

# IRek



## USER GUIDE

v2.72 (v1.2)



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**[www.irek.info.pl](http://www.irek.info.pl)**



## **Contents**

1. Introduction .....	3
2. IRek Transmitter T2 .....	4
3. IRek interface .....	5
3.1. Installation .....	5
3.2. Working modes .....	6
3.3. Programming .....	7
3.3.1. Basic – copying IR signal.....	7
3.3.2. Advanced – repeating the command .....	7
3.3.3. Advanced – generators .....	9
3.3.4. Additional options of programming .....	9
3.4. Macros .....	10
3.4.1. Using macros .....	11
3.5. Transmitting using several transmitters.....	13
3.1. IRek Web server .....	14
3.1.1. Run and stop web server .....	14
3.1.2. Local checking of the web server .....	14
3.1.3. Connect to the web server from local network.....	15
3.2. IRek and Unified Remote (V3) .....	16
3.2.1. Installation of Unified Remote Server.....	16
3.2.2. Installation at remote device.....	17
3.2.3. Generate IRek's remotes to the Unified Remote server.....	17
3.2.4. Creating custom remote.....	19



## 1. Introduction

**IRek interface with transmitter** is universal infrared remote. From the computer allows to control television, radio and other equipment which use infrared. Program needs USB interface to communicate to the transmitter.

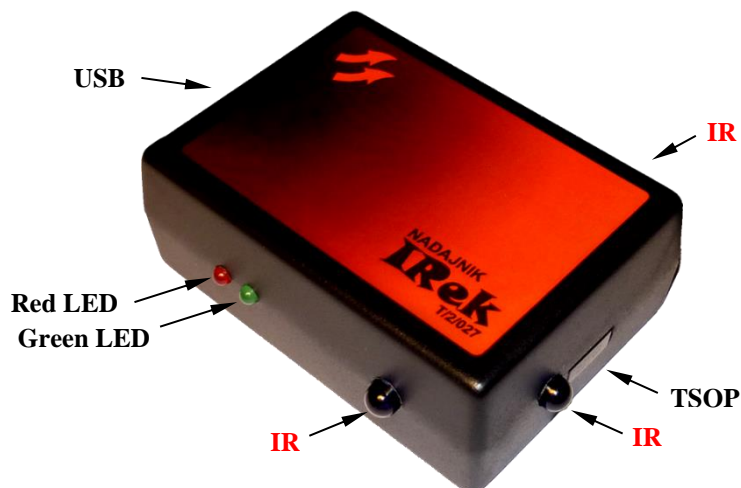


*Figure 1.1 Scheme of capabilities of IRek system*



## 2. IREk Transmitter T2

IREk transmitter can copy almost each signal in infrared. Needs at list one free USB port v1.1. Transmitter is Plug & Play – after connect to a computer is automatically installed as HID device (like a mouse or keyboard) and ready to work.



*Figure 2.1 IREk T2 transmitter*

Transmitter have:

- **TSOP** receiver 36kHz – used to copy infrared commands.
- **3 x IR LED 950nm** – to sends commands in each direction. Don't cover it.
- USB socket – use USB cable type A-B M/M to connect transmitter to the computer.

Green LED next to the socket shows if transmitter is powered.

- **Green LED** – shines if data buffer is empty, blinking if transmitter is connected but IREk interface is shut down.
- **Red LED** – blinking during receiving or transmitting commands.

If the program IREk is run, after connect transmitter to the computer green LED goes out and in top right corner of the program will be description “CONNECTED”.



### 3. IREk interface

Program can be download from the web site [www.irek.info.pl/en](http://www.irek.info.pl/en) in “Download” section. Application works under Windows and needs Microsoft.NET Framework 4.0 or higher.

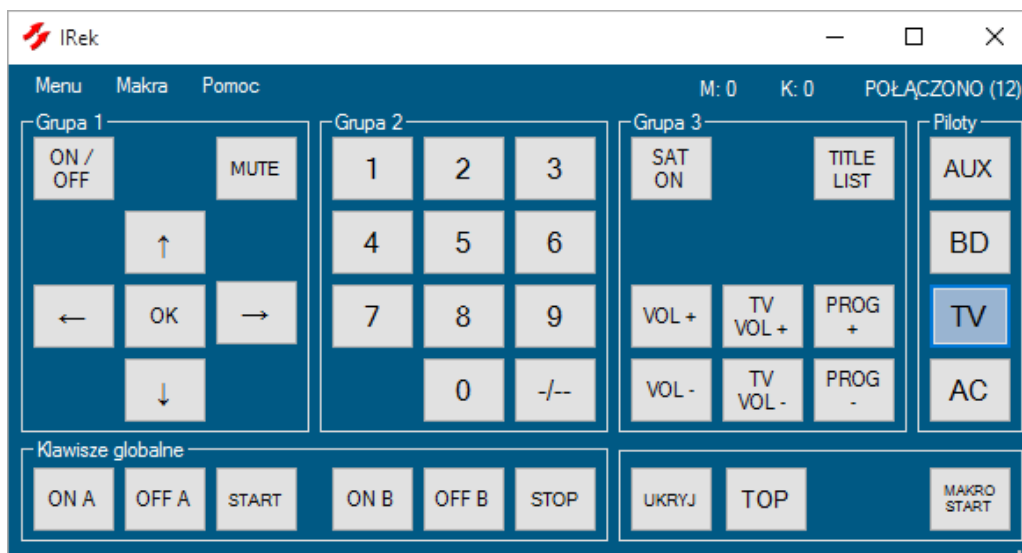


Figure 3.1 Normal mode of IREk interface with programmed buttons

Basic features:

- 150 programmable function keys.
- Working in real-time.
- Support multiple transmitters – quick selection of transmitters or change the order of broadcasting.
- Recording **macros** – sequences of commands and times between them.
- Quick start, stop or looping macros.
- The ability to control program from the command line, scripts or any other program thought WinApi messages.
- Using program as a gate by giving path to IR file.
- IREk WebServer – build-in webserver giving possibility to control program from any device with browser
- Programming the function keys (buttons).
- Compatible with *Unified Remote Server V3*.

#### 3.1. Installation

Download „IREk v2.x Portable” from website [www.irek.info.pl](http://www.irek.info.pl). The program doesn't need to be installed. Unpack the files and run “IREk.exe” with administrator rights.

In case of update old version, just merge folders and replace the old files. All settings are saved in “settings.ini” file. All remotes are saved in “Commands” folder.



### 3.2. Working modes

The IREk interface have two modes of works: NORMAL and PROGRAMMING. Use Menu or F9 key to change between them. The normal mode is default after run program.

Pressing a function key (button) in normal mode cause transmit a command. In programming mode will open a window to programming the button:

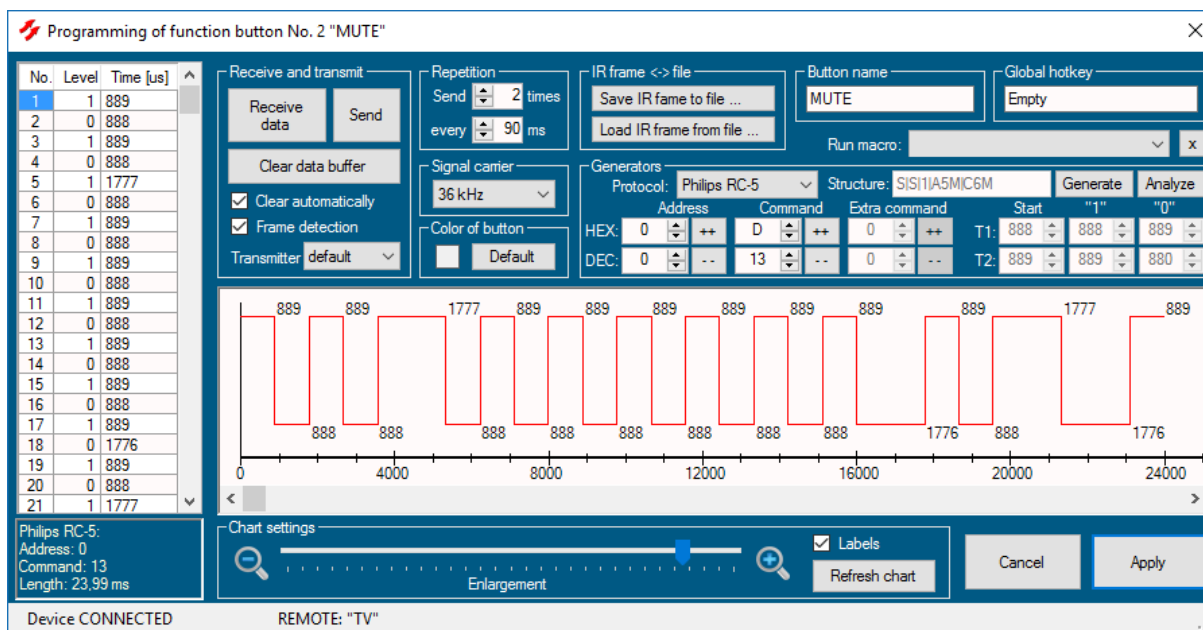


Figure 3.2 Window to programming function key

Basic features:

- easy and fast programming of function keys by copying remote's signal,
- automatic detection a single frame of data IR,
- graphical presentation of data received from remotes,
- write and read of IR frame to file,
- transmitting of a signal with particular carrier frequency,
- setting the multiples of IR command,
- assigning transmitter to command,
- assigning macro to the function key,
- assigning global shortcut for the button,
- generating and decoding popular IR standards.

Hints for each function of the window are shown after hover mouse and waiting 1s.



### 3.3. Programming

To go programming mode press *Ctrl + P* or go to *Menu → Mode → Programming*. On top of the window will be blink description “PROGRAMMING MODE”.

Now press the button to programming. The window as in the figure 3.2 will open.

#### 3.3.1. Basic – copying IR signal

To copy signal from other remote control of some device, follow the steps:

1. If green LED does not shine – clear the data buffer using “*Clear data buffer*” in section “*Receive and transmit*”.
2. Aim remote control (of the device you want to control by IRek) to the TSOP receiver and press the button which you want to copy.
3. Get the data from the buffer using “*Receive data*”. On the chart you should see a red timing of the received signal (seeing from the remote control perspective) and in the table will be show all times of logic levels.
4. Check if the received signal is correct by pressing “*Send*” and observe if the device is doing the same as in case of original remote control.
5. Sign the new name of the function key in field “*Button name*”.
6. Press “*Apply*”.

Repeat this steps for each buttons. If you use more than one transmitter, change in field “*Transmitter*” default value by specific address of transmitter or “*all*” if you want to transmit the command by all connected transmitters. This value can be overridden by settings described in chapter 3.5.

After programming back to Normal mode of the program by pressing *Ctrl + N* or go to *Menu → Mode → Normal*.

#### Attention:

**If the device does not response of the copied signal, try to uncheck option “*Frame detection*” and repeat steps from 1 to 3. If still no any reaction follow the instruction in the next chapter (0).**

#### 3.3.2. Advanced – repeating the command

Some devices needs long press of the button to make command. From logic point of view it is sending a few times the same signal. To achieve it using IRek needs to set up in section “*Repetition*” count of repetitions and time between IR frames. Usually the count of repetitions need to be selected experimentally, while distance is known for the specific IR standard (for



example in RC5 standard is 90ms). If the standard is unknown the distance can be measured. To do it uncheck option *"Frame detection"* in section *"Receive and transmit"* and make steps from 1 to 3 of basic programing in the chapter 3.3.1.

For example:

The device needs to start press power button for a while. After unchecked frame detection and receiving the data we see:

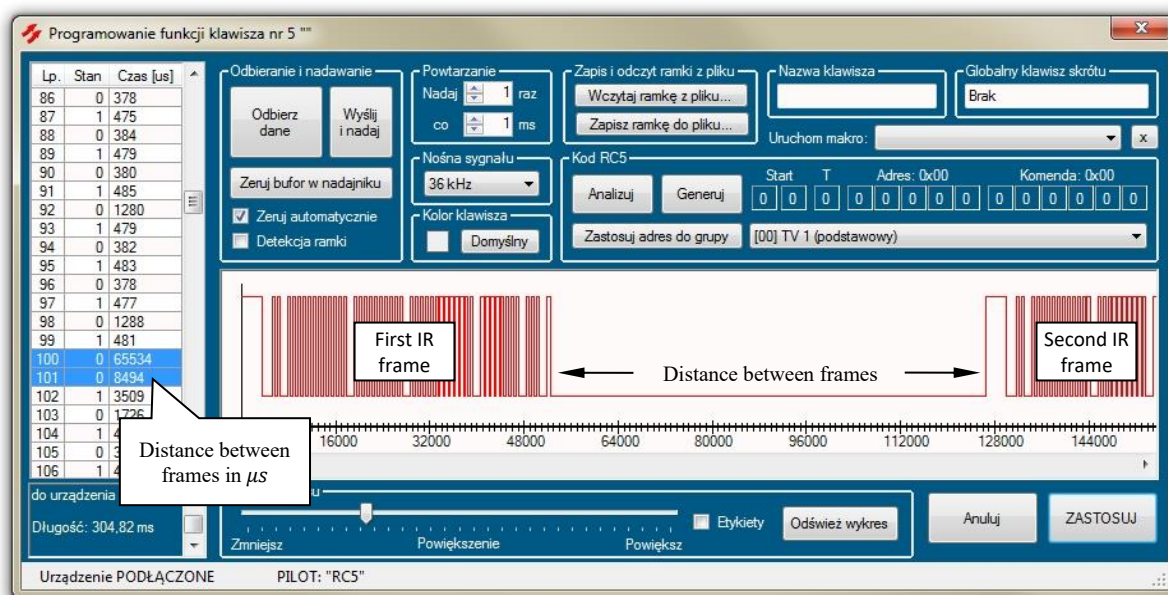


Figure 3.3 Measuring time between IR frames.

The maximum time which can be measured as one value is limited to 16-bit variable. Because of this the distance between frames is presented as two values: 65534 + 8494 [µs]. It gives time about 75ms. This value should be set up in section *"Repetition"* in field *"every"*.

After receiving data frame with checked option *"Frame detection"* and filling repetition we see:



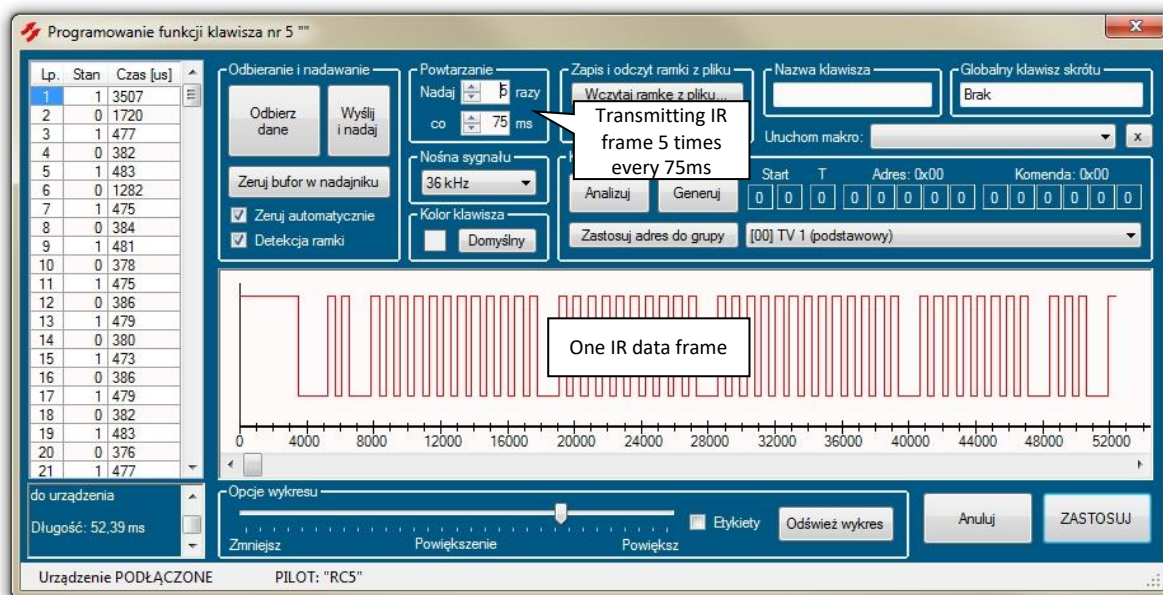


Figure 3.4 Programmed key function with repeating of IR frame

### 3.3.3. Advanced – generators

The program gives possibility to generate and decode commands in Philips RC-5, Sony SIRC, NEC, Sharp, RCA, JVC and X-Sat / Mitsubishi standards.

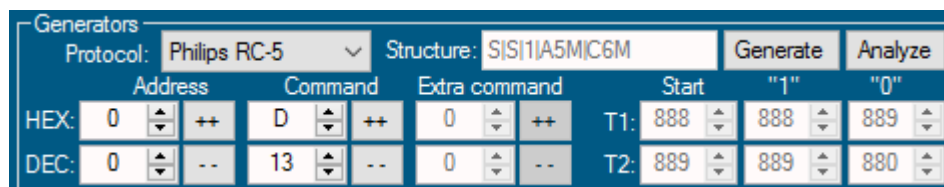


Figure 3.5 Section „Generators”

All the options can be found in the section „Generators” of programming window. Possible is also describe own IR standard.

### 3.3.4. Additional options of programming

To make programing more easier the programming mode have a few extra features:

- **Context menu of the function keys:**

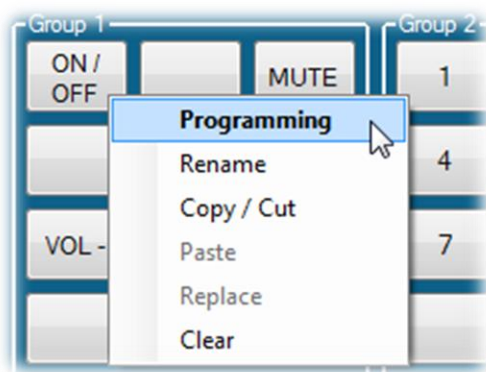


Figure 3.6 Context menu of function keys (opened by right-click).

- „Programming” – open programming window,
  - „Rename” – changing only the name of the button,
  - „Copy / Cut” do:
    - Copying function of the button and sign it to another by right-clicking on it and selecting “Paste”,
    - Replacing functions with other button by right-clicking on it and selecting “Replace”.
  - „Clear” – deleting function of the button.
- **Context menu of the groups**
- Right-clicking in the field of the group 1, 2, 3 or Global buttons and selecting “Clear group” will delete all functions of the buttons in this group. Be careful using this option, because the data are deleted permanently.
- **Context menu of the remotes**
- „Rename” – changing name of the remote control,

### 3.4. Macros

Macro is remembered sequence of pressing buttons and times between them. Created macro can be run by one click or by schedule. Feature is available in the main window of the program in “Macros” tab.

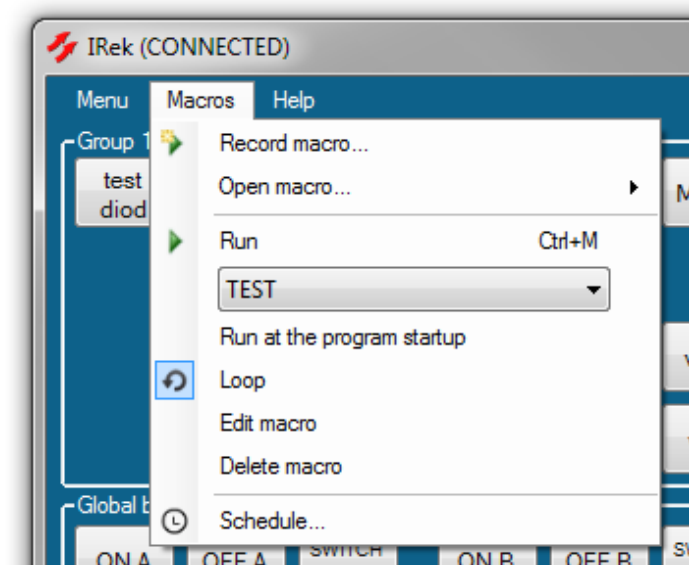


Figure 3.7 “Macros” menu.

### 3.4.1. Using macros

“Macros” menu have several features:

#### ➤ Record macro...

After choosing feature will appear the dialog box to save new macro. Type name of macro and press “Save”. Then in the next dialog box select if the times between command should be saved. Now macro is recorded.

To finish process select *Macros* → *End macro recording*. Now new macro is saved, selected in the list of the macros and ready to run.

#### ➤ Open macro...

Program after start automatically load names of all macros to the list under feature “Run”. Files with macros are in the folder named “Macro” and his subfolders. This folder is creating in root folder with remotes base during recording first macro.

Feature “Open macro” after expansion allows three options:

- „From file...” – loading (copy) macro file to the root folder of macros and refreshing the list of macros.
- „Refresh the list” – reloading all macros from root folder.
- „Open the macros directory” – opening “Macro” folder in Windows Explorer.

#### ➤ Run (Ctrl + M)

Will cause running selected macro from the list. During playing macro, this feature rename to “Stop”. Choosing it again will break running the macro.

#### ➤ Run at the program startup

Selected macro will be run after program start.



➤ **Loop**

If selected, running macro will be repeating after uncheck this option or stopping the macro.

➤ **Edit macro**

Opens macro file in Notepad and lets to edit. Description of the macro's script is included in macro file. Numbering of the buttons shows figure 3.8. First of all gives it possibility to change delay times between commands. The time can be given in milliseconds, seconds, minutes or hours.



Figure 3.8 Numbering of the buttons using in macro script.

➤ **Delete macro**

Deleting macro from the root folder and the list.

➤ **Schedule...**

Selecting opens a dialog box as shown below.

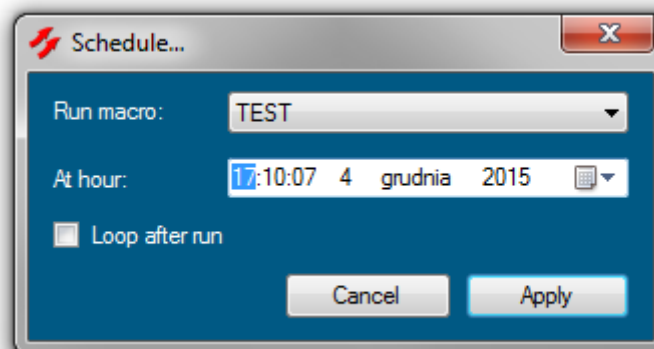


Figure 3.9 Schedule dialog window.



The dialog box allows for one macro set date and time of automatic run.

### 3.5. Transmitting using several transmitters

Transmitting commands by many transmitters connected to the same computer is not different than transmitting using one transmitter. Needs to remember change in field “Transmitter” default value by specific address of transmitter or choose “all” if wants to transmit the command by all connected transmitters.

Settings of each button can be overridden by settings with higher priority.

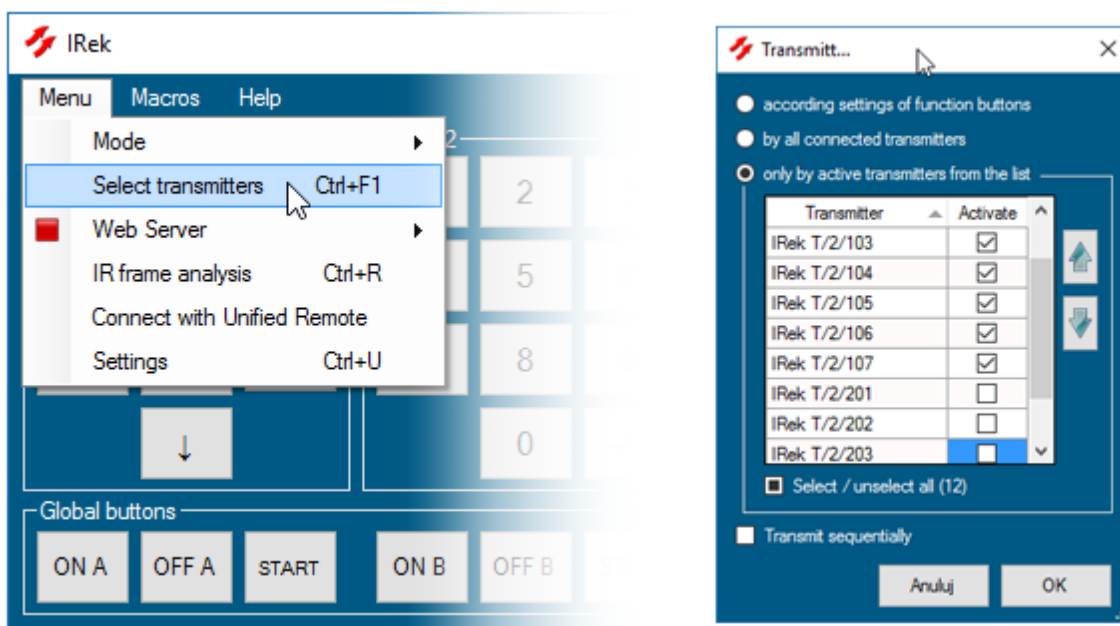


Figure 3.10 Dialog box to changing default transmitting.

In this case needs to select from Menu the feature "Select transmitters". In open dialog box are three options of transmitting:

- *According settings of function buttons* – transmitting according to “Transmitter” option of each function key;
- *By all connected transmitters* – regardless of the setting in the function keys, each command will be transmitted by all transmitters currently connected to the computer in alphabetical order;
- *Only by active transmitters from the list* also with selected order. Use arrows on the right site of the dialog box, to change order of the transmitters.

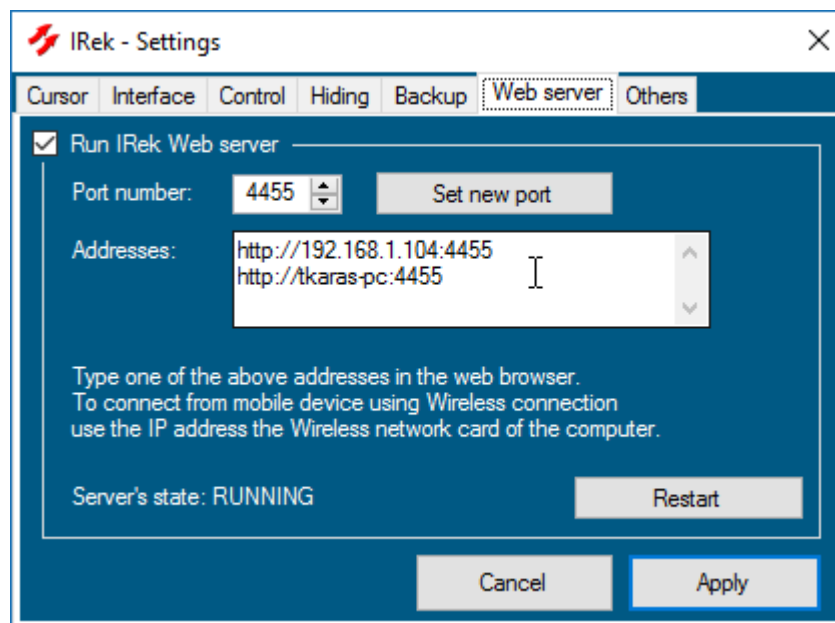


### 3.1. IRek Web server

Using build-in web server is it possible to control IRek program using web browser. Connection to the web server is possible from any device being in the same local network.

#### 3.1.1. Run and stop web server

To change option of the web server go to: *Menu* → *Settings*, and then to „*Web server*”

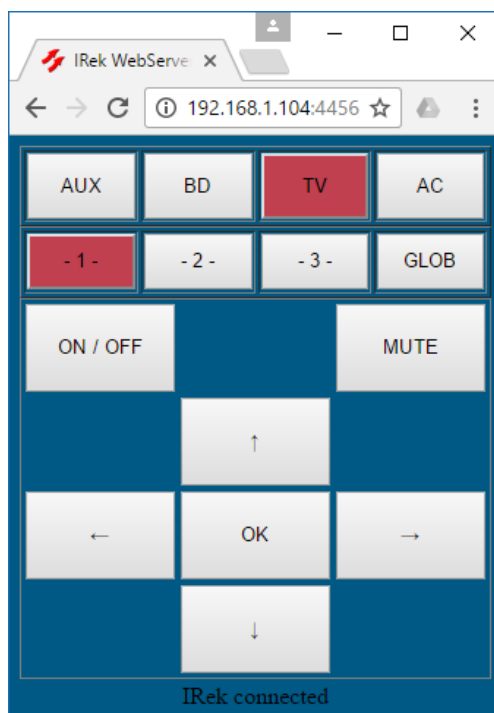


*Figure 3.11 Settings of the web server*

To start working web server, select “Run IRek Web server” checkbox. To change port on which web server will be listen, write new number in “Port number” field and press “Set new port” button. If “Server’s state” field show “RUNNING” – the web server is listen. Use one of the addresses from “Addresses” field to connect to the server.

#### 3.1.2. Local checking of the web server

After run web server open any web browser on the same computer and type address of the web server. As a result you should see panel with buttons as above.



*Figure 3.12 Remote in the web browser.*

### **3.1.3. Connect to the web server from local network**

Connect your mobile device or other computer to home (local) network and run web browser. Type address of the web server – IP and port.

If you cannot connect to the web server check you network security. For example, try to disable the firewall on the computer where web server is running.

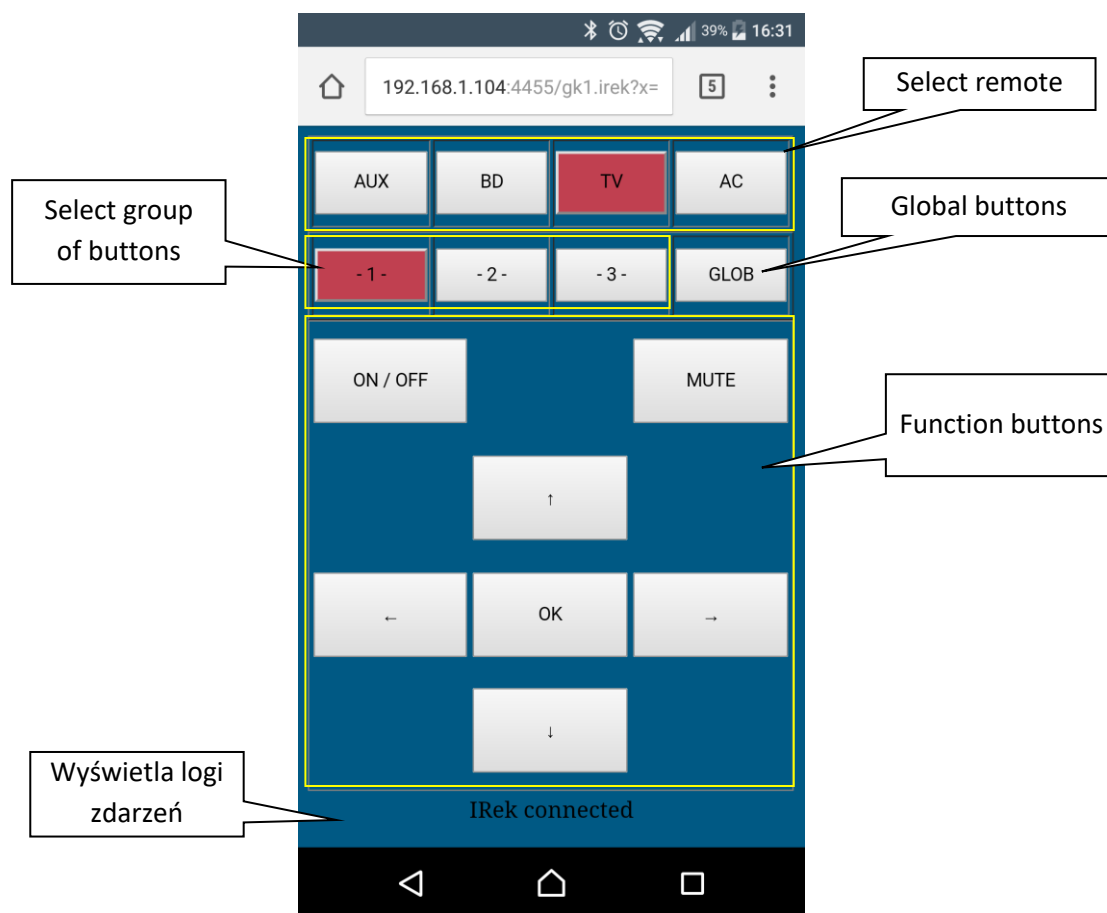


Figure 3.13 View of web remote.

Three groups of the buttons corresponds to the groups in IRek interface.

If you doesn't have local network (switch or router) in your home, you can run hotspot on your smartphone and connect computer with Wi-fi to this network.

### 3.2. IRek and Unified Remote (V3)

*Unified Remote* ([www.unifiedremote.com](http://www.unifiedremote.com)) is application to control your computer and programs on it from mobile device. Also gives us possibility to create own remotes to control any program installed on the computer – also the IRek interface. Using easy tool you can generate remotes, inject them to the *Unified Remote Server* and control IRek program from mobile device.

#### 3.2.1. Installation of Unified Remote Server

Download from website <http://www.unifiedremote.com/download> “*Unified Remote for Windows*”. After installation run application. If you will have problem with installation, go to the support web page: <http://www.unifiedremote.com/support>.





### 3.2.2. Installation at remote device

Download *Unified Remote Full* from your system store. For devices with *Android* from *Google Play Store*, for devices with *Windows Phone* from *Windows Phone Store*, for devices with *iOS* from *App Store*.

**ATTENTION:** To control IRek program you need to buy “*Unified Remote Full*”. But it is possible to use full version of the program for one week – just install “*Unified Remote*” and sign in using this code: BJ\_QNcQge

After run the program, connect to the server installed on your PC. Connection can be established by Wi-Fi network or Bluetooth. In case of problems with connection, go to the support web page: <http://www.unifiedremote.com/support>.

### 3.2.3. Generate IRek’s remotes to the Unified Remote server


In the main window of the IRek interface go to *Menu* → *Connect with Unified Remote*. In opened window (figure 3.14) select remotes which you want to create and press „GENERATE REMOTES”.



Figure 3.14 Window to generate remotes to „Unified Remote”

This operation will generate suitable files in default “Custom Remotes” folder, where *Unified Remote* looks for remotes on your system. Next go to the settings of "Unified Remote Server" and refresh the remotes database. To do this double-click on the *Unified Remote* icon



 in the system tray and go to the "Status" tab. Then press "RELOAD REMOTES". On the list of remotes in "Remotes" tab you should see created remotes of IRek. (figure 3.15).

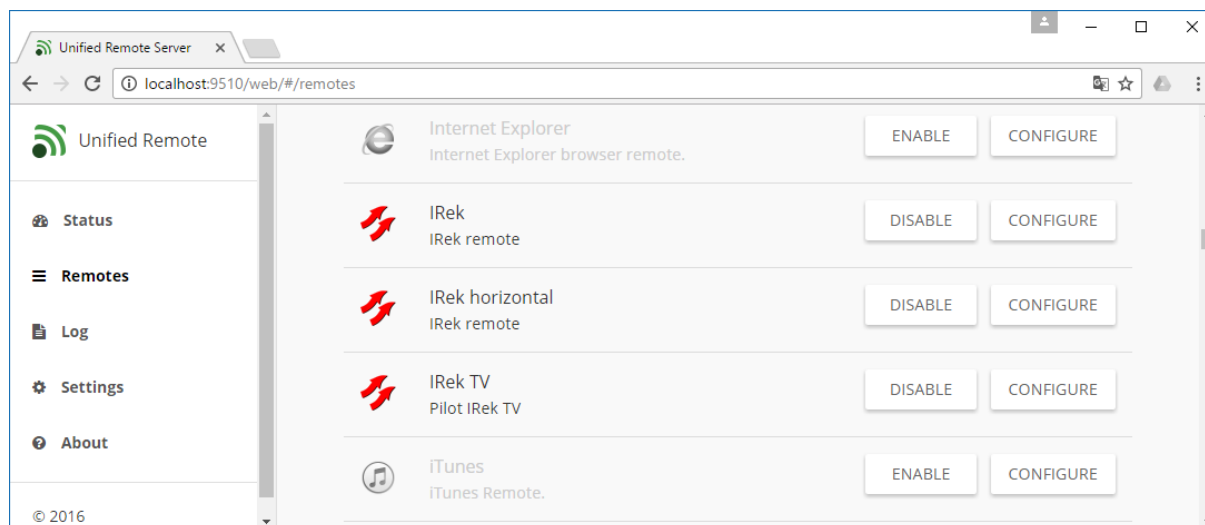


Figure 3.15 „Remotes” tab in Unified Remote Server

Now go to your mobile device and in *Unified Remote* program open “Remotes”. Next press “+” button and select “Others” and choose new IRek remotes.

➤ **Small panel** – dedicated for small screens. Each remote is divided into three groups.

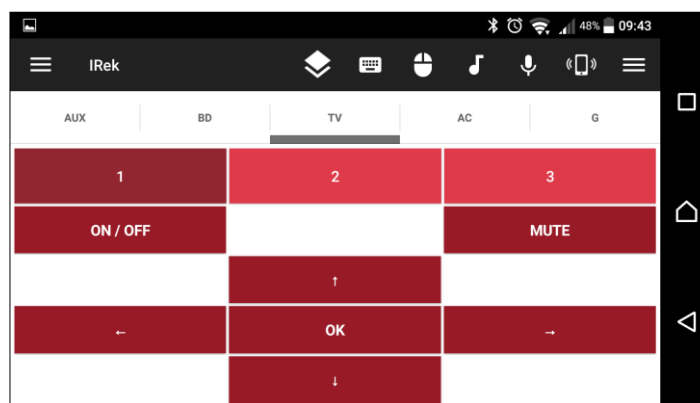
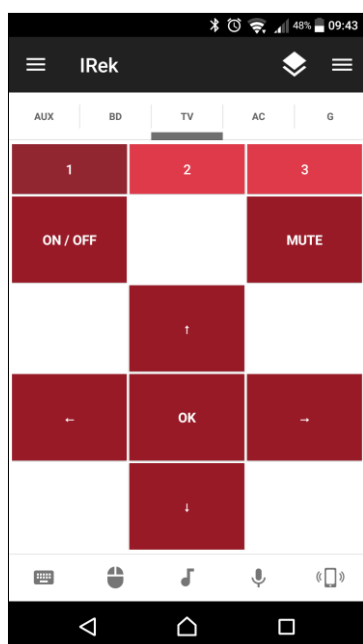


Figure 3.16 Example of small remote

➤ **Big panel** – dedicated for big screens. Order of buttons like in IRek interface.

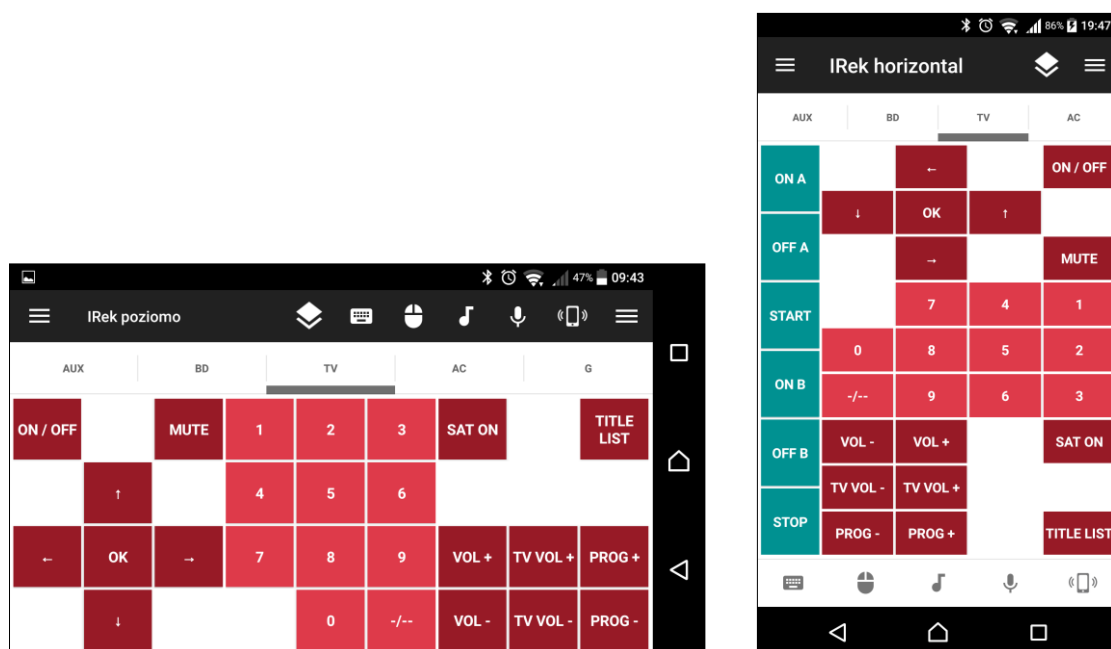


Figure 3.17 Example of two types big remote

In case of both remotes you can change colour of each buttons group, names and description of the remote.

### 3.2.4. Creating custom remote

#### ➤ As a readable remote in *Unified Remote* program

To create custom remote select „Create a sample of custom remote” checkbox in generating remotes window. In custom remotes directory will be created “IRek\_C” folder – it is a sample of remote to control the first and the second group of the third IRek remote with name “IRek TV”. Using this example you can create own remotes by simple changing shame of interface and actions for buttons.

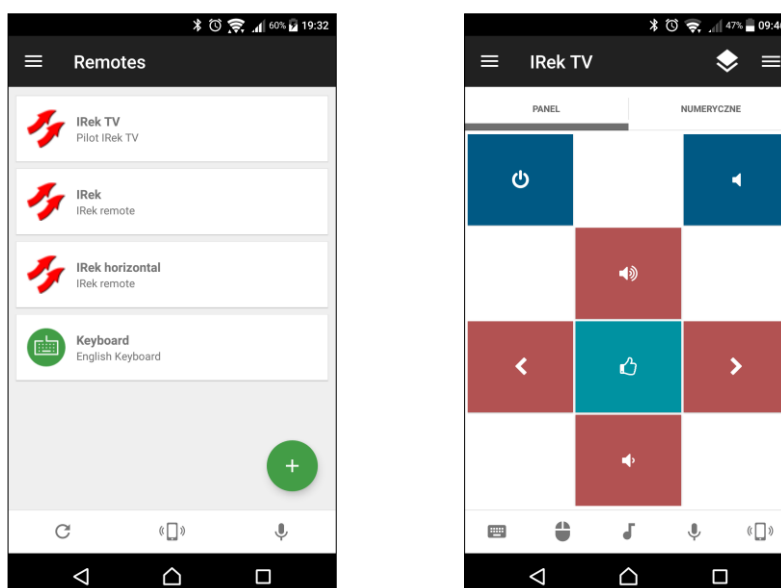


Figure 3.18 Menu in *Unified Remote* program



Using this mechanism you can create any remote you want, you can change order of buttons, their colours and icons. Available icons for use, you will find on the web site: <https://github.com/unifiedremote/Docs/blob/master/res/icons.md>.

To create another remote copy „IRek\_C” folder and change its name. Next edit files “meta.prop” and “layout.xml”. To edit files use notepad or program to editing “xml” files (for example: *Notepad++*, *Programmer’s Notepad*). In „meta.prop” file be sure to change the name of new remote in „meta.name” field.

The “layout.xml” file describes the visual components of a remote. For example, the buttons, tabs, lists, etc. that the user sees when they open a remote in the app. The layout is described using XML. Look for more information: <https://www.unifiedremote.com/api>

To send command by IRek transmitter use “PressButton” function. As arguments give the number of remote (1-4, 0 for global buttons) and number of buttons. Numbering of the buttons shows figure 3.8.

For example: button named “POWER TV” will press button number 0 in the remote number 3 you should describe:

```
<button onTap="PressButton,3,0" color="red" text="POWER TV" icon=""/>
```

### ➤ As a widgets on your homescreen

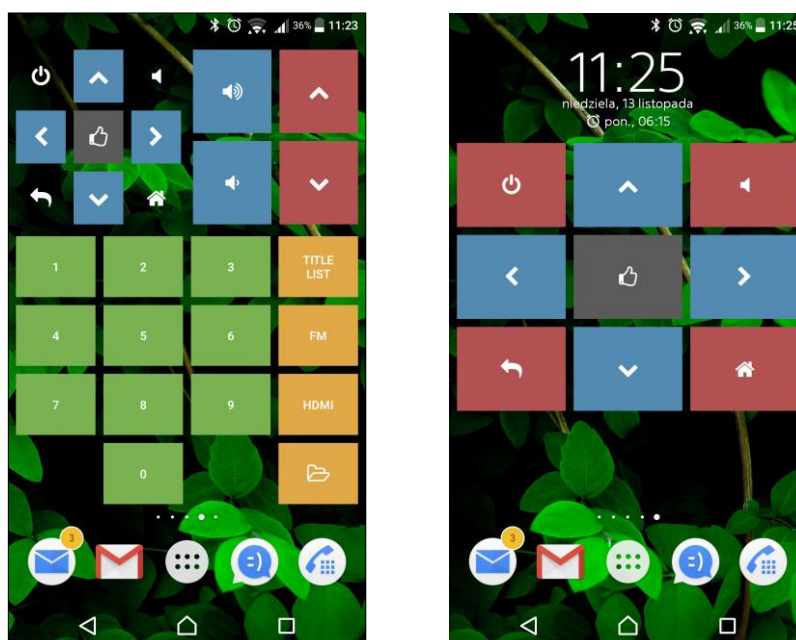




Figure 3.19 Examples of remotes created as widgets on homescreen

On the web site: <https://www.unifiedremote.com/tutorials/how-to-create-a-widget> you will find description how to create widgets of *Unified Remote* program.

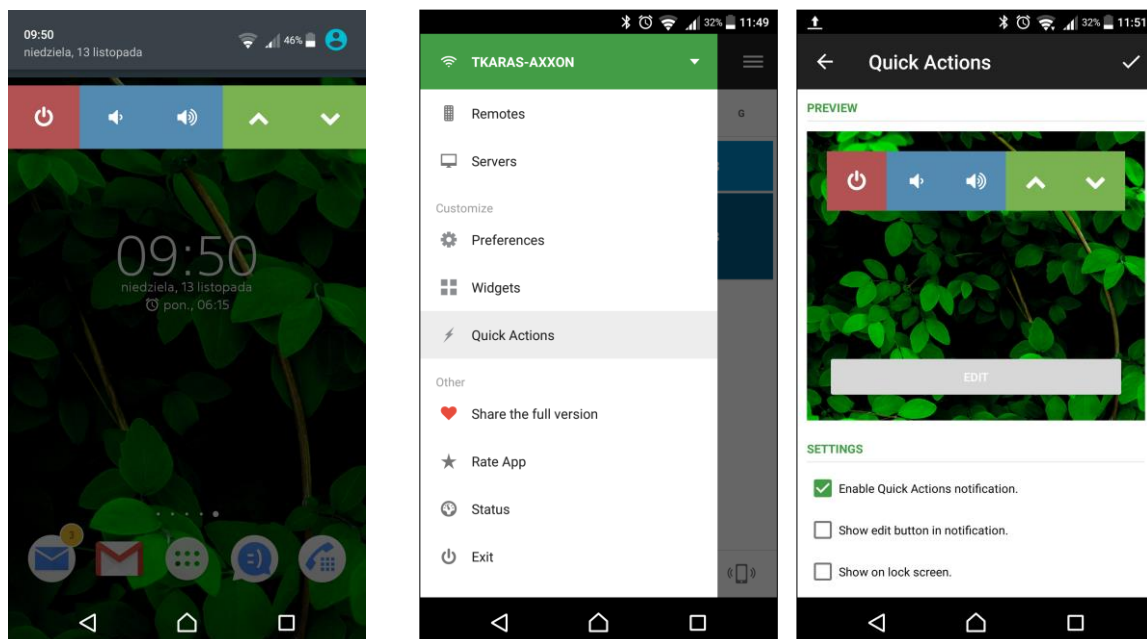
To sign command to the button you need to do:



- in edit mode of the widget, choose the button and press „Change action”,
- select „Remote Action” and press „Next”,
- choose “IRek”, press “Next”,
- select „PressButton” function, press „Next”,
- for „RemoteNo” type the number of remote in IRek interface (1 to 4 or 0 for global buttons), press „Next”,
- for „ButtonNo” type the number of button as shows figure 3.8, press “Next”,
- select from the list a server on each IRek interface is run, press “Next”,
- to confirm all data press “DONE”,
- save changes for buttons by pressing 
- repeat all steps for other buttons of the widget

To save changes in widget press again .

➤ **As buttons in notification are (Quick Actions)**



*Figure 3.20 Example of Quick Actions*

On the web site: <https://www.unifiedremote.com/tutorials/how-to-use-quick-actions> you will find how to pin your favourite buttons to the notification area.