POCKET GUIDE

dev
Part of the axing Group

Integrated RF Solutions for Signal Distribution

Broadcast and Satellite Communications

Broadband HFC and FTTx Networks

THE ART OF ENGINEERING

List of Abbreviations

AC	Alternating Current
APC	Automatic Output Power Control
ASI	Asynchronous Serial Interface
CATV	Community Antenna Television
CCAP	Converged Cable Access Platform
CMTS	Cable Modem Termination System
CWDM	Coarse Wavelength Division Multiplexing
DC	Direct Current
DOCSIS	Data Over Cable Service Interface Specification
DWDM	Dense Wavelength Division Multiplexing
EDFA	Erbium-Doped Fiber Amplifier
HFC	Hybrid Fiber-Coaxial
IRD	Integrated Receiver Decoder
LNB	Low-Noise Block Down Converter
MAC	Media Access Control
MGC	Manual Gain Control
OMI	Optical Modulation Index
RF	Radio Frequency
RGC	Redundancy Path Gain Compensation
RU	Rack Unit
Rx	Receiving
SMA	Sub Miniature Version A
SNMP	Simple Network Management Protocol
TRAC	Trap Receiver Action Controller
Tx	Transmitting

Contents

About DEV Systemtechnik

Partner of Choice

For more than 20 years, DEV Systemtechnik has developed and manufactured integrated systems for the entire RF signal distribution chain for major teleport and network operators worldwide. With its proven record in analog technology and engineering, DEV Systemtechnik provides flawless signal transmission over fiber and coax for satellite, broadcast & military purposes, as well as HFC (Hybrid Fiber Coax) feeds.

Originally founded in 1995, DEV has become the partner of choice when it comes to reliable signal transmission and distribution.

Certified Quality Management

DEV's Quality Management for the development, production and sales of equipment and systems for signal transmission is certified according to ISO 9001:2015.

The DEV Difference

DEV strives to provide solutions with outstanding performance at best cost using minimal space. Our portfolio supports a wide spectrum of high-availability optical and electrical RF systems such as:

- Distribution Amplifiers, Splitters and Combiners
- Switching Systems, Distributing and Combining Matrices
- Routing Products and Multiplexers
- RF Signal Transmission over Optical Fiber (RFoF)
- DOCSIS 3.1 Equipment for HFC and FTTx Networks

We can also configure custom combinations within the DC-40 GHz frequency range. Accessory products such as Lightning Protection, Bias Tees and Impedance Transformers help make your critical signal transmission easy and reliable.

RF over Fiber Technology

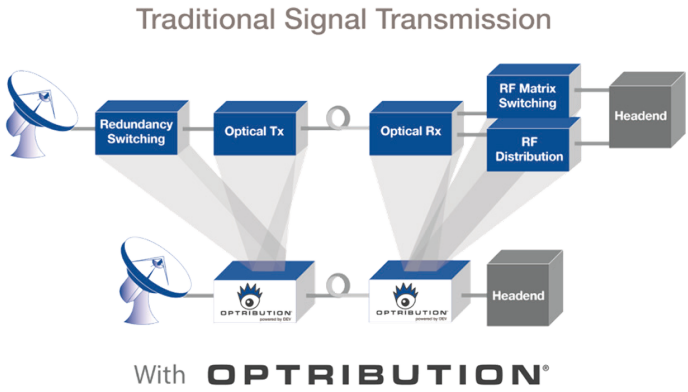
"RF over Fiber" (RFoF) refers to technology that modulates light with a radio frequency signal for transmission over optical fiber. Satellite ground stations and teleports must have an effective transmission method for RF signals linking antennas, signal management apparatus, and diverse equipment centers.

Overcoming the limitations of coax cable, fiber links are the best choice to assure optimal signal quality, especially over longer distances. RFoF offers important advantages over coax: minimal losses, preserved signal quality, muted crosstalk, and multiple channels over one physical medium.

Optribution – The All-in-One Solution

With *Optribution*, DEV offers a product line serving both electrical and optical functions in one system. All products are engineered, developed and manufactured in Germany. *Optribution* allows sophisticated switching, redundant configurations, and long-distance signal transport up to 200 km.

All of our RF-over-Fiber products feature modular flexibility and open paths scalable for future needs. DEV's consistent solution architecture provides seamless interoperability with other DEV gear, including matrix switches, redundancy and antenna control systems, as well as lightning-protection equipment. When using standardized frequencies, protocols and connectors, DEV systems can also interface with third-party systems.



RF over Fiber - Optribution

RF over Fiber Indoor Chassis

DEV 4111

Intelligent Universal Optribution Chassis, 19“, 1 RU, 2 Slots

- 50 Ω SMA (f) and/or 75 Ω F (f)
- Optical Tx, Rx Modules or RF Amplifiers
- L-Band Distribution 1:8 and 1:16
- IRD Controlled Switch 2x8 and 4x8
- 1+1 Redundancy

RF over Fiber Indoor Chassis

DEV 7113

Intelligent Optribution Chassis, 19“, 3 RU, 20 Slots

- 50 Ω SMA (f) or 75 Ω F (f) or 75 Ω BNC (f)
- 1+1 and n+1 Redundancy Options
- CWDM for up to 8 Channels
- DWDM for up to 48 Channels
- Redundancy Path Gain Compensation (RGC)
- Ethernet to Optical Converter

RF over Fiber Indoor Chassis

DEV 7114

Intelligent Optribution Distribution Chassis, 19“, 4 RU, 16 Slots

- 50 Ω SMA (f) and 75 Ω F (f)
- Distribution Amplifiers and Matrix Modules
- IRD controlled Switches from 4x16 to 4x64
- CWDM for 4, 8, and 9 Channels
- Redundancy Path Gain Compensation (RGC)
- Ethernet to Optical Converter

RF over Fiber Indoor Chassis

DEV 7134

Compact Intelligent Optribution Chassis, 19“ (Half Depth), 4 RU, 12 Slots

- 50 Ω SMA (f) and/or 75 Ω F (f)
- Front Accessible and Wall Mountable
- 1+1 or 4+1 Redundancy Option
- CWDM for 4, 8, and 9 Channels
- Redundancy Path Gain Compensation (RGC)
- Ethernet to Optical Converter

RF over Fiber Outdoor Chassis

DEV 7152

Optribution Outdoor Chassis, 5 Slots

- Signal Conversion Directly at Antenna
- 50 Ω SMA (f) or N (f) and/or 75 Ω F (f)
- -30...+60 °C / -22...+140 °F
- 1+1 or 4+1 Redundancy Options
- Redundancy Path Gain Compensation (RGC)
- Ethernet to Optical Converter

Optical L-Band Links

DEV 7232, DEV 7233
DEV 7241, DEV 7251
DEV 7332, DEV 7333
DEV 7341

Optribution Tx and Rx L-Band Link

- 950...2150 MHz and 700...2300 MHz
- SC/APC, FC/APC or E2000 HRL
- CWDM and DWDM Applications
- OMI Optimization
- Variable Gain and Variable Slope
- RF Sensing
- LNB Powering with Current Monitoring

Optical 10 MHz Link
DEV 7238, DEV 7244
DEV 7335, DEV 7344

Optribution Tx and Rx 10 MHz Link

- 10 MHz and 700...2300 MHz
- SC/APC, FC/APC or E2000 HRL
- 9 Wavelengths for CWDM Applications
- Variable Gain and Variable Slope
- RF Sensing
- LNB Powering with Current Monitoring

Optical CATV-Band Links
DEV 7238
DEV 7337
DEV 7338

Optribution Tx and Rx CATV-Band Link

- 10 MHz
- SC/APC, FC/APC or E2000 HRL
- 9 Wavelengths for CWDM Applications
- RF Sensing
- RF Monitoring Port for Transmitter

Optical Splitters

DEV 7512
DEV 7514
DEV 7518

Optribution Splitters

- 1:2, 1:4, 1:8 Bidirectional Optical Splitters
- 1260...1610 nm
- Applicable in CWDM and DWDM Systems
- SC/APC, FC/APC or E2000 HRL

Optical De-/Multiplexers

DEV 7612
DEV 7614
DEV 7618
DEV 7658

Optribution CWDM/DWDM De-/Multiplexers

- 2:1/1:2, 4:1/1:4 or 8:1/1:8
- 1470...1610 nm
- Extension Port for up to 48 DWDM Channels
- SC/APC, FC/APC or E2000 HRL

RF over Fiber - Optribution

EDFA Modules

DEV 7415
DEV 7425

Optical EDFA Modules for Optribution

- Pre- and Boost-Amplifier
- High Gain, Low Noise Figure
- Automatic Output Power Control (APC)
- Manual Gain Control (MGC)
- Monitoring of Optical Power Level
- Optimized for DWDM Solutions

Standalone EDFA Amplifier

DEV 7161/Boost
DEV 7131/Pre
DEV 7162
DEV 7163
DEV 7165

EDFA Optribution Amplifier, 19", 1 RU

- 1, 8, 2*8, or 16 Outputs
- High Gain, Low Noise Figure
- Automatic Output Power Control (APC)
- Manual Gain Control (MGC)
- Monitoring of Optical Power Level
- Optimized for DWDM Solutions

RF over Fiber Outdoor Chassis for Desktop Modules

DEV 7151

Wall Mountable Chassis for Desktop Optribution Modules, 4 Slots

- Up to 4 Desktop Tx and/or Rx Modules
- -20...+65 °C / -4...+149 °F
- Easy Handling Character
- Wall Mountable
- Compact Size

RF over Fiber Desktop Modules

DEV 7285
DEV 7286
DEV 7287
DEV 7385
DEV 7387

Stand-Alone Optribution Tx and Rx Modules

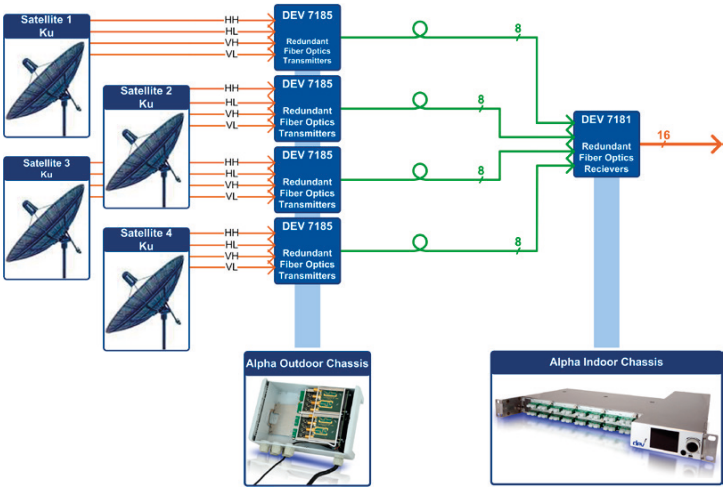
- 47...1006 MHz
- 400...900 MHz
- 700...2300 MHz
- LC/APC or LC/PC
- CWDM Option
- RF Monitoring Port
- LNB Power, Switchable 13/18 V & 0/22 kHz

Alpha – Highly Compact RF-over-Fiber System

The high-density RFoF solution "Alpha" within the *Optribution* family serves up to 32 fiber links in 1 RU – a benchmark figure for optical channels within a single rack unit. Splitting and switching modules are available for redundancy application on both the transmitting and receiving sides.

With an unmatched cost-to-performance ratio, Alpha is the optimal solution for standard RF-over-Fiber transmission up to 3 km when it comes to limited rack spacing. Each Alpha module interfaces with all other *Optribution* products and can be housed in a 1 RU indoor chassis or inside a waterproof outdoor chassis mounted directly on the antenna mast. The Alpha Outdoor Chassis can serve up to 8 optical channels.

Sample Application for Alpha



RF over Fiber - Optribution

Alpha Indoor Chassis

DEV 7181

Intelligent Optribution Chassis Alpha, 19", 1 RU, 8 Slots

- Up to 32 RF over Fiber links
- Space for 8 optical and 8 electrical modules
- LNB Powering – 13 V, 18 V and 0 Hz, 22 kHz
- 2.2" Full Color Display
- Power Supply Redundancy

Alpha Outdoor Chassis

DEV 7185

Optribution Outdoor Chassis Alpha, 2 Slots

- Up to 8 RF over Fiber links
- Space for 2 optical and 2 electrical modules
- LNB Powering – 13 V, 18 V and 0 Hz, 22 kHz
- Wall or pole mountable
- Waterproof to IP66 standards

Alpha Optical I/O Cards

Option 101
Option 102 (CWDM 1...4)
Option 103 (CWDM 5...8)
Option 111

Alpha Optical Transmitter/ Receiver

- 850...2450 MHz
- 4 I/O channels per module
- SC/APC connectors
- CWDM option (1270...1610 nm)
- RF Sensing
- Variable Gain

Alpha RF I/O Cards

Option 151

Alpha Input/Output RF Ports

- Connection to the related optical module
- 850...2450 MHz
- 4 I/O Ports per module
- 75 Ohm, F (f) connectors

Alpha RF Redundancy

Option 155 (Splitter)
Option 156 (Switch)

Alpha 1+1 Redundancy RF Ports

- Connection to two optical modules
- 850...2450 MHz
- 4 RF Ports per module
- Tx or Rx Redundancy
- 75 Ohm, F (f) connectors

Alpha CWDM De-/Multiplexer

Option 161 (1:4)
Option 162 (1:8)

Alpha CWDM De-/Multiplexer

- 4 / 8 Optical Ports for CWDM Applications
- 1470...1610 nm
- SC/APC and LC/APC Connectors

DEV's Bestseller – the Universal Switch Chassis

Satellite communications and broadcast networks must deliver fail-safe signals without interruption 24/7. DEV supports versatile systems enabling flawless service of mission critical networks.

DEV 1951: 1 RU with 2 slots

DEV 1953: 3 RU with 16 Slots

The DEV 1951 and 1953 Chassis have both been designed for ultra-demanding systems. They can be equipped with one or two Switch Modules (DEV 1951) or with up to 16 modules offering identical or varying functions (DEV 1953).

DEV's redundancy solutions are extremely flexible – virtually everything can be altered, combined or tailored to individual requirements.

Benefits

- One chassis for various applications, such as modulator or antenna redundancy
- 27 modules with different switching functionalities and frequency ranges
- Intelligent software functions for use in small or large redundancy applications
- Capable of being integrated into nearly any M&C system via SNMP
- Extremely flexible, functional configurations
- Several Control Options via Ethernet, Telnet, Serial and Digital Interface

TRAC

The TRAC (Trap Receiver Action Controller) option is intended to expand automatic remote-switching capabilities of a device. With this functionality, the device performs switching actions based on SNMP traps linked with any external equipment without needing extra M&C software. In addition, the IP-Monitoring function continuously checks the availability of external equipment used in any TRAC setup. TRAC controls both itself and any other equipment via SNMP.

Redundancy Switches

Universal Switch Chassis

DEV 1951

Universal Switch Chassis, 2 Slots, 19“, 1 RU

- 27 Different Modules Available
- A/B-, Transfer-Switch, Splitter/Combiner
- CATV or L-Band, Ethernet, ASI/SDI, or E1/T1
- Optical Switching
- Automatic Switching and Switch Back
- TRAC - Trap Receiver Action Controller
- Power Supply Redundancy

Universal Switch Chassis

DEV 1953

Universal Switch Chassis, 16 Slots, 19“, 3 RU

- 23 Different Modules Available
- A/B-, Transfer-Switch, Splitter/Combiner
- CATV or L-Band, Ethernet, ASI/SDI, or E1/T1
- Optical Switching
- Automatic Switching and Switch Back
- TRAC - Trap Receiver Action Controller
- Power Supply Redundancy

Automatic Modulator Redundancy Switch

DEV 1992

Modulator Redundancy Switch n+1, 19“, 3 RU

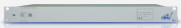
- Stand-Alone and Vendor Independent
- 4+1, 6+1 or 8+1
- Inputs ASI, BNC (f)
- Output: 950...2150 MHz, F (f) or SMA (f)
- Output: 47...862 MHz, BNC (f)
- TRAC - Trap Receiver Action Controller
- Power Supply Redundancy

Automatic n+1 Antenna Redundancy

DEV 1993

Redundancy Switch m*n+1, 19“, 3 RU

- m=1, 2 or 4; n=2, 4, 6, 8, 10, 12, 14 or 16
- 950...2150 MHz
- 50 Ω SMA (f) or 75 Ω F (f)
- 4-Path Simultaneous Switching
- Automatic Switching via RF Sensing
- Integrated Motorized Antenna Controller
- Automatic Antenna Redundancy System
- Power Supply and Power Line Redundancy



Bidirectional Switch

DEV 1018 (CATV-Band)
DEV 10116 (CATV-Band)
DEV 1218 (L-Band)
DEV 12116 (L-Band)

De-/Multiplexer, 19“, 1 RU

- 8:1 and 16:1
- 10...1006 MHz or 950...2150 MHz
- 50 Ω SMA (f) or 75 Ω F (f)
- Power Supply Redundancy

Bidirectional Switch

DEV 1x124
DEV 1x132
DEV 1x148
DEV 1x164

L- or CATV-Band De-/Multiplexer, 19“, 3 RU

- 24:1, 32:1, 48:1 and 64:1
- 47...862 MHz or 950...2150 MHz
- 50 Ω SMA (f) or 75 Ω F (f)
- Amplifier Module for Loss Compensation
- Power Supply Redundancy

RF Switching System;

DEV 1400

RF-µW Switching System, 19”, 3 RU

- DC...18 GHz, C-, X-, or Ku-Band
- Individual Switching/Distribution/Combining
- Customized Functional Modules
- For Example Redundancy or Matrix Switching
- Hot-Pluggable Modules
- Power Supply Redundancy
- DEV Web Interface and SNMP

Bidirectional Switch (DEV Essentials)

DEV 1228
DEV 1236

DEV Essentials Bidirectional Switch, 19“, 1 RU

- 1:8/8:1 and 1:16/16:1
- 10...2300 MHz
- 75 Ω F (f)
- High Isolation
- Good Flatness
- Low Ripple
- Data Backup Feature

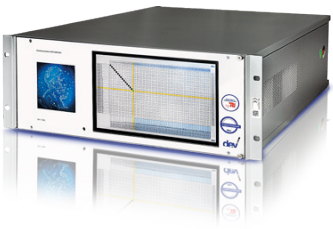
RF Distributing and Combining Matrices

Stronger, Smaller, Smarter

With the introduction of its matrix platform, DEV established a new benchmark in the RF matrix area. DEV's matrix platform offers more functionality, state-of-the-art technology, and easy-to-use software within its compact size.

RF Matrix Switch ARCHIMEDES

The RF Distributing Matrix ARCHIMEDES (DEV 1986) is built in a high-density, 4 RU chassis. Its superior degree of reliability embodies the core of your system. Available in sizes starting at 16x32, it can be easily expanded to 64x64 in increments of 8 inputs or outputs within four rack units. Redundancy options for channels plus controller are set to maximum reliability. With the LNB Power Option, ARCHIMEDES is capable of powering LNBs through all input channels.



Modular – Flexible – Manageable

- Best cost-performance ratio
- Rack space saving design
- Ultra low power consumption
- Unbeatable flexibility for future needs due to the modular design
- Optical Inputs available
- LNB powering through all input channels
- Full color multi-touch display
- Integrated spectrum analyzer, operable locally or via DEV Web Interface

RF Distributing and Combining Matrices

RF Fan-Out Matrix
8²

DEV 1982

L-Band Distributing Matrix 8x8, 19“, 1 RU

- 950...2150 MHz
- 75 Ω, F (f) / BNC (f) / 50 Ω SMA (f) / Optical
- 4x4, 4x8, 8x4, or 8x8 Field Upgradable
- Variable Gain and Slope
- LNB Powering, Switchable 13/18 V & 0/22 kHz
- Graphical Local User Interface

RF Fan-In Matrix

DEV 1975

L-Band Combining Matrix 16x16, 19", 2RU

- 850...2450 MHz
- 75 Ω, F (f) / BNC (f) / 50 Ω SMA (f) / Optical
- Up to 16x16 Channels in 1 RU
- Variable Gain and Slope
- LNB Powering, Switchable 13/18 V & 0/22 kHz
- Graphical Local User Interface

RF Fan-Out Matrix
8to4ty

DEV 1984

L-Band Distributing Matrix 8x40, 19“, 2 RU

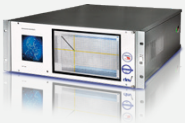
- 950...2150 MHz
- 75 Ω, F (f) / BNC (f) / 50 Ω SMA (f) / Optical
- 8x8 up to 8x40 in 2 RU
- Variable Gain and Slope
- LNB Powering, Switchable 13/18 V & 0/22 kHz
- Integrated Spectrum Analyzer
- Graphical Local User Interface

RF Fan-Out Matrix
16²

DEV 1985

L-Band Distributing Matrix 16x20, 19“, 2 RU

- 850...2450 MHz
- 75 Ω, F (f) / BNC (f) / 50 Ω SMA (f) / Optical
- 16x20 in 2 RU
- Variable Gain and Slope
- LNB Powering, Switchable 13/18 V & 0/22 kHz
- Graphical Local User Interface



RF Fan-Out Matrix
ARCHIMEDES

DEV 1986

L-Band Distributing Matrix 64x64, 19“, 4 RU

- 950...2150 MHz
- 75 Ω, F (f) / BNC (f) / 50 Ω SMA (f) / Optical
- 24x24 up to 64x64 in 4 RU
- Upgradable up to 2048x2048
- LNB Powering, Switchable 13/18 V & 0/22 kHz
- Full Color Multi-Touch Display with TV Receiver
- Integrated Spectrum Analyzer

RF Distributing Amplifiers, Splitters and Combiners

DEV RF Splitters, Combiners and Distributing Amplifiers are built for various frequency ranges, for satellite, CATV and broadband applications. Active and passive devices for various applications and frequency ranges are available in different sizes.

DEV Distribution Amplifiers are capable of splitting an input up to 128 outputs without loss or additional gain, and offer additional features like LNB powering, tilt adjustment, or several redundancy functions. Most of our RF Distribution products come in 19" housings and differ by height, number of channels, distribution functionality, and the integrated software features.

Managed L-Band Distribution Amplifier

The DEV 2190 is a versatile all-in-one 19" 4 RU Chassis for up to 16 active amplifiers and a variety of distribution options.

It comes with useful features like IRD controllable switches, RF sensing, continuous signal level monitoring, and combining functions. The amplifier modules can also be built in a 1+1 redundancy and power LNBs. These features make the DEV 2190 a powerful part of any transmission system.

DEV Essentials

The DEV Essentials Active L-Band Splitters are cost-effective single distribution amplifiers in 0.5 RU providing LNB powering. They support the Frequency Range 500...2300 MHz. Each Product is equipped with a single Splitter with 4, 8 or 16 Output Ports and can optionally be ordered with one additional Splitter. Compared with DEV Standard Products, the DEV Essentials Products provide the same superior RF Transmission Quality without certain Features such as integrated redundant Power Supplies, Monitoring Ports, RF Sensing, and other Alarm Functionality.

RF Combining and Distribution Systems

Managed Distribution Amplifier

DEV 2190

L-Band Distribution System, 19", 4 RU

- 50 Ω SMA (f) and 75 Ω F (f)
- Distributed Amplifier up to 1:128
- Active Combiner up to 8*16:1
- IRD Controlled Switches 4*4x16 ... 1*4x64
- Variable Gain and Variable Slope
- 1+1 Amplifier Redundancy
- Switchable LNB Powering Feature
- RF Sensing
- Power Supply and Power Line Redundancy

Distribution Amplifiers

DEV 2142
DEV 2143
DEV 2145

L-Band Distribution Amplifier, 19", 1 RU

- 700...2450 MHz
- 1:8, 2*1:8 or 1:16 Splitter
- 50 Ω SMA (f) and 75 Ω F (f) or Mixed
- Variable Gain and Slope
- LNB Powering incl. Current Monitoring
- RF Sensing
- Redundant Power Supplies

Active Splitters

DEV 2132
DEV 2133
DEV 2135

Active L-Band Splitters, 19", 1 RU

- 700...2300 MHz
- 1:8, 2*1:8 or 1:16 Splitter
- 50 Ω SMA (f) and 75 Ω F (f) or Mixed
- LNB Powering incl. Current Monitoring
- RF Sensing
- Redundant Power Supplies

Active Combiners

DEV 2208
DEV 2216

Active L-Band Combiner, 19", 1 RU

- 8:1 and 16:1
- 950...2150 MHz
- 50 Ω SMA (f) and 75 Ω F (f) or Mixed
- Monitoring Port at the Front
- DC Blocked Input Ports
- Power Supply Redundancy

RF Splitters and Combiners

Ultra Broadband Low Loss Splitter/Combiner

DEV 2644

Passive Splitter/Combiner, Wall Mountable

- 1:4/4:1
- 500...2700 MHz, 50 Ω SMA (f) or 400...2850 MHz, 75 Ω F (f)
- Compact Wall Mountable Chassis
- DC Path Through
- Low Slope
- High Port-to-Port Isolation

Active Splitter (DEV Essentials)

DEV 2161
DEV 2162
DEV 2165

DEV Essentials Active L-Band Splitter, 19", ½ RU

- 1:4, 1:8,1:16 Active Splitters
- 500...2300 MHz
- 75 Ω F (f)
- LNB Powering

Passive CATV-Band Splitter

DEV 2405
DEV 2409
DEV 2417
DEV 2441
DEV 244x Series

Passive CATV-Band Splitter, 19", 1 RU

- Splits to 4, 8 or 16 Outputs.
- 10...1006 MHz
- Low Slope
- High Port-to-Port Isolation
- 75 Ω F (f)
- Monitoring Port

Passive CATV-Band Combiner

DEV 2404
DEV 2408
DEV 2416
DEV 2424
DEV 2428
DEV 2432
DEV 246x Series

Passive CATV-Band Combiner, 19", 1 RU

- Combines 4, 8, 16, 24 or 32 Signals
- 10...1006 MHz
- Low Slope
- High Port-to-Port Isolation
- 75 Ω F (f)
- Monitoring Port

Accessories for RF Signal Transmission

Remote Control Panel

DEV 8552

Remote Control Panel 2 RU, 54 Keys

- Compact Control Panel for Remote Operation
- Compatible to DEV 1986 Archimedes Matrix
- Easy Switching of all Crosspoints
- 54 Brilliant High Resolution LCD-Keys
- Adaptable for other DEV Products

Managed LNB Powering System

DEV 8120

Managed LNB Powering System, 19“, 3 RU

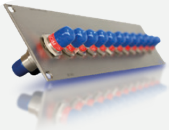
- 700...2300 MHz
- 50 Ω SMA (f) or 75 Ω F (f)
- LNB Powering for up to 54 Channels
- Integrated RF Monitoring for All Channels
- Power Supply Redundancy

LNB Powering Chassis

DEV 8122
DEV 8123

LNB Powering with 1:2 Splitter, 19“, 1 RU

- 950...2150 MHz
- 50 Ω SMA (f) and 75 Ω F (f)
- 2 or 4 Channels
- 1:2 Splitter at Each Path
- Power Supply Redundancy



Lightning Protection

DEV 8601
DEV 8602
DEV 8603

Lightning Protection, 19“, 2 RU

- 700...2300 MHz
- 50, Ω N (f), 75 Ω, N (f) or F (f)
- 4, 8 or 12 LNB Feeds
- DC Path Through
- Exchangeable Gas Capsules

Impedance Transformers

DEV 8131
DEV 8132

Stand-Alone Impedance Transformers

- 900...2200 MHz and 47...862 MHz
- SMA, N, F or BNC Connectors Available
- Ultra Low Loss Impedance Transformation
- Solid Metal Housing in Two Sizes

Managed Power Supply

DEV 5072

Power Supply Chassis, 19“, 1 RU

- 1...4 Hot-Pluggable Power Supply Modules
- 12 V, 24 V, or 48 V, Polarity Selectable
- Up to 10000 W Output Power
- Galvanic Isolation of the Output Terminals
- DEV Web Interface and SNMP

Modular HFC Headends Platforms

MODULO HFC

In order to enable HFC network operators upgrading to DOCSIC 3.1 infrastructure DEV supports with MODULO all critical optical as well as electrical signal transmission functions in the HFC headend in a flexible, highly modular format.

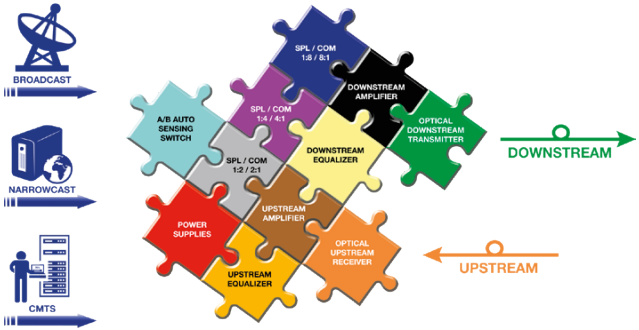
- DOCSIS 3.1 ready
- Coax and Fiber – Upstream and Downstream
- 4 Frames and 13 Different Modules
- Comprehensive Signal Management

Your Choice of Modules

We offer superior quality RF transmission modules for use in HFC networks to transmit RF signals both electrically and over fiber optic cables:

- Optical Receivers and Transmitters
- Passive and Active Splitters/Combiners
- Amplifiers
- Redundancy Switches

Modulo – The New Solution for HFC Headends



MODULO HFC - Active Components

2 RU Active Frame

DEV 3482

MODULO Frame for Active & Passive Modules 19", 2 RU, 7 Slots

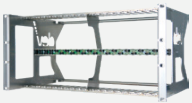
- For Active and Passive Modules
- Up to 3 Active Modules + 4 Passive Modules
- Higher Density than Conventional Products
- Redundant Power Supplies

3 RU Active Frame

DEV 3483

MODULO Frame for Active Modules 19", 3 RU, 22 Half Slots

- For Active Modules only
- Up to 8 Active Modules + 2 Power Supplies
- Higher Density than Conventional Products
- Cable Relief on the Rear



5 RU Active Frame

DEV 3480

MODULO Frame for Active & Passive Modules 19", 5 RU, 22 Slots

- For Active and Passive Modules
- Up to 18 Active Modules + 2 Power Supplies
- Up to 66 Splitter/Combiner
- Higher Density than Conventional Products
- Cable Relief on the Rear

Power Supplies

DEV 3490
DEV 3491

MODULO Power Supplies, 3 Slots

- Available as AC/DC Power Supply (DEV 3490)
- Available as DC/DC Power Supply (DEV 3491)
- 100...240 V AC or +/-36...+/-72 V DC
- 220 W @ 45 °C
- 1+1 Redundant Configuration
- Local LED Monitoring (Prime OK, Temp OK)

Controller

DEV 3464
DEV 3465

MODULO Controller for Active Modules, 1 or 3 Slots

- Optional Local User Interface
- Monitoring & Control of Active Components
- Prepared for Clustering

MODULO HFC - Active Components

Downstream Transmitter

DEV 3501
DEV 3502
DEV 3503

MODULO Downstream Transmitter, 2 Slots

- 47...1218 MHz
- MGC and AGC for an Optimized OMI
- 2 RF Inputs at the Rear
- Optical Output and Monitor Port
- Local Control of OMI Level
- DWDM with 49 Different Wavelengths

Upstream Receiver

DEV 3550

MODULO Upstream Receiver, 2 Slots

- 5...204 MHz
- 15.5 dB Variable Gain, 5 dB Variable Slope
- 2 RF Outputs at the Rear
- Optical Input and Monitor Port
- Automatic Level Control
- Local Control of Gain and Slope

Downstream Amplifier

DEV 3440

MODULO Downstream Amplifier, 2 Slots

- 47...1218 MHz
- 35.5 dB Variable Gain, 10 dB Variable Slope
- <7 dB Noise @ 20 dB Gain
- In- and Outputs at the Rear
- Monitor Port for In- and Output at the Front
- Local Control of Gain and Slope (EQ)

Upstream Amplifier

DEV 3446

MODULO Upstream Amplifier, 2 Slots

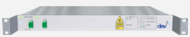
- 5...204 MHz
- 30.5 dB Variable Gain 5 dB Variable Slope
- <7.5 dB Noise @ 15 dB Gain
- In- and Outputs at the Rear
- Monitor Port for In- and Output at the Front
- Local Control of Gain and Slope

A/B Auto Sensing Switch

DEV 3460

MODULO A/B Auto Sensing Switch, 1 Slot

- 5...1218 MHz
- In- and Outputs at the Rear
- Switch with 2 Input Ports and 1 Output Port
- RF Detector at each Input
- Manual and Automatic Switching
- ClassA+10dB



EDFA Boost Amplifier

DEV 3530

Standalone EDFA Boost Amplifier, 19“, 1 RU

- Stand-Alone Device
- 1 RU Chassis with EDFA Boost Amplifier
- High Gain and Low Noise Figure
- Automatic Output Power Control (APC)
- Monitoring of Input and Output Level
- Power Supply Redundancy

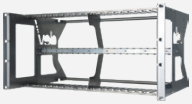
MODULO HFC - Passive Components

1 RU Passive Frame

DEV 3484

MODULO Frame for Passive Modules 19“, 1 RU, 4 Slots

- For Passive Modules only
- Up to 12 Splitter/Combiner
- Higher Density than Conventional Products



5 RU Passive Frame

DEV 3481

MODULO Frame for Passive Modules 19“, 5 RU, 22 Slots

- For Passive Modules only
- Up to 66 Splitter/Combiner
- Higher Density than Conventional Products
- Cable Relief on the Rear

Splitter/Combiner 1:8/8:1

DEV 3411

MODULO Passive Splitter/Combiner 1:8/8:1

- 5…1218 MHz
- Jumper to Select Splitter/Combiner Function
- In- and Outputs at the Rear
- Monitor Port at the Front
- Adjustable Attenuation for Each I/O Port
- Adjustable Slope at Common Port

Splitter/Combiner 2x 1:4/4:1

DEV 3407

MODULO Passive Splitter/Combiner 2x 1:4/4:1

- 5…1218 MHz
- Jumper to Select Splitter/Combiner Function
- In- and Outputs at the Rear
- Monitor Ports at the Front
- Adjustable Attenuation for Each I/O Port
- Adjustable Slope at Common Port

Splitter/Combiner 3x 1:2/2:1

DEV 3402

MODULO Passive Splitter/Combiner 3x 1:2/2:1

- 5…1218 MHz
- Jumper to Select Splitter/Combiner Function
- In- and Outputs at the Rear
- Monitor Ports at the Front
- Adjustable Attenuation for Each I/O Port
- Adjustable Slope at Common Port

4 Path Equalizer

DEV 3463

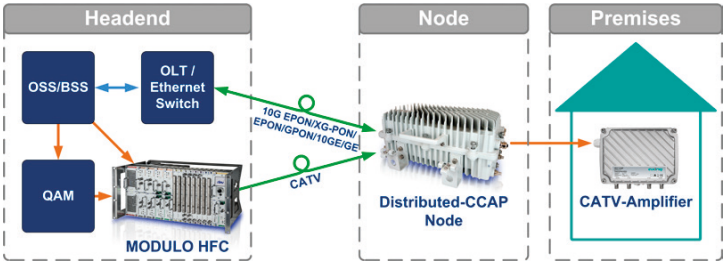
MODULO Passive 4 Path Equalizer

- 5…1218 MHz
- In- and Outputs at the Rear
- Adjustable Attenuation
- Adjustable Slope

Distributed CCAP Solutions

Distributed Access Architecture (DAA) Networks

Leapfrogging Remote PHY topology, which moves the signal generation layer (PHY) to the remote access node, the Remote MAC-PHY approach transfers both the PHY and the DOCSIS processing (MAC) layers to the remote access node. As a result CMTS becomes redundant as its functions are integrated into the remote MAC-PHY node. The use of Distributed CCAP technology offers not only great savings in costs, but also limits space requirements and lowers energy consumption in the headend. Furthermore, any potential timing and latency issues caused by the physical separation of the two layers are avoided because the MAC and PHY layers are located in the same device. Remote MAC-PHY based DAA networks offers also great flexibility as the network can be simply scaled on demand.

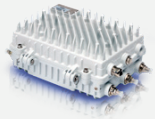


For All Kinds of FTTx Applications

The Distributed CCAP technology is not only suitable for new network infrastructures; they can also be integrated bit by bit into existing networks. With the Remote MAC-PHY topology, Distributed CCAP nodes can be used without changing the existing infrastructure by only replacing the existing HFC optical nodes. Distributed CCAP nodes support all common DOCSIS standards and also work in conjunction with Remote PHY devices or conventional CMTS systems.

DEV offers systems that are ideally suited for all kind of FTTx applications. Distributed CCAP nodes come in different sizes and housings for deployments in-field or in-house. With the user friendly management software NM3000 all Nodes can be managed as one big CCAP.

D-CCAP, Optical Nodes & CATV Amplifier



D-CCAP DOCSIS 3.0 Outdoor Mini Node

DEV 6860

Distributed CCAP DOCSIS 3.0 Outdoor Mini Node

- DOCSIS 3.0, 2.0, Euro- and C-DOCSIS
- 42/54, 55/70, 65/87 MHz Frequency Split
- GE, EPON, GPON SFP Interface
- Cable-based or Local Power Supply
- Up to 250 Cable Modems per Node

D-CCAP DOCSIS 3.0 Outdoor Node

DEV 6850

Distributed CCAP DOCSIS 3.0 Outdoor Node

- DOCSIS 3.0, 2.0, Euro- and C-DOCSIS
- 42/54, 55/70, 65/87 MHz Frequency Split
- GE, EPON, GPON SFP Interface
- Cable-based or Local Power Supply
- Up to 500 Cable Modems per Node

D-CCAP DOCSIS 3.1 Outdoor Node

DEV 6871

Distributed CCAP DOCSIS 3.1 Outdoor Node

- DOCSIS 3.1, 3.0, 2.0, Euro- and C-DOCSIS
- 42/54, 65/87, 85/108, 204/258 MHz Freq. Split
- GE, 10GE, EPON, 10G EPON, GPON, XG-PON
- 6 OFDM, 2*2 OFDMA Channels
- Up to 1,000 Cable Modems per Node

D-CCAP DOCSIS 3.1 Indoor Node

DEV 6811

Distributed CCAP DOCSIS 3.1 Indoor Node

- DOCSIS 3.1, 3.0, 2.0, Euro- and C-DOCSIS
- 42/54, 65/87, 85/108, 204/258 MHz Freq. Split
- 10GE SFP+ Interface
- 6 OFDM, 2*2 OFDMA Channels
- Up to 500 Cable Modems per Node

Axing Micro Fibre Node

ONX 1550-01

Mico Fibre Node for FTTH/FTTB/RFoG

- 1540...1560 nm, 85...1218 MHz Downstream
- 1310 nm, 5...65 MHz Upstream
- Input Level -8...+1 dBm
- Output Level +3 dBm
- Interstage Slope Adjustable
- Attenuation Adjustable

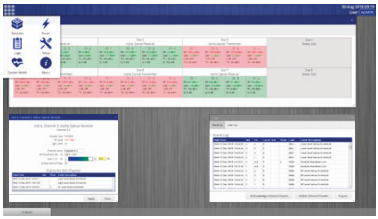
Axing CATV Amplifier

BVS 14-69P
BVS 20-69P

CATV Amplifier premium-line 1218MHz

- GaAs technology
- 85...1218 MHz Downstream
- 5...65 MHz Upstream
- Attenuation Adjustable
- Test Ports at In- and Output

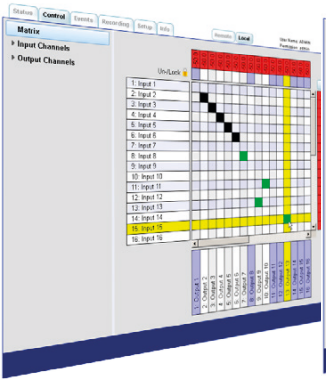
Manageability at its Best

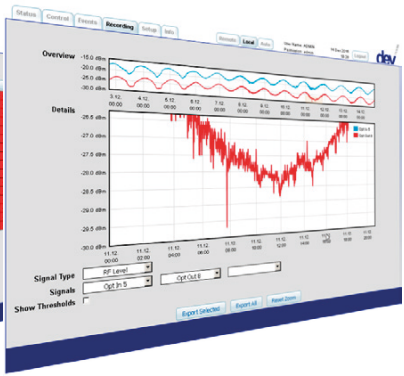


The DEV Web Interface is a powerful, easy-to-use tool for managing DEV devices. The start screen shows the status of the device and its modules at a glance. A list of errors, like signal failures or exceeded thresholds, keeps you in the picture anytime.

The intuitive DEV Web Interface enables you to record and export RF and Bias levels for all available channels. If a spectrum analyzer is installed in the device, you can also operate it via the interface for diagnostic purposes, even for external devices.

The setup area provides you with powerful settings, such as signal routing options, adjusting values like gain and slope, or defining threshold levels for monitoring and switching purposes. You can control the extensive user management, containing individual access permissions, or access the user manual for a detailed documentation of the device and its functions. DEV's Web Interface is accessible via your web browser and does not require the installation of any additional software.





DEV TripleC Protection

DEV offers a Support package for all our high quality and high availability products that is unrivaled in the market, and raises the bar above industry standards: The TripleC Protection

From installation to ongoing deployment – the qualified technical DEV staff will support you with the best and fastest solution. You will enjoy the advantage of our outstanding support services for more than three years, free of charge:

- 37 Months Service Period
- Direct Access to Technical Support
- Guaranteed Service Levels
  - 3-hour Reaction Time[1]
  - Start of Fault Analysis within 24 hours[1]
- Free Shipping of Equipment for Repair – Back and Forth
- Free of Charge
- Extendable to a total service term of 10 years

DEV Premium Service

For high-availability applications, the optional DEV Premium Service gives you full protection on top of TripleC. It offers a free replacement unit in advance in case of a failure, free firmware updates and a guaranteed start of the fault analysis in less than eight hours[1]. Our Premium Service can be ordered even after delivery of your equipment. The Premium Service requires DEV TripleC protection.

7 Years Warranty – We Trust our Products

Since we develop and manufacture our state-of-the-art products in-house, we can be absolutely sure that they are durable and have the highest reliability and lifetime. By offering a long lasting 7-year warranty for all standard products[2] we promise that our devices are engineered and manufactured for many years of use.

[1]Working days, Monday - Friday 8:00am - 6:00pm CET
[2]Excluded are all mechanical parts and power supplies

POCKET GUIDE

DEV Systemtechnik, part of the AXING Group, develops and manufactures a complete range of products and systems for optical and electrical transmission of Radio Frequency (RF) signals via coaxial cable or fiber. For over 20 years DEV has designed, engineered, and manufactured RF transmission equipment for satellite, broadcast, and cable applications. All products are built to meet the highest standards of system availability, reliability and manageability.

In the DEV Pocket Guide you will find...

- RF over Fiber Solutions
- Switching Systems
- Amplifiers, Splitters & Combiners
- Accessories for Broadcast & SatCom
- DOCSIS 3.1 Equipment for HFC and FTTx Networks
- Information about our services and our 7-year warranty

dev
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