Optribution Alpha Outdoor Chassis



The final products may vary from the above images depending on the options selected.

Product and Options

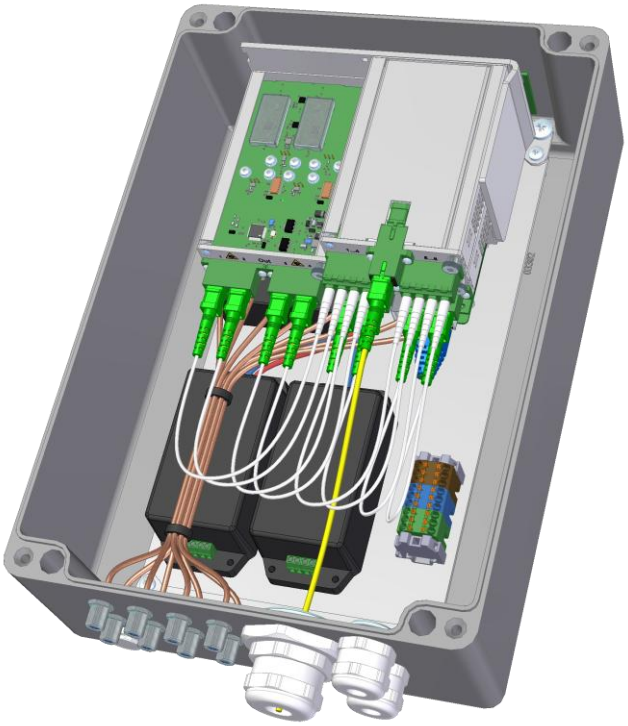
DEV 7186	Optribution Aluminum Outdoor Chassis Alpha; up to 8 Channels
DEV 7187	Optribution Aluminum Outdoor Chassis Alpha; up to 16 Channels

Features

- Two Outdoor Chassis Products for up to 16 Optical Channels
- Optical Transmitter and Receiver Modules with four Channels each
- Different CWDM Transmitter Modules and De-/Multiplexer
- Variable Gain
- LNB Powering, switchable 13/18 V and 22 kHz Tone
- 1+1 Redundancy Options
- SNMP Support
- DEV Web Interface
- Signal Recording
- Power Supply Redundancy
- Interoperability with the DEV Optribution Series

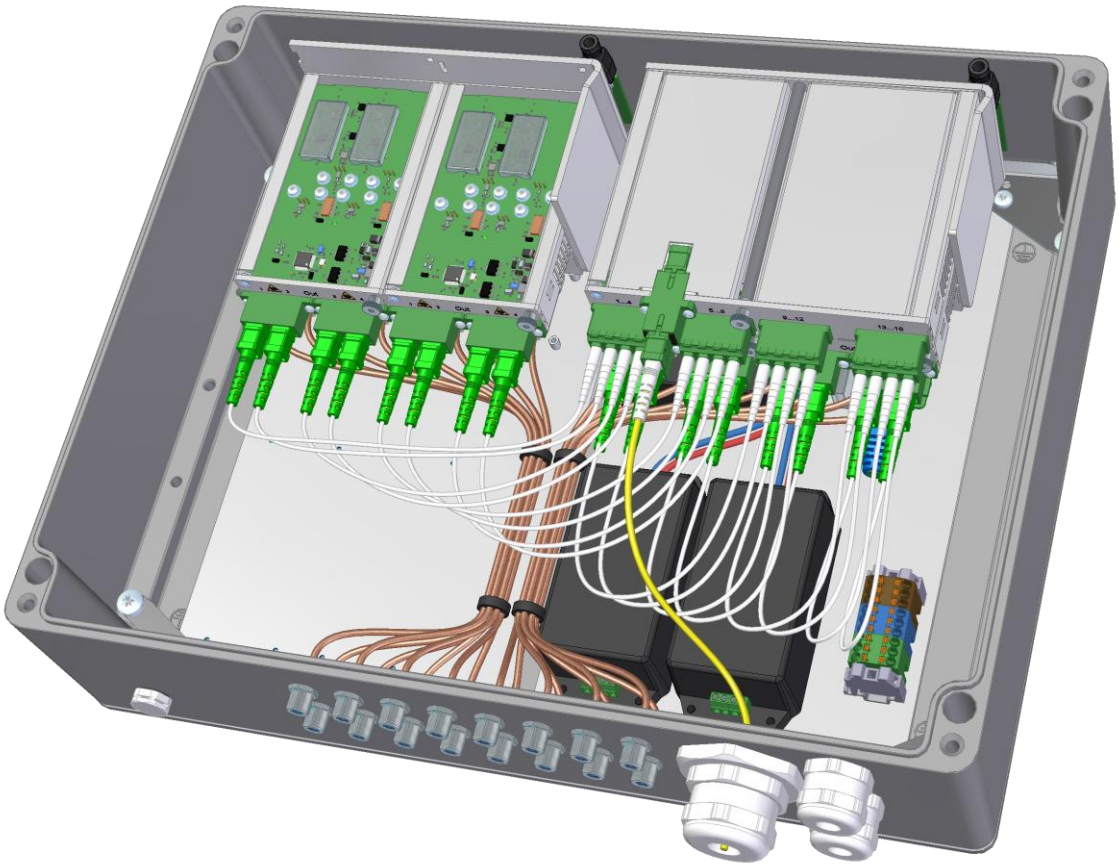
THE ART OF ENGINEERING

DEV 7186 Optribution Aluminum Outdoor Chassis Alpha; up to 8 Channels



The DEV 7186 outdoor chassis can be equipped with up to two optical modules, i.e. up to 8 optical channels. The RF ports (with and without redundancy functionality) are installed below the optical modules. In addition, a slot located above the optical modules can be equipped with a CWDM de-/multiplexer.			
Technical Data			
		Value	**Condition**
Capacity			
Slots for Optical Modules		2	
Power Supply			
Supply Voltage		100…240 V AC	
Power Consumption		<60 VA	
General Specifications			
		DEV 7186	
Size	Width Height Depth	13.0" (330 mm) 9.0" (230 mm) 4.3" (110 mm)	Without external Connectors
Weight		~4.7 kg	Without Modules
Operating Temperature		-30…+60 °C (-22…+140 °F)	
Ingress Protection Rating		IP65	
Environmental Conditions		ETS 300019 Part 1-3 Class 3.1E	Except Temperature and Ingress Protection Rating

DEV 7187 Optribution Aluminum Outdoor Chassis Alpha; up to 16 Channels



The DEV 7187 outdoor chassis can be equipped with up to four optical modules, i.e. up to 16 optical channels.
The RF ports (with and without redundancy functionality) are installed below the optical modules.
In addition, a slot located above the optical modules can be equipped with a CWDM de-/multiplexer.

Technical Data

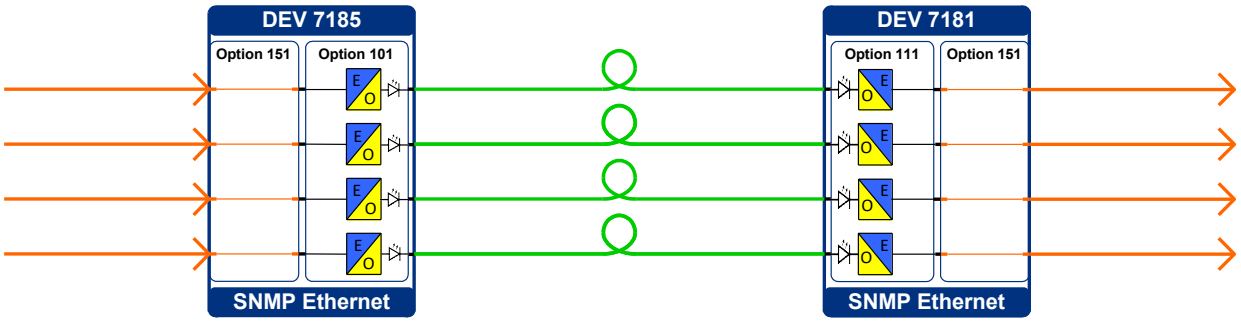
	Value	Condition
Capacity		
Slots for Optical Modules	4	
Redundant Power Supply		
Supply Voltage	100…240 V AC	
Power Consumption	<60 VA	
General Specifications		
Size	15.7" (400 mm) Width, 12.2" (310 mm) Height, 4.3" (110 mm) Depth	Without external Connectors
Weight	~9.1 kg	Without Modules
Operating Temperature	-30…+60 °C (-22…+140 °F)	
Ingress Protection Rating	IP65	
Environmental Conditions	ETS 300019 Part 1-3 Class 3.1E	Except Temperature and Ingress Protection Rating

1:1 Optical Link Specification

The link specifications apply for an optical link realized via an optical 1:1 connection of the single channels of the Alpha Optical Transmitter (Option 101) and of the Alpha Optical Receiver (Option 111).
For the RF connection, Alpha Input/Output RF Ports (Option 151 or Option 152) are applied on both sides of the optical link.

	Value	Condition
Frequency Range	850…2450 MHz	
Link Gain	0±3 dB	@ +25 °C / 77 °F
Variable Gain	-15…+13 dB ±0.5 dB; Step Size 0.5 dB	
Gain Stability vs. Temperature	±0.2 dB per 10 °C change	-30…+60 °C (-22…+140 °F)
Return Loss all Ports	>16 dB typ. >12 dB min.	
Flatness	±1.5 dB ±0.2 dB	850…2450 MHz @ +25 °C In any 36 MHz Window
Group Delay Distortion	<0.2 ns	In any 36 MHz Window
Nominal RF Input Level	-30 dBm	Aggregated Power
Input Power dynamic Range	-50…-20 dBm	Aggregated Power, Note 1
Damage RF Input Level	+10 dBm	Aggregated Power
Noise Figure	≤30 dB	
CNR	>30 dB	Notes 1, 2
Output IP3	7 dBm	Notes 2, 3
OP1dB	-5 dBm	Notes 2, 3
IM3	>40 dBc	@ 2 Tones, -28 dBm each
Transmission Distance	<3 km	
Optical Budget	1 dB	Note 4

Note 1: Pin = -30 dBm, IM3 = 48 dBc
Note 2: fiber connection 2m
Note 3: Gain set to +13 dB
Note 4: including 2 * SC/APC connector loss



1:1 High Power Optical Link Specification

The link specifications apply for an optical link realized via an optical 1:1 connection of the single channels of the Alpha Optical Transmitter (Option 107) and of the Alpha Optical Receiver (Option 112).
For the RF connection, Alpha Input/Output RF Ports (Option 151 or Option 152) are applied on both sides of the optical link with 50 Ohms or 75 Ohms impedance.

	Value	Condition
Frequency Range	850…2450 MHz	
Link Gain	0±3 dB	@ +25 °C / 77 °F
Variable Gain Tx	0…31.5 dB ±0.5 dB; Step Size 0.5 dB	setting 12...14dB for 0dB Link
Variable Gain Rx	-15…+13 dB ±0.5 dB; Step Size 0.5 dB	setting 10dB for 0dB Link
Gain Stability vs. Temperature	±0.2 dB per 10 °C change	-30…+60 °C (-22…+140 °F)
Return Loss all Ports	>16 dB typ. >12 dB min.	
Flatness	±1.5 dB ±0.2 dB	850…2450 MHz @ +25 °C In any 36 MHz Window
Group Delay Distortion	<0.2 ns	In any 36 MHz Window
Nominal RF Input Level	-10 dBm	Aggregated Power
Input Power dynamic Range	-50…-5 dBm	Aggregated Power, Note 1
Damage RF Input Level	+20 dBm	Aggregated Power
Noise Figure	≤38 dB	
CNR	>30 dB	Notes 1, 2
Output IP3	7 dBm	Notes 2, 3
OP1dB	-5 dBm	Notes 2, 3
IM3	>40 dBc	@ 2 Tones, -18 dBm each
Transmission Distance	<3 km	
Optical Budget	1 dB	Note 4

Note 1: Pin = -20 dBm, IM3 = 48 dBc
Note 2: fiber connection 2m
Note 3: Gain set to +13 dB
Note 4: including 2 * SC/APC connector loss

10 MHz Optical Link Specification

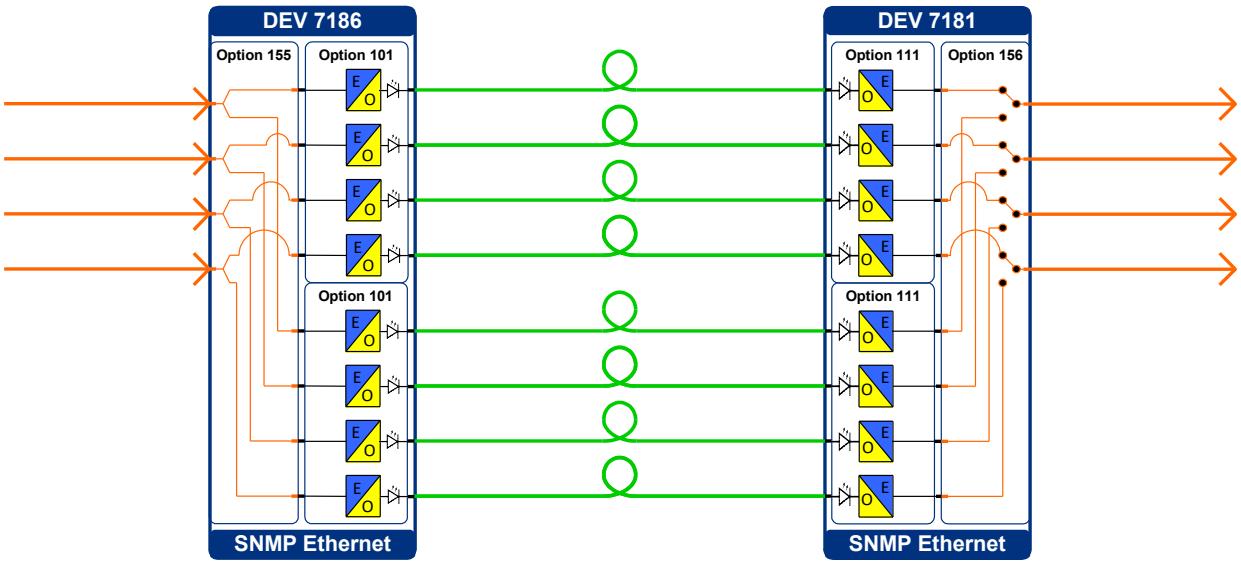
The following link specifications apply for the fourth channel of an optical link realized via an optical 1:1 connection of the fourth channel of an Alpha Optical Transmitter (Option 106) and an Alpha Optical Receiver (Option 113). Alternative with Single channel Alpha Optical Transmitter (Option 106-1) and an Alpha Optical Receiver (Option 113-1).
For the other three optical link channels, please refer to the "1:1 Optical Link Specification" above.

	Value	Condition
Frequency Range	10 MHz	
Link Gain	0±3 dB	
Variable Gain	-7…+6 dB; Step Size 0.5 dB	
Gain Stability vs. Temperature	±0.2 dB per 10 °C change	-30…+60 °C (-22…+140 °F)
Return Loss all Ports	>10 dB min.	
Group Delay Distortion	<0.2 ns	
Nominal RF Input Level	-3 dBm	Aggregated Power
Input Power dynamic Range	-40…0 dBm	Aggregated Power
Damage RF Input Level	+10 dBm	Aggregated Power
Noise Figure	≤30 dB	
OP1dB	+3 dBm	
Transmission Distance	<3 km	
Optical Budget	1 dB	

1+1 Redundancy Optical Link Specification

The link specifications apply for an optical link realized via an optical 1+1 redundancy connection of the single channels of the Alpha Optical Transmitter (Option 101) connected to the Alpha 1+1 Tx Redundancy (Option 155) and of the Alpha Optical Receiver (Option 111) connected to the Alpha 1+1 Rx Redundancy (Option 156).		
	Value	**Condition**
Frequency Range	850…2450 MHz	
Link Gain	2 dB ±3 dB; 50 Ohm 0 dB ±3 dB; 75 Ohm	@ +25 °C / 77 °F
Variable Gain	-15…+13 dB ±0.5 dB; Step Size 0.5 dB	
Gain Stability vs. Temperature	±2 dB per 10 °C change	-30…+60 °C (-22…+140 °F)
Return Loss all Ports	>16 dB typ. >12 dB min.	
Flatness	±2.0 dB ±0.2 dB	850…2450 MHz @ +25 °C In any 36 MHz Window
Group Delay Distortion	<0.2 ns	In any 36 MHz Window
Nominal RF Input Level	-30 dBm	Aggregated Power
Input Power dynamic Range	-50…-20 dBm	Aggregated Power, Note 1
Damage RF Input Level	+10 dBm	Aggregated Power
Noise Figure	≤34 dB	
CNR	>30 dB	Notes 1, 2
Output IP3	7 dBm	Notes 2, 3
OP1dB	-5 dBm	Notes 2, 3
IM3	>44 dBc	@ 2 Tones, -28 dBm each
Transmission Distance	<3 km	
Optical Budget	1 dB	Note 4

Note 1: Pin = -30 dBm, IM3 = 48 dBc
Note 2: fiber connection 2m
Note 3: Gain set to +13 dB
Note 4: including 2 * SC/APC connector loss

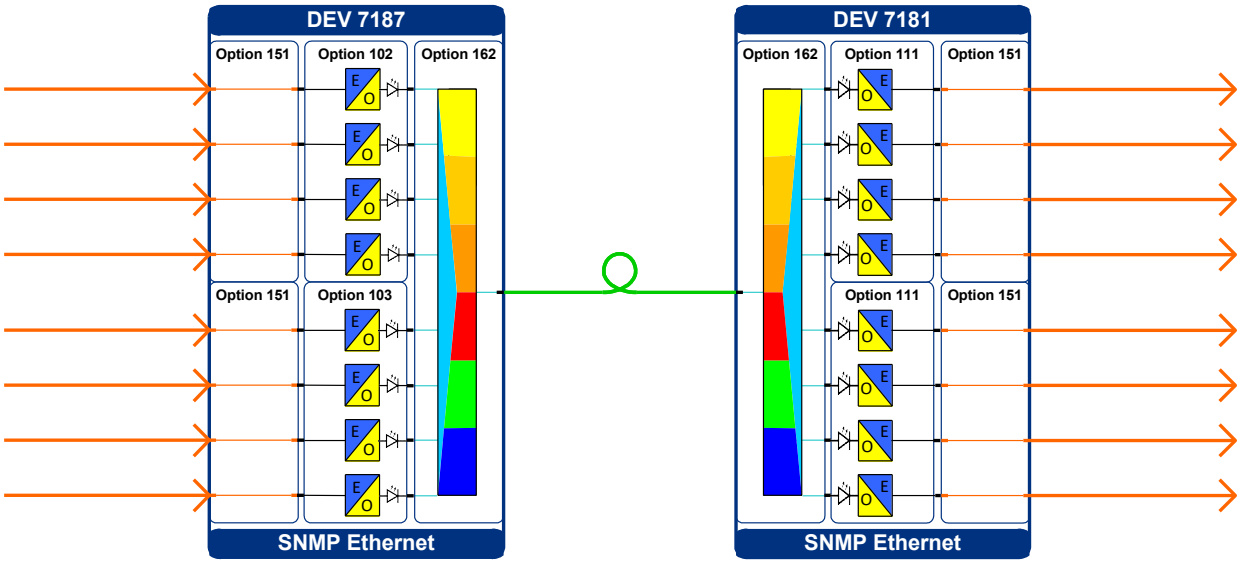


CWDM Optical Link Specification

The link specifications apply for an optical link realized via an optical 1:1 connection of the single channels of the Alpha Optical CWDM Transmitter (Option 102, Option 103, Option 104, or Option 105) and of the Alpha Optical Receiver (Option 111). For combining the optical signals at the transmitter side, and to split the optical signal at the receiver side, Alpha CWDM De-/Multiplexers (Option 161, Option 162, or Option 163) are used.
For the RF connection, Alpha Input/Output RF Ports (Option 151 or Option 152) are applied on both sides of the optical link.

	Value	Condition
Frequency Range	850…2450 MHz	
Link Gain	0±3 dB	@ +25 °C / 77 °F
Variable Gain	-15…+13 dB ±0.5 dB; Step Size 0.5 dB	
Gain Stability vs. Temperature	±0.3 dB per 10 °C change	-30…+50 °C (-22…+122 °F)
Return Loss all Ports	>16 dB typ. >12 dB min.	
Flatness	±1.5 dB ±0.2 dB	850…2450 MHz @ +25 °C In any 36 MHz Window
Group Delay Distortion	<0.2 ns	In any 36 MHz Window
Nominal RF Input Level	-30 dBm	Aggregated Power
Input Power dynamic Range	-50…-20 dBm	Aggregated Power, Note 1
Damage RF Input Level	+10 dBm	Aggregated Power
Noise Figure	≤30 dB	
CNR	>30 dB	Notes 1, 2
Output IP3	7 dBm	Notes 2, 3
OP1dB	-5 dBm	Notes 2, 3
IM3	>40 dBc	@ 2 Tones, -28 dBm each
Transmission Distance	<15 km	
Optical Budget	5 dB	Note 4

Note 1: minimum 10 dB CNR Margin within any 36 MHz window
Note 2: P_{in} = -30 dBm
Note 3: with back-to-back fiber connection (2 m)
Note 4: variable gain set to +13 dB
Note 5: including 2 * SC/APC connector loss



Option 101 - Alpha Optical Transmitter; 4*Tx; 850…2450 MHz
Option 101-1 - Alpha Optical Transmitter; 1*Tx; 850…2450 MHz
Option 106 - Alpha Optical Transmitter; 3*Tx; 850…2450 MHz plus 1*Tx;10 MHz
Option 106-1 - Alpha Optical Transmitter; 1*Tx;10 MHz
Option 107 - Alpha Optical Transmitter; 4*Tx; 850…2450 MHz; High Power



The standard Alpha Optical Transmitter (Option 101) provides 4 optical output channels for the frequency range 850…2450 MHz.
The Alpha Optical Transmitter (Option 101-1) provide 1 optical output channels for the frequency range 850…2450 MHz.
The Alpha Optical Transmitter (Option 106) provides 3 optical output channels for the frequency range 850…2450 MHz, the fourth channel is realized as a 10 MHz output channel. Alternatively, a single Alpha Optical Transmitter (Option 106-1) for 10 MHz.
The Alpha Optical Transmitter (Option 107) provide 4 optical output channels for the frequency range 850…2450 MHz capable of handling high RF input power.

	Value	**Condition**
Optical Specifications		
Optical Output Channels	4	Note 1, 2, 3
Fiber Type	Single Mode 9/125 µm	
Optical Connectors	SC/APC	
Laser Class (according to IEC 60 825-1)	Class 1M (low Risk to Eyes, no Risk to Skin)	
Wavelength	1310 nm nominal	
Optical Output Power	0.5 mW / -3 dBm	
RF Sensing		
Adjustable Threshold Level	-15 dBm > Threshold Level > -55 dBm	
Threshold Repeatability	<±0.1 dB	
LNB Power		
Voltage and Tone Control	13 V, 18 V and 0 Hz, 22 kHz	Individually selectable per Channel
LNB Power	up to 450 mA per channel max. 1 A per module	
General Specifications		
Power Consumption Module	12 V; ~250 mA	Without LNB Power
Size	2.75" (70 mm) Width (one slot)	
Weight	~0.2 kg	
Operating Temperature	-30…+60 °C (-22…+140 °F)	
Environmental Conditions	ETS 300019 Part 1-3 Class 3.1E	Except Temperature

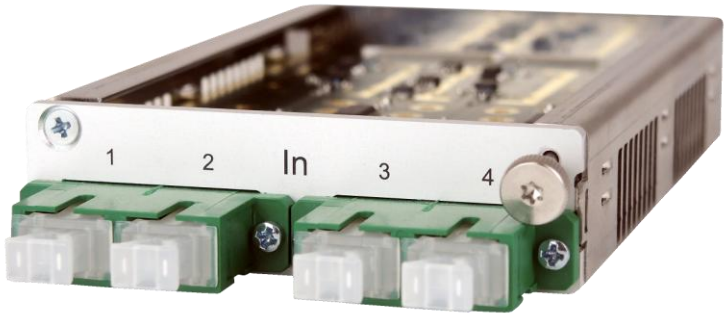
Note 1: Option 101-1 - Alpha Optical Transmitter has 1 optical output only
Note 2: Option 106 - Alpha Optical Transmitter has 3 optical outputs for 850…2450 MHz and 1 optical output for 10 MHz reference
Note 3: Option 106-1 – Single channel Alpha Optical Transmitter for 10 MHz reference.

Option 102 - Alpha Optical CWDM Transmitter; 4*Tx; 850…2450 MHz; CWDM Channels 1…4
Option 103 - Alpha Optical CWDM Transmitter; 4*Tx; 850…2450 MHz; CWDM Channels 5…8
Option 104 - Alpha Optical CWDM Transmitter; 4*Tx; 850…2450 MHz; CWDM Channels 9…12
Option 105 - Alpha Optical CWDM Transmitter; 4*Tx; 850…2450 MHz; CWDM Channels 13…16



The Alpha Optical CWDM Transmitters provide the same specifications as the standard Alpha Optical Transmitter (Option 101), except:				
	Value			
Optical Specifications	**Option 102**	**Option 103**	**Option 104**	**Option 105**
CWDM Wavelengths	Channels 1…4: 1510 nm ±10 nm 1530 nm ±10 nm 1550 nm ±10 nm 1570 nm ±10 nm	Channels 5…8: 1470 nm ±10 nm 1490 nm ±10 nm 1590 nm ±10 nm 1610 nm ±10 nm	Channels 9…12: 1310 nm ±10 nm 1330 nm ±10 nm 1350 nm ±10 nm 1370 nm ±10 nm	Channels 13…16: 1270 nm ±10 nm 1290 nm ±10 nm 1430 nm ±10 nm 1450 nm ±10 nm
Optical Output Power	1 mW / 0 dBm			

Option 111 - Alpha Optical Receiver; 4*Rx; 850…2450 MHz
Option 111-1 - Alpha Optical Receiver; 1*Rx; 850…2450 MHz
Option 112 - Alpha Optical Receiver; 4*Rx; 850…2450 MHz; High Power
Option 113 - Alpha Optical Receiver; 3*Rx; 850…2450 MHz plus 1*Rx; 10 MHz
Option 113-1 - Alpha Optical Receiver; 1*Rx; 10 MHz



The standard Alpha Optical Receiver (Option 111) provides 4 optical input channels for the frequency range 850…2450 MHz.
The Alpha Optical Receiver (Option 111-1) provide 1 optical input channels for the frequency range 850…2450 MHz.
The Alpha Optical Receiver (Option 112) provides 4 optical high input power channels for the frequency range 850…2450 MHz.
The Alpha Optical Receiver (Option 113) provides 3 optical input channels for the frequency range 850…2450 MHz, the fourth channel is realized as a 10 MHz input channel. Alternatively, a single Alpha Optical Receiver (Option 113-1) for 10 MHz.

	Value		**Condition**
Optical Specifications			
Optical Input Channels	4		Note 1, 2, 3
Fiber Type	Single Mode 9/125 µm		
Optical Connectors	SC/APC		
Max. Optical Input Power	2 mW / 3 dBm	6 mW / 8 dBm	
Wavelength Range	1270…1610 nm		
RF Sensing			
Adjustable Threshold Level	-15 dBm > Threshold Level > -55 dBm		
Threshold Repeatability	<±0.1 dB		
General Specifications			
Power Consumption Module	12 V; ~180 mA		
Size	2.75" (70 mm) Width (one slot)		
Weight	~0.2 kg		
Operating Temperature	-30…+60 °C (-22…+140 °F)		
Environmental Conditions	ETS 300019 Part 1-3 Class 3.1E		Except Temperature

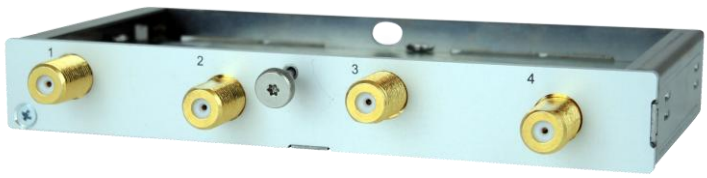
Note 1: Option 111-1 - Alpha Optical Receiver has 1 optical input only
Note 2: Option 113 - Alpha Optical Receiver provides 3 optical inputs for 850…2450 MHz and 1 optical input for 10 MHz reference
Note 3: Option 113-1 – Single channel Alpha Optical Receiver for 10 MHz reference.

Option 151 - Alpha Input/Output; 4*RF Port; 75 Ohm, F (f)
Option 151-1 - Alpha Input/Output; 1*RF Port; 75 Ohm, F (f)
Option 152 - Alpha Input/Output; 4*RF Port; 50 Ohm, SMA (f)
Option 152-1 - Alpha Input/Output; 1*RF Port; 50 Ohm, SMA (f)



The Alpha Input/Output RF Ports provides direct RF access to the one or four channels of the related optical module.		
	Value	**Condition**
RF Specifications		
Input/Output Ports	4 (Option 151, Option 152) 1 (Option 151-1, Option 152-1)	
Impedance, Connectors	75 Ohm, F (f) (Option 151, Option 151-1) 50 Ohm, SMA (f) (Option 152, Option 152-1)	
DC blocked	No	
General Specifications		
Size	2.75" (70 mm) Width (one slot)	
Weight	~0.1 kg	

Option 155 - Alpha 1+1 Tx Redundancy; 4*RF Splitter; 75 Ohm, F (f)
Option 155-1 - Alpha 1+1 Tx Redundancy; 1*RF Splitter; 75 Ohm, F (f)
Option 157 - Alpha 1+1 Tx Redundancy; 4*RF Splitter; 50 Ohm, SMA (f)
Option 157-1 - Alpha 1+1 Tx Redundancy; 1*RF Splitter; 50 Ohm, SMA (f)



The Alpha 1+1 Tx Redundancy options are used for the RF connection to two optical transmitter modules in 1+1 redundancy applications.		
	Value	**Condition**
RF Specifications		
Input/Output Ports	4 (Option 155, Option 157) 1 (Option 155-1, Option 157-1)	
Impedance, Connectors	75 Ohm, F (f) (Option 155, Option 155-1) 50 Ohm, SMA (f) (Option 157, Option 157-1)	
DC blocked	No	
General Specifications		
Size	5.55" (141 mm) Width (two slots)	
Weight	~0.2 kg	

Option 156 - Alpha 1+1 Rx Redundancy; 4*RF Switch; 75 Ohm, F (f)
Option 156-1 - Alpha 1+1 Rx Redundancy; 1*RF Switch; 75 Ohm, F (f)
Option 158 - Alpha 1+1 Rx Redundancy; 4*RF Switch; 50 Ohm, SMA (f)
Option 158-1 - Alpha 1+1 Rx Redundancy; 1*RF Switch; 50 Ohm, SMA (f)



The Alpha 1+1 Rx Redundancy option is used for the RF connection to two optical receiver modules in 1+1 redundancy applications.		
	Value	**Condition**
RF Specifications		
Input/Output Ports	4 (Option 156, Option 158) 1 (Option 156-1, Option 158-1)	
Impedance, Connectors	75 Ohm, F (f) (Option 156, Option 156-1) 50 Ohm, SMA (f) (Option 158, Option 158-1)	
DC blocked	Yes	
General Specifications		
Size	5.55" (141 mm) Width (two slots)	
Weight	~0.2 kg	

Option 161 - Alpha 1:4 CWDM De-/Multiplexer; CWDM Channels 1…4
Option 162 - Alpha 1:8 CWDM De-/Multiplexer; CWDM Channels 1…8
Option 163 - Alpha 1:16 CWDM De-/Multiplexer; CWDM Channels 1…16

The Alpha CWDM De-/Multiplexer provides four, eight, or sixteen optical ports for CWDM applications.
Note that the Alpha 1:16 CWDM De-/Multiplexer option is available for the DEV 7187 only.

	Value		**Condition**	
Optical Specifications				
Optical Connectors Common Port / Patch Cables De-/Mux Ports / Patch Cables	 SC/APC / SC/APC SC/APC / LC/APC			
	Option 161	**Option 162**	**Option 163**	
Number of De-/Mux Ports	4	8	16	
CWDM Wavelengths	Channels 1…4: 1510 nm ±10 nm 1530 nm ±10 nm 1550 nm ±10 nm 1570 nm ±10 nm	Channels 1…8: 1510 nm ±10 nm 1530 nm ±10 nm 1550 nm ±10 nm 1570 nm ±10 nm 1470 nm ±10 nm 1490 nm ±10 nm 1590 nm ±10 nm 1610 nm ±10 nm	Channels 1…16: 1510 nm ±10 nm 1530 nm ±10 nm 1550 nm ±10 nm 1570 nm ±10 nm 1470 nm ±10 nm 1490 nm ±10 nm 1590 nm ±10 nm 1610 nm ±10 nm 1310 nm ±10 nm 1330 nm ±10 nm 1350 nm ±10 nm 1370 nm ±10 nm 1270 nm ±10 nm 1290 nm ±10 nm 1430 nm ±10 nm 1450 nm ±10 nm	
General Specifications				
Size	2.75" (70 mm) Width (one slot)		5.55" (141 mm) Width (two slots)	
Weight	~0.1 kg		~0.2 kg	
Operating Temperature	-30…+50 °C (-22…+122 °F)			
Environmental Conditions	ETS 300019 Part 1-3 Class 3.1E		Except Temperature	

Option 55 - Change Ethernet to optical Ethernet Interface

The DEV 7186 and DEV 7187 with Option 55 enable the device to change the Ethernet Interface to Optical Ethernet Interface.

Option 77 - Signal Recording

With Option 77, the Web Interface of DEV 7186 and DEV 7187 provide the Recording Window that permits the visualization and the external storage of transmitter and receiver signal data.

Option 89 - Pole Mount Assembly

	DEV 7186	**DEV 7187**
Mounting for Pole Diameters	6.6…10.0" (168…254 mm)	

Order Information

Product and Options	
DEV 7186	Optribution Aluminum Outdoor Chassis Alpha; up to 8 Channels
DEV 7187	Optribution Aluminum Outdoor Chassis Alpha; up to 16 Channels
Option 101	Alpha Optical Transmitter; 4*Tx; 850…2450 MHz; SC/APC
Option 101-1	Alpha Optical Transmitter; 1*Tx; 850…2450 MHz; SC/APC
Option 102	Alpha Optical CWDM Transmitter; CWDM Channels 1…4; 850…2450 MHz; SC/APC
Option 103	Alpha Optical CWDM Transmitter; CWDM Channels 5…8; 850…2450 MHz; SC/APC
Option 104	Alpha Optical CWDM Transmitter; CWDM Channels 9…12; 850…2450 MHz; SC/APC
Option 105	Alpha Optical CWDM Transmitter; CWDM Channels 3…16; 850…2450 MHz; SC/APC
Option 106	Alpha Optical Transmitter; 3*Tx; 850…2450 MHz plus 1*Tx; 10 MHz; SC/APC
Option 106-1	Alpha Optical Transmitter; 1*Tx; 10 MHz; SC/APC
Option 107	Alpha Optical Transmitter; 4*Tx; 850…2450 MHz; High Power; SC/APC
Option 111	Alpha Optical Receiver; 4*Rx; 850…2450 MHz; SC/APC
Option 111-1	Alpha Optical Receiver; 1*Rx; 850…2450 MHz; SC/APC
Option 112	Alpha Optical Receiver; 4*Rx; 850…2450 MHz; High Power; SC/APC
Option 113	Alpha Optical Receiver; 3*Rx; 850…2450 MHz plus 1*Rx; 10 MHz; SC/APC
Option 113-1	Alpha Optical Receiver; 1*Rx; 10 MHz; SC/APC
Option 151	Alpha Input/Output; 4*RF Port; 75 Ohm, F (f)
Option 151-1	Alpha Input/Output; 1*RF Port; 75 Ohm, F (f)
Option 152	Alpha Input/Output; 4*RF Port; 50 Ohm, SMA (f)
Option 152-1	Alpha Input/Output; 1*RF Port; 50 Ohm, SMA (f)
Option 155	Alpha 1+1 Tx Redundancy; 4*RF Splitter; 75 Ohm, F (f)
Option 155-1	Alpha 1+1 Tx Redundancy; 1*RF Splitter; 75 Ohm, F (f)
Option 156	Alpha 1+1 Rx Redundancy; 4*RF Switch; 75 Ohm, F (f)
Option 156-1	Alpha 1+1 Rx Redundancy; 1*RF Switch; 75 Ohm, F (f)
Option 157	Alpha 1+1 Tx Redundancy; 4*RF Splitter; 50 Ohm, SMA (f)
Option 157-1	Alpha 1+1 Tx Redundancy; 1*RF Splitter; 50 Ohm, SMA (f)
Option 158	Alpha 1+1 Rx Redundancy; 4*RF Switch; 50 Ohm, SMA (f)
Option 158-1	Alpha 1+1 Rx Redundancy; 1*RF Switch; 50 Ohm, SMA (f)
Option 161	Alpha 1:4 CWDM De-/Multiplexer; CWDM Channels 1…4
Option 162	Alpha 1:8 CWDM De-/Multiplexer; CWDM Channels 1…8
Option 163[1]	Alpha 1:16 CWDM De-/Multiplexer; CWDM Channels 1…16
Option 55	Change Ethernet to optical Ethernet Interface
Option 77	Signal Recording
Option 89	Pole Mount Assembly

Note 1: DEV 7187 only

Contact

DEV Systemtechnik GmbH
Grüner Weg 4A
61169 Friedberg
GERMANY
Phone: +49 6031 6975 100
Fax: +49 6031 6975 114
info@dev-systemtechnik.com
www.dev-systemtechnik.com

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