Control-iT.USB

User Guide Control-iT
preliminary version

May 2018

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Introduction

Control-iT is a compact USB control panel, specially designed for software video switchers. The unit features 9 illuminated broadcast buttons, and a rotary control. The LEDs in the switches are available to provide 3-color visual feedback.
Several firmware versions are available, that define how the unit interacts with the software: MIDI, keyboard, joystick, USB serial, etc.
Control-iT is connected directly to the computer via USB, and needs no external power supply.
There are several ways to customize this unit to your needs:

- By selecting a protocol - the number of supported protocols is growing
- By changing the key caps/ key inlays - use the legends that are included or make your own
- By mapping the buttons in teh software you are controlling

Features

- several firmware options available (and growing)

- compact form factor: 12.6 x 8 x 4.5 cm

- is powered via USB

- future proof, user updatable

Front Panel
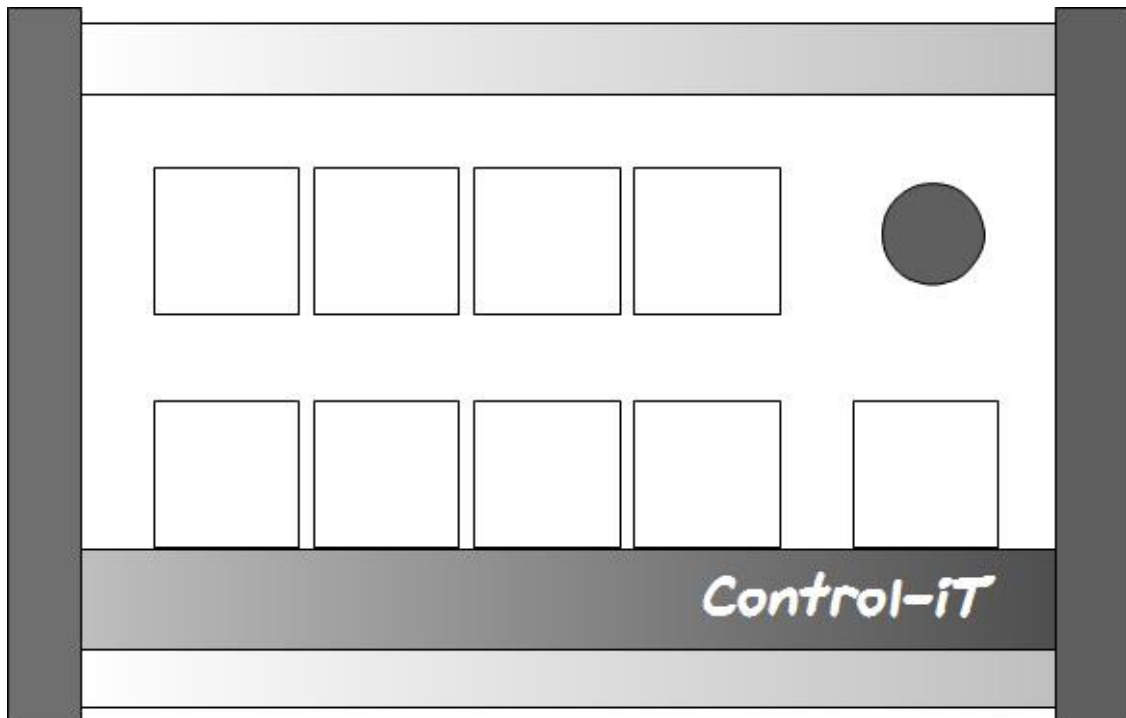
The Control-iT unit features two rows of four high quality buttons and one extra button, as used in broadcast switchers, and a rotary encoder that can also be pressed. The buttons have red and green LEDs, so they can provide status info by lighting red, green and yellow or not lighting. The 2 x 4 button layout resembles many multiviewers. The caps of these buttons can be replaced, we provide you with some extra caps. Also, you can make your own inlays if you wish. (see replacing caps and inlays)
What happens when you press a button, is determined by the firmware that is loaded and the application that is connected and how it is configured.

Side Panel

The side of the unit contains the USB connector, and a hidden update switch (see Updating)

Protocol : MIDI USB

Connecting

First, connect Control-iT to the PC that is running vMix, with an USB-cable. The unit is powered over USB, and uses USB MIDI protocol.

The computer will recognize that a device is plugged in (sound), and install a driver for it. You should now be able to find it in the device list; check via right mousebutton click on windows icon (lower left of desktop)- Device manager - sound, video and game controllers. Click on '>'. 'Control-iT' should be in this list.

Application: vMix

Control-iT uses MIDI protocol to communicate with vMix. In this way, button presses can be sent, and status info can be displayed in the button LEDs.
After connecting Control-iT, the functions have to be connected to the buttons in the shortcut and activator menus:

Shortcuts

Start vMix. After this has started, go to 'Settings' (upper right corner), and 'shortcuts'. Now click 'Midi settings' and tick the box in front of 'Control-iT' to enable it. Click 'OK' in the MIDI Devices window.
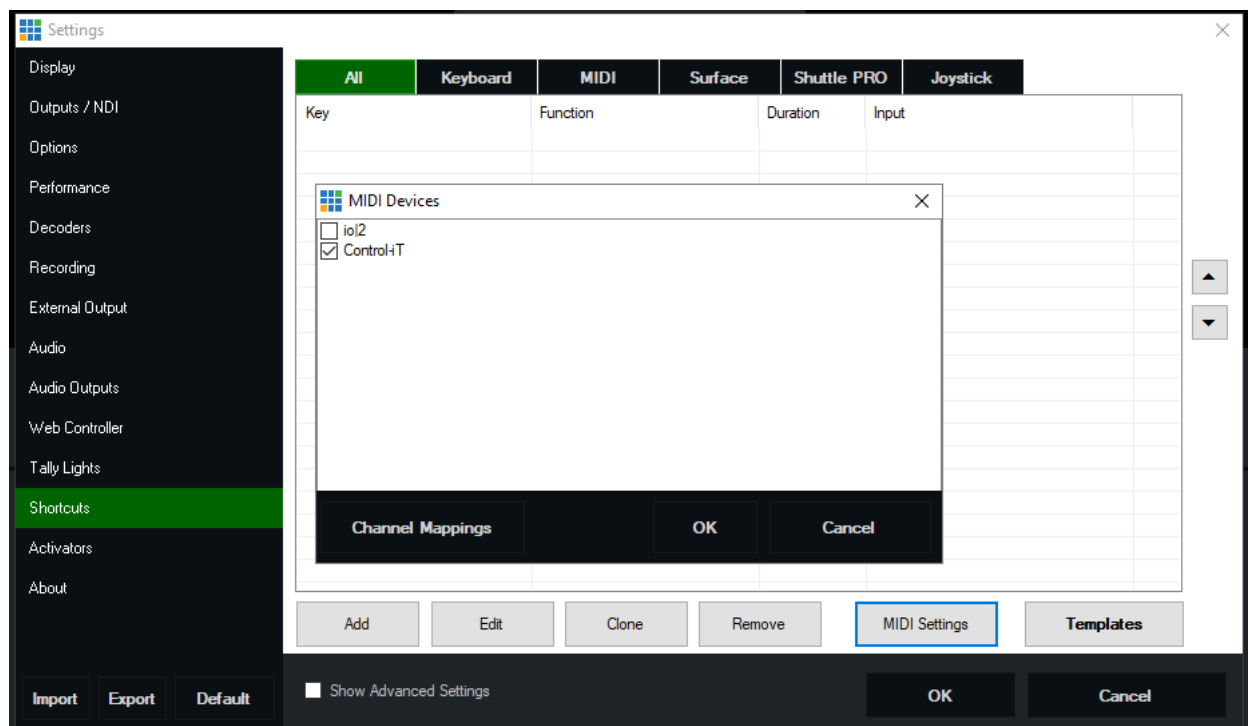
Now you can enter shortcuts, either by hand or by importing a template.

You can find several templates for vMix on the Control-iT website.
A shortcut template links the keys/midi codes to a function of vMix.
For simple switching, inputs 1 to 8 can be selected in preview, and send to program with 'cut'.

Another template is for controlling PTZ camera's that are in the preview window, with tilt up/down, pan left/right, zoom tele/wide, focus near/far and auto focus.
Templates can be changed once they are imported, and exported again.
Please tell us what template you would like to see, or send your templates to share.

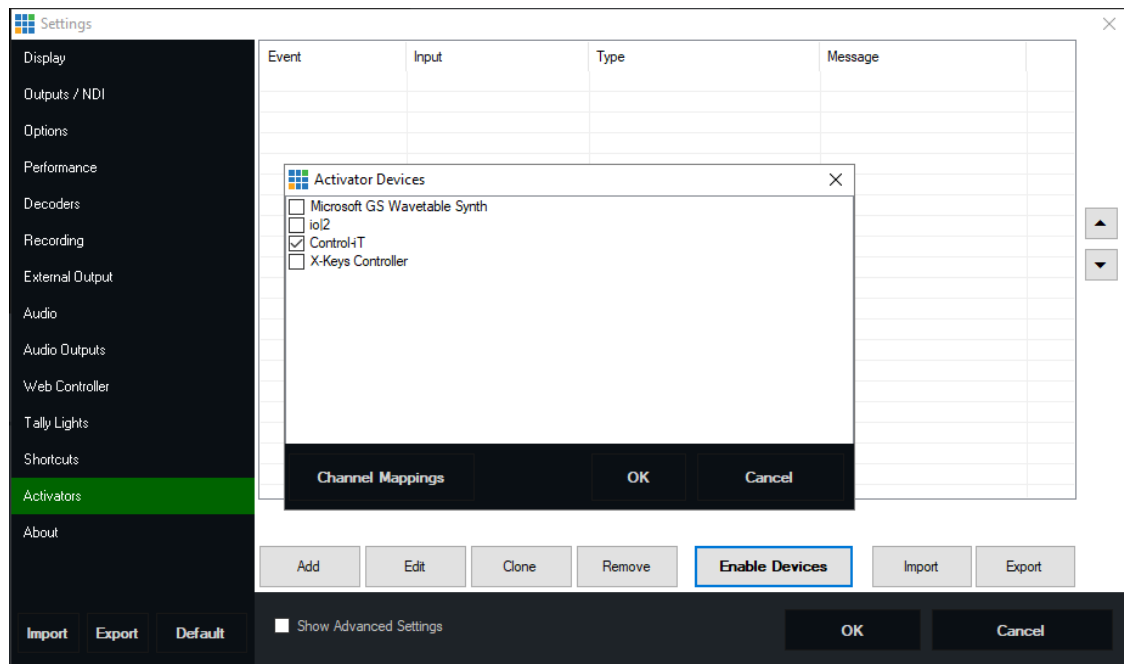**Import a shortcut template**

Click 'Templates'
Now click 'Import'
Next, navigate to the folder where you stored your template (e.g. 'desktop', click on the template, and 'apply'. Confirm that it wil replace existing shortcuts ('Yes'). The shortcuts are now linked to the keys of your Control-iT.
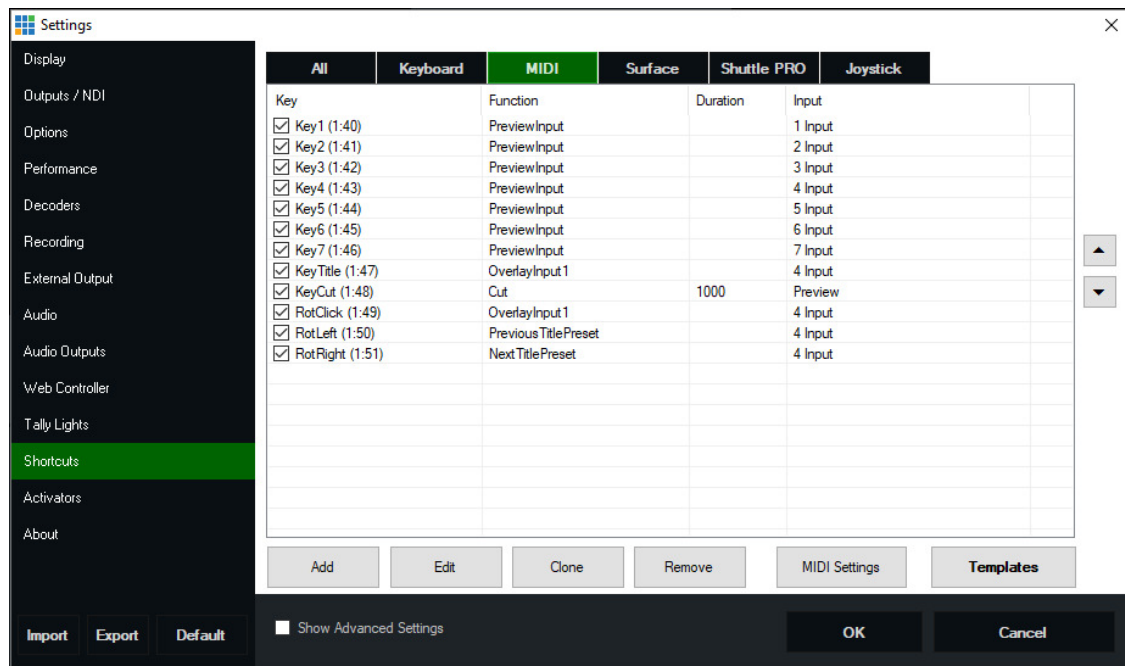
Status info: activators

The LEDs in the buttons can show the status of vMix: red, yellow, green and blank. In vMix this is done via 'activators' that tell the controller when to lit which color LED .

Once again, first you must enable Control-iT as activator device, by navigating to Settings - Activators - Enable Devices, and ticking the box in front of Control-iT. Next, click 'OK'.


For activators, you can also find vMix templates on the Control-iT website.
An activator template links the button LEDS to a status of vMix.
For instance for simple switching, inputs 1 to 8 can color green when in preview, red when in program (output), and yellow when in an overlay.

Import an activator template

In the Activator window, click 'Import'
Next, navigate to the folder where you stored your activator template (e.g. 'desktop'), click on the template, and 'apply'. Click 'OK' to close the settings window. Now if you start pushing buttons, LED's should light up correspondingly.

If you imported the PTZ template, there is no real use for the button EDs, except maybe for a auto focus button.
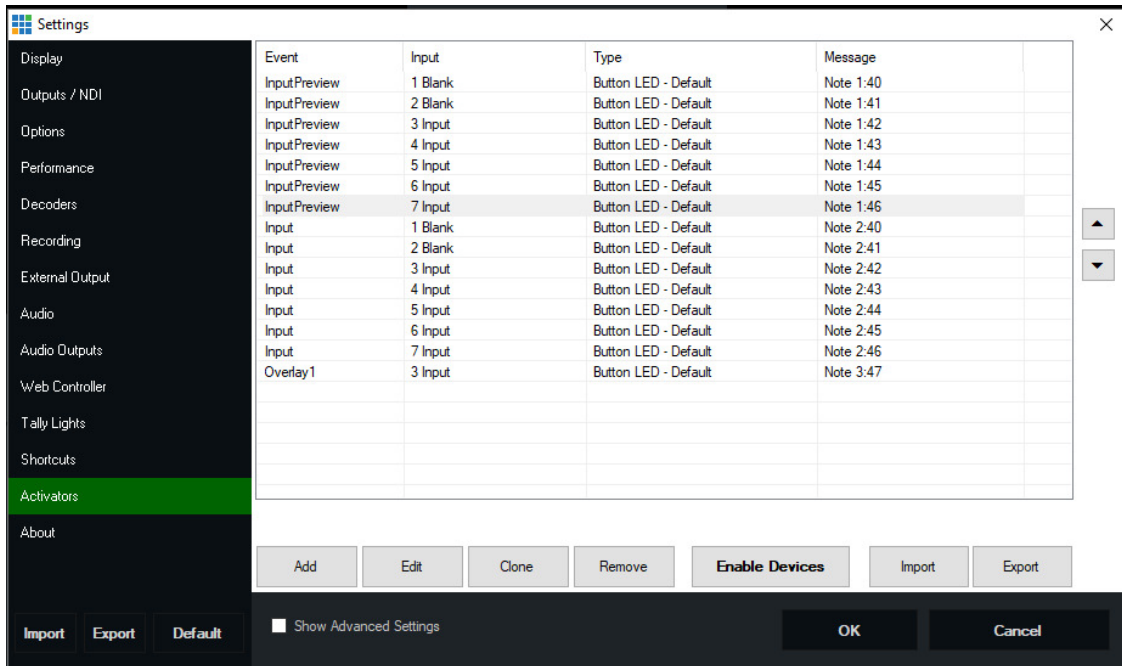
Add or edit shortcut manually

Control it sends a note on command when a button is pressed, and a note off command when it is released. This is usefull to have an action operated as long as the button is pressed, like zoom in on a camera. So keep in mind that in vMix there are functions that need a momentary push (note on), and others that need both a note on and a note off command.

To add a shortcut, navigate to Settings - shortcuts and click add. (To edit an existing shoirtcut, select this shjortcut and select edit).
Now click 'find', and click the button on the controller that you want to link.
You will see it recognized as a MIDI note on, velocity 127. If you release the button, the velocity changed to 0 (= note off). For a momentary action (e.g. selecting an input) click 'o'k. For a toggle action (e.g. startstoprecoirding), keep the button pressed and click 'ok', and tick the 'value' box (127).
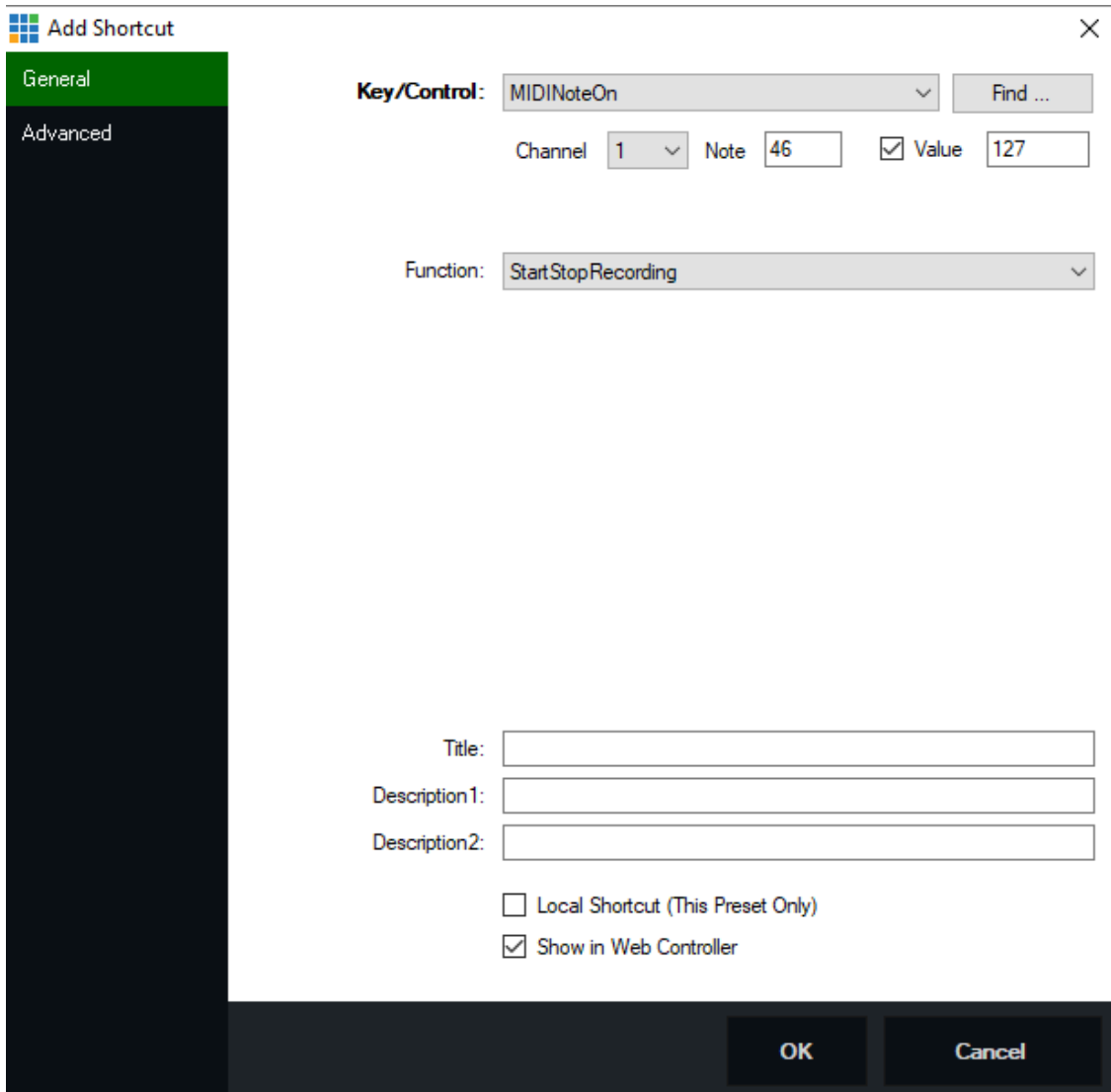
Next, you can select which function you want to operate with the button, e.g. 'StartStopRecording'.

The Input box shows with which input this command operates, usually preview. But if you selected 'PreviewInput' or 'ActiveInput' (which select an input for the preveiw or program bus), you will select which input you want.

Next you can give the shirtcut a meaningfull name, e.g. 'preview 1', or 'overlay title'.

OK finished the shortcut add.

Add or edit activator manually

Each LED color for a button needs an entry in the activator list. Control-iT uses MIDI channel 1 for green, 2 for red and 3 for yellow. The note numbers correspond to the buttons. Because the button can only have one color at the time there is a priority, with green being lowest and yellow highest. So if an input is selected both in preview and program, the button will show red, 'masking' the green.

To add an activator, navigate to Settings - activator and click add. (To edit an existing activator, select this entry and select edit).
Now click 'find', and click the button on the controller that you want to link.
Click 'OK'.
Now define which color you want to activate (1-green, 2-red, 3-yellow) by setting the channel number.
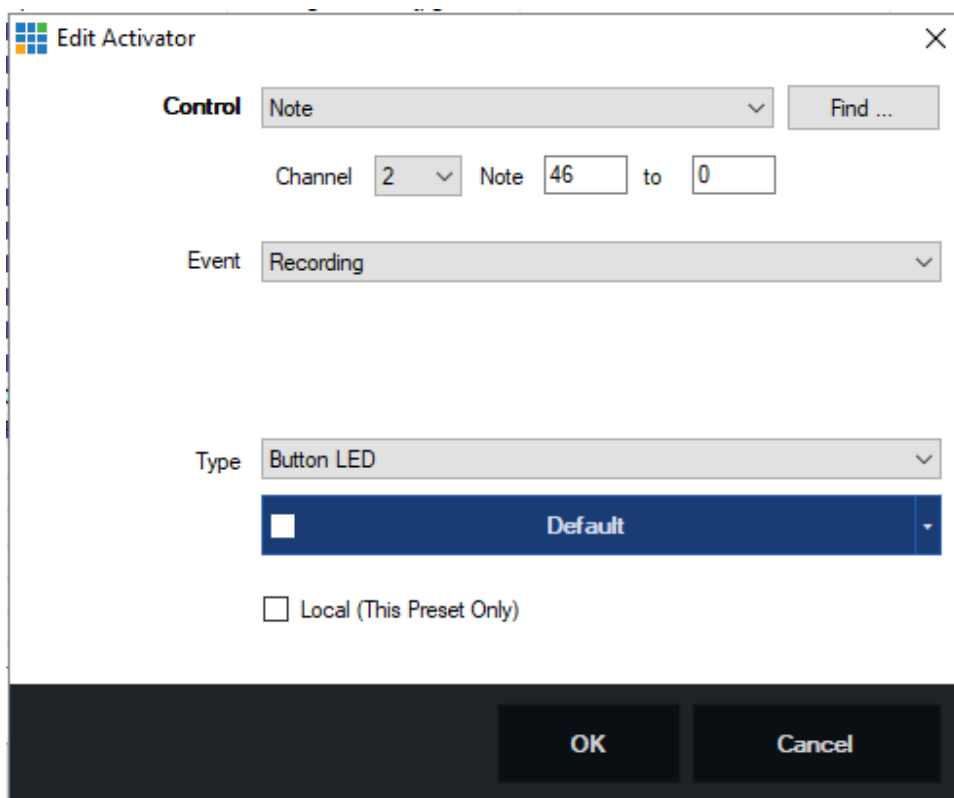
The next step is selecting which event status you want to display, e.g. 'recording'.
And last, set type to 'buttonLed' and click 'ok'.

The rotary also has shortcuts assigned, that can be recalled by turning clockwise or counterclockwise, and by pushing the knob.

It may look cumbersome at first, but the combination of shortcuts and activators create a powerfull tool, that lets you assign and layout the functions that are important for you in a simple and clear way. You can e.g. use the rotaries to select pictures from a list.

Protocol : MIDI USB

Application: OBS

Protocol : MIDI USB

Application: Wirecast

Update/change firmware

If you want to update Control-iT with a new firmware version, or want to change its functionality (e.g. USB keyboard controller instead of USB MIDI controller), first go to the website www.control-it.tv and download the firmware with update tool.

Install the update software.
Run 'HID bootloader(Windows).exe'
it shows this message:
       Device not detected. Verify device is attached and in firmware update mode.

Plug in the USB cable at the PC-side.
Now plug-in the USB connector into the Control-iT, while pressing the bootloader button by inserting a pin or bended paperclip into the smal hole next to the USB connector until you feel a light 'click'. After the USB connector is inserted, you can release the button.
The USB bootloader should now show
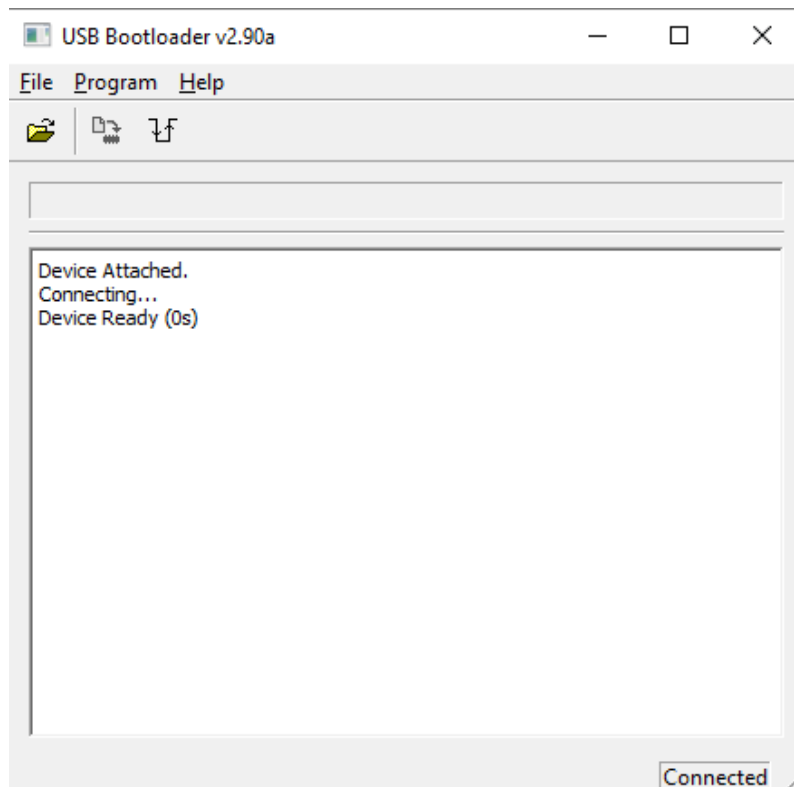   Device Attached.
       Connecting...
       Device Ready (0s)

Next step is to locate the hex file that contains the new firmware
click on the folder icon, and browse to the right directory.

Now you can press the 'erase/program/verify device' button.

After the update is finished, you can press the 'reset device' button, or [unplug/plug the Control-iT.

Changing keycaps

Changing inlays

MIDI implementation sheet

8 + 1 buttons, rotary with switch
usb midi interface
name 'Control-iT'

try with midi-ox

connect - should hear windows sound
visible in device manager - sound video and game controllers
'Mini-Macro'

sw1   ch1- note on - 40 velocity 127
| | |
sw8   ch1 - note on - 47 velocity 127

cut   ch1- note on 48 -   velocity 0x7f
press rotary   ch1- note on - 49 velocity 127
rotary step left   ch1- note on - 50 velocity 127
rotary step right   ch1- note on - 51 velocity 127

lights: correspond to switches (0-9)
ch1 -   green
ch2-   red
ch3 -   yellow
priority : up (red masks green, yellow masks red and green)

example: light red in switch 3:
note on - ch2 42, velocity 127
switch led off:
note off - ch2 42, velocity 127

Specifications

Input	Network - RJ45, PoE enabled
	Power - DC jack 5.5/2.1mm
Output	Option port - stereo minijack RS485
Supported Video Switchers	All vMix editions
Supported ATEM firmware	20.0 or higher
Power Consumption	7.5V/0.2A (1.5W)
Operating Temperature	0~50°C [32~114°F]
Storage Temperature	-10~ +60°C
Dimension	345mm(W) x 185mm(L) x 60mm(H)
Certifications	CE / FCC

Dimensions

Service & support

For more information on Control-**iT**, check the website **www.control-it.tv.** Here you can find the latest news, the pdf manual and information on updates.

The online vMix documentation contains more information on operating your switcher software.