Screen Flash Eliminator

Instruction Manual & Functional Description

Contents

1 Introduction

This add on board is for the Nascom 2 computer. This is not compatible with Nascom 1.

This is based on an original design by EDAC Engineering

Its purpose is to remove screen flash seen as a consequence of both the video circuitry and the Z80 processor attempting to access video memory simultaneously.

This was developed as I found that the unclean video from the Nascom 2 lead to VGA converters having problems producing a stable image. The improved the output considerably in my experience.

The unit operates by inserting Z80 WAIT state whenever an access clash between the video circuitry and the Z80 occurs, thus removing the contention.

2 Components

Qty	Reference(s)	Value	Notes
2	C1, C2	10nF	
1	C3	220pF	Optional
1	J1	Header	Use SIL strips
1	Q1	BC557	
1	R1	4K7	
1	SW1	Cap Enable	Optional
1	SW2	Unit Enable	Optional
1	TP1	IC1 Pin 24 (Wait)	Test Point – Link to IC1 Pin 24
1	TP2	IC67/11	Test Point – Link to IC67 Pin 11
1	U1	74LS00	Package DIP-14 W7.62mm Socket
1	U2	74LS74	Package DIP-14 W7.62mm Socket
1	U3	74LS32	Package DIP-14 W7.62mm Socket

3 Notes on Components

All the components used have been selected at time of design to be readily available via commercial component suppliers.

4 Construction

4.1 Before you start construction

Inspect the PCB for any visible signs of damage

Select your components:

- Turned pin sockets are recommended due to robustness and reliability

4.2 Order of construction

The recommended order of construction is:

- Resistor
- Sockets
- Disc capacitors
- Insert switches (optional)
- Transistor
- SIL strips
- Insert IC’s

5 Configuration

5.1 Location

The unit is design to replace the 74LS32 device in IC69. This should be transferred to the board.

The unit requires two links to the Nascom 2 circuit.

TP1 – IC24 Pin 24 (Z80 Wait Signal) - IC1/24 (Useable TPH near IC7)

TP2 – IC67 Pin 11 - (Usable TPH near IC67)

5.2 Switches

5.2.1 SW1 – Optional

This allows a capacitor to be enabled / disabled which may be required if the unit does not completely remove screen flash, especially if switching between 2MHz and 4MHz operation.

This switch and associated capacitor are not normally required.

5.2.2 SW2 – Optional

This allows the unit to be enabled / disabled if required. Then unit is normally enabled if this switch is not present.

The switch should be set to **ON** if you need to disable the unit, i.e. **DISABLE** is **ON**

This switch is not normally required.

5.3 Remove Snow-Plough

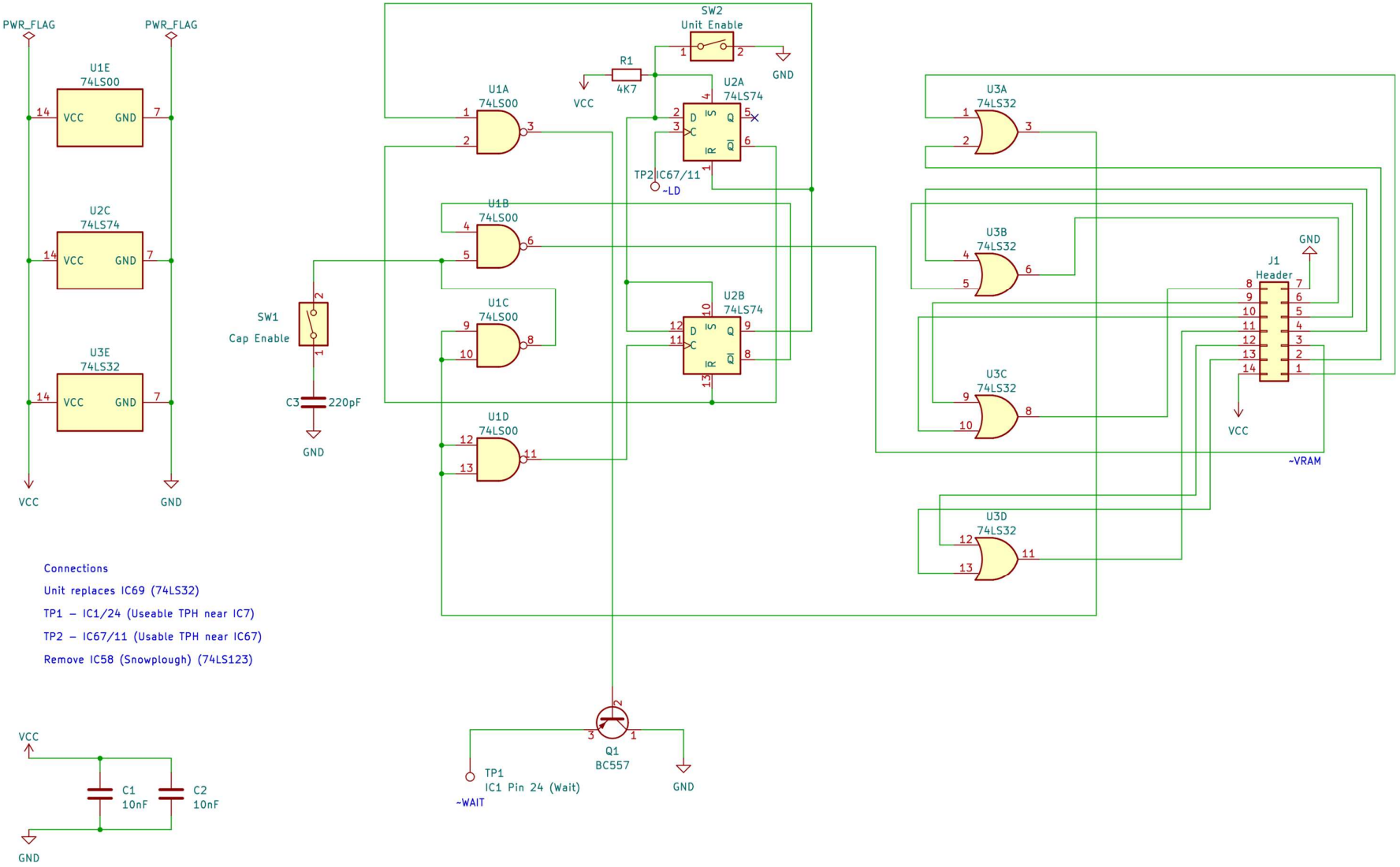
The IC at IC58 (74LS123) should be removed. This is the existing snow removal circuit which is being superseded with this unit.

6 Testing

Use NAS_SYS to tabulate memory from 0 to FFFF (T 0 FFFF)

Any appearance of screen flash / snow should now be removed.

If SW2 is fitting, try toggling it to observe screen flash / snow appearing and disappearing

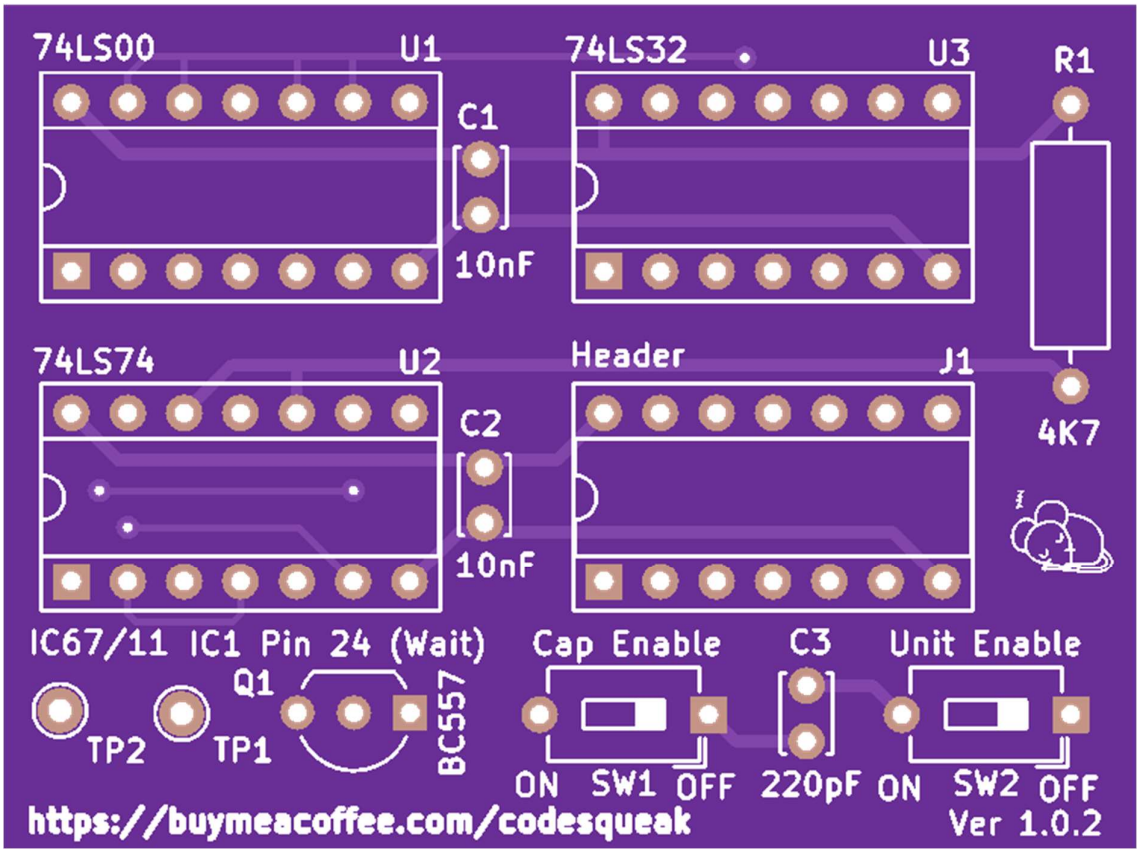

PWR_FLAG
PWR_FLAG
U1E
74LS00
VCC
GND
U2C
74LS74
U3E
74LS32
VCC
GND
SW2
Unit Enable
R1
4K7
VCC
GND
U1A
74LS00
U2A
74LS74
TP2
IC67/11
~LD
U1B
74LS00
U1C
74LS00
U2B
74LS74
SW1
Cap Enable
C3
220pF
GND
U1D
74LS00
U3A
74LS32
U3B
74LS32
U3C
74LS32
U3D
74LS32
J1
Header
GND
VCC
~VRAM
Connections
Unit replaces IC69 (74LS32)
TP1 – IC1/24 (Useable TPH near IC7)
TP2 – IC67/11 (Usable TPH near IC67)
Remove IC58 (Snowplough) (74LS123)
Q1
BC557
TP1
IC1 Pin 24 (Wait)
~WAIT
GND
VCC
C1
10nF
C2
10nF
GND

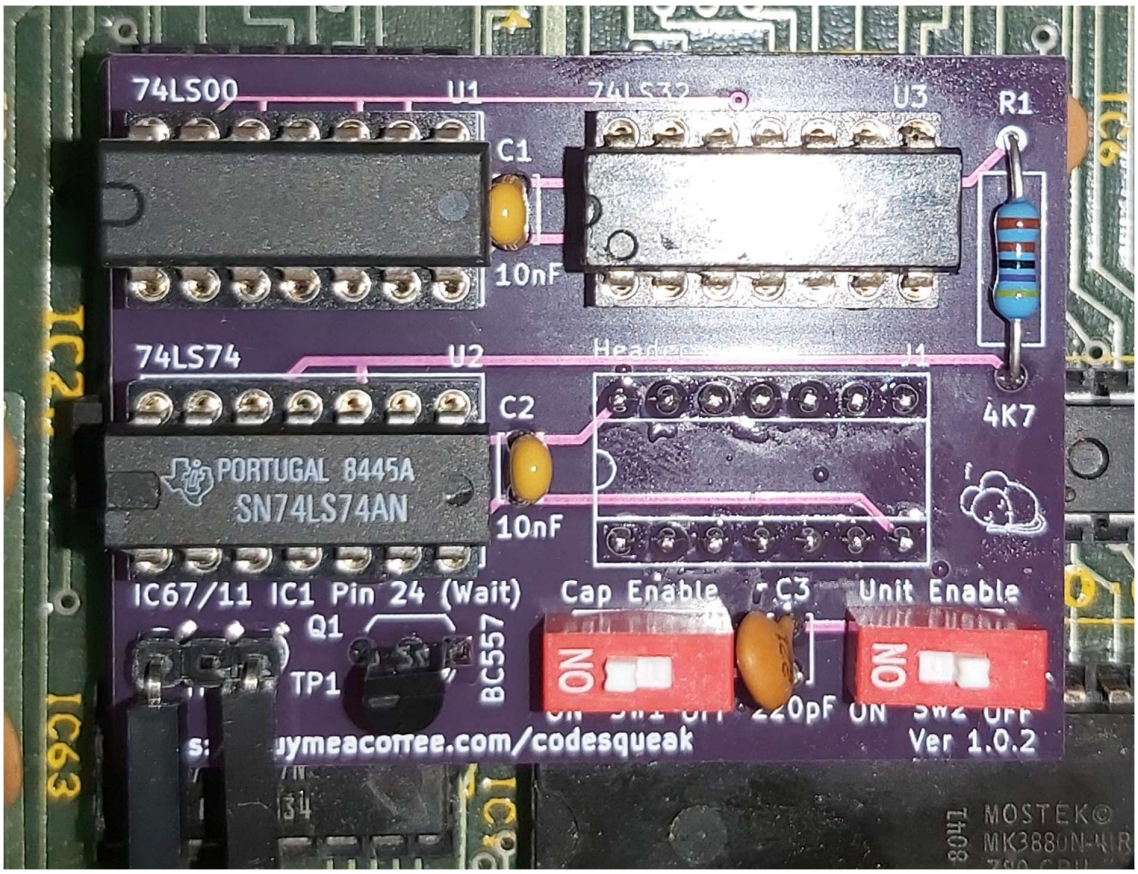
7 Errata

7.1 Version 1.0.2

No know issues

8 Reference Images




74LS00
U1
74LS32
U3
R1
C1
10nF
74LS74
U2
Header
J1
4K7
C2
PORTUGAL 8445A
SN74LS74AN
10nF
IC67/11 IC1 Pin 24 (Wait)
Cap Enable
C3
Unit Enable
Q1
TP1
BC557
ON
ON
220pF
Ver 1.0.2
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