

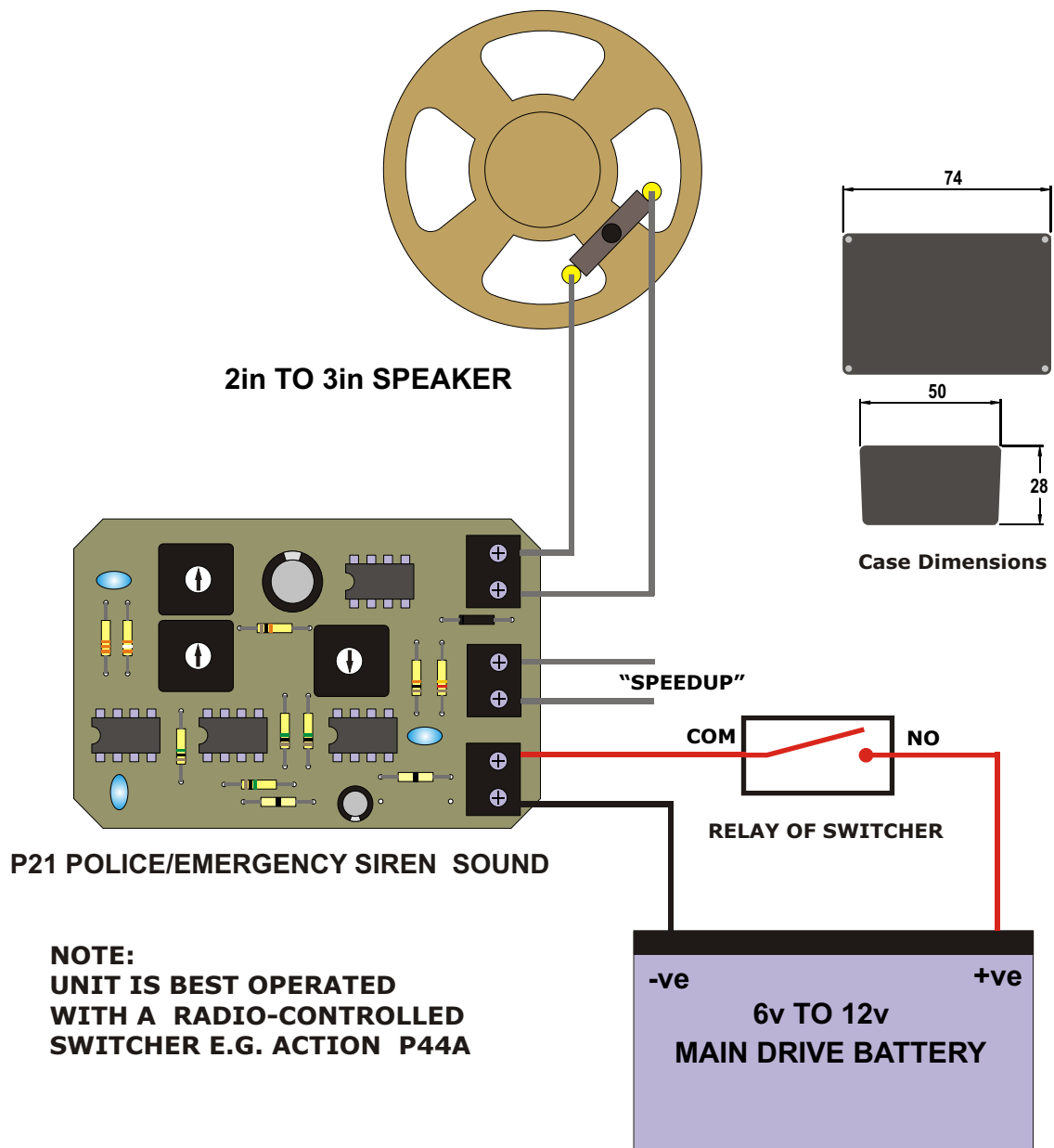
P21

POLICE/EMERGENCY SIREN

This Police/Emergency siren gives a sound simulation of the type of sirens used on police cars and boats; fire and rescue vehicles and boats used in the UK and many parts of the continent of Europe. This is a second generation version of the siren which gives the added feature of a second control input that can be used to shift from slow ramp to fast ramp sound (SPEEDUP). The unit can be switched on by radio and details are shown of using an ACTION Universal P44A switcher to take advantage of this added feature when used with one spare radio control channel. It will enhance the appeal of many land and marine model subjects. See ACTION lists for switchers.

Voltage requirement
Connections
Speaker
Maximum power output

6 volt to 12 volt
Screw connection
8 ohm 2 inch to 3 inch mylar
1 watt



P21

POLICE/EMERGENCY SIREN



The P21 Police/Emergency Siren simulates the type used on emergency vehicles in the UK and in many parts of Europe. This version has the added feature of a second control input that shifts the ramp sound from normal to double-speed. The unit can be operated by either a single relay switch e.g. ACTION P43 or, if using the Speedup feature, a twin switch such as P44. One proportional channel is required for either type.

Voltage requirement	6v to 12v
Connections	Screw terminal blocks
Speaker (not supplied)	8Ω x 50mm to 66mm dia; Mylar cone is best
Maximum power output	1 Watt
Case size	74mm x 50mm x 29mm

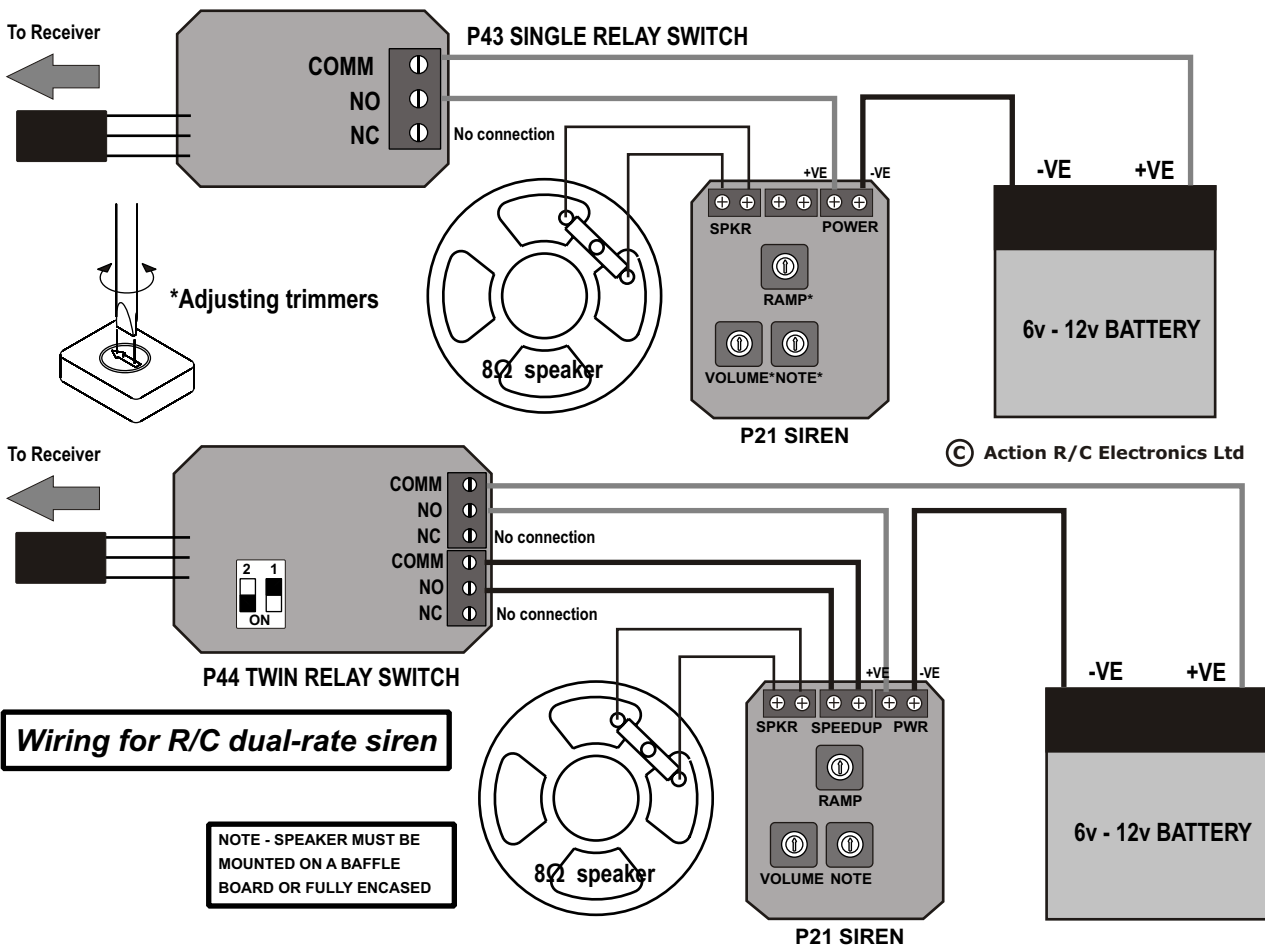
INSTALLATION

The unit will require either a manual or RC switch for operation. If the two connections of the block marked Speedup are shorted together this will increase the frequency of the rise-and-fall note. Drill suitable holes in the ABS case to allow the wiring to access the screw terminal connector blocks, and use Velcro pads to secure the case to the inside of the model. Use a fine screwdriver to adjust the trimmers for volume, tone and ramp rate as required.

RECOVERY SERVICE

A Recovery or repair service ensures that you will not be left with a dead unit for any reason. The Service Charge for this unit is £12 including parts (and return postage within the UK). Credit/ Debit card payments must contain full details (Name and Full Postal Address, Card Account number, Expiry date and Security Number from the Signature Strip).

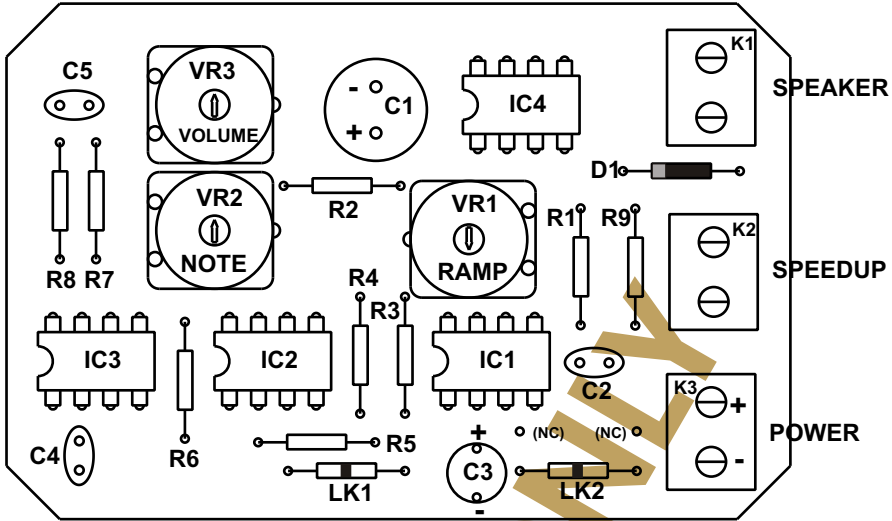
ACTION R/C ELECTRONICS, 1 Llwyn Bleddyn, Llanllechid, Bangor LI57 3EF



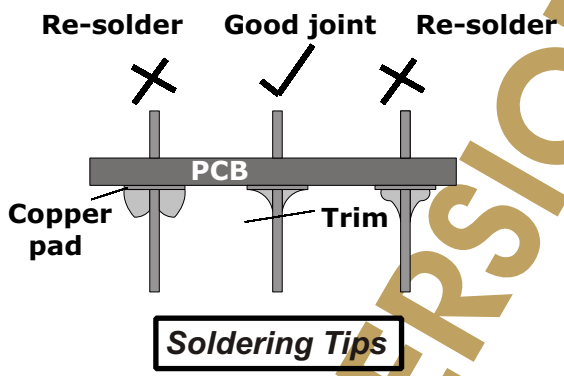
Sound units are polarity-critical! Take care to connect the battery correctly!

The small print.....
 ACTION R/C Electronics guarantee all products to be free from manufacturing defects for 12 months from date of purchase. This does not cover suitability for specific applications; components worn or damaged by use, tampering or incorrect connection; alteration to original components; damage to batteries or other equipment through use; misuse, or shipping damage. Where goods are found to be faulty, the customer shall return them to ACTION R/C Electronics in their original condition and with their original instructions, packaging etc. Our liability is limited to repairing or replacing goods to their original specification and will not exceed the cost of the goods. By using the product the user accepts all liability. Where a fixed repair charge is applicable, ACTION R/C Electronics shall undertake repairs to the extent that they are judged economically viable. Where such is not the case then the customer will be offered the option of crediting the repair charge towards the cost of a new unit or having the faulty unit returned and the charge refunded (less the cost of return carriage). We reserve the right to modify this guarantee without notice.

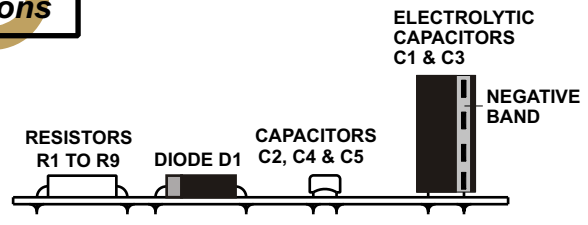
P21 POLICE/EMERGENCY SIREN
Instructions for kit version



Component positions



Soldering Tips



Component mounting details



Resistor colour bands

PARTS LIST

- IC1,3
- IC2
- IC4
- D1
- R1,2
- R3,4,5,6
- R7
- R8
- R9
- LK1.2
- VR1
- VR2
- VR3
- C1
- C2,4,5
- C3
- K1,2,3
- CASE TYPE
- WIRE
- SPEAKER

- 555 IC & 8 PIN IC HOLDERS
- LM358 IC & 8 PIN IC HOLDER
- TDA7052 IC & 8 PIN IC HOLDER
- PLASTIC 1 AMP DIODE 1N4003
- 10K RESISTOR 1/4 WATT (BROWN/BLACK/ORANGE)
- 1M RESISTOR 1/4 WATT (BROWN/BLACK/GREEN)
- 39K RESISTOR 1/4 WATT (ORANGE/WHITE/ORANGE)
- 33K RESISTOR 1/4 WATT (ORANGE/ORANGE/ORANGE)
- 120K RESISTOR 1/4 WATT (BROWN/RED/YELLOW)
- ZERO OHM RESISTOR or LINK (CENTRAL BLACK BAND)
- 1M MIN ENCLOSED HORIZONTAL PRESET
- 220K MIN ENCLOSED HORIZONTAL PRESET
- 4K7 MIN ENCLOSED HORIZONTAL PRESET
- 220uF 16V MIN RADIAL ELECTROLYIC CAPACITOR
- 0.01 uF MONOLITHIC CERAMICS (marked 103)
- 2.2uF 63V MIN RADIAL ELECTROLYIC CAPACITOR
- TWO TWIN CONNECTOR BLOCKS
- RX2010
- Any flexible type. Not supplied with kit.
- 8 Ohm 2.5" or larger if possible. Not supplied with kit.

P21 Kit Instructions

REQUIREMENTS

This Sound Project requires a drive battery in the range of 6 volts to 12 volts. It can be controlled by a simple toggle/push button switch or a Radio Control Switcher (for ACTION switchers see current lists). The unit will drive an 8 Ohm speaker at up to 1 Watt. Mixing this and up to three other ACTION sounds into one speaker will require a P34 or P97 Mixer/Amplifier. This has inputs and power distribution for up to four ACTION Sound units.

PCB

The PCB for this Project is fully prepared and requires no additional work.

TOOLS

For construction you will require a soldering iron and flux cored solder; a small pair of wire cutters; a small screwdriver for adjustment and connection. A good level of light is recommended.

PARTS

- All the parts for the kit should be laid out on a clean surface so that they can be correctly identified.
 - The resistors are colour coded as directed in the Parts List, see also Drawing. The resistor-looking item with one black central band is in fact a Zero Ohm resistor, or link (LK).
 - The Electrolytic Capacitors are marked with the value and working voltage and a vertical bar with Negative signs on it which signifies which leg goes to the negative. The opposite leg of the capacitor, of course, goes to the positive. All capacitor polarizations are shown on the drawing.
 - The small Monolithic Ceramic (coated) Capacitors are not polarised and can be fitted either way round.
 - All four IC's are marked with their type code, see Drawing together with the Parts List.
 - The black plastic rod with a wire at each end is a diode. It has a silver band printed around one end which signifies the way round it should be mounted. It is coded 1N4003.

CONSTRUCTION

As the PCB layout for this project is well spaced and most components can easily be fitted at any stage of the construction, a full list of instructions is not required. Just points to watch out for have been listed. Components can be fitted in whatever order you wish. "Soldering Tips" is an attempt to help the inexperienced to recognise a satisfactory soldered joint.

- When fitting ICs, ensure that the small notch at one end is in accordance with the illustration.
- The polarity of capacitors C1 and C3 must be observed, see Mounting Detail. The + and - are marked on the drawing.
- All resistors and other non-polarised capacitors can be fitted either way round, just ensure that the correct value goes in the right place - see Parts List and Drawing.
- When fitting VR1, VR2 and VR3, note that they have different values. Ensure that the correct value is fitted in each case.
- The 2-way screw connector blocks K1, K2, K3 are to allow easy connection when installing the finished unit into the model.
- When the PCB construction is complete, set the little volume control preset VR3 to almost fully anti-clockwise (low volume). The rear of the board can now be cleaned with something like an old toothbrush and some spirit cleaner. Then check all over the soldered side of the board for good joints and no solder bridges between tracks. Time now to tackle the case; not a lot to it really, it's just a matter of either drilling small holes for the wires at the appropriate positions along the side of the case or anywhere else that suits you. I personally just file a narrow slot at the top end of the case by the connector blocks. This is all that the case requires.

TESTING

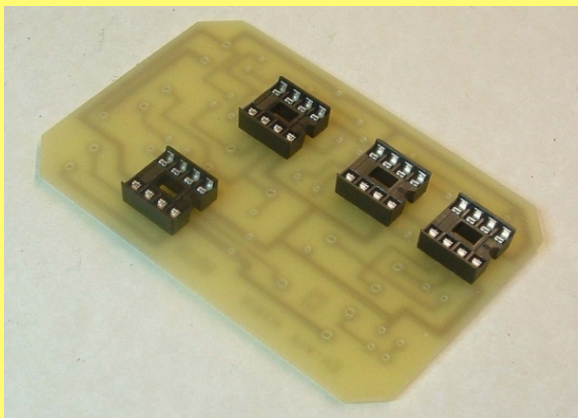
Having built the unit it's simply a matter of connecting your speaker and power wires (from whatever battery pack you are using). Both the speaker and +/- power connections are clear from the Drawing. You don't need a switch to test it initially. The circuit produces a continuous series of rising and falling tone ramps for as long as the switch is connected. Practice will give you the precise sequence you are looking for. The first 'ramp' of a sequence is slightly longer than subsequent 'ramps'. VR1 will control the length and hence the slope of the ramp up and down; VR2 controls the frequency of the note and VR3 is the volume control for the output amplifier. Use a volume setting that suits the speaker you are using. The range of control had to take into account units that are run on 6 & 12volts. The connector K2 enables a switch or relay switcher to switch from slow to rapid ramps whilst running. See Wiring Diagram for R/C dual rate siren for use with a P44 Twin Switch.

SPEAKER

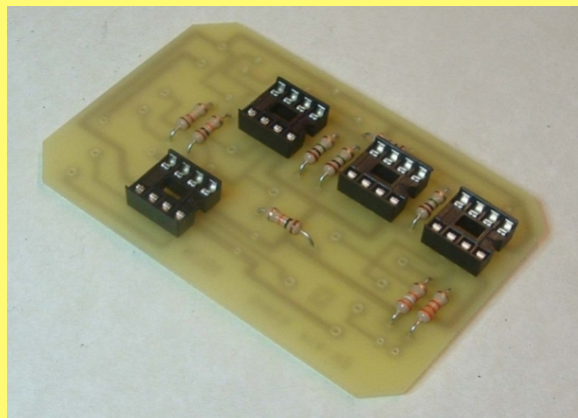
The absolute minimum requirement for speaker mounting is a baffle; a flat piece of plywood, plasticard or similar about twice the speaker cone area with a hole cut, almost as big in diameter as the speaker, which should be fastened to it. Evostick or other contact adhesive gives a good bond in most cases. A hole will be required to permit the sound to be heard outside the model. This can be through a porthole or through a funnel, a grating or a slightly-open hatch. Semi-waterproof, Mylar-Cone Speakers are the obvious choice for a marine model. A speaker of 2.5 inch or 3 inch will be ideal (see ACTION price list).

P21 POLICE/EMERGENCY SIRE

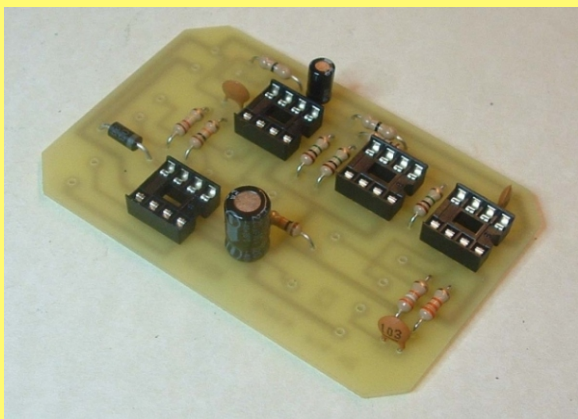
PHOTOGRAPHIC BUILD SEQUENCE FOR KIT VERSION ONLY



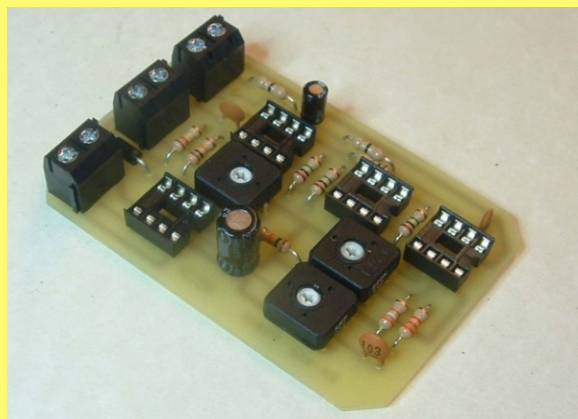
PICTURE 1: Fit four I/C sockets to PCB



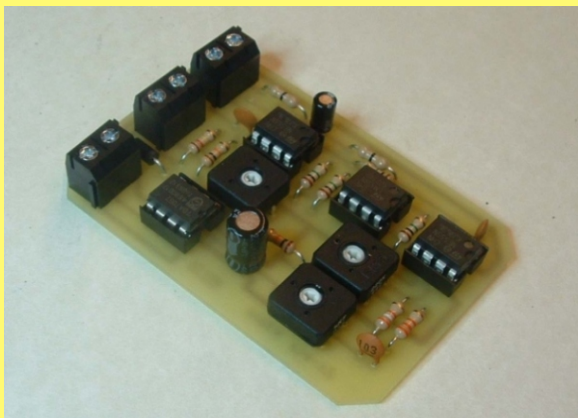
PICTURE 2: Resistors fitted



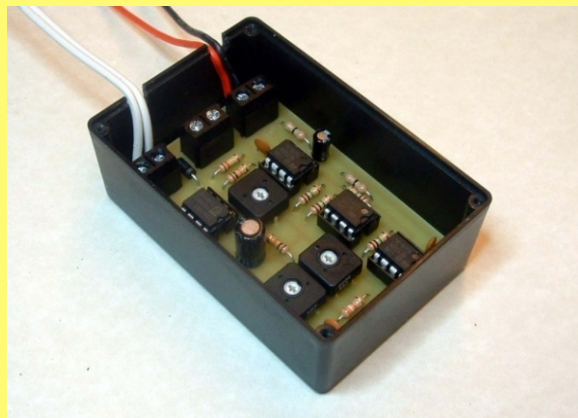
PICTURE 3: Capacitors and diode added



PICTURE 4: Screw terminals and presets fitted



PICTURE 5: Fit 4 x I/C chips NOTE! ANTI-STATIC PRECAUTIONS REQUIRED



PICTURE 8: File slots in case for cables



PICTURE 9: Finished unit, cased with sticker