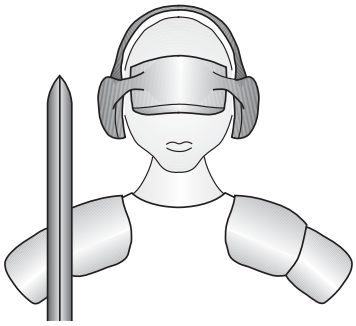
AN3: Migrating MW24Wheel and MW24EyeII to the new chips

Applicable for MouseWarrior24



Code Mercenaries

1. Introduction
This application note is intended for those of you who have existing designs using MouseWarrior24Wheel or MouseWarrior24EyeII. The old versions of these chips had to be replaced as the silicon on which the chips were based has been discontinued.
In this application note we will outline the changes between the chip versions and show how to use exisiting designs with the new chips.

2. What has changed
MouseWarrior24Wheel II and MouseWarrior24EyeIII do only support USB and PS/2 interfaces. Serial port and ADB have been removed as their market significance has turned negligible. In place of the old interfaces the chips do now offer inputs for up to six buttons.
External circuitry has been cut significantly, removing most of the discrete parts including the resonator which is replaced by an internal oscillator.

2.1 How to migrate
Existing PCBs can in most cases be used with the new chip by simply changing some of the components and omitting others.
For optimal use of the new capabilities a revision of the PCB is recommended. The impact of this change should be minimal as in most cases unused parts have to be removed.
In the following we will refer to the application circuit diagrams found on pages 2 to 5. The old ones had been used in past versions of the MouseWarrior data sheet and we will refer to them to tell you which components to remove or replace etc.
The parts of the circuits that change are the same for MouseWarrior24Wheel and MouseWarrior24Eye.

2.1.1 The resonator
The new chips no longer need the ceramic resonator X1. Do not put it on the PCB any more and leave the pins 12 and 13 unconnected. If you do supply an external clock remove it if possible. Pin 12 is now used to disable the internal pull up resistors for the axis inputs. So make sure that pin 12 is left unconnected unless you want to disable the pull ups.

2.1.2 Resistors
For MouseWarrior24Wheel II all resistors except R1 and the series resistor for the encoder LEDs are removed. For MouseWarrior24 Eye III all resistors except R1 and Rb are removed.
If possible connect R1 to Pin 11 as shown in the new circuit diagrams (3.2, 3.4), in this case use a 1K3 resistor. Should that not be possible just continue to use the 7K5 resistor connected to +5V.

2.1.3 Capacitors
C2 is removed.

2.1.4 Diodes
No Diodes are used for the new chips. Replace D1 and D3 by bridges, remove D2.

2.1.5 LED drive pin /En
The LED driver pin is significantly stronger in the new chips, it can sink up to 50mA at 0.8V. Make sure to check if this is compatible with the LEDs you are using or add an appropriate resistor.

2.1.6 Serial and ADB
Do not connect the serial and/or ADB interface. These pins are now used as additional button inputs.

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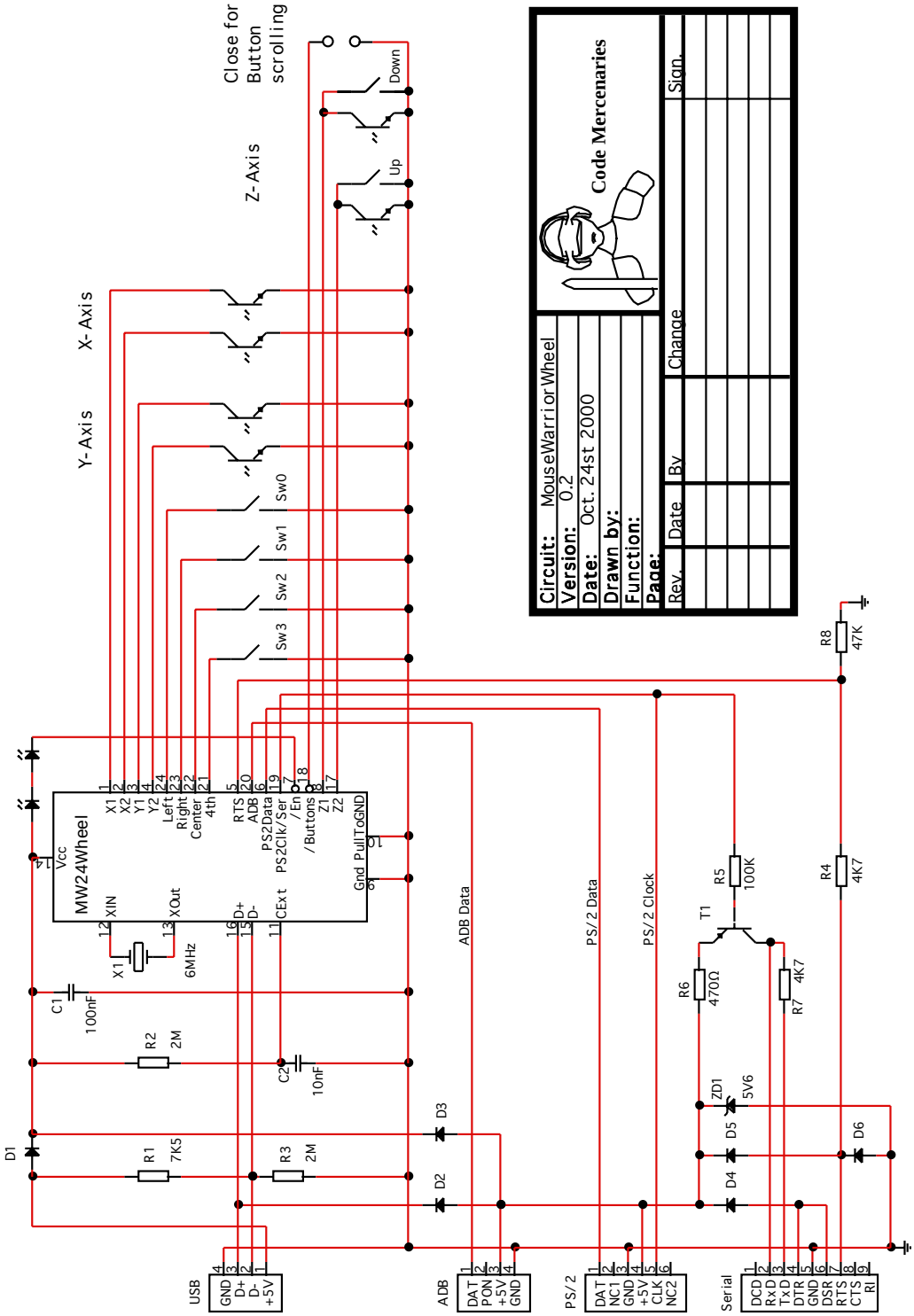
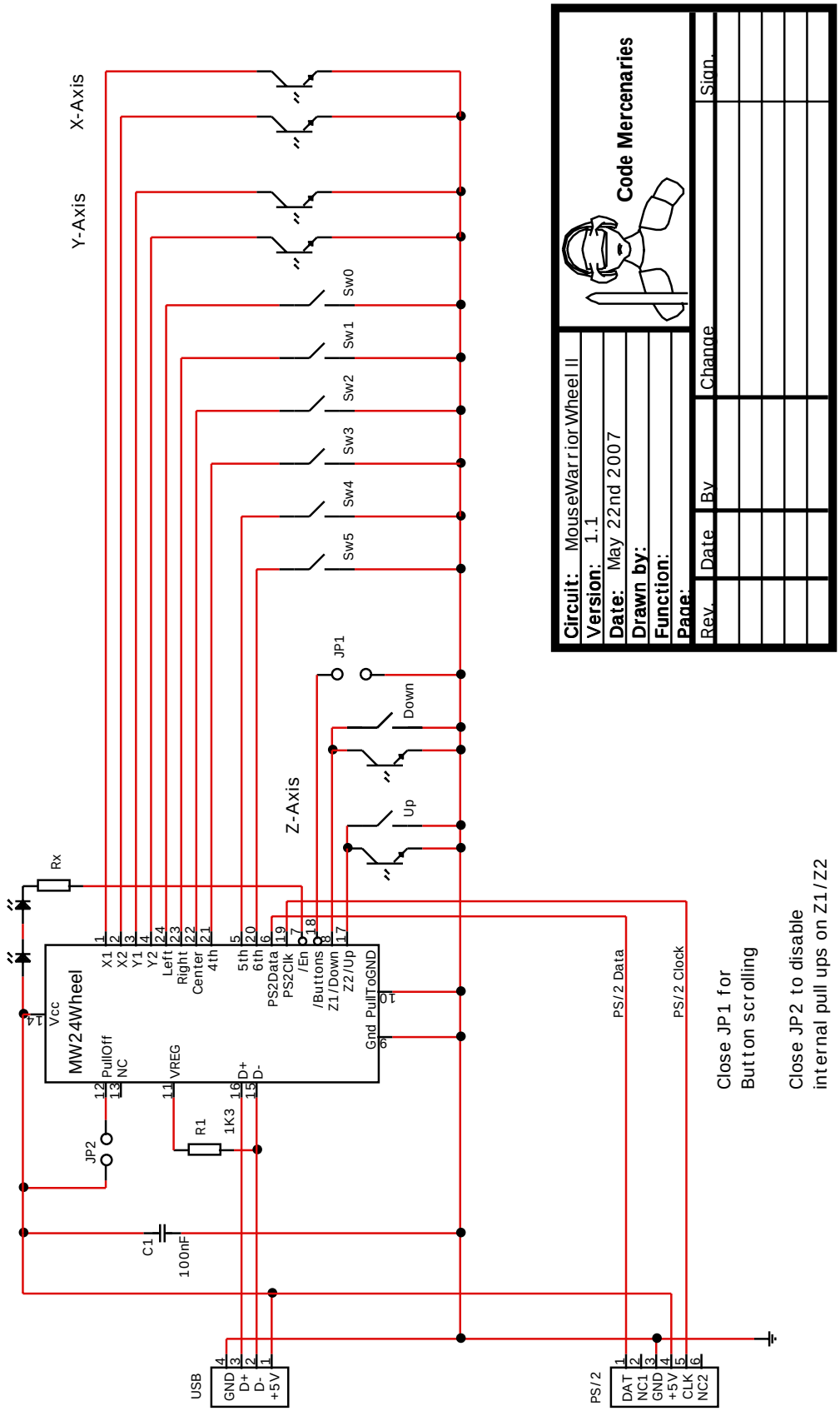
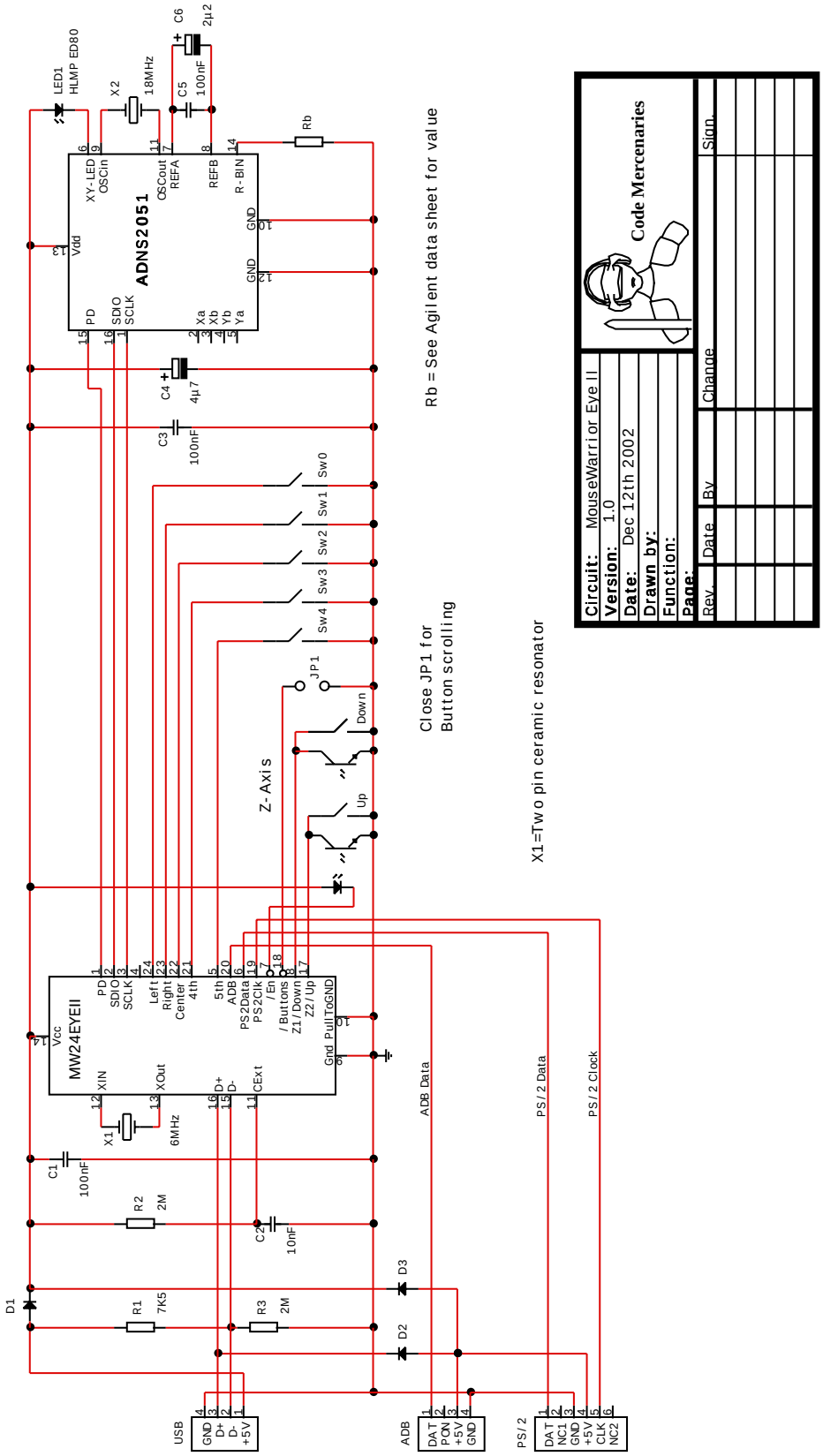
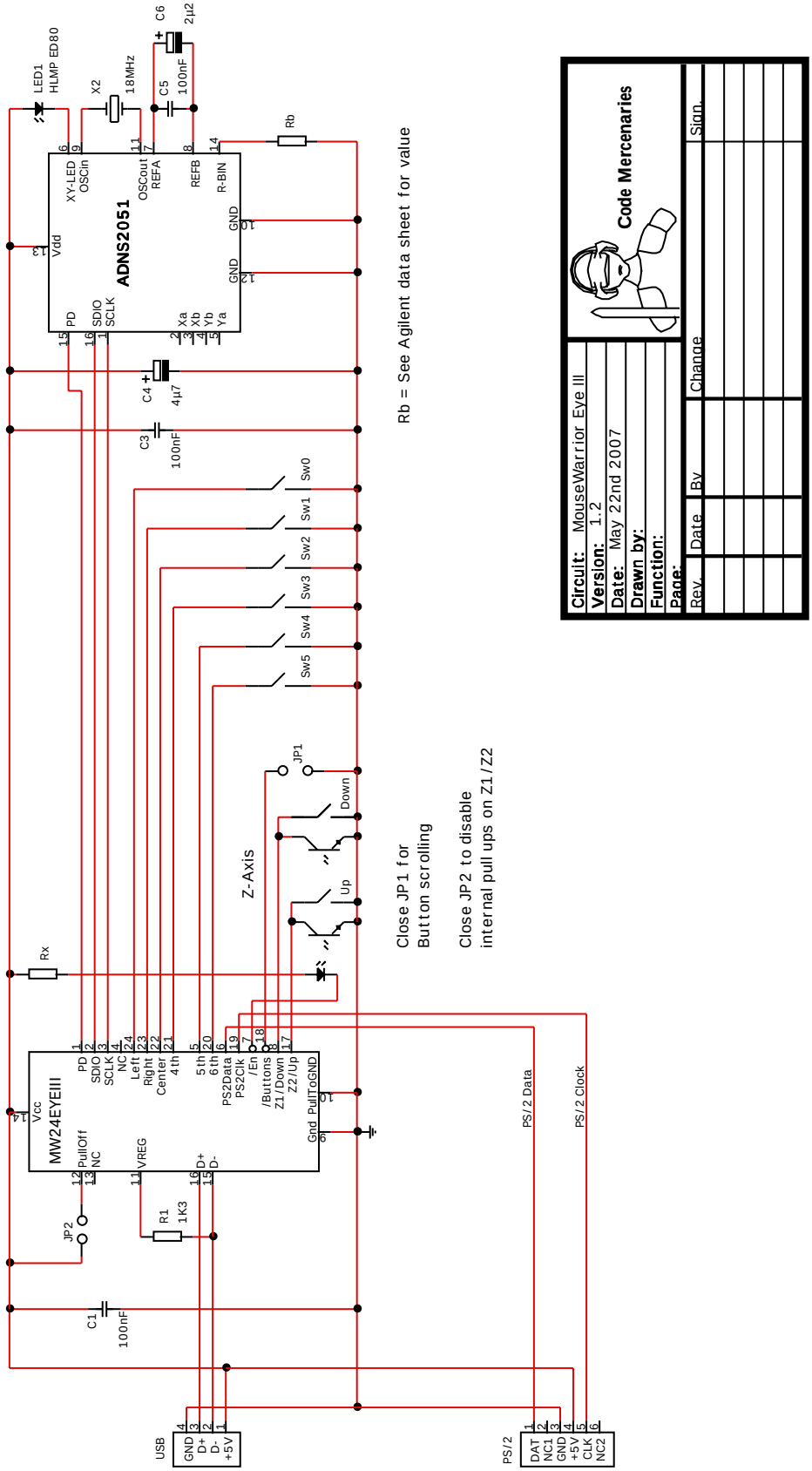
3.1 Old circuit for MouseWarrior24Wheel



3.2 Current circuit for MouseWarrior24Wheel II



3.3 Old circuit for MouseWarrior24EyeII



3.4 Current circuit for MouseWarrior24EyeIII