

Bill of Materials for ES23 - Sequence Programmer [4mm] Full Kit V0.3

Item	Description	Qty	Designator	Package
HARDWARE				
1	M3 Thumbscrew	4		-
			NB: Construct-A-Rack	
2	M3 x 6mm Bolt PH	4		-
			NB: Doefper Compatible Rails	
PANEL				
3	ES23 - Sequence Programmer Front Panel A	1		-
KITS				
4	ES23 - Sequencer-Programmer PCB Set V0.3	1		-
5	ES24 - Programmer Extension [4mm] Hardware Kit V0.0	1		-
6	ES24 - Programmer Extension PCB Set V0.0	1		-
7	ES24 - Programmer Extension Component Kit V0.0	1		-
8	ES23 - Sequence Programmer [4mm] Hardware Kit V0.3	1		-
9	ES23 - Sequence Programmer Component Kit V0.3	1		-

Bill of Materials for ES24 - Programmer Extension Component Kit V0.0 - Stage 1

Item	Description	Qty	Designator	Package
CAPACITOR				
1	470pF 5% C0G	1	C101	RAD-0.2N
2	10nF 63V Polyester	1	C102	RAD-0.2
3	22nF 63V Polyester	1	C103	RAD-0.2
CONNECTOR				
4	IDC20 RA Box Header	1	J201	-
5	1x2 Pin 20mm Header	1	D103	2.54MM
DIODE				
6	1N4148	5	D101, D102, D104, D105, D106	DIODE-0.3
OPTO-ELECTRONIC				
7	3mm Yellow LED	1	D103	2MA
POTENTIOMETER				
8	100KB LIN - 18T Spline	3	P101, P102, P103	ALPHA 16MM
RESISTOR				
9	1K0 1% 0.5W Metal Film	1	R112	AXIAL-0.4
10	1K2 1% 0.5W Metal Film	1	R110	AXIAL-0.4
11	1K3 1% 0.5W Metal Film	1	R111	AXIAL-0.4
12	47K 1% 0.5W Metal Film	3	R101, R102, R109	AXIAL-0.4
13	100K 1% 0.5W Metal Film	1	R104	AXIAL-0.4
14	150K 1% 0.5W Metal Film	3	R105, R106, R108	AXIAL-0.4
15	220K 1% 0.5W Metal Film	3	R113, R114, R115	AXIAL-0.4
16	470K 1% 0.5W Metal Film	1	R107	AXIAL-0.4
17	1M0 1% 0.5W Metal Film	1	R103	AXIAL-0.4
TRANSISTOR				
18	BC557B PNP Transistor	3	Q101, Q102, Q103	TO-92
19	BC547B NPN Transistor	1	Q104	TO-92

Bill of Materials for ES24 - Programmer Extension Component Kit V0.0 - Stage2

Item	Description	Qty	Designator	Package
CAPACITOR				
1	470pF 5% C0G	1	C101	RAD-0.2N
2	10nF 63V Polyester	1	C102	RAD-0.2
3	22nF 63V Polyester	1	C103	RAD-0.2
CONNECTOR				
4	IDC20 RA Box Header	1	J201	-
5	1x2 Pin 20mm Header	1	D103	2.54MM
DIODE				
6	1N4148	5	D101, D102, D104, D105, D106	DIODE-0.3
OPTO-ELECTRONIC				
7	3mm Yellow LED	1	D103	2MA
POTENTIOMETER				
8	100KB LIN - 18T Spline	3	P101, P102, P103	ALPHA 16MM
RESISTOR				
9	1K0 1% 0.5W Metal Film	1	R112	AXIAL-0.4
10	1K2 1% 0.5W Metal Film	1	R110	AXIAL-0.4
11	1K3 1% 0.5W Metal Film	1	R111	AXIAL-0.4
12	47K 1% 0.5W Metal Film	3	R101, R102, R109	AXIAL-0.4
13	100K 1% 0.5W Metal Film	1	R104	AXIAL-0.4
14	150K 1% 0.5W Metal Film	3	R105, R106, R108	AXIAL-0.4
15	220K 1% 0.5W Metal Film	3	R113, R114, R115	AXIAL-0.4
16	470K 1% 0.5W Metal Film	1	R107	AXIAL-0.4
17	1M0 1% 0.5W Metal Film	1	R103	AXIAL-0.4
TRANSISTOR				
18	BC557B PNP Transistor	3	Q101, Q102, Q103	TO-92
19	BC547B NPN Transistor	1	Q104	TO-92

Bill of Materials for ES24 - Programmer Extension Component Kit V0.0 - Stage3

Item	Description	Qty	Designator	Package
CAPACITOR				
1	470pF 5% C0G	1	C101	RAD-0.2N
2	10nF 63V Polyester	1	C102	RAD-0.2
3	22nF 63V Polyester	1	C103	RAD-0.2
CONNECTOR				
4	IDC20 RA Box Header	1	J210	-
5	1x2 Pin 20mm Header	1	D103	2.54MM
DIODE				
6	1N4148	5	D101, D102, D104, D105, D106	DIODE-0.3
HARDWARE				
7	9mm Earth Tag	1	P101	-
OPTO-ELECTRONIC				
8	3mm Yellow LED	1	D103	2MA
POTENTIOMETER				
9	100KB LIN - 18T Spline	3	P101, P102, P103	ALPHA 16MM
RESISTOR				
10	1K0 1% 0.5W Metal Film	1	R112	AXIAL-0.4
11	1K2 1% 0.5W Metal Film	1	R110	AXIAL-0.4
12	1K3 1% 0.5W Metal Film	1	R111	AXIAL-0.4
13	47K 1% 0.5W Metal Film	3	R101, R102, R109	AXIAL-0.4
14	100K 1% 0.5W Metal Film	1	R104	AXIAL-0.4
15	150K 1% 0.5W Metal Film	3	R105, R106, R108	AXIAL-0.4
16	220K 1% 0.5W Metal Film	3	R113, R114, R115	AXIAL-0.4
17	470K 1% 0.5W Metal Film	1	R107	AXIAL-0.4
18	1M0 1% 0.5W Metal Film	1	R103	AXIAL-0.4

Bill of Materials for ES24 - Programmer Extension Component Kit V0.0 - Stage 4

Item	Description	Qty	Designator	Package
CAPACITOR				
1	470pF 5% C0G	1	C101	RAD-0.2N
2	10nF 63V Polyester	1	C102	RAD-0.2
3	22nF 63V Polyester	1	C103	RAD-0.2
CONNECTOR				
4	IDC20 RA Box Header	1	J201	-
5	1x2 Pin 20mm Header	1	D103	2.54MM
DIODE				
6	1N4148	5	D101, D102, D104, D105, D106	DIODE-0.3
OPTO-ELECTRONIC				
7	3mm Yellow LED	1	D103	2MA
POTENTIOMETER				
8	100KB LIN - 18T Spline	3	P101, P102, P103	ALPHA 16MM
RESISTOR				
9	1K0 1% 0.5W Metal Film	1	R112	AXIAL-0.4
10	1K2 1% 0.5W Metal Film	1	R110	AXIAL-0.4
11	1K3 1% 0.5W Metal Film	1	R111	AXIAL-0.4
12	47K 1% 0.5W Metal Film	3	R101, R102, R109	AXIAL-0.4
13	100K 1% 0.5W Metal Film	1	R104	AXIAL-0.4
14	150K 1% 0.5W Metal Film	3	R105, R106, R108	AXIAL-0.4
15	220K 1% 0.5W Metal Film	3	R113, R114, R115	AXIAL-0.4
16	470K 1% 0.5W Metal Film	1	R107	AXIAL-0.4
17	1M0 1% 0.5W Metal Film	1	R103	AXIAL-0.4
TRANSISTOR				
18	BC557B PNP Transistor	3	Q101, Q102, Q103	TO-92
19	BC547B NPN Transistor	1	Q104	TO-92

Bill of Materials for ES24 - Programmer Extension Component Kit V0.0 - Back Board

Item	Description	Qty	Designator	Package
	CONNECTOR			
1	IDC20 Receptacle	4	J1, J2, J3, J4	-
2	IDC20 Socket	2	J5A, J5B	-
3	1x2 Pin 9mm Header	2	JP1, JP2	2.54MM
4	IDC20 Box Header	2	J5, J6	2.54MM

Bill of Materials for ES23 - Sequence Programmer Component Kit V0.3

Item	Description	Qty	Designator	Package
CAPACITOR				
1	47pF 5% Ceramic	6	C201, C202, C211, C212, C221, C222	RAD-0.2N
2	10nF 63V Polyester	4	C101, C102, C103, C104	RAD-0.2
3	100nF Ceramic Capacitor	6	C303, C304, C305, C306, C307, C308	RAD-0.2N
4	10uF 35V Electrolytic	2	C301, C302	RB-D5.0-P2.0
CONNECTOR				
5	1x4 Pin 9mm Header	3	J201, J202, J203	2.54MM
6	1x4 Pin 20mm Header	2	J102, J104	-
7	IDC16 Box Header	1	J301	2.54MM
8	IDC20 RA Box Header	1	J302	-
			NB: Cut pin 16	
9	8-pin IC Socket 0.3inch	2	U101, U202	DIP-8
10	14-pin IC Socket 0.3inch	1	U201	DIP-14
11	Jumper Shunt	2	JP1, JP2	2.54mm
DIODE				
12	1N4148	2	D101, D102	DIODE-0.3
HARDWARE				
13	9mm Earth Tag	1	PANEL_GND	-
LINEAR				
14	TL074 Quad JFET Opamp	1	U201	DIP-14
15	LM393 - Dual Comparator	1	U101	DIP-8
16	TL072 Dual JFET Opamp	1	U202	DIP-8
INDUCTOR				
17	Ferrite Bead - 0.45uH 7A	2	L301, L302	-
RESISTOR				
18	330R 1% 0.5W Metal Film	3	R204, R214, R224	AXIAL-0.4
19	1K0 1% 0.5W Metal Film	4	R108, R120, R125, R130	AXIAL-0.4

Bill of Materials for ES23 - Sequence Programmer Component Kit V0.3

Item	Description	Qty	Designator	Package
	RESISTOR - continued			
20	1K3 1% 0.5W Metal Film	2	R107, R119	AXIAL-0.4
21	2K2 1% 0.5W Metal Film	2	R124, R129	AXIAL-0.4
22	10K 1% 0.5W Metal Film	4	R110, R111, R112, R128	AXIAL-0.4
23	22K 1% 0.5W Metal Film	1	R113	AXIAL-0.4
24	33K 1% 0.5W Metal Film	1	R114	AXIAL-0.4
25	47K 1% 0.5W Metal Film	9	R103, R104, R106, R115, R116, R117, R118, R131, R132	AXIAL-0.4
26	100K 1% 0.5W Metal Film	10	R123, R201, R202, R203, R211, R212, R213, R221, R222, R223	AXIAL-0.4
27	150K 1% 0.5W Metal Film	1	R101	AXIAL-0.4
28	220K 1% 0.5W Metal Film	2	R122, R127	AXIAL-0.4
29	470K 1% 0.5W Metal Film	3	R102, R121, R126	AXIAL-0.4
30	1M0 1% 0.5W Metal Film	1	R105	AXIAL-0.4
	TRANSISTOR			
31	BC557B PNP Transistor	2	Q102, Q105	TO-92
32	BC547B NPN Transistor	3	Q101, Q103, Q104	TO-92
	UNITS			
33	Panther - IDC16 - 24cm	1	J301	-

Bill of Materials for ES24 - Programmer Extension [4mm] Hardware Kit V0.0 - Column 2

Item	Description	Qty	Designator	Package
	CONNECTOR			
1	4mm PCB Socket c/w Nut - Yellow	1	J102	-
2	4mm PCB Socket c/w Nut - Red	1	J101	-
	OPTO-ELECTRONIC			
3	3mm Clear Lens Mount	1	D103	-
	POTENTIOMETER			
4	100KB LIN - 18T Spline	3	P101, P102, P103	ALPHA 16MM

Item	Description	Qty	Designator	Package
	CONNECTOR			
1	4mm PCB Socket c/w Nut - Yellow	1	J103	-
2	4mm PCB Socket c/w Nut - Red	1	J101	-
	OPTO-ELECTRONIC			
3	3mm Clear Lens Mount	1	D103	-
	POTENTIOMETER			
4	100KB LIN - 18T Spline	3	P101, P102, P103	ALPHA 16MM

Bill of Materials for ES23 - Sequence Programmer [4mm] Hardware Kit V0.3

Item	Description	Qty	Designator	Package
	CONNECTOR			
1	4mm PCB Socket c/w Nut - Yellow	2		-
2	4mm PCB Socket c/w Nut - Red	2		-
3	4mm PCB Socket c/w Nut - Green	3		-

Bill of Materials for ES24 - Programmer Extension PCB Set V0.0

Item	Description	Qty	Designator	Package
	PCB			
1	ES24 - Programmer Extension BackBoard PCB V0.0	1		-
2	Panther LED Carrier PCB V0.0	4		-
3	ES24 - Programmer Extension Stage PCB V0.2	4		-
4	Panther Carrier PCB V1A	8		-
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