πλoγτεc
Ploytec GmbH

πλ² Synthesizer

Manual for Assembly Kit

Features

2 Oscillators

4 Waveforms

32 Presets

32 User presets

Specifications

Power supply: +5V DC/50mA

Dimensions: 100 x 100 x 23mm

Congratulations on purchasing our PL2 Synthesizer assembly kit!
For a successful and effortless assembly of our product,
please read the following instructions carefully!

1. The right equipment

Before you start, make sure you have the right tools.
We suggest the following:

- Soldering iron with a tapered tip
- Damp sponge (for cleaning the tip of the soldering iron)
- Tin-solder
- Side cutter
- Needle-nosed pliers
- Pair of tweezers
- Multimeter (optional)

2. Advice for soldering novices

- Make sure the tip of the soldering iron is always clean. You can clean it by wiping it on the damp sponge.
- Try to do the actual soldering as quickly as possible. If sensitive devices are exposed to too much heat for extended periods of time, they may get damaged.
- To solder, place the tip of the soldering iron against the tin-solder as well as the wire you wish to solder on the printed circuit board (PCB) simultaneously. The tin-solder will quickly begin to flow and form a solder joint between the wire and PCB. Once this has occurred, withdraw first the tin-solder and after another moment the soldering iron too. Do not touch or move the soldered components for a few seconds to allow for the soldered joints to harden in place. The finished solder joint should be cone-shaped with a shiny and slightly concave surface.
- Following the soldering, trim the excess leads by cutting them off close to the solder joints.
- When soldering semi-conductors, LED and ICs, please take care that you do not heat the pins of these components for longer than two seconds as they may get damaged otherwise. Please also remember to check for the correct polarity before soldering these parts.
- Once you have completed the assembly process, please check that the components on the PCB have all been placed as required and that the polarity is correct.

3. Assembling your synthesizer

To ensure the correct assembly of your synthesizer, please follow the subsequent instructions in the same order as listed for every component:

- First, place the PCB in front of you with the imprint facing you. This is the top side that you will slot all the leads of the assembly parts into. These will then be soldered on the blank bottom side of the PCB.
- If necessary, bend the ends of the leads according to the respective distance between the corresponding drills on the PCB into a right angle.
- Now slot the (bent) leads into the drills provided on the PCB.
- Caution: for some components, their specific orientation on the PCB is crucial; you will find detailed information on this in the next section.
- Gently hold the inserted components onto the PCB with one finger while turning the PCB over and carefully placing it down again. (We suggest you only insert as many components in one go as you are able to hold in place when turning the board over.)
- On the blank bottom side of the PCB which is now facing you, carefully solder the leads to the PCB.
- Once the new solder joints have cooled and hardened, you can trim excess leads close to the solder joints.

4. Correct order of assembly

In order to make the soldering as easy as possible, we recommend you assemble it as described in the following (i.e. beginning with the smallest components).

Caution! For some components, their specific orientation on the PCB is crucial. In the list below, you can identify these components easily by this 💬 symbol, which is followed by detailed instructions.

4.1 Resistors

- 💬 Make sure you orientate all resistors according to their colour codes and that all resistors of the same kind follow the same orientation!
- The 7K5 and 15K resistors look very alike but do in fact have different colour codes:
  - 15K – brown, green, black, red, brown
  - 7K5 – purple, green, black, brown, brown
- For packaging reasons, your assembly kit includes more resistors than you will need for your assembly.

4.2 Capacitors

- 💬 Please check for the correct polarity of these components (for electrolytic capacitors only).

4.3 LED

- LED1
- 💬 Please check for the correct polarity of these component.

4.4 Voltage regulator

- IC3
- 💬 Please check for the correct polarity of these component.

4.5 Crystal

- Q1

4.6 **Potentiometer**

- P1

4.7 **ICs**

- IC1, IC2, OK1
- Please check for the correct polarity of these components.

4.8 **USB, DIN5, RCA & TRS**

5. Bill of materials

5.1 Resistors (see section 4.1 of this manual)

Part	Value	Marking
R1 – R8	7K5	Violet, green, black, brown, brown
R9 – R25	15K	Brown, green, black, red, brown
R26 – R32	7K5	Violet, green, black, brown, brown
R33	220R	Red, red, brown, gold
R34	1K	Brown, black, red, gold
R35	750R	Violet, green, black, black, brown
R36	7K5	Violet, green, black, brown, brown
R37	51K	Green, brown, black, red, brown
R38	10K	Brown, black, black, red, brown
R39	12K	Brown, red, black, red, brown
R40	7K5	Violet, green, black, brown, brown
R41	15K	Brown, green, black, red, brown
R42	15K	Brown, green, black, red, brown
R43	7K5	Violet, green, black, brown, brown
R44	7K5	Violet, green, black, brown, brown

5.2 Capacitors (see section 4.2 of this manual)

Part	Value	Marking
C1	100nF	104
C2	100nF	104
C3	1nF	1nK100
C4	2,2nF	2n2K100
C5	4,7nF	4n7K100
C6	10nF	10nK100
C7	10nF	10nK100
C8	6,8nF	6n8K100
C9	33nF	33nK100
C10	68nF	68nK100
C11	22pF	22
C12	22pF	22
C13	100nF	104
C14	68nF	68nK100
C15	33nF	33nK100
C16	6,8nF	6n8K100
C17	10nF	10nK100
C18	10nF	10nK100
C19	4,7nF	4n7K100
C20	2,2nF	2n2K100
C21	1nF	1nK100
C22	100nF	104
C23	100pF	101
C24	- (Jumper)	
C25	- (Jumper)	
C26	100pF	101
C27	100pF	101
C28	100pF	101
C29	100nF	104

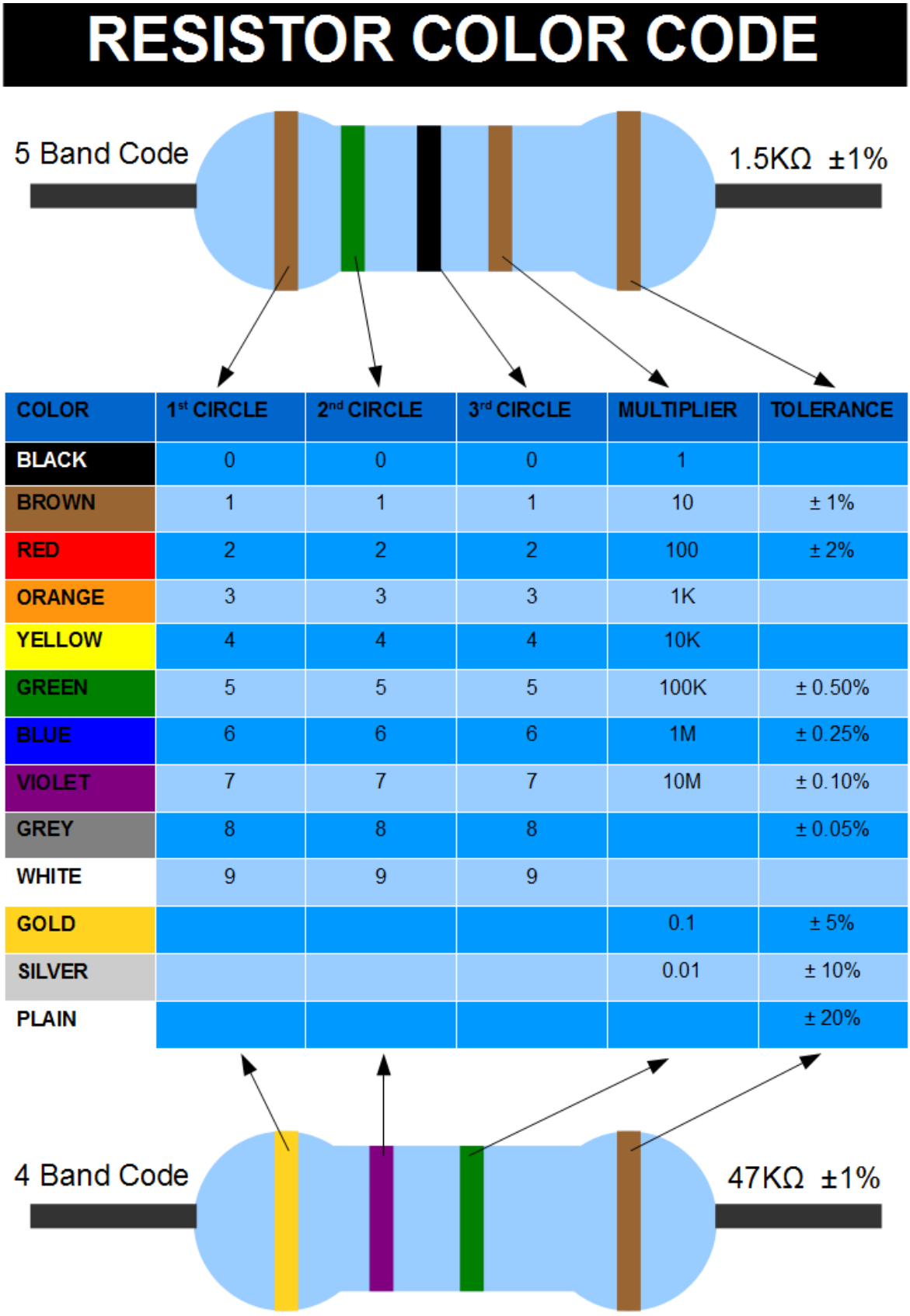
5.3 Electronic capacitors (see section 4.2 of this manual)

Part	Value	Marking
C30	22µF	22µF16V
C31	22µF	22µF16V
C32	10µF	10µF16V
C33	10µF	10µF16V
C34	22µF	22µF16V
C35	22µF	22µF16V

5.4 Other components (see sections 4.3 - 4.8 of this manual)

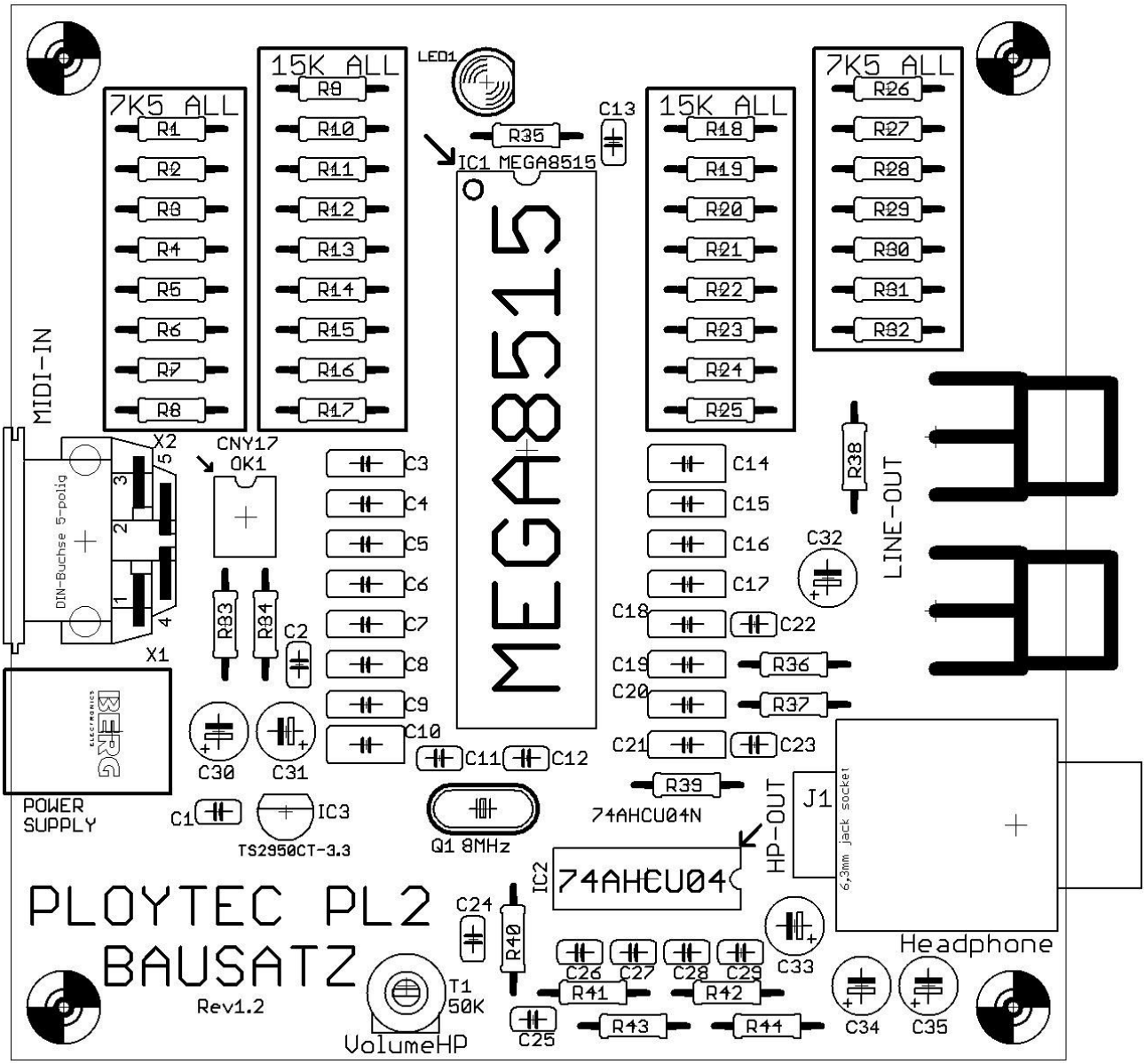
Part	Value	Marking
IC1	MEGA8515	ATMEGA8515L8PU
IC2	74AHC04N	SN74AHCU04N
IC3	TS2950CT-3.3	TSC295033
J1	6,3mm jack socket	
J101	RCA	
J102	RCA	
LED1	LED 5mm green	
OK1	CNY17	CNY17-3
Q1	8MHz	8.0000MHz
T1	Potentiometer 50K	50K
X1	USB connector	
X2	MIDI connector	

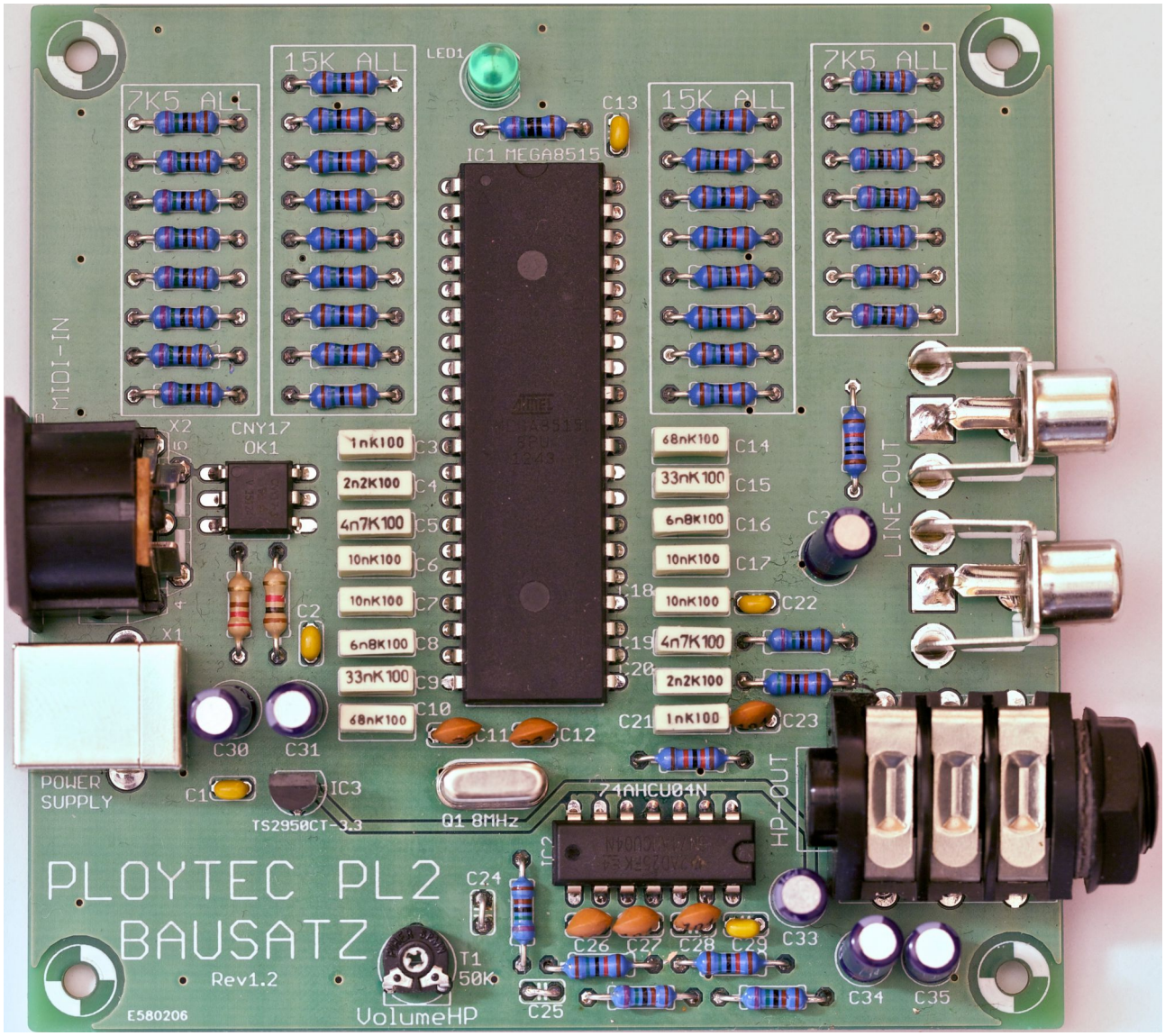
6. Colour codes of resistors



COLOR	1st CIRCLE	2nd CIRCLE	3rd CIRCLE	MULTIPLIER	TOLERANCE
BLACK	0	0	0	1	
BROWN	1	1	1	10	± 1%
RED	2	2	2	100	± 2%
ORANGE	3	3	3	1K	
YELLOW	4	4	4	10K	
GREEN	5	5	5	100K	± 0.50%
BLUE	6	6	6	1M	± 0.25%
VIOLET	7	7	7	10M	± 0.10%
GREY	8	8	8		± 0.05%
WHITE	9	9	9		
GOLD				0.1	± 5%
SILVER				0.01	± 10%
PLAIN					± 20%

6. Layout


7K5 ALL
R1
R2
R3
R4
R5
R6
R7
R8
15K ALL
R9
R10
R11
R12
R13
R14
R15
R16
R17
LED1
R35
IC1 MEGA8515
MEGA8515
C13
15K ALL
R18
R19
R20
R21
R22
R23
R24
R25
7K5 ALL
R26
R27
R28
R29
R30
R31
R32
MIDI-IN
DIN-Buchse 5-polig
X2
X1
CNY17
OK1
R33
R34
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C14
C15
C16
C17
C18
C19
C20
C21
C22
C23
R36
R37
R38
R39
C32
LINE-OUT
74AHCU04N
HP-OUT
J1
6,3mm jack socket
Headphone
POWER SUPPLY
C1
C30
C31
IC3
TS2950CT-3.3
Q1 8MHz
IC2
74AHCU04
PLOYTEC PL2
BAUSATZ
Rev1.2
C24
R40
C26
C27
C28
C29
C33
R41
R42
R43
R44
C25
T1
50K
VolumeHP
C34
C35


15K ALL
7K5 ALL
LED1
IC1 MEGA8515
MIDI-IN
CNY17
OK1
X2
X1
POWER
SUPPLY
IC3
TS2950CT-3.3
Q1 8MHz
74AHCU04N
LINE-OUT
HP-OUT
PLOYTEC PL2
BAUSATZ
Rev1.2
E580206
VolumeHP
T1
50K

Important notes

The PL2 Synthesizer assembly kit has been developed for customers with pre-existing knowledge of electronics and analogue synthesizers. In order to assemble the components of this kit, you will further need some experience in soldering processes. For these reasons, we cannot recommend this product for absolute beginners, but advise this group to purchase the Original PL2 Synthesizer. Ploytec GmbH refuses to follow any claims for warranty which have been caused by abnormal handling. Repair services are NOT offered.

Operation

A USB power supply is needed for operating your assembled PL2 Synthesiser. (Despite the Original PL2 Synthesizer ,this board can not be powered via MIDI.) The purchaser is asked to provide their own power supply, we recommend a standard USB power supply (5V).

Storage

Please ensure that you store the components of this kit and the assembled product out of reach for small children, animals and other curious fellow beings at all times. They do not taste very good and may cause serious injury. Ploytec GmbH assumes no liability for any damage caused.

Disposal

Your PL2 Synthesizer assembly kit consists of a number of different electronic components, which cannot be disposed of in your normal bin due their toxicity for the environment. Please dispose of these responsibly and according to disposal regulations of your local municipality.

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