

Sat-IF Distribution System (4 x Sat-IF) Digital Wideband Multi-switch

About This Manual

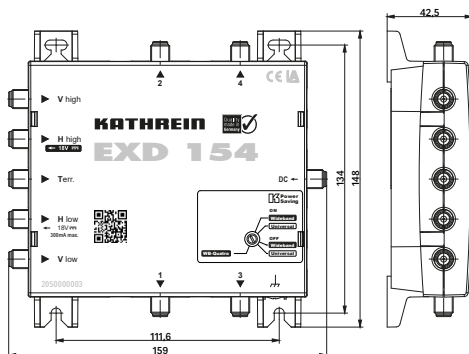
This document is part of the product.

- ▶ Do not install or use the device until you have read and understood this document.
- ▶ Keep this document for reference throughout the service life of the device and pass it on to any new owner or user.

For the most up-to-date version of this document, go to www.kathrein-ds.com.

Features

- Universal multi-switch with automatic operating mode detection. A standard TV or 16 receivers each can be operated in single cable mode at each connection.
- All types of signalling are supported and automatically detected: 14/18 V 0/22 kHz (legacy), DiSEqC™ 1.0, single cable standards according to EN 50494, as well as the extended command set according to EN 50607 (SCD2 or JESS); PIN codes can also be used in single cable operation.
- Latest IC technology with full band capturing ensures the best signal quality. The inputs are broadband and can also be operated with wideband LNBs (e.g. UAS 582). This means that a multi-feed system can be implemented (for two LNBs, the TV set must support either DiSEqC™ or the single-cable standard).
- QR code for user instructions
- For indoor installation
- The integrated AGC (Automatic Gain Control) ensures that the Sat IF signals have a constant output level and more reserve in the distribution.
- When all TV sets/receivers are switched off, the multi-switch no longer consumes any power. If Kathrein Power Saving is activated, the LNBs are also switched off.
- Wideband to Quatro mode:
In this case, the two inputs of the wideband LNB are permanently connected to the four outputs of the multi-switch. The outputs of the EXD 154 behave like a Quatro LNB, so that an additional standard multi-switch can be connected.
- The NCF 18 is a highly efficient, short-circuit-proof switched-mode power supply unit



Tip

The QR code on the front of the multi-switch will take you to our website where you can download these instructions:



Transport and Storage

- ▶ Use the original packaging for transporting the device; store it in a dry place.
- ▶ Make sure there is no water condensation build-up.

Scope of Delivery

- EXD 154
- Instructions for use for EXD 154
- NCF 18

Intended use

The equipment described is designed solely for the installation of satellite receiver systems. Any other use or non-observance of these instructions will result in the loss of the warranty and guarantee.

Mounting Instructions



CAUTION!

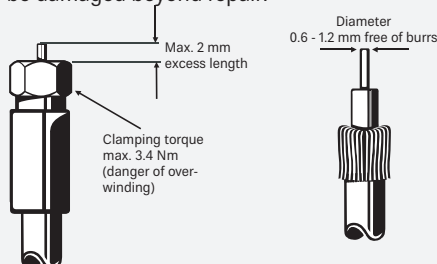
Risk of damage to the device if operated in inappropriate ambient conditions!

- ▶ The equipment may only be installed in dry indoor areas. Do not install the equipment on or against easily combustible material
- ▶ The equipment must be provided with an equipotential bonding wire (Cu, at least 4 mm²)
- ▶ The safety regulations set out in the current EN 60728-11 and EN 62368-1 standards must be complied with
- ▶ Fasteners for concrete substrates and masonry: 4 suitable plugs and associated screws with half-round or cylindrical head, outer thread diameter 4.5 - 5 mm, head diameter ≥ 9 mm and a screw length ≥ 30 mm
For other types of wall, use the appropriate screws or screw-dowel systems, which offer the same or better fastening
- ▶ Connectors: RF connectors 75 Ω (F series) compliant with EN 61169-24
- ▶ Unused subscriber ports should be closed off using 75 Ω resistors (e.g. EMK 03)
- ▶ To meet EMC requirements, the only power supply unit allowed to be used is the NCF 18



Risk of damage to property!

If the diameter of the inner cable conductor exceeds 1.2 mm or if there is a burr, the device sockets may be damaged beyond repair.



Safety Precautions



Current-carrying device

- ▶ Do not open or tamper with the unit
- ▶ When working on the system, always unplug the power supply unit from the wall socket.
- ▶ Ensure adequate clearance: at least 5 cm to all sides
- ▶ Do not install on the ceiling or vertically
- ▶ Ensure free circulation of air to dissipate the heat from the unit. Risk of overheating!
- ▶ Admissible ambient temperature: -20 to +40 °C



Note:

- ▶ Do not place any liquid-filled items on top of the device
- ▶ Do not expose the device to dripping or splashing water
- ▶ Ensure that the power supply unit is easily accessible and operable
- ▶ Disconnect the unit from the mains by pulling the plug of the power supply unit out of the mains socket

SAT-IF Distribution Equipment (not for wideband operation!)

Type		Kathrein Power Saving	Switch Setting
VWS 2551	Amplifier	Unrestrictedly usable	ON
EBX 2520	Two-way splitter	Unrestrictedly usable if each trunk is terminated by the Kathrein Power Saving-capable end multi-switch	ON
EAX 2512	Two-way tap	Not Kathrein Power Saving-capable	OFF
VWS 2500	Amplifier	Order no. 20510098 is Kathrein Power Saving-capable; older models are not	ON / OFF

PIN Code Protection

To prevent the set user band from being used or disturbed by another subscriber, the user band can be protected by means of a PIN code. The PIN code must be entered in the settings of the receiver/TV. Each user band is assigned a fixed PIN.

UB 1	UB 2	UB 3	UB 4	UB 5	UB 6	UB 7	UB 8	UB 9	UB 10	UB 11	UB 12	UB 13	UB 14	UB 15	UB 16
151	052	133	124	205	196	187	178	099	232	198	111	190	002	201	140

Notes for Single-cable Operation



Only use splitters without diodes (EBC 110 or EBC 114). The required diode protection is provided by the outlets of the ESU series.

It is especially important to make sure that each user band is assigned only once, since otherwise the receivers will generate mutual interference. The frequencies are allocated on the receiver's setting menu. Depending on the type, this assignment may be manual or automatic.

It is recommended to assign the outlets with the shorter length connections to the higher frequencies. By definition, the system is designed so that single-cable devices are supplied with 14 V DC.

The power supply is briefly switched to 18 V DC if DiSEqC™ control signals have to be transmitted. Continuous application of 18 V would block the system. For this reason, we recommend the use of the ESU series outlets which are equipped with an electronic switch-off system.

The connected receivers with the single-cable standard EN 50494 can use user bands 1 – 8. To be able to exploit all user bands, the receiving device must comply with the new single-cable SCD2 standard according to EN 50607.

Notes for Standard Operation



If a multi-switch connection is operated with DiSEqC or legacy signalling, this must be taken into account for signal distribution. In this case, the installation may not be carried out across several apartments. A simultaneous mixed operation with single cable devices on one line is not possible; in this operating mode, outlets of the ESU5x series must be programmed to "Legacy" to prevent blocking of permanently applied 18 V.

Mode Detection

Mode detection takes place each time the receiver is switched on, separately for each connection.

The necessary configuration via the rotary switch is reduced to the distinction between Universal/Wideband LNB and Kathrein Power Saving On/Off.

Frequency Assignment of the User Bands

UB 1	975 MHz	UB 5	1175 MHz
UB 2	1025 MHz	UB 6	1225 MHz
UB 3	1075 MHz	UB 7	1275 MHz
UB 4	1125 MHz	UB 8	1325 MHz

UB 9	1375 MHz	UB 13	1575 MHz
UB 10	1425 MHz	UB 14	1625 MHz
UB 11	1475 MHz	UB 15	1675 MHz
UB 12	1525 MHz	UB 16	1725 MHz

Input Frequency Ranges

Universal

In case of a universal LNB, the four levels (VL, VH, HL, HH) of the LNB are connected to the inputs of the multi-switch. The LNB supply voltage is provided at the HL input.

Wideband

A wideband LNB has an extended frequency range (300 to 2350 MHz). Therefore, only two inputs per satellite are required. In combination with two wideband LNBs, the multi-switch can operate two satellite positions.

Inputs VL and HL are assigned to position 1, inputs VH and HH to position 2. If only one wideband LNB is connected to the multi-switch, inputs VL and HL must be used.

In addition, an LNB supply voltage is provided at the HH input in all switch positions marked in black. Please note that a total supply current of max. 300 mA must not be exceeded.

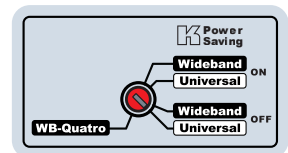
If only one satellite position is used, all unused inputs must be terminated with DC-decoupled resistors, e.g. EMK 05.

Rotary Switch

The rotary switch is the central element of the multi-switch. It sets the operating modes and functionalities.

Kathrein Power Saving

As delivered, Kathrein Power Saving is turned off.



NOTE

The settings of the **rotary switch** are only effective if all subscriber outputs are powered off.

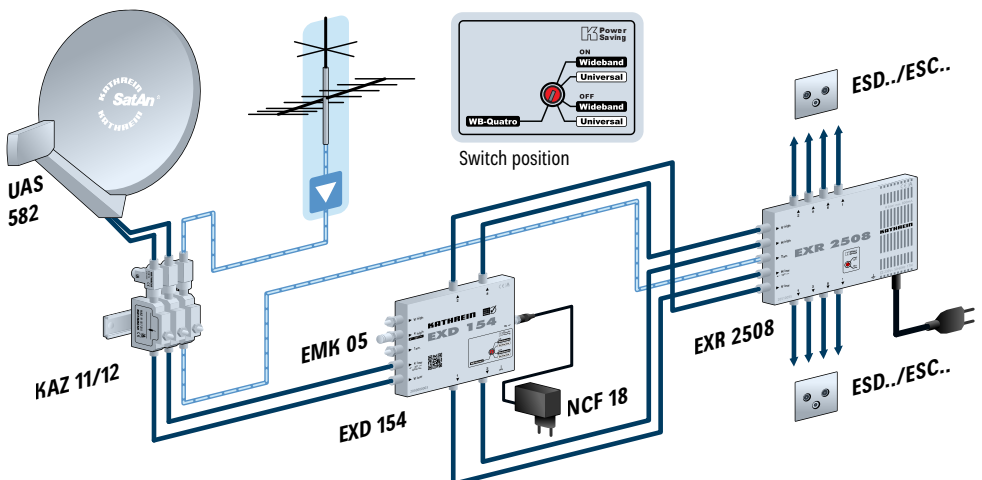
- Unscrew **all** connecting cables to interrupt the power supply

Multi-switches without Kathrein Power Saving do not give signalling to the end multi-switch. For permanent powering of the LNB, the rotary switch must be set to **Power Saving OFF**.

Changes in the configuration during operation can lead to undesirable configurations and malfunction.

- Never alter the configuration during operation

The diagram illustrates a satellite TV system installation. It starts with two **SatAm 582** dish antennas connected to a central **EXD 154** receiver. The receiver is connected to a **NCF 18** power supply. The system then branches out to multiple **ESU 56** and **ESU 53** receivers. Each receiver is connected to a monitor and a set-top box. The diagram also shows a **EXP 418E** receiver connected to the main system via a red dashed line labeled **8**. The system is labeled **KAZ 10/11/12** and **ESD /ESC**.



6 / 8

Technical Data

Type		EXD 154	
Order no.		2050000003	
Subscriber connections		4 x Legacy or 16 UBs each	
Inputs		1 x terrestr.	4 x Sat
Frequency range	MHz	5 – 862	300 – 2350
Through loss	dB	-	-
Connection loss (terrestrial)	dB	9	-
Sat (AGC) output level	dB μ V	-	90
Horiz./vert. decoupling	dB	-	30
Trunk decoupling	dB	-	-
Sat input level	dB μ V	-	60 – 90
Subscriber frequency/user band	MHz	see <i>Frequency assignment of the user bands, p. 4</i>	
Max. current consumption at the subscriber connection	mA	25	
Max. permissible voltage at the subscriber connection	V	19	
Max. permissible remote feed current (horiz. low input)	mA	300 (2 x 150 for wideband)	
Max. permissible remote feed current per trunk	mA	-	
Max. supply voltage at DC connection	V	18.6	
Protection class		IP 30	
Permissible ambient temperature	°C	-20 to +40	
Connections		F connectors	
Dimensions	mm	159 x 148 x 43	
Packing unit/weight	pc./kg	1 (10)/0.40	

Please find the technical data from the power-supply unit NCF 18 on www.kathrein-ds.com.

Simplified EU Declaration of Conformity

Hereby, KATHREIN Digital Systems GmbH declares that the radio equipment type EXD 154, order no.: 2050000003 is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: www.kathrein-ds.com

Possible Causes of Failure and Troubleshooting

Problem	Possible Cause	Troubleshooting
Permanent message: "Poor or no signal"	No voltage from receiver	- Make sure there is no short circuit on the receiver-multi-switch connection - Make sure that the outlet does not block permanent 18 V
	Incorrect operation mode	Frequency range and user bands on the receiver and multi-switch must match. If the setting on the rotary switch is changed, briefly disconnect the multi-switch from the mains so that the settings are applied on restart
	Poor DiSEqC™ signal	Use distribution material without diodes to reduce power consumption
	Incorrect PIN code	Check or deactivate the PIN code
	Incorrect assignment	Make sure that user band and frequency match. Note: SCR address is smaller than the user band number by 1
	No voltage on the LNB	Make sure there is no short circuit on the receiver-LNB connection Connect DC block EMU 12 (order no. 273281) to the cascade input to reduce the load placed on the VL trunk from the LNB
Short message: "Poor or no signal" or picture stutters at regular intervals	Another subscriber has accessed the same user band	- Check menu settings of all connected receivers - Make sure that the frequencies are assigned to one receiver only
Loop-through multi-switches without Kathrein Power Saving do not function or function only sometimes	Rotary switch is set to Kathrein Power Saving "ON"	Switch off Kathrein Power Saving. Set the rotary switch to "OFF".

Disposal



Electronic equipment

Electronic equipment is not domestic waste – in accordance with directive 2012/19/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL dated 04th July 2012 concerning used electrical and electronic appliances, it must be disposed of properly. At the end of its service life, take this unit to a designated public collection point for disposal.