800 jumpers
CNR [dBc]	56	4.5%OMI/ channel, 10dB passive optical loss
Output level typ. [dBμV] DIN CTB ≤ -60dBc CSO ≤ -60dBc	 129 114 112	 According to DIN-4500 4B According to EN 50083-3; 9dB interstage equalizer, 42 CENELEC carriers, optical transmitter distortions not included
Reverse bandwidth [MHz]	5 ÷ 30...65	DF diplex filters
Reverse gain [dB]	26 ± 0.75	Port 4 to ORT reverse transmitter; DF diplex filters, ATG 800 jumpers, RCG 04 configuration module, RAG amplifier
Reverse noise figure [dB]	≤ 7	DF diplex filters, ATG 800 jumpers, RCG 04 configuration module and RAG amplifier
NPR [dBc]	≤-60	RAG amplifier, 27dBmV/Hz signal @ 60MHz
HUM modulation @ 12A [dBc] 5 ÷ 15MHz 15 ÷ 65MHz 85 ÷ 862MHz	≤-55 ≤-60 ≤-60	@ 791.25 MHz
RF return loss [dB]	≤-18	f ≤ 40MHz; f > 40MHz: +1.5/oct but ≤-10
Test point @ input [dB]	-20 ± 1	Relative to the output of OFR receiver
Test points @ outputs [dB]	-20 ± 1	Directional coupler
Test points @ reverse inputs [dB]	-20 ± 1	Directional coupler
GENERAL PARAMETERS	**VALUE**	**COMMENT**
Number of RF ports/connectors type	2 / Pg11	Port 1 – reverse auxiliary input 5 ÷ 210MHz for ORT transmitter
AC voltage range [V]	35 ÷ 65	AC 50 ÷ 60Hz
Maximum current for AC IN port [A]	15	Power insertion port
Maximum current for RF port [A]	12	All RF ports, except Port 1
AC current consumption [mA] 35VAC 48VAC 65VAC	850 660 510	RAG amplifier and OFR receiver
AC power consumption [W]	25 26	RAG amplifier and OFR receiver RAG amplifier, OFR receiver and ORT transmitter
Protection class IP	IP 67	
Operating ambient temperature range [°C]	-40 ÷ +60	
MTBF [years]	>30	@25°C, without ORT transmitter
Dimensions (W x L x H) [mm]	245 x 195 x 125	
Weight [kg]	4.3	

OPTI 200RX

· Output level typ. 2 x 112 dBµV
· Forward path redundancy
· Reverse path redundancy or segmentation
· Network Management System ready
· AGC controlled by pilot tone or optical power
· Separate RF slope and level control
· Remote or local powering and low power consumption
· IP 67 compact housing
· GaAs FET power doubler technology
· Line or mains powered

TYPE	ORDER NO.	SPECIFICATIONS
DKT OPTI 200RXM	65905	2 outputs, 2*129 dBµV output level, mains powered
DKT OPTI 200RXL	65902	2 outputs, 2*129 dBµV output level, line powered

Block Diagram



OPTI 200RX

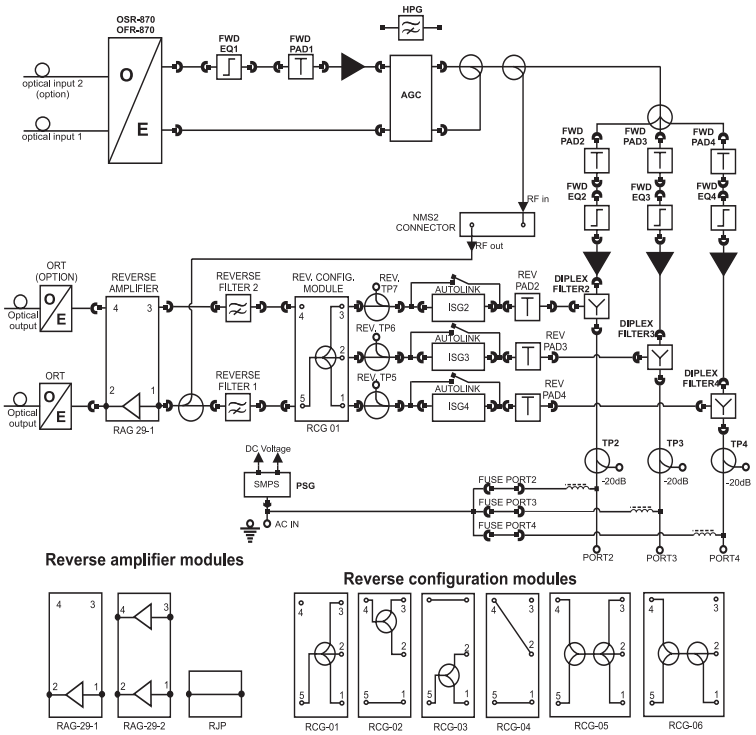
OPTICAL PARAMETERS	VALUE	COMMENT
Wavelength [nm]	1100 ÷ 1600	
Optical input power range [dBm]	-5 ÷ +2	
Equivalent input noise [pA$\sqrt{Hz}$]	≤8	
Optical connector	SC/APC	Others on request
Optical power test point [V/mW]	1 ± 0.1	
RF level at the output of the OFR receiver [dBμV]	78 ± 1	4.5% OMI/channel, 0dBm input optical power
Optical power indicator [dBm]	- 5	Green – optical power > -5dBm Red – optical power < -5dBm
RF PARAMETERS	**VALUE**	**COMMENT**
Forward bandwidth [Mhz]	47...85 ÷ 862	DF diplex filters
Maximum output RF level [dBμV]	2 x 117 ± 1	0dBm input optical power, 4.5% OMI/channel
Flatness [dB]	±0.75	DF diplex filters, AT 800 and ATG 800 jumpers
Slope [dB]	±1	DF diplex filters, AT 800 and ATG 800 jumpers
CNR [dBc]	56	4.5%OMI/ channel, 10dB passive optical loss
Output level typ. [dBμV] DIN CTB ≤ -60dBc CSO ≤ -60dBc	 129 114 112	 According to DIN-4500 4B According to EN 50083-3; 9dB interstage equalizer, 42 CENELEC carriers, optical transmitter distortions not included
Reverse bandwidth [MHz]	5 ÷ 30...65	DF diplex filters
Reverse gain [dB]	23 ± 0.75	Port 4 to ORT reverse transmitter; DF diplex filters, ATG 800 jumpers, RCG 04 configuration module, RAG amplifier
Reverse noise figure [dB]	≤ 10	DF diplex filters, ATG 800 jumpers, RCG 04 configuration module and RAG amplifier
NPR [dBc]	≤-60	RAG amplifier, 27dBmV/Hz signal @ 60MHz
HUM modulation @ 12A [dBc] 5 ÷ 15MHz 15 ÷ 65MHz 85 ÷ 862MHz	≤-55 ≤-60 ≤-60	@ 791.25 MHz
RF return loss [dB]	≤-18	f ≤ 40MHz; f > 40MHz: +1.5/oct but ≤-10
Test point @ input [dB]	-20 ± 1	Relative to the output of OFR receiver
Test points @ outputs [dB]	-20 ± 1	Directional coupler
Test points @ reverse inputs [dB]	-20 ± 1	Directional coupler
GENERAL PARAMETERS	**VALUE**	**COMMENT**
Number of RF ports/connectors type	3 / Pg11	Port 1 – reverse auxiliary input 5 ÷ 210MHz for ORT transmitter
AC voltage range [V]	35 ÷ 65	AC 50 ÷ 60Hz
Maximum current for AC IN port [A]	15	Power insertion port
Maximum current for RF port [A]	12	All RF ports, except Port 1
AC current consumption [mA] 35VAC 48VAC 65VAC	1500 1150 850	RAG amplifier and OFR receiver
AC power consumption [W]	40 42	RAG amplifier and OFR receiver RAG amplifier, OFR receiver and ORT transmitter
Protection class IP	IP 67	
Operating ambient temperature range [°C]	-40 ÷ +60	
MTBF [years]	>30	@25°C, without ORT transmitter
Dimensions (W x L x H) [mm]	245 x 195 x 125	
Weight [kg]	4.3	

OPTI 300RX

· Output level typ. 3 x 110 dBµV
· Forward path redundancy
· Reverse path redundancy or segmentation
· Network Management System ready
· AGC controlled by pilot tone or optical power
· Separate RF slope and level control
· Remote or local powering and low power consumption
· IP 67 compact housing
· GaAs FET Push-Pull technology
· Line or mains powered

TYPE	ORDER NO.	SPECIFICATIONS
DKT OPTI 300RXM	65906	3 outputs, 3*126 dBµV output level, mains powered
DKT OPTI 300RXL	65903	3 outputs, 3*126 dBµV output level, line powered

Block Diagram



OPTI 300RX

OPTICAL PARAMETERS	VALUE	COMMENT
Wavelength [nm]	1100 ÷ 1600	
Optical input power range [dBm]	-5 ÷ +2	
Equivalent input noise [pA$\sqrt{Hz}$]	≤ 8	
Optical connector	SC/APC	Others on request
Optical power test point [V/mW]	1 ± 0.1	
RF level at the output of the OFR receiver [dBμV]	78 ± 1	4.5% OMI/channel, 0dBm input optical power
Optical power indicator [dBm]	- 5	Green – optical power > -5dBm Red – optical power < -5dBm
RF PARAMETERS	**VALUE**	**COMMENT**
Forward bandwidth [Mhz]	47...85 ÷ 862	DF diplex filters
Maximum output RF level [dBμV]	3 x 117 ± 1	0dBm input optical power, 4.5% OMI/channel
Flatness [dB]	±0.75	DF diplex filters, AT 800 and ATG 800 jumpers
Slope [dB]	±1	DF diplex filters, AT 800 and ATG 800 jumpers
CNR [dBc]	56	4.5%OMI/ channel, 10dB passive optical loss
Output level typ. [dBμV] DIN CTB ≤ -60dBc CSO ≤ -60dBc	 126 110 110	 According to DIN-4500 4B According to EN 50083-3; 9dB interstage equalizer, 42 CENELEC carriers, optical transmitter distortions not included
Reverse bandwidth [MHz]	5 ÷ 30...65	DF diplex filters
Reverse gain [dB]	21 ± 0.75	Port 4 to ORT reverse transmitter; DF diplex filters, ATG 800 jumpers, RCG 04 configuration module, RAG amplifier
Reverse noise figure [dB]	≤ 12	DF diplex filters, ATG 800 jumpers, RCG 04 configuration module and RAG amplifier
NPR [dBc]	≤ -60	RAG amplifier, 27dBmV/Hz signal @ 60MHz
HUM modulation @ 12A [dBc] 5 ÷ 15MHz 15 ÷ 65MHz 85 ÷ 862MHz	≤ -55 ≤ -60 ≤ -60	@ 791.25 MHz
RF return loss [dB]	≤ -18	f ≤ 40MHz; f > 40MHz: +1.5/oct but ≤-10
Test point @ input [dB]	-20 ± 1	Relative to the output of OFR receiver
Test points @ outputs [dB]	-20 ± 1	Directional coupler
Test points @ reverse inputs [dB]	-20 ± 1	Directional coupler
GENERAL PARAMETERS	**VALUE**	**COMMENT**
Number of RF ports/connectors type	4 / Pg11	Port 1 – reverse auxiliary input 5 ÷ 210MHz for ORT transmitter
AC voltage range [V]	35 ÷ 65	AC 50 ÷ 60Hz
Maximum current for AC IN port [A]	15	Power insertion port
Maximum current for RF port [A]	12	All RF ports, except Port 1
AC current consumption [mA] 35VAC 48VAC 65VAC	1500 1150 850	RAG amplifier and OFR receiver
AC power consumption [W]	40 42	RAG amplifier and OFR receiver RAG amplifier, OFR receiver and ORT transmitter
Protection class IP	IP 67	
Operating ambient temperature range [°C]	-40 ÷ +60	
MTBF [years]	>30	@25°C, without ORT transmitter
Dimensions (W x L x H) [mm]	245 x 195 x 125	
Weight [kg]	4.3	

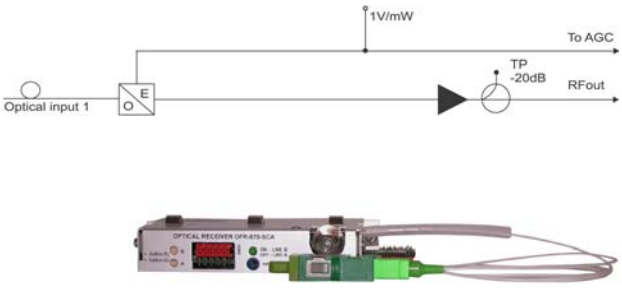
PLUG-IN MODULES FOR OPTI 100, 200 AND 300

OPTICAL RECEIVER MODULE

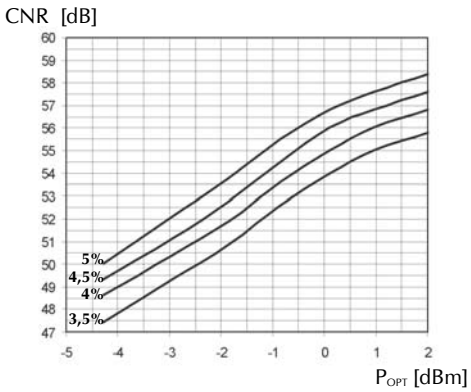
Type: OFR 870-SCA

PARAMETERS	VALUE	COMMENT
Wavelength [nm]	1100 ÷ 1600	
Optical input power range [dBm]	-5 ÷ +2	
Bandwidth [MHz]	47 ÷ 870	
Equivalent input noise [pA$\sqrt{Hz}$]	≤ 8	
Optical connector	SC/APC	Others on request
Optical power test point [V/mW]	1 ± 0,1	
RF level at the output of the module [dBμV]	78 ± 1	4,5% OMI/channel, 0dBm input optical power
Optical Power Indicator [dBm]	-5	Green - optical power > -5dBm Red - optical power < -5dBm
RF test point - directional [dB]	-20	Relative to module output signal

Block diagram



CNR vs. optical input power and OMI /channel

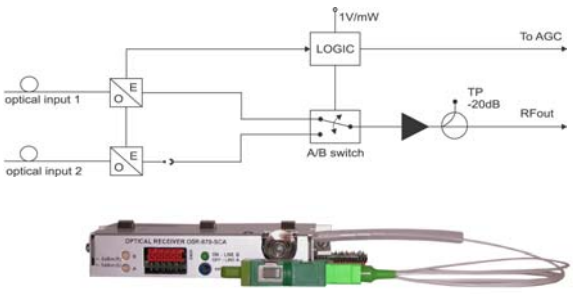


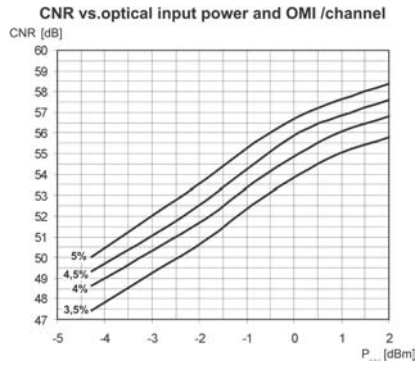
OPTICAL RECEIVER WITH REDUNDANCY MODULE

Type: OSR 870-SCA

PARAMETERS	VALUE	COMMENT
Wavelength [nm]	1100 ÷ 1600	
Optical input power range [dBm]	-5 ÷ +2	
Bandwidth [MHz]	47 ÷ 870	
Equivalent input noise [pA$\sqrt{Hz}$]	≤ 8	
Optical connector	SC/APC	Others on request
Optical power test point [V/mW]	1 ± 0,1	
RF level at the output of the module [dBμV]	78 ± 1	4,5% OMI/channel, 0dBm input optical power
Optical Power Indicator [dBm]	-5	Green - optical power > -5dBm Red - optical power < -5dBm
RF test point - directional [dB]	-20	Relative to module output signal

Block diagram



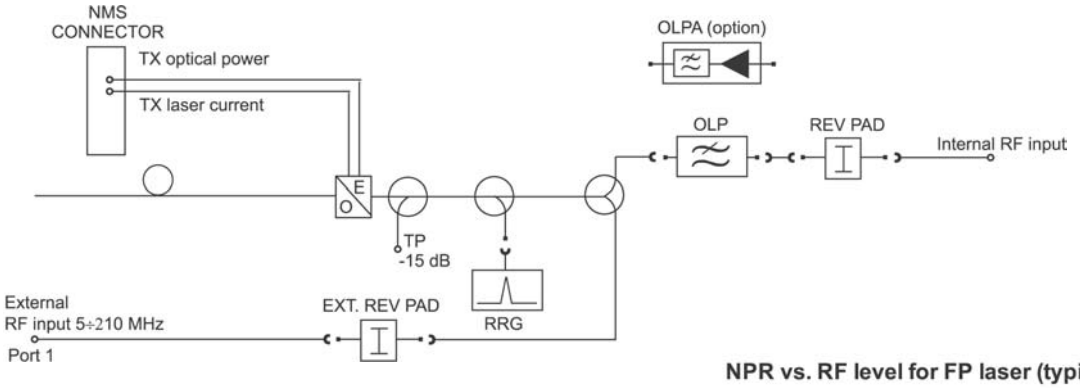


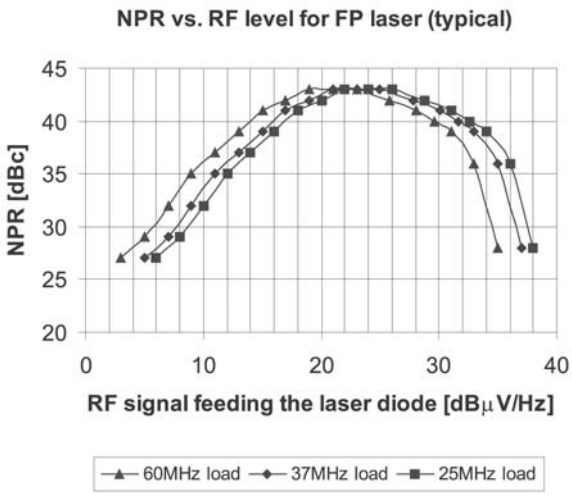
FP 1310 NM OPTICAL TRANSMITTER MODULE

Type: ORT F1310-SCA, ORT F1310-SCA/42/, ORT F1310-SCA/30/

PARAMETERS	VALUE	COMMENT
Laser type	FP Non-isolated	
Wavelength [nm]	1310 ± 40	
Optical output power [dBm]	0 ± 1	
Bandwidth [MHz] · ORT F1310-SCA · ORT F1310-SCA/42/ · ORT F1310-SCA/30/	 5 ÷ 65 5 ÷ 42 5 ÷ 30	For internal RF input
Minimum input level for NPR > 30dB [dBμV/Hz] · ORT F1310-SCA · ORT F1310-SCA/42/ · ORT F1310-SCA/30/	 6 8 9	RF signal feeding the laser diode @ 25°C, 5dB passive optical loss, for: 60 MHz load 37 MHz load 25 MHz load
Dynamic range for NPR > 30dB [dB]	>25	5dB optical loss
Optical connector	SC/APC	Others on request
Laser power status indicator [dBm]	-3	Green - optical power > -3dBm Red - optical power < -3dBm
RF test point - directional [dB]	-15	Relative to RF signal feeding the laser diode
Insertion loss for internal RF input [dB]	5	For 0dB pad and OLP module
Bandwidth [MHz]	5 ÷ 210	For external RF input - port 1
Insertion loss for external RF input [dB]	4	For 0dB pad
OMI variation over temperature [dB]	± 2	

Block diagram



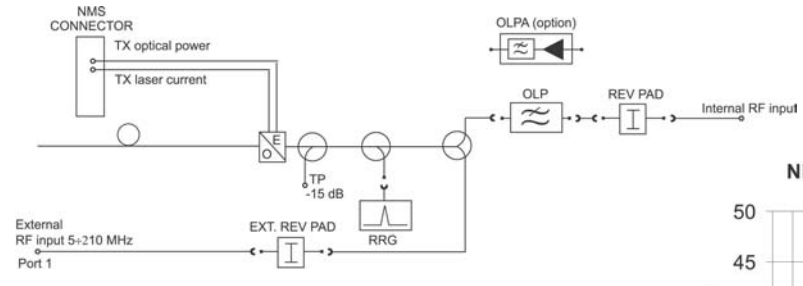


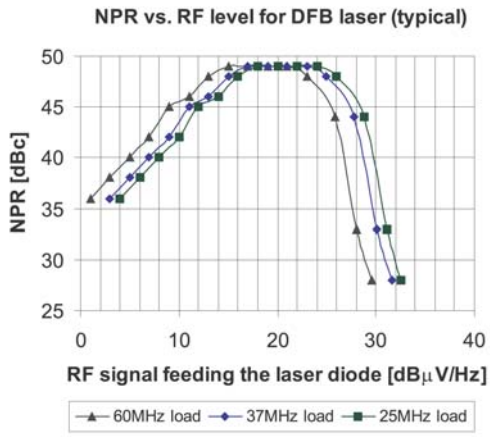
DFB 1310 NM OPTICAL TRANSMITTER MODULE

Type: ORT D1310-SCA, ORT D1310-SCA/42/, ORT D1310-SCA/30/

PARAMETERS	VALUE	COMMENT
Laser type	DFB Isolated	
Wavelength [nm]	1310 ± 40	
Optical output power [dBm]	0 ± 1	
Bandwidth [MHz] · ORT D1310-SCA · ORT D1310-SCA/42/ · ORT D1310-SCA/30/	 5 ÷ 65 5 ÷ 42 5 ÷ 30	For internal RF input
Minimum input level for NPR > 35dB [dBμV/Hz] · ORT D1310-SCA · ORT D1310-SCA/42/ · ORT D1310-SCA/30/	 1 3 4	RF signal feeding the laser diode @ 25°C, 5dB passive optical loss, for: 60 MHz load 37 MHz load 25 MHz load
Dynamic range for NPR > 30dB [dB]	>25	5dB optical loss
Optical connector	SC/APC	Others on request
Laser power status indicator [dBm]	-3	Green - optical power > -3dBm Red - optical power < -3dBm
RF test point - directional [dB]	-15	Relative to RF signal feeding the laser diode
Insertion loss for internal RF input [dB]	5	For 0dB pad and OLP module
Bandwidth [MHz]	5 ÷ 210	For external RF input - port 1
Insertion loss for external RF input [dB]	4	For 0dB pad
OMI variation over temperature [dB]	± 2	

Block diagram



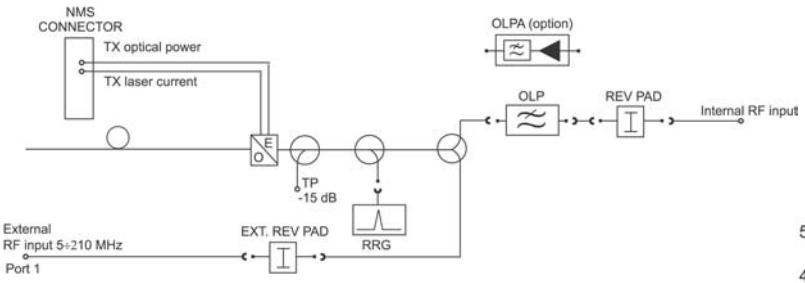


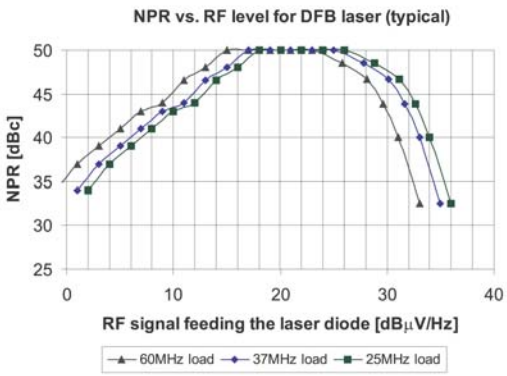
DFB 1310 NM OPTICAL TRANSMITTER MODULE

Type: ORT 3D1310-SCA, ORT 3D1310-SCA/42/, ORT 3D1310-SCA/30/

PARAMETERS	VALUE	COMMENT
Laser type	DFB Isolated	
Wavelength [nm]	1310 ± 40	
Optical output power [dBm]	3 ± 1	
Bandwidth [MHz] · ORT 3D1310-SCA · ORT 3D1310-SCA/42/ · ORT 3D1310-SCA/30/	 5 ÷ 65 5 ÷ 42 5 ÷ 30	For internal RF input
Minimum input level for NPR > 35dB [dBμV/Hz] · ORT 3D1310-SCA · ORT 3D1310-SCA/42/ · ORT 3D1310-SCA/30/	 0 2 3	RF signal feeding the laser diode @ 25°C, 5dB passive optical loss, for: 60 MHz load 37 MHz load 25 MHz load
Dynamic range for NPR > 30dB [dB]	>25	5dB optical loss
Optical connector	SC/APC	Others on request
Laser power status indicator [dBm]	0	Green - optical power > 0dBm Red - optical power < 0dBm
RF test point - directional [dB]	-15	Relative to RF signal feeding the laser diode
Insertion loss for internal RF input [dB]	5	For 0dB pad and OLP module
Bandwidth [MHz]	5 ÷ 210	For external RF input - port 1
Insertion loss for external RF input [dB]	4	For 0dB pad
OMI variation over temperature [dB]	± 2	
Temperature range [°C]	-40 ÷ +55	Optical node ambient temperature

Block diagram



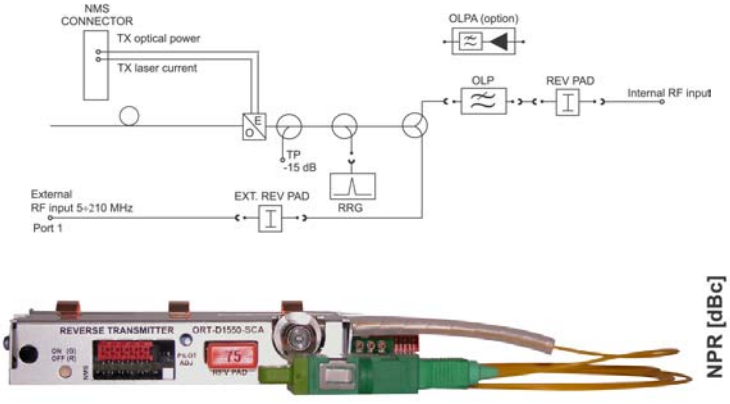


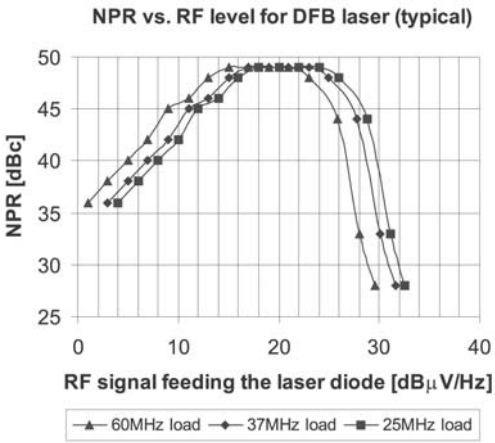
DFB 1550 NM OPTICAL TRANSMITTER MODULE

Type: ORT D1550-SCA, ORT D1550-SCA/42/, ORT D1550/30/

PARAMETERS	VALUE	COMMENT
Laser type	DFB Isolated	
Wavelength [nm]	1550 ± 20	
Optical output power [dBm]	3 ± 1	
Bandwidth [MHz] · ORT D1510-SCA · ORT D1510-SCA/42/ · ORT D1510-SCA/30/	 5 ÷ 65 5 ÷ 42 5 ÷ 30	For internal RF input
Minimum input level for NPR > 35dB [dBμV/Hz] · ORT D1510-SCA · ORT D1510-SCA/42/ · ORT D1510-SCA/30/	 1 3 4	RF signal feeding the laser diode @ 25°C, 5dB passive optical loss, for: 60 MHz load 37 MHz load 25 MHz load
Dynamic range for NPR > 30dB [dB]	>25	5dB optical loss, 60MHz load
Optical connector	SC/APC	Others on request
Laser power status indicator [dBm]	-3	Green - optical power > -3dBm Red - optical power < -3dBm
RF test point - directional [dB]	-15	Relative to RF signal feeding the laser diode
Insertion loss for internal RF input [dB]	5	For 0dB pad and OLP module
Bandwidth [MHz]	5 ÷ 210	For external RF input - port 1
Insertion loss for external RF input [dB]	4	For 0dB pad
OMI variation over temperature [dB]	± 2	

Block diagram



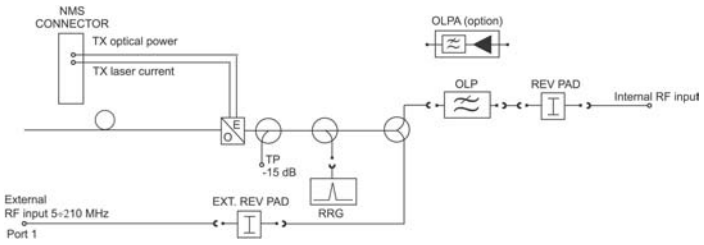


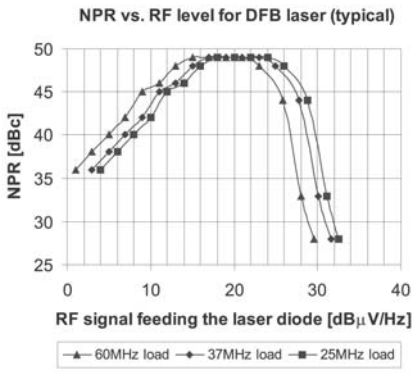
DFB CWDM TRANSMITTER MODULE (XXXX = 1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610 NM)

Type: ORT DCXXXX-SCA, ORT DCXXXX-SCA/42/, ORT DCXXXX/30/

PARAMETERS	VALUE	COMMENT
Laser type	DFB Isolated	
Wavelength [nm]	XXXX ± 3	Narrowband transmitters ±2nm available on request
Optical output power [dBm]	3 ± 1	
Bandwidth [MHz] · ORT DCXXXX-SCA · ORT DCXXXX-SCA/42/ · ORT DCXXXX-SCA/30/	 5 ÷ 65 5 ÷ 42 5 ÷ 30	For internal RF input
Minimum input level for NPR > 35dB [dBμV/Hz] · ORT DCXXXX-SCA · ORT DCXXXX-SCA/42/ · ORT DCXXXX-SCA/30/	 1 3 4	RF signal feeding the laser diode @ 25°C, 5dB passive optical loss, for: 60 MHz load 37 MHz load 25 MHz load
Dynamic range for NPR > 30dB [dB]	>25	5dB optical loss, 60MHz load
Optical connector	SC/APC	Others on request
Laser power status indicator [dBm]	-3	Green - optical power > -3dBm Red - optical power < -3dBm
RF test point - directional [dB]	-15	Relative to RF signal feeding the laser diode
Insertion loss for internal RF input [dB]	5	For 0dB pad and OLP module
Bandwidth [MHz]	5 ÷ 210	For external RF input - port 1
Insertion loss for external RF input [dB]	4	For 0dB pad
OMI variation over temperature [dB]	± 2	

Block diagram



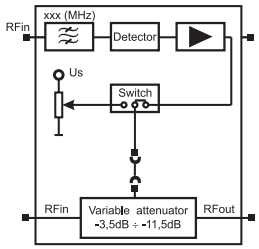


PLUG-IN MODULES FOR OPTI 100, 200 AND 300

AUTOMATIC GAIN CONTROL MODULE CONTROLLED BY PILOT TONE

Type: AGC xxx-x

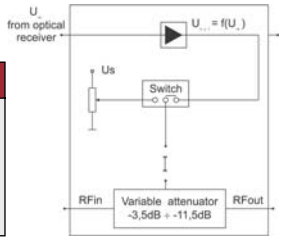
TECHNICAL PARAMETERS			
• Bandwidth [MHz]		• 3 dB bandwidth (minimum) [MHz]	4
· AGC xxx-6	85 ÷ 862	• 20 dB bandwidth [MHz]	15
· AGC xxx-4	54 ÷ 862	• Dynamics [dB]	8
· AGC xxx-3	47 ÷ 862	• AGC insertion loss [dB]	3,5
• Pilot frequency [MHz]	xxx	• Stability over ± 4dB input change [dB]	± 1,5
• Video carrier to pilot tone ratio [dB]	0 ÷ -12		



AUTOMATIC GAIN CONTROL MODULE CONTROLLED BY OPTICAL POWER AT THE INPUT OF RECEIVER

Type: AGC 000-x

TECHNICAL PARAMETERS			
• Bandwidth [MHz]		• Dynamics [dB]	8
· AGC 000-6	85 ÷ 862	• AGC insertion loss [dB]	3,5
· AGC 000-4	54 ÷ 862	• Stability over ± 4dB input change [dB]	± 1
· AGC 000-3	47 ÷ 862		



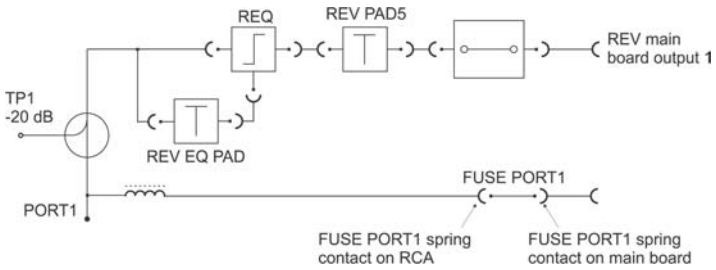
AUTOMATIC GAIN CONTROL MODULE CONTROLLED BY OPTICAL POWER AT THE INPUT OF RECEIVER

Type: HPG xx

FORWARD PATH HIGH-PASS FILTER MODULE	
• Bandwidth [MHz]	
· HPG 65	85 ÷ 862
· HPG 42	54 ÷ 862
· HPG 30	47 ÷ 862

OUTPUT MODULE FOR COAXIAL REVERSE OUTPUT

Type: RCA



OPTICAL NODE CONVERSION KIT

Type: CKG 01

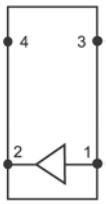
Kit includes:
- optical input adapter PG-16
- cover plate
- fibre holders
- mounting screws

PLUG-IN MODULES FOR OPTI 100, 200 AND 300

REVERSE AMPLIFIER MODULE FOR SINGLE REVERSE PATH

Type: RAG 29-1, RAG 29-1/42/, RAG 29-1/30/

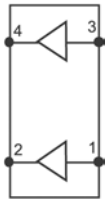
TECHNICAL PARAMETERS			
• Maximum gain for configuration module RCG 04 [dB]	29 ± 0,75	• Inter modulation distortions:	
• Bandwidth [MHz]		· third order beat IMD3 @ 110dBμV[1] [dBc]	≤ - 60
· RAG 29-1	5 ÷ 65	· second order beat IMD2 @ 102dBμV[1] [dBc]	≤ - 60
· RAG 29-1/42/	5 ÷ 42	• Power consumption [W]	1,2
· RAG 29-1/30/	5 ÷ 30	[1] *According to EN 50083-3*	
• Flatness [dB]	± 0,7		
• Noise figure for configuration module RCG 04 [dB]	≤ 6		
• NPR [dBc] for:			
· 60 MHz load @ 27dBμV/Hz	≤ - 60		
· 37 MHz load @ 29dBμV/Hz	≤ - 60		
· 25 MHz load @ 30dBμV/Hz	≤ - 60		



REVERSE AMPLIFIER MODULE FOR DUAL REVERSE PATH

Type: RAG 29-2, RAG 29-2/42/, RAG 29-2/30/

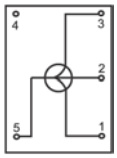
TECHNICAL PARAMETERS			
• Maximum gain for configuration module RCG 04 [dB]	2 x 29 ± 0,75	• Inter modulation distortions:	
• Bandwidth [MHz]		· third order beat IMD3 @ 110dBμV1 [dBc]	≤ - 60
· RAG 29-1	5 ÷ 65	· second order beat IMD2 @ 102dBμV1 [dBc]	≤ - 60
· RAG 29-1/42/	5 ÷ 42	• Power consumption [W]	2,4
· RAG 29-1/30/	5 ÷ 30	[1] *According to EN 50083-3*	
• Flatness [dB]	± 0,7		
• Noise figure for configuration module RCG 04 [dB]	≤ 6		
• NPR [dBc] for:			
· 60 MHz load @ 27dBμV/Hz	≤ - 60		
· 37 MHz load @ 29dBμV/Hz	≤ - 60		
· 25 MHz load @ 30dBμV/Hz	≤ - 60		



REVERSE CONFIGURATION MODULE

Type: RCG 01

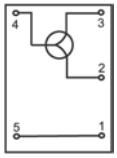
Used for 3-outputs distribution amplifier or 3-outputs optical node with single reverse path.
Provides equal sum of ports 2, 3 and 4.



REVERSE CONFIGURATION MODULE

Type: RCG 02

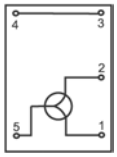
Used for 3-outputs optical node with dual reverse path.
Provides equal sum of ports 2 and 3. Port 4 is configured as an independent reverse path.



REVERSE CONFIGURATION MODULE

Type: RCG 03

Used for 2-outputs distribution amplifier or 2-outputs optical node with single reverse path as well as for 3-outputs optical node with dual reverse path.
Provides equal sum of ports 3 and 4. Port 2 is configured as an independent reverse path (for 3-outputs optical node).

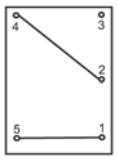


PLUG-IN MODULES FOR OPTI 100, 200 AND 300

REVERSE CONFIGURATION MODULE

Type: RCG 04

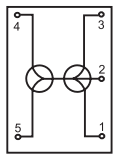
Used for 1-outputs optical node with single reverse path or for 2-outputs optical node with dual reverse path. Ports 3 and 4 are configured as independent reverse paths (for 2-outputs optical node)



REVERSE CONFIGURATION MODULE

Type: RCG 05

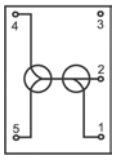
Used for 3-outputs optical node with dual reverse path.
Allows redundant transmission while using redundant optical transmitter.



REVERSE CONFIGURATION MODULE

Type: RCG 06

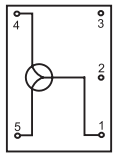
Used for 2-outputs optical node with dual reverse path.
Allows redundant transmission while using redundant optical transmitter.



REVERSE CONFIGURATION MODULE

Type: RCG 07

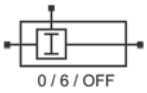
Used for 1-output optical node with dual reverse path.
Allows redundant transmission while using redundant optical tramsmiter.



INGRESS SWITCH MODULE

Type: ISG 65

Used with Network Management System



ACTIVE BAND-PASS FILTER MODULE 15 ÷ 65 MHZ FOR OPTICAL TRANSMITTER

Type: OLPA 65

Provides gain of 20dB.

ACTIVE BAND-PASS FILTER MODULE 15 ÷ 42 MHZ FOR OPTICAL TRANSMITTER

Type: OLPA 42

Provides gain of 20dB.

ACTIVE BAND-PASS FILTER MODULE 15 ÷ 30 MHZ FOR OPTICAL TRANSMITTER

Type: OLPA 30

Provides gain of 20dB.

DIPLEX FILTER MODULE

Type: DF 65A

Frequency range: 5 ÷ 65/ 85 ÷ 862 MHz

DIPLEX FILTER MODULE

Type: DF 42A

Frequency range: 5 ÷ 42 / 54 ÷ 862 Mhz

DIPLEX FILTER MODULE

Type: DF 30A

Frequency range: 5 ÷ 30 / 47 ÷ 862 MHz

PLUG-IN MODULES FOR OPTI 100, 200 AND 300

FORWARD PATH FIXED EQUALIZER MODULE


Type: EQ 801 ÷ EQ 824

Equalization range 1 ÷ 24dB with step 1

FORWARD PATH CABLE SIMULATOR MODULE

Type: CS 80x

x - signal attenuation @ 862MHz [dB] (x = 3,6)

FORWARD JUMPER MODULE


Type: AT 800

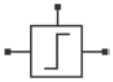
Installed in place of diplex filters and/or forward equalizers if they are not used

FIXED ATTENUATOR MODULE


Type: ATG 800 ÷ ATG 820

Used in forward and reverse path. Attenuation range 0 ÷ 20dB with step 1

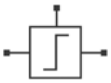
REVERSE PATH EQUALIZER MODULE

Type: REQ 65

Equalization is determined by ATG 8xx attenuator (REV EQ PAD)

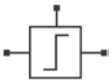
REVERSE PATH EQUALIZER MODULE

Type: REQ 42

Equalization is determined by ATG 8xx attenuator (REV EQ PAD)

REVERSE PATH EQUALIZER MODULE

Type: REQ 30

Equalization is determined by ATG 8xx attenuator (REV EQ PAD)

REVERSE JUMPER MODULE

Type: RJP

HIGH PASS FILTER 15 MHZ MODULE FOR REVERSE PATH

Type: RHP 15

TERMINATOR 75 W MODULE

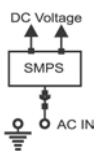
Type: ATG 075

SINGLE TONE REFERENCE GENERATOR MODULE

Type: RRG xxx

xxx - frequncy tone [MHz]

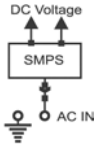
SWITCH MODE POWER SUPPLY (SMPS) MODULE



Type: PSG 65

35 ÷ 65 VAC

SWITCH MODE POWER SUPPLY (SMPS) MODULE



Type: PSG 90

40 ÷ 90VAC

TRANSPONDERS SPECIFICATIONS *(HMS)*

FlexStat II

- Fully compatible with all AM status monitoring and performance products
- Frequency agile
- Downloadable firmware
- Firmware can be downloaded locally or via RF
- Wide operating temperature Range
- Proven reliability
- Small size and easy mounting
- Multi channel 8-bit A/D converter
- Serial Peripherals for Interface control or external peripherals and I/O expansion circuits

PARAMETER	VALUE
Receive frequency [MHz]	Agile, 50-53, 73-76, 89-93, 107-110, 456-462
Nominal RF input level [dBuV]	60
Input level range [dBuV]	40-80
Interface rejection [dBc]	0 @ +/-300 kHz 20 @ +/-600 kHz
Receiver spurious outputs [dBuV]	45 max. 50-1000 MHz
Transmit frequency [MHz]	Agile 5.5-8, 8-12, 12-18, 18-27, 23-32, 27-40
Frequency tolerance [%]	0,1
Output RF level [dBuV]	105, +/- 3dB @ maximum
Output level attenuator [dB]	-6, -12, -18 down from max., +/-2
Bandwidth [kHz]	300 @ -40dBc 500 @ -50 dBc
Transmitter spurious outputs [dBc]	-55 @ max., 5-50 MHz
Modulation type	FSK, +/-50 kHz nominal
Modulation tolerance [kHz]	37.5 min. 65 max.
Data format	Asynchronous, NRZ, Burst Packet
Data rate [kb]	38.4
Operating temperature [°C]	-40 - +100
Humidity [%]	0 – 90 non-condensing
Analog inputs quanity	20[1] 5[2]
Digital inputs quanity	20[1] 2[2]
Digital outputs quanity	20[1] 2[2]

[1] With external multiplexing
[2] Without external multiplexing

FlexStat III

- Wide operating frequency range
- Fully compatible with all AM status monitoring and performance products
- SCTE HMS-005/004 compliant
- Downloadable firmware
- Firmware can be downloaded locally or via RF
- Wide operating temperature Range
- Proven reliability
- Small size and easy mounting
- Multi channel 8-bit A/D converter
- Serial Peripheral Interface for control or external peripherals and I/O expansion circuits

PARAMETER	VALUE
Receive frequency [MHz]	Agile, 48-120
Nominal RF input level [dBuV]	60
Input level range [dBuV]	40-80
Interface rejection [dBc]	0 @ +/-300 kHz 20 @ +/-600 kHz
Receiver spurious outputs [dBuV]	45 max. 50-1000 MHz
Transmit frequency [MHz]	Agile 5-42
Frequency tolerance [%]	0,1
Output RF level [dBuV]	105, +/- 3dB @ maximum
Output level attenuator [dB]	0- -30, 2 dB steps
Bandwidth [kHz]	300 @ -40dBc 500 @ -50 dBc
Transmitter spurious outputs [dBc]	-60 @ max., 5-50 MHz
Output match [dB]	12, 5-42 MHz
Modulation type	FSK, +/-50 kHz nominal
Modulation tolerance [kHz]	+/-2
Data format	Asynchronous, NRZ, Burst Packet
Data rate [kb]	38.4
Operating temperature [°C]	-40 - +85
Humidity [%]	0 – 90 non-condensing
Temperature range [°C]	-40 - +100
Accuracy/resolutuon [°C]	+-5 / 1
Analog inputs quanity	20[1] 5[2]
Digital inputs quanity	20[1] 2[2]
Digital outputs quanity	20[1] 2[2]

DKT

Denmark:
Fanøvej 6
DK-4060 Kr. Såby
Tel.: +45 4646 2626
e-mail: dkt@dkt.dk
COMEGA . com
Fax.: +45 4646 2625

Sweden:
Axel Danielssons Väg 257
S-215 82 Malmö
Tel.: +46 4037 4770
e-mail: dktab@dkt.se
COMEGA . com
Fax.: +46 4037 4779

Finland:
Runnarinkuja 3
FIN-60800 Ilmajoki
Tel.: +358 6 4245 111
e-mail: myynti@dkt.fi
COMEGA . com
Fax.: +358 6 4245 110