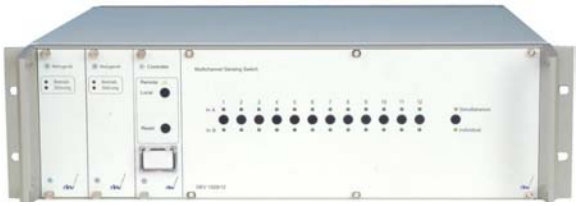
The Experts in RF Signal Handling

Multi Channel Switches



Products:

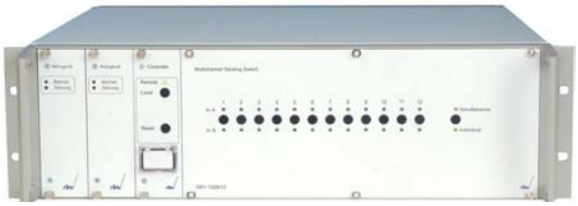
DEV 1220/xx -	Multi Channel DPST Switch, 50 Ohm SMA
DEV 1520/50/xx -	Multi Channel L-Band Redundancy Switch, 50 Ohm SMA
DEV 1520/75/xx -	Multi Channel L-Band Redundancy Switch, 75 Ohm Precision F
DEV 1530/xx -	Multi Channel CATV-Band Redundancy Switch, 75 Ohm Precision F
DEV 1720/xx -	Multi Channel CATV-Band Switch with Monitoring Port, 75 Ohm BNC
DEV 1820/xx -	Multi Channel ASI Redundancy Switch, 75 Ohm BNC

Features:

- Series of Multi Channel DPST Switches for different Purposes
- Available with 4, 8, 12, or 16 Switch Modules (“/xx”)
- Comprehensive Web Interface for Surveillance and Setup of the Instrument
- Web Interface Option available for comfortable Configuration and Control
- Remote Control Protocol Support, e.g. SNMP
- Dual Redundant Power Supplies

Application Areas:

- Satellite Ground Stations
- Cable Head End Stations
- Transmission Studios



Front DEV 1520/zz/12

Rear DEV 1520/75/12

The Situation

Different fields of application require the application of switches, where the output is fed by one of two signal sources (DPST, double pole single throw (2:1)) or where the input signal can be routed to one of two output ports (SPDT, single pole double throw (1:2)). Usually, the number of the same kind of switches, which are required, varies from application to application.

DEV worked out a Solution

The DEV 1x20/xx and DEV 1530/xx were developed for the professional use. Basically, the aim of this series of multi channel switches is to cover the requirements for a number of DPST or SPDT switches integrated in a compact rack-mountable chassis.

The instruments support the individual switching of each channel or the simultaneous switching of a group of channels; each group consisting of four consecutive channels. Instruments with sensing switch modules applied, even provide autonomous switching capability, i.e. based on the RF level measured for each input port, the instrument decides to automatically switch a channel or a group without any external interaction.

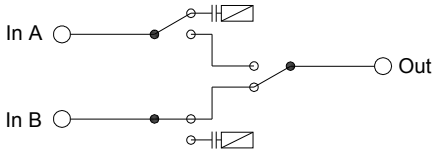
The Technical Concept

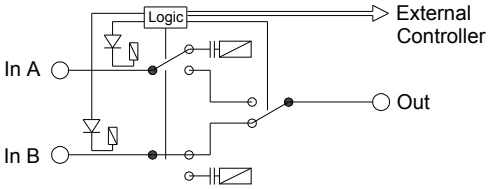
The common base of the DEV 1x20/xx and the DEV 1530/xx is a 19” 3 RU chassis prepared for the integration of various switch modules. The field of application is indicated by the different model numbers, please refer to the next page, where the functionality of the different switch modules is explained. The instruments of this series are available with a different number of switch modules installed, indicated by “/xx” which can be either /4, /8, /12, or /16.

There are various possibilities to operate the instrument: First, there is the operation via the push buttons on the instrument thus enabling the local control. The default Basic Web Interface provides features for checking the health status of the instrument and for changing the basic setup of the instrument. The instrument can be equipped with the Web Interface Option (Option 78), which additionally permits the full control of the instrument, in terms of switching and setting up specific parameters.

Additionally, the implementation of protocols (Sandar Prosan, Leitch, SNMP) provides the remote control and surveillance of the instrument.

Functionality of the different Switch Modules



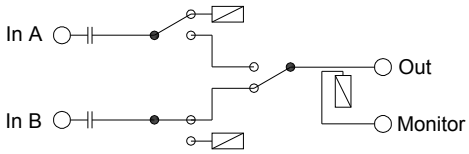


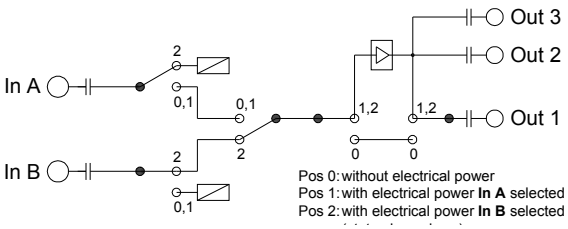
DEV 1220 –
DEV 11-0051 DPST Switch Module

For the frequency range DC…2,5 GHz in 50 Ohm with SMA connectors.
The common output port can be switched to one of two input ports (DPST, Double Pole Single Throw (2:1)).
Due to the fact that the signal is routed via relays only, the module can be used in reverse direction as well, i.e. to realise a SPDT (Single Pole Double Throw (1:2)) switch.

DEV 1520/50, DEV 1520/75, and DEV 1530, DEV 11-0014, DEV 11-0026, and DEV 11-0034 DPST Sensing Switch Module

For L-Band applications (DC, 950…2150 MHz, DEV 11-0014 (50 Ohm, SMA) and DEV 11-0026 (75 Ohm, Precision F))
or CATV-Band applications (DC, 47…862 MHz, DEV 11-0034 (75 Ohm, Precision F)).
Two input ports can be switched to one output port.
Both input ports are individually monitored for the user defined RF threshold level. Alarming functionality is provided.
The instrument is able to control the switching autonomously.
The module is able to pass an external 10 MHz reference signal.





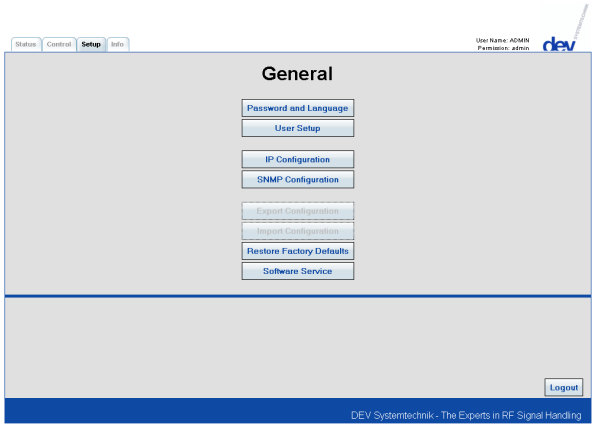
DEV 1720
DEV 11-0031 CATV-Band Switch Module with Monitor Port

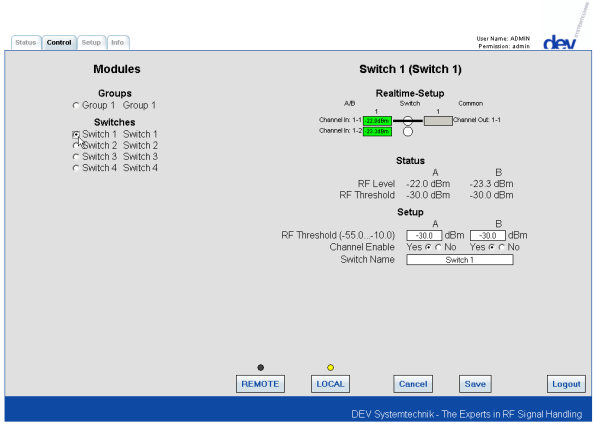
For CATV-Band applications (47…862 MHz) in 75 Ohm with BNC connectors.
The output port can be switched to one of two input ports.
A monitoring port at a 20 dB reduced level in comparison to the output signal is realised via an integrated RF coupler, This monitor port can be used for measurements on the output signal while the instrument is in service.

DEV 1820 –
DEV 14-0001 ASI Redundancy Switch Module

For ASI signal applications in 75 Ohm with BNC connectors.
The module combines a 2:1 input selection and a 1:3 active distribution amplifier for ASI signals. One of two inputs feeds the three parallel outputs.
The signal transmission of DC is blocked.

The Web Interface





The figures above show two screenshots of the Web Interface of a DEV 1520/zz/4.

The Setup Tab of the Basic Web Interface

To branch out in the different setup windows, the Setup Tab contains a number of buttons:
The user who is currently logged in can change the password and the personal language setting using the Password and Language button.
With the User Setup button an administrator may add or delete users and may alter user permissions.
For changing the IP settings of the instrument, the button IP Configuration is provided, the button SNMP Configuration enables modifications of the SNMP parameters.
The button Restore Factory Defaults resets the instrument to the factory default values, and the button Software Service finally permits updates of the firmware of the instrument.

The Control Tab of the Web Interface Option

With the Web Interface Option (Option 78) it is possible to perform switching operations and the setup of specific instrument parameters via a standard Web-Browser.
In the “Realtime-Setup” section on the right side it is possible to switch the selected channel (or group) by clicking on one of the circles.
In the “Status” section of an instrument with RF sensing functionality, the measured RF level and the RF threshold level for each input port of the selected channel are displayed.
In the “Setup” section it is possible to change the RF threshold levels and to enable or disable each input port. If disabled, the port will not be monitored and will not be considered in autonomous switching mode.
Finally, it is possible to assign a user specific name for each channel or group to provide a comprehensive identification for the corresponding instance.

Technical Data

DEV 1x20 / DEV 1530 Multi Channel Switch Chassis

Capacity

Number of slots for switch modules	4	(DEV 1x20/4, DEV 1530/4)
	8	(DEV 1x20/8, DEV 1530/8)
	12	(DEV 1x20/12, DEV 1530/12)
	16	(DEV 1x20/16, DEV 1530/16)

Remote Communication

Interfaces, connectors	• Ethernet, RJ-45 • serial interface RS 232 (optional RS 422/RS 485), Sub-D-9 (f)
Remote control & surveillance, interface	• via (optional) Web Interface, Ethernet; • via Sandar Prosan protocol, serial interface; • via SNMP protocol, Ethernet; • via Leitch protocol, Ethernet/Telnet (up to 7 sessions) and optional via serial interface.

Alarms

Two stage alarm signalisation for power line failure	Potential free contacts
Alarm connector	Sub-D-9 (m)
Contact load	60 V; 0,3 A
B-Alarm	One power supply unit does not deliver any secondary power.
A-Alarm	All power supply units do not deliver any secondary power.
Summary Alarm	Via remote interface and via potential free contacts

Redundant Power Supply

Redundant power supplies	100…240 V AC supplied by two different lines
Power consumption	~30…50 VA, absolute max. 100 VA

General Specifications

Housing	19“ (483 mm), 3 RU (133 mm), 495 mm depth
Weight	~9…12 kg
Environmental conditions	ETS 300019 Part 1-3 Class 3.1

DEV 1220 – DEV 11-0051 DPST Switch Module, DC…2,5 GHz, 50 Ohm, SMA (f)

RF Specifications

Frequency range	DC…2,5 GHz	
Number of inputs	2	
Number of outputs	1	
Impedance, connectors	50 Ohm, SMA (f)	
Damage level	+30 dBm	
Return loss selected path	>14 dB, typical 16 dB	
Return loss not selected path	>14 dB, typical 16 dB	
Insertion loss	<2 dB	
Isolation on/off	>50 dB	
Relay type	latching	
Contact rating	28 V DC, 0,25 A	
Switching cycles	>10E6	(no DC)
	>10E5	(28 V DC, 0,25 A)

Technical Data (cont.)

DEV 1520/50 – DEV 11-0014 DPST Sensing Switch Module, L-Band, 50 Ohm, SMA (f)
DEV 1520/75 – DEV 11-0026 DPST Sensing Switch Module, L-Band, 75 Ohm, Precision F (f)
DEV 1530 – DEV 11-0034 DPST Sensing Switch Module, CATV-Band, 75 Ohm, Precision F (f)

RF Specifications

Frequency range	DC, 47…862 MHz	(DEV 11-0034)
	DC, 950…2150 MHz	(DEV 11-0026, DEV 11-0014)
Number of inputs	2	
Number of outputs	1	
Impedance, connectors	50 Ohm, SMA (f)	(DEV 11-0014)
	75 Ohm, Precision F (f)	(DEV 11-0026, DEV 11-0034)
Damage level	+10 dBm	(DEV 11-0034)
	+15 dBm	(DEV 11-0026, DEV 11-0014)
Nominal input level	0 dBm	
Return loss selected path	>14 dB, typical 16 dB	
Return loss not selected path	>14 dB, typical 16 dB	
Insertion loss	<2 dB	
Frequency response	±0,5 dB	
Relay type	latching	
Switching cycles	>10E6	(no DC)

RF Sensing

Adjustable threshold level	-10 dBm > threshold level > -50 dBm (DEV 11-0026)
	-10 dBm > threshold level > -60 dBm (DEV 11-0034, DEV 11-0014)
DEV factory setting	-30 dBm
Alarm indication	via LED and via remote interface

DEV 1720 – DEV 11-0031 DPST Switch Module with Monitor Port, CATV-Band, 75 Ohm, BNC (f)

RF Specifications

Frequency range	47…862 MHz
Number of inputs	2
Number of outputs	1
Impedance, connectors	75 Ohm, BNC (f)
Damage level	+30 dBm
Return loss selected path	>23 dB @ 70 MHz
	>18 dB @ 140 MHz
	>14 dB @ 700 MHz, typical 16 dB
Return loss not selected path	>23 dB @ 70 MHz
	>18 dB @ 140 MHz
	>14 dB @ 700 MHz, typical 16 dB
Insertion loss	<2 dB
Isolation on/off	>80 dB @ 140 MHz
	>55 dB @ 700 MHz
Relay type	failsafe
Switching cycles	10E6

Monitoring Port

Impedance, connector	75 Ohm, BNC (f)
Return loss	>18dB
Insertion loss	= output level - 20±3 dB

Technical Data (cont.)

DEV 1820 – DEV 14-0002 ASI Redundancy Switch Module, 75 Ohm, BNC (f)

Signal type	ASI / 0,8 V
Transmission rate	30…540 MBit/s
Number of inputs	2
Number of outputs	3
Impedance, connectors	75 Ohm, BNC (f)
Input level	100…800 mV
Output level	>600 mV
Isolation on/off	>50 dB
Relay type	failsafe
Switching cycles	10E6

Order Information

DEV 1220/4	4	Channel DPST Switch, 50 Ohm SMA
DEV 1220/8	8	Channel DPST Switch, 50 Ohm SMA
DEV 1220/12	12	Channel DPST Switch, 50 Ohm SMA
DEV 1220/16	16	Channel DPST Switch, 50 Ohm SMA
DEV 1520/50/4	4	Channel L-Band Redundancy Switch, 50 Ohm SMA
DEV 1520/50/8	8	Channel L-Band Redundancy Switch, 50 Ohm SMA
DEV 1520/50/12	12	Channel L-Band Redundancy Switch, 50 Ohm SMA
DEV 1520/50/16	16	Channel L-Band Redundancy Switch, 50 Ohm SMA
DEV 1520/75/4	4	Channel L-Band Redundancy Switch, 75 Ohm Precision F
DEV 1520/75/8	8	Channel L-Band Redundancy Switch, 75 Ohm Precision F
DEV 1520/75/12	12	Channel L-Band Redundancy Switch, 75 Ohm Precision F
DEV 1520/75/16	16	Channel L-Band Redundancy Switch, 75 Ohm Precision F
DEV 1530/4	4	Channel CATV-Band Redundancy Switch, 75 Ohm Precision F
DEV 1530/8	8	Channel CATV -Band Redundancy Switch, 75 Ohm Precision F
DEV 1530/12	12	Channel CATV -Band Redundancy Switch, 75 Ohm Precision F
DEV 1530/16	16	Channel CATV -Band Redundancy Switch, 75 Ohm Precision F
DEV 1720/4	4	Channel CATV-Band Switch with Monitoring Port, 75 Ohm BNC
DEV 1720/8	8	Channel CATV-Band Switch with Monitoring Port, 75 Ohm BNC
DEV 1720/12	12	Channel CATV-Band Switch with Monitoring Port, 75 Ohm BNC
DEV 1720/16	16	Channel CATV-Band Switch with Monitoring Port, 75 Ohm BNC
DEV 1820/4	4	Channel ASI Redundancy Switch, 75 Ohm BNC
DEV 1820/8	8	Channel ASI Redundancy Switch, 75 Ohm BNC
DEV 1820/12	12	Channel ASI Redundancy Switch, 75 Ohm BNC
DEV 1820/16	16	Channel ASI Redundancy Switch, 75 Ohm BNC

Option 52	RS 422 instead of RS 232
Option 53	RS 485 instead of RS 232
Option 76	Leitch protocol is available via serial interface (instead of Sandar Prosan protocol)
Option 78	Web Interface Option (can be ordered multiple times)
Option 83	Chassis delivered with 4 switch modules less (can be ordered in different quantities depending on the type of model (“/xx”): up to 3 times for a 16 channel instrument (/16), up to 2 times for a 12 channel instrument (/12), and max. once for an 8 channel instrument (/8))

Contact

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