

KS3 PICAXE PROJECTS

The student worksheets include **detailed assembly instructions, soldering advice and fault finding sections** – please read through these sections for each student project as these sections identify the common student assembly faults.

AXE101- Cyberpet	http://www.rev-ed.co.uk/docs/axe101.pdf
AXE102- Alarm	http://www.rev-ed.co.uk/docs/axe102.pdf
AXE105- Electronic Dice	http://www.rev-ed.co.uk/docs/axe105.pdf

General Electronics Advice

Additional teaching tips:

- Ensure students ‘snap down’ the PICAXE download socket (so that it lies flat on the PCB) before soldering.
- All battery clips should be threaded through the holes on the PCB prior to soldering
- The uncased piezos have very thin wires – do not overheat whilst soldering. They only generate an audible noise when the brass side is stuck down onto the PCB using a foam pad (Rapid 87-8120). The polarity of these piezos is not important, they work either way around.
- Some boards can be configured to be used with either the PICAXE system or with the Chip Factory system (which have slightly different input/output pin layouts). This involves a wire link (off-cut resistor leg) to be made over the PX or CF links on the PCB. If there is no link labelled on the board it can be used directly with either system.
- Never use a 9V PP3 battery as this will damage the microcontroller. Only use 3 or 4.5V battery packs (do not use 6V as this will cause the 8 pin PIC to overheat after a few minutes use).
- Remember the PICAXE chip is pre-programmed with the PICAXE bootstrap code. You cannot use a blank PIC with the PICAXE system.
- To download and play mobile phone ring tunes you must use a PICAXE-08M chip.

Parts Lists / Order Codes

All parts and order codes required for the projects are detailed in the notes below. *Please note that, for instance, order codes for the resistors are for 100 or 1000 bulk packs, so please check quantities carefully before ordering!*

Revolution Education Ltd (online store at www.tech-supplies.co.uk)
4 Old Dairy Business Centre, Melcombe Road, Bath, BA2 3LR
Tel: 01225 340563
Fax: 01225 340564
www.rev-ed.co.uk

Rapid Electronics Ltd
Severalls Lane, Colchester, Essex C04 5JS
Tel: 01206 751166
Fax: 01206 751188
www.rapideducation.co.uk

AXE-101 Cyberpet Parts List

A 'PCB & PICAXE-08 chip' is available from Revolution at 99p (min order 120, part number AXE-101D)

A 'PCB & PICAXE-08M chip' is available from Revolution at £1.19 (min order 120, part number AXE101D-08M)

Full kits (PCB, PICAXE-08 and all components) in sets of 5 are also available.

Part	Description	Notes	Revolution Tech-Supplies	Rapid
R1-2, R6	10k resistor	brown black orange gold	RES-10k (pack 100)	62-0397 (pack 1000)
R3	22k resistor	Red red orange gold	RES-22k (pack 100)	62-0405 (pack 1000)
R4-5	330R resistor	orange orange brown gold	RES-330 (pack 100)	62-0361 (pack 1000)
LED1-2	5mm red LED		LED001	55-0155
PZ	uncased piezo sounder		SPE003	35-0200
<i>PZ (alternate)</i>	<i>PCB mounting piezo sounder</i>	<i>easy to solder but more expensive</i>	<i>SPE001</i>	<i>35-0225</i>
LDR	miniature LDR		SEN002	58-0134
SW1	miniature 6mm switch		SEN030	78-0600
IC1	8 pin IC socket		ICH008	22-0150
IC1	PICAXE-08 microcontroller		AXE007	13-1224
CT1	download 3.5mm socket		CON039	20-0137
BT1	battery clip		BAT016	18-0092
BT1	4.5V (3xAA) battery box		BAT013	18-0126
PCB	printed circuit board		AXE101 (pack 25)	n/a
FULL KIT (5 pack)		PICAXE-08 or PICAXE-08M	AXE101K AXE101K08M	70-1210 n/a

The sticky pad to stick the uncased piezo down (roll 300) is Rapid part: 87-1820

AXE-102 Alarm Parts List

A 'PCB & PICAXE-08 chip' is available from Revolution at 99p (min order 120, part number AXE-102D)

A 'PCB & PICAXE-08M chip' is available from Revolution at £1.19 (min order 120, part number AXE102D-08M)

Full kits (PCB, PICAXE-08 and all components) in sets of 5 are also available.

Part	Description	Notes	Revolution Tech-Supplies	Rapid
R1-2, R6	10k resistor	brown black orange gold	RES-10k (pack 100)	62-0397 (pack 1000)
R3 (see below)	22k resistor	red red orange gold	RES-22k (pack 100)	62-0405 (pack 1000)
R4	330R resistor	orange orange brown gold	RES-330 (pack 100)	62-0361 (pack 1000)
R5	1k resistor	brown black red gold	RES-1k (pack 100)	62-0373 (pack 1000)
LED1	5mm red LED		LED001	55-0155
PZ	uncased piezo sounder		SPE003	35-0200
<i>PZ (alternate)</i>	<i>PCB mounting piezo sounder</i>	<i>easy to solder but more expensive</i>	<i>SPE001</i>	<i>35-0225</i>
TR1	BC548B		TRT001	81-0066
D1	1N4001		RES041	47-3130
C1	100uF electrolytic		CAP006	11-0875
IC1	8 pin IC socket		ICH008	22-0150
IC1	PICAXE-08 microcontroller		AXE007	13-1224
CT1	download 3.5mm socket		CON039	20-0137
BT1	battery clip		BAT016	18-0092
BT1	4.5V (3xAA) battery box		BAT013	18-0126
PCB	printed circuit board		AXE102 (pack 25)	n/a
FULL KIT (5 pack)		PICAXE-08 or PICAXE-08M	AXE102K AXE102K08M	70-1214 n/a

The sticky pad to stick the piezo down (roll 300) is Rapid part: 87-1820

If you prefer to use screw terminal connectors these are part CON005 (21-0454)

AXE-105 Electronic Dice Parts List

A 'PCB & PICAXE-08 chip' is available from Revolution at 99p (min order 120, part number AXE-105D). As this board does not support sound there is no need to upgrade to a PICAXE-08M chip.

Full kits (PCB, PICAXE-08 and all components) in sets of 5 are also available.

Part	Description	Notes	Revolution Tech-Supplies	Rapid
R1-2	10k resistor	brown black orange gold	RES-10k (pack 100)	62-0397 (pack 1000)
R3	22k resistor	red red orange gold	RES-22k (pack 100)	62-0405 (pack 1000)
R4-11	330R resistor	orange orange brown gold	RES-330 (pack 100)	62-0361 (pack 1000)
LED1-7	5mm red LED		LED001	55-0155
SW1	miniature 6mm switch		SEN030	78-0600
<i>LDR (alternate)</i>	<i>miniature LDR</i>	<i>can be used instead of switch</i>	<i>SEN002</i>	<i>58-0134</i>
IC1	8 pin IC socket		ICH008	22-0150
IC1	PICAXE-08 microcontroller		AXE007	13-1224
CT1	download 3.5mm socket		CON039	20-0137
BT1	battery clip		BAT016	18-0092
BT1	4.5V (3xAA) battery box		BAT013	18-0126
PCB	printed circuit board		AXE105 (pack 25)	n/a
FULL KIT (5 pack)			AXE105K	70-1208