Mounting instructions for Helvest® BT10 buttons

1. GENERAL PRODUCT PRESENTATION

1.1 BT10 light buttons

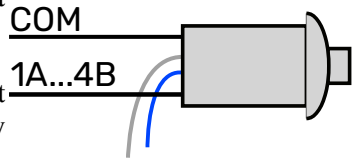
BT10 are buttons that establish an electrical contact the instant they are pressed, and remove it as soon as they are released.
They have the special feature of a built-in illumination, which can be switched on independently of pressing the button. The illumination can be used to indicate the appearance of a signal, the position of a switch, etc.

2. ELECTRICAL CONTACTS

WARNING: All the following operations must be carried out with the power switched off.

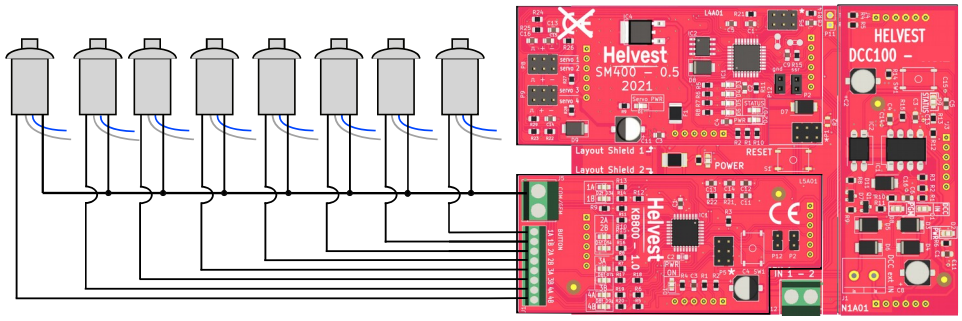
2.1 Electrical connections of button using Helvest KB800 module

 # 1



To connect the button to a KB800 module, you must use the two black wires (these two wires are completely equivalent, one or the other is completely irrelevant).
One of the two wires is connected to the common connector ("COM") of the KB800 (one wire per button will go into this connector)
The other black wire should be connected to the output you want to control with that button: 1A, 1B, 2A, 2B.... up to 4B.

 # 2

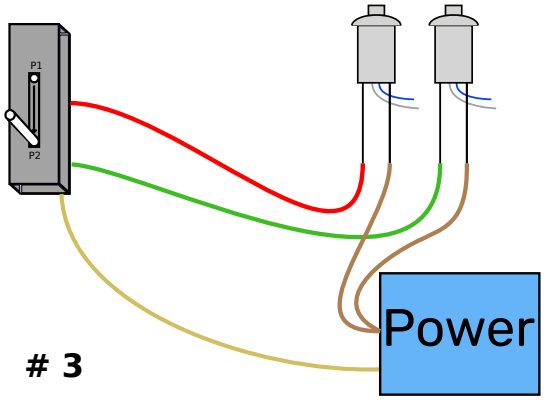


KB800

Up to 8 buttons can be connected to a KB800, where one black cable is common and enters the COM output of the KB800. The other cables are connected to the 8 outputs 1A, 1B, 2A, 2B.... 4B as in figure 2.
The connection is to be made with the KB800 board and is independent of the other "Layout" module installed.

2.2 Electrical connections of the button for analogue operation

The buttons can also be used in analog mode. In this case, one of the two black wires goes to the power supply, the other to the device to be activated. Figure 3 shows the example of an electromagnetic switch motor: one black wire of the two pushbuttons goes to the input of the power supply (brown wire, common for all devices), the other goes to the function to be activated (red or green wire). The common of the device goes to the power supply (yellow wire, in the example).



 # 3

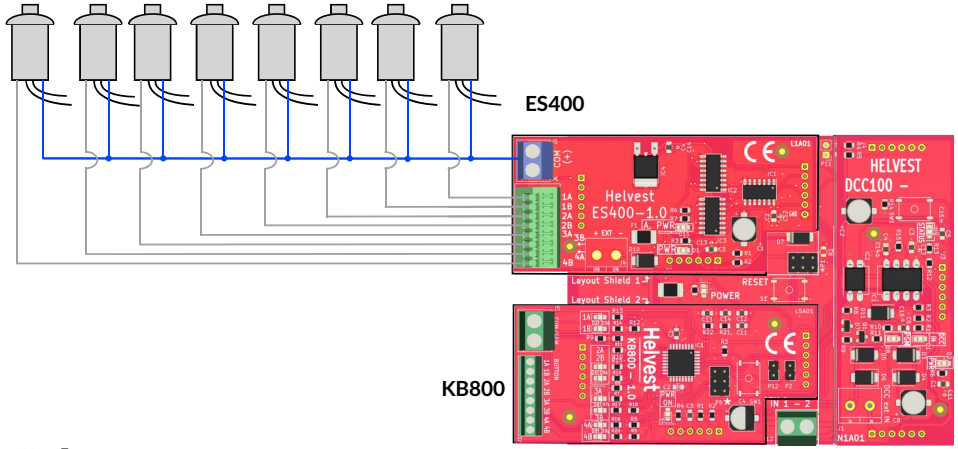
3. LIGHTING CONNECTION

The push-button's built-in LED is powered by the white (negative) and blue (positive) wire. The LED can be activated in many ways depending on the intended use: here are the three main uses.

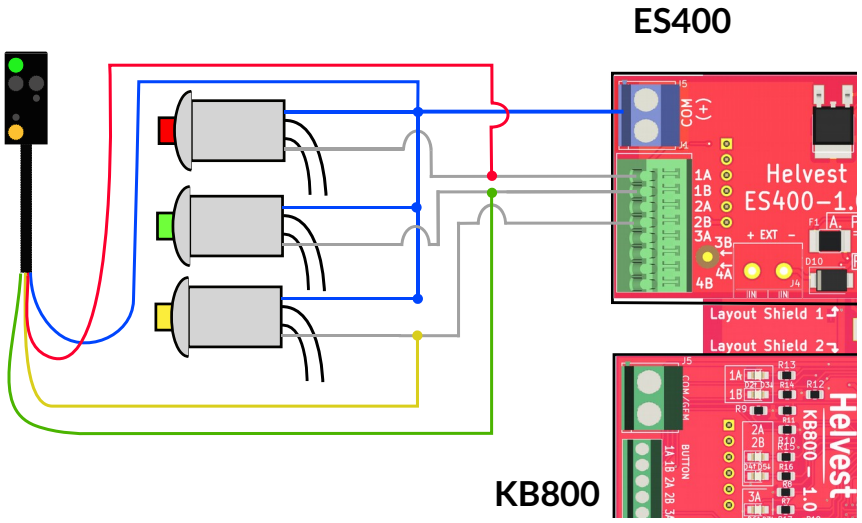
WARNING:
- All the following operations must be carried out with the power switched off.
- Do not, under any circumstances, cut or desolder the resistor connected to the end of the white wire. Connecting the LED without a resistor will irreparably destroy it.

3.1 LED activation using Helvest ES400 module

In digital operation, the LEDs can be activated directly with a Helvest ES400 module. For signal operation this is the most suitable system: The same module which switches on the signal LEDs is also used to switch on the button LEDs.
The blue (common) wire of the various buttons is connected to the blue COM connector of the ES400; the white wire of each button is connected to the specific output of the LED to be switched on (1A, 1B, 2A... etc.), as shown in fig. 4.



 # 4



 # 5

Figure 5 shows in detail the connection of a three-light signal as an example. The white wire of the button with which the 'red' signal is to be activated is connected to the wire which activates red in the signal, and the same is done for green and yellow. Red, green and yellow are in positions 1A, 1B and 2B. In the paired KB800 module, the black wires are connected to outputs 1A, 1B and 2B (these connections are not shown in fig. 5 for simplicity, but are visible in fig. 2).

3.2 Lighting with external sources

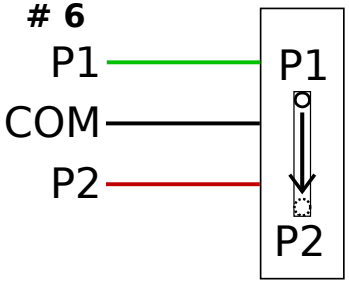
The push-button LED can be powered by any other way, as long as it is direct current, with voltages between 12 and 20 V. The blue wire is the positive pole, the white wire the negative pole.

3.3 Indication of actual switch position with motor contact

For switches, it can be made so that the LED indicates the actual needle position.

The first possibility is to use the additional motor contact, if the motor you use has this option and if you do not use it for other purposes.
Some motors, such as Tortoise*, Cobalt*, MTB*, some Conrad* series, etc., have an additional contact, i.e. wires that are activated depending on the motor position. In Fig. 6, when the motor is in position P1, COM and the green P1 wire are in contact. When the motor is in position 2, COM and the red P2 cable are in contact.

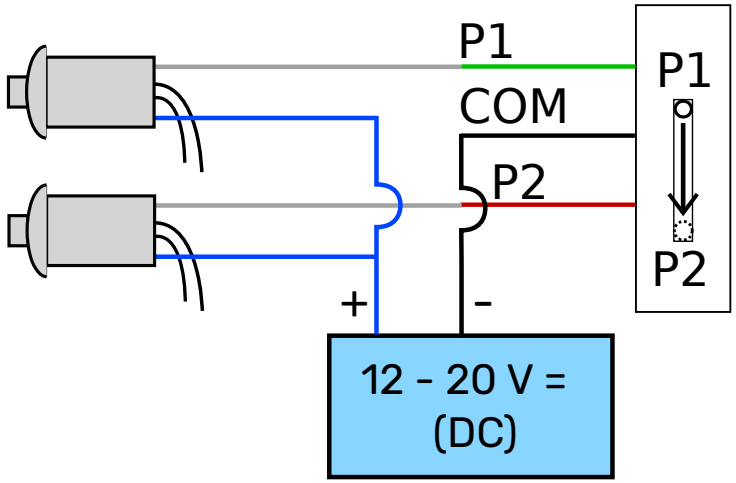
 # 6



We would like to point out that the wires shown in fig. 6 are NOT those that make the motor move, but are those of the additional contact (consult the instructions of your motor; if you have any doubts about a specific motor, write to us).

In this case, connect the two wires marked P1 and P2 to the white wires of the two buttons corresponding to their respective positions. The blue wire of the button is the common and should be connected to the positive pole of a DC power supply (fig. 7)

ATTENZIONE: Do not connect the LED in AC or DCC without the kit indicated in section 3.4, otherwise it could be irreparably damaged.



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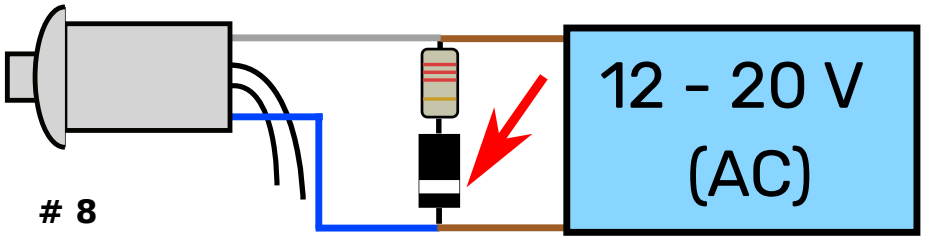
3.4 LED AC operation

If you use the LED in AC, you need an additional BK01 kit. The kit contains two resistors and two diodes (to format two pushbuttons), which must be connected between the white and blue wire as shown in figure 8.
Take care to orientate the diode correctly: the grey notch (indicated in the figure with the arrow) must be turned towards the blue wire!



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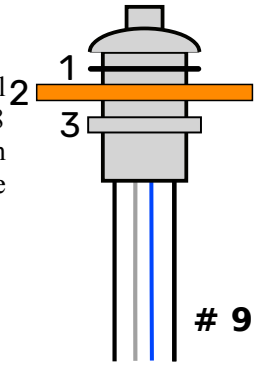
4. MOUNTING THE PUSH-BUTTON



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The button has a diameter of 8 mm. For mounting on a panel (no. 2 in fig. #9), unscrew the nut (no. 3 in fig. #9), drill an 8 mm diameter hole in the panel and insert the button from above. Insert the rubber gasket (#1 in fig. #9) between the button and the panel.

5. TECHNICAL SPECIFICATIONS

Button type:	SPST momentary, normally open.
Maximum current	3A
Signalling LED:	DC power supply, 12-20V.
Button diameter	8 mm
environmental reference standard	Rohs