Parts List for the Junior Computer][IO/Language Card Rev. 1D

Reference	Quantity	Value	Description and Order-Link	Distributor
C1-C8, C14,C24,C26	11	100nF	KERKO 100N Ceramic Capacitor, 5mm spacing	Reichelt.de
C9,C12,C13	3	10uF 16V	RAD 10/35 Electrolytic Capacitor, radial, 2.5mm spacing	Reichelt.de
C10	1	220uF 35V	RAD 220/35 Electrolytic Capacitor, radial, 5mm spacing	Reichelt.de
C11	1	47nF 63V	MMK 47n 63 Film Capacitor, 5mm spacing	Reichelt.de
C15-C17	3	470pF	KERKO 470P Ceramic Capacitor 2.5mm spacing	Reichelt.de
C18-C21	4	1uF 16V	RAD 1/63 Electrolytic Capacitor, radial, 2.5mm spacing	Reichelt.de
C22	1	100nF	MMK 100n 100 Film Capacitor, 5mm spacing	Reichelt.de
C23,C25	2	10uF 6,3V	RAD 10/35 Electrolytic Capacitor, radial, 2.5mm spacing	Reichelt.de
D1-D7,D9-D10	9	BAT46	BAT 46 Schottky Diode	Reichelt.de
D8	1	1N4004	1N4004 Diode	Reichelt.de
R1-R4	4	4.7 KOhm	1W 4.7K Metal Film Resistor	Reichelt.de
R5-R7,R10, R14-R16, R18,R19	9	10 KOhm	1W 10K Metal Film Resistor	Reichelt.de
R8	1	1.2 KOhm	1W 1.2K Metal Film Resistor	Reichelt.de
R9	1	10 Ohm	1W 10 Metal Film Resistor	Reichelt.de
R12,R13	2	3.3 KOhm	1W 3.3K Metal Film Resistor	Reichelt.de
R17	1	2.2 KOhm	1W 2.2K Metal Film Resistor	Reichelt.de
RV1	1	10 KOhm	ACP 14-S 10K trim. Potentiometer	Reichelt.de
Q1	1	TIP125	TIP125 Darlington Transistor, PNP	Reichelt.de
U1,U2,U13	3	74LS244	SN 74LS244N TEX Buffer, 3-State, DIL-20	Reichelt.de
U3	1	74LS245	LS 245 Transceiver, Octal, DIL-20	Reichelt.de
U4,U5	2	65C22	W65C22S6TPG-14 6522 VIA	Reichelt, eBay, Mouser…
U6	1	74LS137	LS 137 Decoder/MPX, 3 to 8, DIL-16	Reichelt.de

U7	1	74LS139	LS 139 Decoder/MPX, 2 to 4, DIL-16	Reichelt.de
U8	1	28C256	28C256-150 EEPROM, 256Kb (32 K x 8), PDIP-28	Reichelt.de
U9	1	74LS02	LS 02 NOR-Gate, 2-Input, DIL-14	Reichelt.de
U10,U11	2	74LS257	LS 257 Multiplexer, 3-State, DIL-16	Reichelt.de
U12	1	74LS241	LS 241 Buffer, 3-State, DIL-20	Reichelt.de
U14	1	DS1307+	DS 1307 Serial Real Time Clock, 56byte Clock/Calendar, DIP-8	Reichelt.de
U15	1	SN76489	Digital Complex Sound Generator	eBay
U16	1	74LS165	LS 165 Shift Register, 8-Bit, DIL-16	Reichelt.de
U17	1	LM386N	LM386 DIP Audio-IC, 1-Chanel, DIP-8	Reichelt.de
U18	1	MT3608	DC-DC Stepup Converter	AZ-Delivery
U19	1	74LVC245	74LVC245Transceiver/Level-Shifter	csd-electronics.de or eBay, AliExpress, ...
U20	1	NCP1117-3.3	LDO-Voltage Regulator 3.3V SMD	Reichelt.de
X1	1	4.00 MHz	OSZI 4.000000 Cristal Oscillator 4.00 MHz	Reichelt.de
Y1	1	32.768 KHz	IQD LFXTAL002997 Cristal, 32.768 KHz	Reichelt.de
BT1	1	KZH 20-1	KZH 20-1 Button Cell Holder for 20mm diameter	Reichelt.de
BATT1	1	CR2032	Button Cell CR2032	
J1	1	DIN41612 Male, 3 rows, 2x32 pin	HAN 03 164 6921 C Female Connector, 64-pin (A-C), pitch 2,5mm, angled	Reichelt.de
J2	1	ASCII-Keyboard Connector	GS 16P IC-Socket 16-pin, precision socket, gold plated **Use J9 instead if Keyboard Rev. 2 connected**	Reichelt.de
J3,J4	1	Port A 2x7-pin, Port B 2x8-pin	SL 2x17W 2,54 2x17-pin Pin Header, angled, 2.54 mm spacing	Reichelt.de
J5	1	DB25 Female	D-SUB BU 25US D-SUB-Connector Female 25-pin, angled, depth 7,2mm	Reichelt.de
J6	1	Box Header 2x10-pin	WSL 20G Box Connector, 20-pin, straight	Reichelt.de
J7	1	Box Header 2x8-pin	WSL 16G Box Connector, 16-pin, straight	Reichelt.de
J9	1	ASCII-Keyboard Connector, Box Header 2x8-pin	WSL 16G Box Connector, 16-pin, straight **Use J2 instead if Keyboard Rev. 1 connected**	Reichelt.de
J8, J10, J12, JP4	4	Pin Header 1x4-pin, 1x2-pin, 1x2-pin, 1x2-pin	BKL 10120528 Pin Header, 20-pin, 2.54mm spacing, angled	Reichelt.de

J14	1	Pin Header 1x6-pin	BKL 10120204 Pin Header, 20-pin, 2.54mm spacing, straight	Reichelt.de
J15	1	SD-Card Connector, Push-Push	ATOM SD01-AP20324 or WR-CRD SD Header 9 Pin	Pollin.de or de.rs-online.com
IC-Soc	2	IC-Socket 8-pin	GS 8P IC-Socket 8-pin, precision socket, gold plated	Reichelt.de
IC-Soc	1	IC-Socket 14-pin	GS 14P IC-Socket 14-pin, precision socket, gold plated	Reichelt.de
IC-Soc	6	IC-Socket 16-pin	GS 16P IC-Socket 16-pin, precision socket, gold plated	Reichelt.de
IC-Soc	6	IC-Socket 20-pin	GS 20P IC-Socket 20-pin, precision socket, gold plated	Reichelt.de
IC-Soc	1	IC-Socket 28-pin	GS 28P IC-Socket 28-pin, precision socket, gold plated	Reichelt.de
IC-Soc	2	IC-Socket 40-pin	GS 40P IC-Socket 40-pin, precision socket, gold plated	Reichelt.de
Dist	4	Spacers	VT DA4 18mm Spacers, Metal, M4, 18mm	Reichelt.de

Backplane Parts

Slot 0 – Slot 3	4	DIN 41612 Female, 3 rows, 2x32-pin	HAN 03 264 6825 C Male Connector, straight, 64-pin (A-C).	Reichelt.de

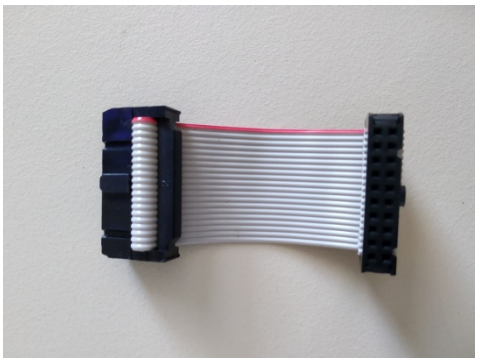
Assembly Notes

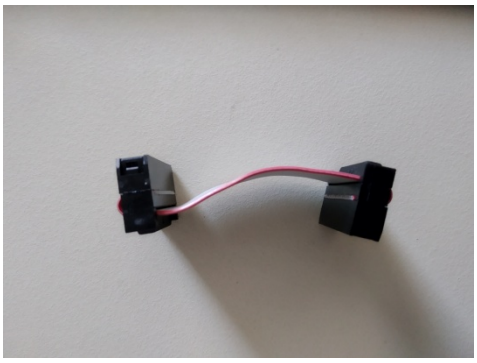
Please note the installation direction of the crystal oscillator X1. Pin 1 of the oscillator is on the right, next to pin 7 of IC U9 (74LS02).

You may use soldering nails to solder the MT3608 voltage converter. I just took 1mm diameter pieces of silver wire. **The output voltage of the converter must be set to 6.1V**.

You should insulate the converter (with some plastic foil, cardboard, etc.) from the circuit board to prevent a short with the IO Board, because of a some protruding pins on the bottom side of the converter.

The total length of the cable between the parallel IO port of the Junior Computer][and the parallel port interconnect should be approx. 7.5 cm so that it can easily plugged in and out even with the strain reliefs of the ribbon cable connectors clipped in.





Place two solder joints on left and right side of the front of the SD card adapter to secure it against wobbling. There are small solder pads near the edge of the PCB for this purpose.

If necessary, fix the 32.768KHz crystal to the circuit board with solder or a drop of glue to prevent breaking the very thin connection wires. For this purpose, there is a small solder pad at the top of the crystal.

The pin headers J14 (Datasette) and J2 (SND OUT) are optional. The output of the SN76489 sound chip can be tapped at SND OUT if you want to use your own amplifier or some amplified PC speakers.

You can tap the signals of the I2C interface for your own on-board extensions at the two solder pads named SCL and SDA on the left side of the perf board. J8 can be used for external I2C extensions:

J8 (I2C) GND (1) +5V (2) SDA (3) SCL (4).

Assignment of the two port connectors

J3 (Port A)	14 GND	13 GND
	12 PA0	11 PA1
	10 PA2	9 PA3
	8 PA4	7 PA5
	6 PA6	5 PA7
	4 CA1	3 CA2
white mark	2 +5V	1 +5V |

J4 (Port B)	16 GND	15 GND
	14 /RES	13 /IRQ
	12 PA0	11 PA1
	10 PA2	9 PA3
	8 PA4	7 PA5
	6 PA6	5 PA7
	4 CA1	3 CA2
white mark	2 +5V	1 +5V |

There are three solder jumpers K2, K3 and K4 located to the left of the expansion connector. One of them must be bridged to select the IO base address for the correct function of the IO Board.

Jumper	Base-Address
K2	$0800
K3	$0C00
K4	$1000 (reserved for the Junior Computer][Floppy-/Graphics-Controller)

On the Junior Computer][CPU board, the DIP switches must be in position

$80 ON
$A0 OFF
$C0 OFF

Have fun

Jörg