L-Band Combining Matrix



The final product may vary from the above image depending on the options selected.

Products	
DEV 1975/16x16	16x16 Combining Matrix; 850...2450 MHz; 75 Ohm, F (f)
DEV 1975/16x8	16x8 Combining Matrix; 850...2450 MHz; 75 Ohm, F (f)

Features

- Up to 16x16 in 2 RU
- Various Input and Output Modules
  - 75 Ohm, F (f) or BNC (f), or 50 Ohm, SMA (f) or BNC (f)
  - Optical Inputs
- Variable Gain (MGC or AGC)
- Variable Slope
- RF Sensing
- LNB Powering, switchable 13/18 V and 22 kHz Tone
- Graphical Local User Interface
- Integrated Spectrum Analyzer
- Power Supply Redundancy
- Secure Lock Operation
- SNMP Support
- Easy to use DEV Web Interface
- Signal Recording and Data Backup Feature

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Technical Data

DEV 1975 Combining Matrix

Capacity		
Number of Inputs x Outputs	DEV 1975/16x16:	16x16
	DEV 1975/16x8:	16x8
RF Specifications		
Frequency Range	850…2450 MHz	
Impedance, Connectors	75 Ohm, precision F (f)	
Damage Level	+25 dBm	
Operational Input Level	<-5 dBm	
Return Loss	typ. 14, min. >12 dB	
Variable Gain at Input	-5…+5 dB	
Variable Gain at Output	-32…+31 dB	
Flatness	typ. ±2.0 dB (over entire Band)	
	±0.75 dB (in any 36 MHz Interval)	
Isolation	Input/Input, Output/Output:	typ. 60 dB
	Input/Output (Crosstalk):	typ. 60 dB
	Off:	typ. 60 dB
Intermodulation Distortion [1]	>40 dBc @ -20 dBm/tone	
Group Delay Distortion	<1 ns (in any 36 MHz Interval)	
Noise Figure	< 37 dB; Input gain: 5 dB	
OIP3[1]	>12 dBm	
OP1dB	2 dBm	
Relay Type	Semiconductor	
Local Operation		
Display	2.2" Full Color (18 Bits)	
Controls	Rotary Switch	
Remote Communication		
Interface (Connector)	Ethernet (RJ-45)	
Remote Control & Surveillance (Interface)	• via Web Interface (Ethernet) • via SNMP (Ethernet)	
Redundant Power Supply		
Supply Voltage	100…240 V AC supplied by two different Lines	
Power Consumption	<250 VA	
General Specifications		
Size	19" (483 mm) Width, 2 RU (89 mm) Height, ~300 mm Depth	
Weight	~16 kg	
Environmental Conditions	ETS 300019 Part 1-3 Class 3.1E	

Note 1: Maximum number of combined inputs is 8

Technical Data (cont.)

Option 20I **Change 4 Input Channels to 50 Ohm, SMA (f)**
Option 20B **Change 4 Input Channels to 50 Ohm, SMA (f) with LNB Powering**
Option 20O **Change 4 Output Channels to 50 Ohm, SMA (f)**

Per Option 20I (20O), one input (output) module with four channels is equipped with 50 Ohm, SMA (f) connectors instead of 75 Ohm, F (f) connectors.
With Option 20B the four channels of one input module are capable to deliver LNB power in addition:

LNB Power & Current Monitoring

LNB Power	max. 350 mA per Input
Voltage and Tone Control	13 V, 18 V and 0 Hz, 22 kHz
Adjustable Level Setting:	
• Upper Alarm Level	• max. 330 mA
• Lower Alarm Level	• min. 50 mA

Option 21I **Change 4 Input Channels to 75 Ohm, BNC (f)**
Option 21B **Change 4 Input Channels to 75 Ohm, BNC (f) with LNB Powering**
Option 21O **Change 4 Output Channels to 75 Ohm, BNC (f)**

Per Option 21I (21O), one input (output) module with four channels is equipped with 75 Ohm, BNC (f) connectors instead of 75 Ohm, F (f) connectors.
With Option 21B the four channels of one input module are capable to deliver LNB power, in addition:

LNB Power & Current Monitoring

LNB Power	max. 350 mA per Input
Voltage and Tone Control	13 V, 18 V and 0 Hz, 22 kHz
Adjustable Level Setting:	
• Upper Alarm Level	• max. 330 mA
• Lower Alarm Level	• min. 50 mA

Option 22I **Change 4 Input Channels to Optical providing LC/APC**
Option 22IHP **Change 4 Input Channels to Optical providing LC/APC (High Input Power)**
Option 24I **Change 4 Input Channels to Optical providing SC/APC**
Option 24IHP **Change 4 Input Channels to Optical providing SC/APC (High Input Power)**

Per Option 22I (24I), one input module with four channels is equipped with optical LC/APC (SC/APC) connectors instead of 75 Ohm, F (f) RF connectors.
Furthermore, optical input modules are available that are capable to handle higher optical input levels, as provided by some optical LNBs. These high input power optical input modules are to be ordered via Option 22IHP (with optical LC/APC connectors) and via Option 24IHP (with optical SC/APC connectors)

Optical Specifications

Fiber Type	Single Mode 9/125 µm	
Connector Type	Option 22I, Option 22IHP:	LC/APC
	Option 24I, Option 24IHP:	SC/APC
Wavelength	1100…1650 nm	
Optical Input Level	Option 22I, Option 24I:	-22…0 dBm
	Option 22IHP, Option 24IHP:	-22…3 dBm
Damage optical Input Level	+10 dBm	

Technical Data (cont.)

Option 23B Change 4 Input Channels to 75 Ohm, F (f) with LNB Powering

Per Option 23B, the four channels of one input module with 75 Ohm, F (f) connectors are capable to deliver LNB power:

LNB Power & Current Monitoring

LNB Power	max. 350 mA per Input
Voltage and Tone Control	13 V, 18 V and 0 Hz, 22 kHz
Adjustable Level Setting:	
• Upper Alarm Level	• max. 330 mA
• Lower Alarm Level	• min. 50 mA

Option 25 Variable Slope (all Channels)

With Option 25, the matrix provides slope control for all paths.

Variable Slope	0…5 dB

Option 26I Change 4 Input Channels to 50 Ohm, BNC (f)
Option 26B Change 4 Input Channels to 50 Ohm, BNC (f) with LNB Powering
Option 26O Change 4 Output Channels to 50 Ohm, BNC (f)

Per Option 26I (Option 26O), one input (output) module with four channels is equipped with 50 Ohm, BNC (f) connectors instead of 75 Ohm, F (f) connectors.
With Option 26B the four channels of one input module are capable to deliver LNB power, in addition:

LNB Power & Current Monitoring

LNB Power	max. 350 mA per Input
Voltage and Tone Control	13 V, 18 V and 0 Hz, 22 kHz
Adjustable Level Setting:	
• Upper Alarm Level	• max. 330 mA
• Lower Alarm Level	• min. 50 mA

Option 36 Integrated Spectrum Analyzer

With Option 36, the matrix is delivered with integrated spectrum analyzer functionality to be operated via Web Interface. The matrix chassis provides a dedicated external 50 Ohm, SMA (f) spectrum analyzer input port for connecting any signal to be probed.
For the technical data of the spectrum analyzer, please refer to the separate spec sheet.

Option 38 Secure Lock Operation

With Option 38, the matrix provides the ability of Secure Lock Operation for multiple user operation. While each user can be configured to operate dedicated inputs and outputs, Secure Lock Operation allows user X to lock a switched path while user Y cannot unlock this path to prevent unwanted service interruptions. Admin user is able to overwrite any path locked by normal users.

Option 85 4 Input Channels less
Option 86 4 Output Channels less

With Option 85 or Option 86, the device is delivered with four input channels or with four output channels less. Thus, the standard configuration can be equipped with less input or output channels. This provides the flexibility to configure the device for the current requirements and to keep the option to upgrade the device to an application specific maximum size. The field upgrade can be performed by the customer by ordering the corresponding input module or output module.

Order Information

Products	
DEV 1975/16x16	16x16 Combining Matrix; 850...2450 MHz; 75 Ohm, F (f)
DEV 1975/16x8	16x8 Combining Matrix; 850...2450 MHz; 75 Ohm, F (f)

Options	
Option 20I	Change 4 Input Channels to 50 Ohm, SMA (f)
Option 20B	Change 4 Input Channels to 50 Ohm, SMA (f) with LNB Powering
Option 20O	Change 4 Output Channels to 50 Ohm, SMA (f)
Option 21I	Change 4 Input Channels to 75 Ohm, BNC (f)
Option 21B	Change 4 Input Channels to 75 Ohm, BNC (f) with LNB Powering
Option 21O	Change 4 Output Channels to 75 Ohm, BNC (f)
Option 22I	Change 4 Input Channels to Optical providing LC/APC
Option 22IHP	Change 4 Input Channels to Optical providing LC/APC (High Input Power)
Option 23B	Change 4 Input Channels to 75 Ohm, F (f) with LNB Powering
Option 24I	Change 4 Input Channels to Optical providing SC/APC
Option 24IHP	Change 4 Input Channels to Optical providing SC/APC (High Input Power)
Option 25	Variable Slope (all Channels)
Option 26I	Change 4 Input Channels to 50 Ohm, BNC (f)
Option 26B	Change 4 Input Channels to 50 Ohm, BNC (f) with LNB Powering
Option 26O	Change 4 Output Channels to 50 Ohm, BNC (f)
Option 36	Integrated Spectrum Analyzer
Option 38	Secure Lock Operation
Option 85	4 Input Channels less
Option 86	4 Output Channels less

Order Information (cont.)

Modules	(Input Modules and Output Modules for Upgrade or as Spare Part)
DEV 13-0408	Input Module, 4 Paths; 850...2450 MHz; 50 Ohm, BNC (f)
DEV 13-0409	Input Module incl. LNB Powering, 4 Paths; 850...2450 MHz; 50 Ohm, BNC (f)
DEV 13-0411	Output Module, 4 Paths; 850...2450 MHz; 50 Ohm, BNC (f)
DEV 13-0406	Input Module, 4 Paths; 850...2450 MHz; 50 Ohm, SMA (f)
DEV 13-0407	Input Module incl. LNB Powering, 4 Paths; 850...2450 MHz; 50 Ohm, SMA (f)
DEV 13-0410	Output Module, 4 Paths; 850...2450 MHz; 50 Ohm, SMA (f)
DEV 13-0350	Input Module, 4 Paths; 850...2450 MHz; 75 Ohm, BNC (f)
DEV 13-0351	Input Module incl. LNB Powering, 4 Paths; 850...2450 MHz; 75 Ohm, BNC (f)
DEV 13-0352	Output Module, 4 Paths; 850...2450 MHz; 75 Ohm, BNC (f)
DEV 13-0347	Input Module, 4 Paths; 850...2450 MHz; 75 Ohm, F (f)
DEV 13-0348	Input Module incl. LNB Powering, 4 Paths; 850...2450 MHz; 75 Ohm, F (f)
DEV 13-0349	Output Module, 4 Paths; 850...2450 MHz; 75 Ohm, F (f)
DEV 13-0253	Optical Input Module, 4 Paths; LC/APC
DEV 13-0397	Optical Input Module, 4 Paths; High Input Power; LC/APC
DEV 13-0384	Optical Input Module, 4 Paths; SC/APC
DEV 13-0398	Optical Input Module, 4 Paths; High Input Power; SC/APC

Order Example

16x16 Combining Matrix; 850...2450 MHz; 75 Ohm, F (f) with LNB Powering for all Input Channels

- 1* DEV 1975/16x16
- 4* Option 23B

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