opticamSWITCH | **fiber optic camera switch**

Operating Manual

NEUTRIK®

version V2

opticamSWITCH
OPERATING INSTRUCTION

Manual Version: opticamSWITCH V2

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Table of Content

1. General Safety Summary

This equipment is intended for use in professional applications, e.g. broadcast camera systems, where adequate safety mechanisms are being implemented.
Review the following safety precautions to avoid injury and prevent damage.

WARNING: Laser Handling Precautions

The unit shall be attached to equipment providing laser modules approved and classified as Class 1 only.
Laser light can damage your eyes. Laser light is invisible. Viewing it directly does not cause pain. The iris of the eye will not close involuntarily when viewing a bright light, consequently, serious damage to the retina of the eye is possible. Never look into the end of a fiber which may have a laser coupled to it. DO NOT use magnifiers in the presence of laser radiation. Diffused laser light can cause eye damage if focused with optical instruments. Should accidental exposure to laser light be suspected, arrange for an eye examination immediately.

FCC:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/T.V. technician for help.

CAUTION: Protective Earth

This Equipment must be grounded. It should not be necessary to remove any protective earth signal cable shield connections to prevent ground loops. Any such disconnections are outside the recommended practice of Neutrik AG and will render any EMC or safety certification void.

CAUTION: Electro-Static Discharge (ESD)

Do not remove cover. No used serviceable parts inside.
High risk of electro static discharge when cover is open.

CAUTION: Voltage

Hazardous voltage inside! Do not open or disassemble the opticamSWITCH when in service.

CAUTION: Voltage

Use dedicated power adapter: Before connecting make sure that voltage rating and polarity is correct

CAUTION: Dispose

Production of this product required the extraction and use of natural resources. The equipment may contain substances that could be harmful to the environment or human health if improperly handled at the product's end of life. In order to avoid release of such substances into the environment and to reduce the use of natural resource, we encourage you to recycle this product in an appropriate system that will ensure that most of the materials are reused or recycled appropriately.

CAUTION: Transport

For transportation protect opticamSWITCH from rain and handle it carefully.

2. Scope of Delivery

Figure 2.a: NOCS-WL-8x4-1310

Figure 2.b: Operator CD

No	Function	Description
1	NOCS-WL-8x4-1310	opticamSWITCH
2	Operating Manual	Channel designation, specifications, mechanical dimensions, etc.

2.1 Accessories

Parts below are not included and have to be purchased separately.

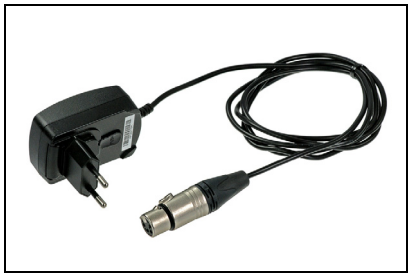


Figure 2.1.a

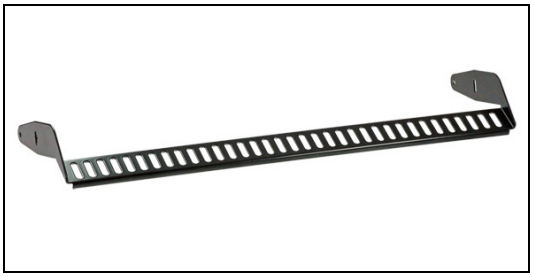


Figure 2.1.b

No	Function	Description
1	NPS-24W	Main power supply 12 Vdc / 2A with lockable NC4FXX connector
2	Cable Management Bar	Cable bar for enhanced wiring

3. Design

3.1 Identification of User Interface and Connector Parts

Front

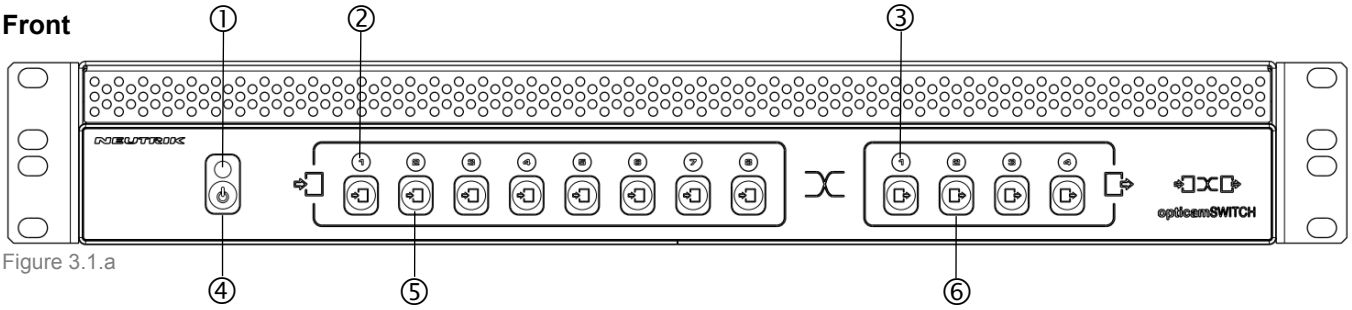
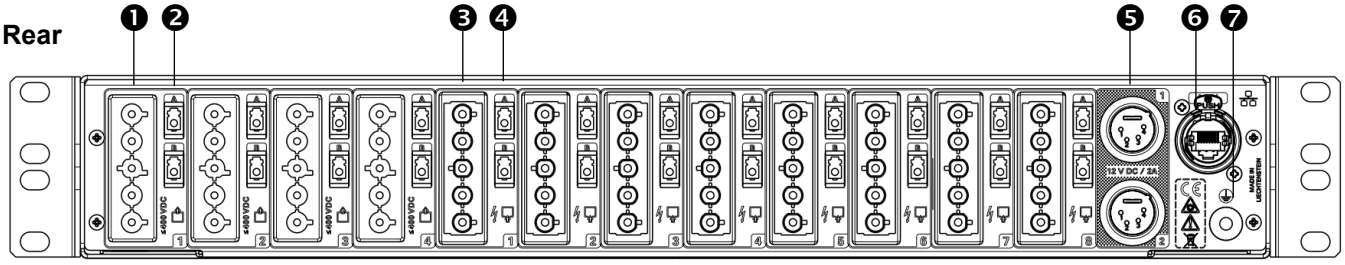


Figure 3.1.a

No	Symbol	Function
①	-	Status LED – power supply
②		Status LED – CAM (camera) ports
③		Status LED – CCU (Camera Control Unit) ports
④		Button – power ON / OFF
⑤		Button – CAM (camera) ports 1-8
⑥		Button – CCU (Camera Control Unit) ports 1-4

Rear



No	Symbol	Function
❶	Power CCU port 1-4	Power connector for camera control signals and power supply from CCU (Camera Control Unit)
❷	Fiber CCU port 1-4	LC connector for optical data transfer from/to CCU (Camera Control Unit)
❸	Power CAM port 1-8	Power connector for camera control signals and power supply from camera
❹	Fiber CAM port 1-8	LC connector for optical data transfer from/to camera
❺	Main & Auxiliary power supply	12V external power supply
❻	Ethernet port	Interconnection (LAN) between opticamSWITCH and PC.
❼	Protective Earth Screw	Grounding screw to connect housing to protective earth.

Figure 3.1.b

Pin Designation – 12Vdc power supply

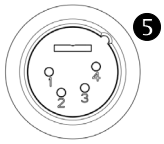


Figure 3.1.c

No	Function	Description
1	Power -	Supply Ground
4	Power +	12 Vdc / 2A

Pin Designation – LAN connection

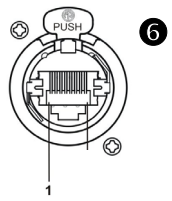


Figure 3.1.d

No	Function	Description
1	Tx +	Transmit +
2	Tx -	Transmit -
3	Rx +	Receive +
4	-	Reserve
5	-	Reserve
6	Rx -	Receive -
7	-	Reserve
8	-	Reserve

Pin Designation – power CCU

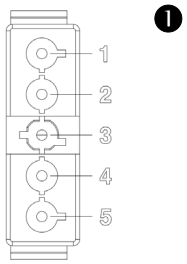


Figure 3.1.e

No	Function	Description
1	Sense +	Red
2	Sense -	Grey
3	Shield	Green
4	Power -	White
5	Power +	Black

Pin Designation – power CAMERA

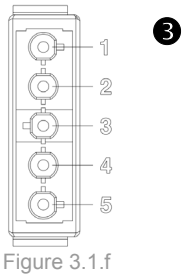


Figure 3.1.f

No	Function	Description
1	Power +	Black
2	Power -	White
3	Shield	Green
4	Sense -	Grey
5	Sense +	Red

Protective Earth Screw

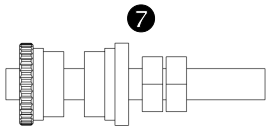


Figure 3.1.g

Notice: Outer diameter of grounding screw is 4.8 mm

3.2 Dimensions [mm]

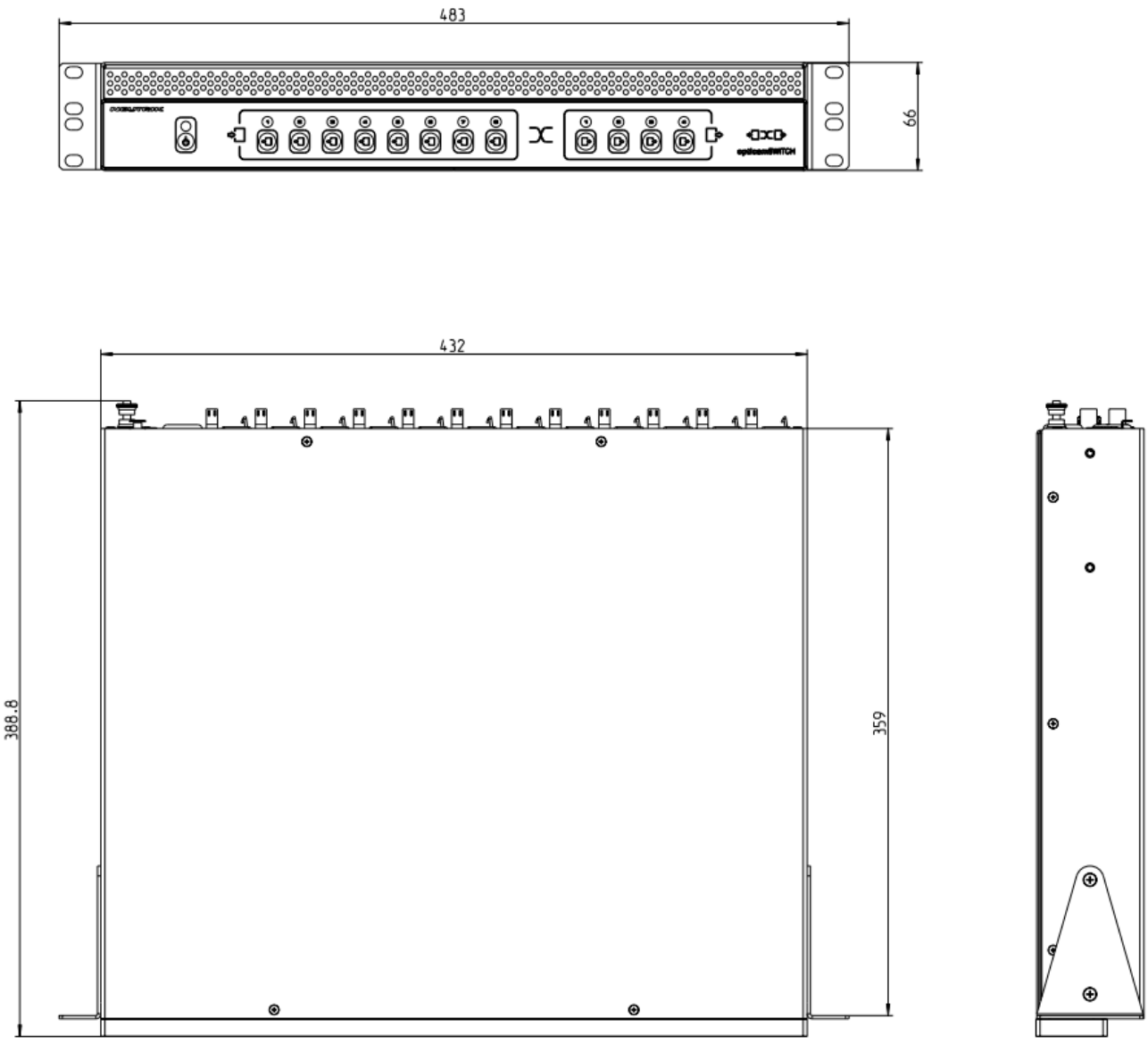


Figure 3.2.a

4. Getting Started

4.1 Mechanical Preparation

For better air circulation it is suggested to mount the opticamSWITCH units with space to each other.
It is recommended to support each opticamSWITCH unit with help of chassis sliders mounted in the cabinet as illustrated in figure 4.1.a.

Figure 4.1.a

4.2. Power Supply

The opticamSWITCH offers 2 different power supplies (accessories) for redundancy in case of voltage drop down.

4.2.1 Master Power Supply

Connect main power supply on XLR-chassis on the top.

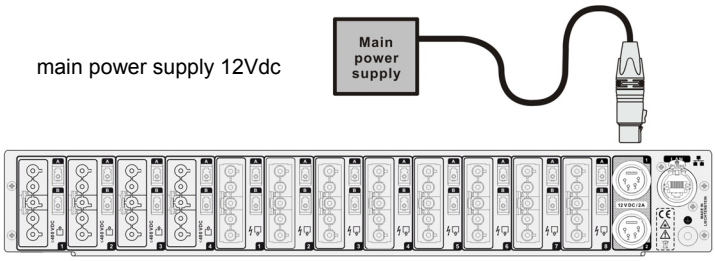
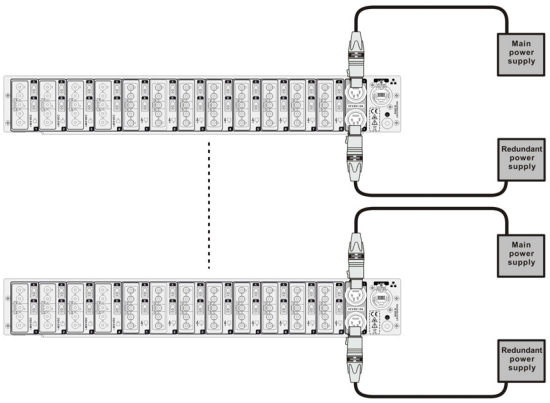


Fig. 4.2.1.a

4.2.2 Auxiliary Power Supply

Redundant power supply should be connected to a different branch circuit to avoid breakdowns in case
Ąf voltage drop down.



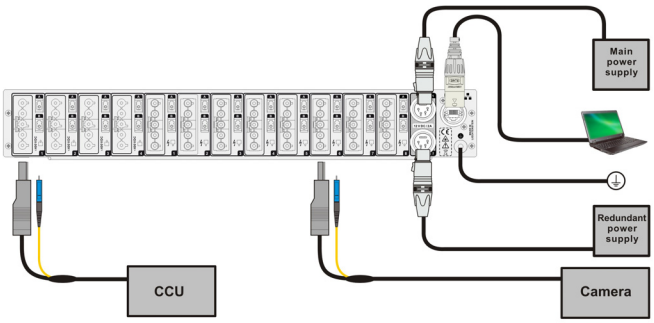
ATTENTION:

For a proper setup connect power supplies from different branch circuits!

Fig. 4.2.2.a

4.3 Installation - Setup

Connect camera and CCU links with the opticamSWITCH according required configuration. Make sure that the cameras are turned off for the first configuration procedure.



Caution: Make sure that the housing is connected to protective earth (PE) via grounding terminal.

Figure 4.3.a

4.4 Wiring

Note: In order to achieve uniform and compatible systems, the internal fiber optic wiring with regard to duplex polarity complies with ISO / IEC 11801 which defines position A as INPUT and B as OUTPUT referring to the fixed connector. Connect and install the CAM and CCU cables as illustrated in the figures below. To avoid increased attenuation, make sure that the fibers are not interlaced to each other.

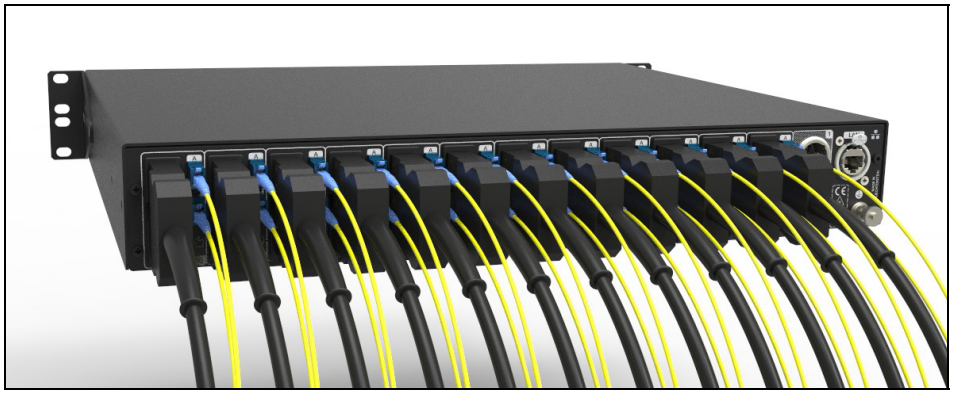


Figure 4.4.a: Wiring Setup

Notice: Bending radius of fiber cables correlate to the specifications of the cable datasheet. High bending causes increased attenuation and a significant reduction of fiber lifetime.

5. Operation

5.1 Power ON - Self Test

5.1.a) Power ON

Push the power ON/OFF button and hold for about 0.5 seconds to switch ON the opticamSWITCH; the LED illuminates green.

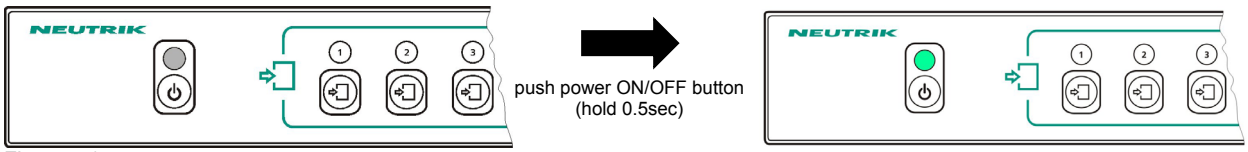


Figure 5.1.a

5.1.b) Self-test

The device runs automatically an internal start-up self-test (when power supply is attached and if no channel routed) checking the function of all status LEDs of the device. Contact your next support office if status LED doesn't illuminate orange, green and red.

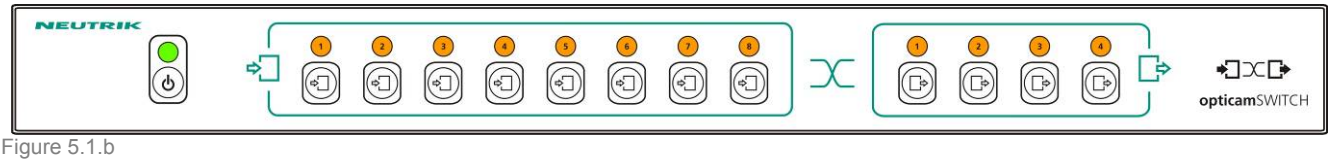


Figure 5.1.b

ATTENTION:

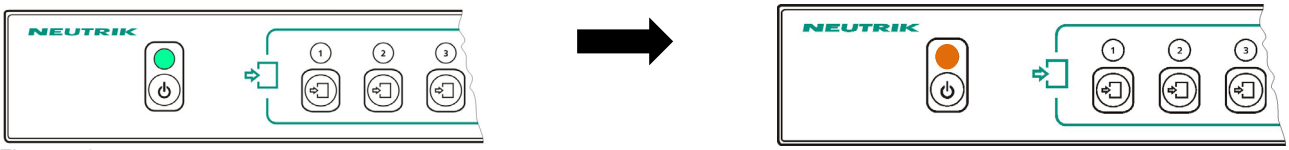


Figure 5.1.c

In case of internal power supply failures the power LED switches from green to orange (blinking). The device switches to the auxiliary power supply (if used), check mains power supply.

5.2 First Channel Assignment

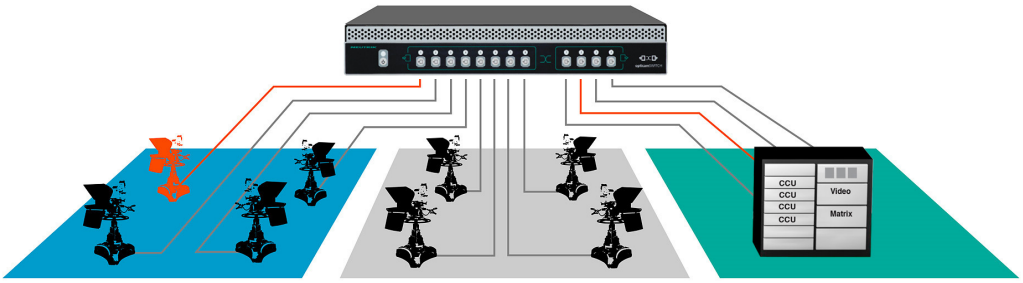


Figure 5.2.a

5.2.a) Define routing setup

To route a camera push and hold the CAM button and the corresponding CCU button of choice for 1 second. A successful link is confirmed by a short beep (◂) and both corresponding LEDs illuminate orange as long as at least one of the buttons are still pushed. The LED of each button will indicate the status of the link as soon as the button is released

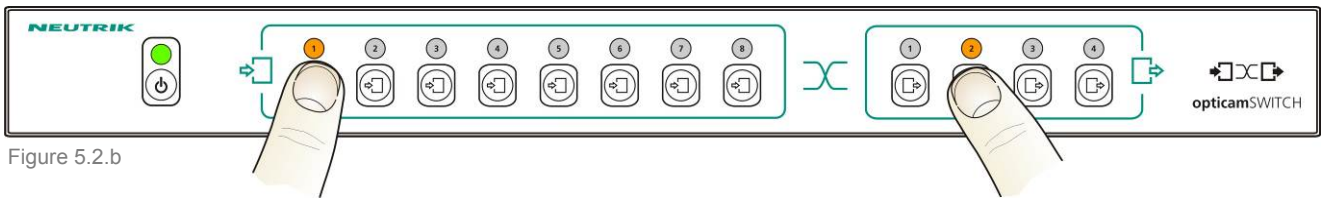


Figure 5.2.b

5.2.b) LED status information

The opticamSWITCH is equipped with an intelligent power working circuit (IPWC) to guarantee correct operation within the permissible operation limits of the power relays (see table 5.2.c). The IPWC of the device monitors both voltage and current supplied by connected CCUs at any time. The status LED of each button indicates the transmission status of the camera link.

LED	DESCRIPTION	EFFECT
GRAY	Vacant channel	Re-routing possible Device can be switched off
GREEN blinking **(CCU LED only)**	Voltage and current within the IPWC margin of the system Camera or CCU (Camera Control Unit) turned off	Re-routing possible
GREEN	Voltage and/or current within the IPWC margin of the system. Camera or CCU turned on	Re-routing possible Device can be switched off
RED	Voltage and/or current outside of the IPWC margin.	Re-routing not possible under load
ORANGE	Depressed CCU or CAM button	Indicates current channel assignment

Table 5.2.a

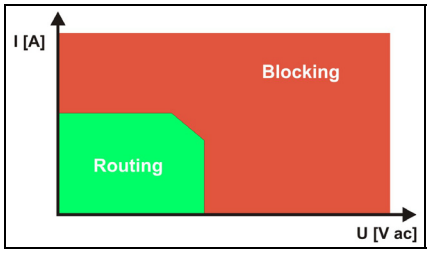


Figure 5.2.c

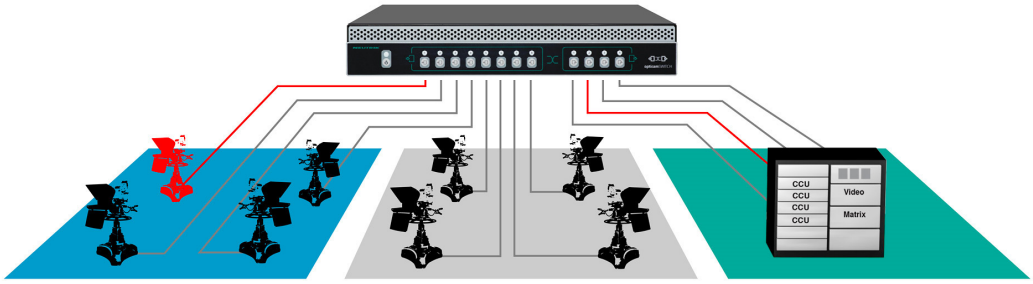


Figure 5.2.d

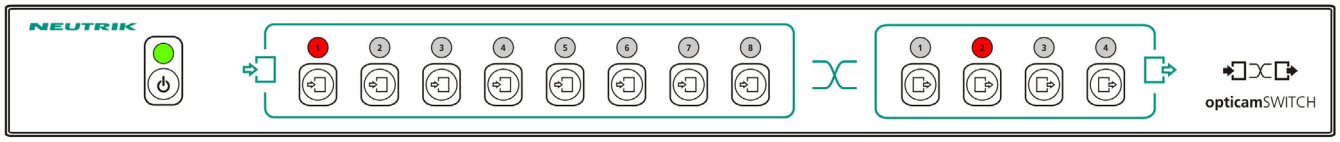


Figure 5.5.e: Camera power exceeds the IPWC margin of the device, re-routing is blocked, LED illuminated RED;

IMPORTANT:

It is impossible to turn off the device as long as one status LED is illuminated RED in order to protect the corresponding relay of the device from damage!

Shut down the camera to disable IPWC block, the status LED illuminates green (or blinking), the device can be switched off.

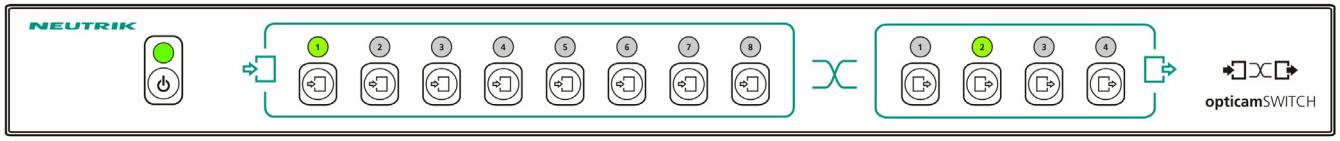


Figure 5.2.f: Green blinking status LED indicates switched off device (e.g. camera);

5.2.c) Further channel assignment

Repeat step 5.2.a *"Define routing setup"* for further channel assignments of free channels (max 4 channels can be routed together - Non Blocking)

5.3 Channel Re-Routing

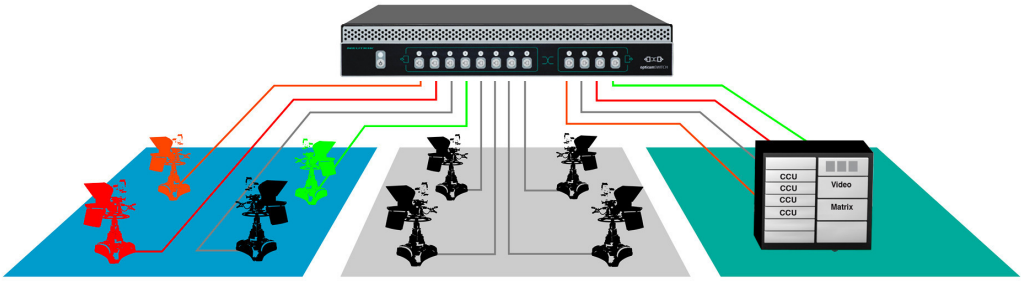


Figure 5.3.a

5.3.a) Check channel status

Only not assigned channels can be routed.

A chosen channel assignment will be shown by a push of any CAM or CCU button. The status LED of the pushed button and the LED of the corresponding channel illuminate orange indicating the channel assignment for the time the button is being pushed.

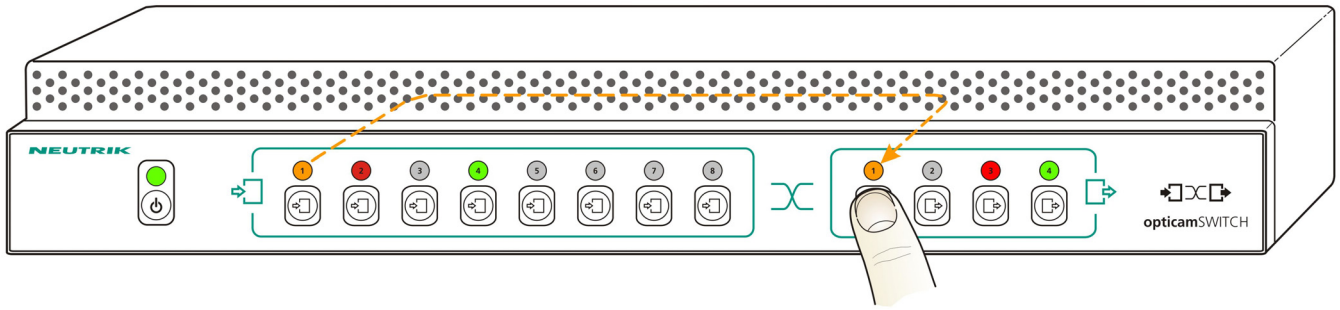


Figure 5.3.b: Input channel 1 is linked to output channel 1.

5.3.b) Remove channel assignment

NOTE:

If the status LED illuminates RED, turn off the associated cameras to disable the IPWC block.

Press the assigned channel CAM and CCU button for 1 second until the status LED from linked channel is switched off. A short beep (◂) confirms a successfully removed channel assignment.

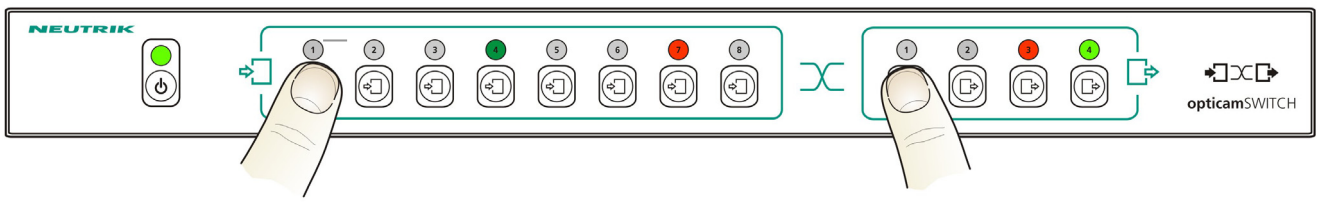


Figure 5.3.c: After beep the LEDs are turned off.

5.3.c) Channel rerouting

Press a not assigned CAM and CCU button of your choice and hold for 1 sec. A successful link is confirmed by a short beep and the corresponding LEDs illuminate orange as long as at least one of the buttons remains pushed. The LED of each button will indicate the status of the link as soon as the button is released

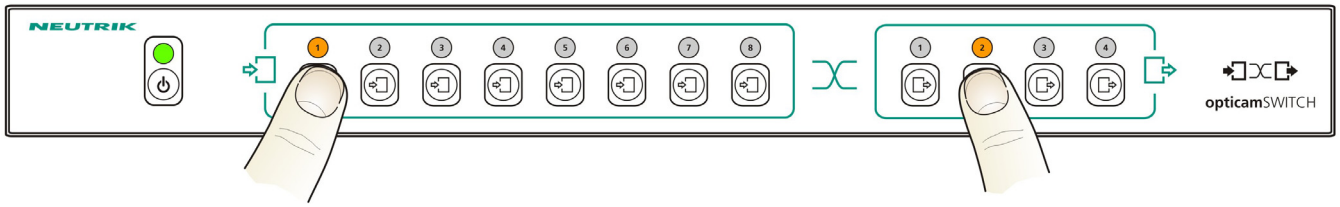


Figure 5.3.d: LED switches to orange after the routing procedure has been completed.

NOTE:
Only free channels can be rerouted! Repeat step 5.3.b to remove the existing channel assignment

6. Troubleshooting & Support

If you have questions, service needs, or require technical assistance related to using the opticamSWITCH, contact your responsible Neutrik subsidiary or export partner.

CONDITION	DESCRIPTION	SOLUTION
Red blinking status LED	Sense Fuse defect	Check wiring! Contact responsible Neutrik agent
Orange blinking power LED	Failures on the 12Vdc external master power supply Auxiliary power supply in use	Check wiring of power supply!

7. Specifications

7.1 General Data

Parameter	Value
Maximum Number Of Inputs	8
Power connectivity	Wieland GST18I5F B2 R V SW
Optical Connectivity	LC connector
Data connectivity for configuration	Neutrik NE8FDP
Main power supply	12 Vdc / 2 A (NC4MPR-HD)
Auxiliary power supply	12 Vdc / 2 A (NC4MPR-HD)
Max. Power Consumption	24 W

7.2 Fiber Data

Parameter	Value
Operating Wavelength	1310 nm
Maximum Insertion Loss (IL)	3.0 dB
Maximum Insertion Loss Uniformity	1 dB
Minimum Optical Return Loss (ORL)	> 45 dB
Fiber Compatibility	9/125 Single-mode PC (physical contact)

7.3 Mechanical Data

Parameter	Value
Dimensions (w x h x d) [mm]	483 x 66 x 389 (with mounting angle / no cable management bar) 432 x 66 x 389 (without mounting angle / no cable management bar) 483 x 66 x 570 (with mounting angle and cable management bar)
Weight [kg]	6.3

7.4 Electrical Data

Parameter	Value
Rated Voltage power lines	400 Vpk
Rated Voltage – sense lines	42.4 Vpk / 60 Vdc
Max. Current (power / sense)	3 A / 0.2 A
Fuse – Power Relays	3.15 A – slow
Fuse – Sense Relays	63 mA - fast
Fuse – Power Supply	1.6 A – slow
Fuse – Power Supply (Auxiliary)	1.6 A – slow

7.5 Environmental Data

Parameter	Value
Operating Ambient Temperature	0°C to + 40°C
Storage Ambient Temperature	-25 °C to +75 °C
Humidity	5 % to 90 % R.H.; Non-condensing conditions
Vibration	According to IEC61587-1 , DL2 (Performance Level)
Electromagnetic Compatibility	EN55022; EN55024

8. Appendix

Following camera matrix lists tested video equipment (camera, base station, operator control panel, etc.) from common suppliers.

Manufacturer	Partnumber	Description
Ikegami	CCU-890	Base Station
	BS-89	Base Station
	HDK-79EXIII	HD-Camera
	SE-H700	Optic
	OCP-200	Operation Control Panel
Grass Valley	LDK5880	HD Fiber Adapter
	LDK5420	3G Fiber Adapter
	LDK4582	HD Base Station
	LDK4410	3G Base Station
	LDK4583	HD 3x Speed Base Station
	LDK4430	3G 3x Speed Base Station
	LDK4420	3G Twin Base Station
	LDK4425	3G Fiber Power Converter
	LDK4426	3G Triax Camera to 3G Fiber Converter
Hitachi	Z-HD5000	Camera
	SKHD 1000	Camera
	SKHD 1200	Camera
	SKHD 2000	Camera
	SKHD 2200	Camera
	CU-HD 1000	Base Station
	CU-HD 500	Base Station

9. WARRANTY

Neutrik AG warrants that the product will be free from defects in materials and workmanship for a period of 2 years from the date of original purchase from an authorized Neutrik distributor. If the product proves defective during this warranty period, Neutrik AG, at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product. Parts, modules and replacement products used by Neutrik AG for warranty work may be new or reconditioned to like new performance. All replaced parts, modules and products become the property of Neutrik AG.

In order to obtain service under this warranty, Customer must notify Neutrik AG of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to the headquarters.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. Neutrik AG shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than Neutrik AG representatives to install, repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; c) to repair any damage or malfunction caused by the use of non - Neutrik AG supplies; or d) to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

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Liechtenstein (Headquarters)
NEUTRIK AG, Im alten Riet 143, 9494 Schaan
T +423 237 24 24, F +423 232 53 93, neutrik@neutrik.com

Germany / Netherlands / Denmark / Austria
Neutrik Vertriebs GmbH, Felix-Wankel-Strasse 1, 85221 Dachau, Germany
T +49 8131 28 08 90, neutrik@neutrik.de

Great Britain
Neutrik (UK) Ltd., Westridge Business Park, Cothey Way
Ryde, Isle of Wight PO33 1 QT
T +44 1983 811 441, sales@neutrik.co.uk

France
Neutrik France SARL, Rue du Parchamp 13, 92100 Boulogne-Billancourt
T +33 1 41 31 67 50, info@neutrik.fr

USA
Neutrik USA Inc., 4115 Taggart Creek Road, Charlotte, North Carolina, 28208
T +1 704 972 30 50, info@neutrikusa.com

Japan
Neutrik Limited, Yusen-Higashinihonbashi-Ekimae Bldg., 3-7-19
Higashinihonbashi, Chuo-ku, Tokyo 103
T +81 3 3663 47 33, mail@neutrik.co.jp

Hong Kong
Neutrik Hong Kong LTD., Suite 18, 7th Floor Shatin Galleria
Fotan, Shatin
T +852 2687 6055, neutrik@neutrik.com.hk

China
Ningbo Neutrik Trading Co., Ltd., Shiqi Street, Yinxian Road West
Fengjia Villiage, Yinzhou Area, Ningbo, Zhejiang, 315153
T +86 574 88250488 800, neutrik@neutrik.com.cn

India
Neutrik India Pvt. Ltd., Level 3, Neo Vikram, New Link Road,
Above Audi Show Room, Andheri West, Mumbai, 400053
T +91 982 05 43 424, anklesaria@neutrik.com

Associated companies

Contrik AG
Steinackerstrasse 35, 8902 Urdorf, Switzerland
T +41 44 736 50 10, contrik@contrik.ch

H. Adam GmbH
Felix-Wankel-Straße 1, 85221 Dachau, Germany
T +49 08131 28 08-0, anfrage@adam-gmbh.de

www.neutrik.com