PT-FD-3765

User's Manual

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Peripheral Technology

Last update 05/13/26

PT-FD-3765

The FD-3765 is a high- density floppy controller intended for use in the PT68K2. The FD-3765 is not needed for the PT68K4 or PT68K5 since those boards include a WD3765 floppy controller. The PT68K2 uses a WD1772 as its onboard floppy controller. The WD1772 does not support high density formats. Recently, the WD1772 is very hard to find while the WD3765 chip is readily available. Using the FD-3765 in a PT68K2 computer allows the PT68K2 to use the same diskettes the PT68K4 uses.

Due to the limitations of the 16V8 GAL the enable/disable function of jumper JP3 has been lost. The original chip was a TIBPAL16L8. Finding the TIBPAL16L8 today is almost impossible, and there are no inexpensive programmers if you were to obtain a TIBPAL16L8. The equations have been modified to use a 16V8. A 16V8 will replace most designs using a 16L8; this was one that did not.

Historically JP3 had been used to change the address of the board. Should an address change be needed, modification to the PAL equations will be necessary and a new GAL programmed.

Parts List FD-3765

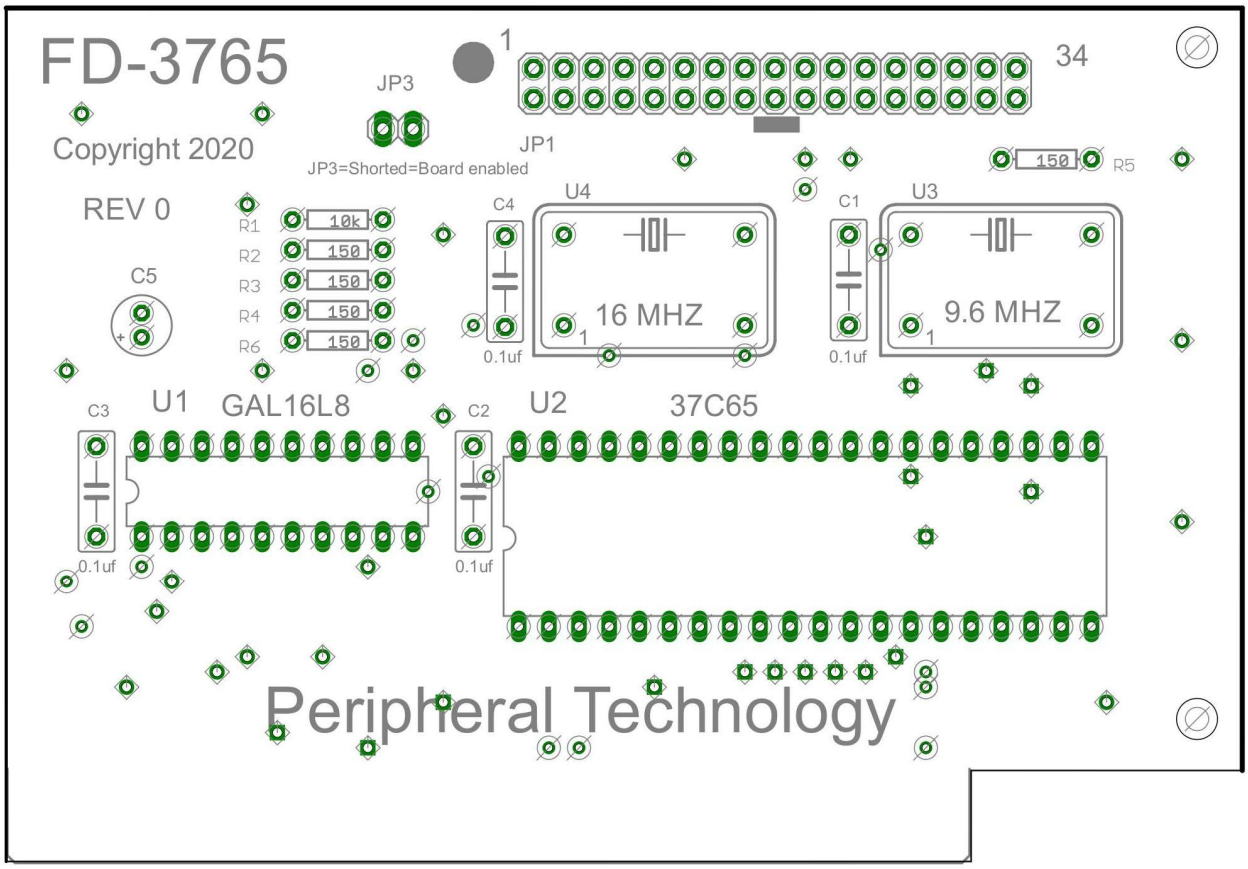
Quantity	Designation	Description
1	R1	10K Ohm 1/4 Watt Resistor
5	R2-R6	150 Ohm 1/4 Watt Resistor
.		
4	C1-C4	0.1uF Ceramic Capacitor
1	C5	20 to 100uF 16V Capacitor
1	U1	Atmel F16V8B-15PU
1	U2	WD3765
2	U3	Optional – 9.6MHZ Oscillator – Full Size
3	U4	16 MHZ Oscillator – Full size
1		20 pin IC Socket
1		40 pin IC Socket
1	JP1	17x2 Header Strip
1		Keystone 9202 Bracket

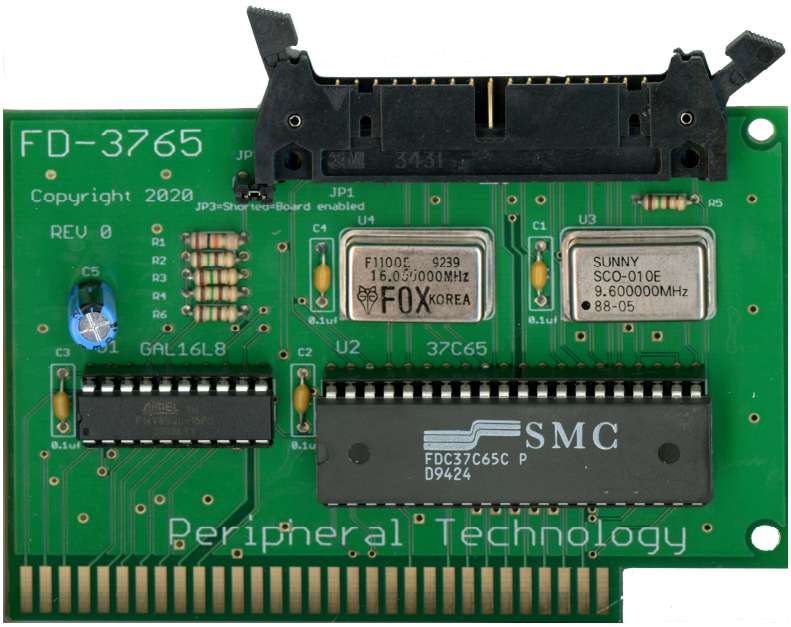
Notes:
JP3 – Does not function.

It is suggested to use WD3765. The SMC3765 chips we tested did not work well. There were frequent read/write errors.

U3 – Is not required and is almost impossible to find. U3 allowed a 1.2MB high-density drive without RPM switching to read/write standard density disks. Some 1.2MB HD drives have the ability to change speed from 360 RPM to 300 RPM when a standard diskette is inserted. The drives with speed switching do not require U3.

Parts Placement PT-FD-3765




FD-3765
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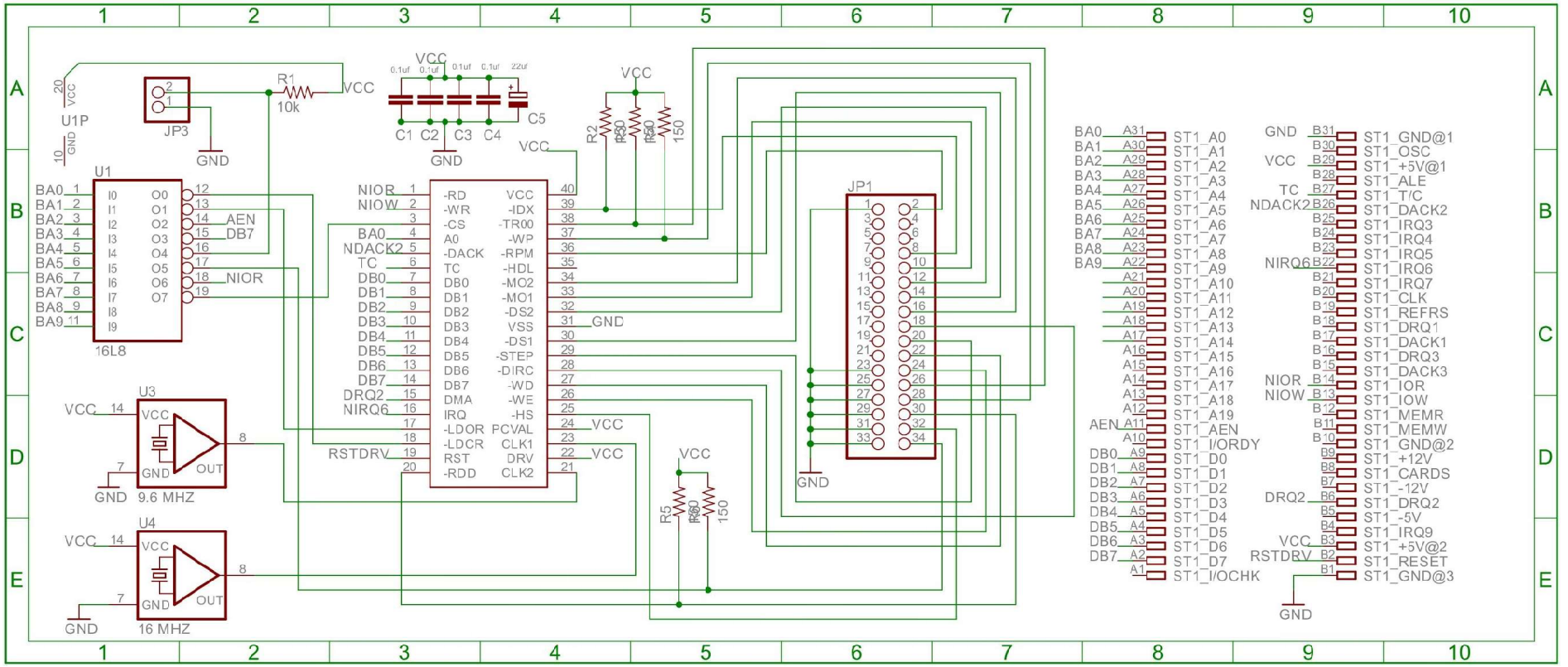
REV 0
JP1
JP3=Shorted=Board enabled
R1
R2
R3
R4
R5
R6
C1
C2
C3
C4
C5
U1
U2
U3
U4
GAL16L8
37C65
F1100E 9239
16.000000MHz
FOX KOREA
SUNNY
SCO-010E
9.600000MHz
88-05
SMC
FDC37C65C P
D9424
Peripheral Technology


U1P
JP3
R1
10k
VCC
GND
C1 C2 C3 C4 C5
0.1uf 0.1uf 0.1uf 0.1uf 22uf
R2 R3 R4 R5
150
U1
16L8
BA0 BA1 BA2 BA3 BA4 BA5 BA6 BA7 BA8 BA9
AEN
DB7
NIOR
U3
U4
9.6 MHZ
16 MHZ
NIOR NIOW BA0 NDACK2 TC DB0 DB1 DB2 DB3 DB4 DB5 DB6 DB7 DRQ2 NIRQ6 RSTDRV
-RD -WR -CS A0 -DACK TC DB0 DB1 DB2 DB3 DB4 DB5 DB6 DB7 DMA IRQ -LDOR -LDCR RST -RDD
VCC -IDX -TR00 -WP -RPM -HDL -MO2 -MO1 -DS2 VSS -DS1 -STEP -DIRC -WD -WE -HS PCVAL CLK1 DRV CLK2
JP1
ST1_A0 ST1_A1 ST1_A2 ST1_A3 ST1_A4 ST1_A5 ST1_A6 ST1_A7 ST1_A8 ST1_A9 ST1_A10 ST1_A11 ST1_A12 ST1_A13 ST1_A14 ST1_A15 ST1_A16 ST1_A17 ST1_A18 ST1_A19 ST1_AEN ST1_I/ORDY ST1_D0 ST1_D1 ST1_D2 ST1_D3 ST1_D4 ST1_D5 ST1_D6 ST1_D7 ST1_I/OCHK
ST1_GND@1 ST1_OSC ST1_+5V@1 ST1_ALE ST1_T/C ST1_DACK2 ST1_IRQ3 ST1_IRQ4 ST1_IRQ5 ST1_IRQ6 ST1_IRQ7 ST1_CLK ST1_REFRS ST1_DRQ1 ST1_DACK1 ST1_DRQ3 ST1_DACK3 ST1_IOR ST1_IOW ST1_MEMR ST1_MEMW ST1_GND@2 ST1_+12V ST1_CARDS ST1_-12V ST1_DRQ2 ST1_-5V ST1_IRQ9 ST1_+5V@2 ST1_RESET ST1_GND@3

U1 PAL Equations

The same PAL is used in the PT68K4, PT68K5 and FD3765

```
Name     Floppy Decoder PT68K5;
PartNo   U9 ;
Date     9/29/2020 ;
Revision 0 ;
Designer Frederic C Brown ;
Company  Peripheral Technology ;
Assembly None ;
Location  ;
Device   g16V8a ;



/* *************** INPUT PINS *********************/
PIN   1  = A0                        ; /*                                 */
PIN   2  = A1                        ; /*                                 */
PIN   3  = A2                        ; /*                                 */
PIN   4  = A3                        ; /*                                 */
PIN   5  = A4                        ; /*                                 */
PIN   6  = A5                        ; /*                                 */
PIN   7  = A6                        ; /*                                 */
PIN   8  = A7                        ; /*                                 */
PIN   9  = A8                        ; /*                                 */
PIN  10  = GND                       ; /*                                 */
PIN  11  = A9                        ; /*                                 */
PIN  14  = AEN                       ; /*                                 */
PIN  15  = DB7                       ; /*                                 */
PIN  16  = ISHUNT                     ; /*                                  */
PIN  17  = DCHNG                     ; /*                                 */
PIN  18  = IOR                       ; /*                                 */
PIN  20  = VCC                       ; /*                                 */

/* *************** OUTPUT PINS *********************/
PIN  12   =  LDCR                    ; /*                                 */
PIN  13   =  LDOR                    ; /*                                 */
PIN  19   =  CS                      ; /*                                 */

/* The 16V8 does not allow pins 15 and 16 to be used as inputs */
/* So it is not possible for use pin 16 to deselect the chip   */
/* This is a loss of fuction, but causes no great problems     */

!LDCR =  !AEN & A9 & A8 &  A7 & A6 & A5 & A4 & !A3 & A2 & A1  ;


!LDOR =  !AEN & A9 & A8 &  A7 & A6 & A5 & A4 & !A3 & !A2 & A1  ;


!CS   =  !AEN & A9 & A8 &  A7 & A6 & A5 & A4 & !A3 & A2 & !A1  ;
```