

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, 2x 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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DEV 1951

dev



Front DEV 1951



Rear DEV 1951 equipped with 2x DEV 11-0005

The Situation

Systems integrators need a high flexibility in their switching solutions to match the requirements of the target application. They need to be able to decide at short notice if there is a need e.g. for a redundancy switch with one or with two switch modules or for a switching solution with other functionality.

DEV worked out a Solution

To enable the customer to be as flexible as possible, DEV has developed a modular design principle for a universal switch chassis. The DEV 1951 can be used in a single channel or a dual channel configuration.

There is available a variety of different switch modules. Depending on the application, the customer decides which of the modules and module combinations will serve him best. Only the sensing switch modules and the MEIO- (Multi Event Input/Output-) modules cannot be mixed with other switch modules.

A chassis equipped with a single switch module, can be upgraded at any time with a second module of the same or a different type at the customers' premises and by the customer himself.

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 instrument.

The Technical Concept

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

Aside from the local operation at the instrument, the DEV 1951 provides a digital interface for basic remote switching functionality, e.g. the control via a PLC.

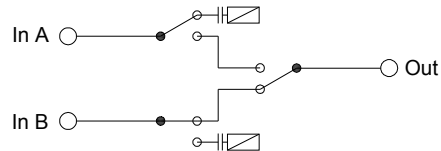
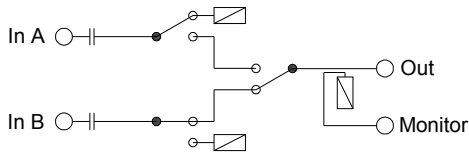
The implementation of remote control protocols as Sandar Prosan, Leitch, QEC, and SNMP permits surveillance and control of the instrument via external M&C systems.

Finally, the DEV 1951 can be controlled via the Web Interface Option, which enables the 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 corresponding to a user-defined time schedule.

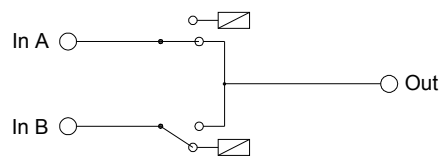
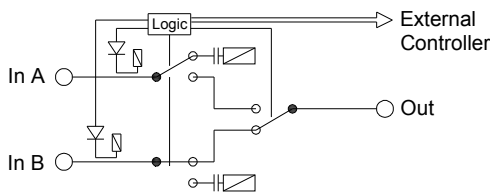
On the other hand, if the instrument is ordered with one or two sensing switch modules, the Web Interface Option is included in the delivery. With this kind of module(s) switching can be performed by the DEV 1951 autonomously dependant on the signal levels on the inputs of the sensing switch modules.

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.

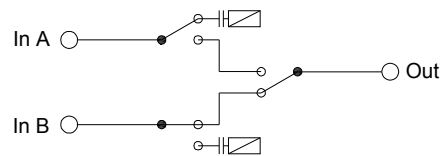
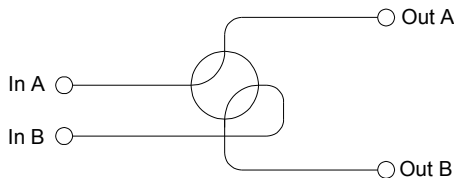
DEV 11-0009 and DEV 11-0050 - DPST Switch Module
 For the frequency range DC...2,5 GHz in 50 Ohm with N connectors (DEV 11-0009) or with SMA connectors (DEV 11-0050).
 The common port can be switched to one of two input-/output ports.



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 instrument 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

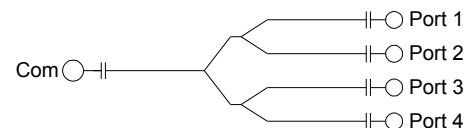
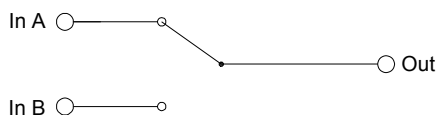
For applications in the frequency range DC...18 GHz in 50 Ohm with SMA connectors (DEV 11-0027) or DC...862 MHz in 75 Ohm with BNC connectors (DEV 11-0057).

Input A of the module is either connected to Output A, or to Output B. In the latter case 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

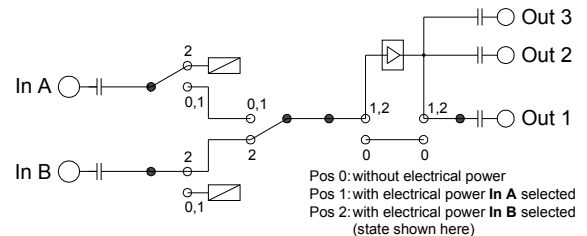
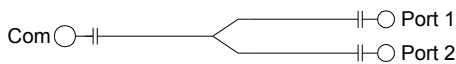
For applications in the frequency range DC...18 GHz in 50 Ohm with SMA connectors. The output port of the high performance relay switch module can be switched to one of two input ports.

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

For CATV-Band applications (DC, 47...862 MHz, DEV 13-0169 (75 Ohm, Precision F)) or L-Band applications (DC, 950...2150 MHz, 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 instrument 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.

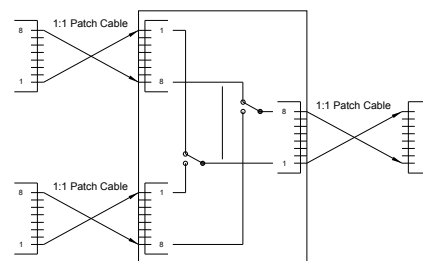
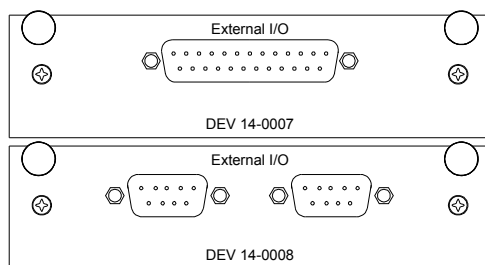
The module can be used in the second slot of the instrument for the distribution or combination of RF signals.

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 instruments 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 Option (including scheduled switching), 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
-36...-60 V DC supplied by two different lines (Option 14)

Power consumption <40 VA

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

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, 0,25 A	
Switching cycles	>10E6	(no DC)
	>10E5	(28 V DC, 0,25 A)

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	-10 dBm > threshold level > -50 dBm	(DEV 11-0010)
	-10 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	<+27 dBm	(DEV 11-0024)
	<+30 dBm	(DEV 11-0027, DEV 11-0033)
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, 0,25 A	
Switching cycles	>10E6	(no DC)
	>10E5	(28 V DC, 0,25 A)

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, 2x Sub-D 9 (f)

Number of I/O pins	25	(DEV 14-0007)
	2x 9	(DEV 14-0008)
Connectors	Sub-D 25 (f)	(DEV 14-0007)
	2x 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

Order Information

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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 11-0024	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)
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 (Cross-Over) 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, 2x Sub-D 9 (f)
DEV 14-0014	Ethernet Redundancy Switch Module, RJ-45
Option 14	-36...-60V DC Supply Voltage
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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