The Experts in RF Signal Handling

Minimum Space – Maximum Performance!

Product:

DEV 2180 - L-Band Distribution System

Features:

- Versatile 4 RU Chassis which can be equipped individually
- Various L-Band Distribution Amplifier (DA) Options and Matrix Switch Options are available
- Inputs and Outputs are available in 50 Ohm (DA Options) and 75 Ohm (DA Options and Matrix Switch Options)
- LNB Bias Feeding, Monitoring Output and RF Sensing for each Amplifier Module
- Bias Current Monitoring Option with Alarm Function
- Redundant AC or DC Power Supplies with Status Alarm Output

Application Areas:

- Large Cable Head End Stations
- Large Satellite Ground Stations
- Play Out Centres

*Front DEV 2180 (with 12 Amplifier Modules & 4 * Option 33)*

Rear DEV 2180 (Sample Configuration)

The Situation

Large turn-around cable head-ends need to be capable of receiving L-Band feeds from many satellites. E.g. in an application, a large number of L-Band digital and analogue receivers are to be fed from a number of satellites, with each satellite providing 4 L-Band signals.

Some of the receivers require only one of the signals from a specific satellite; some require more flexibility and should be able to choose from all four L-Band signals of a specific satellite.

DEV worked out a Solution

The DEV 2180 is the ideal unit for minimising space requirement, but providing maximum performance, by using multiple distribution amplifier options and/or matrix switch options in a compact chassis, tailored to the specific satellite and channel listing requirements.

There is a solution for each individual need!!!

The Technical Concept

The DEV 2180 L-Band distribution system is extremely flexible to be equipped.

Two types of amplifier modules are used for the different applications; all modules provide a monitoring port, bias feeding, and RF Sensing for monitoring the input signal. It is possible to install up to 12 amplifier modules at the front side of the instrument, which feed the splitters and/or matrix switches located at the rear side of the chassis.

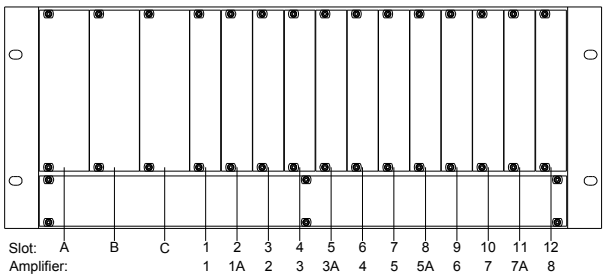
There are available different L-Band distribution amplifier options (1:8, 1:16, in 50 Ohm or in 75 Ohm).

In addition or alternatively, the chassis can be equipped with various matrix switch options. Each output of a matrix switch can select any of the two or the four input signals fed from one satellite antenna. The matrix switch options are available with 16, 32, 48, or 64 outputs.

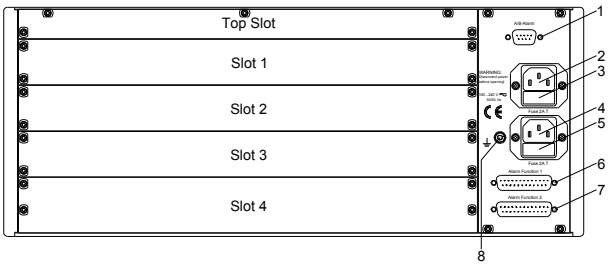
LNB bias current monitoring modules are available as an option as well.

Due to the modular design of the DEV 2180, it is possible to exchange the modules on the front side, whilst the unit is fitted in the rack, without the need to unplug the cables from the rear side or to remove the unit.

DEV 2180 System Configuration



Front Slot Configuration DEV 2180



Rear Slot Configuration DEV 2180

To configure your DEV 2180 count the front side slots and rear side slots of your desired setup.

Front Side

The instrument is equipped with up to three power supply modules (A)…(C), which are located on the left side. By default, two power supply modules are installed, it is recommended to equip the instrument with a third power supply, if eight or more amplifier modules are installed. Either the additional module is ordered additionally, or it can be ordered at any time as an upgrade. The upgrade can be easily performed onsite by the customer.

Right to the power supply modules, the twelve available slots (1)…(12) for amplifier modules (distribution amplifier modules and/or matrix amplifier modules) are located, counted and installed from left to right. The naming of the amplifier modules differs, since it is possible to equip the instrument with the bias monitoring option which requires a slot per two amplifier modules and which is usually placed at the locations, which are named with an “A” appended, i.e. “1A”, “3A”, “5A”, and “7A”.

Rear Side

On the right side, the power plugs ((2) & (4)), the alarm connectors ((1), (6) & (7)), and the grounding screw (8) are installed.

Five horizontal slots are available; the Top Slot is reserved for the inputs of the instrument. Slots 1…4 will usually accommodate matrix switches or splitters, thus the outputs of the instrument. A matrix switch with 16 outputs requires one slot; larger matrix switches need the corresponding number of slots.

Alternatively a slot can be used for the outputs of a distribution amplifier option, up to four 1:8 splitters or two 1:16 splitters can be located within one slot.

Note, that the maximum number of 1:8 splitters is restricted to 12 per chassis, due to the number of available slots at the front side.

If ordered with the bias monitoring option (Option 33), the maximum number of 1:8 splitters is even reduced to 8 per chassis.

The assembly of inputs in the top cover will start from left to right, following the numbering of the front side.

The assembly of outputs will start in Slot 1 with the matrix switch with the maximum number of output ports, down to the splitter with the lowest number of output ports.

Technical Data

DEV 2180 L-Band Distribution System – Common Technical Data

RF Specifications	
Frequency range	950…2150 MHz
Capacity	
Front side	Up to 12 vertical slots
Rear side	Up to 4 horizontal Slots plus Top Slot for the inputs
Monitoring Port	
Impedance, connector	50 Ohm, SMA (f)
Return loss	>18 dB
RF-Sensing	
Adjustable threshold level	-15 dBm > threshold level > -45 dBm
DEV factory setting	-30 dBm
Alarm indication	via LED on the front panel and via potential free contacts
Bias	
Bias	15+3/-0 V, max. 0,5 A per input; total max. 2,0 A (if equipped with 2 power supply modules) or total max. 5,2 A (if equipped with 3 power supply modules)
Bias Current Monitoring (Option 33)	
Adjustable alarm level setting:	
• Upper alarm level	• max. 500 mA (DEV factory setting: 350 mA)
• Lower alarm level	• min. 50 mA (DEV factory setting: 100 mA)
Alarm indication	via LED on the front panel and via potential free contacts
Redundant Power Supply (standard and Option 14)	
Number of power supplies, power supply module slots	equipped with 2 power supply modules, 3 power supply slots available
Power line redundancy	100…240 V AC supplied by two different lines (standard) or -36…-60 V DC supplied by two different lines (Option 14)
Power consumption	<120 VA
Alarms	
Alarm connectors	2 * Sub-D-25 (m) & 1 * Sub-D-9 (m)
Contact rating	60 V; 0,3 A
Two stage alarm signalisation for power line failure	Potential free contacts
B-Alarm	One power supply unit does not deliver any secondary power.
A-Alarm	All power supply units do not deliver any secondary power.
General Specifications	
Housing	19“ (483 mm), 4 RU (178 mm), ~490 mm depth
Weight	~10 kg
Environmental conditions	ETS 300019 Part 1-3 Class 3.1

Technical Data (cont.)

DEV 2180 L-Band Distribution System – Distribution Amplifier Options

RF Specifications

Number of outputs	8, 16 per distribution amplifier option	
Impedance, connectors	50 Ohm, SMA (f) or 75 Ohm, Precision F (f)	
Damage level	+10 dBm @ 50 Ohm / 120 dBµV @ 75 Ohm	
Nominal input level	–10 dBm @ 50 Ohm / 85 dBµV @ 75 Ohm	
Return loss	>14 dB	
Insertion loss	0±3 dB	(for 1:8 and 1:16 DAs)
Frequency response full band	±0,6 dB	(for 1:8 and 1:16 DAs)
Frequency response in any 36 MHz interval	±0,3 dB	(for 1:8 and 1:16 DAs)
Isolation between output ports	>25 dB	
Intermodulation distortion	<-40 dBc @ -10 dBm	
Group delay	< 5 ns	(within any 36 MHz window)
Noise figure	<10 dB	

Unused output ports need to be terminated!

DEV 2180 L-Band Distribution System – Matrix Switch Options

RF Specifications

Number of inputs	2 or 4 inputs per matrix switch option	
Number of outputs	16, 32, 48, or 64 per matrix switch option	
Impedance, connectors	75 Ohm, Precision F (f)	
Damage level	120 dBµV	
Nominal input level	85 dBµV	
Return loss	>14 dB	
Insertion loss	3±3 dB	
Frequency response in any 36 MHz interval	±0,6 dB ±0,3 dB	(950…1100 MHz) (1100…2150 MHz)
Isolation between input ports	>25 dB	
Isolation between output ports	>25 dB	
Intermodulation distortion	<-35 dBc @ 85 dBµV	
IMA_3 output level	<89 dBµV	
IMA_2 output level	<87 dBµV	
Group delay	< 5 ns	(within any 36 MHz window)
Noise figure	<10 dB	

Input Selection

Switch control	14 V, 18 V and 0 Hz, 22 kHz at the output

Unused output ports need to be terminated!

Order Information

DEV 2180 Chassis for L-Band Distribution System

Please select number and type of options to be installed in the chassis from the following table. Please consider the slot requirements on the front side and the rear side of the chassis, feel free to contact DEV Systemtechnik if you need assistance!

Options	Inputs			Outputs			Slot Requirements	
	#	Impedance	Connector	#	Impedance	Connector	Front	Rear
Distribution Amplifier Options								
Option 8/50	1	50 Ohm	SMA (f)	8	50 Ohm	SMA (f)	1	1 / ¼
Option 8/75	1	75 Ohm	F (f)	8	75 Ohm	F (f)	1	1 / ¼
Option 16/50	1	50 Ohm	SMA (f)	16	50 Ohm	SMA (f)	1	1 / ½
Option 16/75	1	75 Ohm	F (f)	16	75 Ohm	F (f)	1	1 / ½
Matrix Switch Options								
Option 2x16/75	2	75 Ohm	F (f)	16	75 Ohm	F (f)	2	1
Option 2x32/75	2	75 Ohm	F (f)	32	75 Ohm	F (f)	2	2
Option 2x48/75	2	75 Ohm	F (f)	48	75 Ohm	F (f)	2	3
Option 2x64/75	2	75 Ohm	F (f)	64	75 Ohm	F (f)	2	4
Option 4x16/75	4	75 Ohm	F (f)	16	75 Ohm	F (f)	4	1
Option 4x32/75	4	75 Ohm	F (f)	32	75 Ohm	F (f)	4	2
Option 4x48/75	4	75 Ohm	F (f)	48	75 Ohm	F (f)	4	3
Option 4x64/75	4	75 Ohm	F (f)	64	75 Ohm	F (f)	4	4
Other Options								
Option 14 (Supply Voltage -48 V DC instead of 100…240 V AC)								
Option 33 (Bias Current Monitoring) per two amplifier modules:							1	
DEV 12-0013 (3rd AC power supply for instruments with 8 or more amplifier modules)								

Contact

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