

## SMART TRACKER 2

### An innovative wire tracker

#### --- abstract ---

#### Project F2039

We all experienced the painful situation of a tangle of unidentified wires. Usually in this situation they are all of the same color, thanks to Murphy's law. Ok, we have a DMM somewhere, and we can check it wire by wire. However the situation is starting to be more than painful if the two ends of the wire are not in the same room, for instance when installing a new LAN or a new alarm system. And who can stay quiet when a devil has also introduced some short circuits between some of these wires ?

Wire identification devices do exist on the market, using separated transmitter and receiver boxes, but they all require some kind of ground connection (so at least one identified wire), and are usually not happy with short circuits. Moreover they are not as cheap as I wanted. So I decided to design my own product, and here it is : Welcome to **Smart Tracker 2**.



Smart Tracker 2 is a very low cost and compact device. A 10-channels transmitter injects test signals into up to ten wires, and on the other side a small probe could be connected between any of these ten wires, and identify **simultaneously** both of them, **without any ground connection** ! Moreover even if any number of short circuits are present between wires then the probe also **identify all short-circuited wires** !

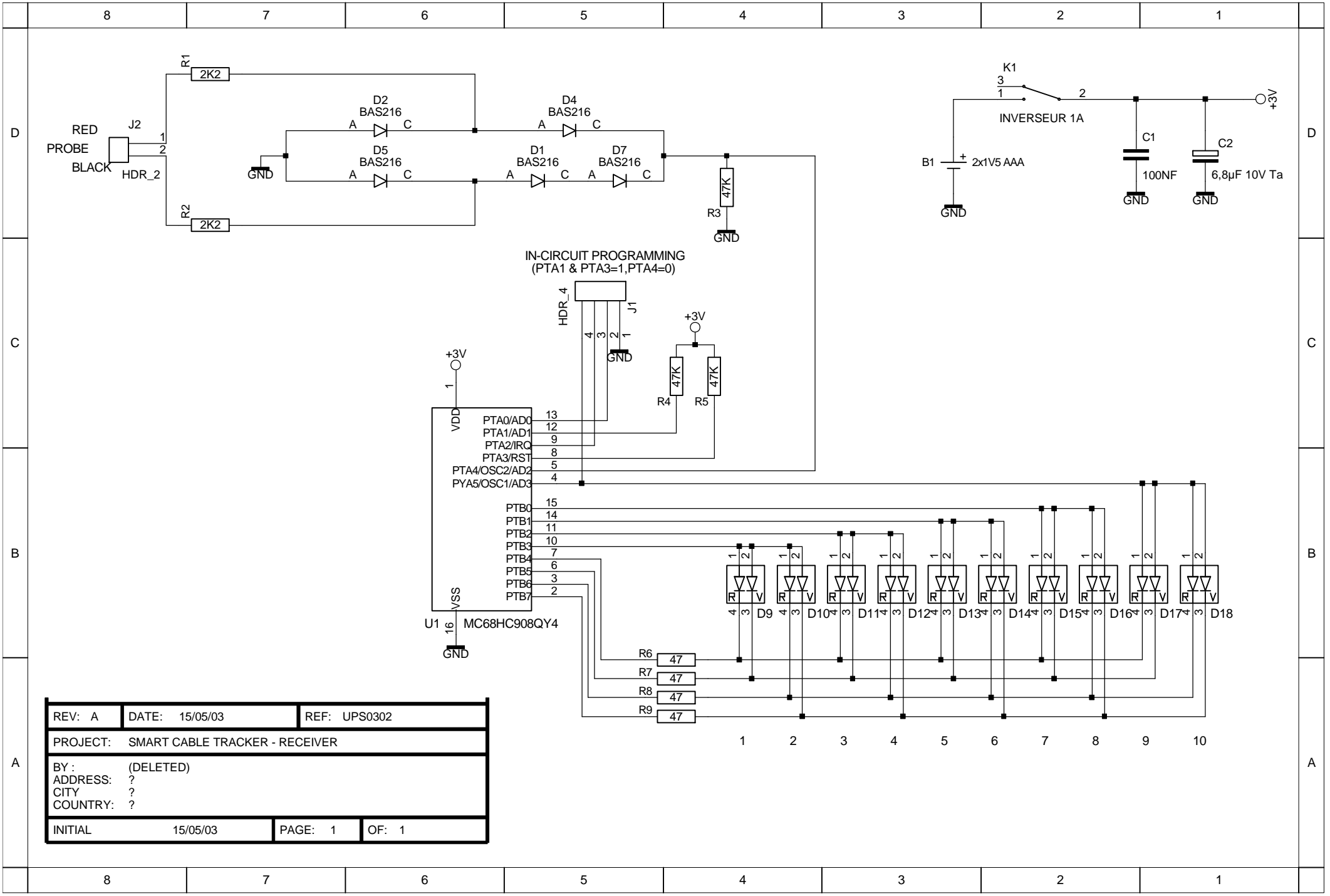
Like in a lot of successful projects, the innovation comes from an unusual association of techniques, here uart-like digital transmissions and analog-domain tricks, and in particular the use of unbalanced diode bridge.

The MC68HC908QY4 is a perfect match for this project, in particular for its 3V power supply, low consumption, on-board oscillator, ADC... and low cost !

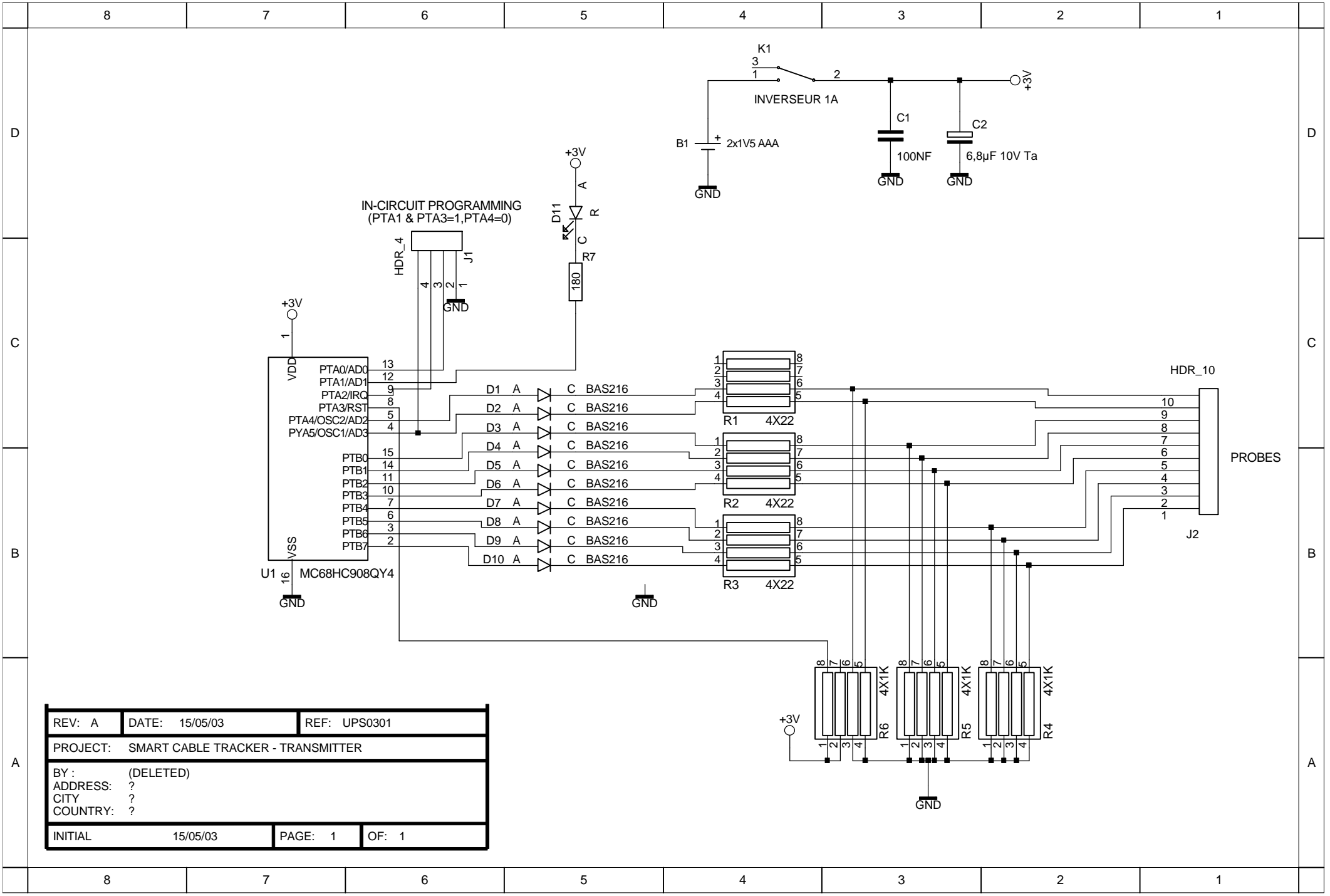
All the software is written in C, using Metrowerk's IDE, as the MC68HC908QY4 has largely enough memory and as this project is not a hard real time one.

The development of this project took around 60 hours only, two third devoted to the hardware design and a small 20 hours to the software.

This small but innovative project ended up with a very useful and low cost tool. Its design once again demonstrates that mixed signal solutions, combining the best of the digital and analog worlds, is often a very powerful track !



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BY: (DELETED)		
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REV: A	DATE: 15/05/03	REF: UPS0301
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