The circuit diagrams in the 5150 PC Technical Reference by IBM are your best source of information for identifying and understanding the parts used on the PC-Retro. The PC-Retro is identical except for the cassette delay line chip. (DS1000M-125)

Finding parts for the PC-Retro has become very difficult. Often, finding a suitable part requires locating an equivalent substitute by doing research. Jameco originally was a pretty good supplier, but their stock of vintage parts is dwindling. Digi-Key has also been a good supplier, but they are phasing out through hole components and tin-lead devices.

The most likely source for finding parts today is on EBAY. This often involves ordering from all over the world. Beware of counterfeit vintage parts coming from China. (Blank IC's labeled to look correct.)

MTM Scientific, Inc 11/21/2020

## IC's on IBM 5151 PC MOTHERBOARD (64KB-256KB CPU)

U1, MC1741, 8 pin
U2, 8259A, 28 pin
U3, 8088 CPU, 40 pin
U4, 8087 MATH PROCESSOR, EMPTY, 40 pin
U5, LS30, 14 pin
U6, 8288, 20 pin
U7, LS373, 20 pin
U8, LS245, 20 Pin
U9, LS373, 20 pin
U10, LS373, 20 pin
U11, 8248A, 18 pin
U12, LS245, 20 pin
U13, LS245, 20 pin
U14, LS245, 20 pin
U15, LS244, 20 pin
U16, LS244, 20 pin
U17, LS244, 20 pin
U18, LS373, 20 pin
U19, LS670, 16 pin
U20, RN1 THIS LOCATION, 4.7 K Ohm, 16 pin (See below)
U21, SW1 DIP SWITCH THIS LOCATION, 16 pin (See below)
U22, RN2 THIS LOCATION, 8.2 K Ohm, 16 pin (See below)

U23, LS244, 20 pin
U24, LS322, 20 pin
U25, SW2 DIP SWITCH THIS LOCATION, 16 pin (See below)
U26, LS175, 16 pin
U27, LS02, 14 pin
U28, ROM, EMPTY, 24 pin
U29, ROM, BASIC, 24 pin
U30, ROM, BASIC, 24 pin
U31, ROM, BASIC, 24 pin
U32, ROM, BASIC, 24 pin
U33, ROM, BIOS, 24 pin (Use a 27128 EPROM in an Adapter Socket)
U34, 8253-5, 24 pin
U35, 8237A-S, 40 pin
U36, 8255A-5, 40 pin
U37, RAM, BANK0, 16 pin, MB8264-20 (Numerous Substitutes)
U38, RAM, BANK0, 16 pin
U39, RAM, BANK0, 16 pin
U40, RAM, BANK0, 16 pin
U41, RAM, BANK0, 16 pin
U42, RAM, BANK0, 16 pin
U43, RAM, BANK0, 16 pin
U44, RAM, BANK0, 16 pin
U45, RAM, BANK0, 16 pin
U46, LS138, 16 pin
U47, LS138, 16 pin
U48, LS138, 16 pin
U49, S08, 14 pin
U50, LS02, 14 pin
U51, LS04, 14 pin
U52, LS00, 14 pin
U53, RAM, BANK1, EMPTY, 16 pin, MB8264-20 (Numerous Substitutes)
U54, RAM, BANK1, EMPTY, 16 pin
U55, RAM, BANK1, EMPTY, 16 pin
U56, RAM, BANK1, EMPTY, 16 pin
U57, RAM, BANK1, EMPTY, 16 pin
U58, RAM, BANK1, EMPTY, 16 pin
U59, RAM, BANK1, EMPTY, 16 pin
U60, RAM, BANK1, EMPTY, 16 pin
U61, RAM, BANK1, EMPTY, 16 pin
U62, LS158, 16 pin

U63, LS38, 14 pin
U64, LS20, 14 pin
U65, S138, 16 pin
U66, LS138, 16 pin
U67, LS74, 14 pin
U68, RN3 THIS LOCATION, 4.7 K Ohm, 16 pin (See below)
U69, RAM, BANK2, EMPTY, 16 pin, MB8264-20 (Numerous Substitutes)
U70, RAM, BANK2, EMPTY, 16 pin
U71, RAM, BANK2, EMPTY, 16 pin
U72, RAM, BANK2, EMPTY, 16 pin
U73, RAM, BANK2, EMPTY, 16 pin
U74, RAM, BANK2, EMPTY, 16 pin
U75, RAM, BANK2, EMPTY, 16 pin
U76, RAM, BANK2, EMPTY, 16 pin
U77, RAM, BANK2, EMPTY, 16 pin
U78, RN4 THIS LOCATION, 30 Ohm, 16 pin (See below)
U79, LS158, 16 pin
U80, LS125, 14 pin
U81, S00, 14 pin
U82, S74, 14 pin
U83, LS04, 14 pin
U84, LS10, 14 pin
U85, RAM, BANK3, EMPTY, 16 pin, MB8264-20 (Numerous Substitutes)
U86, RAM, BANK3, EMPTY, 16 pin
U87, RAM, BANK3, EMPTY, 16 pin
U88, RAM, BANK3, EMPTY, 16 pin
U89, RAM, BANK3, EMPTY, 16 pin
U90, RAM, BANK3, EMPTY, 16 pin
U91, RAM, BANK3, EMPTY, 16 pin
U92, RAM, BANK3, EMPTY, 16 pin
U93, RAM, BANK3, EMPTY, 16 pin
U94, S280, 14 pin
U95, 75477, 8 pin
U96, LS74, 14 pin
U97, S08, 14 pin
U98, LS175, 16 pin
U99, LS04, 14 pin
U100, NO SOCKET, EMPTY SPACE, 20 pin
U102, See Miscellaneous List (See below)

# Resistors on IBM 5151 PC Motherboard

(64KB-256KB CPU) "Model B"
Cross checked with board and the circuit diagram.
R1, 18 KOhm, Brown Gray Orange
R2, 1 MOhm, Brown Black Green
R3, 18 KOhm, Brown Gray Orange
R4, 18 KOhm, Brown Gray Orange
R5, 18 KOhm, Brown Gray Orange
R6, 150 Ohm, Brown Green Brown
R7, 1200 Ohm, Brown Red Red
R8, 4.7 KOhm, Yellow Purple Red
R9, 3.9 KOhm, Orange White Red
R10*, 33 Ohm, Orange Orange Black
R11, 180 Ohm, Brown Gray Brown
R12, 220 Ohm, Red Red Brown
R13, 27 Ohm, Red Purple Black
R14, 27 Ohm, Red Purple Black
R15, 27 Ohm, Red Purple Black
R16, 27 Ohm, Red Purple Black
R17, 27 Ohm, Red Purple Black
R18, 27 Ohm, Red Purple Black
R19, 27 Ohm, Red Purple Black
R20, 27 Ohm, Red Purple Black
R21, 27 Ohm, Red Purple Black
R22, 510 Ohm, Green Brown Brown
R23, 30 Ohm, Orange Black Black
R24, Not Present
R25, 510 Ohm, Green Brown Brown

*R10 is 1/2 Watt. All others are 1/4 Watt.

Resistor Networks (DIP IC)

RN1, 4.7 K Ohm, 16 pin, Bussed (15 resistors) 4116R-002-472 (yellow DIP) or 316A472  AB Note: This part is available from Mouser as 4116R-2-472 (Exact match)

RN2, 8.2 K Ohm, 16 pin, 15 resistors bussed to +5V. Part number from Mouser is 4116R-2-822LF. (Tin/Lead legacy is 4116R-002-822)

RN3, 4.7 K Ohm, 16 pin, Bussed (15 resistors) 4116R-002-472 (yellow DIP) or 316A472 AB Note: This part is available from Mouser as 652-4116R-2LF-4.7K (Exact match)

RN4, 30 Ohm, 16 pin, 8 independent resistors, 916C300X2SR or 316B300 from AB. Mouser only has 27 or 33 ohm available.  Arrow has the part though, as 4116R-1-300.

## Capacitor Parts List / Misc. List

C3, .047 uF, Qty: 23, Yellow, Ceramic, Marked 'K5M', Digi-Key #BC2686TB-ND, 50V

C5, .01 uF, Tubular, Qty: 1, TRW 630 film capacitor, 50V (Same as C9)

C7, 10 uF, Qty: 13, Yellow, Tantalum, 3 Leads, 16V  (Substitute 2 Leads OK)

C8, .047 uF, Tubular, Qty: 1, TRW 630 film capacitor,  50V

C9, .01 uF, Tubular, Qty: 1, TRW 630 film capacitor, 50V (Same as C5)

C10, 47pF, Qty: 3, Yellow, Ceramic, 50V, Digi-Key #BC1038CT-ND

C-12, .047uf, Qty: 1, Yellow, Ceramic (Appears to be the same as C3)

Capacitor Trimmer, 5-30 pF

## Miscellaneous Components

Crystal, 14.31818 MHZ, Qty: 1, Jameco #537799

Rocker Switches, Qty: 2, AMP 435640-5 (These are U21 and U25 on IC Listing)

Relay, DPDT, Qty: 1 Omron G5V-2 5VDC

Keyboard Connector, 5 Pin DIN, Qty:2, Jameco #29399

Power Supply Connector, 6 Pin, 0.156, Amphenol, Qty:2 (Modified Key in 1 of 2)

Edge Card Connector, Qty: 5, Jameco #40694

TD1: Time Delay Line, DS1000M-125 Qty: 1, (Substitute is Data Delay Devices #3D7205M-25, 8 Pin IC DIP) On the Stock List as U102.

TD2: Time Delay Line, Qty: 1, Resistor Substitution is 470 Ohm 1/4 Watt, Jameco #690785 . (This was done on some IBM production boards.)

Speaker, 8 Ohm, Qty: 1

Speaker Connector, Qty:1, Right Angle Single Row Male Header, 0.100" (2.54mm). Cut to 4 pins and remove a pin.

2x2 Male Pin Header (Cassette Jumper Select), Qty: 1, Straight Male Header, 0.100" (2.54mm), EBAY.

Mini Jumper Plug, Shorting, Qty: 1, 0.100" (2.54 mm)

Diode, Qty: 1, "D1" on Board, 1N659, FC Type, 50V, Substitute 1N914A (Jameco #655269)

## IC Socket List

8 pin, Qty: 3

14 pin, Qty: 19

16 pin, Qty: 51

18 pin, Qty: 2

20 pin, Qty: 14

24 pin, Qty: 7 (Double Wide, 0.600 inches)

28 pin, Qty: 1 (Double Wide, 0.600 inches)

40 pin, Qty: 4 (Double Wide, 0.600 inches)