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# FKG-4

## User Manual

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## 1 In General

The FKG-4 is a *haircross generator*. It generates up to four haircrosses and insert them into a video signal. This video signal must be a external connected video source. In general this will be a video camera.

All functions of the FKG-4 are controlled by the integrated keypad. This allows the user the full adaption to his task. The configuration is automatically saved and restored at startup.

### 1.1 Features

The following enumeration gives you an short overview of the available features of the FKG-4.

- insertion of up to four haircrosses into an external video signal.
- free positioning of each single haircross.
- free adjustment of the brightness of the haircrosses.
- adjustable width in four steps for each haircross.
- adjustable height in four steps for each haircross.

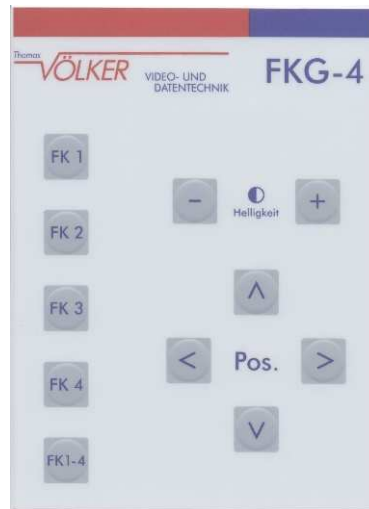


Figure 1: Layout of the keypad.

- each single haircross can be deactivated.
- automatically save and restore the last configuration.
- locking of the keypad.

See section 4 for an overview of more technical details of the device.

## 2 Usage

All functions of the FKG-4 are controlled by the integrated keypad. Figure 1 shows an image of the layout of the keypad.

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**Note:** Don't use sharp object to press the keys. This could damage the keypad!

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### 2.1 Structure of the keypad

The keypad is divided into three areas. On the left side, there are five keys on top of each other. The names of this keys starts with "FK". This are the so called *selection keys*. They are used to select one or more haircrosses.

In the lower right part are four keys located, that are labeled with arrows. This are the *positioning keys*. To make this more clear, there is the label POS. in the centre of the keys.

The last area is located in the upper right part of the keypad. Here are the two keys which control the brightness of all haircrosses.

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Key	Selection
ⓀK1	haircross 1
ⓀK2	haircross 2
ⓀK3	haircross 3
ⓀK4	haircross 4
ⓀK1-4	all haircrosses

---

Table 1: selecting the haircrosses.

## 2.2 Controlling the FKG-4

### 2.2.1 Brightness

To get the best results, you should adapt the brightness to the current video signal. The brightness is common to all haircrosses. So there is no need to select a single haircross.

To get the lines darker, press the key  $\ominus$ . You have to use the key  $\oplus$  to make them brighter. The value of the brightness changes as long as you press one of the two keys.

After releasing the brightness keys, the FKG-4 saves this setup immediately. This means, that the brightness is restored after the next power up.

### 2.2.2 Selecting haircrosses

All functions which affects single haircrosses, makes it necessary, that the user *select* one or more haircrosses. Therefore the *selection keys* must be used.

To select one or more haircrosses, the corresponding selection keys have to be pressed. The selection is *active* as long as the keys are pressed. Table 1 shows the association between the haircross and the name of the selection key.

As a visual response to the selection, the selected haircrosses change there brightness. If the normal haircrosses are dark, the selected ones gets brighter. If the normal ones are bright, the selected haircrosses will become darker.

---

**Tip:** The selected haircrosses change there brightness immediately. So the user is able to verify his selection visually.

---

The selection itself causes no action. It is always necessary to “tell” the FKG-4 what it should do with the selected items. In the easiest case, this could be the repositioning.

### 2.2.3 Moving a haircross

As mentioned in the previous section, the repositioning makes it necessary, that the user select one or more haircrosses. Without a selection, all positioning keys are ignored.

As the name implies, the *positioning keys* must be used to move the selected haircrosses. The label points to the direction. It is possible to press more than one positioning key. If you do so, the result is a diagonal movement.

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**Note:** Nonsensical combinations of the positioning keys will be ignored!

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Because of the high resolution of the FKG-4, a step-by-step movement would be a very annoying task. To combine exact positioning with a fast movement, the FKG-4 use a acceleration function. The FKG-4 starts moving the haircross while the user holds the key pressed. This first movement is slow. After a while, the movement becomes faster and faster. Currently, there are four speed levels, which are driven by the time the key is hold pressed.

## 3 Special Functions

This section describes some *special functions*. To avoid unintentional use, the activation of these function is combined with the  $\ominus$ . This means, that additional to the selection of the haircrosses, the key  $\ominus$  must be pressed and held. Note that the order is important. First select a haircross and than enter special mode by pressing the key  $\ominus$ .

### 3.1 Changing the line thickness

After selecting one or more haircrosses for *special functions*, the positioning keys can be used to change the thickness of the horizontal and vertical lines.

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**Tip:** Choose a thicker haircross to mark more important points!

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You can use the keys  $\leftarrow$  and  $\rightarrow$  to change the width of the vertical lines. There are four different values available. To toggle the height of the horizontal lines, press  $\wedge$  or  $\vee$ .

### 3.2 Hiding haircrosses

It is not always desirable to have four haircrosses visible. In this case, it is possible to *hide* unused haircrosses. Those crosses are only invisible, they still have there setup. After “unhiding” the haircross, there previously position and configuration is restored.

To hide / unhide a haircross, select the cross for *special functions* and than press the key  $\oplus$ . This hides visible haircrosses, or it restores hidden haircrosses.

**Samples:** We assume, that haircross 2 is visible. To hide the haircross, we must press and hold first  $\text{\textcircled{FK2}}$  and than  $\ominus$ . Now we can hide the haircross by simply pressing  $\text{\textcircled{+}}$ . After the haircross disappears, it is save to release all three keys.

This function can also be used to “toggle” between two “sets” of haircrosses. To do this, move all haircrosses to there desired positions. Hide the haircrosses 3 and 4. To toggle between the sets, you only have to press  $\text{\textcircled{FK1-4}}$ ,  $\ominus$  and  $\text{\textcircled{+}}$ .

---

### 3.3 Locking the keypad

It is possible to protect a given configuration of the FKG-4 by locking the keypad. This can be done by the following power-up sequence.

1. power off the device.
2. press and hold the keys  $\text{\textcircled{FK1}}$ ,  $\text{\textcircled{FK2}}$  and  $\text{\textcircled{FK3}}$ .
3. power on the device. Wait until you see four white haircrosses.
4. release the keys.

An active *keylock* is shown by an animation at power-up. The haircrosses are moved from the middle of the screen to the border and back. After this, the saved position is restored.

The same power-up sequence must be used to remove an active keylock.

### 3.4 Reset the device

The FKG-4 has many features. So it is possible to “misconfigure” the device. In such a situation, it is very helpful to “restore the factory setup”. This is, what we call a *Reset*. Be aware, that a reset will remove the whole setup!

To reset the FKG-4, carry out the following steps:

1. power off the device.
2. press and hold the keys  $\text{\textcircled{+}}$ ,  $\ominus$  and  $\text{\textcircled{v}}$ .
3. power on the device. Wait until you see four white haircrosses around the middle of the screen.
4. release the keys.

The FKG-4 is ready for further operations now.

## 4 Appendix

### 4.1 Technical Data

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<b>video signal:</b>	EIA/NTSC: B/W or color (FKG-4-018) CCIR/PAL: B/W or color (FKG-4-011)
<b>horizontal frequency:</b>	15.652 kHz (FKG-4-011) 15.75 kHz (FKG-4-018)
<b>vertical frequency:</b>	50 Hz interlaced 2:1
<b>signal bandwidth:</b>	> 10 MHz (-1 dB)
<b>power supply:</b>	115 V / 60 Hz (FKG-4-017) 230 V / 50 Hz – 60 Hz (FKG-4-011)
<b>power consumption:</b>	2.5 W
<b>dimensions:</b>	158 mm (W) * 200 mm (L) * 100 mm (H)
<b>weight:</b>	nearly 800 g
<b>resolution:</b>	horizontal 785 vertical 585
<b>brightness:</b>	255 levels
<b>line width:</b>	4 levels
<b>line height:</b>	2 levels

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## 4.2 Declaration of Conformity

Wir

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erklären in alleiniger Verantwortung die Übereinstimmung des Produktes:

### FKG-4 Fadenkreuzgenerator

auf das sich diese Erklärung bezieht, mit folgenden Normen:

EN 550081-1	1993
EN 550082-2	1996
EN 550022 K1.B	1998
EN 61000-4-2	1996
EN 61000-4-3	1997
EN 61000-4-4	1996
EN 61000-4-5	1996
EN 61000-4-6	1997

entsprechend den Bestimmungen der Richtlinie 89/336/EWG.

Maintal, den 22.10.2007  
(Ort und Datum der Ausstellung)

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(Thomas Völker, Geschäftsführer)