

# **Y.A.R.D. 2 Mini / LCD /** **Micro / Nano**

[www.yard2usb.de](http://www.yard2usb.de)

**Y: Yet**

**A: Another**

**R: Remote**

**D: Device**

**2: 2<sup>nd</sup> Version ☺**

**Disclaimer:**

**Y.A.R.D. is available as an assembly set and not as a final product.**

**By using Y.A.R.D.2 USB  
you are accepting to use  
this device on**

**YOUR OWN  
RISK !**

**I'm not responsible for  
any damage of your  
hardware / software.**

## **Y.A.R.D.Yet Another Remote Device 2**

It is available with 3 different versions: Micro, Mini and LCD

| <b>Y.A.R.D.2 USB</b>                        | <b>Nano</b> | <b>Micro</b> | <b>Mini</b> | <b>LCD</b> |
|---|-------------|--------------|-------------|------------|
| <b>USB connection</b>                       | X           | X            | X           | X          |
| <b>IR Receiver</b>                          | X           | X            | X           | X          |
| <b>IR Wakeup</b>                            |             | X            | X           | X          |
| <b>IR Sender</b>                            |             |              | X           | X          |
| <b>RTC wakeup</b>                           |             |              | X           | X          |
| <b>Rotary encoder</b>                       |             |              |             | X          |
| <b>Buttons (up to)</b>                      | (1)         | 7            | 1           | 127        |
| <b>i²c Header for extensions (e.g. FAN)</b> |             |              | X           | X          |
| <b>LCD &amp; Light sensor</b>               |             |              |             | X          |
| <b>Windows Software</b>                     | X           | X            | X           | X          |
| <b>Linux Software</b>                       | X           | X            | X           | X          |

### **The device has following features (Nano / Micro / Mini / LCD):**

- IR receiver for supported protocols (RC5, RC6, NEC, Samsung, Denon)
- IR wakeup support (not Nano)

#### **Additional for Micro:**

- Up to 7 push buttons

#### **Additional for Mini and LCD:**

- IR Sender (for some protocols)
- RTC (Real time clock) for programmable wakeup with GoldCap buffer for min 3 days in case of an power failure.
- i²c Header for extensions (FAN Controller) (Mini from Rev04)

#### **Additional for LCD Version:**

- Up to 15 push buttons (up to 127 if you do not need the Rotary encoder)
- Rotary encoder with separate push Button
- LCD for character and graphic LCD with controllers: HD44780, KS0108, T6369C
- Automatic back light adjustment via Photo resistor if LED back light is used.

### **Windows Software**

→ IR events via

- WinLirc protocol (WinLirc not required)
- MCE Emulation (e.g. Windows 7/8 Media center, PowerDVD)
- JSON (for Kodi / XBMC), no plugin required
- Keyboard emulation

→ General sending of Keys to the foreground Window

→ Every program with Winlirc interface can be used

→ Media Portal can be controlled with my own Winlirc Plugin.

→ PVR monitoring for automatic wakeup

- DVBViewer
- WMC Vista / WMC 7 (Beta)
- Media Portal (only if mySQL5 is used for MediaPortal - Beta).

→ Starting applications via IR

→ Power on Reset handling

→ FritzBox Call monitor

### **Linux Software**

- yard2srvd is a background Daemon
- lirc daemon patch
- Work as an input device event[x] (keyboard emulation)
- yard2wakeup for automatic wakeup time for VDR
- yard2config for Y.A.R.D.2 configuration
- yard2record to create IRMap table for own lirc server implementation and for /input/event[x]
- yard2flash to update Y.A.R.D.2 firmware
- lirc test is a simple lirc test application
- [Beta] own lirc server implementation. lirc is not needed
- [Beta] An input device can be created dev/input/event[x], which simulates keystrokes
- [Beta] LCDproc driver (only char. LCDs)
  - LCD is only supported on Linux distributions with full compiler support for LCDproc !
  - e.g. Openelec is NOT supported

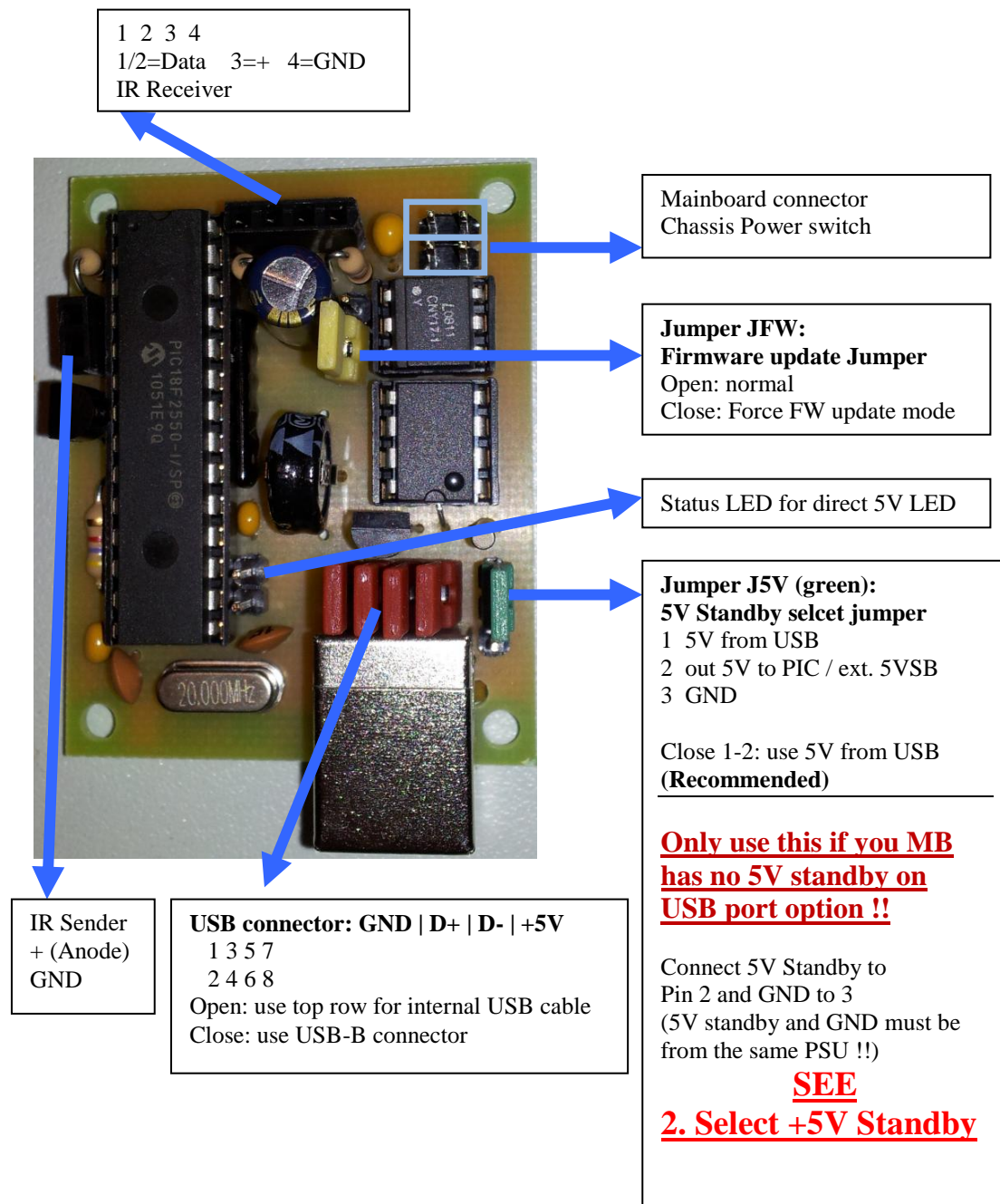
A manual installation on OpenElec (x86/RasPi/Cubex on ARM6) is possible, without LCD and yard2flash support.

XBMCbuntu is also supported.

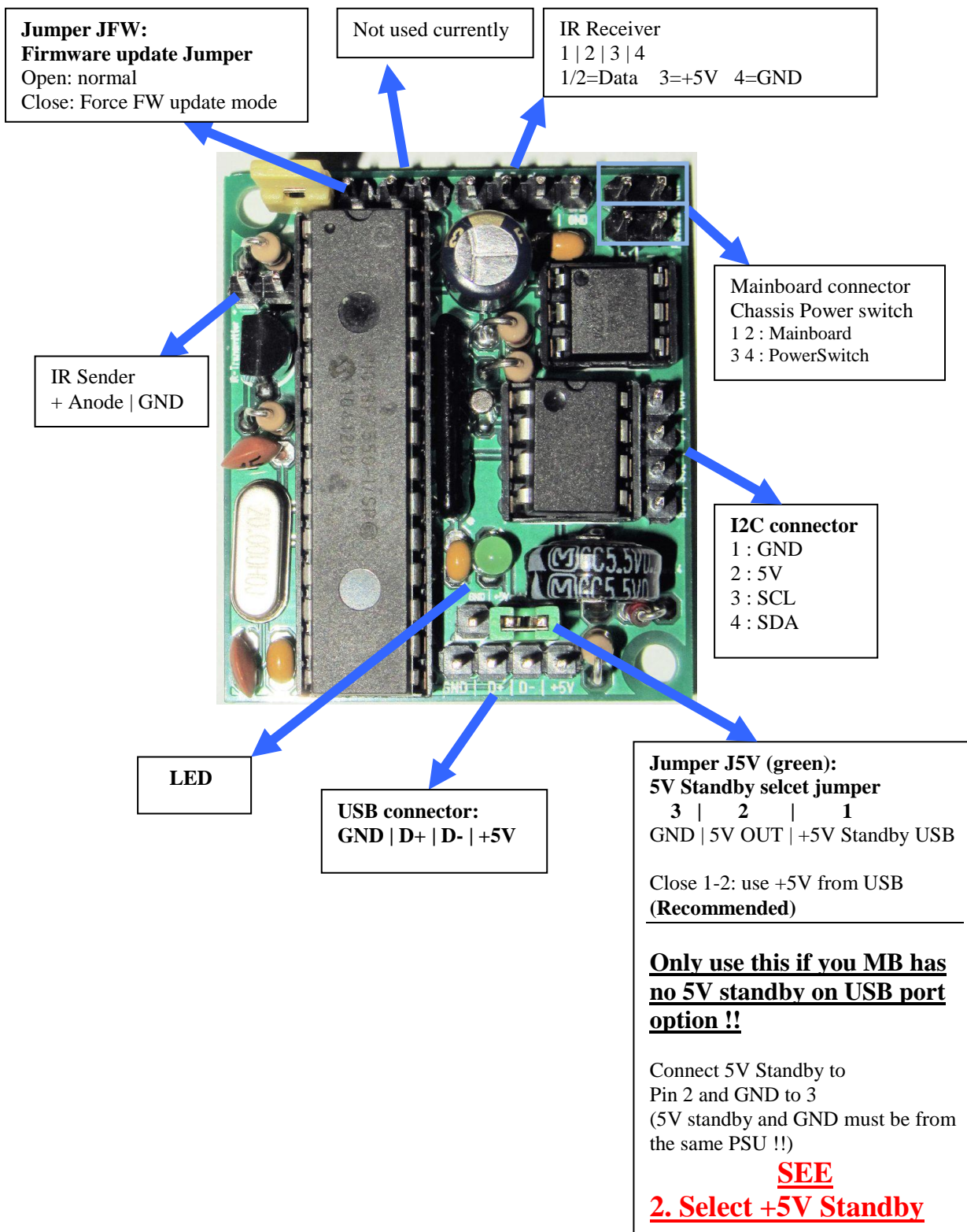
### **Requirements:**

- Free USB port (internal preferred)
- Y.A.R.D.2 needs 5V StandBy from USB port in S5 mode (Check mainboard manual)
- Windows XP, Vista, 7, 8 32Bit / 64Bit
- Linux (LCD support currently only textmode via LCDProc)

## Y.A.R.D. 2 USB mini Rev.2/3



## Y.A.R.D. 2 USB mini Rev.4



## Y.A.R.D. 2 USB mini Rev.6

### **Jumper JFW:**

#### **Firmware update Jumper**

Open: normal

Close: Force FW update mode

### **Mainboard connector**

#### **Chassis Power switch**

1 2 : Mainboard

3 4 : PowerSwitch

### **IR Receiver**

1 = Data

2 = Data

3 = +5V

4 = GND

### **I2C connector**

1 : GND

2 : 5V

3 : SCL

4 : SDA

### **LED**

### **IR Sender**

+ Anode

GND

### **USB connector:**

**GND | D+ | D- | +5V**

### **Jumper J5V (green):**

#### **5V Standby select jumper**

1 | 2 | 3

+5V Standby USB | 5V OUT | GND

Close 1-2: use +5V from USB

**(Recommended)**

**Only use this if you MB has  
no 5V standby on USB port  
option !!**

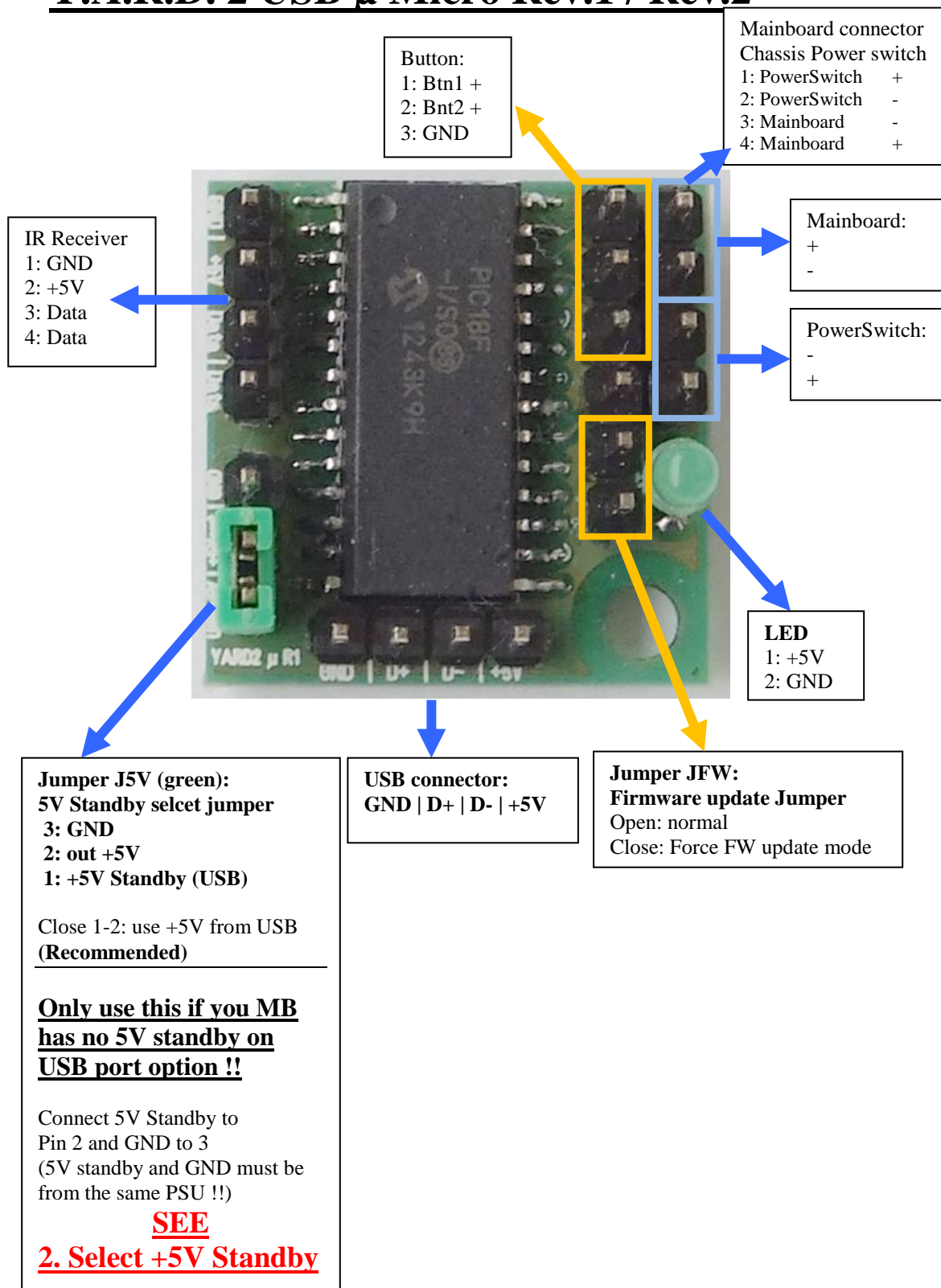
Connect 5V Standby to  
Pin 2 and GND to 3  
(5V standby and GND must be from  
the same PSU !!)

**SEE**

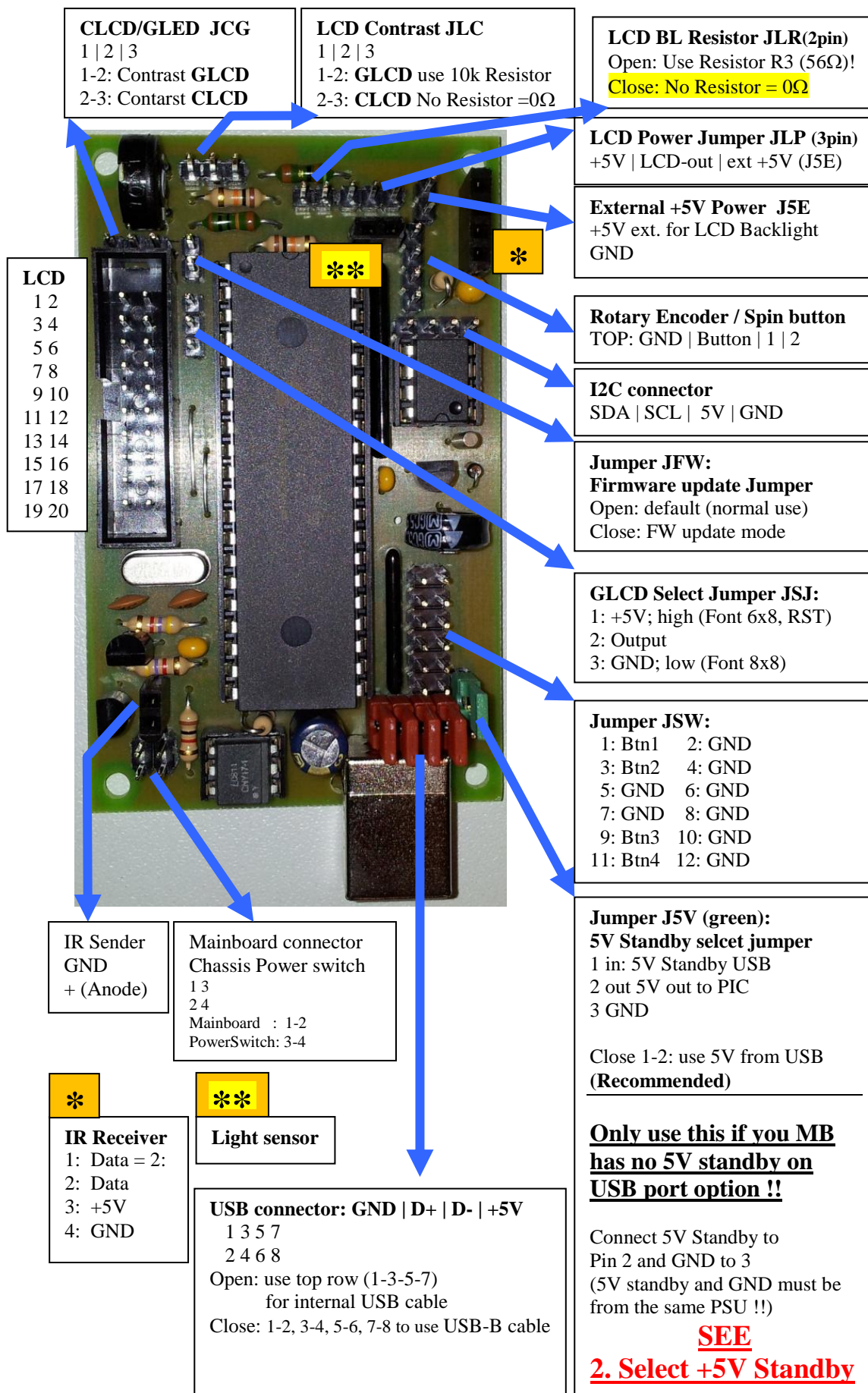
**2. Select +5V Standby**



## Y.A.R.D. 2 USB $\mu$ Micro Rev.1 / Rev.2

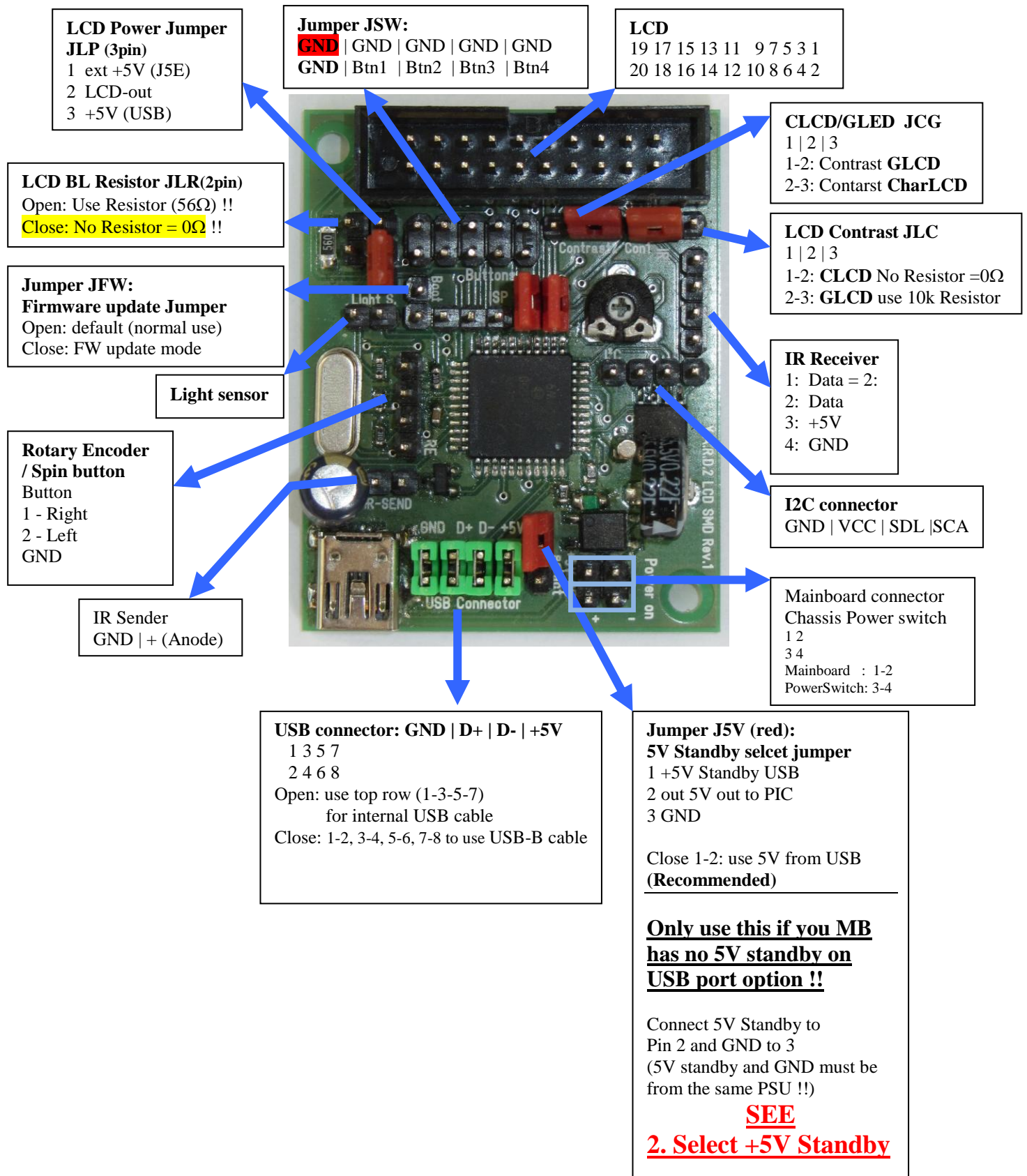


## Y.A.R.D. 2 USB LCD Rev.1



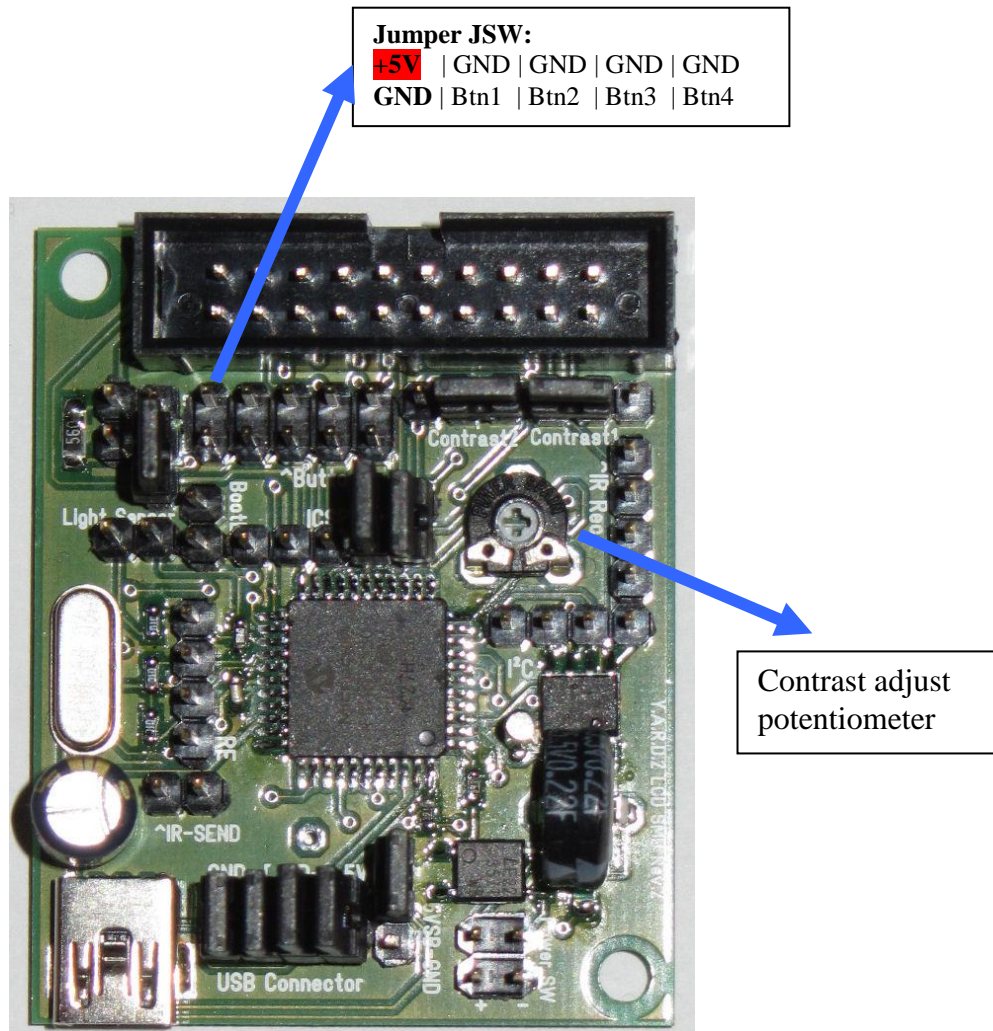


## Y.A.R.D. 2 USB LCD SMD Rev.1

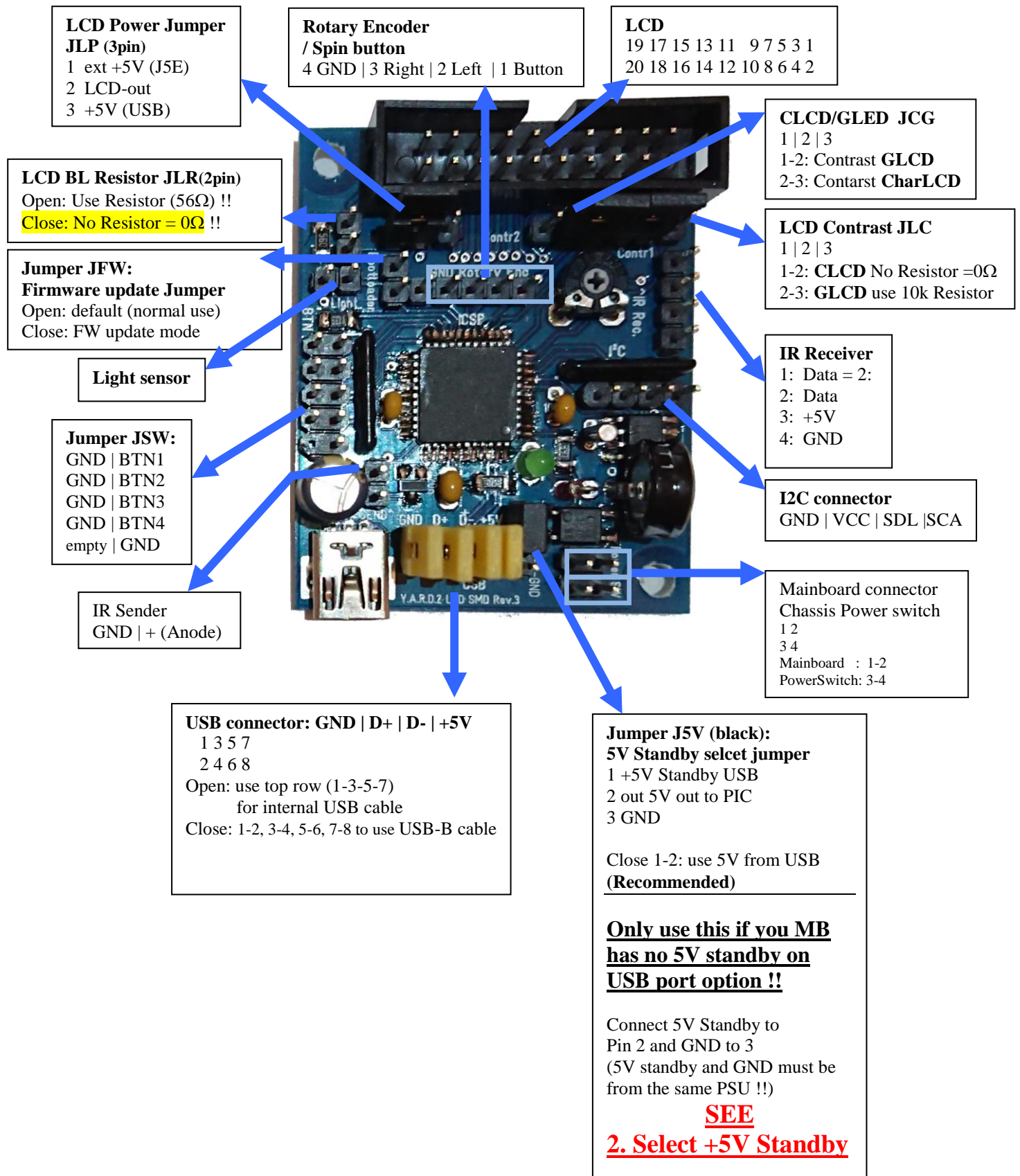


## Y.A.R.D. 2 USB LCD SMD Rev.2

LCD SMD Rev. 2 has the same layout as Rev.1 except Jumper JSW !  
There is a +5V output instead of GND !

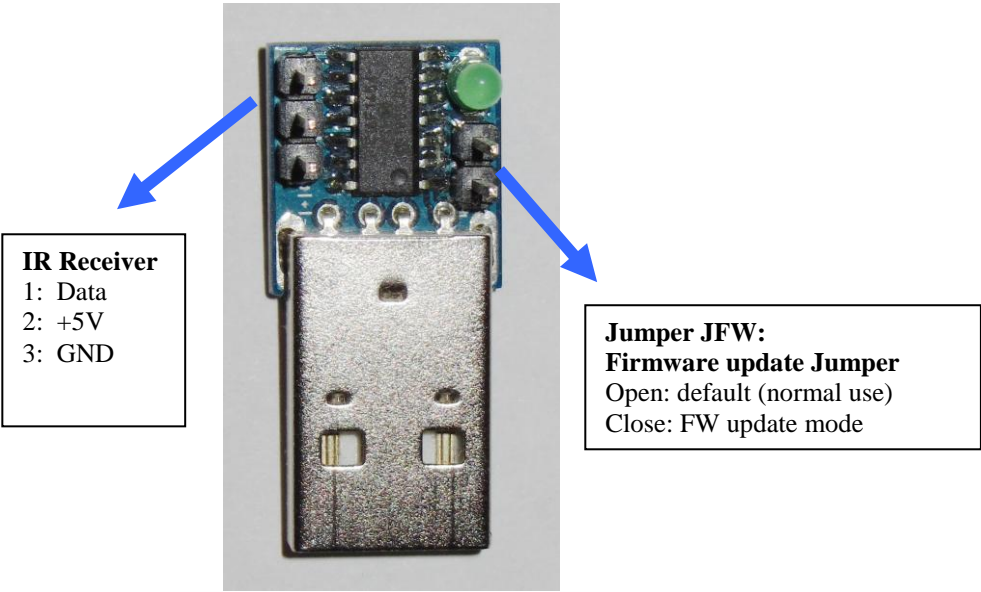


## Y.A.R.D. 2 USB LCD SMD Rev.3

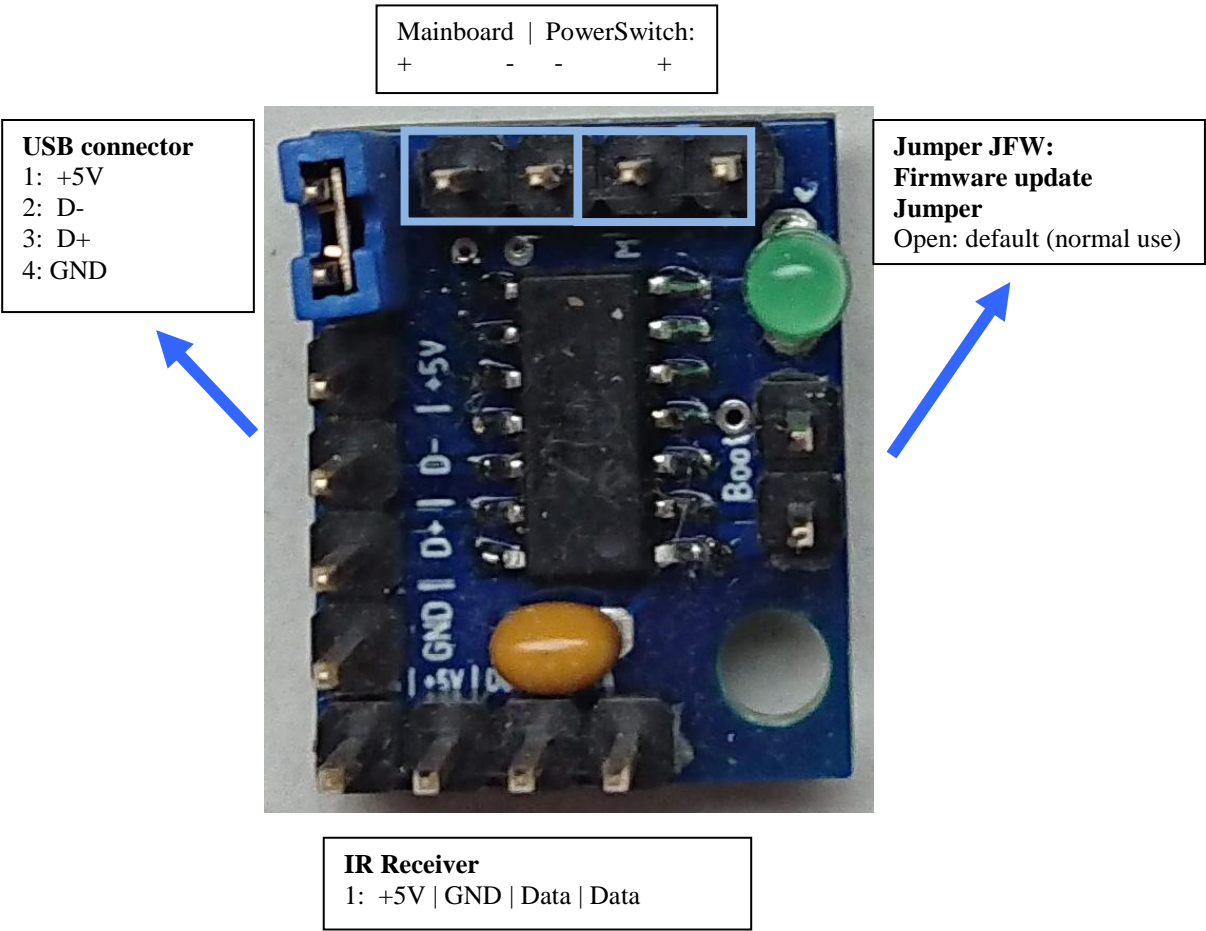




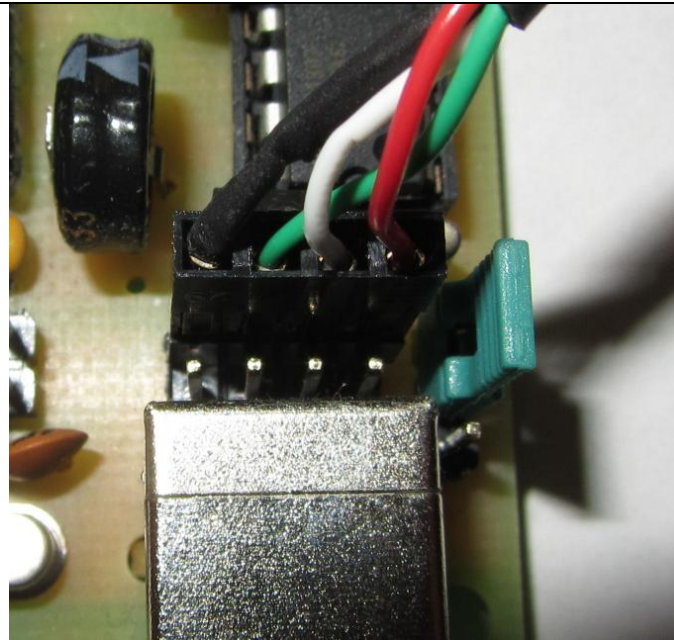
**Y.A.R.D. 2 USB Nano Rev.1**



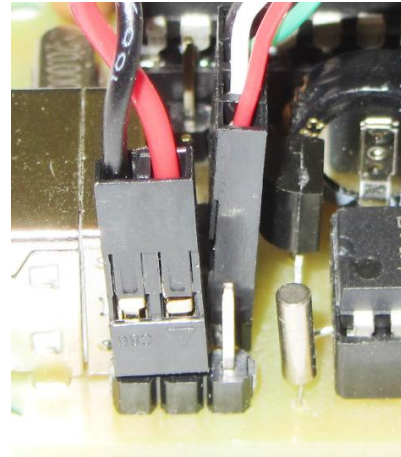
**Y.A.R.D. 2 USB Nano Internal Rev.1**



## Internal USB connection Mini & LCD



Connect USB cable to the top row  
Pin layout left to right  
GND | D+ | D- | +5V



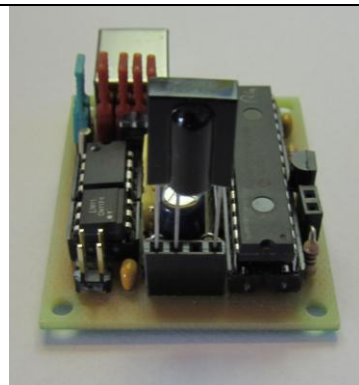
+5VSB (Standby voltage)  
If USB is not providing  
+5VSB connect a +5VSB  
voltage to the Jumper J5V

**!! WARNING !!**

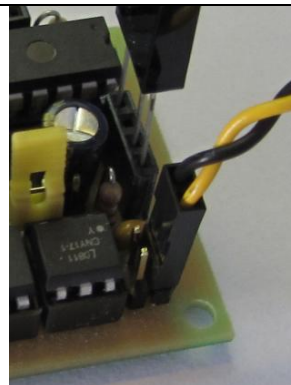
**SEE**

**2. Select +5V Standby**

## Connection examples YARD2 Mini:



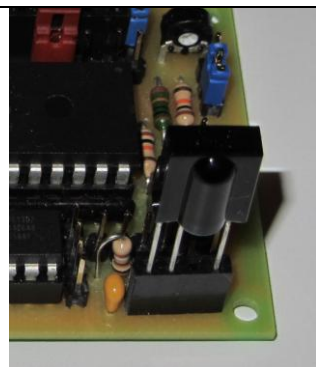
**IR Receiver**



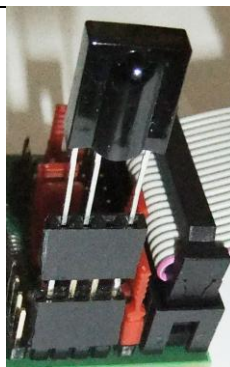
**Power-MB Switch**



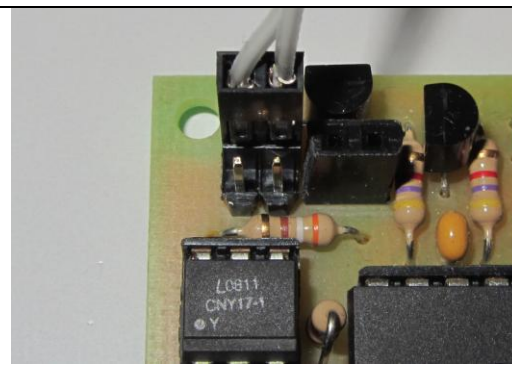
## Connection examples YARD2 LCD:



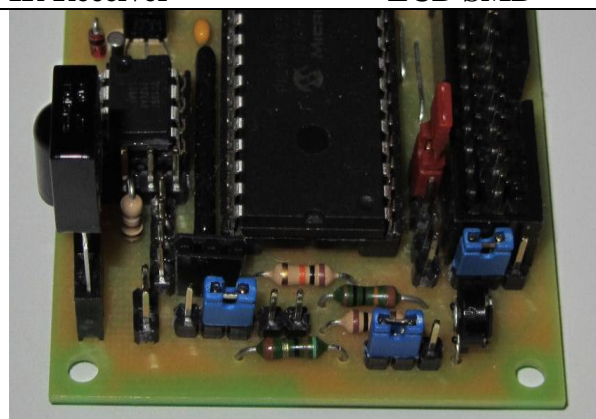
IR Receiver



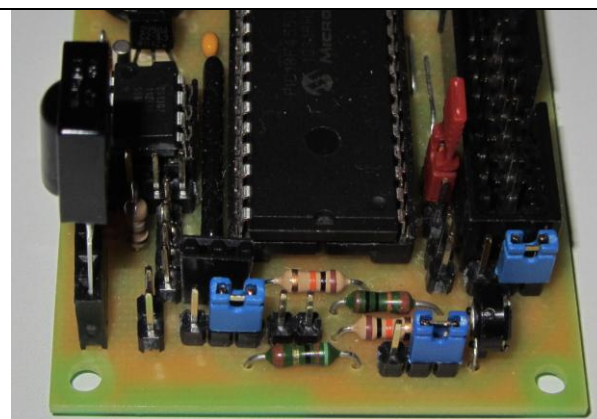
LCD SMD



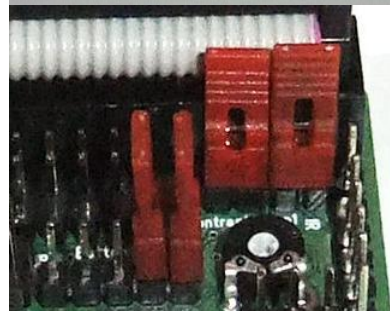
Power-MB Switch



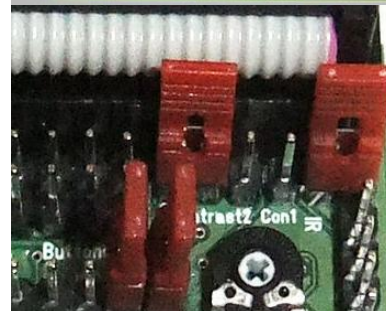
CharLCD Jumpers



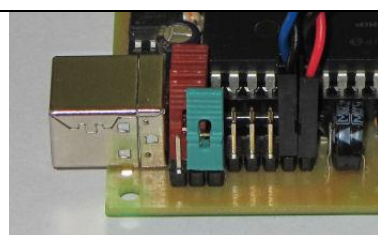
GraphicsLCD Jumpers



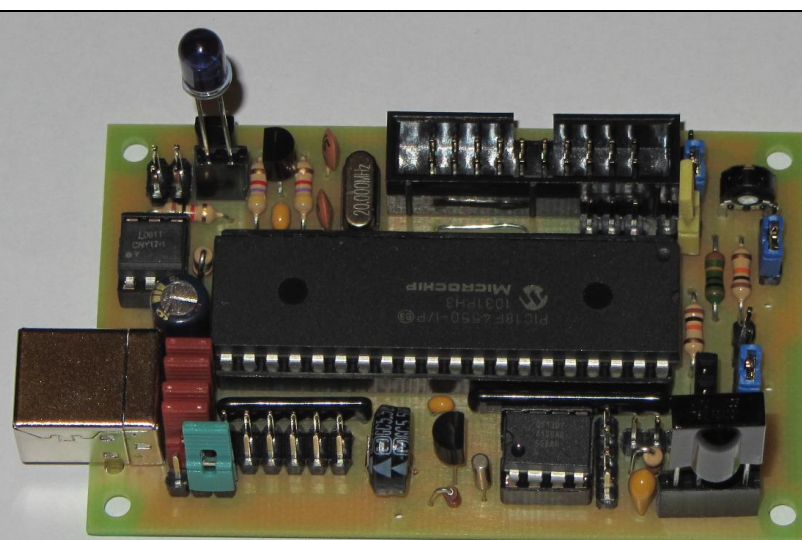
LCD SMD



LCD SMD



External Switches



## Y.A.R.D. 2 USB micro mini & LCD –

### Supported IR protocols:

Receive: RC5, RC6(A), NEC, Samsung, Sony, Denon

Send: RC5, NEC, Samsung

## Y.A.R.D. 2 USB LCD - Supported LCDs:

Character LCD: HD44780, KS0073, KS0066

Graphic LCD: T6963c (max 240x128), KS0108 (only 128x64)

*CLCD is recommended, because of lower  $\mu C$  load!*

## Y.A.R.D. 2 USB LCD connector:

### Character LCD (HD44780/KS0073/66) (CLCD)

|                                  |                   |
|----------------------------------|-------------------|
| 1: GND                           | 2: +5V Main Power |
| 3: LCD Contrast +5V (via Poti)   | 4: -              |
| 5: Backlight +5V (via Resistor?) | 6: -              |
| 7: Data 0                        | 8: Data 1         |
| 9: Data 2                        | 10: Data 3        |
| 11: Backlight GND (PWM)          | 12: RS            |
| 13: Read / Write                 | 14: Enable 1      |
| 15: Enable2                      | 16: -             |
| 17: Data 4                       | 18: Data 5        |
| 19: Data 6                       | 20: Data 7        |

### Graphic LCD (T6963c) (GLCD)

|                                  |  |
|----------------------------------|--|
| 1: GND (Logic)                   | 2: +5V Main Power (Logic)                      |
| 3: LCD Contrast Adjust (input)   | 4: Font Select (FS) (+5V/GND via Jumper)       |
| 5: Backlight +5V (via Resistor?) | 6: LCD Contrast “–Vee” <b>provided by LCD!</b> |
| 7: Data 0                        | 8: Data 1                                      |
| 9: Data 2                        | 10: Data 3                                     |
| 11: Backlight GND                | 12: Data Write (WR)                            |
| 13: Data Read (RD)               | 14: Enable (CE)                                |
| 15: Command /Data input (C/D)    | 16: Reset                                      |
| 17: Data 4                       | 18: Data 5                                     |
| 19: Data 6                       | 20: Data 7                                     |

### Graphic LCD (KS0108) (GLCD)

|                                  |  |
|----------------------------------|--|
| 1: GND (Logic)                   | 2: +5V Main Power (Logic)                      |
| 3: LCD Contrast Adjust (input)   | 4: Reset (RST) (+5V via Jumper !)              |
| 5: Backlight +5V (via Resistor?) | 6: LCD Contrast “–Vee” <b>provided by LCD!</b> |
| 7: Data 0                        | 8: Data 1                                      |
| 9: Data 2                        | 10: Data 3                                     |
| 11: Backlight GND                | 12: Chip Select 1 (CS1)                        |
| 13: Chip Select 2 (CS2)          | 14: Read/Write (RW)                            |
| 15: Data/Instruction (RS)        | 16: Enable (E)                                 |
| 17: Data 4                       | 18: Data 5                                     |
| 19: Data 6                       | 20: Data 7                                     |

## Y.A.R.D. 2 USB LCD SMD connector:

### Character LCD (HD44780/KS0073/66) (CLCD)

|                                       |                             |
|---------------------------------------|-----------------------------|
| 1: GND                                | 2: +5V Main Power           |
| 3: LCD Contrast +5V (via Poti)        | 4: -                        |
| 5: RS                                 | 6: R/W                      |
| 7: Enable 1                           | 8: Enable 2                 |
| 9: Data 0                             | 10: Data 1                  |
| 11: Data 2                            | 12: Data 3                  |
| 13: Data 4                            | 14: Data 5                  |
| 15: Data 6                            | 16: Data 7                  |
| 17: -                                 | 18: -                       |
| 19: Backlight +5V (via Resistor?) (A) | 20: Backlight GND (PWM) (K) |

### Graphic LCD (T6963c) (GLCD)

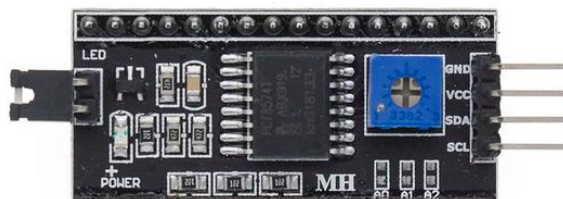
|                                       |  |
|---------------------------------------|--|
| 1: GND (Logic)                        | 2: +5V Main Power (Logic)                      |
| 3: LCD Contrast Adjust (input Vo)     | 4: LCD Contrast “-Vee” <b>provided by LCD!</b> |
| 5: Data Write (WR)                    | 6: Data Read (RD)                              |
| 7: Enable (CE)                        | 8: Command /Data input (C/D)                   |
| 9: Data 0                             | 10: Data 1                                     |
| 11: Data 2                            | 12: Data 3                                     |
| 13: Data 4                            | 14: Data 5                                     |
| 15: Data 6                            | 16: Data 7                                     |
| 17: Reset                             | 18: Font Select (FS) (+5V/GND via Jumper)      |
| 19: Backlight +5V (via Resistor?) (A) | 20: Backlight GND (PWM) (K)                    |

### Graphic LCD (KS0108) (GLCD)

|                                       |  |
|---------------------------------------|--|
| 1: GND (Logic)                        | 2: +5V Main Power (Logic)                      |
| 3: LCD Contrast Adjust (input Vo)     | 4: LCD Contrast “-Vee” <b>provided by LCD!</b> |
| 5: Reset (RST)                        | 6: Read/Write (RW)                             |
| 7: Data/Instruction (RS)              | 8: Enable (E)                                  |
| 9: Data 0                             | 10: Data 1                                     |
| 11: Data 2                            | 12: Data 3                                     |
| 13: Data 4                            | 14: Data 5                                     |
| 15: Data 6                            | 16: Data 7                                     |
| 17: Chip Select 1 (CS1)               | 18: Chip Select 2 (CS2)                        |
| 19: Backlight +5V (via Resistor?) (A) | 20: Backlight GND (PWM) (K)                    |

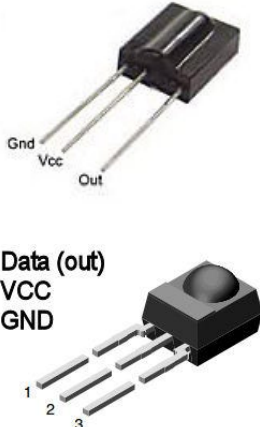
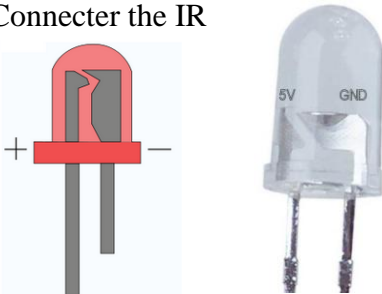
### i²C (HD44780/KS0073/66) (CLCD)

With FW 2.xx i2c LCD (via adapter) is supported at address: 0x27



e.g.:

**Jumper Options Micro, Mini, LCD (positions see explanation above):**

|                                       |   |
|---------------------------------------|---|
| USB connector:<br>GND   D+   D-   +5V | See chapter 1. "Connect Y.A.R.D.2 USB LCD / Mini to your system"  |
| IR Receiver                           | <p>Connector for IR-Receiver</p> <p><b>TSOP31238</b><br/>1: GND<br/>2: 5V (VCC)<br/>3: Data (out)</p> <p><b>TSOP 32238</b><br/>1: Data (out)<br/>2: 5V (VCC)<br/>3: GND</p>                                    |
| IR Sender / StatusLED                 | <p>Connecter the IR send diode</p>   |
| Jumper JFW:                           | See 3. Firmware update.   |
| <b>Jumper J5V (green)</b>             | <b>See chapter 2. "Select +5V Standby"</b>  |
| I²C connector                         | I²C connector for additional addons.<br>(FAN-controller)  |
| <b>LCD Jumper / connectors only</b>   |   |
| CLCD/GLCD JCG                         | Select your used LCD<br>GLCD or CLCD  |
| LCD Contrast JLC:                     | Select if your LCD needs a additional contrast resistor.<br>GLCD or CLCD. If it is too weak/strong, you can try the other position and turn the potentiometer.  |
| LCD BL Resistor JLR                   | <p>Select if your LCD needs a Backlight resistor or not.<br/>(Default 56Ω)<br/>LED Backlight normally needs a resistor if not included on LCD.</p> <p><b>Be sure you use the correct resistor for your LCD !!<br/>Otherwise you can damage your LCD !!!</b></p>                                   |
| LCD Power Jumper JLP (3pin)           | <p>If you use a normal LCD with LED backlight you can use the USB as PSU for the backlight.<br/>→ <b>Close: +5V   LCD-out</b></p> <p>If you use a LCD with a high current (&gt;250mA) backlight you can select the external PSU for the backlight.<br/>→ <b>Close LCD-out   ext +5V (J5E)</b></p> |
| External +5V Power J5E                | Connect external PSU for LCD Backlight Power JLP  |

|  |   |
|--|---|
| GLCD Select Jumper JSJ<br>Only non SMD LCD-Version | <b>T6369c:</b><br>Select your Font you want to use with your GLCD<br>Font 6x8: Close 1-2 (+5V)<br>Font 8x8: Close 2-3 (GND - default)<br><b>KS0108:</b><br>+5V: Close 1-2 |
| Rotary Encoder / Spin button                       | GND: Connect to GND<br>Button: Button of the Rotary Encoder (if available)<br>Left pin of the Rotary Encoder<br>Right pin of the Rotary Encoder                           |
| Jumper JSW   | Connect your buttons/switches to this Jumperblock<br>You can connect 4 buttons directly (1-2), or 15 with a diode matrix (Appendix1)                                      |
| Light sensor                                       | Connector for light sensor for automatic backlight adjust   |

## Y.A.R.D. 2 Status LED:

Y.A.R.D.2 LCD SMD and Y.A.R.D.2 mini Rev.2 (or later) are equipped with a status LED or a header for a status LED (5V LED !). The behaviour can be selected in the Windows or Linux software.

Current modes:

0. LED off
1. LED on
2. LED 1 second blink (RTC time must be set)
3. LED blink if IR Wakeup code is detected
4. LED on if system is off (e.g. to check if OFF state is correctly detected)
5. LED blink during an IR-code receive (always)
6. LED blink during an IR-code receive when system in "ON"

HINT:

From 05/2014: In Bootloader mode the LED is blinking fastly (~ 4 each second)

### External buttons

All YARD2 versions can connect an external button at the force firmware update jumper.

During normal operation this will generate a button event.

During YARD2 Bootup this will enter force update mode, **see 4.**

More buttons can be connected, depending on your YARD2 version:

Micro: 3 additional buttons can be connected, see description above

Mini: only the force update Jumper Button is available

LCD: Up to 15 buttons can be additionally connected to the button headers. Additionally the Rotary Encoder can be used as buttons.

**See Appendix 1 for an example.**

**Buttons must be connected from "+" to "GND".**



## 1. Connect Y.A.R.D.2 to your system

A: USB-B / USB-B mini connector (if available)

Close all 4 jumper (1-2, 3-4, 5-6, 7-8) of USB connector and attach a normal USB-B / mini to USB-A cable. Connect to a free USB Port of your system.

B: Internal USB header

Open all jumper, use a internal 4pin cable (upper row of YARD) to connect to a USB header on your Main board. (1=GND | 3=D+ | 5=D- | 7=+5V)

**Be careful when you connect the USB cable!**

**Do not mix up the direction!**

For internal connection you need an internal USB cable. This is not part of the Y.A.R.D.2 package. You can get such a cable easily e.g. via eBay.



Internal USB cable (4Pin → 4Pin or 5Pin → 4Pin)

## 2. Select +5V Standby – **WARNING read carefully**

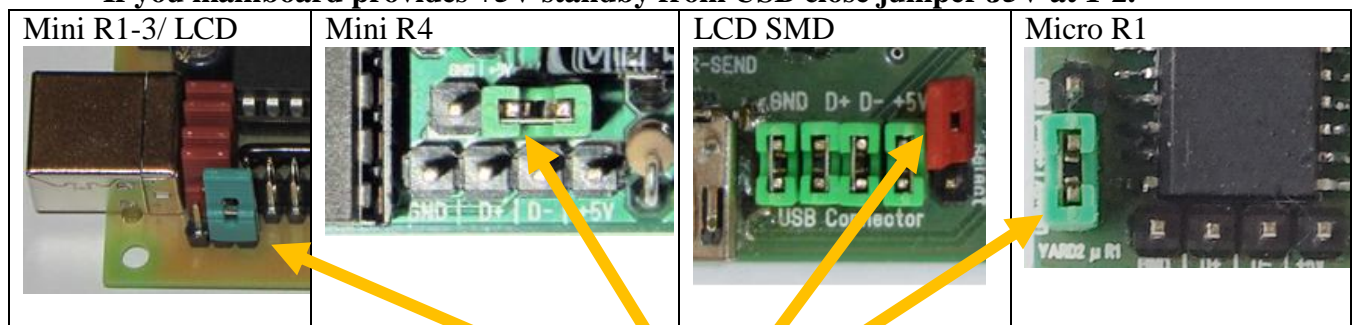
Y.A.R.D. 2 USB needs +5V standby power to work while the system is in S5 mode (Shutdown / OFF).

**It is recommended to use +5V standby power from USB port.**

**See also Appendix 2 for details**

Look at you mainboard manual for this feature. It is possible that you need to enable this feature by Bios setting or mainboard jumper.

**If you mainboard provides +5V standby from USB close jumper J5V at 1-2.**



**ONLY IF YOU MAINBOARD CAN NOT PROVIDE  
+5V Standby from USB  
!! BE VERY CAREFUL WHEN CONNECTING !!**

You can use another +5V standby from your Mainboard e.g.

1. WOL connector
2. CIR header
3. From PSU

if available.

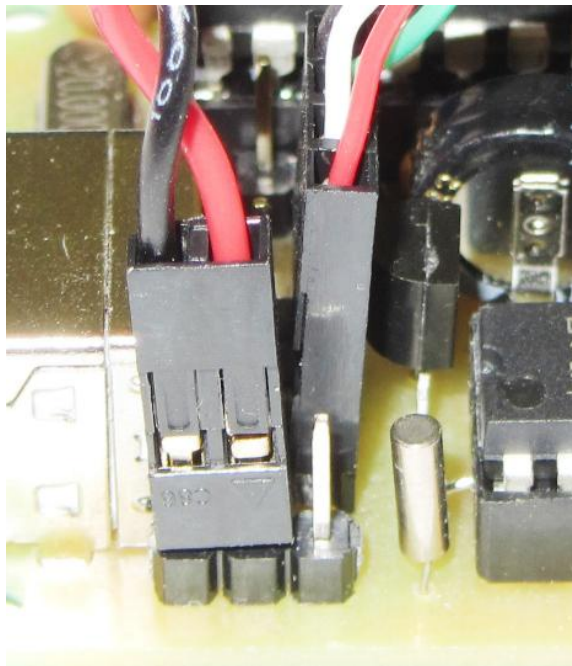
Look at your Mainboard manual for a +5V Standby provider!

**See also Appendix 2 for details**

**Be careful while connecting this you Y.A.R.D. 2 USB!**

Check Pin layout of your Y.A.R.D.2 version and connect

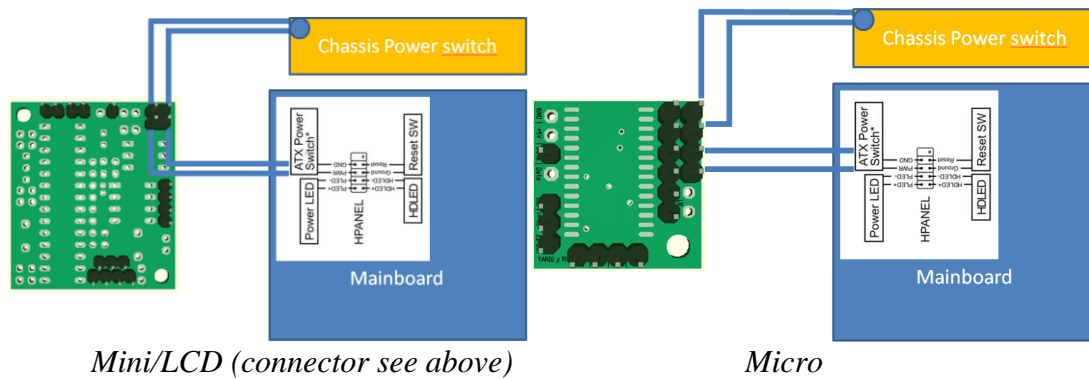
1. +5V Standby (here RED cable ) to pin 2 (middle of the 3 Pins) and
2. GND to pin 3 (Black cable).



**Standby voltage must be from the same PSU connected to your  
Mainboard.**

### **3. Connect Power switch cable**

1. Connect the Power switch cable from your chassis to Y.A.R.D.2  
(See mainboard connector Chassis Power switch on the Hardware description page)
2. Connect a cable from Y.A.R.D. to the main board power switch  
(Where you normally connect your chassis power switch)



Some main board needs to attach the cable from the Y.A.R.D.2 to the mainboard power switch in the right direction.

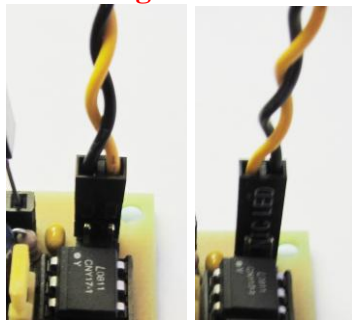
#### **How to check correct direction:**

In Windows you have to setup the energy settings, that Windows will shutdown by pressing the chassis power switch.

You can check now the connection by using the “Test power switch” button in the Y.A.R.D. Software Setup tab.

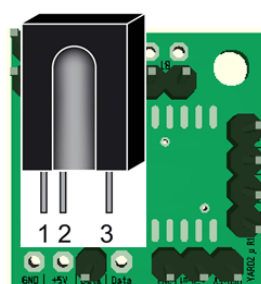
If the system will **not** shut down you have to turn the cable 180°. Test it again.

**A working chassis Power switch is NO indication for right direction!**



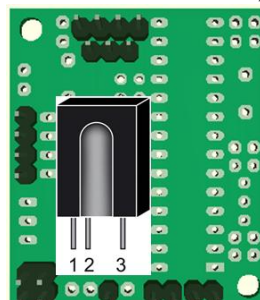
### **4. Connect IR receiver**

IR receiver must be installed according IR-Receiver Pin out, see above (e.g. 31238)



Micro

1: GND  
2: 5V  
3: Data



Mini/LCD (connector see above)

## **5. Firmware update (force Firmware update mode)**

Normally Firmware update is done completely by software.

See section “Windows or Linux” software for details.

In case that anything went wrong during Firmware update process or FW update procedure changes, you can force to enter “Firmware update mode” by closing jumper JFW.

### **Force Firmware update process:**

1. Disconnect Y.A.R.D.2 USB from USB (& Power) completely
2. Close jumper JFW
3. Connect Y.A.R.D.2 to USB (& Power)
4. Wait 10 seconds and remove JFW jumper
5. Start Y.A.R.D.2 software and start Firmware update
6. After update is completed, close Y.A.R.D.2 Software and restart it.  
Y.A.R.D.2 should work now normally.

## **6. Remote control & Logitech Harmony**

You can use any multi remote control as long as you select a model with a supported protocol.

### **For a Logitech Harmony you can use e.g. following profiles:**

- Asrock 330HT: Select: "Media Center PC" → ASRock → ION 330HT
- Origen AE TechnologyS16V: Select: "Media Center PC" → Origen → TechnologyS16V

### **For a Loewe Assist 1/2 you can use e.g. following profiles:**

- Use SetTopBox profile database (18) and use Profile 306

**Ebay – Get this lowcost RC6 MCE remote control from ebay for ~6€.**



**Y.A.R.D. 2 is only a IR receiver.**

**You have to learn and configure each remote control button in the software!!**

## LCD related section:

### **7. LCD contrast adjust:**

Adjust the LCD contrast with the 10k Poti to your specific LCD.

Without this your LCD might show nothing or is black.

If the contrast is too weak or too strong you can also test the other position.

### **8. Negative voltage for LCD contrast:**

Y.A.R.D. 2 does not provide negative voltage for contrast adjusts!

If you need negative voltage and it is not provided directly from the LCD, you can use a external –12V DC/DC converter (+5V -> -12V) and connect the –12V negative voltage output to **Pin 6** of LCD connector (cable) or **Pin 2** of Jumper “CLCD/GLED JCG”



## **Y.A.R.D. 2 USB Windows Software description**

### **1. Driver installation for normal / update mode**

A: Windows XP 32/64bit

After connecting Y.A.R.D.2 USB to the system a dialog is shown to select driver.

Select "YARD2" directory and install driver

B: Windows Vista / Windows 7 32/64bit / Windows 10 Bootloader

After connecting Y.A.R.D.2 USB to the system will not find any known driver for this device. Open "Device Manager" search for Y.A.R.D. 2 and update driver manually: Right click → update driver.

Select "YARD2" directory and install driver

C: Windows 8 / 8.1 32/64Bit

See additional document "Windows8\_Installation.pdf" or visit [www.yard2usb.de](http://www.yard2usb.de) and select Videos

D: Windows 10 32/64Bit

Standard Y.A.R.D.2 USB driver is included in Windows 10.

For firmware update driver see Windows 8 / 8.1 section C: .

*For the **Firmware update** another driver is necessary.*

*At the first time you update the Firmware following A or B.*

*In device manager it is shown as "sprut device" or "Custom USB Devices" or "YARD2\_BOOTLOADER"(depends how old your YARD is ☺)*

*Select "Bootloader" directory and install driver.*

*To make it a bit easier a selfsign certificate for Windows 10 is available.*

*Install the certificate with*

*1\_Certs\_Install\_as\_Admin!.bat*

*as Admin (right click -> Start as Administrator) in folder*

*[YARD2Files]\Driver\_Bootloader\Win8-Win10\Win10\_SelfSign*

*After that you can install the driver according "B".*

## **2. Y.A.R.D. 2 Software (Windows)**

Every option in the software with a “Y:” in front, is a Y.A.R.D.2 USB option and needs to be saved by pressing “Save YARD settings”.

*Almost all settings / buttons in the software have hints with a further description.*

*All settings are stored in the Registry: “HKEY\_CURRENT\_USER\Software\YARD2”.*

*Note Windows 10 only:*

*Some users reported problems during start-up of the software and report high CPU usage.*

*Select “Method 2” in Expert settings to avoid this issue. (Close Comport before !)*

### **Configuration:**

#### **2.0 Main Menu**

##### **YARD2 → Test Power switch**

To test the correct connection of the mainboard power switch:

If you press the button the system will probably shutdown.

If the system does not shutdown:

1. Check Windows default behaviour when the Power button is pressed
2. Turn the cable from the Y.A.R.D. to the mainboard

##### **YARD2 → Dump / Erase EEPROM DATA**

If something does not work you can erase the EEPROM and start again.

For debug you can save the EEPROM to a file

##### **YARD2 → Expert Settings**

Here you can change or enable some not common settings.

→ Comport access Method (normally only for Win10 users)

→ Delay adjustments

→ Kodi scroll performance

##### **YARD2 → Export Settings**

Export all Windows settings from the registry to a file.

#### **2.1 Setup tab**

If you want to start this application during Windows start. Check this box.

Select COM port and press “Open Com port”

If you selected the right one, you see the current status in the Y.A.R.D.2 field

Options: TCP port for Winlirc: Change only if necessary. Default: 8765

##### **Test Winlirc**

Y.A.R.D. 2 sends dummy data to all connected WinLirc devices.

##### **Y: Status LED:**

Set mode Status LED. LED modes see above.

##### **Y: Y: Use WakeUP IR Button also as shutdown command:**

If enabled the power switch button will be triggered even if system in ON.

Depending on your system power button setup this will shutdown your system.

### **FritzBox Call Monitor**

If you use a Fritz!Box and it is configured to send the incoming calls via TCP, you can show a the information which number is calling to your number.

### **Y: Use WatchDog**

Restart the System if Yard SW does not reset the counter. SW must running !

### **I<sup>2</sup>C Extension**

Check if you have an extension installed

### **i<sup>2</sup>c LM75A Tempsensor installed (Adr. 0x90 - Mini & LCD version !)**

Use an LM75A Tempsensor, e.g.:



### **i<sup>2</sup>c FAN controller extension installed (Mini & LCD version !)**

Use an FAN controller add-on

### **Reset Y.A.R.D. 2**

Reset / reboot the device.

**Firmware update → See 2.2**

## **2.2 Firmware Update Dialog**

Dialog to update the Y.A.R.D. FW.

“Select FW” and press “Upload new FW”.

Check “Reset EEPROM DATA” to reset the configuration to default.

Use this only if you have problems during Y.A.R.D.2 startup.

After the new FW is flashed press “Close FW update”

### **Hint (Micro, Mini, LCD),**

At first update you have to install the Y.A.R.D.2 Bootloader driver.

See: Driver installation at next page how to install driver.

**Do not exit the update dialog!**

NANO used a default driver with Windows

After driver is installed, press “Upload Firmware” again.

In Firmware update mode, no COM-port is available.

It is done via a custom USB interface.

## 2.3 RTC / POR tab

Setup time and wake up time

### **Y: Start system after power loss:**

If a power loss is detected you can decide to start the system or not.

Configure POR (Power on Reset = Power loss) handling if you want to use it.

Reboot / Shutdown -> Restart Stability Test (Use this only for Debug !!)

You can test Y.A.R.D.2 and you system for wakeup and system start.

Also you can check if a specific device (e.g. TV card) is present.

Find the VEN/DEV numbers in device manager.

## 2.4 VDR / Recording tab

Y.A.R.D. SW tries to get the next programmed recording and set the wake up time automatically. Currently supported:

- DVBViewer / DVBViewer Recording Service
- Windows Media Center Vista
- Windows Media Center Windows 7
- Windows Media Center Windows 8
- Media Portal (if mySQL database is used)

“Set new wake up time immediately” programmes the wake up time on every recording change. Otherwise time will be set only during shutdown.

For some Media application you have to setup some individual parameters

- ➔ DVBViewer and DVBViewer Recording Service
- ➔ XBMC IP address if default IP / port is not used

## 2.5 IR Key map tab

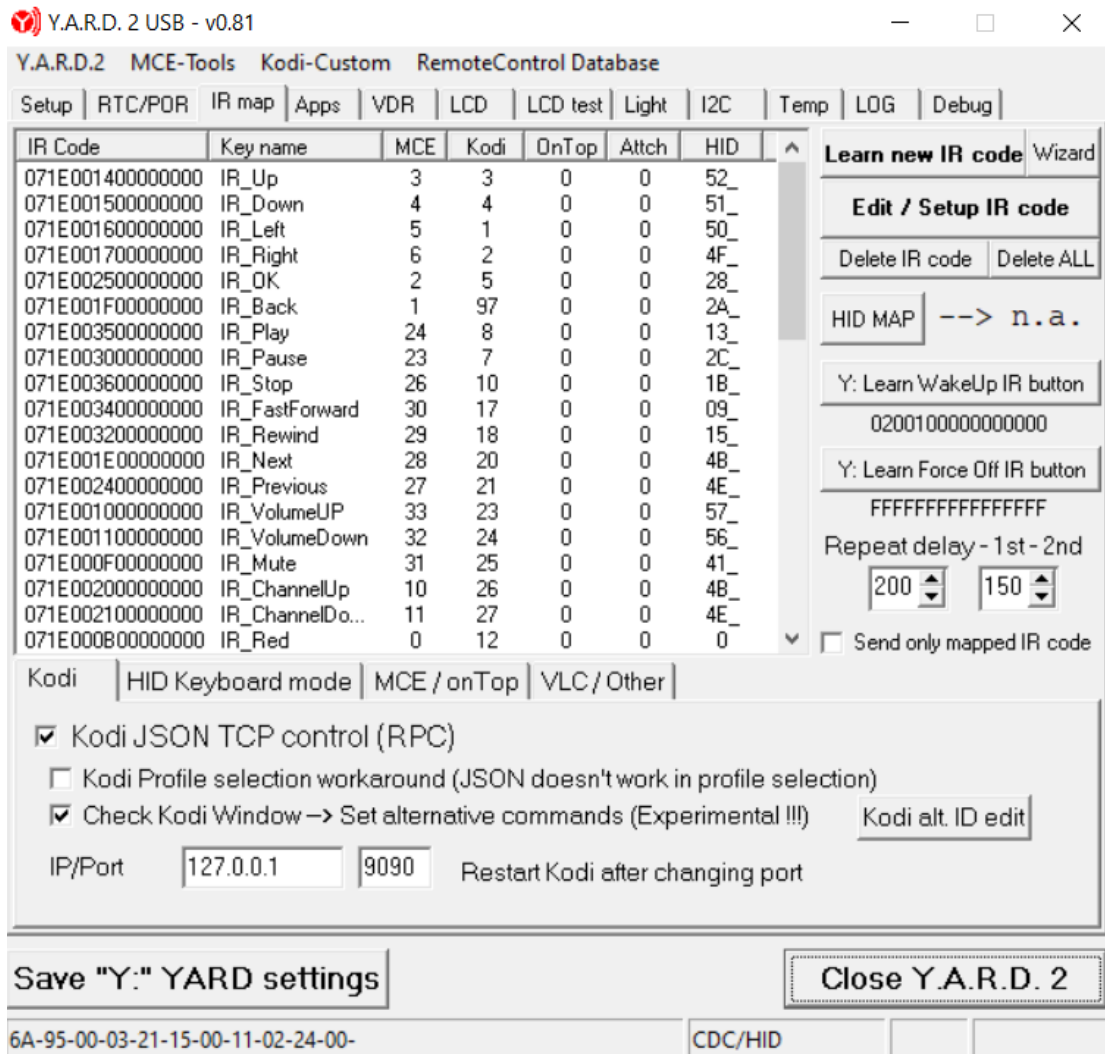
Y.A.R.D. is only a IR Receiver.

Every button on your remote control must be learned and configured !!

Please note that the controlling with IR commands is handled in 4 steps:

- 1: Mouse and Start application
- 2: XBMC/Kodi via JSON TCP control if option is checked
- 3: MCE Emulation of the selected application
- 4: OnTop Window

If an IR event is using e.g. 2: XBMC/Kodi then 3 and 4 will be skipped!



Every code needs unique specific keyname. An automatic prefix can be used. For the common IR buttons / events you can use the IR Setup wizard. Additional buttons can be added afterwards.

To change the settings double-click or press “Edit / Setup IR Code”.

### Setup Wizard:

1. Press “Wizard”
2. Press the button on your remote for the shown event e.g. “UP”
3. Press Skip if you do not want to use this Event.
4. Wizard close automatically after all buttons configured.





### Manual button learning:

1. Press “Learn new IR code” to enable learning mode
2. Press a button on your remote control you want to use and enter a keyname or select one from the pre-defined list.  
Set MCE, XBMC action and program assignment from dropdown menu.
3. Press “Learn new IR code” again to disable learning mode
4. You can edit or delete IR Code afterwards if necessary

Learn / Setup IR code

| IR Key name | MCE Emulation | XBMC / Kodi | Assigned Application (Apps Tab) |
|-------------|---------------|-------------|---------------------------------|
| IR_Right    | 6-Right       | 2-right     | - No assignment -               |

OnTop key action  ☐ SHIFT ☐ ALT ☐ CTRL ☐ WINDOWS

HID KEY action  ☐ SHIFT ☐ ALT ☐ CTRL

Exclusive assignments (only one of them allowed)

Mouse emulation

System Volume Control  <- Must be enabled in Expert settings !

IR Sendscript

OK Cancel  Clear mapping

### Mouse & MCE emulation & XBMC Setup

Select IR code in upper list and select the emulated key in dropdown field or via context menu.

**HID key:** Configure the Keyboard KEY used in HID mode

**Mouse:** Configure IR code exclusively to work as a mouse replacement

**OnTop:** Configure keystroke for OnTop window

**MCE:** Configure which IR code is used for MCE emulation.

**Kodi:** Configure XBMC action of selected IR code for JSON TCP.

*Note: If you use MCE emulation with Windows Vista or higher, the user context (e.g. Administrator privileges) of the YARD Software and the target application must be the same!*

### Attach IR code to applications and send scripts

Edit the IR code by DoubleClick or use “Edit / Setup IR Code”

Select application (see Apps Tab) or Sendscript and press OK.

### IR Wake up/ Start up Button

#### Learn a specific IR code to power on you system press

1. “Y: Learn Start IR command”. Press the button on your remote device.
2. Press and hold the button you want to use for 1 second
3. Press “Save YARD settings” to save this code to YARD2 EEPROM.

**To Reset Wake Up code, double click to the code below the button.**

#### Learn system Force Power off IR button

#### Learn a specific IR code to force power off you system press

1. “Y: Learn Force off IR button”. Press the button on your remote device.
2. Press and hold the button you want to use for 1 second

3. Press **“Save Y: YARD settings”** to save this code to YARD2 EEPROM.  
**To Reset Wake Up code, double click to the code below the button.**  
**!Warning – The system will be power off immediately!**

**For MCE / onTop emulation you have to select a target program:**

- Windows Media Center
- PowerDVD
- MediaPortal (Use Winlirc Plugin for MP instead! See YARD2 SW folder!)
- Kodi (Use **Kodi TCP control instead!**)

To test the emulation you can press “Test MCE” from Main menu to send the selected MCE code.

For MCE, you can also send the command to the top windows whatever it is. Also defined keys can be send to top window if no Media center is running

**Kodi JSON remote control**

If you use Kodi you should control it with JSON Interface.

If you use multiple profiles the JSON interface is not activated in Profile selection dialog. Please check the Profile workaround.

Alternative commands is to manage the events in different Kodi windows. e.g. you can use the same RC Button in different windows with a different action. I added some default entry. You can try it ☺

**VLC / Other**

You can control several Media Player with a socket based system.

VLC LUA: Enable the LUA interface in VLC on port 2345 (See 3.4)

MPC: Enable the http interface in the MPC seting. (See 3.5)

**Send only known IR codes (key mapping) to clients (WinLirc only):**

If selected only IR code which are in the list will be send. All other will be logged but ignored for controlling.

*This is recommended after you configured all IR buttons!*

**Repeat delay adjustment**

You can configure how much time must be between 2 similar IR events.

This can be configured seperatly for the first event and all following events.

Recommended settings: 1<sup>st</sup>: 350 – 2<sup>nd</sup>: 120

*(1<sup>st</sup> should be higher than the 2<sup>nd</sup>)*

(See expert Settings for more adjustments)

**MCE new target programs (For experts)**

You can add a new program to the target programs list:

1. Start the new program
2. Press “List windows”
3. Select your program in the list and note the “WindowClass”
4. Open “YARD\_Window\_map.ini” (Y.A.R.D. software folder) in an editor and add the program to the file. This must be done manually!
5. Restart Y.A.R.D. software

## 2.6 Apps tab

Configure application that can be used with YARD SW.

Select program and “Toggle” option:

‘X’: Usage disabled at the moment

‘I’: Can be used to start with IR-command

‘A’: Start application with Y.A.R.D.2, start delay 1 second for each SW

### *Send IR Script:*

Here you can configure the IR codes which will be sending when you attach a IR Code to a send script. It can contain 1..10 IR codes.

IR Send is still experimental and in work and does not work sometimes.

### *Kodi Use Mouse TopMost:*

On some systems the Taskbar is still visible when Kodi is started via YARD Software. The mouse will click to the Kodi windows to get it topmost.

You have to find the right time delay.

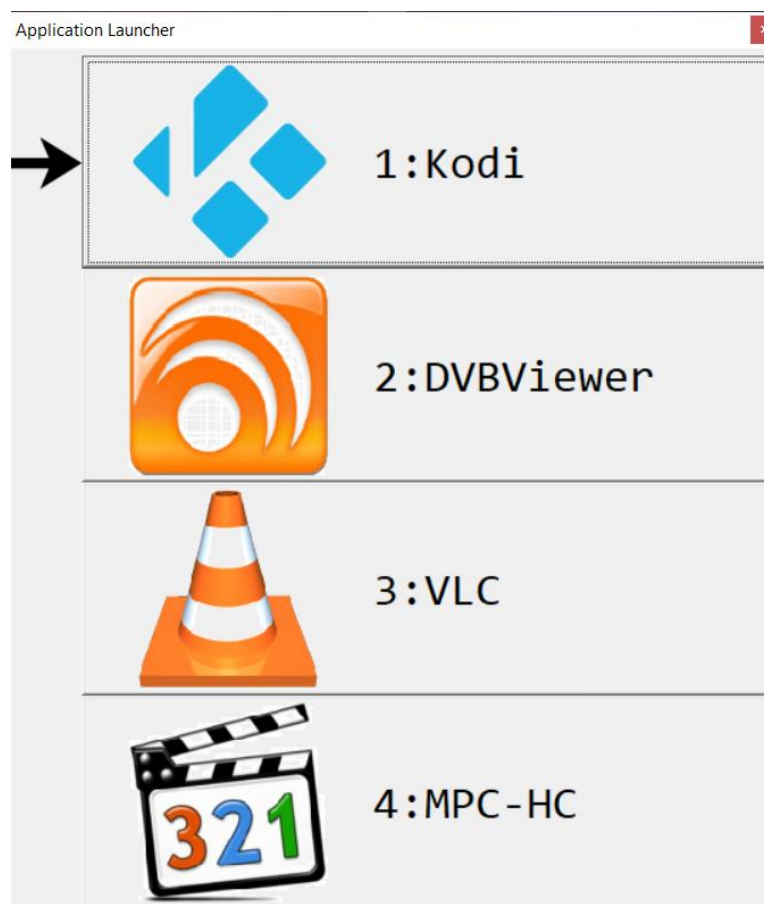
### YARD2 Application Launcher App ID 5:

You can use the internal application launcher by assigning ID 5 to an IR Code. You can then use up/down and OK to start the application.

Add your application to the list and Toggle AppL to add it to the launcher list.

‘I’: Can be used with application launcher

‘X’: Not used for application launcher



## 2.7 HID Mode

The Yard2 hardware can act as CDC (Serial) and HID Keyboard device simultaneously with firmware 2.1.0 and higher

Therefore you can assign a keyboard map to your IR codes.

These will be “pressed” when you use your remote control.

You can select

- 1: CDC mode only
- 2: HID mode only
- 3: CDC and HID mode (here you have to be careful)
- 4: HID NoSw -> CDC SW: Use HID before software is started

You can switch the mode by selecting the dropdown menu. This will change the mode directly.

The repeat delay can also be adjusted for HID in firmware, but only complete frames are used for delay calculation, e.g.

1. RC frame time is 120ms, delay is 100ms, all frames will be used
2. RC frame time is 90ms, delay is 100ms, only every 2<sup>nd</sup> frame will be used

The keymap is limited to 4 different remote controls with a maximum of  
60 keys without modifier (CTRL, Shift, ALT)  
45 keys with modifier (CTRL, Shift, ALT)

You can also wakeup the system from Suspend (S4) and Standby (S3) with HID only mode. This is experimental!

The screenshot shows a software window titled 'HID Keyboard mode'. It has several tabs: 'Kodi', 'HID Keyboard mode' (selected), 'MCE / onTop', and 'VLC / Other'. Below the tabs, there is a section for 'IR ID' with a dropdown menu and a text box. A note says: 'You can use HID mode with 4 different remote controls But the CMD ID of all used remotes must be different (Bytes 4-5)'. Below this, there are two spinners for 'H: Repeat delay - 1st - 2nd - Adjust' with values 250 and 100. To the right, there is a checkbox 'H: Use USB Wakeup (S3/S4) EXPERIMENTAL !' and a dropdown menu 'No modifier (=60 Key maps!)'. At the bottom, there is a 'Save "H:" HID IR mapping' button and a dropdown menu 'H: CDC / HID Mode' with 'HID (Keyboard) only' selected.

*Setup HID mode is currently only available with Windows Software.  
But The USB Device will work with any system as HID device (keyboard)*

### For easy HID Keyboard configuration:

Activate HID MAP and select a IR Code on the left side and press the keyboard button.

When finished click again on HID MAP

The screenshot shows a software window titled 'HID MAP'. It has a 'Learn new IR code' button and a 'Wizard' button. Below these, there is a button 'Edit / Setup IR code'. At the bottom, there are two buttons: 'Delete IR code' and 'Delete ALL'. On the right side, there is a button 'HID MAP' and a text label 'RIGHT'.

## 2.8 LCD (Only available in LCD Version)

### 2.8.1 LCD setup

Configure your LCD display.

Currently supported displays

CLCD: HD44780, KS0066/73,

GLCD: T6963c, KS0108 (only 128x64).

*Recommended are CLCD, because of the lower data rate*

**Y: Display Time and WakeUp while system is off**  
(Req. USB standby power) Self explaining ☺

**Y: Show own welcome message during start**

You can enter your own welcome message during start up

**Show own shutdown message**

Last LCD output during system shutdown.

**Y: LCD Testmode (Time, IR, USB Status)**

This is useful for debugging – currently only 4x16 / 4x20 displays are supported

If you enable, you can not write on the LCD yourself!!

If system is shutdown, the backlight is disabled. You can see the text on the LCD if you look carefully on the LCD. The text may be very dark.

**Clear LCD after YARD software start**

Clears the LCD directly after the Y.A.R.D. is successfully opened by the software.

**LCDHype Textmode only (KS0108 Controller)**

This option activate only the Textmode with the KS0108 Controller when used with LCDhype.

**Y: Rotary Encoder**

If you use a rotary encoder, you can configure your used type.

Some encoders send more than one impulse per turn.

Look at the datasheet of your encoder how many impulses/turn it sends. (1..4)

Switch direction left ← → right if necessary

### 2.7.2 LCD Test

On this page you can test your LCD – self explaining ☺

**Be sure Testmode is disabled!!**

You can also see the text and graphics that external programs, like LCDhype is sending to Y.A.R.D.2 SW

### 2.7.3 Lightsensor

Setup max and min value for automatic backlight adjustment with light sensor

Get current value and press “Minimum” or “Maximum” to setup the values.

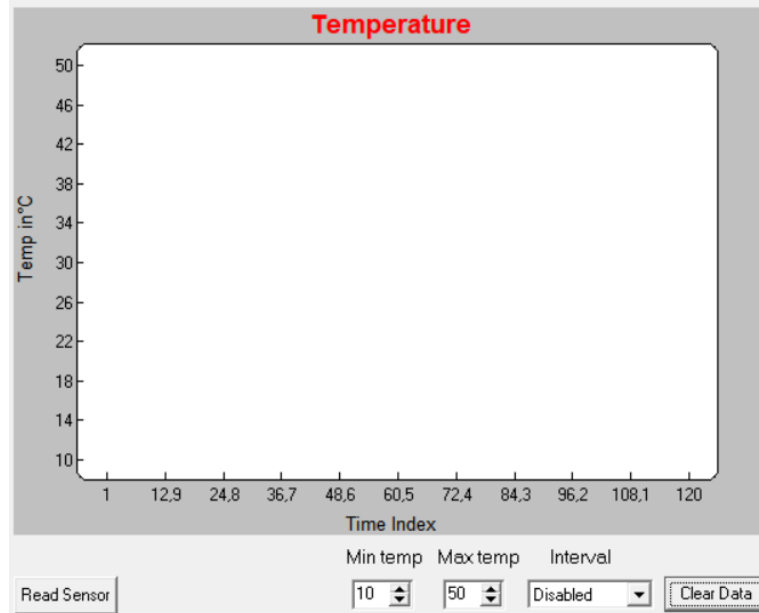
### LCD Backlight

Setup max and min value for automatic backlight adjustment with light Sensor

➔ Press “Save YARD settings” after configuration

## 2.9 Temp Tab

If you have a LM75A sensor attached you can Plot the values in this graph.



## 2.10 Log tab

Configure the Log option. If everything works well disable all.

“Log all events / messages / IR”: Log every message created by YARD2 SW

“Log all Remote keys”: Log only the IR commands

“Log all LCD output”: Log all LCD controls received from external LCD program, e.g. LCDHype

*Hint: Disable log if you do not need it!*



## **3 Application specific settings**

### **3.1 MCE application e.g. Windows Media Center (Vista / Win7)**

Configure MCE emulation and select e.g “Windows Media Center” as target.

Thats all ☺

⇒ **Note: MCE IDs are also used for other applications like VLC and MPC without using MCE emulation. This is only for key mapping !**  
**See Appendix 5 for details**

### **3.2 XBMC / Kodi**

XBMC / Kodi can be easily controlled via JSON TCP interface. With this interface you can use almost any remote control feature of XBMC.

Activate JSON TCP in XBMC: Settings → Services → Remote control →

“Allow programs on this system to control XBMC”

and

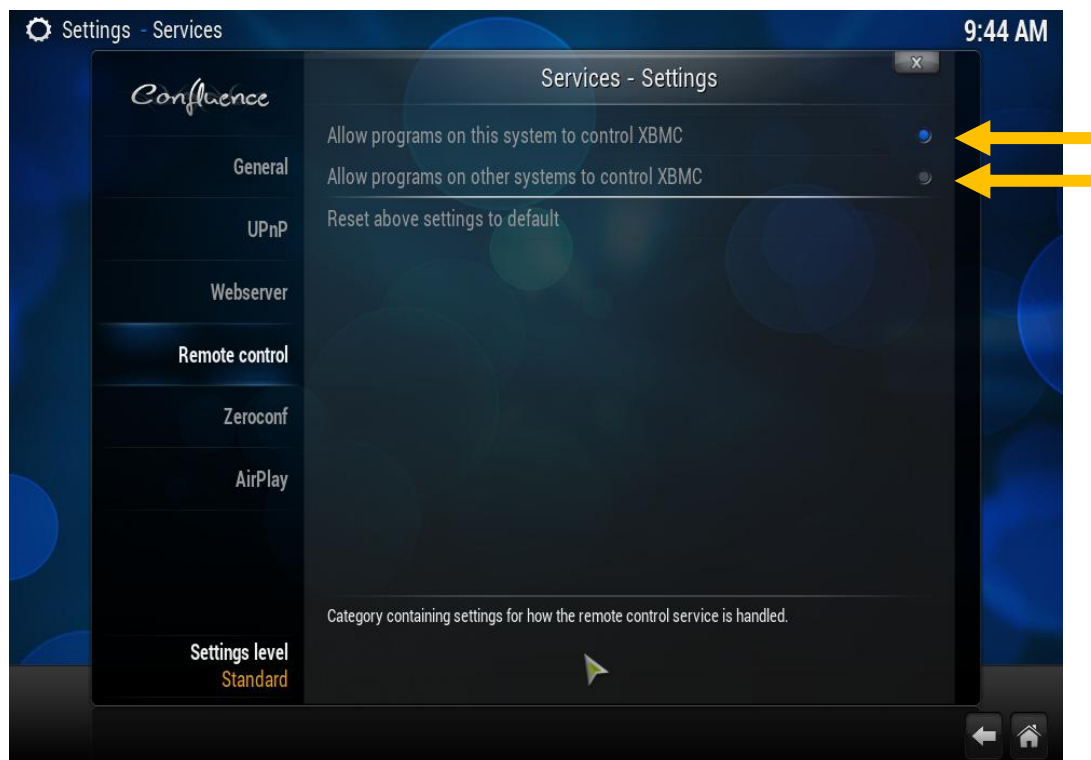
“Allow programs on other systems to control XBMC”

Depends on your skin, this can also be in another place.

(With Kodi 18+ the 2<sup>nd</sup> Option is not necessary)

Restart XBMC / Kodi.

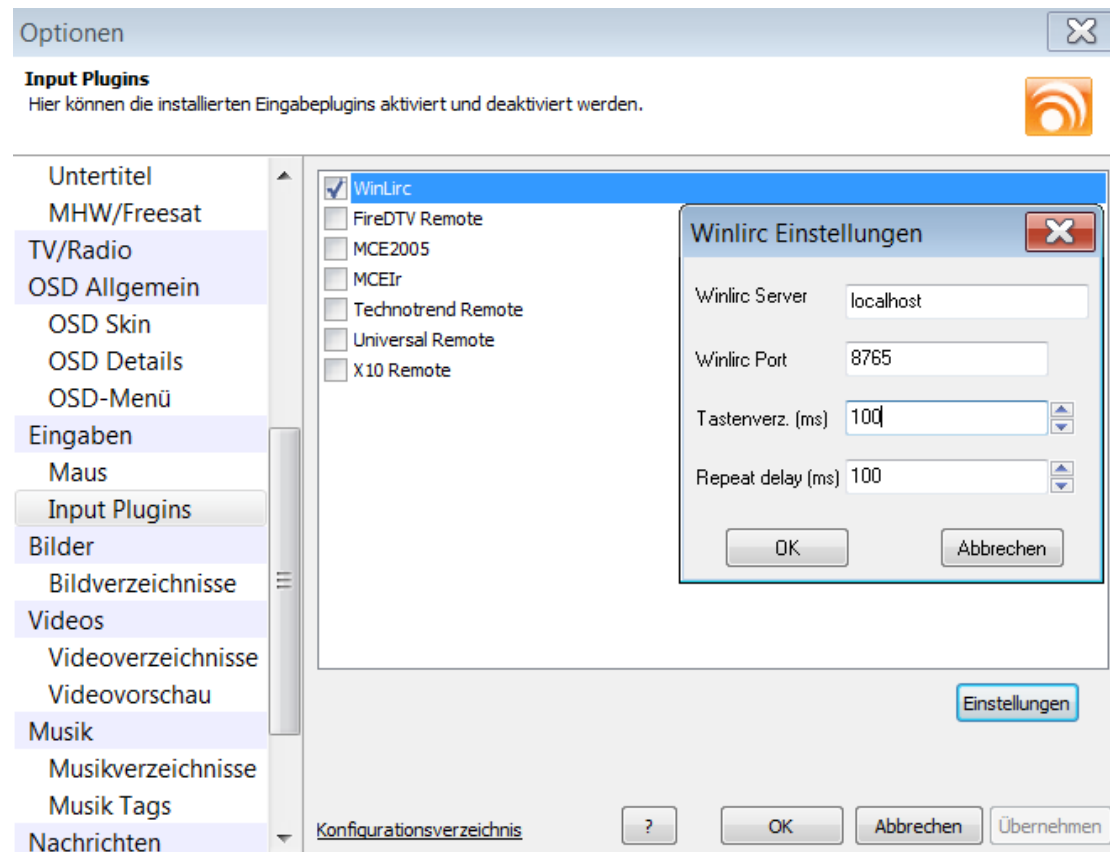
**Check also Firewall settings for YARD2 software and XBMC / Kodi !**



### 3.3 DVBViewer

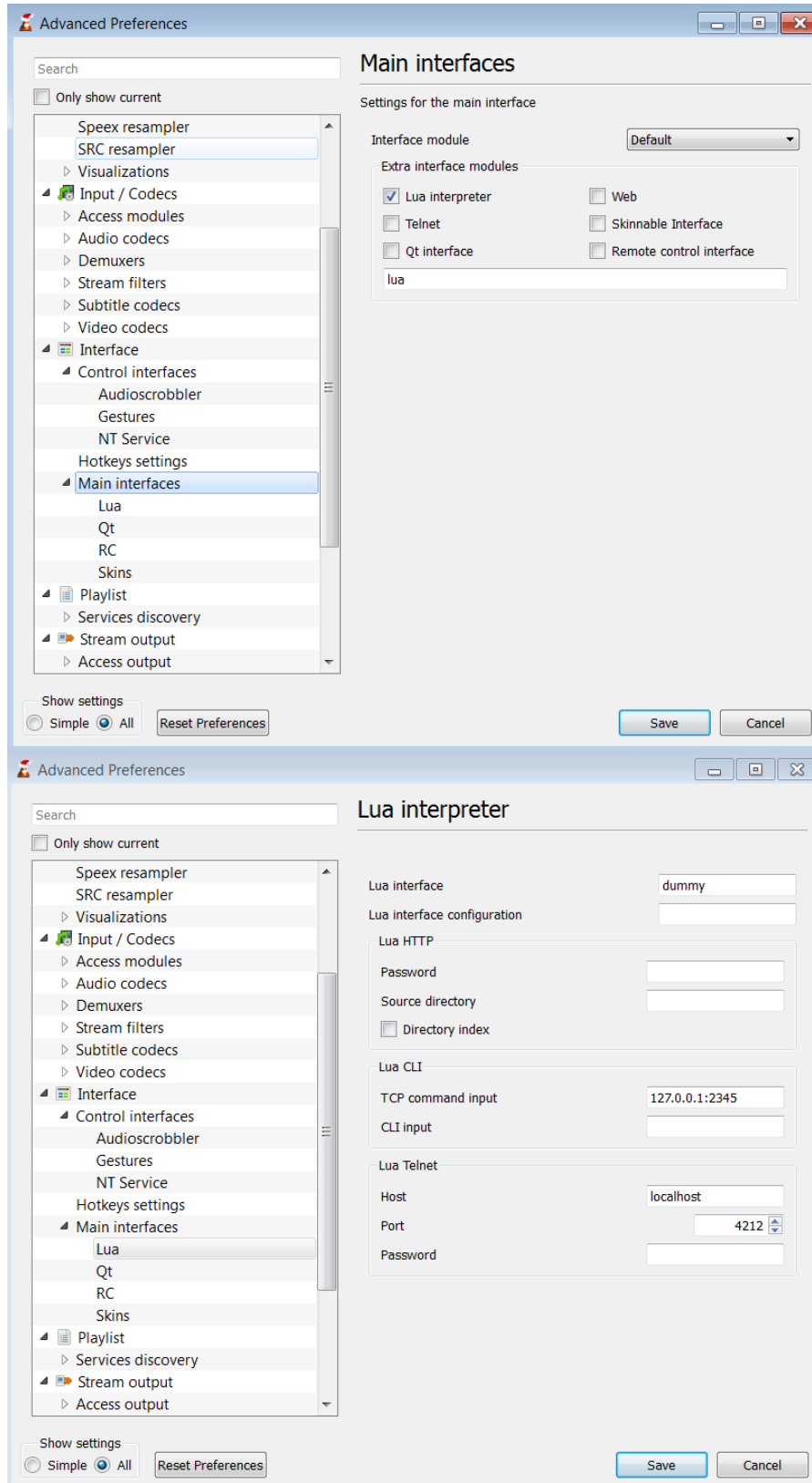
For DVBViewer use the WinLirc Plugin provided with DVBViewer

1. Enable Plugin: Settings → Input → Input Plugins → Winlirc
2. Set “Repeat delay” and “Tastenverz.” to 100 since this is already done in YARD2 Software (or lower if you setup less than 100 in YARD software)  
Hint: Use lower values if you specify lower values in YARD Software ☺
3. Configure events in Settings → Input → Learn mode



### 3.4 VLC (only few/main commands possible)

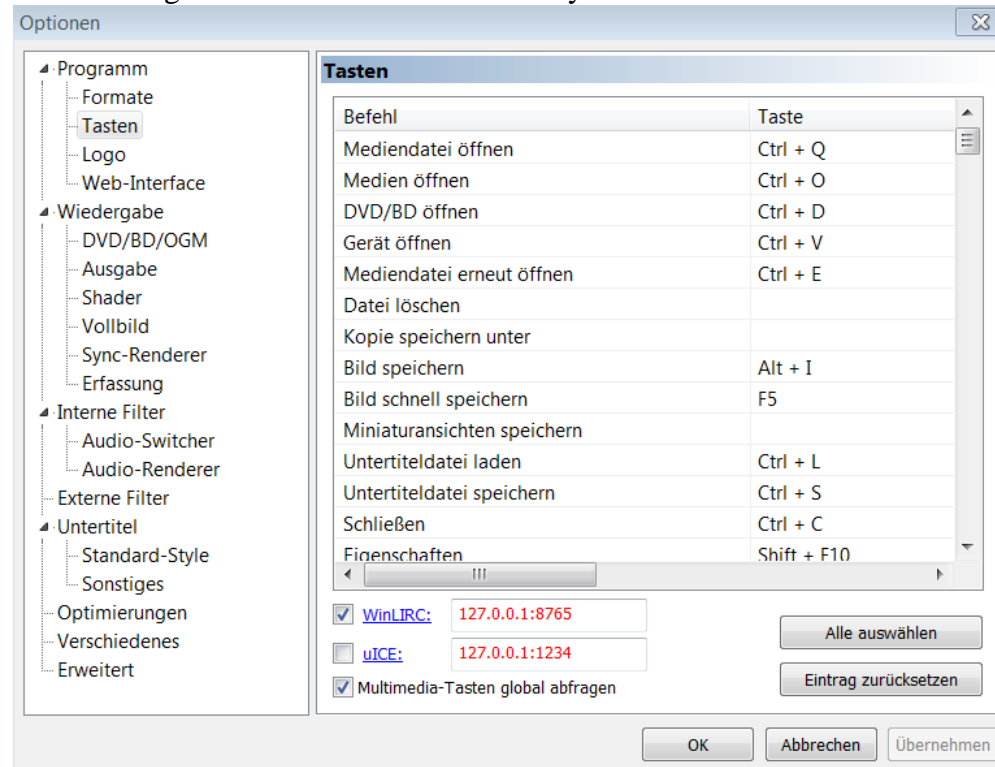
1. Show settings → all
2. Interfaces → Main interfaces → Lua Interpreter
3. Lua → Lua Cli → TCP command input → 127.0.0.1:2345  
Supported commands see Appendix 5.



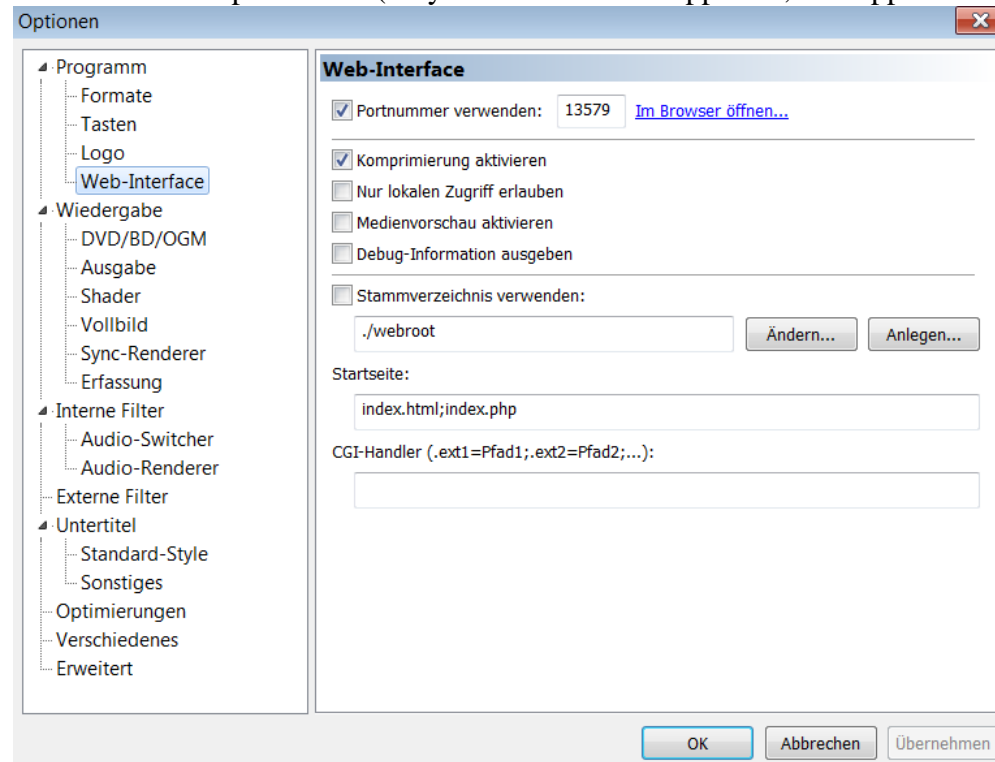
## 3.5 MPC-HC / MPC-BE

You can use setup MPC via Winlirc and http interface.

### 1. Assign Winlirc commands manually to the MPC command



### 2. Use the http interface (only a few CMD are supported, see Appendix 5)



### 3.6 MediaPortal

You can control MediaPortal in 2 ways:

1. You can use the WinLirc Plugin in this folder and put it into  
[MP]\plugins\process  
Configure it with MediaPortal Configuration Tool → Plugins  
**Recommended for MediaPortal 1.x!**
2. You can use IR Server Suite:  
<http://forum.team-mediaportal.com/threads/ir-server-suite-aka-irss-releases.75092/>  
Be sure that Y.A.R.D.2 SW is started before ISS !  
Do not use to start "Winlirc.exe" or "YARD2.exe"  
**Recommended for MediaPortal 2.x**

For automatic wakeup time programming use mySQL.

If you have login problems from YARD2 Software, add a new user in MySQL and setup it in VDR tab in YARD2 Software.

MySQL commands (MySQL server command line client):

```
CREATE USER 'yard'@'%' IDENTIFIED BY 'yard';  
GRANT ALL ON *.* TO 'yard'@'%';
```

### 3.7 Eventghost

Use the WinLirc interface of Eventghost for communication.

### 3.8 LCDHype

Install LCDhype (076) and copy folder “Controller” which contains the driver “YARDhype” from the software package folder “LCDhype” to the installation folder of LCDhype.

Optional:

For a faster startup of LCDhype, remove all other controller driver from “Controller” except “YARDhype” and “Preview”.

Also copy the “Plugins” folder to the installation folder of LCDhype .

You find information and some examples how to use the plugins inside the plugin folder.

If you use a KS0108 LCD update the LCDhype.exe with the “lcdhype\_0761\_install\_0760\_before.zip”.



## **4 Communications with Y.A.R.D.2 Software**

### **4.1 External command line Wake up “SetWakeup.exe”**

SetWakeup.exe is made for external scheduler. It has the same parameters as CmosTimer (Common RTC wake up program).

You can rename this program if needed. (e.g. for PVRScheduler)

Usage:

Setwakeup /offonly (Disable Timer)

Setwakeup /wakeup=Long date time format e.g. 31.12.2005 10:45:30

Setwakeup /wakeupononly=Long date time format e.g. 31.12.2005 10:45:30

Setwakeup yyyy mm dd hh mm - e.g. 2010 10 20 22 50

Examples:

Setwakeup /wakeup=31.12.2005 10:45:30

Setwakeup /wakeupononly=31.12.2005 10:45:30

Setwakeup 2010 10 20 22 50

### **4.2 External Wake up YARDdll.dll**

You can use YARDdll.dll to set wakeup time with your program.

Exported function:

YARD\_SET\_TIME(NewWU: TSystemTime)

### **4.3 External LCD program for Y.A.R.D.2 LCD**

At the moment only LCDhype fully supports Y.A.R.D.2 to show your info on LCD.

Use **LCDhype** driver (YARDhype) included in Y.A.R.D.2 software package and copy it to “[LCDhype]\controller” folder.

An **LCDSmartie** driver is available, but only for character LCDs.

**If you want to develop a driver for a LCD program, please contact me.**

### **4.4 WinLirc IR-Events:**

Y.A.R.D.2 uses WinLirc protocol for distributing IR-Events.

If you want to use the IR-Events, create a socket and connect to the configured IP (e.g. localhost) & Port (8765)

WinLirc format (each frame ends with Hex10 (0x10, \$10)):

[16Byte IR Code][blank][Repeat 00.FF][blank][Name][blank][YARD2USB] **[HEX10]**

➔ 0011223344556677 00 IR\_Button1 YARD2USB**[HEX10]**

If [Name] is not defined the 16Byte IR Code is repeated

➔ 0011223344556677 00 0011223344556677 YARD2USB**[HEX10]**

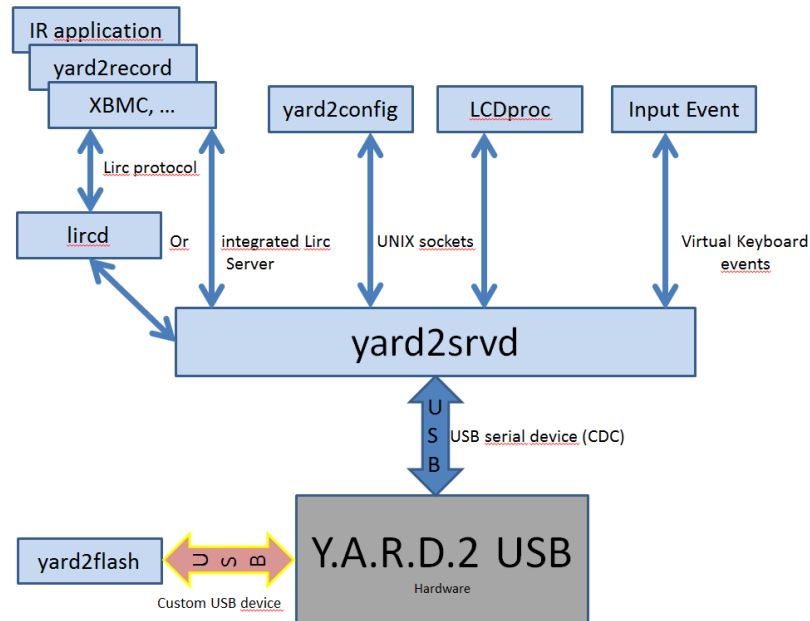
## Y.A.R.D. 2 USB Linux Software description

Linux Software is open source and under GPL licence!

Source: <https://www.assembla.com/code/yard2srvd/git/nodes>

Package: <https://launchpad.net/~yard2team/+archive/stable>

### Y.A.R.D.2 software structure:



The Y.A.R.D.2 daemon **yard2srvd** is used to communicate with other application and Y.A.R.D.2 hardware.

The default daemon mode via **yard2tools.cfg** is Input mode, which simulate a keyboard. With this virtual keyboard normally all application can operate if they accept keyboard commands.

For IR lirc applications a **lircd** daemon patch available or an integrated lirc compatible server implementation inside the **yard2srvd** daemon can be used.

Y.A.R.D.2 itself has no LCD program implemented. You need an external program like **LCDproc** which send the data via **yard2srvd** to the connected LCD.

### Important:

An udev rule is provided to start the daemon automatically:

```
/usr/bin/yard2srvd -d -c /etc/yard2/yard2tools.cfg
```

If you do not use udev for startup the **yard2srvd**, the startup script depends on your Linux distribution, you have to modify your init script to start **yard2srvd**.

For testing you can start **yard2srvd** with with detailed log:

```
sudo ./yard2srvd -l 5
```

**sudo** is necessary for the first time to create a **lircd** compatible socket in **/var/run/lirc/lircd** and the input event if you use the integrated lirc server or input events.

## Installation of yard2tools (2 possible ways):

### **1. PPA – package (Recommended for normal user):**

Installation from launchpad as debian package:

1. Add your user to group "dialout" (needed to open the serial port without sudo)  
`sudo usermod -a -G dialout [your username]`
2. Add Y.A.R.D.2 ppa to your system ppa  
`sudo add-apt-repository ppa:yard2team/stable`
3. Update database:  
`sudo apt-get update`
4. Install yard2tools  
`sudo apt-get install yard2tools`
5. Reboot

If you can not add repository, you can download the yard2tools package manually:

<https://launchpad.net/~yard2team/>

**With Ubuntu 15.04 the modemmanager can cause problems with YARD2.**

**If you do not need it, please remove it:**

`sudo apt-get purge modemmanager`

### **2. Source from git:**

1. get Y.A.R.D 2 linux software from  
`git clone git://git.assembla.com/yard2srvd.git yard2`
2. See also README for installation  
You need libusb-dev and libbsd-dev and automake to compile yard2.  
If not installed →  
`sudo apt install build-essential (if you have no gcc installed)`  
`sudo apt-get install libusb-dev`  
`sudo apt-get install libbsd-dev`  
`sudo apt-get install libbsd-dev:i386 (if you need for cross compiling)`  
`sudo apt-get install automake`
3. Run: `touch configure.ac aclocal.m4 configure Makefile.am Makefile.in`
3. Run: `./configure`
4. Run: `make`
5. Run: `sudo make install` if you want to copy the files to `/usr/local/bin ..`
6. Add your user to group "dialout" (needed to open the serial port without sudo)  
`usermod -a -G dialout username`
7. Use -daemon as argument to run as real daemon (Startup, done by udev rule)
8. If the service ist not started automatically  
Run: `sudo systemctl enable yard2`

**After installation use yard2record to create IR code event mapping!**

**See also → 4. yard2record**

## **Openelec / Libreelec installation** **(i386 32/64Bit / ARM6 32Bit)**

- SSH login required.

1. Get Openelec binaries from the YARD2 Software package
2. Copy LE/OE binaries (x86\_32/x86\_64/ARM6) to e.g, \\openelec\downloads\yard2
3. Connect to OE with a SSH client (e.g. putty) (Enable SSH if disabled)  
and go the directory /storage/downloads/yard2
4. Change install.sh to be executable:  
`chmod +x install.sh`
5. run install.sh  
`./install.sh`

( old manual way:

4. Create an folder /storage/yard2  
`mkdir /storage/yard2`
  5. Copy all files to this folder and make them executable (`chmod +x *`)  
`cd /storage/downloads/yard2`  
`cp * /storage/yard2`  
`cd /storage/yard2`  
`chmod +x *`
  6. Copy autorun.sh to “/storage/.config” and make it executable  
`cp autorun.sh /storage/.config`  
`chmod +x /storage/.config/autorun.sh`
- )

7. All configuration files must be in “/storage/yard2”  
Change you settings in /storage/yard2/yard2tools.cfg if necessary
8. Restart system and run yard2config to see if the daemon is started.  
`cd /storage/yard2`  
`./yard2config`  
Quit with “0”
9. Restart system and run yard2record -i /storage/yard2/yardirmap.txt  
See installation instruction above for yard2record and other programs.  
*If you just run yard2record the yardirmap.txt will be created in “/storage”.*  
*Copy the file to “/storage/yard2”*  
`cp /storage/yadirmap.txt /storage/yard2`
10. Restart system after yard2record to activate changes

### **Note:**

- yard2flash (Firmware update) is not supported on Openelec!
- LCD is not supported
- For Enter/OK use “KEY\_ENTER” = ID 28 (only if “input system” is used)

## **1. yard2srvd Y.A.R.D 2 Linux daemon**

yard2srvd is the main daemon which communicates with the Y.A.R.D.2 hardware. All communication will be done via this daemon.

Therefore other programs can send commands via Unix sockets to the daemon.

Available I/O sockets:

- /tmp/configserver: Used only for yard2config program!!!!
- /tmp/lcdserver: Used to communicate with LCD programs like lcdproc
- /tmp/yardsrv\_sock: Used for the lircd communication
- /var/run/lirc/lircd: Used for integrated lirc server; using the same socket name as lirc. External programs can connect to this socket to get IR events (same as lirc).

Commandline options:

- d, --daemon: Start in daemon mode.
- c <file> : Config file normally “/etc/yard2/yardtools.cfg”
- D <device>, --device=<device>:  
The tty device for yard2. Default: /dev/ttyYARD2  
or /dev/ttyACM0, checked in this order.
- I, --input: Use the Linux input system to deliver the key codes.
- i <file>, --irmap=<file>: The IR map filename (with path).
- L, --lirc: Use lircd server with yard2 patch.
- O, --ownlirc: Use own lirc implementation.
- J, --kodijson: Use kodi json remote control
- 1, --rdelay1: Set repeat delay 1 in ms. Default 250, accepted values 50..1000
- 2, --rdelay2: Set repeat delay 2 in ms. Default 100, accepted values 50..1000
- l <val>, --loglevel=<val>:  
Loglevel: 1:error, 2:warning, 3:info, 4:verbose, 5:debug
- s, --syslog: Use syslog for logging.
- h, --help: Help text.

Info: Options -I, -L and -O are mutual exclusive.

**The default udev rule use these parameters:**

yard2srvd -d -c /etc/yard2/yardtools.cfg

Change it if you want to change the udev rule, it is located in:

/lib/udev/rules.d/60-usb-yard2.rules

Normally change the option in the config file: /etc/yard2/yardtools.cfg

### **Hint:**

To see the output of yard2srvd if you use -s option use

“sudo tail -f /var/log/syslog“



## **2. yard2config:**

This is the main configuration program for the Y.A.R.D.2 hardware.  
yard2srvd must be started before.

You can configure the main settings of the Y.A.R.D.2 hardware e.g.

- IR Wakeup command and Force Off command
- LED settings
- LCD Settings
- Enter firmware update mode
- Set Time
- Reset

The setting description can be found at the Windows description.

LCD can be configured, but currently only a beta of LCDproc implementation for character LCDs is available.

## **3. yard2wakeup:**

yard2wakeup: [-C | -I | -S] [2] [3]

Commandline options:

- C: Read current wake up from Y.A.R.D.2
- I: New wake up time in time\_t
- S: New wake up time as string (dd.mm.yyyy MM:HH)
- [2]: reduction time in minutes
- [3]: -Poff: Shutdown system (need sudo)

Example:

```
yard2wakeup -S "20.12.2012 20:10" 10 = program 20.12.2012 20:00  
yard2wakeup -I 1046958562
```

It can also called directly with VDR -s option.

Y.A.R.D. will be programmed with the new time (or wakeup disabled)  
In this case the system will be shutdown if the time is in the future.

**For VDR an automatic wakeup script is available.**

This will program the next wakeup time automatically if you shutdown via VDR.

Wakeup script is located in:

- share/vdr/shutdown-hooks/S90.yard2-wakeup
- usr/share/vdr/shutdown-hooks/S90.yard2-wakeup

**VDR/yaVDR:** Disable other shutdown scripts in WEB front end by setting to "None"

**easyVDR:** Disable all other wakeup methods in  
"System-Einstellungen->Wakeup-Einst....->Methode kein "

**Important:**

**Enable Y.A.R.D.2 wake up by setting YARD2\_ENABLED="yes" in the file  
/etc/vdr/vdr-addon-yard2wakeup.conf**

## **4. yard2record:**

yard2record: [-i]

-i <file>: Optional: the IR map filename (with path).

If not specified (recommended) default filename is used

If you use a different filename, change it also in /etc/yard2/yard2tools.cfg

You have to create an IR map file with “Input mode” or “Own lirc Server” mode!

With this program you can create a remote control mapping config for the lirc server implementation and Input(x) in yard2srvd.

**After changing the key-ID map, you have to reboot to activate the changes!**

The default configuration file path is: home/[user]/yardirmap.txt"

**yard2tools.cfg use this file from path: /etc/yard2**

Copy the file to this location “sudo cp /home/[user]/yardirmap.txt /etc/yard2/”

or use “sudo yard2record -i /etc/yard2/yardirmap.txt”

File Format: ACSII

[IR CODE 16char]@[BUTTON NAME]@[Event ID]@

Example:

0701020304000000@KEY\_LEFT@106@

**Diffrent modes for yard2record are available (easiest way is 3):**

1: Enter Button Name and Event ID on your own

2: Enter Button Name → Event ID will be selected automatically

**3: Enter Event ID → Button name will be selected automatically**

For yaVDR, easyVDR and XBMC a Key table is shown for an easier handling.

Look at the keyboard / IR maping in yaVDR and easyVDR:

**See also Appendix 4 for all available Linux KEY-IDS**

yaVDR: <http://www.yavdr.org/documentation/0.5/de/ch02s03.html>

easyVDR: <http://wiki.easy-vdr.de/index.php?title=Bedienung>

### Common VDR / XBMC KEY-IDs

|                  |     |                |     |                  |     |
|------------------|-----|----------------|-----|------------------|-----|
| KEY_UP:          | 103 | KEY_GREEN:     | 399 | KEY_CHANNELDOWN: | 403 |
| KEY_DOWN:        | 108 | KEY_YELLOW:    | 400 | KEY_CHANNEL:     | 336 |
| KEY_LEFT:        | 105 | KEY_BLUE:      | 401 | KEY_VOLUMEUP:    | 115 |
| KEY_RIGHT:       | 106 | KEY_PLAY:      | 207 | KEY_VOLUMEDOWN:  | 114 |
| KEY_OK:          | 352 | KEY_PAUSE:     | 119 | KEY_MUTE:        | 113 |
| KEY_ENTER:       | 28  | KEY_STOP:      | 128 | KEY_FAVORITES:   | 365 |
| KEY_MENU:        | 139 | KEY_RECORD:    | 167 | KEY_SUBTITLE:    | 370 |
| KEY_ESC:         | 1   | KEY_SETUP:     | 141 | KEY_1:           | 2   |
| KEY_SPACE:       | 57  | KEY_TIME:      | 359 | KEY_2:           | 3   |
| KEY_BACKSPACE:   | 14  | KEY_MODE:      | 373 | KEY_3:           | 4   |
| KEY_FASTFORWARD: | 208 | KEY_SCREEN:    | 375 | KEY_4:           | 5   |
| KEY_REWIND:      | 168 | KEY_PROG1:     | 148 | KEY_5:           | 6   |
| KEY_PREVIOUS:    | 412 | KEY_PROG2:     | 149 | KEY_6:           | 7   |
| KEY_NEXT:        | 407 | KEY_PROG3:     | 202 | KEY_7:           | 8   |
| KEY_BACK:        | 158 | KEY_PROG4:     | 203 | KEY_8:           | 9   |
| KEY_POWER:       | 116 | KEY_PVR:       | 366 | KEY_9:           | 10  |
| KEY_EPG:         | 365 | KEY_AUDIO:     | 392 | KEY_0:           | 11  |
| KEY_FN:          | 464 | KEY_VIDEO:     | 393 | KEY_C:           | 46  |
| KEY_TEXT:        | 388 | KEY_IMAGES:    | 442 | KEY_I:           | 23  |
| KEY_RED:         | 398 | KEY_CHANNELUP: | 402 |                  |     |

Hint: 1. Some distributions use KEY\_OK instead of KEY\_ENTER.

Try KEY\_OK if KEY\_ENTER is not working

2. **Kodi** does not use KEY\_STOP. Use KEY\_X = 45 instead for STOP.
3. On system with X11 WindowManager (Ubuntu, KodiBuntu) KEY with IDs >255 does not work. If you want to use a KEY like KEY\_RED use lower ID instead and use Kodi Keymap Editor to assign the KEY manually: e.g. you can use KEY\_F13 = 183 to KEY\_F24 = 194

You can also use Kodi Keyboard Shourtcuts instead

[http://kodi.wiki/view/Keyboard\\_controls](http://kodi.wiki/view/Keyboard_controls)

<http://www.htpcbeginner.com/15-xbmc-keyboard-shortcuts/>

➔ See Ownlirc, too which can handle KEY\_ID > 255.

## **5. yard2flash:**

With this program you can update the Y.A.R.D.2 Firmware.

1. Start yard2config and select "U" to enter update mode  
Note: yard2config will close itself after this command!!
2. Run: sudo yard2flash --program [filename]
3. Programming takes some time ....
4. Reset is done automatically (in case of a problem run: sudo yard2flash --reset)
5. Wait about 20 seconds for reassigning USB device
6. If you use udev rule, yard2srvd will be shutdown and restart automatically.  
Otherwise yard2srvd daemon waits 5 minutes after entering Update mode and tries to reconnect. If you need longer than 5 minutes you have restart yard2srvd.

## **6. lirc test:**

To test the lirc IR events you can use lirc test.

This will connect to the lirc socket and print out the lirc string if remote control button is pressed. You can use this with lircd and the yard2srvd integrated lirc server implementation.

## **7. yard2lcdtest:**

For Y.A.R.D.2 LCD version a small LCD test utility is provided.

Start yard2lcdtest and enter commands:

C: Clear LCD

G[line]: Goto line x start with 0 (G0 = set cursor to line 0)

W[Text]: Write text to LCD (e.g. WHalloWorld)

Only supports are Linux distributions with full compiler support, e.g. Openelec is not supported!

## **8. Event/Input server (default for udev & yard2tools.cfg):**

yard2srvd can simulate an keyboard event through the Linux event handler.

**This is the default mode in yard2tools.cfg.**

To activate it, use “-I” commandline option

Hint:

The remote control config file is not compatible with the lirc.conf file.

To create a new one use “yard2record” (see above)

The keyboard ID of the events can be found in the \_input\_h\_KeybIDs.txt.

## **9. Integrated lirc server implementation (ownLIRC):**

yard2srvd has a basic lirc compatible server (beta) implemented (without IRSEND!).

To activate it, use “-O” commandline option

**Important:**

Do not start original lircd! It is not necessary if you are using the integrated lirc server in yard2srvd.

Hint:

The remote control config file is not compatible with the lirc.conf file.

To create a new one use “yard2record” (see above)

See also chapter: 13 → Kodi/XBMC with integrated ownLIRC sever

ownLirc needs sudo permission if started manually

## **10. Use original lircd**

Y.A.R.D.2 is now official part of lircd distribution.

Just select yard2 for installation.

See lircd documentation for installation.

With lircd 0.9.4 the YARD2 driver is part of yard2tools package.

You have to compile it yourself and install it. See Readme of yard2 lirc module.

With lircd 0.9.5 the YARD2 driver must be compiled by yourself. Source is included in the folder /etc/yard2.

---

### **Old version 0.9.1b:**

1. Get lirc 0.9.1b from sourceforge:

```
git clone -b release_0.9.1b --single-branch git://git.code.sf.net/p/lirc/git lirc_091b
```

2. Change to folder lirc\_091b and apply patch to Lirc 0.9.1b

(included in yard2srvd directory yard2\_lircd\_091b\_patch.txt)

```
patch -p1 < yard2_lircd_091b_patch.txt
```

3. lirc need some additional tools to compile. If not installed → sudo apt-get install

- libtool-1.3.3

- automake-1.4

- autoconf-2.13 (min. Version)

- man2html

4. Copy additional files (included in yard2srvd directory):

```
copy \daemons and \remotes to lirc root directory "[lirc]\"
```

5. run lirc autogen

```
./autogen.sh
```

6. run lirc configure

```
./configure --with-driver=yard2
```

7. run

```
make
```

8. run

```
make install
```

9. Start LIRC

```
sudo daemons/lircd -n -H yard2
```



## **11. Use Kodi JSON TCP remote control**

Yard2srvd can use JSON TCP for remote controlling Kodi.  
Setup the Remote control ID with yard2record and option “4”.

To activate it, use “-J” commandline option.

Also you have to enable JSON support in Kodi:

Activate JSON TCP in XBMC: Settings → Services → Remote control →  
“Allow programs on this system to control XBMC”

and

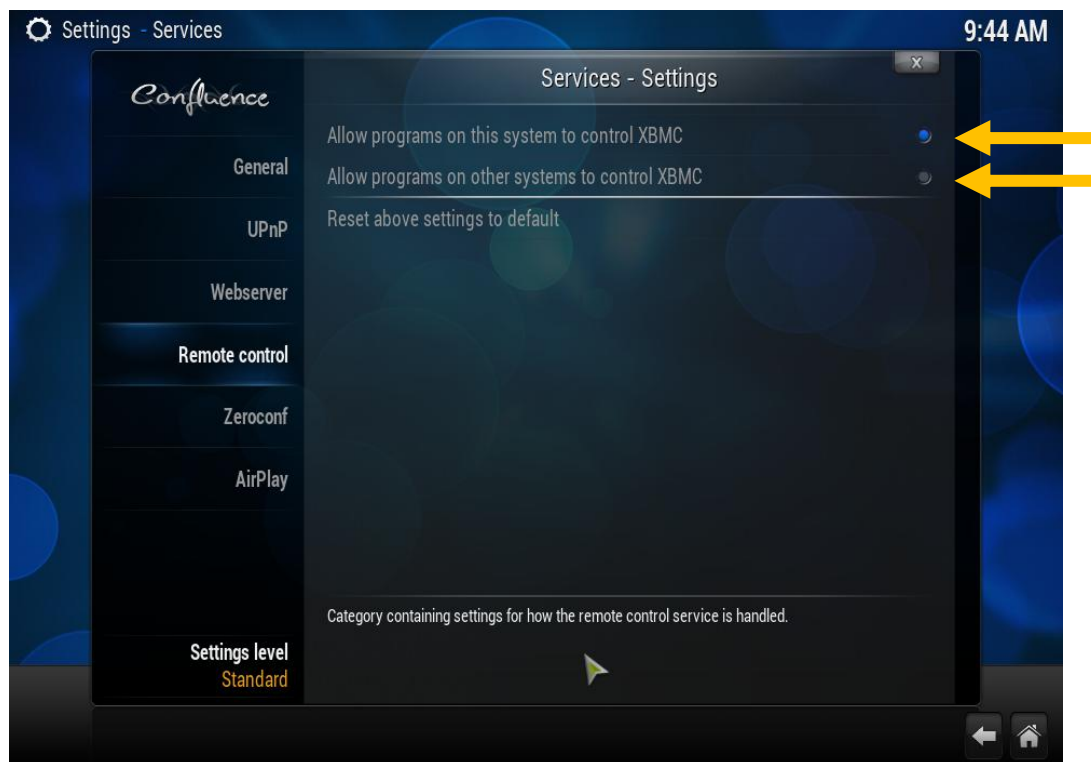
“Allow programs on other systems to control XBMC”

Depends on your skin, this can also be in another place.

(With Kodi 18+ the 2<sup>nd</sup> Option is not necessary)

Hint: All CMD ID see “Appendix 6”

Restart XBMC / Kodi.



## **12. Usage of LCDproc:**

LCDproc support YARD2 LCD directly in current version ☺

1. Get LCDproc from GIT  
(git clone <https://github.com/lcdproc/lcdproc.git> lcdproc) not merged now  
git clone <https://github.com/YARD2/lcdproc.git> lcdproc
2. run: sh autogen.sh
3. run: ./configure --enable-drivers=yard2LCD
4. run: make
5. run: make install (optional)
6. Change settings of your LCD in LCDd.conf:  
sudo nano /usr/local/etc/LCDd.conf  
[yard2LCD]  
Size=20x4  
# Size of the LCD is done via driver. No need to change the default here  
# If rendering rate is too high it can cause overflow  
# Change FrameInterval=1000000 = 1Hz above

Change Driver path in LCDd.conf to  
DriverPath=[where your driver is]  
Driver=yard2LCD

Start LCDd (-f run in foreground for testing)  
sudo ./server/LCDd -f -d "/usr/local/lib/lcdproc/yard2LCD"  
or search for the "yard2LCD.so" on your system

Unfortunately the driver path is a bit tricky.  
If you get a message that the driver is not found try to change the DriverPath  
in LCDd.conf

## **13. Kodi/XBMC with integrated ownLIRC sever**

If you want to use lirc for Kodi/XBMC remote control, you can use the integrated lirc-server in yard2srvd and do not need to use original lircd.

### **Kodibuntu:**

1. After installation change yard2tools.cfg and enable ownlirc-Server  

```
sudo nano /etc/yard2/yard2tools.cfg
```

Change the line input and ownlirc and disable input with a “;” and remove “,”  
from ownlirc  
;input = 1  
ownlirc = 1

---

Nr2 no longer needed with software package 1.2.5, for older version use Nr2

2. Change the lirc configuration to use the right socket  
KodiBuntu/XBMCBuntu:  
Edit file XBMC.session or Kodi.session in  

```
sudo nano /usr/share/xdg/xsessions/[xbmc/kodi].desktop
```

and change line  
Exec=[xbmc/kodi]-standalone  
to  
Exec=[xbmc/kodi]-standalone --lircdev /var/run/lirc/lircd

Other installations:

Be sure to start Kodi/XBMC with the parameter “--lircdev /var/run/lirc/lircd

---

3. Reboot
4. Follow the normal lirc usage procedure from XBMC/Kodi  
Use Lircmap.xml and remote.xml.  
Lircmap.xml location:       ~/[.xbmx or .kodi]/userdata  
remote.xml location:       ~/[.xbmc or .kodi]/userdata/keymaps

Samples is provided in the Kodi/XBMC folder in the software package which works if you use yard2record.

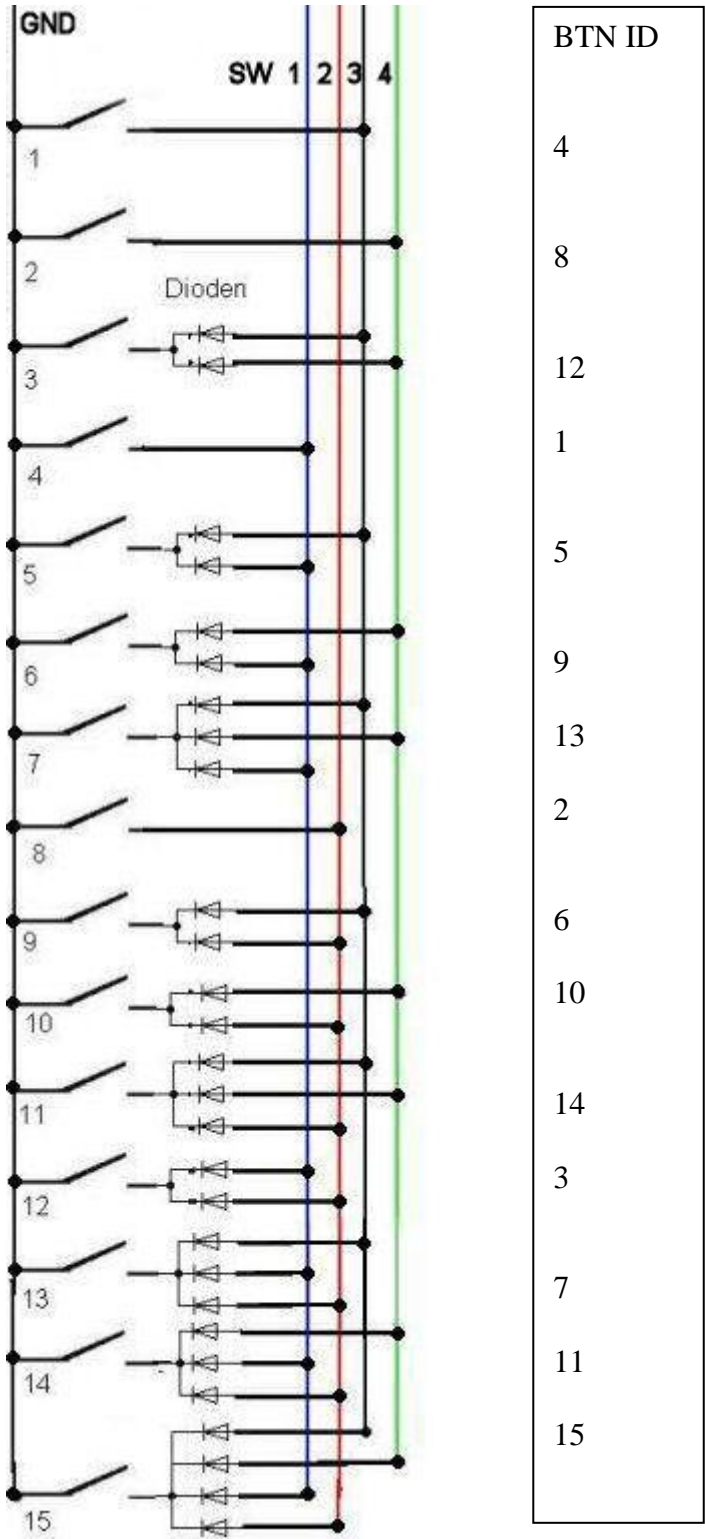
**LibreElec / OpenElec:**

Json interface is strongly recommended as remote control protocol!

1. After installation change yard2tools.cfg and enable ownlirc-Server  
    `nano /storage/yard2/yard2tools.cfg`  
    Change the line input and ownlirc and disable input with a “;” and remove “,”  
    from ownlirc  
    ;`input = 1`  
    `ownlirc = 1`
2. Change autostart.sh  
    `nano /storage/.config/autostart.sh`  
  
    `killall eventlircd`  
    `killall lircd`  
    `/storage/yard2/yard2srvd -d -c /storage/yard2/yard2tools.cfg`  
     `#(no longer needed) ln -s /var/run/lirc/lircd /run/lirc/lircd)`
3. Run yard2record and map your IR keys
4. Reboot
5. Follow the normal lirc usage procedure from XBMC/Kodi  
    Use Lircmap.xml and remotexml.  
    Lircmap.xml location:        `/storage/[.xbmx or .kodi]/userdata`  
    remotexml location:        `/storage/[.xbmc or .kodi]/userdata/keymaps`  
  
    Samples is provided in the Kodi/XBMC folder in the software package which  
    works if you use yard2record.

# Appendix 1

1. Example for a diode matrix for JSW to provide up to 15 switches.  
The Button number are counted binary



## **Appendix 2 – +5VSB (Standby)**

Y.A.R.D.2 needs +5VSB (5V Stand by) voltage from the system.  
This is provided normally from the USB port.

On some mainboards you have to enable this via mainboard Jumper or Bios settings.  
Please look into your mainboard / system manual if 5VSB is not provided via USB or how to enable it.

Known mainboard settings:

|          |        |   |
|----------|--------|---|
| Asus     | P8Q77  | Enable in Bios:<br>“legacy USB” and Wakeup via Keyboard   |
|          | P8H77  | Enable in Bios:<br>“legacy USB” and Wakeup via Keyboard   |
|          | H97M-E | Enable in Bios:<br>“Charging USB devices in Power State S5”<br>Warning:<br>This will not power the YARD2 after a power loss!<br>➔ Enable also “Restore Power loss” ➔ “Power on” |
| Gigabyte | B85M   | Disable ErP function in Energy settings   |

Currently only a very few MB was not able to provide 5VSB from USB.  
Normally this is working with newer mainboards without problems.

## **Appendix 3 – FAQ**

1. **I attach Y.A.R.D.2 to the USB bus, a device is recognized but no COM port (Windows) or ttyACM (Linux) device is installed.**

Solution:

Probably the Y.A.R.D.2 is in Bootloader mode.

- Windows: Check device manager if a custom Microchip device is installed
- Linux: run `lsusb` and check if a device with `idVendor=04d8`, `idProduct=ff0b` or `f544` is installed
- Check if you set the force Update jumper, if set remove it
- Cancel FW update via Software  
(Windows: Cancel update; Linux `yard2flash --reset`)
- Check for a solder bridge around the force firmware update jumper

2. **I installed everything, Software is running, but I cannot receive any IR signal**

Solution:

1. Probably you installed the IR Receiver in the wrong direction  
**TSOP 31238:** The round side of the IR Receiver must be directed on the outside of the Y.A.R.D.2
2. **TSOP 32238:** The round side of the IR Receiver must be directed on the inside of the Y.A.R.D.2
3. You use a not supported IR protocol  
Try any other remote control you have at home or use a Logitech Harmony with “Asrock – 330HT” profile



## Appendix 4 – Linux input.h KEY-Ids

|                |    |                      |     |                  |     |
|----------------|----|----------------------|-----|------------------|-----|
| KEY_RESERVED   | 0  | KEY_KP9              | 73  | KEY_DELETEFILE   | 146 |
| KEY_ESC        | 1  | KEY_KPMINUS          | 74  | KEY_XFER         | 147 |
| KEY_1          | 2  | KEY_KP4              | 75  | KEY_PROG1        | 148 |
| KEY_2          | 3  | KEY_KP5              | 76  | KEY_PROG2        | 149 |
| KEY_3          | 4  | KEY_KP6              | 77  | KEY_WWW          | 150 |
| KEY_4          | 5  | KEY_KPPLUS           | 78  | KEY_MSDOS        | 151 |
| KEY_5          | 6  | KEY_KP1              | 79  | KEY_COFFEE       | 152 |
| KEY_6          | 7  | KEY_KP2              | 80  | KEY_SCREENLOCK   | 152 |
| KEY_7          | 8  | KEY_KP3              | 81  | KEY_DIRECTION    | 153 |
| KEY_8          | 9  | KEY_KP0              | 82  | KEY_CYCLEWINDOWS | 154 |
| KEY_9          | 10 | KEY_KPDOT            | 83  | KEY_MAIL         | 155 |
| KEY_0          | 11 | KEY_ZENKAKUHANKAKU   | 85  | KEY_BOOKMARKS    | 156 |
| KEY_MINUS      | 12 | KEY_102ND            | 86  | KEY_COMPUTER     | 157 |
| KEY_EQUAL      | 13 | KEY_F11              | 87  | KEY_BACK         | 158 |
| KEY_BACKSPACE  | 14 | KEY_F12              | 88  | KEY_FORWARD      | 159 |
| KEY_TAB        | 15 | KEY_RO               | 89  | KEY_CLOSECD      | 160 |
| KEY_Q          | 16 | KEY_KATAKANA         | 90  | KEY_EJECTCD      | 161 |
| KEY_W          | 17 | KEY_HIRAGANA         | 91  | KEY_EJECTCLOSECD | 162 |
| KEY_E          | 18 | KEY_HENKAN           | 92  | KEY_NEXTSONG     | 163 |
| KEY_R          | 19 | KEY_KATAKANAHIRAGANA | 93  | KEY_PLAYPAUSE    | 164 |
| KEY_T          | 20 | KEY_MUHENKAN         | 94  | KEY_PREVIOUSSONG | 165 |
| KEY_Y          | 21 | KEY_KPJPCOMMA        | 95  | KEY_STOPCD       | 166 |
| KEY_U          | 22 | KEY_KPENTER          | 96  | KEY_RECORD       | 167 |
| KEY_I          | 23 | KEY_RIGHTCTRL        | 97  | KEY_REWIND       | 168 |
| KEY_O          | 24 | KEY_KPSLASH          | 98  | KEY_PHONE        | 169 |
| KEY_P          | 25 | KEY_SYSRQ            | 99  | KEY_ISO          | 170 |
| KEY_LEFTBRACE  | 26 | KEY_RIGHTALT         | 100 | KEY_CONFIG       | 171 |
| KEY_RIGHTBRACE | 27 | KEY_LINEFEED         | 101 | KEY_HOMEPAGE     | 172 |
| KEY_ENTER      | 28 | KEY_HOME             | 102 | KEY_REFRESH      | 173 |
| KEY_LEFTCTRL   | 29 | KEY_UP               | 103 | KEY_EXIT         | 174 |
| KEY_A          | 30 | KEY_PAGEUP           | 104 | KEY_MOVE         | 175 |
| KEY_S          | 31 | KEY_LEFT             | 105 | KEY_EDIT         | 176 |
| KEY_D          | 32 | KEY_RIGHT            | 106 | KEY_SCROLLUP     | 177 |
| KEY_F          | 33 | KEY_END              | 107 | KEY_SCROLLDOWN   | 178 |
| KEY_G          | 34 | KEY_DOWN             | 108 | KEY_KPLEFTPAREN  | 179 |
| KEY_H          | 35 | KEY_PAGEDOWN         | 109 | KEY_KPRIGHTPAREN | 180 |
| KEY_J          | 36 | KEY_INSERT           | 110 | KEY_NEW          | 181 |
| KEY_K          | 37 | KEY_DELETE           | 111 | KEY_REDO         | 182 |
| KEY_L          | 38 | KEY_MACRO            | 112 | KEY_F13          | 183 |
| KEY_SEMICOLON  | 39 | KEY_MUTE             | 113 | KEY_F14          | 184 |
| KEY_APOSTROPHE | 40 | KEY_VOLUMEDOWN       | 114 | KEY_F15          | 185 |
| KEY_GRAVE      | 41 | KEY_VOLUMEUP         | 115 | KEY_F16          | 186 |
| KEY_LEFTSHIFT  | 42 | KEY_POWER            | 116 | KEY_F17          | 187 |
| KEY_BACKSLASH  | 43 | KEY_KPEQUAL          | 117 | KEY_F18          | 188 |
| KEY_Z          | 44 | KEY_KPPLUSMINUS      | 118 | KEY_F19          | 189 |
| KEY_X          | 45 | KEY_PAUSE            | 119 | KEY_F20          | 190 |
| KEY_C          | 46 | KEY_SCALE            | 120 | KEY_F21          | 191 |
| KEY_V          | 47 | KEY_KPCOMMA          | 121 | KEY_F22          | 192 |
| KEY_B          | 48 | KEY_HANGEUL          | 122 | KEY_F23          | 193 |
| KEY_N          | 49 | KEY_HANGUEL          | 122 | KEY_F24          | 194 |
| KEY_M          | 50 | KEY_HANJA            | 123 | KEY_PLAYCD       | 200 |
| KEY_COMMA      | 51 | KEY_YEN              | 124 | KEY_PAUSECD      | 201 |
| KEY_DOT        | 52 | KEY_LEFTMETA         | 125 | KEY_PROG3        | 202 |
| KEY_SLASH      | 53 | KEY_RIGHTMETA        | 126 | KEY_PROG4        | 203 |
| KEY_RIGHTSHIFT | 54 | KEY_COMPOSE          | 127 | KEY_DASHBOARD    | 204 |
| KEY_KPASTERISK | 55 | KEY_STOP             | 128 | KEY_SUSPEND      | 205 |
| KEY_LEFTALT    | 56 | KEY_AGAIN            | 129 | KEY_CLOSE        | 206 |
| KEY_SPACE      | 57 | KEY_PROPS            | 130 | KEY_PLAY         | 207 |
| KEY_CAPSLOCK   | 58 | KEY_UNDO             | 131 | KEY_FASTFORWARD  | 208 |
| KEY_F1         | 59 | KEY_FRONT            | 132 | KEY_BASSBOOST    | 209 |
| KEY_F2         | 60 | KEY_COPY             | 133 | KEY_PRINT        | 210 |
| KEY_F3         | 61 | KEY_OPEN             | 134 | KEY_HP           | 211 |
| KEY_F4         | 62 | KEY_PASTE            | 135 | KEY_CAMERA       | 212 |
| KEY_F5         | 63 | KEY_FIND             | 136 | KEY_SOUND        | 213 |
| KEY_F6         | 64 | KEY_CUT              | 137 | KEY_QUESTION     | 214 |
| KEY_F7         | 65 | KEY_HELP             | 138 | KEY_EMAIL        | 215 |
| KEY_F8         | 66 | KEY_MENU             | 139 | KEY_CHAT         | 216 |
| KEY_F9         | 67 | KEY_CALC             | 140 | KEY_SEARCH       | 217 |
| KEY_F10        | 68 | KEY_SETUP            | 141 | KEY_CONNECT      | 218 |
| KEY_NUMLOCK    | 69 | KEY_SLEEP            | 142 | KEY_FINANCE      | 219 |
| KEY_SCROLLLOCK | 70 | KEY_WAKEUP           | 143 | KEY_SPORT        | 220 |
| KEY_KP7        | 71 | KEY_FILE             | 144 | KEY_SHOP         | 221 |
| KEY_KP8        | 72 | KEY_SENDFILE         | 145 | KEY_ALTERASE     | 222 |

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|                      |     |                    |     |                     |     |
|----------------------|-----|--------------------|-----|---------------------|-----|
| KEY_CANCEL           | 223 | KEY_RADIO          | 385 | KEY_DEL_EOS         | 449 |
| KEY_BRIGHTNESSDOWN   | 224 | KEY_TUNER          | 386 | KEY_INS_LINE        | 450 |
| KEY_BRIGHTNESSUP     | 225 | KEY_PLAYER         | 387 | KEY_DEL_LINE        | 451 |
| KEY_MEDIA            | 226 | KEY_TEXT           | 388 | KEY_FN              | 464 |
| KEY_SWITCHVIDEOMODE  | 227 | KEY_DVD            | 389 | KEY_FN_ESC          | 465 |
| KEY_KBDILLUMTOGGLE   | 228 | KEY_AUX            | 390 | KEY_FN_F1           | 466 |
| KEY_KBDILLUMDOWN     | 229 | KEY_MP3            | 391 | KEY_FN_F2           | 467 |
| KEY_KBDILLUMUP       | 230 | KEY_AUDIO          | 392 | KEY_FN_F3           | 468 |
| KEY_SEND             | 231 | KEY_VIDEO          | 393 | KEY_FN_F4           | 469 |
| KEY_REPLY            | 232 | KEY_DIRECTORY      | 394 | KEY_FN_F5           | 470 |
| KEY_FORWARDMAIL      | 233 | KEY_LIST           | 395 | KEY_FN_F6           | 471 |
| KEY_SAVE             | 234 | KEY_MEMO           | 396 | KEY_FN_F7           | 472 |
| KEY_DOCUMENTS        | 235 | KEY_CALENDAR       | 397 | KEY_FN_F8           | 473 |
| KEY_BATTERY          | 236 | KEY_RED            | 398 | KEY_FN_F9           | 474 |
| KEY_BLUETOOTH        | 237 | KEY_GREEN          | 399 | KEY_FN_F10          | 475 |
| KEY_WLAN             | 238 | KEY_YELLOW         | 400 | KEY_FN_F11          | 476 |
| KEY_UWB              | 239 | KEY_BLUE           | 401 | KEY_FN_F12          | 477 |
| KEY_UNKNOWN          | 240 | KEY_CHANNELUP      | 402 | KEY_FN_1            | 478 |
| KEY_VIDEO_NEXT       | 241 | KEY_CHANNELDOWN    | 403 | KEY_FN_2            | 479 |
| KEY_VIDEO_PREV       | 242 | KEY_FIRST          | 404 | KEY_FN_D            | 480 |
| KEY_BRIGHTNESS_CYCLE | 243 | KEY_LAST           | 405 | KEY_FN_E            | 481 |
| KEY_BRIGHTNESS_ZERO  | 244 | KEY_AB             | 406 | KEY_FN_F            | 482 |
| KEY_DISPLAY_OFF      | 245 | KEY_NEXT           | 407 | KEY_FN_S            | 483 |
| KEY_WIMAX            | 246 | KEY_RESTART        | 408 | KEY_FN_B            | 484 |
| KEY_RFKILL           | 247 | KEY_SLOW           | 409 | KEY_BRL_DOT1        | 497 |
| KEY_MICMUTE          | 248 | KEY_SHUFFLE        | 410 | KEY_BRL_DOT2        | 498 |
| KEY_OK               | 352 | KEY_BREAK          | 411 | KEY_BRL_DOT3        | 499 |
| KEY_SELECT           | 353 | KEY_PREVIOUS       | 412 | KEY_BRL_DOT4        | 500 |
| KEY_GOTO             | 354 | KEY_DIGITS         | 413 | KEY_BRL_DOT5        | 501 |
| KEY_CLEAR            | 355 | KEY_TEEN           | 414 | KEY_BRL_DOT6        | 502 |
| KEY_POWER2           | 356 | KEY_TWEN           | 415 | KEY_BRL_DOT7        | 503 |
| KEY_OPTION           | 357 | KEY_VIDEOPHONE     | 416 | KEY_BRL_DOT8        | 504 |
| KEY_INFO             | 358 | KEY_GAMES          | 417 | KEY_BRL_DOT9        | 505 |
| KEY_TIME             | 359 | KEY_ZOOMIN         | 418 | KEY_BRL_DOT10       | 506 |
| KEY_VENDOR           | 360 | KEY_ZOOMOUT        | 419 | KEY_NUMERIC_0       | 512 |
| KEY_ARCHIVE          | 361 | KEY_ZOOMRESET      | 420 | KEY_NUMERIC_1       | 513 |
| KEY_PROGRAM          | 362 | KEY_WORDPROCESSOR  | 421 | KEY_NUMERIC_2       | 514 |
| KEY_CHANNEL          | 363 | KEY_EDITOR         | 422 | KEY_NUMERIC_3       | 515 |
| KEY_FAVORITES        | 364 | KEY_SPREADSHEET    | 423 | KEY_NUMERIC_4       | 516 |
| KEY_EPG              | 365 | KEY_GRAPHICSEDITOR | 424 | KEY_NUMERIC_5       | 517 |
| KEY_PVR              | 366 | KEY_PRESENTATION   | 425 | KEY_NUMERIC_6       | 518 |
| KEY_MHP              | 367 | KEY_DATABASE       | 426 | KEY_NUMERIC_7       | 519 |
| KEY_LANGUAGE         | 368 | KEY_NEWS           | 427 | KEY_NUMERIC_8       | 520 |
| KEY_TITLE            | 369 | KEY_VOICEMAIL      | 428 | KEY_NUMERIC_9       | 521 |
| KEY_SUBTITLE         | 370 | KEY_ADDRESSBOOK    | 429 | KEY_NUMERIC_STAR    | 522 |
| KEY_ANGLE            | 371 | KEY_MESSENGER      | 430 | KEY_NUMERIC_POUND   | 523 |
| KEY_ZOOM             | 372 | KEY_DISPLAYTOGGLE  | 431 | KEY_CAMERA_FOCUS    | 528 |
| KEY_MODE             | 373 | KEY_SPELLCHECK     | 432 | KEY_WPS_BUTTON      | 529 |
| KEY_KEYBOARD         | 374 | KEY_LOGOFF         | 433 | KEY_TOUCHPAD_TOGGLE | 530 |
| KEY_SCREEN           | 375 | KEY_DOLLAR         | 434 | KEY_TOUCHPAD_ON     | 531 |
| KEY_PC               | 376 | KEY_EURO           | 435 | KEY_TOUCHPAD_OFF    | 532 |
| KEY_TV               | 377 | KEY_FRAMEBACK      | 436 | KEY_CAMERA_ZOOMIN   | 533 |
| KEY_TV2              | 378 | KEY_FRAMEFORWARD   | 437 | KEY_CAMERA_ZOOMOUT  | 534 |
| KEY_VCR              | 379 | KEY_CONTEXT_MENU   | 438 | KEY_CAMERA_UP       | 535 |
| KEY_VCR2             | 380 | KEY_MEDIA_REPEAT   | 439 | KEY_CAMERA_DOWN     | 536 |
| KEY_SAT              | 381 | KEY_10CHANNELSUP   | 440 | KEY_CAMERA_LEFT     | 537 |
| KEY_SAT2             | 382 | KEY_10CHANNELSDOWN | 441 | KEY_CAMERA_RIGHT    | 538 |
| KEY_CD               | 383 | KEY_IMAGES         | 442 |                     |     |
| KEY_TAPE             | 384 | KEY_DEL_EOL        | 448 |                     |     |

## **Appendix 5 – Windows MCE ID usage**

| ID | MCE description      | MCE KEYBcmd<br>WMC, NextPVR | PowerDVD   | Total<br>Media | VLC<br>via Lua | MPC<br>via http |  |
|----|----------------------|-----------------------------|------------|----------------|----------------|-----------------|--|
| 1  | Back                 | Backspace                   | <          | <              |                |                 |  |
| 2  | Select               | Enter                       | <          | <              | X              | X               |  |
| 3  | UP                   | Up                          | <          | <              | X              | X               |  |
| 4  | Down                 | Down                        | <          | <              | X              | X               |  |
| 5  | Left                 | Left                        | <          | <              | X              | X               |  |
| 6  | Right                | Right                       | <          | <              | X              | X               |  |
| 7  | Display context menu | CTRL-D                      |            | <              |                | DVD-Title       |  |
| 8  | Not used             |                             |            |                |                | Menu-Exit       |  |
| 9  | Toggle FullScreen    | ALT-Space                   | Z          | Z              | X              | X               |  |
| 10 | Channel +            | PGUP                        | <          |                |                |                 |  |
| 11 | Channel -            | PGDown                      | <          |                |                |                 |  |
| 12 | My TV                | CTRL-T                      |            |                |                |                 |  |
| 13 | My Music             | CTRL-M                      |            |                |                |                 |  |
| 14 | My Videos            | CTRL-E                      |            |                |                |                 |  |
| 15 | My Pictures          | CTRL-I                      |            |                |                |                 |  |
| 16 | TV Guide             | CTRL-G                      |            |                |                |                 |  |
| 17 | TV Record            | CTRL-R                      |            |                |                |                 |  |
| 18 | TV Details           | CTRL-D                      |            | <              |                |                 |  |
| 19 | DVD Menu             | CTRL-M                      | L          |                | X              | X               |  |
| 20 | Recorded TV          | CTRL-O                      |            |                |                |                 |  |
| 21 | DVD Audio            | CTRL-SHIFT-A                |            |                | X              | X               |  |
| 22 | DVD Subtitle         | CTRL-U                      | U          | S              | X              | X               |  |
| 23 | Pause                | CTRL-P                      | Space      | Space          | X              | X               |  |
| 24 | Play                 | CTRL-SHIFT-P                | Space      | Space          | X              | X               |  |
| 25 | Play Pause           |                             | Space      | Space          | X              |                 |  |
| 26 | Stop                 | CTRL-SHIFT-S                | S          | O              | X              | X               |  |
| 27 | Replay               | CTRL-B                      | CTRL-Left  | PGUP           | X              | X               |  |
| 28 | Skip next            | CTRL-F                      | CTRL-Right | PGDown         | X              | X               |  |
| 29 | Rewind               | CTRL-SHIFT-B                | B          | R              | ID 56          | ID 56           |  |
| 30 | Fast Forward         | CTRL-SHIFT-F                | F          | F              | ID 57          | ID 57           |  |
| 31 | Mute                 | F8                          | Q          | Q              | X              | X               |  |
| 32 | Volume +             | F9                          | -          | Shift-Up       | X              | X               |  |
| 33 | Volume -             | F10                         | +          | Shift-Down     | X              | X               |  |
| 34 | Start WMC            | ALT-WIN-Enter               |            |                |                |                 |  |
| 35 | First item           | Home                        |            |                |                |                 |  |
| 36 | Last item            | End                         |            |                |                |                 |  |
| 37 | Radio                | CTRL-A                      |            |                |                |                 |  |
| 38 | Live TV              | CTRL-T                      |            |                |                |                 |  |
| 39 | Close                | ALT-F4                      | <          | CTRL-X         | X              | X               |  |
| 40 | Key 0                | ALT-0                       |            | 0              |                |                 |  |
| 41 | Key 1                | ALT-1                       |            | 1              |                |                 |  |
| 42 | Key 2                | ALT-2                       |            | 2              |                |                 |  |
| 43 | Key 3                | ALT-3                       |            | 3              |                |                 |  |
| 44 | Key 4                | ALT-4                       |            | 4              |                |                 |  |
| 45 | Key 5                | ALT-5                       |            | 5              |                |                 |  |
| 46 | Key 6                | ALT-6                       |            | 6              |                |                 |  |
| 47 | Key 7                | ALT-7                       |            | 7              |                |                 |  |
| 48 | Key 8                | ALT-8                       |            | 8              |                |                 |  |
| 49 | Key 9                | ALT-9                       |            | 9              |                |                 |  |
| 50 | Clear (ESC)          | ESC                         |            |                |                |                 |  |
| 51 | #                    | #                           |            |                |                |                 |  |
| 52 | *                    | *                           |            |                |                |                 |  |
| 53 | Jump short +         |                             |            |                | X              | X               |  |
| 54 | Jump short -         |                             |            |                | X              | X               |  |
| 55 | Jump medium +        |                             |            |                | X              | X               |  |
| 56 | Jump medium -        |                             |            |                | X              | X               |  |
| 57 | Jump large +         |                             |            |                | X              | X               |  |
| 58 | Jump large -         |                             |            |                | X              | X               |  |

## Appendix 6 – Kodi Json action IDs

[http://kodi.wiki/view/Action\\_IDs](http://kodi.wiki/view/Action_IDs)

(Kodi Json Action description)

List of Ids used in yard2srvd:

|                      |       |                    |        |                       |        |                  |       |
|----------------------|-------|--------------------|--------|-----------------------|--------|------------------|-------|
| noop                 | = 0   | zoomlevel4         | = 65   | codecinfor            | = 130  | swipeleft        | = 195 |
| left                 | = 1   | zoomlevel5         | = 66   | nextletter            | = 131  | swiperight       | = 196 |
| right                | = 2   | zoomlevel6         | = 67   | prevletter            | = 132  | swipeup          | = 197 |
| up                   | = 3   | zoomlevel7         | = 68   | increaserating        | = 133  | swipedown        | = 198 |
| down                 | = 4   | zoomlevel8         | = 69   | decreaserating        | = 134  | error            | = 199 |
| select               | = 5   | zoomlevel9         | = 70   | nextcalibration       | = 135  | noop             | = 200 |
| previousmenu         | = 6   | mplayerosd         | = 71,  | resetcalibration      | = 136  | Home             | = 500 |
| pause                | = 7   | osd                | = 72   | analogmove            | = 137  | Exit             | = 501 |
| play                 | = 8   | osdleft            | = 73   | rotate                | = 138  | PVR-Guide        | = 502 |
| playpause            | = 9   | osdrigh            | = 74   | rotateccw             | = 139, | MyTV             | = 503 |
| stop                 | = 10  | osdup              | = 75   | verticalshiftup       | = 140  | MyVideos         | = 504 |
| info                 | = 11  | osddown            | = 76   | verticalshiftdown     | = 141  | MyMusic          | = 505 |
| red                  | = 12  | osdselect          | = 77   | reloadkeymaps         | = 142  | MyPictures       | = 506 |
| green                | = 13, | osdvalueplus       | = 78   | filter                | = 143  | MyRadio          | = 507 |
| yellow               | = 14  | osdvalueminus      | = 79   | filterclear           | = 144  | ShutdownMenu     | = 508 |
| blue                 | = 15  | rename             | = 80   | filtersms2            | = 145  | PVR Manager      | = 600 |
| close                | = 16  | delete             | = 81   | filtersms3            | = 146  | (Addon shutdown) |       |
| fastforward          | = 17  | copy               | = 82   | filtersms4            | = 147  |                  |       |
| rewind               | = 18  | move               | = 83   | filtersms5            | = 148  |                  |       |
| playlist             | = 19  | parentdir          | = 84   | filtersms6            | = 149  |                  |       |
| skipnext             | = 20  | parentfolder       | = 85   | filtersms7            | = 150  |                  |       |
| skipprevious         | = 21  | leftclick          | = 86   | filtersms8            | = 151  |                  |       |
| aspectratio          | = 22  | rightclick         | = 87   | filtersms9            | = 152  |                  |       |
| volumeup             | = 23  | middleclick        | = 88   | jumpsms2              | = 153  |                  |       |
| volumedown           | = 24, | doubleclick        | = 89   | jumpsms3              | = 154  |                  |       |
| mute                 | = 25  | wheelup            | = 90   | jumpsms4              | = 155  |                  |       |
| channelup            | = 26  | wheeldown          | = 91   | jumpsms5              | = 156  |                  |       |
| channeldown          | = 27  | mousedrag          | = 92   | jumpsms6              | = 157  |                  |       |
| previouschannelgroup | = 28  | mousemove          | = 93,  | jumpsms7              | = 158, |                  |       |
| nextchannelgroup     | = 29  | cursorleft         | = 94   | jumpsms8              | = 159  |                  |       |
| fullscreen           | = 30  | cursorright        | = 95   | jumpsms9              | = 160  |                  |       |
| togglefullscreen     | = 31  | enter              | = 96   | guiprofile            | = 161  |                  |       |
| stepforward          | = 32  | back               | = 97   | increasepar           | = 162  |                  |       |
| stepback             | = 33  | pageup             | = 98   | decreasepar           | = 163  |                  |       |
| bigstepforward       | = 34  | pagedown           | = 99   | volampup              | = 164  |                  |       |
| bigstepback          | = 35  | firstpage          | = 100  | volampdown            | = 165  |                  |       |
| analogfastforward    | = 36  | lastpage           | = 101  | nextresolution        | = 166  |                  |       |
| analogrewind         | = 37  | moveitemup         | = 102  | audiotoggledigital    | = 167  |                  |       |
| analogseekforward    | = 38  | moveitemdown       | = 103  | smallstepback         | = 168  |                  |       |
| analogseekback       | = 39  | backspace          | = 104  | togglewatched         | = 169  |                  |       |
| nextpicture          | = 40  | scrollup           | = 105  | increasevisrating     | = 170  |                  |       |
| previouspicture      | = 41, | scrolldown         | = 106  | decreasevisrating     | = 171  |                  |       |
| showsubtitles        | = 42  | subtitledelayminus | = 107  | playerdebug           | = 172  |                  |       |
| nextsubtitle         | = 43  | subtitledelay      | = 108  | record                | = 173  |                  |       |
| audionextlanguage    | = 44  | subtitledelayplus  | = 109  | playpvr               | = 174  |                  |       |
| showtime             | = 45  | subtitleshiftup    | = 110  | playpvrradio          | = 175  |                  |       |
| showvideomenu        | = 46  | subtitleshiftdown  | = 111, | playpvr tv            | = 176  |                  |       |
| nextscene            | = 47  | subtitlesalign     | = 112  | stereomode            | = 177  |                  |       |
| previousscene        | = 48  | showpreset         | = 113  | nextstereomode        | = 178  |                  |       |
| number0              | = 49  | presetlist         | = 114  | previousstereomode    | = 179  |                  |       |
| number1              | = 50  | nextpreset         | = 115  | togglestereomode      | = 180  |                  |       |
| number2              | = 51  | previouspreset     | = 116  | stereomodetomono      | = 181  |                  |       |
| number3              | = 52  | lockpreset         | = 117  | volumeamplification   | = 182  |                  |       |
| number4              | = 53  | randompreset       | = 118  | createbookmark        | = 183  |                  |       |
| number5              | = 54  | audiodelayminus    | = 119  | createepisodebookmark | = 184  |                  |       |
| number6              | = 55  | audiodelay         | = 120, | settingsreset         | = 185  |                  |       |
| number7              | = 56  | audiodelayplus     | = 121  | settingslevelchange   | = 186  |                  |       |
| number8              | = 57  | hidesubmenu        | = 122  | togglecommskip        | = 187  |                  |       |
| number9              | = 58  | screenshot         | = 123  | showtimerrule         | = 188  |                  |       |
| zoomout              | = 59  | contextmenu        | = 124  | longclick             | = 189  |                  |       |
| zoomin               | = 60  | queue              | = 125  | tap                   | = 190  |                  |       |
| zoomnormal           | = 61, | scanitem           | = 126  | longpress             | = 191  |                  |       |
| zoomlevel1           | = 62  | shift              | = 127  | pangesture            | = 192  |                  |       |
| zoomlevel2           | = 63  | symbols            | = 128  | zoomgesture           | = 193  |                  |       |
| zoomlevel3           | = 64  | highlight          | = 129  | rotategesture         | = 194  |                  |       |

(Shutdownmenu is working  
with Kodi 18 and higher)

## Appendix 7 – Raspberry WakeUp

To use Raspberry Pi Wakeup you have to use the GPIO Pins.  
Check your Pin layout (this one is for RasPi 3)

1.

The 5V power must be taken from Pin 2!

See: **2. Select +5V Standby – WARNING read carefully**

2.

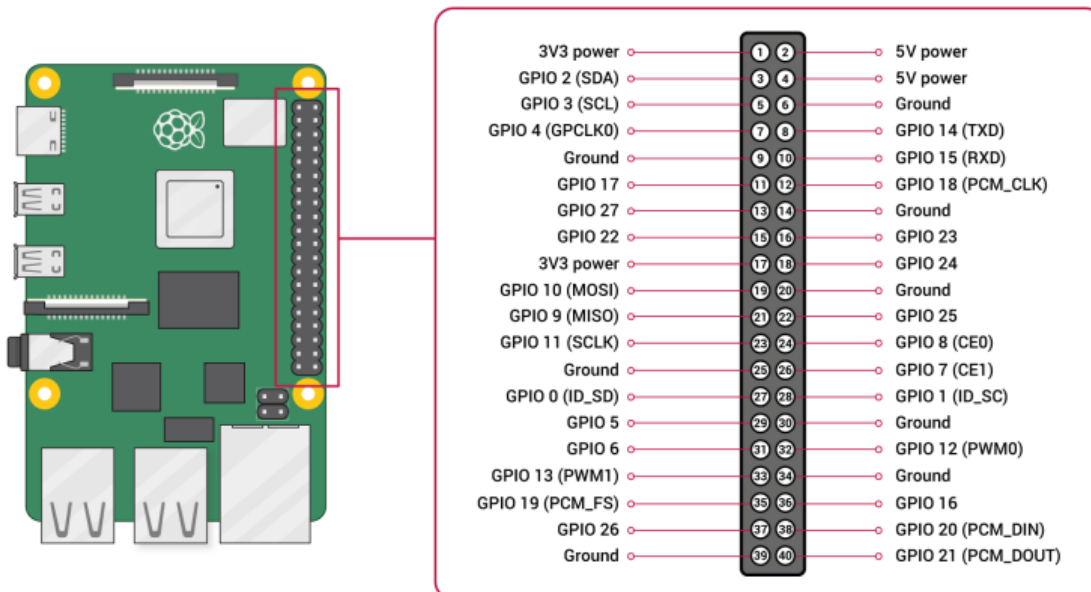
The start command will be done via GPIO pin 5 and 6

Connect the power button switch cable from Y.A.R.D.2 to Pin 5 and 6.

You also have to check the direction of the cable.

See: **3. Connect Power switch cable**

Raspberry 2/3 Pinout Check if you use another device !



For Kodi automatic wakeup you can use the PVR Manager:

<https://github.com/b-jesch/service.pvr.manager>

Install it according the Readme.

For LibreElec you have to change the path in the PVR.manager shutdown script:

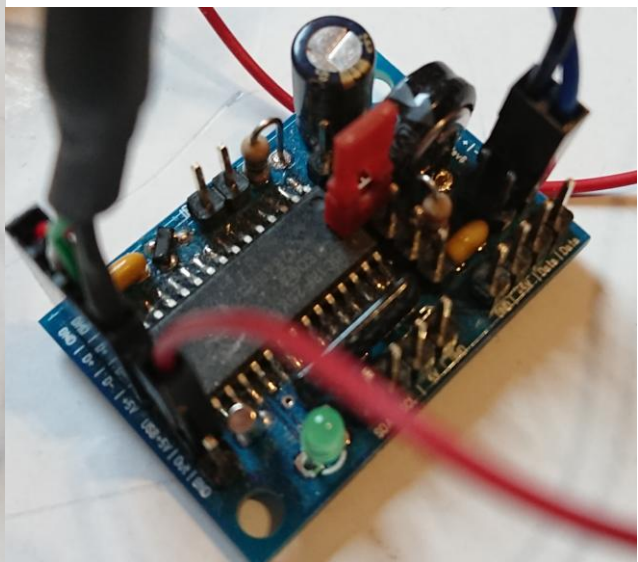
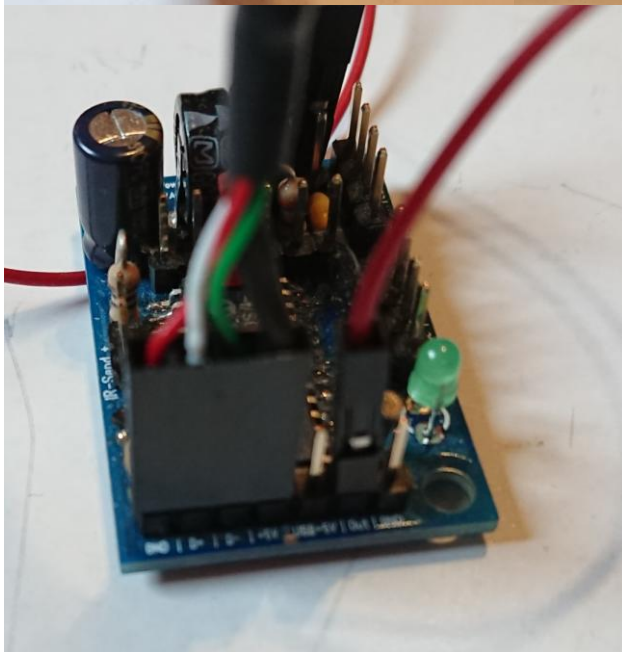
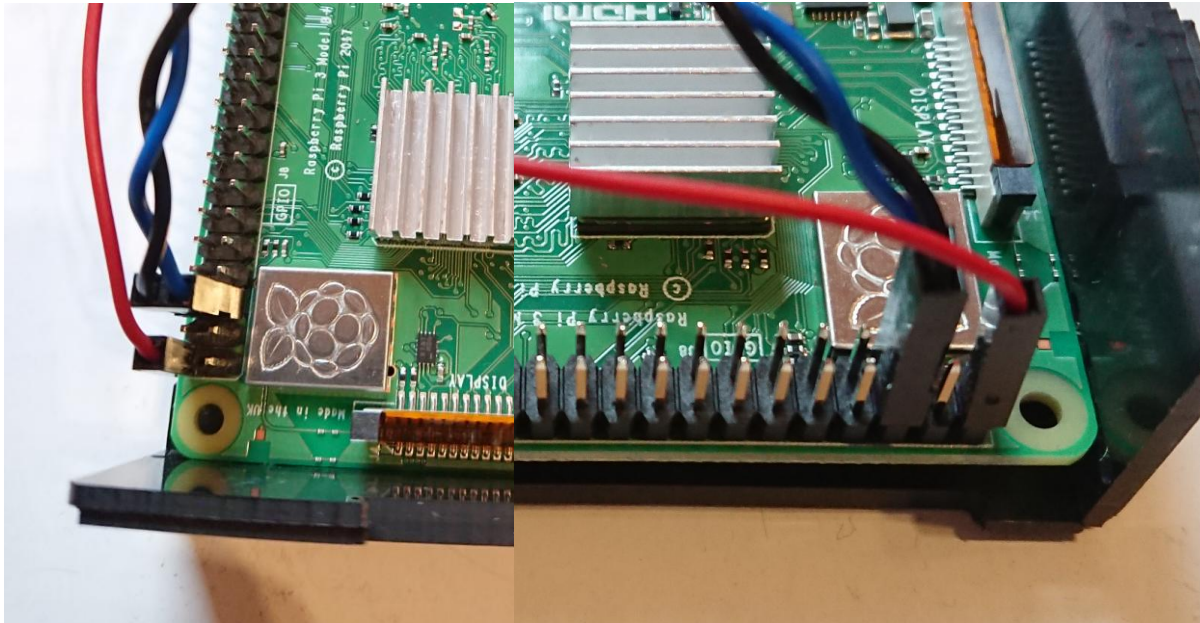
```
# nano ~/.kodi/addons/service.pvr.manager/resources/lib/shutdown.sh
```

Change:

```
yard2wakeup -I $1
```

to the install path

```
/storage/yard2/yard2wakeup -I $1
```



Hint:

To modify the skin for the PVR Manager Addon you have to copy it to your kodi folder:

```
cp -R /usr/share/kodi/addons/skin.estuary /storage/.kodi/addons/skin.estuary-mod
```

You have to rename the skin and therefore modify the addon.xml:

original:

```
<addon id="skin.estuary" version="1.9.16" name="Estuary" provider-name="phil65, Ichabod Fletchman">
```

modified:

```
<addon id="skin.estuary-mod" version="1.9.16" name="Estuary-mod" provider-name="phil65, Ichabod Fletchman">
```

After that the skin should be available and you are able to enable that skin.

You can change the DialogButtonMenu.xml according the readme of PVR-Manger.

## Excerpt of Readme of PVR-Manager

If you want to add a hook to the shutdown menu of kodi (this changes the behaviour of the power button), edit the 'DialogButtonMenu.xml' (or similar) in the xml part of the skin addon and look for a xml tag like (note the <onclick>Powerdown()</onclick> inside here):

```
<item>
  <label>$LOCALIZE[13016]</label>
  <onclick>Powerdown()</onclick>
  <visible>System.CanPowerDown</visible>
</item>
```

and change this to:

```
<item>
  <label>$LOCALIZE[13016]</label>
  <onclick>Powerdown()</onclick>
  <visible>System.CanPowerDown + System.HasAddon(service.pvr.manager)</visible>
</item>
<item>
  <label>$LOCALIZE[13016]</label>
  <onclick>RunScript(service.pvr.manager,poweroff)</onclick>
  <visible>System.CanPowerDown + System.HasAddon(service.pvr.manager)</visible>
</item>
```

Don't forget to store. Remember that you have to repeat this when the skin has updated.