

# 8. CIRCUIT DIAGRAMS

## AND PARTS LISTS

### 8.1. Symbol Explanation

#### 8.1.1. Arrows:

A black arrow on a line indicates in which direction an AC-signal flows.

A white arrow on a line indicates in which direction the information of a DC signal flows. An exception from this rule is the supply lines and their connections, which are always indicated by a supply voltage level or its associated label.

#### 8.1.2 Logic circuits:

A small circle at an external input means that the specific input is active LOW, i.e. it produces the desired function, in conjunction with other inputs if its voltage is the lower of the two logic levels in the system, otherwise the specific input is HIGH.

A clock input is indicated by an open triangle. A small circle at a clock input means that the outputs change on the HIGH to LOW clock transition.

A small circle at an output indicates that when the function designated is true, the output is LOW.

Inputs and outputs are labelled with mnemonic letters as described in table 8.1.

#### 8.1.3. Logic Functions:

Logic functions are labelled with mnemonic letters in brackets. An active LOW function is given a bar over the label.

#### 8.1.4. Voltages:

Typical DC voltages are indicated on the circuit diagrams next to the points to which they refer and are marked with a "V".

Typical logic levels are indicated in brackets (LOW/HIGH) on the circuit diagrams next to the point to which they refer and are marked with a "V".

Typical AC voltages are likewise indicated on the circuit diagrams. They are marked with "Vpp" or "mVpp".

## ABBREVIATIONS

A	=	ampere, amperes
B	=	battery, motor
C	=	capacitor
Car.	=	carbon
Cer.	=	ceramic
D	=	diode
F	=	farad, fan
FS	=	fuse
H	=	henry
k	=	kilo or $10^3$
L	=	inductor
LS	=	loudspeaker
lin.	=	linear
log.	=	logarithmic
m	=	milli or $10^{-3}$
M	=	mega or $10^6$
ME	=	instrument
MF	=	metal film
Mi	=	mica
MP	=	metallized paper
u	=	micro or $10^{-6}$
n	=	nano or $10^{-9}$
NPO	=	temp. coefficient 0
N150	=	temp. coefficient -150
NTC	=	neg. temp. coefficient
P	=	pico or $10^{-12}$
PL	=	connector (plug)
Polyes.	=	polyester
Polyst.	=	polystyrene
PTC	=	pos. temp. coefficient
Q	=	transistor
R	=	resistor
RL	=	relay
S	=	switch
SK	=	connector (socket)
SL	=	lamp
T	=	transformer
Tan	=	tantalum electrolytic capacitor
U	=	integrated circuit
V	=	working voltage DC or volts
Vl	=	valve
Vac.	=	working voltage AC
Var.	=	variable
Vpp	=	peak to peak voltage
Varicap	=	variable capacitance diode
ww	=	wire wound
W	=	watt, watts
W.alum.	=	wet aluminium electrolytic
X	=	crystal, crystal osc. or crystal filter

Table 8.1

Label	Short for	Meaning
A	Trig Input	triggers one-shot on falling edge
$A_x$	Address	selects a memory location (data word) or a multiplexer input
B	Trig Input	triggers one-shot on rising edge
B/D	Binary/Decimal	selects counting mode (modulus 16 or 10)
BI	Blank Input	deactivates BCD-to-7 segment decoder (blanks connected display)
$C_x^Y$	Control Signal	programmable bidirectional hand-shake signal to/from peripheral
CEP, CET	Clock Enable	enables clock signal to counter
CP	Clock Pulse	edge activated input for updating synchronous circuit
$CS_x$	Chip Select	selects a memory or peripheral circuit (bus slave)
$D_x$	Data	input to D flip-flop and register or bidirectional information path for bus connected device
E	Enable Input	enables clock signal
EO	Enable Output	activates output(s) from combinatorial circuit
EQ	Enable Output	activates output(s) from sequential circuit
HLT	Halt	suspends MPU activity and releases busses
$I_x^Y$	Input Data	input for combinatorial circuit
$IRO_y$	Interrupt Request	wired-OR flag from peripheral to MPU indicating interrupt detected

Table 8.1 (continued)

Label	Short for	Meaning
J, K	Data	input to J-K flip-flop
$K_x$	Mode Select	selects counting mode for programmable counter
LE	Latch Enable	updates latching register
LT	Lamp Test	activates all outputs on BCD-to-7 segment decoder
MR	Master Reset	input for initializing MPU or clearing programmable registers in peripheral circuit
MRDY	Memory Ready	hand-shake flag to MPU indicating new bus cycle may be started
NMI	Non-maskable Interrupt	flag to MPU, which cannot be masked softwarewise indicating interrupt detected
$O_x$	Output	output from combinatorical circuit
$P_x Y$	Data (bidirectional)	input to programmable counter or programmable bidirectional signal to/from peripheral
PE	Parallel Enable	loads $P_x$ data into programmable counter
$Q_x$	Output	output from sequential circuit
R	Reset	forces flip-flop(s) to LOW state
RBI	Ripple Blank Input	deactivates BCD-to-7 segment decoder (blanks connected display) if data correspond to leading zero, when decoders are cascaded
$RS_x$	Register Select	addresses programmable registers in peripheral circuit
S	Set	forces flip-flop(s) to HIGH state
$S_y$	Select Data	selects data path through multiplexer

Table 8.1 (continued)

Label	Short for	Meaning
SYNC	Synchronize	issued from bus master (MPU) to synchronize data transfer
TC	Terminate Count	output from counter indicating new cycle started (corresponds to carry or borrow depending on counting direction)
U/D	UP/Down	selects counting direction
VMA	Valid Memory Address	issued from bus master (MPU) to indicate stable address bus
WI	Write Input	input to bus slave to make it accept data from master
WQ	Write Output	output from bus master (MPU) when it is a data source.

(1) "x" is a numerical index (zero origin indexing) corresponding to bit position

(2) "y" is an alphabetical index used for multiple ports.

## PARTS LIST

FOR

400

Printed Circuit Board Complete 400					107 440 01
400C1,2,3,4,7,8,9,10 11,12,13,14,15	47 nF	10%	100V	Polyes.	623 447 00
C5	0.47 uF	10%	63V	Polyes.	622 547 00
C6	100 uF		25V	WW	652 810 00
C100	100 uF		25V	WW	652 810 00
C101	6.8 nF	1%	250V	Polyst.	614 368 00
C102	0.1 uF	10%	100V	Polyes.	623 510 01
C103	1000 uF		16V	Tan.	651 910 00
400D1,6	1S920				830 192 00
D2,3	MV5353				823 000 01
D4	10D05				831 000 51
D5	AA143				830 014 30
400L1,2	25 uH			RF Choke	740 125 00
L100	10 uH			RF Choke	740 110 00
400PL2	40 Way				756 040 00
PL3	26 Way				756 026 01
PL4	25 Way				751 000 81
PL5	1 Way				750 000 14
400Q100,101,102,103, 104,105,106,107, 108,109,111	BC327				840 032 70
Q110	BC547B				840 054 70
400R1,2	2,2 kohm	5%	1/2W	Car.	502 322 00
R3,12	10 kohm	Var.	Lin.		353 407 4X

## PARTS LIST

FOR

400

400R4, 6, 9	10 kohm	5%	1/3W	Car.	501 410 00
R5	560 ohm	5%	1/3W	Car.	501 256 00
R7	1.5 kohm	5%	1/2W	Car.	502 315 00
R8	10 kohm	Var.	Log	1	353 407 3X
R10	220 ohm	5%	1/3W	Car.	501 222 00
R11	10 ohm	5%	1/3W	Car.	501 110 00
R100, 101, 104, 105, 110, 110, 119, 120, 122, 123	120 ohm	5%	1/3W	Car.	501 212 00
R102, 103, 106, 107, 114, 115, 120, 121, 125, 126, 131	1 kohm	5%	1/3W	Car.	501 310 00
R108, 109, 112, 113, 116, 117, 118, 119, 127	56 ohm	5%	1/3W	Car.	501 156 00
R124	220 ohm	5%	1/3W	Car.	501 222 00
R128	10 ohm	5%	1/3W	Car.	501 110 00
R129	100 kohm	Var.	Lin		353 407 5X
R130	5.6 kohm	5%	1/3W	Car.	501 356 00
R132	120 ohm	5%	1/2W	Car.	502 212 00
400S1	Alarm/Start				763 000 16
S2	Supply				762 000 14
S3	Alarm/Send/Off/Test				373 409 7X
S4	Duplex/Simplex				762 000 16
S5	Power				373 409 8X
S6	Loudspeaker				762 000 17
S7	Tune				763 000 15
S8	Mode/A3J-SSB/A3A/A3H-AM				762 000 15

PARTS LIST

FOR

400

400S100, 101		763 000 15
S102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117	M73-0100	
400TS1	2 Way	770 000 18
TS2	4 Way	770 000 19
400U1	SN74LS05	850 740 51
U2, 3	CNY17-II	825 000 00
U100	SN74LS145	857 414 50
U101, 102, 103, 104, 107, 108, 109, 110, 112, 113	Man 82	824 008 20
U105	ULN2803	850 280 30
U106	74LS48	850 744 81
U111	SN74LS08	850 740 80
U114	SN74LS123	857 412 30



## PARTS LIST

FOR

401

Printed Circuit Board complete 401					107 440 11
401C1	470 uF		40V	W.Alum.	652 847 00
C2,4	0.1 uF	10%	100V	Polyes.	623 510 01
C3	10 nF	10%	100V	Polyes.	623 410 00
C100, 101,104	0.22uF	10%	63V	Polyes.	622 522 00
C102,103,121,142, 145	10 nF	10%	100V	Polyes.	623 410 00
C105,106,116,117 138,139,140,141 143,144,149,150 151,153	0.1 uF	10%	100V	Polyes.	623 510 00
C107,114	1 nF	1%	125V	Polyst.	613 310 00
C108, 128	820 pF	1%	500V	Polyst.	615 282 00
C109,147	270 pF	1%	500V	Polyst.	615 227 00
C110	220 pF	1%	500V	Polyst.	615 222 00
C111,134,148	15 pF	+/-0.25%	400V	Cer.	605 115 01
C112,122,130,135	1.2 nF	1%	125V	Polyst.	613 312 00
C113	560 pF	1%	560 pF	Polyst.	615 256 00
C115	2x335 pF			Var.	682 233 50
C118	33 pF	5%	400V	Cer.	605 133 00
C119,127	27 pF	5%	400V	Cer.	605 127 00
C120	2.7 pF	+/- 0.25%	400V	Cer.	605 027 00
C123,132,136,146	180 pF	1%	500V	Polyst.	615 218 00
C124	160 pF	1%	500V	Polyst.	615 216 00
C125	10 pF	5%	400V	Cer.	605 110 00
C126	22 nF	10%	100V	Polyes.	623 422 00
C129	1.8 nF	1%	125V	Polyst.	613 318 00

## PARTS LIST

FOR

401

401C131,152	130 pF	1%	500V	Polyst.	615 213 00
C133	18 pF	5%	400V	Cer.	605 118 03
C137	4.7 pF	+/-0.25%	400V	Cer.	605 047 01
C200,203,204,206 214,216,217,218 219,220,224,225 229,231,232,234, 235,236,239,240, 243,245,248,249 250,252,254,255, 267	0.1 uF	10%	100V	Polyes.	623 510 00
C201	15 pF	+/-0.25%	400V	Cer.	605 115 01
C202,207,212,215, 227,233,238,242, 247,251,257,261	10 nF	10%	100V	Polyes.	623 410 00
C205	47 pF	5%	400V	Cer.	605 147 00
C208, 269	510 pF	1%	500V	Polyst.	615 251 00
C209	590 pF	1%	500V	Polyst.	615 259 00
C210	560 pF	1%	500V	Polyst.	615 256 00
C211	39 pF	5%	500V	Cer.	605 139 00
C213,221,223,237	1 nF	1%	125V	Polyst.	613 310 00
C222	6.8 nF	1%	250V	Polyst.	614 368 00
C226,262	22 uF		15V	Tan.	651 722 00
C228,263,266	100 uF		25V	W.Alum.	652 810 00
C230	4.7 pF	+/-0.25%	400V	Cer.	605 047 00
C241	120 pF	1%	500V	Polyst.	615 212 00
C244	12 pF	5%	400V	Cer.	605 112 01
C246	1.2 nF	1%	125V	Polyst.	613 312 00

## PARTS LIST

FOR

**401**

401C253	2.2 nF		500V	Polyst.	615 322 01
C256	470 pF	1%	500V	Polyst.	615 247 00
C258,259	0.47uF	10%	63V	Polyes.	622 547 00
C260	22 nF	10%	100V	Polyes.	623 422 00
C264	5.6 nF	1%	125V	Polyst.	613 356 00
C265	1.5 nF	1%	500V	Polyst.	615 315 00
C268	470 uF		40V	W.Alum.	652 847 00
401D100,101,102,103 108,109,110,113 114,115,116,117 118,119,120	1S920				830 192 00
D104,105,106,107 111,112	10D05				831 100 51
D200,201	BA379				833 037 90
D202,203,203,205 206,207,208,209 210,211,212	1S920				830 192 00
401L100	5 mH			RF Choke	740 350 00
L101,116,117	100 uH			RF Choke	740 210 00
L102,107	1 mH			RF Choke	740 310 00
L103,109	47 uH			RF Choke	740 147 01
L104					103 400 8X
L105					103 400 4X
L106,112					103 400 21
L108	68 uH			RF Choke	740 168 00
L110	330 uH			RF Choke	740 233 00
L111					103 400 3X

## PARTS LIST

FOR

401

401L113	220 uH			RF Choke	740 222 00
L114					103 400 91
L115	0.68uH			RF Choke	740 006 80
L200	4.7 uH			RF Choke	740 147 00
L201,203	100 uH			RF Choke	740 210 00
L202					103 400 7X
L203,205,206					103 400 5X
L207					103 400 6X
401PL1	10 Way				756 010 00
PL2	60 Way				756 060 00
401Q100	BC337-25-40				840 033 70
Q101	BC547B				840 054 70
Q102	BSX20				840 002 00
Q103,104	J310				840 031 02
Q200,203,204,205 207,209,211	BC547B				840 054 70
Q201	BSX20				840 002 00
Q202	J310				840 031 03
Q206,208,210	BF240				840 024 00
401R1	390 ohm	5%	1/3W	Car.	501 239 00
R2	4.7 kohm	5%	1/3W	Car.	501 347 00
R3	22 kohm	5%	1/3W	Car.	501 422 00
R4	100 kohm	5%	1/3W	Car.	501 510 00

## PARTS LIST

FOR

401

401R100,101,102,105	4.7 kohm	5%	1/3W	Car.	501 347 00
R104,106	10 kohm	5%	1/3W	Car.	501 410 00
R107	1.2 kohm	5%	1/3W	Car.	501 312 00
R108	47 kohm	5%	1/3W	Car.	501 447 00
R109,121	2.2 kohm	5%	1/3W	Car.	501 322 00
R110	33 kohm	5%	1/3W	Car.	501 433 00
R111,112,113,114	1 kohm	5%	1/3W	Car.	501 310 00
R115,116,117,118 119,120	390 ohm	5%	1/3W	Car.	501 239 00
R122,124	560 ohm	5%	1/3W	Car.	501 156 00
R123,131,132	100 ohm	5%	1/3W	Car.	501 210 00
R125	3.3 kohm	5%	1/3W	Car.	501 333 00
R126	1.8 kohm	5%	1/3W	Car.	501 318 00
R127	82 ohm	5%	1/3W	Car.	501 182 00
R128	150 ohm	5%	1/3W	Car.	501 215 00
R129, 130	332 ohm	1%	1/3W	MF	511 233 20
R200	22 kohm	5%	1/3W	Car.	501 422 00
R201,226,232, 235,246,261	1 kohm	5%	1/3W	Car.	501 310 00
R202	1.8 kohm	5%	1/3W	Car.	501 318 00
R203	56 kohm	5%	1/3W	Car.	501 456 00
R203,218,219,227 231,267	100 ohm	5%	1/3W	Car.	501 210 00
R205,206,223	33 kohm	5%	1/3W	Car.	501 433 00
R207	1.5 kohm	5%	1/3W	Car	501 315 00
R208,244,263	1.2 kohm	5%	1/3W	Car.	501 312 00

## PARTS LIST

FOR

401
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401R209	120 ohm	5%	1/3W	Car.	501 212 00
R210	560 ohm	5%	1/3W	Car.	501 256 00
R211	27 kohm	5%	1/3W	Car.	501 427 00
R212, 233, 245, 248 256	330 ohm	5%	1/3W	Car.	501 233 00
R213, 216, 217	6.8 kohm	5%	1/3W	Car.	501 368 00
R214, 215, 254	820 ohm				
R220	15 kohm	5%	1/3W	Car.	501 415 00
R221, 229, 230, 238 241, 242, 262	10 kohm				
R222, 247	4.7 kohm	5%	1/3W	Car.	501 347 00
R224, 225, 228, 251 264	3.3 kohm	5%	1/3W	Car.	501 333 00
R226, 232, 235	1 kohm	5%	1/3W	Car.	501 310 00
R234	680 ohm	5%	1/3W	Car.	501 268 00
R236, 240	220 kohm	5%	1/3W	Car.	501 522 00
R237, 260	330 ohm	5%	1/3W	Car.	501 133 00
R239	27 ohm	5%	1/3W	Car.	501 127 00
R243, 250	470 ohm	5%	1/3W	Car.	501 247 00
R249, 252, 265	100 kohm	5%	1/3W	Car.	501 510 00
R253, 257	2.2 kohm	5%	1/3W	Car.	501 322 00
R255	47 kohm	5%	1/3W	Car.	501 447 00
R258	56 ohm	5%	1/3W	Car.	501 156 00
R259	2.7 kohm	5%	1/3W	Car.	501 327 00
R266	68 ohm	5%	1/3W	Car.	501 168 00
R268	1 ohm	5%	1/3W	Car.	501 010 00

## PARTS LIST

FOR

401

401RL100	Reed Relay	12V	780 000 25
401RN103	15x10 kohm		530 000 03
401SK1	Socket		750 000 13
401SL1	Lamp	Neon	722 000 00
401T1			103 401 9X
T100			130 401 0X
T101			103 401 1X
T102			103 401 2X
T103			103 401 3X
T104			103 401 7X
T200			103 401 8X
T201			103 401 4X
T202			103 401 5X
T203			103 401 6X
401U1	MA7812		850 781 20
U100	ULN2803		850 280 30
U101	4081B		850 408 10
U102	4011B		850 401 10
U103	CD4049B		850 404 90
U200	TBA 120		850 012 00
U201	TBA 810S		850 081 00

## PARTS LIST

FOR

402

Printed Circuit Board Complete 402					107 440 21
402B1	Battery		3.7V		890 000 01
402C1,2,5,	0.47 uF	10%	63V	Polyes.	622 547 00
C3	10 nF	10%	100V	Polyes.	623 410 00
C4	220 uF		25V	W.Alum.	652 822 00
C6,7	22 uF		15V	W.Alum.	651 722 00
C100	1 nF	1%	250V	Polyst.	614 310 00
C101,103,105	10 nF	10%	100V	Polyes.	623 410 00
C102	22 uF		15V		651 722 00
C104,106,107	0.1 uF	10%	100V	Polyes.	623 510 00
C108	0.47 uF	10%	63V	Polyes.	622 547 00
C109,110,111,112, 113	0.1 uF	10%	100V	Polyes.	623 510 00
C200	0.1 uF	10%	100V	Polyes.	623 510 00
C201	4.5-26 pF	Var.			683 126 00
C202,203,207,208	10 nF	10%	100V	Polyes.	623 410 00
C204	27 pF	+/-0.25%	400V	Cer.	605 127 01
C205	330 pF	1%	500V	Polyst.	615 233 00
C206	180 pF	1%	500V	Polyst.	615 218 00
C209,210,216,220, 221,226,228,229, 234,235,238,239, 244,247,250,252, 253,254,255,256, 257,258	0.1 uF	10%	100V	Polyes.	623 510 00
C213	220 pF	1%	500V	Polyst.	615 222 00
C214	6.8 uF	10%	63V	Polyes.	622 668 00



## PARTS LIST

FOR

402

C215	33 pF	5%	400V	Cer.	605 133 00
C217	3.3 nF	1%	125V	Polyst.	613 333 00
C218,222,237,240 243,246,248,249 251	10 nF	10%	100V	Polyes.	623 410 00
C219	220 uF		25V	W.Alum	652 822 00
C223	.1 nF	1%	250V	Polyst.	614 310 00
C224	39 pF	10%		Cer.	602 139 00
C225,231	470 pF	1%	500V	Polyst.	615 247 00
C227	120 pF	10%	25V	Cer.	602 212 01
C230,232	680 pF	1%	500V	Polyst.	615 268 00
C233	0.22 uF	10%	63V	Polyes.	622 522 00
C236	0.47 uF	10%	63V	Polyes.	622 547 00
C241	47 pF	5%	400V	Cer.	605 147 00
C242,245	1 nF	-20+80%	25V	Cer.	602 310 00
402D1	AA143				830 014 30
D2	BZX79	Zener			832 796 20
D3,4	1S920				830 192 00
D100	AA143				830 014 30
D101	BZX79	Zener			832 796 20
D200,205,207	1S920				830 192 00
D201,202,203	BB109				833 010 90
D204	BB204				833 020 40
D206	BB212				833 021 20

## PARTS LIST

FOR

402

402L1	25 uH			RF Choke	740 125 00
L200	10 uH			RF Choke	740 110 00
L201,203,204,205	100 uH			RF Choke	740 210 00
L202					103 402 1X
402PL1	10 Way				756 010 00
PL2	60 Way				756 060 00
PL3	26 Way				756 026 00
402Q1	BC547B				840 054 70
Q100,102,103	BC547B				840 054 70
Q101	BF240				840 024 00
Q200,201,202,203, 204,205,206,207, 208,210	BF240				840 024 00
Q209	BC547B				840 054 70
Q211,212	BSX20				840 002 00
402R1	15 kohm	5%	1/3W	Car.	501 415 00
R2	4.7 kohm	5%	1/3W	Car.	501 347 00
R3	220 ohm	5%	1/3W	Car.	501 222 00
R4	330 ohm	5%	1/3W	Car.	501 233 00
R5	470 ohm	5%	1/3W	Car.	501 247 00
R100	470 ohm	5%	1/3W	Car.	501 247 00
R101,102,105,106, 109	3.3 kohm	5%	1/3W	Car.	501 333 00
R103,108	12 kohm	5%	1/3W	Car.	501 412 00

## PARTS LIST

FOR

402

402R104,113,117,120	1 kohm	5%	1/3W	Car.	501 310 00
R107	68 ohm	5%	1/3W	Car.	501 168 00
R110	4.7 kohm	5%	1/3W	Car.	501 347 00
R111	680 ohm	5%	1/3W	Car.	501 268 00
R112	270 ohm	5%	1/3W	Car.	501 227 00
R114	1.8 kohm	5%	1/3W	Car.	501 318 00
R115	330 ohm	5%	1/3W	Car.	501 233 00
R116	10 kohm	5%	1/3W	Car.	501 410 00
R118	68 kohm	5%	1/3W	Car.	501 468 00
R119	15 kohm	5%	1/3W	Car.	501 415 00
R121	47 kohm	5%	1/3W	Car.	501 447 00
R200,201	10 kohm	5%	1/3W	Car.	501 410 00
R202,212,214,215, 219,232,249,251, 262,267,273	1 kohm	5%	1/3W	Car.	501 310 01
402R203,245,255,243	2.2 kohm	5%	1/3W	Car.	501 322 00
R204,207,210,226, 227,247,248,250, 264,266,268	10 kohm	5%	1/3W	Car.	501 410 00
R205,211,230,234, 246,252,257,265, 272	3.9 kohm	5%	1/3W	Car.	501 339 00
R206,208,253,258	470 ohm	5%	1/3W	Car.	501 247 00
R209,259	150 ohm	5%	1/3W	Car.	501 215 00
R213	1.5 kohm	5%	1/3W	Car.	501 315 00
R216	330 kohm	5%	1/3W	Car.	501 533 00
R217,220,222,228	15 kohm	5%	1/3W	Car.	501 415 00

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402R218,221,223,229	47 kohm	Horizontal			582 447 00
R224	27 kohm	5%	1/3W	Car.	501 427 00
R225	120 ohm	5%	1/3W	Car.	501 212 00
R231	3.3 Mohm	5%	1/3W	Car.	501 633 00
R233,240	22 kohm	5%	1/3W	Car.	501 422 00
R235,237	33 kohm	5%	1/3W	Car.	501 433 00
R236	6.8 kohm	5%	1/3W	Car.	501 368 00
R238,239,241	100 kohm	5%	1/3W	Car.	501 510 00
R242,261,276,279, 280	220 ohm	5%	1/3W	Car.	501 222 00
R244	220 kohm	5%	1/3W	Car.	501 222 00
R254,269,274	100 ohm	5%	1/3W	Car.	501 210 00
R256	12 kohm	5%	1/3W	Car.	501 412 00
R260,270,271	4.7 kohm	5%	1/3W	Car.	501 347 00
R263	330 ohm	5%	1/3W	Car.	501 233 00
R275	47 ohm	5%	1/3W	Car.	501 147 00
R277	56 ohm	5%	1/3W	Car.	501 156 00
R278	82 ohm	5%	1/3W	Car.	501 182 00
R281	33 ohm	5%	1/3W	Car.	501 133 00
402RN100	15x10 kohm				530 000 03
RN101	14x47 kohm				530 000 04
402T200					103 402 3X
T201					103 402 4X
T202					103 402 2X

## PARTS LIST

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402U1	MA7812	850 781 20
U2,3	MA7805	850 780 50
U100	SN7406	850 740 60
U101	SN74LS08	850 740 80
U102	4093BC	850 409 30
U103	74LS04	850 740 41
U104	6802	850 680 20
U106	2532	850 253 20
U107	SN74LS10	850 741 01
U108	6335-1	850 633 50
U109	MC6821P	850 682 10
U110	6522	850 652 20
U111	74C160	857 416 01
U112,113	4019BC	850 401 90
U114	74C164	857 416 31
U115	510L-1	850 510 10
U116	74LS30	850 743 01
U117	74C150	857 415 00
U200,213,216	SN74LS163	857 416 31
U201,210	SN74LS00	850 740 02
U202	4013B	850 401 30
U203,214,218	CD4029B	850 420 90
U204	4001	850 400 10
U205	CD4046B	850 404 60
U206	CD4059A	850 405 90
U208,209,215	74C164	850 416 40