The XERC User's Guide

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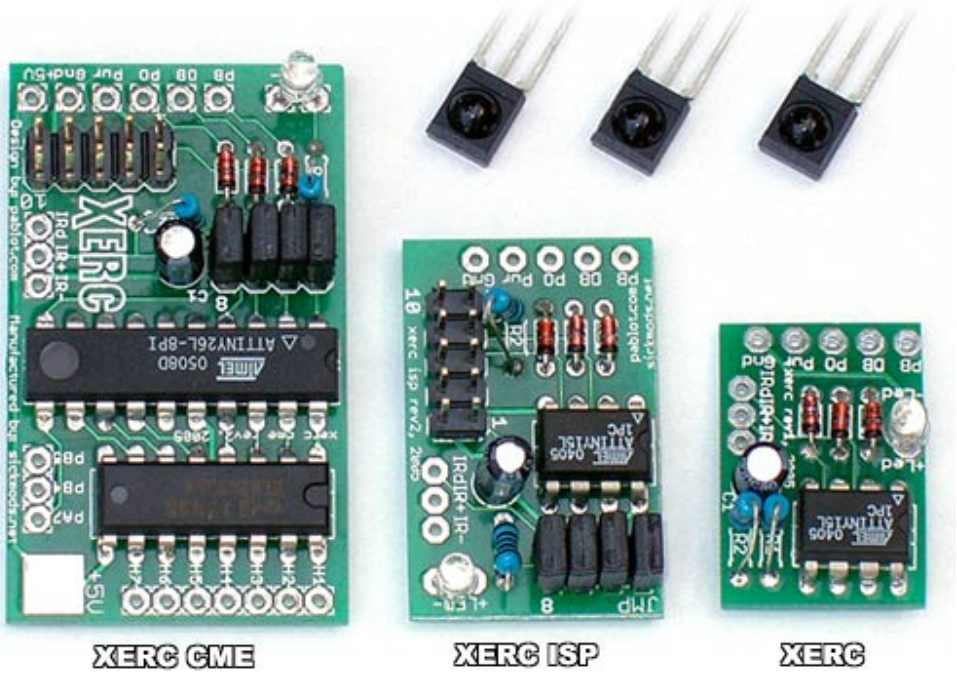
Intro

Thank you for purchasing the premier IR-mod for the Xbox. The XERC (Xbox Extended Remote Control), XERC ISP (In System Programmable), and XERC CME (Case Modders Edition) was designed by Pablot of pablot.com and have been produced and distributed by SICKdimension of SICKmods.net. The code used in the XERC is completely open source and any version is programmable by the user. (The only difference between XERC and XERC ISP is in circuit programming. All other functions and setup is the same).

Note: This manual makes the assumption that you know how to solder and can open up your Xbox without too much difficulty and that you are using the XERCs from sickmods.net.

Here are the 3 versions of XERC that sickmods.net offers:



XERC is the simple version offering On/Off, eject, and modchip functions if your modchip supports it. Works on all Xbox versions. The ISP version is completely re-programmable, while installed in the Xbox (programmer not included).

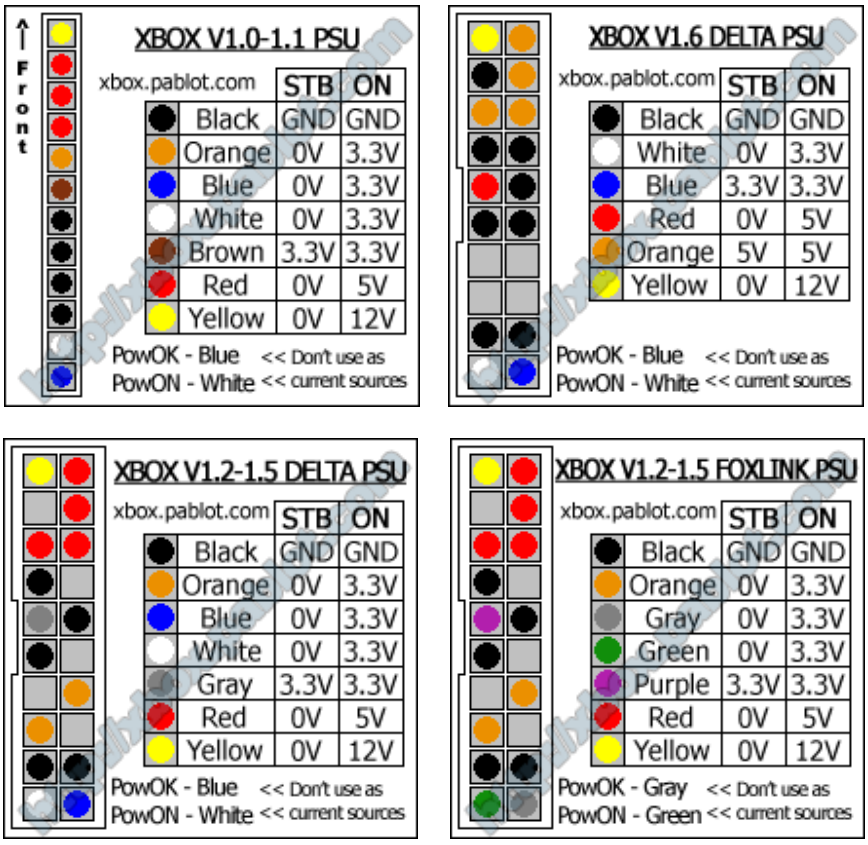
The left one is our top of the line CME version. Offering all of the same capabilities as the Simple version and adds 7 outputs (H1-H7) that can operate strings of LEDs, CCFLs, whatever you want to hook up with a max current draw up to 500mAmps per line. Port PB4 is used for the VU Meter, if your version supports it. PA7 and PB3 are extra outputs, which are not preprogrammed so to use them a programmer will be required.

There XERC CME now comes with your choice of one of three different firmwares. The default mode allows all 7 ports to individually toggle on/off. The P12 version includes 13 chasers, built-in, so no external circuits required, other than the LEDs/resistors. Included in these chasers is a strobe and a VU (Volume) Meter, which blinks the LEDs according to the volume that the xbox is outputting. It uses 6 ports for the chasers, and the 7th port can be toggled on/off. The P10 version is the same as above, but uses 5 ports for the chasers, and the remaining 2 ports can be toggled on/off. You may want this version if you have a pre-built 10 LED jewel ring, or if you want to switch on/off a CCFL, which would require 2 ports.

When you get the XERC it comes pre-programmed with Pablot's open source code. There are, however, steps that are required to "personalize" your remote and how you want the XERC to operate (the what button does what setup). We'll get to that in a moment right now we need to get the XERC installed and ready for your commands.

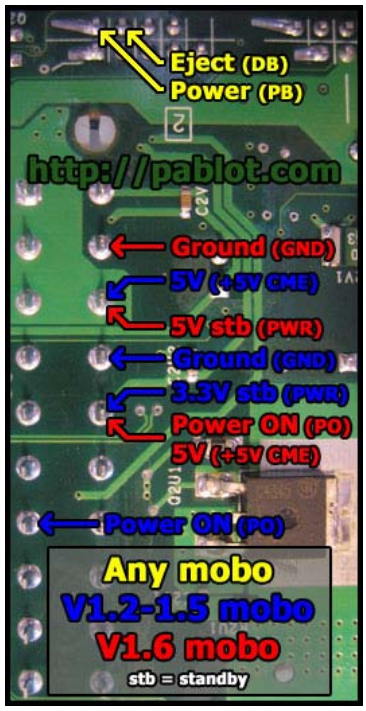
First you need to determine what version Xbox you have. There is a tutorial at http://www.xbox-scene.com/versions.php that covers it so do some homework and get back here. If you have done that or already know what version you have refer to the following diagrams to determine where we will be getting power and ground for the XERC from.

XBOX PSU connectors



	PO	Pwr	Gnd	+5V
v1.0-1.1	Orange	Brown	Black	Red/Yellow
v1.2-1.5 Delta	Orange	Gray	Black	Red/Yellow
v1.2-1.5 Foxlink	Orange	Purple	Black	Red/Yellow
v1.6 Delta	Red	Orange	Black	Red/Yellow

Wiring this puppy up



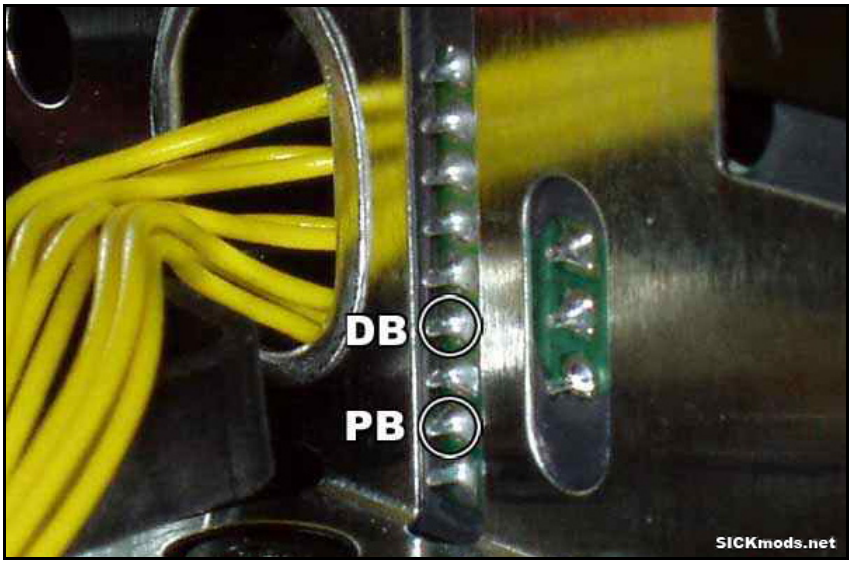
Looking at the left side of the XERC, you'll notice the input/output section. We'll cover the other outputs on the CME later.

PB = Power Button
DB = Eject Button
PO = Power Strobe (an input that is 0V with the Xbox off and 3.3/5V with the Xbox on)
PWR = Stby PWR (5v for 1.6 and 3.3V for all others)
GND = Ground (any black wire on the power plug or any screw hole on the Xbox)

CME also adds
5V = 5V or 12V

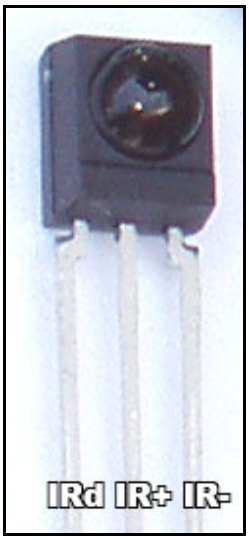
So we hook PWR, GND, PO, and 5V (CME only) to the power plug on the Xbox. You can do this in a couple ways. The **best way** is to wire directly to the bottom of the motherboard, as seen in the picture to the right. In the picture you can also see the connections to the front panel.

Another method is to splice into the lines you need to (not recommended). Make sure you cover the connections with electrical tape or heat shrink. You can also strip and tin the wires and press them into the proper holes on the top of the power plugs, making sure you are making good contact (you can also solder short pieces of stiffer wire such as leads from a resistor or LED to each wire to put into the power plug. Take care to use heat shrink or tape to protect any part of these added leads to keep them from shorting to anything). These two methods are more dangerous, and could potentially damage your XBOX or XERC if not done correctly.
The PB and DB can be wired straight to the back of the power/eject PCB in the face of the Xbox. Refer to the following diagram:



Counting from the bottom up, on the straight line of soldering points, the second point goes to PB and the fourth goes to DB. Be careful not to short your wires on the surrounding metal shield.

Once all of this is wired in it is time to place the IR detector. You can get creative and drill a hole for it in your case, or follow our recommended method to drop the receiver through the front vents, under the controller ports. You can route the wires through one of the holes in the shielding, prior to soldering them to the IR detector or XERC. You can then connect them to the appropriate spots on the receiver and the XERC, and position the receiver where you want it. You will probably have to trim down the legs on the receiver a bit. The IR receiver MUST be visible from the outside or the mod WILL NOT work. Infrared works line of sight. Pics of an example finished installation are found at the end of this manual.



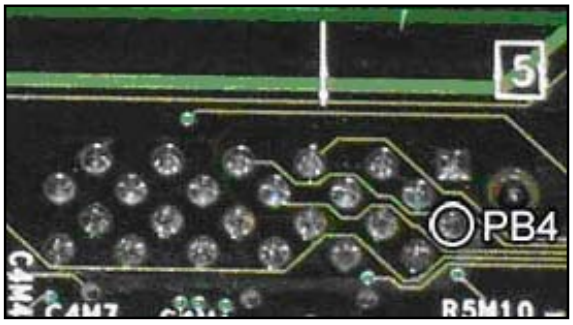
Wiring the lights to the CME

This is performed by wiring your circuit (e.g. LED) as normal except substitute ground in your circuit with the output of the XERC. Pressing the button assigned will provide ground and turn your circuit on.

If you want to run a CCFL (cold cathode) inverter of 12V of the XERC you have to connect 12V to the +5V pad! If you just connect 5V and take the 12V from somewhere else the cathode will not turn off entirely, it will still have a faint glow. We have noted that most CCFLs won't run of only one Hx port. If this happens to you then you will need connect it to two ports.

Although the ULN2003a can technically support up to 500mA per port, totaling 3.5A, We highly recommend not driving more than 1.5A in total through the H-ports. If you drive more than that the ULN2003a may get too hot and the traces might lift. (1.5A is approximately 75 LEDs, so for most people, this will not be a problem you need to be concerned with.)

Additional wiring for the VU Meter on the CME



If your version of the XERC CME supports the VU Meter, then there is 1 additional wire and a 10K resistor you must install in order for the XERC to receive the audio signal from the Xbox. First, connect a 10K Ohms resistor to PB4 on the XERC. Then, located on the underside of the motherboard by the A/V plug, you will see a bunch of pins, like in the following pic. wire from Pin2 ,as shown in the diagram, to the 10K resistor on PB4. (Pin2 is the audio output for the right channel.) Wire your LEDs to the Hx ports as normal, with H1 being the lowest volume, and H7 being the peak.

Calibration

The first time you power up your XERC you will have to calibrate it. You do that by pressing any button on the remote repeatedly until the led blinks: short-short-long. This could take up to and above 2 minutes (!!). The XERC is then calibrated and will remain so unless you intentionally reset it. Calibration varies with voltage so you only need to recalibrate if you change the supply voltage (ie going from a 1.0-1.5 to a 1.6 Xbox or vice versa.)
To reset the calibration you have to do the following:

1. Cut the power to the XERC. Wait 20-60 seconds for the capacitor to un-charge.
2. Connect the pins indicated in the picture on the right. You can short them out with a screwdriver for example.
3. Connect power and see the led blink short-long-short-long etc
4. Remove power and wait 20-60 seconds, then un-short the two pins.

From now on the LED will blink short-short-long every time you plug the power chord in to indicate that the XERC is calibrated.

Configuration

To configure the XERC, you need to press and hold any un-programmed button until the led blinks short-short-short. This can take between 10-20 seconds. (The led will now be blinking a 3-bit binary (or for bit for the XERC CME) number so it just blinked a zero and then it will increase for every command). The button you entered the configuration with will now be the ignore button. If there is a function that you don't want to use, you can use this button to indicate that, and it will skip over it.

Note: Hold each button until the LED starts flashing, if it does not start flashing in a few seconds release the button and press it again. On the CME the abort button is used if you get confused and want to start over. Once it is assigned if it is pressed again you start back over, the LED will flash 1111 and you will have to hold a non assigned button until you get the 4 short flashes again, and then start back into the config with an abort button....etc.

Once you program the last code, the configuration is over and you can begin using your XERC! Congratulations. If you ever want to reconfigurate it you just press and hold any unprogrammed button for 15 seconds again and you start the configuration again. Here is the order for the different versions:

Output	LED flashes				Button Assignment
	Simple	CME	P12	P10	
Abort		0001	0001	0001	
XERC on/off	001	0010	0010	0010	
Short power press	010	0011	0011	0011	
Long power press	011	0100	0100	0100	
Eject	100	0101	0101	0101	
Smartxx OS	101	0110	0110	0110	
Speed Up			0011	0011	
Slow Down			1000	1000	
Chaser Mode			1001	1001	
Chaser Direction			1010	1010	
H1		0111			
H2		1000			
H3		1001			
H4		1010			
H5		1011			
H6		1100		1011	
H7		1101	1011	1100	

Normal use

When the Xbox is off you can use all the commands like normal but when the Xbox is on you have to "turn the XERC on" to be able to execute any commands. To turn the XERC on, you press and hold the "XERC on/off" button for about a second or two. The led will then light up, indicating that the XERC is on and then you can execute commands, such as turning the Xbox off. To turn the XERC off again just press and hold the "XERC on/off" button again until the led turns off. If you turn the Xbox off, the XERC's LED will also turn off, and operation will return to normal.

Programming

We won't go too much into programming the XERC, since it comes pre-programmed. Should you need to program it you will need to purchaser or build a programmer and will need to remove the 4 jumpers on the XERC. More info on programming can be found at http://www.pablot.com

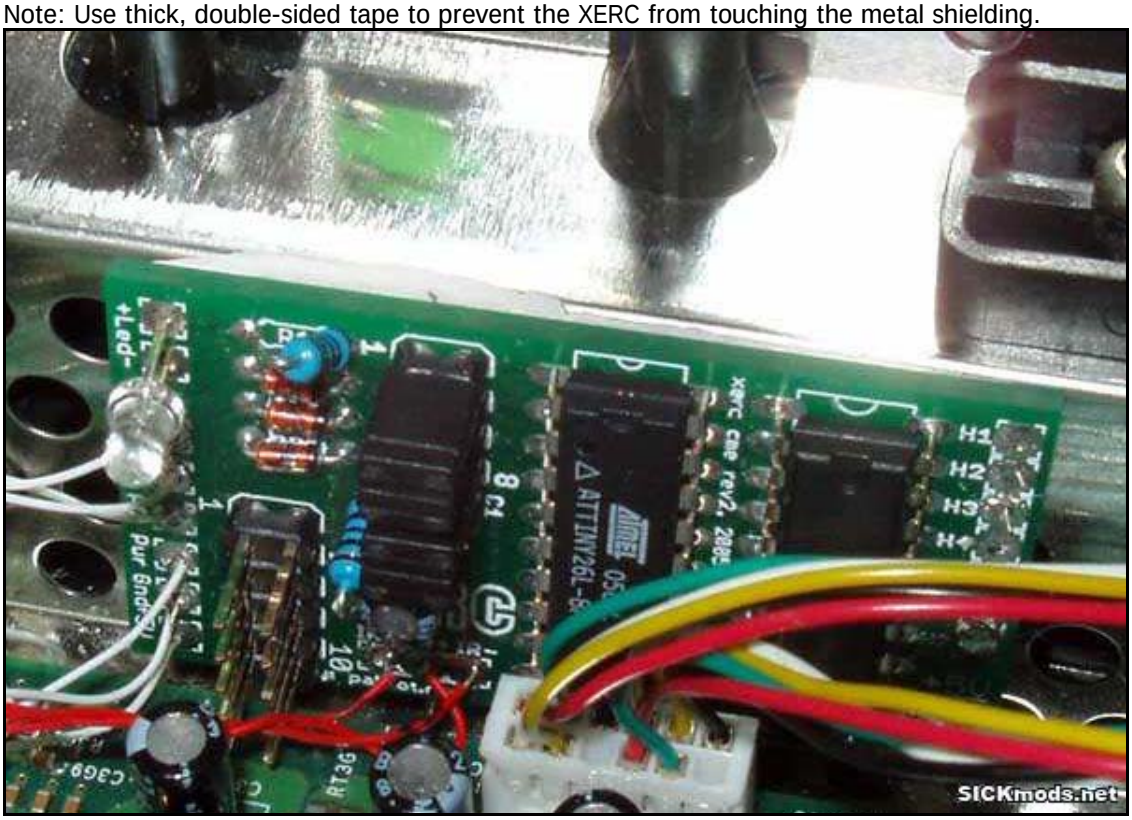
The only way to reprogram the XERC Simple (non-ISP) is to remove the MCU and program in a programmer set up to program raw chips.

Installation examples

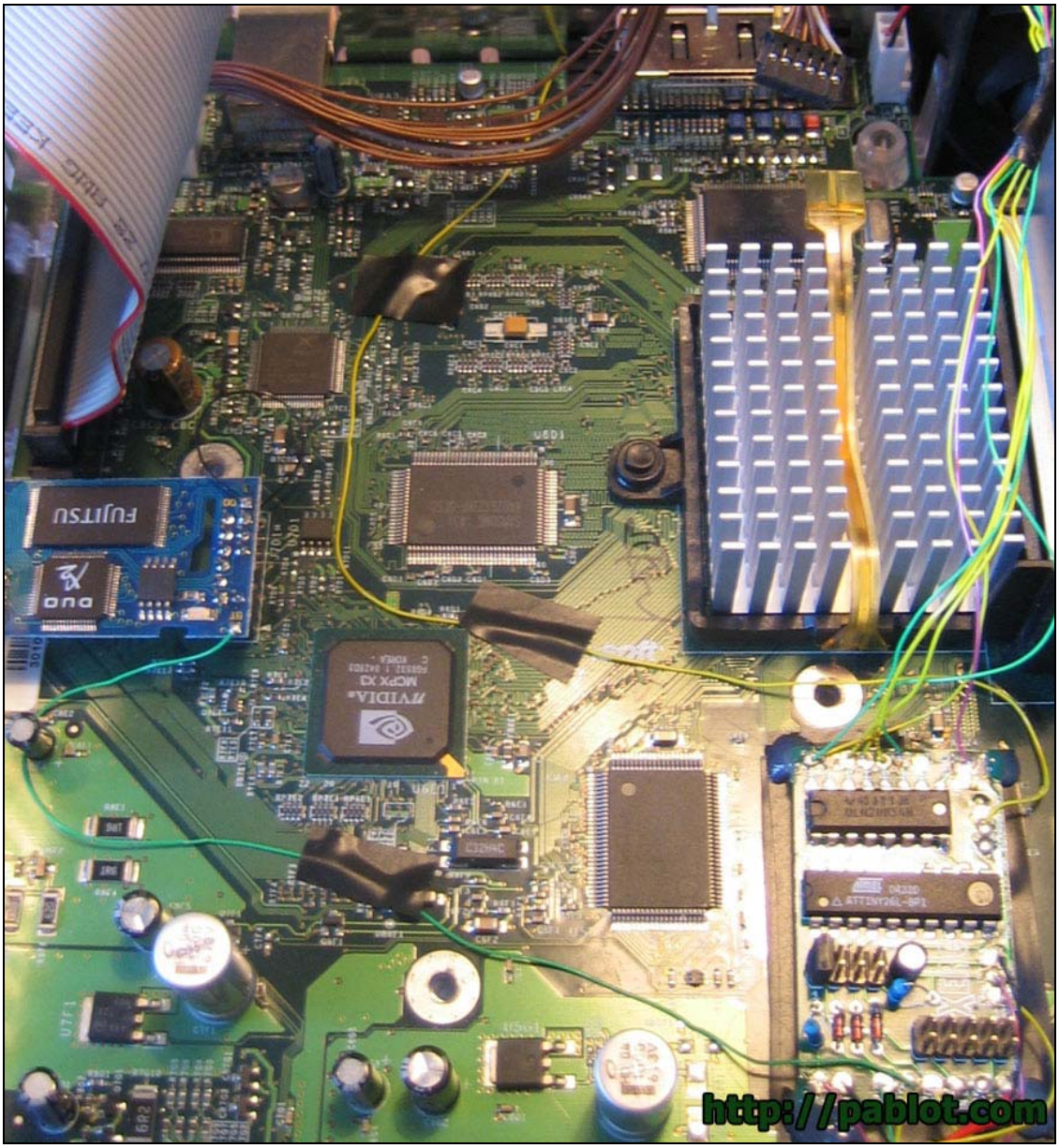
Sample videos of the Chasers and VU Meter can be found at http://pablot.com

Example of placement of the IR-eye if you don't want to drill any holes. (Wired through vents).

Example of placement of the XERC CME inside the Xbox.
Note: Use thick, double-sided tape to prevent the XERC from touching the metal shielding.



This is another example on how to place the XERC CME P12. Be sure to insulate it properly. It is held in place with hot-glue. The yellow wire coming from the back is for the VU-meter and the green wire from the DuoX 2 is for the BT points that the DouX 2 needs.



Change log

1.05 - Replaced the back connection picture in the “wireing this puppy up” section.

1.04 - Adjustments to comments on some of the timings.
- Added another install picture.
- Added a new picture in regards to connecting the XERC to the xbox.
- Added this change log.