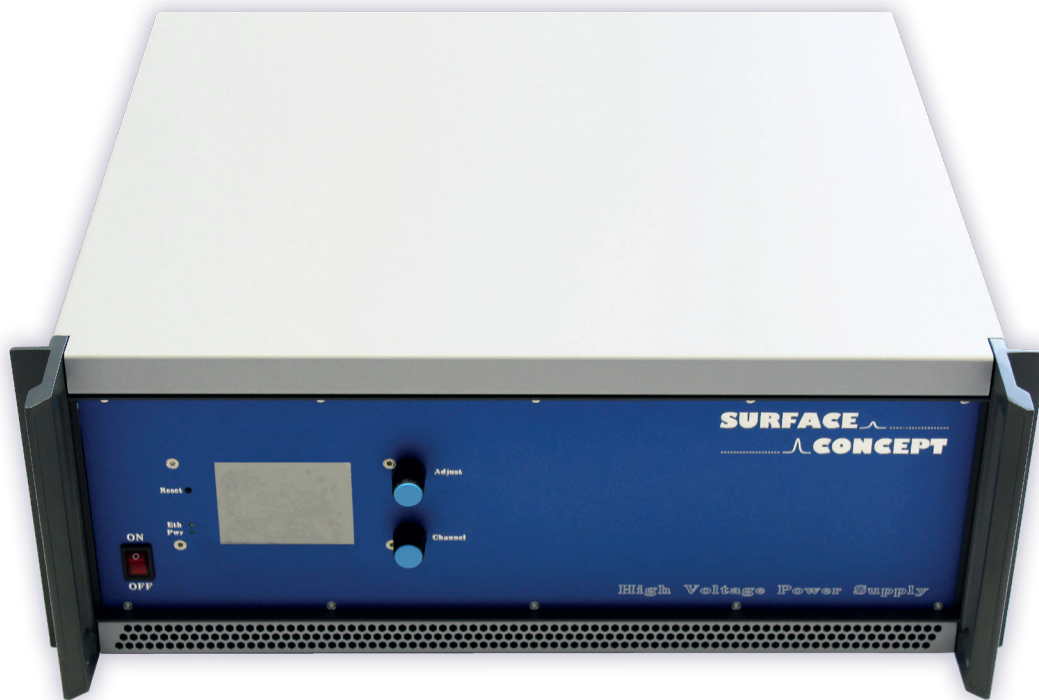


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# 19" Basic Unit for HVPS Modules (Release R015)



## Manual



**SURFACE** .....  
..... **CONCEPT**

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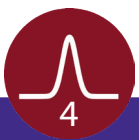
User Manual for the  
19" Basic Unit for HVPS Modules  
Release: R015  
Manual Version 2.0  
Printed on 2020-06-23



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## 2 Introduction

### 2.1 General Information

This manual is intended to assist users in the installation, operation and maintenance of Release Version 015 of the 19" Basic Unit. It is divided into 8 chapters.

### 2.2 Safety Instructions

Please read this manual carefully before performing any electrical or electronic operations and strictly follow the safety rules given within this manual.

The following symbols may appear throughout the manual:



The "note symbol" marks text passages that contain important information/hints about the operation of the device. Follow this information to ensure a proper operation of the device.



The "caution symbol" marks warnings, which are given to prevent an accidental damaging of the device. Do **NOT** ignore these warnings and follow them **strictly**. Otherwise no guarantee is given for arose damages.



The "high voltage symbol" marks warnings, given in context with the description of the operation/use of high voltage supplies and/or high voltage carrying parts. Hazardous voltages are present that can cause serious or fatal injuries. Therefore only persons with the appropriate training are allowed to carry out the installation, adjustment and repair work.

## 2.3 General Overview

The Surface Concept 19" Basic Unit R015 is base unit of a modular supply system which can be equipped with up to 9 individual modules like high voltage power supply modules, current source modules etc. It comes with an integrated main controller, which allows a communication between the Basic Unit and the single modules via an integrated bus system.

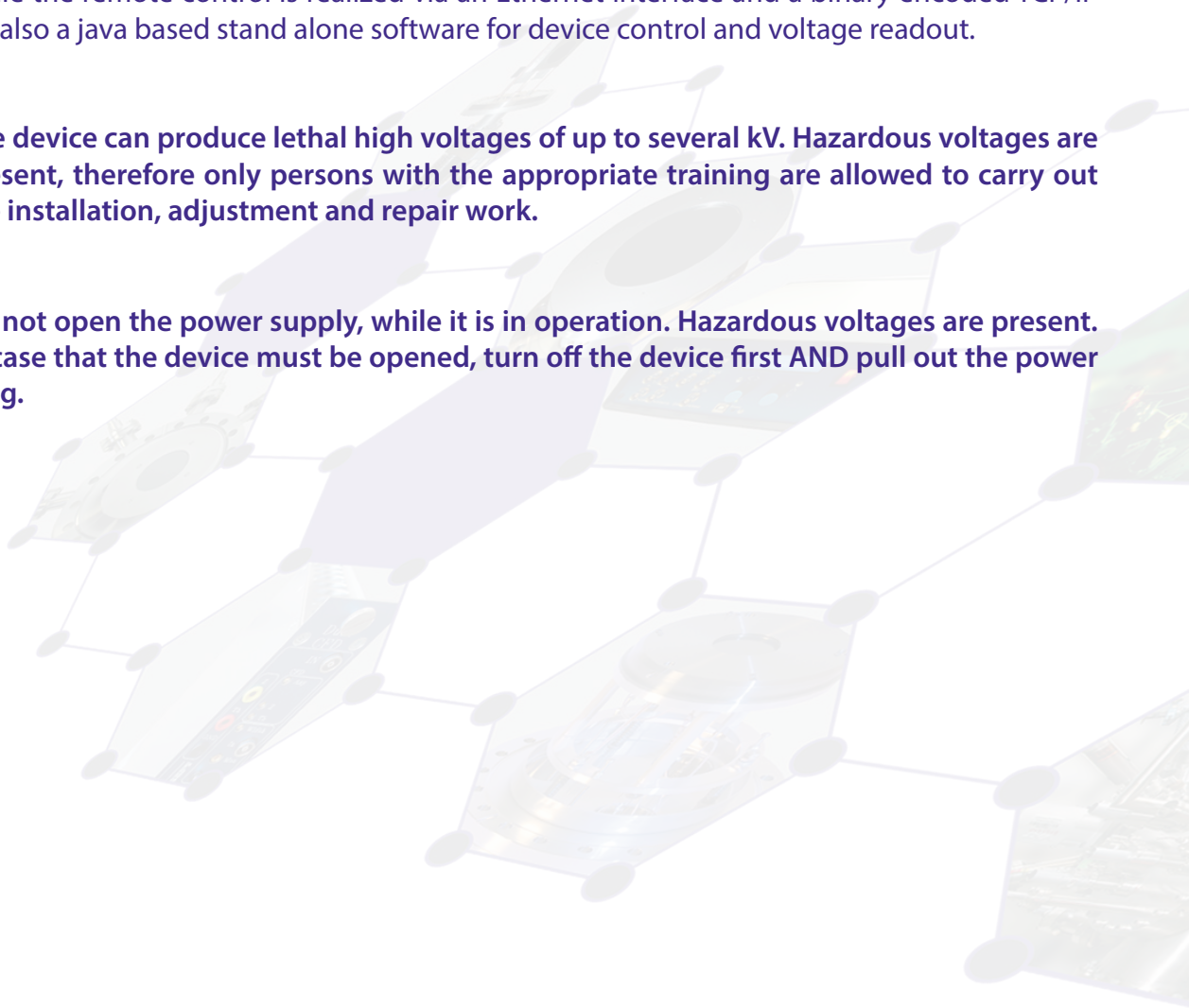
The device can be controlled manually as well as remotely. The manual control is realized via an integrated touch display while the remote control is realized via an Ethernet interface and a binary encoded TCP/IP protocol. There is also a java based stand alone software for device control and voltage readout.



**The device can produce lethal high voltages of up to several kV. Hazardous voltages are present, therefore only persons with the appropriate training are allowed to carry out the installation, adjustment and repair work.**



**Do not open the power supply, while it is in operation. Hazardous voltages are present. In case that the device must be opened, turn off the device first AND pull out the power plug.**



## 3 Introduction

### 3.1 Initial Inspection

Visual inspection of the system is required to ensure that no damage has occurred during shipping. If there are any signs of damage, please contact SURFACE CONCEPT immediately. Please check the delivery according to the packing list (see **Table 1**) for completeness.

- 1x 19" Basic Unit R015
- 1x BNC Termination Plug
- 1x Ethernet Cable (5m)

Table1: Packing list for the 19" Basic Unit R015.

### 3.2 Installation

The general connection scheme of the 19" Basic Unit is as follows:

- First, use the "Ground" connector (M4 screw) to ground the device.
- Connect the power cable to the main connector.
- Check if the Interlock-Plug (BNC termination plug) is connected.
- Connect the Ethernet cable if remote control should be used.
- Check the single manuals for the different modules for module operation as well as voltage and current output.



Check the single manuals for the different modules for the specific connection scheme.

Finish the complete cabling before switching on the 19" Basic Unit and switch off the device first before performing any changes to the cabling.

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# 4 Device Layout & Operation

## 4.1 Device Layout

The layout of the 19" Basic Unit is given below.



1. Power switch, to turn ON/OFF the device (lighted, when switched ON)
2. Hardware reset button
3. Status LEDs for Power (lightens up when device is switched on) and Ethernet connection (lightens up only when a software is connected to the HV supply).
4. Touch Display
5. Control knob for high voltage adjustment
6. Control knob for channel selection
7. BNC connector for hardware interlock (output of BNC connector must be grounded to deactivate interlock)
8. Ground connector for device grounding
9. Ethernet socket
10. Power socket



Figure 1: Layout of the 19" Basic Unit R015.



## 4.2 General Device Operation

After switching on the device (1), the display (4) shows the “Surface Concept” animated logo, while the device is scanning for available modules and their specific settings. This can take up to several seconds. If the device is ready for operation, it switches into the standby mode and shows an empty mask for the voltage adjustment (see **Figure 2**).

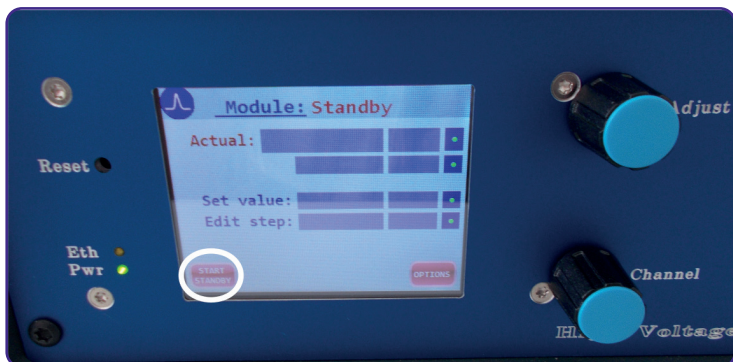


Figure 2: Standby mode.

Push the “Start/Standby” button in the lower left corner of the display to switch on the high voltage.

Alternatively one can press the “Channel” control knob.

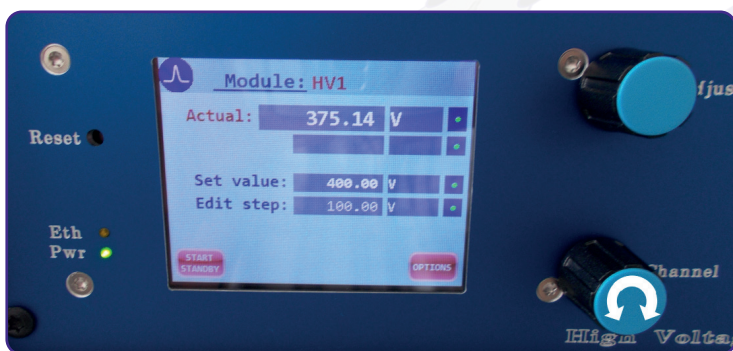


Figure 3: Operation mode.

After switching on the high voltage the device is in the so called operation mode. In operation mode the display shows the name of the selected channel in the top line (in this case “HV 1”) as well as the output voltage of that channel.

The different HV channels can be selected by turning the “Channel” control knob.

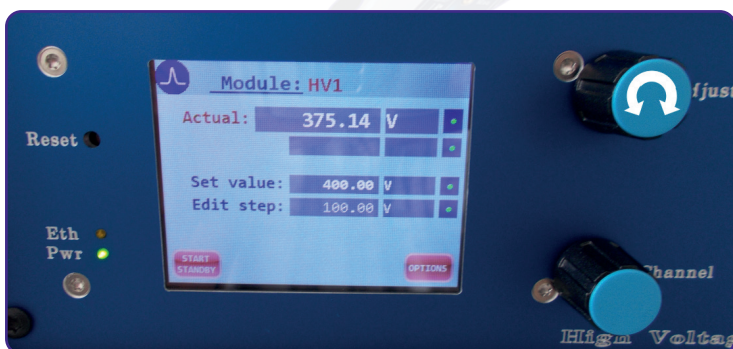
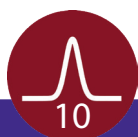


Figure 4: Operation mode – voltage adjustment.

The “Adjust” control knob is used to adjust the output voltage. Turn the “Adjust” control knob clockwise/counterclockwise to increase/decrease the value of the output voltage in a step width as defined in the line “edit step”.

The line “set value” displays the nominal value for the output voltage as adjusted by the user. Voltage adjustment can only be made in this line.

The line “actual” displays the actual value for the output voltage on the output connector as measured by the device. The device always regulates the actual value of the output voltage to fit to the nominal value as set by the user. Hereby the voltage measurement is always a relative measurement between the two HV outputs of one channel. Additional reference voltages (e.g. in floating operation) are not measured and therefore are also not displayed (see the manual of the specific module for further details). Turn the “Adjust” control knob clockwise/counterclockwise while pushing it to increase/decrease the step width in the line “edit step”.



Push the „Start/Standby“-button in the lower left corner of the display again to switch back to the “Standby” mode.

## 5 Additional Device Options

Pressing the "Option" button in the lower right corner of the device display, the device will switch to the overview display of the additional device options. The available options are device depending. Press the "Exit" button to switch back to the display of the operation voltages.

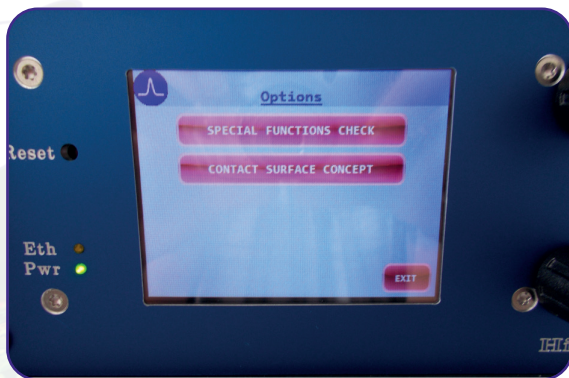


Figure 5: "Device Options" sub-menu.

The overview of the device options show the different available options like the contact page for surface concept or special device specific functions.

Open the specific sub-menu by pressing the corresponding button in the touch display.

### 5.1 Special Function Check

The sub-menu "Special Function Check" in the device options display the different special functions currently available for the different modules for the 19" Basic Unit. Not all listed functions are available for each single module layout.

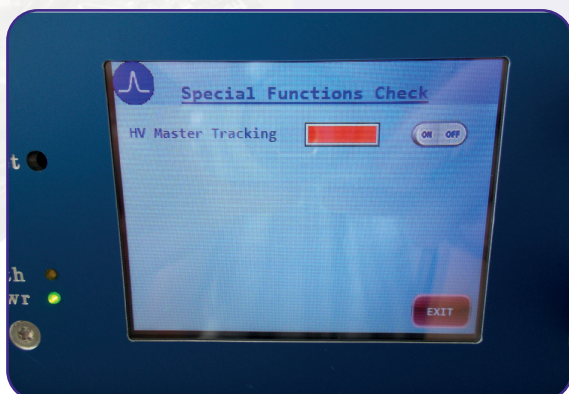
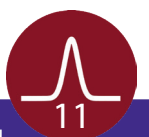


Figure 6: "Special Functions Check" sub-menu.

The "HV Master Tracking" allows the HVPS to track an external reference voltage and to produce an output voltage which is in a fixed defined relation to the master voltage.

Please note: This function differs from the floating functionality, because the master voltage is "only" measured within the device and the HVPS is producing a corresponding output voltage.

The "HV Master Tracking" can be switched ON/OFF by clicking on the corresponding button on the display.





## 5.2 Contact Surface Concept

The sub-menu “Contact Surface Concept” in the device options displays the Surface Concept contact information. Press the “Exit” button to leave this sub-menu.

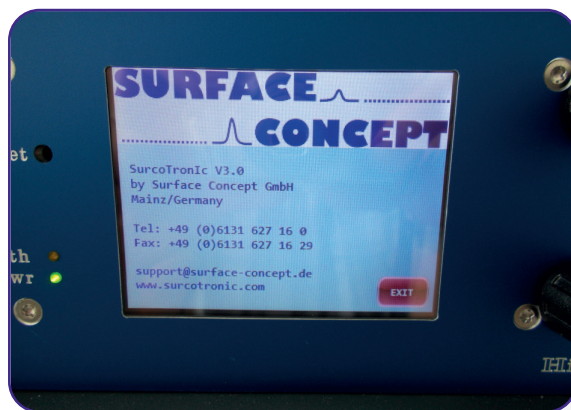


Figure 7: “Contact Surface Concept” sub-menu.

## 6 Error States

Error states of the device are indicated by error messages in the display.



Figure 8: Error code – Interlock.

### Err – Interlock

The device interlock is active and is blocking the HV output. Please terminate the interlock to ground using either the BNC termination plug (part of the delivery) or check the proper functionality of the use device which is providing the interlock.

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## 7 Technical Data

### 19" Basic Unit R015

Housing Dimensions (h/w/d):

No. of Slots for Modules:

Electrical Input (LINE):

Power (max.):

Fuse:

### R033

177mm x 462mm x 496mm

9

85V – 260V AC, 50/60Hz

500W

1 x T 3.15A

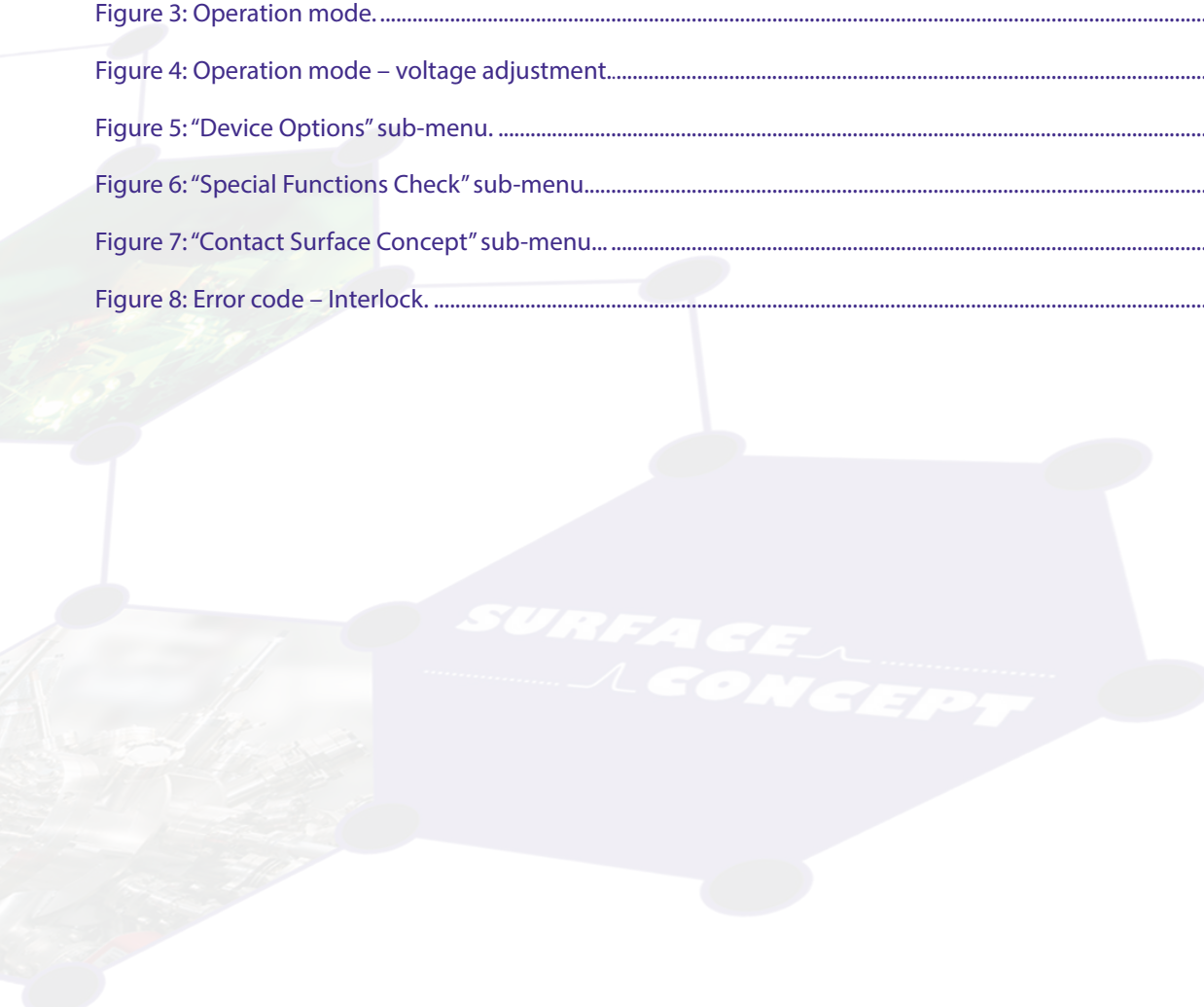






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# EC Declaration of Conformity

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Product Model

High Voltage Power Supply  
19" Basic Unit

The above named products comply with the following European directive:

- 89/336/EEC Electromagnetic Compatibility Directive, amended by 91/263/ EEC and 92/31/ EEC and 93/68/EEC
- 73/23/EEC Low Voltage Equipment Directive, amended by 93/68/EEC

The compliance of the above named product to which this declaration relates is in conformity with the following standards or other normative documents where relevant:

- EN 61000-6-2:2005+AC:2005 Electromagnetic compatibility (EMC):  
Generic standards - Immunity for industrial environments
- EN 61000-6-4:2007+A1:2011 Electromagnetic compatibility (EMC):  
Generic standards - Emission standard for industrial environments
- EN 61010-1: 2010 Safety Requirements for Electrical Equipment for Measurement,  
Control and Laboratory Use

For and on behalf of Surface Concept GmbH

Mainz,.....01.04.2013.....  
(Date)

Legal Signature.....  
(Dr. Andreas Oelsner)

This declaration does not represent a commitment to features or capabilities of the instrument. The safety notes and regulations given in the product related documentation must be observed at all times.

