

Product description

Cascadable single cable multiswitches SRM523 and SRM543 is intended for the distribution of satellite and terrestrial signals for up to 32 satellite tuners or receivers on each outputs pair.

The series consist of:

SRM523 has 1 pair subscribers outputs (2 outputs) and 1 signal processor.

SRM543 has 2 pairs subscribers outputs (4 outputs) and 2 independent signal processors.

The multiswitches have 4 passive SAT IF and 1 active Terrestrial TV trunk lines and 4 x DC power modes for convenient DC powering options (see chapter „**Installation instructions**“).

The device ensure an independent access for every subscriber to any SAT IF or Terrestrial TV trunk line.

These multiswitches automatically detect SCR/dSCR mode or legacy format from the receiver. The dSCR switches also feature fully automatic level control, negating the need for any gain or level adjustments in most installations. It's built into a zinc alloy die cast housing for extreme interference immunity. The housing of multiswitches meets more stringent screening requirements according to EN50083-2, class A.

Control according to EN50494/EN50607 (SCR/dSCR) as well as Legacy (+13 V/+18 V/22 kHz) commands.

According to the standard ETSI EN 303 354 V.1.1.1, TERR TV band amplifier of multiswitch type is Launch, selectivity classification 0.

Safety instructions

Installation of the multiswitch must be done according IEC60728-11 and national safety standards.

The multiswitch is powered from the stabilized power supply +20 V. This voltage is not dangerous to life.

External power supply must have a short circuit protection.

Any repairs must be made by skilled personnel.

To avoid damaging of the multiswitch do not connect the supply voltage until all cables have been connected correctly.

The device shall be mounted in vertical position with RF input connectors on the top side on a wall or other nonflammable surface.

The multiswitch must be fixed with screws. The screws are not included in a package.

Avoid placing the multiswitch next to central heating components or direct sunlight and in areas of high humidity.

If the multiswitch has been kept in cold conditions for a long time, keep it in warm room no less than 2 hours before powering.

The ventilation should not be impeded by covering the multiswitch with items, such as newspapers, table-cloths, curtains.

The mains socket of external power supply must be easily accessible.

IMPORTANT WARNINGS!

Before connecting any products to a system, it is essential to make sure the **system power supply is switched off**. Avoid short-circuit or overload of any power supply. Never “HOT-SWAP” any system components as this may result in damage to the newly introduced or existing components.

The SRM523 and SRM543 multiswitches are intended only for indoor installation or installation in a suitable weatherproof outdoor cabinet (in this case ensure good ventilation conditions).

These multiswitches must not come into contact with moisture or be installed in areas of high humidity or heat.

Always mount the multiswitch securely to a wall or bulkhead panel so it cannot hang or swing on its coaxial cables as this may strain the internal circuit board and components.

Always connect all of the coaxial cables to the multiswitch before connecting the power. These units are not designed to be “HOT-SWAPPED” or connected to a live system.

Always be sure that connecting cables shield and multiswitch functional grounding clamp have common potential before powering the system. Floating voltages can be created in an un-earthed system which may cause damage and can be dangerous.

Momentary short-circuit of any cables may be enough to damage the sensitive electronics within the multiswitch or the connected system.

Always allow plenty of ventilation around the multiswitch and do not allow it to be covered with materials such as loft insulation.

We recommend at least 5 cm of airspace around the multiswitch. Digital products can get hot to the touch and require a flow of air to avoid overheating.

SRM523 and SRM543 multiswitches is designed only to work with Ku band Quattro LNBS.

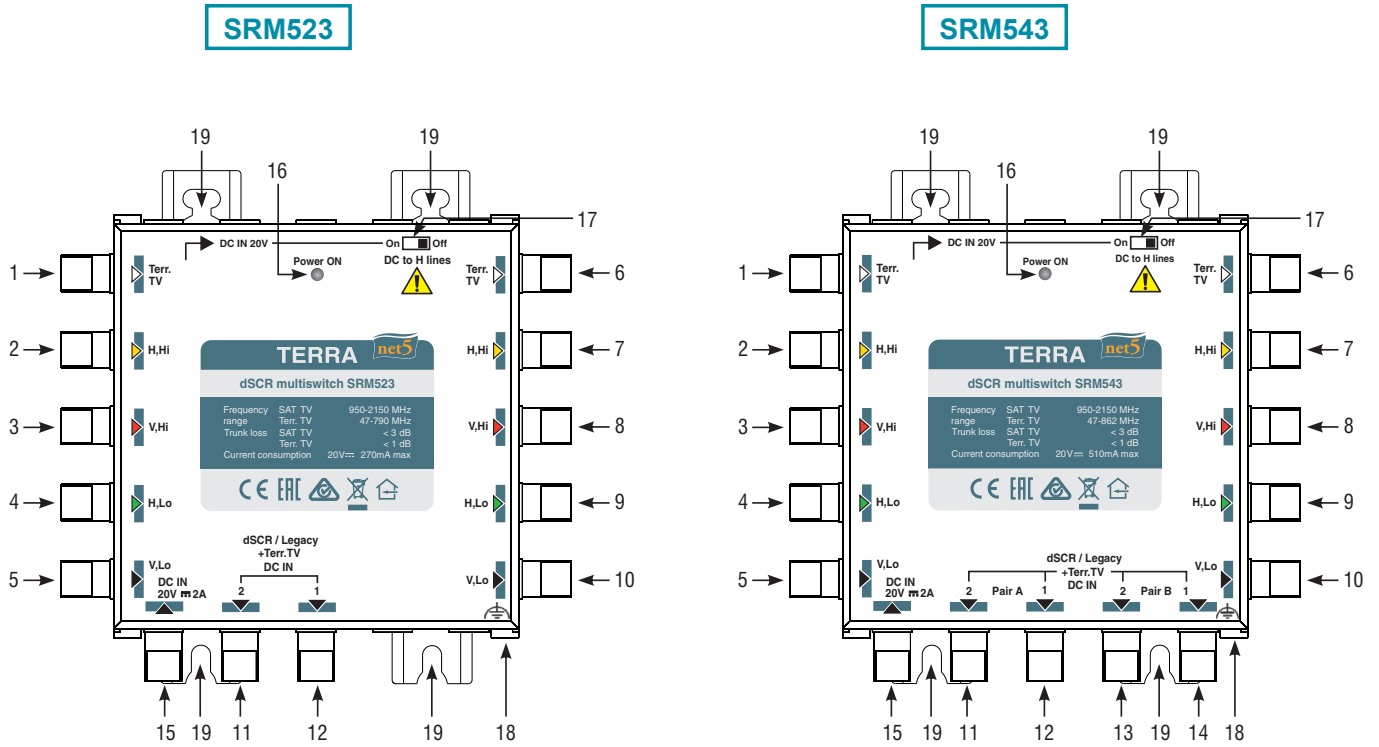
LNB's and other system equipment connected to the multiswitch SAT H,Lo and H,Hi trunks inputs/outputs can be powered from the same power supply as the multiswitch.



To avoid damage not covered by warranty **DO NOT EXCEED MAX. CURRENTS**. See “**Technical characteristics**” for max. current for external equipment.

DO NOT OPERATE THE DC POWER TO H TRUNK LINES SWITCH (see Figure 1, pos.17) unless you totally understand the power demands of the system and confirmed they are 2 A or less. **ALWAYS LEAVE THE DC POWER TO H TRUNK LINES SWITCH IN THE “OFF” POSITION** when inserting SRM523, SRM543 into an existing multiswitch installation. Damage caused by current overload is not covered by the manufacturer's warranty.

External view



- 1** – Terrestrial TV trunk input
- 2** – H, Hi trunk input
- 3** – V, Hi trunk input
- 4** – H, Lo trunk input
- 5** – V, Lo trunk input
- 6** – Terrestrial TV trunk output
- 7** – H, Hi trunk output
- 8** – V, Hi trunk output
- 9** – H, Lo trunk output
- 10** – V, Lo trunk output
- 11** – Legacy/dSCR output2 (SRM543 pair A) (Legacy/UB+Terr.TV)
- 12** – Legacy/dSCR output1 (SRM543 pair A) (Legacy/UB+Terr.TV)
- 13** – Legacy/dSCR output2 (SRM543 pair B) (Legacy/UB+Terr.TV)
- 14** – Legacy/dSCR output1 (SRM543 pair B) (Legacy/UB+Terr.TV)
- 15** – DC 20V power input
- 16** – Power ON indication LED
- 17** – DC power to H trunk lines switch
- 18** – Ground clamp
- 19** – Mounting supports

All sockets are “F” type.


Figure 1. External view of the multiswitches

Installation instructions

Read the safety instruction first.

Fit multiswitch on mounting place and connect it (pay attention to the multiswitch inputs and Quattro LNB outputs marking), connect the isolated 75 Ω loads to the unused RF output F sockets, power on multiswitch using one of 4 powering modes (see Table 1).

Table 1

Powering mode	"DC power to H trunk lines switch" position (see Figure 1, pos.21)	 Warnings and notes
1. Multiswitch is powered from local PSU (20 V) via DC input (see Figure 1, pos. 15) . (Recommended for use is PS202F 20 V PSU). H trunk lines are DC isolated from it.	OFF	Recommended as first choice. WARNING: BEFORE CONNECTION ALWAYS CHECK DC POWER TO H TRUNK LINES SWITCH (see Figure 1, pos.17). IT MUST BE IN POSITION "OFF"! Note: All trunk lines preserve DC bypassing.
2. Multiswitch is powered from local PSU (20 V) via DC input and with DC passing to H trunk lines. In this mode H trunk lines can power in cascade other multiswitches (without PSU, with "DC to H trunk lines" switch ON).	ON	WARNING: Don't overload PSU via H trunk lines – check total system power consumption of multiswitch and from H trunk lines (including all other equipment connected). Check all other system equipment connected to H lines if it can accept 20 V. SERIOUS DAMAGE OF IT CAN OCCUR!
3. Multiswitch is powered from H trunk lines: - building new SCR/dSCR system (18 V - 20 V) - upgrading old legacy systems (15 V - 18 V)	ON	WARNING: Don't exceed the current capability of system power supply. SERIOUS DAMAGE CAN OCCUR IF OVERLOADED!
4. Multiswitch is powered from Legacy/dSCR (subscriber) outputs, (see Figure 1, pos. 11-14). Each dSCR output circuit is individually powered directly from STB's or from dSCR power inserter (with 22 kHz bypass).	OFF	WARNING: MULTISWITCH WILL DRAW CURRENT AND POWER FROM PAIR OUTPUT WITH HIGHER VOLTAGE! If STB's connected to Legacy/dSCR outputs can't supply sufficient power for it's own output – dSCR power inserter with 20 V PSU should be used (one per output of pair A or B). WARNING: Don't exceed the current capability of power inserter and dSCR outputs (800 mA max.). SERIOUS DAMAGE CAN OCCUR IF OVERLOADED! Note: Terr. TV amplifier can be powered from H trunk lines (15-20 V) to minimize current consumption from STB and keep Terr. TV operation when all STBs are OFF.

Power ON indication LED (see Figure 1, pos. 16) glows **Green** at any of the 4 powering modes.

Then switch on receiver(s). The multiswitch will begin the process of auto-detecting which type(s) of receiver connected.

All subscriber outputs are configured to connect legacy STB (supports +13V / +18V/22 kHz signals), but it switches to dynamic mode SCR/dSCR if receives a DiSEqC command according EN50494/EN50607.

Set the highest frequency UB for STB located nearest to the multiswitch and lowest frequency for STB farthest to the multiswitch. If you install less than max. possible STB's use lowest frequencies first.

Disconnect RF cables or STB's from necessary outputs to reset to legacy / **Start mode**.

PIN code

All User Bands (UB) are protected by PIN Code to prevent the set of UB from being used/disturbed by another user (see Table 2).

Default settings

1. SAT IF inputs are configured to use Ku-band Quattro LNB (SAT A, LNB Lo=9750/10600 MHz).
2. All outputs are configured to connect **Legacy** STB (+13 V/+18 V/22 kHz), but it switches to **Dynamic mode** SCR/dSCR if receives a DiSEqC command according EN50494/EN50607. Output User Bands (UB) are the same in all subscriber outputs (see Table 2).). All user bands are turn off (**Start mode**).
3. PIN Codes (see Table 2 and see chapter "**Configuration**").
4. Only one UB plan is set depended of delivery region, if you need another plan see chapter "**Configuration**" or contact TERRA UAB.
5. DC power to H trunk lines switch (see Figure 1, pos. 17) in position "**OFF**".

Table 2

User Band (UB)	PIN Code	Marking: v.0			Marking: v.1			Marking: v.2		
		Bandwidth, MHz	Central frequency, MHz		Bandwidth, MHz	Central frequency, MHz		Bandwidth, MHz	Central frequency, MHz	
			EN50494	EN50607		EN50494	EN50607		EN50494	EN50607
UB0								46	1210	1210
UB1	1	40	1210	1210	40	1210	no	46	1420	1420
UB2	2	40	1420	1420	40	1420	no	46	1680	1680
UB3	3	40	1680	1680	40	1680	no	46	2040	2040
UB4	4	40	2040	2040	40	2040	no	46	1006	1006
UB5	5	40	1284	1284	40	no	985	46	1057	1057
UB6	6	40	1516	1516	40	no	1050	46	1108	1108
UB7	7	40	1632	1632	40	no	1115	46	1159	1159
UB8	8	40	1748	1748	40	no	1275	46	no	1261
UB9	9	40	no	970	40	no	1340	46	no	1312
UB10	10	40	no	1010	40	no	1485	46	no	1363
UB11	11	40	no	1050	40	no	1550	46	no	1471
UB12	12	40	no	1090	40	no	1615	46	no	1522
UB13	13	40	no	1130	40	no	1745	46	no	1573
UB14	14	40	no	1170	40	no	1810	46	no	1624
UB15	15	40	no	1330	40	no	1875	46	no	1731
UB16	16	40	no	1370	40	no	1940			

Configuration

The default setting of the device can be changed using dedicated programmer and software.

These multiswitches can be configured up to 32 User Bands (UB) per pair outputs (SRM543 total 64 UB) for use with STB's supporting DiSEqC commands according to standards EN50494/EN50607 (SCR/dSCR) as well as Legacy (+13 V/+18 V/22 kHz) commands. Default settings **Dynamic mode** can be changed to **Static mode**.

PC Windows software can be free downloaded from www.terraelectronics.com.

Output configuration must be the same per pair of outputs, but can be different in others pairs. Each pair of outputs is configured separately. Pay attention to the numbering of outputs.

Some possible outputs pair configurations shown in Table 3:

Table 3

Output 1	Output 2
8 SCR/dSCR UB + up to 24 dSCR UB + Terrestrial TV	Legacy + Terrestrial TV
8 SCR/dSCR UB + up to 24 dSCR UB, PIN protected + Terrestrial TV	Legacy + Terrestrial TV
Static mode (up to 32 converted transponders) + Terrestrial TV	Legacy + Terrestrial TV
8 SCR/dSCR UB + Static mode (24 converted transponders) + Terrestrial TV	Legacy + Terrestrial TV

See programmer user manual for more information.

Technical characteristics


Type		SRM523	SRM543	
Frequency range	SAT IF	950-2150 MHz		
	SAT IF output	950-2150 MHz		
	Terr. TV	47-862 MHz		
Number of trunk inputs & outputs	SAT IF	4		
	Terr. TV	1		
Number of tap outputs		2 (1 pair)	4 (2 pairs)	
Return loss / impedance		> 10 dB / 75 Ω		
Input level	SAT IF	60-95 dBμV		
	Terr. TV	IMD3=60 dB 96 dBμV max.		
Terr.TV noise figure		6 dB		
Tap output with combined DTT	user bands (dSCR mode)	configurable 32 max. per pair outputs		
	user band bandwidth (dSCR mode)	configurable 20-60 MHz		
	dSCR mode output level, AGC controlled	84 dBμV		
	legacy mode output level, typical	78 dBμV		
	Terr. TV gain	8 dB	4 dB	
	Terr. TV output level	IMD3=60 dB 104 dBμV max.	IMD3=60 dB 100 dBμV max.	
Trunk output loss	SAT IF	< 3.0 dB		
	Terr. TV	< 1.0 dB		
DC pass through trunk lines	SAT IF	2 A max., 1 A max. through one line		
	Terr. TV	250 mA max.		
Decoupling	SAT IF inputs/SAT IF inputs	> 30 dB		
	SAT IF inputs/tap outputs	> 30 dB		
	SAT IF/ Terr. TV	> 25 dB		
Current consumption	from DC input*	20 V 270 mA max.	20 V 510 mA max.	
	from H trunk lines	15 V 370 mA; 18 V 310 mA; 20 V 270 mA	15 V 700 mA; 18 V 580 mA; 20 V 510 mA max.	
	Terr.TV amplifier	15-20 V 40 mA max.		
	from STB	legacy mode	13 V 270 mA max., 18 V 240 mA max.	
		dSCR mode	13 V 370 mA max.	
legacy+dSCR mode		13 V 410 mA max., 18 V 310 mA max.		
Current pass from DC input to H trunk lines, switchable	20 V 1.73 A max.	20 V 1.49 A max.		
Operating temperature range	-20° ÷ + 50° C			
Dimensions	134x135x30 mm		134x135x30 mm	
Weight (packed)	0.42 kg		0.44 kg	

* without external DC feeding

Recommended accessories

1. Power supply PS202F
2. Power inserter PI012
3. Multiswitch programmer PC102W

 This product complies with the relevant clauses of the European Directive 2002/96/EC. The unit must be recycled or discarded according to applicable local and national regulations.

 Equipment intended for indoor usage only.

 Functional grounding. Connect to the main potential equalization.

 This product is in accordance to following norms of EU: EMC norm EN50083-2, safety norm EN62368-1, RoHS norm EN50581.

 This product is in accordance with Custom Union Technical Regulations: "Electromagnetic compatibility of technical equipment" CU TR 020/2011, "On safety of low-voltage equipment" CU TR 004/2011.


 This product is in accordance with safety standard AS/NZS 60065 and EMC standards of Australia.

Diagram of DC paths

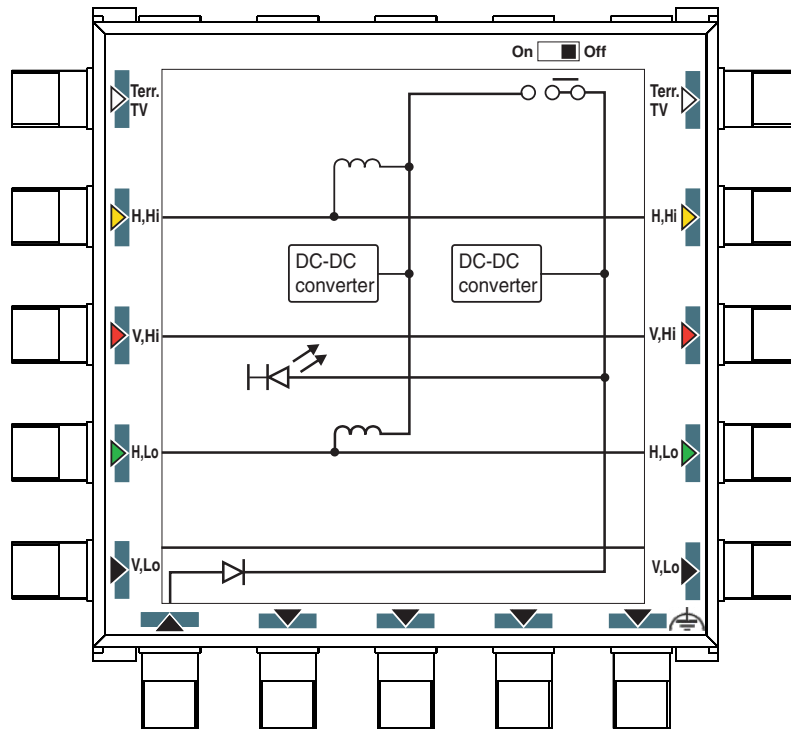


Figure 2. Diagram of DC path