

Optical transceiving systems

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- Accessories optical nodes - MINI NODE



FIBER LINE optical receivers

LR 52



Optical Dual Return path receiver

- Dual optical return path receiver for WISI TOPLINE HEADEND
- Optical input level -12 dBm ... +2 dBm
- 2 input channels with 50 dB crosstalk isolation
- NMS via Headend controller OV 51S or remote interface OV 52
- Input frequency range 5-100 MHz
- Input wavelength from 1290 to 1600 nm
- LASER CLASS 1

RF characteristics

Frequency range	5 - 100 MHz	
Impedance	75 Ω	
Amplitude response	< ± 0,75 dB	
Output level	ALC on	90 dBμV ± 2 dB
Attenuation	ALC on	0 - 20 dB
	ALC off	0 - 50 dB
Isolation between output 1-2	Dual mode	> 50 dB
	Combining mode	> 20 dB
	Redundancy mode	> 20 dB
Output return loss	18 dB	
Testpoint	- 20 dB	
Optical characteristics		
Wavelength	1290-1600 nm	
Input level	-12 dBm...+2 dBm	
Fiber	single mode 9 / 125 μm	
Connector	E 2000 APC F-type	
NMS-Functions		
Monitoring	Selection of in and output Mode	
	Test Point Optical Input level	
	Optical Input ALC	
	Redundancy threshold	
Selection	Mode	Dual, redundancy, combining
	ALC	
	Optical power	
	Redundancy threshold	
	Alarms	
Alarms	Redundancy	< -20 dB
	Optical power	
Generals		
Housing	Zinc die-cast	
Operating temperature	0°C...+50°C	
Storage temperature	-25°C...+75°C	
	95%	
EMC	CE, Class A	

FIBER LINE optical transmitters

LT 53 LT 53 0400



DFB laser module

- Optical transmitter for WISI TOPLINE HEADEND
- Input frequency range 5-862 MHz
- Wavelength 1310 nm
- NMS via Headend controller OV 51S or remote interface OV 52
- LASER CLASS 1

RF parameters

Input frequency range	5-862 MHz	
Input level (42 channels)	88 dB μ V \pm 4 dB	
Level adjustment	10 dB	
C/N for 42 channels, opt., link=4 dB	> 50 dB	
CSO for 42 channels CENELEC	> 60 dB	
CTB for 42 channels CENELEC	> 63 dB	
Test socket	- 20 dB	

Optical parameters

Laser type	uncooled isolated DFB laser	
Wavelength	1310 nm \pm 20 nm	
Optical output power	LT 53	2.5 mW (4 dBm)
	LT 53 0400	4mW (6 dBm)

NMS functions

Monitoring	Laser bias	
	Laser temperature	
	Laser output power	
	Level adjustment	
	RF power at laser	

Generals

Housing	Zinc die-cast	
Connectors	RF	F-type
	optical	E 2000 APC
Dimensions	30x260x200 mm	
Operating temperature	-10°C...+50°C	
Storage temperature	-25°C...+75°C	
Max. humidity, non condensing	95%	
Packing unit	1 piece, 4.6 dm ³ , 2.2 kg	
EMC	CE, Class A	



FIBER LINE optical transmitters

LT 54 1000



DFB laser module

- Optical transmitter for WISI TOPLINE HEADEND
- Input frequency range 5-862 MHz
- Wavelength 1310 nm
- NMS via Headend controller OV 51S or remote interface OV 52
- LASER CLASS 1 M

RF parameters

Input frequency range	5-862 MHz
Input level (42 channels)	88 dB μ V \pm 4 dB
C/N for 42 channels, opt., link=10 dB	> 53 dB
CSO for 42 channels CENELEC	> 64 dB
CTB for 42 channels CENELEC	> 67 dB
Test socket	- 20 dB

Optical parameters

Laser type	cooled isolated DFB laser
Wavelength	1310 nm \pm 20 nm
Optical output power	10 mW (10 dBm)

NMS functions

Monitoring

	Laser bias
	Laser temperature
	Laser output power
	Level adjustment
	Tec-Strom
	RF power at laser

Generals

Housing	Zinc die-cast
Connectors	RF F-type
	optical E 2000 APC
Dimensions	30x260x200 mm
Operating temperature	-10°C...+50°C
Storage temperature	-25°C...+75°C
Max. humidity, non condensing	95%
Packing unit	1 piece, 4.6 dm ³ , 2.2 kg
EMC	CE, Class A



FIBER LINE optical transmitters

LT 54 1600



DFB laser module

- Optical transmitter for WISI TOPLINE HEADEND
- Input frequency range 5-862 MHz
- Wavelength 1310 nm
- NMS via Headend controller OV 51S or remote interface OV 52
- LASER CLASS 1 M

RF parameters

Input frequency range	5-862 MHz
Input level (42 channels)	88 dB μ V \pm 4 dB
Level adjustment	10 dB
C/N for 42 channels, opt. attenuation=12 dB	> 53 dB
CSO for 42 channels CENELEC	> 64 dB
CTB for 42 channels CENELEC	> 67 dB
Test socket	- 20 dB

Optical parameters

Laser type	cooled isolated DFB laser
Wavelength	1310 nm \pm 20 nm
Optical output power	16 mW (12 dBm)

NMS functions

Monitoring

	Laser bias
	Laser temperature
	Laser output power
	Level adjustable
	Tec-Strom
	RF power at laser

Generals

Housing	Zinc die-cast
Connector	RF F-type optical E 2000 APC
Dimensions	30x260x200 mm
Operating temperature	-10°C...+50°C
Storage temperature	-25°C...+75°C
Max. humidity, non condensing	95%
Packing unit	1 piece, 4.6 dm ³ , 2.2 kg
EMC	CE, Class A



FIBER LINE optical transmitters

LT 61



Optical transmitter

- 4 dBm DFB-Lasermodule for TOPLINE HEADEND
- Frequency range CATV 45-862 MHz, SAT 950-2200 MHz
- Wavelength 1290-1310 nm
- SAT-ZF and CATV via one Fiber
- Dual band (CATV and SAT-IF) or Single band (CATV or SAT-IF)
- NMS via Headend controller OV 515 or remote interface OV 52
- Laser Class 1

Laser type	DFB Laser uncooled	
Input frequency 1	CATV	45-862 MHz
Input frequency 2	SAT	950-2200 MHz
Input level 42 ch.	CATV	88 dB μ V \pm 4 dB
Input level 40 ch.	SAT	79 dB μ V \pm 4 dB
Dual band	CATV and SAT-IF	
Single band	CATV or SAT-IF	
Test socket	-20 dB	
Single band CATV		
C/N for 42 ch. opt. link 4 dB	>50 dB	
CSO/CTB 42 ch. CENELEC	>60 dB	
Single band SAT IF		
C/N for 40 SAT ch. opt. link 4 dB	>37 dB	
Dual band		
C/N for CATV 42 ch. opt. link 4 dB	>49 dB	
C/N for SAT 40 ch. opt. link 4 dB	>27 dB	
EMC	CE	

FIBER LINE plus

FIBER LINE plus

FIBER LINE plus - Catalogue

Please ask for our catalogue "FIBER LINE plus"! Professional fiber optical equipment for large scale networks.

Optical nodes - COMPACT LINE

LR 43



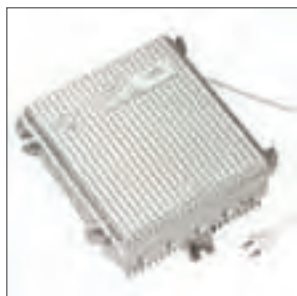
Redundant optical node, local feeding

- Redundant Node with three active outputs
- Integrated splice box
- Plug in RX and TX modules
- All settings via OK41A handset or via NMS system
- NMS interface VT 51
- Electronic upstream configuration (redundancy / clustering)
- ICS for every coax line
- AGC based on optical input level or via pilot carrier with VX58

Downstream	incl. one receiver module		LR 40
Wavelength			1290-1600 nm
Fiber	single mode	9/125 µm	
Optical connector			E 2000 / APC
Frequency range			47-862 MHz
Optical input power	for controlled opt. output level	-5...+3 dBm	
Controlled output level			87-102 dBµV
IMR CTB, CSO	64 dB	Out 1	102 dBµV, 6 dB slope
IMR CTB, CSO	60 dB	Out 1 + 2	114 dBµV, 6 dB slope
Equalizer			0-15 dB
RF test points			-20 dB
Upstream	Optical upst-ream trans-mitter		
Wavelength	FP Laser	LT 40	1310 ± 40 nm
	DFB Laser	LT 41	1310 ± 20 nm
		LT 45 1510	1510 ± 3 nm
		LT 45 1530	1530 ± 3 nm
		LT 45 1550	1550 ± 3 nm
		LT 45 1570	1570 ± 3 nm
Optical output power			3 dBm
Frequency range			10-(30)65 MHz
Broadband RF-input	106 dBµV = 5% OMI	10-300 MHz	
Nominal input level			75 dBµV
OMI control range	@ 75 dBµV input	3-10%	
Test point			-20 dB
Pilot frequencies		LT 40 / LT 41 1310	6.5 MHz
		LT 45 1510	6.6 MHz
		LT 45 1530	6.8 MHz
		LT 45 1550	7.0 MHz
		LT 45 1570	7.2 MHz
General			
RF connectors			PG 11
Operating voltage			180-265 VAC
Operating temperature			-20°C...+55°C
Power consumption	typ.	incl. 1xLR 40, 1xLT 41	< 45 W
	max	incl. 2xLR 40, 2xLT 41, VT 51	53 W

Optical nodes - COMPACT LINE

LR 43



Redundant optical node, local feeding

Protection class	IP 66	
Dimensions	288x125x302 mm	
EMC	CE, Class A	
Downstream		
Monitoring	Optical input power	
	Attenuator setting	
	Equalizer out 1,2,3 setting	
	Redundancy switch position	
	Receiver configuration	
	Pilot level	
Configuration	Attenuation out 1, 2, 3	0-15 dB
	Equalizer out 1, 2, 3	0-15 dB
	Redundancy mode	auto / manual
	Redundancy switch position	Rec. 1 / Rec. 2
	AGC control	on / off
	Alarm / warning thresholds	
Upstream		
Monitoring	Optical output power	
	Temperature	
	Transmitter configuration	
	Redundancy / clustering switch position	
	ICS position	
	Reference pilot frequency	
Configuration	Laser	on / off
	OMI	3-8%
	ICS1, ICS2, ICS3	0 / 8 / >45 dB
	Redundancy / clustering switch position	
	Alarm / warning thresholds	
Alarms / Warnings		
	Optical input power too high / too low	
	Optical transmitting power too high / too low	
	Temperature too high / too low	
	AGC range limit	
	Pilot level too high / too low	

Optical nodes - COMPACT LINE

LR 63



Redundant optical Node, remote feeding

- Redundant Node with three active outputs
- Integrated splice box
- Plug in RX and TX modules
- All settings via OK41A handset or via NMSystem
- NMS interface VT 51
- Electronic upstream configuration (redundancy / clustering)
- ICS for every coax line
- AGC based on optical input level or via pilot carrier with VX58

Downstream		incl. one receiver module	
Wavelength	1290-1600 nm		
Fiber	single mode	9/125 μm	
Optical connector	E 2000 / APC		
Frequency range	47-862 MHz		
Optical input power	for controlled optical output level	-5...+3 dBm	
Controlled output level			
IMR CTB/CSO	64 dB	Out 1	102 dBμV, 6 dB slope
IMR CTB/CSO	60 dB	Out 2 + 3	114 dBμV, 6 dB slope
Equalizer	0-15 dB		
RF test points	-20 dB		
Upstream		Optical upstream transmitter	
Wavelength	FP Laser	LT 40	1310 ± 40 nm
	DFB Laser	LT 41	1310 ± 20 nm
		LT 45 1510	1510 ± 3 nm
		LT 45 1530	1530 ± 3 nm
		LT 45 1550	1550 ± 3 nm
		LT 45 1570	1570 ± 3 nm
Optical output power	3 dBm		
Frequency range	10-(30)65 MHz		
Broadband RF-Input	106 dBμV = 5% OMI	10-300 MHz	
Nominal input level	75 dBμV		
OMI control range		@ 75 dBμV input	3-10%
ICS 1, 2, 3	0 / 8 / >45 dB		
Pilot frequencies		LT 40 / LT 41 1310	6.5 MHz
		LT 45 1510	6.6 MHz
		LT 45 1530	6.8 MHz
		LT 45 1550	7.0 MHz
		LT 45 1570	7.2 MHz
Generals			
RF connectors	PG 11		
Operating voltage	27-65 VAC		
Operating temperature	-20°C...+55°C		
Power consumption	incl.	1xLR 40, LT 41	< 45 W
		^{max}	53 W



Optical nodes - COMPACT LINE

LR 63



Redundant optical Node, remote feeding

Protection class	IP 66
Dimensions	288x125x302 mm
EMC	CE, Class A
NMS, Handset-functions	
Downstream	Optical input power
	Attenuator setting
	Equalizer out 1,2,3 setting
	Redundancy switch position
	Receiver configuration
	Pilot level
Configuration	
	Attenuation out 1, 2, 3 0-15 dB
	Equalizer out 1, 2, 3 0-15 dB
	Redundancy mode auto/manual
	Redundancy switch position Rec. 1 / Rec. 2
	AGC control on/off
	Alarm / warning thresholds
Upstream	
Monitoring	Optical output power
	Temperature
	Transmitter configuration
	Redundancy / Clustering switch position
	ICS position
	Reference pilot frequency
Configuration	
	Laser on/off
	OMI 3-8 %0/8/>45 dB
	ICS1, ICS2, ICS3 0/8/>45 dB
	Redundancy / clustering switch position
	Alarm / warning thresholds
Alarms / warning	
	Optical input power too high / too low
	Optical transmitting power too high / too low
	Temperature too high / too low
	AGC range limit
	Pilot level too high / too low

Accessories optical nodes COMPACT LINE

LR 40

Optical Receiver module

Wavelength	1290-1600 nm
Optical return loss	> 40 dB
Frequency range	10-862 MHz
Optical input power	-5dbm...+3dBm
Nominal output level	80 dB μ V \pm 2 dB
Attenuator	Step size 0 / 4/ 8 / 12 dB
Power consumption	< 2 W
Optical connector	E 2000 / APC

LT 40

Optical Transceiver module, 1310 nm FP-Laser

Wavelength	1310 \pm 40nm
Broadband RF-input	10-300 MHz
Frequency range	depending on diplexfilter 10-(30) 65 MHz
Nominal input level	75dB μ V
Setting range OMI	3-10% @75 dB μ V input
Step size	1 dB
Optical output power	3 dBm
Pilot frequency	6.5 MHz

LT 41

Optical Transceiver module, 1310 nm DFB-Laser

Wavelength	1310 \pm 20 nm
Broadband RF-input	10-300 MHz
Frequency range	depending on diplexfilter 10-(30) 65 MHz
Nominal input level	75 dB μ V
Setting range OMI	3-10% @75 dB μ V input
Step size	1 dB
Optical output power	3 dBm
Pilot-frequency	6.5 MHz



Accessories optical nodes COMPACT LINE

LT 45 1510

Optical Transceiver module, 1510 nm CWDM

Wavelength	1510 ± 3 nm
Broadband RF- input	10-300 MHz
Frequency range	10-(30) 65 MHz
Nominal input level	75 dBμV
Setting range OMI	3-10% @ 75 dBμV output
Step size	1 dB
Optical output power	3 dBm
Pilot frequency	6.6 MHz

LT 45 1530

Optical Transceiver module, 1530 nm CWDM

Wavelength	1530 ± 3 nm
Broadband RF-input	10-300 MHz
Frequency range	depending on diplexfilter 10 -(30) 65 MHz
Nominal input level	75 dBμV
Setting range OMI	3-10% @ 75 dBμV input
Step size	1 dB
Optical output power	3 dBm
Pilot-frequency	6.8 MHz

LT 45 1550

Optical Transceiver module, 1550 nm CWDM

Wavelength	1550 ± 3 nm
Broadband RF-input	10-300 MHz
Frequency range	depending on diplexfilter 10 -(30) 65 MHz
Nominal input level	75 dBμV
Setting range OMI	3-10% @ 75 dBμV input
Step size	1 dB
Optical output power	3 dBm
Pilot-Frequency	7.0 MHz

Accessories optical nodes COMPACT LINE

LT 45 1570

Optical Transceiver module, 1570 nm CWDM

Wavelength	1570 ± 3 nm	
Broadband RF-input	10-300 MHz	
Frequency range	depending on diplexfilter	10 -(30) 65 MHz
Nominal input level	75 dBμV	
Setting range OMI	3-10% @ 75 dBμV input	
Step size	1 dB	
Optical output power	3 dBm	
Pilot-Frequency	7.2 MHz	

OK 41 A



Handset

Programming device with illuminated display, data memory and LED torch

Packing unit	1 piece	1.25 dm ³
Shipping unit	10 pieces	15 dm ³ , ca. 1 kg

VT 51



HMS Transponder module

- For use in VX 5... Compact Line amplifier and Fiber Nodes LR43/LR63
- Hardware compliant with SCTE HMS PHY. layer HMS-005R9
- Software compliant with SCTE HMS-MAX layer HMS-004R13
- Update capability over HMS RF layer
- Advanced and customizable automatic channel discovery

XC 40

Configuration-Module for installation in LR 43 / 63

necessary together with LT 40-45

XE 50 F 0300



Diplexfilter 30 MHz

Downstream-frequency	47 - 862 MHz	
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Accessories optical nodes COMPACT LINE

XE 50 F 0650



Diplexfilter 65 MHz

Downstream-frequency	85 - 862 MHz
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XS 40

Redundancy switch for installation in LR 43/63

Accessories Optical nodes ASC/ALSC module

VX 58

ASC / ALSC module 1-2 pilot signals

- ASC / ALSC module 1-2 pilot ton signals
- AGC only for LR 4x and LR 6x
- 1. Pilot frequency 287-862 MHz*
- 2. Pilot frequency 110-140 MHz*
- *Specify pilot frequencies when ordering

Control range	47 MHz ± 0.9 dB
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	470 MHz ± 2.9 dB
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ASC	606 MHz ± 3.4 dB
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	862 MHz ± 4 dB
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ALSC / AGC	47 - 862 MHz ± 4 dB
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ASC / AGC	287-862 MHz	1. Pilot frequency range
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ALSC	110-140 MHz	2. Pilot frequency range
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Notes

Optical nodes - MINI NODE

LR 20



Mininode, local feeding

- Modular concept
- Cost efficient optical node for distribution networks
- Optical return transmitter modules LT20 / 21
- Integrated splicebox
- All functions controlled via microprocessor
- All settings via OK40 /41A

Downstream

Wavelength	1290-1600 nm	
Transmission bandwidth	47-862 MHz	
Controlled output level	slope 4 dB@ 862 MHz	95 dB μ V
	flat	80 dB μ V
Optical input power	for constant electrical output level	-5 dBm...+3 dBm
output level (42 TV channels)	slope 4 dB	95 dB μ V
	CSO 65 dB	
	CTB 68 dB	
RF test socket	-20 dB	
Generals		
Operating voltage	230 VAC	
Operating temperature	-20°C...+50°C	
Dimensions	244x134x84 mm	
Packing unit	1 piece	8.1 dm ³ , 2.1 kg

Notes



Optical nodes - MINI NODE



LR 21



Mininode, remote feeding

- Modular concept
- Cost efficient optical node for distribution networks
- Optical upstream transmitter modules LT20 / 21
- Integrated splice box
- All functions controlled via microprocessor
- All settings via OK40 /41A
- LASER CLASS 1

Downstream

Wavelength		1290-1600 nm
Transmission bandwidth		47-862 MHz
Controlled output level	slope 4 dB@ 862 MHz	95 dBµV
	flat	80 dBµV
Optical input power	for constant electrical output level	-5...+3 dBm
Output level (42 TV channels)	slope 4 dB	95 dBµV
	CSO 65 dB	
	CTB 68 dB	
RF test socket		-20 dB
Generals		
Operating voltage		27-65 VAC
Operating temperature		-20°C...+50°C
Dimensions		244x134x84 mm
Packing unit	1 piece	8.1 dm³, 2.1 kg

Notes



Optical nodes - MINI NODE

LR 60



Mininode, CATV und SAT IF

















- Compact splitband fibernode for CATV and SAT IF on one fiber
- All settings with WISI handset OK 41 / OK 41A.
- Integrated splice box
- Separate outputs for CATV and SAT IF
- ALC for constant output level
- LASER CLASS 1

Wavelength		1290-1600 nm
CATV-Parameter		
Frequency range		45-862 MHz
Controlled output level ALC	OMI=5% @ 862 MHz 4 dB slope	85 dB μ V
CNR for 42 channels CENELEC	opt. Link=6 dB	\geq 48 dB
Optical input power		-5 dBm...+3 dBm
SAT IF-parameters		
Frequency range		950-2200 MHz
NMS functions		
Monitoring	Optical input level	
	roll-off	
Configuration	ALC mode CATV	auto/manual
	ALC mode SAT-IF	auto/manual
	roll-off CATV	0-20 dB
	roll-off SAT IF	0-20 dB
Alarms	Input level too high/low	Adjustable alarm thresholds
Generals		
Operating voltage		230 VAC
Packing unit	1 piece	8.1 dm ³ , 2.1 kg

Notes



Accessories optical nodes - MINI NODE

		LT 19	Optical upstream transmitter, FP laser
		Wavelength	1270-1350 nm
		Transmission bandwidth	10-65 MHz
		RF -input 10-300 MHz	95 dB μ V (OMI=5%)
		Output power	3 dBm
		LT 20	Optical upstream transmitter, DFB laser
		Wavelength	1290-1330 nm
		Transmission bandwidth	10-65 MHz
		RF-input 10-300 MHz	95 dB μ V (OMI=5%)
		Output power	3 dBm
		LT 21 1510	Optical returnpath transmitter, CWDM Laser
		Wavelength	1510 nm \pm 3 nm
		Transmission bandwidth	10-65 MHz
		RF-input 10-300 MHz	95 dB μ V (OMI=5%)
		Output power	3 dBm
		LT 21 1530	Optical returnpath transmitter, CWDM Laser
		Wavelength	1530 nm \pm 3 nm
		Transmission bandwidth	10-65 MHz
		RF-input 10-300 MHz	95 dB μ V (OMI=5%)
		Output power	3 dBm
		LT 21 1550	Optical returnpath transmitter, DFB laser
		Wavelength	1550 nm \pm 3 nm
		Transmission bandwidth	10-65 MHz
		RF-input 10-300 MHz	95 dB μ V (OMI=5%)
		Output power	3 dBm
		LT 21 1570	Optical returnpath transmitter, CWDM Laser
		Wavelength	1570 nm \pm 3 nm
		Transmission bandwidth	10-65 MHz
		RF- input 10-300 MHz	95 dB μ V (OMI=5%)
		Output power	3 dBm
		OK 41 A	Handset for all programmable amplifiers and nodes
		with memory, lightning display and LED torch	
		Packing unit	1 piece, 1.25 dm ³
		Shipping unit	10 pieces, 15 dm ³ , ca. 1 kg
		VT 21	HMS Transponder
		NMS settings and monitoring of temperature, optical Rx level, RF output level, OMI, alarm. Operable only with LT 20/21.	