

Universal Switch Chassis



Products:

DEV 1951 -	Dual Channel Universal Switch Chassis
DEV 11-0005 -	DPST Switch Module with Monitor Port, CATV-Band, 75 Ohm, BNC (f)
DEV 11-0009 -	DPST Switch Module, DC...2.5 GHz, 50 Ohm, N (f)
DEV 11-0010 -	DPST Sensing Switch Module, L-Band, 75 Ohm, Prec. F (f)
DEV 11-0011 -	DPST Sensing Switch Module, CATV-Band, 75 Ohm, Precision F (f)
DEV 11-0024 -	DPST Relay Switch Module with Termination, DC...18 GHz, 50 Ohm, SMA (f)
DEV 11-0027 -	DPDT Relay Switch Module, DC...18 GHz, 50 Ohm, SMA (f)
DEV 11-0028 -	DPST Switch Module, L-Band, 75 Ohm, Precision F (f)
DEV 11-0033 -	DPST Relay Switch Module, DC...18 GHz, 50 Ohm, SMA (f)
DEV 11-0050 -	DPST Switch Module, DC...2.5 GHz, 50 Ohm, SMA (f)
DEV 11-0057 -	DPDT Switch Module, DC...862 MHz, 75 Ohm, BNC (f)
DEV 11-0058 -	DPST Sensing Switch Module, L-Band, 50 Ohm, SMA (f)
DEV 13-0169 -	Passive 1:4 Splitter Module, CATV-Band, 75 Ohm, Precision F (f)
DEV 13-0170 -	Passive 1:4 Splitter Module, L-Band, 75 Ohm, Precision F (f)
DEV 13-0171 -	Passive 1:4 Splitter Module, L-Band, 50 Ohm, SMA (f)
DEV 13-0174 -	Passive 1:2 Splitter Module, L-Band, 75 Ohm, Precision F (f)
DEV 14-0001 -	ASI Redundancy Switch Module, 75 Ohm, BNC (f)
DEV 14-0007 -	MEIO Module for Potential Free Contacts, Sub-D 25 (f)
DEV 14-0008 -	MEIO Module for Potential Free Contacts, 2 * Sub-D 9 (f)
DEV 14-0014 -	Ethernet Redundancy Switch Module

Features:

- /// High switching flexibility since the chassis can be equipped with one or two equal or different switch modules
- /// 2nd slot can be equipped alternatively with a passive splitter module
- /// Local interface and various remote interfaces for control & surveillance
- /// Autonomous and time scheduled switching capability
- /// Dual redundant power supplies with status alarm output

Application Areas:

- /// Satellite Ground Stations
- /// Cable Head End Stations

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Front DEV 1951



*Rear DEV 1951 equipped with 2 * DEV 11-0005*

The Challenge

To meet changing demands for different applications, service providers often require a high degree of flexibility in their RF and related signal switching systems. Requirements can change quickly, for example from a redundancy application, to an RF switch, ASI or Ethernet switch, or different combinations of these.

Introducing the DEV Solution

To help meet customer requirements for flexibility, DEV has developed a modularly designed Universal Switch Chassis. The DEV 1951 can be used in a single channel or a dual channel configuration.

A variety of different switch modules are available. The modules and the module combinations can be selected according to the requirements of the specific application. A chassis equipped with a single switch module, can be upgraded at any time with a second module of the same or of a different type at the customers' premises and by the customer.

For applications, which require signal distribution instead of a second switch module, one of the available passive splitter modules can be installed in the free slot of the device. Only the sensing switch modules and the MEIO- (Multi Event Input/Output-) modules cannot be mixed with other switch modules.

The Technical Concept

The DEV 1951 can be equipped with one or two switch modules which can be operated independently or simultaneously.

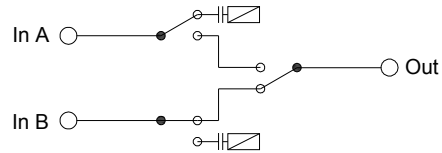
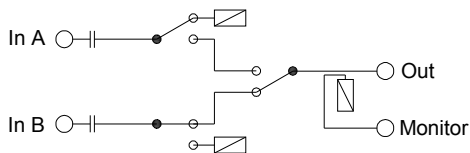
In addition to the local operation at the device, the DEV 1951 provides a digital interface for basic remote switching functionality, e.g. the control via a PLC (Programmable Logic Controller).

The implementation of remote control protocols as Sandar Prosan, Leitch, QEC, and SNMP permits surveillance and control of the device via external M&C systems.

Finally, the DEV 1951 can be controlled via the Web Interface Option, which enables remote access to operational elements of the chassis. If equipped with the Web Interface Option and standard switch module(s), the DEV 1951 is even able to switch according to a user-defined time schedule.

If the unit is ordered with one or two sensing switch modules, the delivery of the DEV 1951 includes one license for the Web Interface Option by default. Aside the adjustment of the RF sensing threshold levels, this kind of Web Interface provides the Recording feature for the visualization and storage of the signal level data obtained from the inputs of the sensing switch module(s). With applied sensing switch modules, the DEV 1951 is enabled to process the switching autonomously from the primary to the secondary input port(s), based on the input signal levels of the sensing switch module(s). With Option 28 applied, autonomous switching is even possible in both directions.

Application of the Different Modules



DEV 11-0005 -

DPST 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.

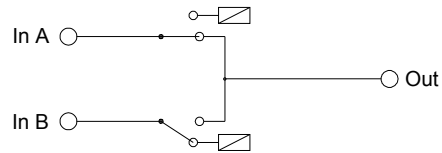
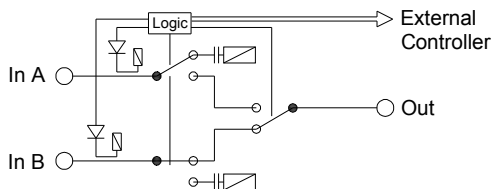
A monitoring output is available for measurement purposes.

DEV 11-0009 and DEV 11-0050 -

DPST Switch Module

For the frequency range DC...2.5 GHz in 50 Ohm with N connectors (DEV 11-0009) or with SMA connectors (DEV 11-0050).

The common port can be switched to one of two input/output ports.



DEV 11-0010, DEV 11-0011, and DEV 11-0058 -

DPST Sensing Switch Modules

For L-Band applications (DC, 950...2150 MHz, DEV 11-0010 (75 Ohm, Precision F) and DEV 11-0058 (50 Ohm, SMA)) or CATV-Band applications (DC, 47...862 MHz, DEV 11-0011 (75 Ohm, Precision F)).

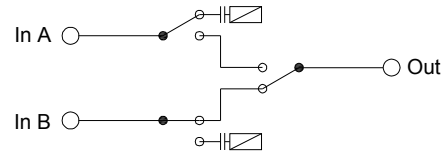
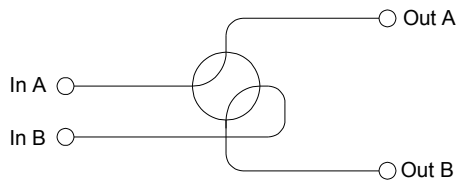
Two input ports can be switched to one output port. Both input channels are individually monitored for the user defined RF threshold level. Alarming is provided. The device is able to control the switching autonomously. The module is able to pass an external 10 MHz reference signal.

DEV 11-0024 -

DPST Relay Switch Module

For applications in the frequency range DC...18 GHz in 50 Ohm with SMA connectors. The output port of the high performance relay switch module can be switched to one of two input ports. The port which is not fed to the output is terminated internally.

Application of the Different Modules

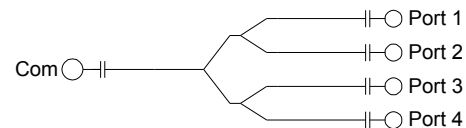
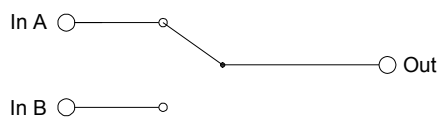


DEV 11-0027 and DEV 11-0057 - DPDT (Cross-Over) Relay Switch Modules

For applications in the frequency range DC...18 GHz in 50 Ohm with SMA connectors (DEV 11-0027) or DC...862 MHz in 75 Ohm with BNC connectors (DEV 11-0057). Input A of the module is either connected to Output A, or to Output B. Alternatively, Input B is connected to Output A, otherwise to Output B.

DEV 11-0028 - DPST Switch Module

For L-Band applications (DC, 950...2150 MHz) in 75 Ohm with Precision F connectors. The output port can be switched to one of two input ports. The module is able to pass an external 10 MHz reference signal.



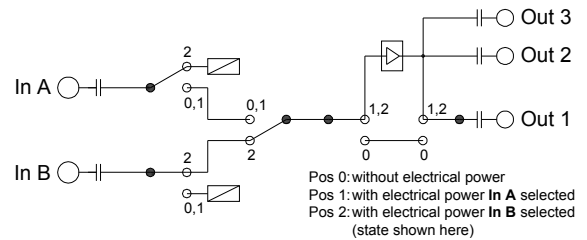
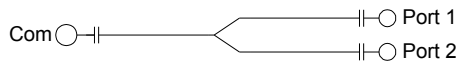
DEV 11-0033 - DPST Relay Switch Module

For applications in the frequency range DC...18 GHz in 50 Ohm with SMA connectors. The output port of the high performance relay switch module can be switched to one of two input ports.

DEV 13-0169, DEV 13-0170, and DEV 13-0171 - Passive 1:4 Splitter Modules

For CATV-Band applications (DC, 47...862 MHz, i.e. DEV 13-0169 (75 Ohm, Precision F)) or L-Band applications (DC, 950...2150 MHz, i.e. DEV 13-0170 (75 Ohm, Precision F) and DEV 13-0171 (50 Ohm, SMA)). The module can be used in the second slot of the device for the distribution or combination of RF signals.

Application of the Different Modules



DEV 13-0174 -

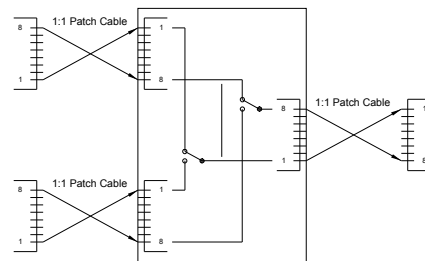
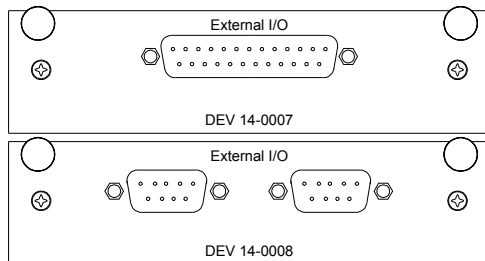
Passive 1:2 Splitter Module

For L-Band applications (950...2150 MHz) in 75 Ohm with Precision F connectors. The module can be used in the second slot of the device for the distribution or combination of RF signals.

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.



DEV 14-0007 and DEV 14-0008 -

MEIO Modules for Potential Free Contacts

If equipped with MEIO- (Multi Event Input/Output-) Module(s), the DEV 1951 can be used for the remote surveillance and control of DEV products which are not equipped with a CPU. The DEV 14-0007 has a female Sub-D 25 connector and the DEV 14-0008 has two female Sub-D 9 connectors.

Each pin of a connector can be defined as a source or a sink, i.e. if the two potential free contacts of a relay are connected to a source pin and a sink pin, the state of the relay can be detected. The free configuration ability of each pin provides flexibility for various applications.

DEV 14-0014 -

Ethernet Redundancy Switch Module

For Ethernet switching applications. The module is equipped with three RJ-45 Ethernet connectors, in order to be able to select physically one of two routes.

Technical Data

DEV 1951 - Dual Channel Universal Switch Chassis

Capacity

Number of slots 2

Remote Communication

Interfaces, connectors

- Ethernet, RJ-45
- serial interface RS 232 (optional RS 422/RS 485), Sub-D-9 (f)
- digital interface, Sub-D-9 (f)

Remote control & surveillance, interface

- via Web Interface, Ethernet;
- via SNMP, Ethernet;
- via Sandar Prosan protocol, serial interface; *OR*
- via Leitch protocol, Ethernet/Telnet (up to 7 sessions) and via serial interface; *OR*
- via QEC protocol, Ethernet (Telnet port 23) and via serial interface.

Redundant Power Supply

Redundant power supplies 100...240 V AC supplied by two different lines
or
-40...-56 V DC supplied by two different lines (Option 14)

Power consumption <40 VA

Potential Free Contacts

Alarm connector Sub-D-9 (m)

Contact load 60 V; 300 mA

Summary Alarm Via remote interface and via potential free contacts

Two stage alarm signalization for power line failure:

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), 1 RU (44 mm), 285 mm depth

Weight ~5 kg

Environmental conditions ETS 300019 Part 1-3 Class 3.1

Technical Data

DEV 11-0005 - DPST Switch Module with Monitor Port, CATV-Band, 75 Ohm, BNC (f)

RF Specifications

Frequency range	47...862 MHz
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

DEV 11-0009 - DPST Switch Module, DC...2.5 GHz, 50 Ohm, N (f)

DEV 11-0050 - DPST Switch Module, DC...2.5 GHz, 50 Ohm, SMA (f)

RF Specifications

Frequency range	DC...2.5 GHz	
Impedance, connectors	50 Ohm, N (f)	(DEV 11-0009)
	50 Ohm, SMA (f)	(DEV 11-0050)
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, 250 mA	
Switching cycles	>10E6	(no DC)
	>10E5	(28 V DC, 250 mA)

Technical Data

DEV 11-0010 - DPST Sensing Switch Module, L-Band, 75 Ohm, Precision F (f)
DEV 11-0011 - DPST Sensing Switch Module, CATV-Band, 75 Ohm, Precision F (f)
DEV 11-0058 - DPST Sensing Switch Module, L-Band, 50 Ohm, SMA (f)

RF Specifications

Frequency range	DC, 47...862 MHz	(DEV 11-0011)
	DC, 950...2150 MHz	(DEV 11-0010, DEV 11-0058)
Impedance, connectors	50 Ohm, SMA (f)	(DEV 11-0058)
	75 Ohm, Precision F (f)	(DEV 11-0010, DEV 11-0011)
Damage level	+10 dBm	(DEV 11-0011)
	+15 dBm	(DEV 11-0010, DEV 11-0058)
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	
Switching cycles	>10E6	(no DC)

RF Sensing

Adjustable threshold level	0 dBm > threshold level > -50 dBm	(DEV 11-0010)
	0 dBm > threshold level > -60 dBm	(DEV 11-0011, DEV 11-0058)
		(DEV factory setting: -30 dBm)

DEV 11-0024 - DPST Switch Module with Termination, DC...18 GHz, 50 Ohm, SMA (f)
DEV 11-0027 - DPDT (Cross-Over) Relay Switch Module, DC...18 GHz, 50 Ohm, SMA (f)
DEV 11-0033 - DPST Relay Switch Module, DC...18 GHz, 50 Ohm, SMA (f)

RF Specifications

Frequency range	DC...18 GHz	
Impedance, connectors	50 Ohm, SMA (f)	
Input level	<+30 dBm	
Return loss selected path	>14 dB, typical 16 dB	
Return loss not selected path	>14 dB, typical 16 dB	
Insertion loss	<0.5 dB	
Isolation on/off	>60 dB	
Relay type	latching	
Contact rating	28 V DC, 250 mA	
Switching cycles	>10E6	(no DC)
	>10E5	(28 V DC, 250 mA)

Technical Data

DEV 11-0028 - DPST Switch Module, L-Band, 75 Ohm, Precision F (f)

RF Specifications

Frequency range	DC, 950...2150 MHz	
Impedance, connectors	75 Ohm, Precision F (f)	
Damage level	+15 dBm	
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	
Switching cycles	>10E6	(no DC)

DEV 11-0057 - DPDT (Cross-Over) Switch Module, CATV-Band, 75 Ohm, BNC (f)

RF Specifications

Frequency range	DC...862 MHz	
Impedance, connectors	75 Ohm, BNC (f)	
Damage level	+30 dBm	
Return loss	>18 dB	(In A – Out A, In B – Out B)
	>14 dB, typical 16 dB	(In A – Out B, In B – Out A)
Insertion loss	<1 dB	
Isolation	>40 dB	
Relay type	failsafe	
Switching cycles	10E6	

DEV 13-0169 - Passive 1:4 Splitter Module, CATV-Band, 75 Ohm, Precision F (f)

DEV 13-0170 - Passive 1:4 Splitter Module, L-Band, 75 Ohm, Precision F (f)

DEV 13-0171 - Passive 1:4 Splitter Module, L-Band, 50 Ohm, SMA (f)

RF Specifications

Frequency range	47...862 MHz	(DEV 13-0169)
	950...2150 MHz	(DEV 13-0170, DEV 13-0171)
Impedance, connectors	50 Ohm, SMA (f)	(DEV 13-0171)
	75 Ohm, Precision F (f)	(DEV 13-0169, DEV 13-0170)
Return loss	>16 dB, typical 18 dB	
Insertion loss	8±1 dB	
Frequency response	±0.2 dB	(within any 36 MHz interval)
Isolation	>22 dB, typical 25 dB	
DC blocked	yes	

Technical Data

DEV 13-0174 - Passive 1:2 Splitter Module, L-Band, 75 Ohm, Precision F (f)

RF Specifications

Frequency range	950...2150 MHz	
Impedance, connectors	75 Ohm, Precision F (f)	
Return loss	>16 dB, typical 18 dB	
Insertion loss	4±1 dB	
Frequency response	±0.2 dB	(within any 36 MHz interval)
Isolation	>22 dB, typical 25 dB	
DC blocked	yes	

DEV 14-0001 - 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

DEV 14-0007 - MEIO Module for Potential Free Contacts, Sub-D 25 (f)

DEV 14-0008 - MEIO Module for Potential Free Contacts, 2 * Sub-D 9 (f)

Number of I/O pins	25	(DEV 14-0007)
	2 * 9	(DEV 14-0008)
Connectors	Sub-D 25 (f)	(DEV 14-0007)
	2 * Sub-D 9 (f)	(DEV 14-0008)
Input voltage per sink pin	<14 V DC	
Input current per sink pin	<10 mA	
Output voltage per source pin	12 V DC	
Output current per source pin	<1 mA	

DEV 14-0014 - Ethernet Redundancy Switch Module, RJ-45

Transmission rate	<100 MBit/s
Connectors	RJ-45

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DEV 11-0024	DPST Relay Switch Module with Termination, DC...18 GHz, 50 Ohm, SMA (f)
DEV 11-0027	DPDT (Cross-Over) Relay Switch Module, DC...18 GHz, 50 Ohm, SMA (f)
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DEV 13-0174	Passive 1:2 Splitter Module, L-Band, 75 Ohm, Precision F (f)
DEV 14-0001	ASI Redundancy Switch Module, 75 Ohm, BNC (f)
DEV 14-0007	MEIO Module for Potential Free Contacts, Sub-D 25 (f)
DEV 14-0008	MEIO Module for Potential Free Contacts, 2 * Sub-D 9 (f)
DEV 14-0014	Ethernet Redundancy Switch Module, RJ-45
Option 14	-40...-56 V DC Supply Voltage
Option 28	Automatic Switch Back
Option 52	RS 422 instead of RS 232
Option 53	RS 485 instead of RS 232
Option 79	Web Interface Option (can be ordered multiple times)
Option 81	Blanking Plate (to cover an empty slot)

Contact

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