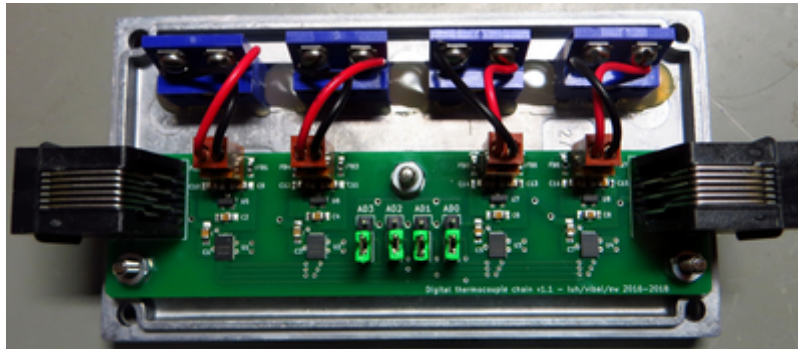


Digital thermocouple chain



Principle

This project provides four thermocouple to digital channels. The boards can be chained on a one-wire bus to form a long chain of thermocouple inputs. Chain with more than 20 input channels (five boards) have been shown to work, only limited by the conversion time. The chain is compatible with any other one-wire slaves, for example [DS18B20](#) temperature sensors.

Chaining between boards is provided by RJ12/25 patch cables that are available for low prices at common distributors (ISDN cable). Pinout of the 6P6C connectors is as follows:

- 1: GND
- 2: Reserved
- 3: +3V3
- 4: Reserved
- 5: DATA
- 6: Reserved

All the functionality is embedded in the Maxim MAX 31850 chips. Specific thermocouple calibration tables are chosen at assembly time by choosing the correct member of the MAX 31850 family (all major thermocouple types available).

Development

- Developer: Etienne Wodey, wodey@iqo.uni-hannover.de
- June 2016 - February 2018
- Status: several chains operated routinely

Design files

- Schematics
- Components placement

- [git repository](#)
- Mechanics
- Gerbers

Note: the standard footprint size for two-poles components is 0805 (in). The footprints are nevertheless much larger than normal to allow easy hand soldering.

Box

Steffen Sauer (Mg) has designed a [box](#) (based on Hammond PSLA xx) for the individual units.

The plugs can be purchased from OMEGA (Part No. MPJ-x-F, where x is the thermocouple type).

One-wire masters

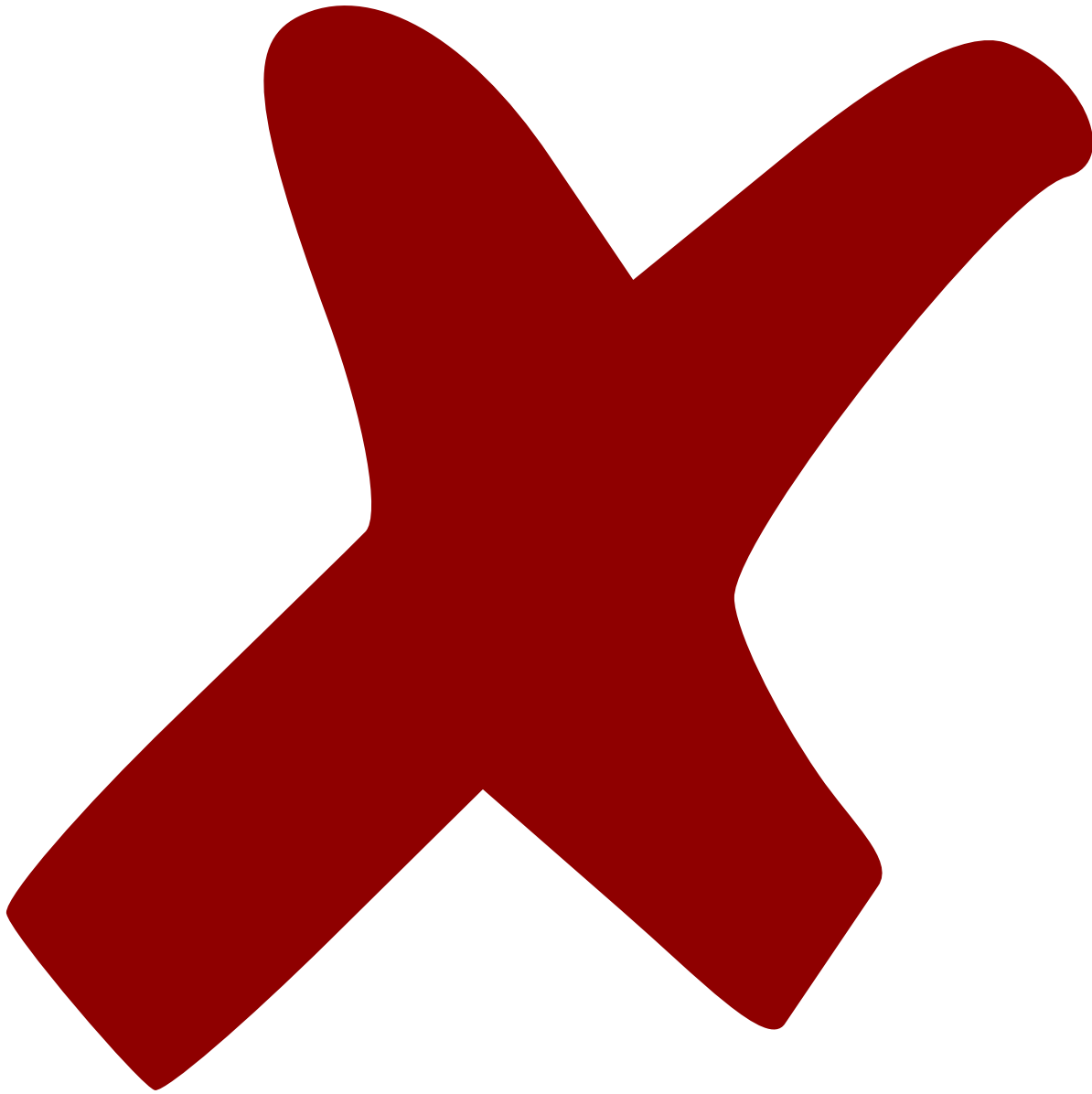
Ways to get a one-wire master (not all tested):

- [Bus Pirate](#)
- GPIO bitbang, in particular on a Raspberry Pi (with `w1-gpio` driver)
- [DS2482](#) I2C One-wire master
- there also exists USB to one-wire adapters

In all cases, make sure that the supply voltage is around +3V3. Also, please note that the boards do provide a separate power supply line. Parasitic power is therefore not required.

Meckerliste

Was für die nächste Version zu tun ist: (



: verworfen,



: in Arbeit,



Schaltplan, aber noch nicht im Layout,

: im



: erledigt)

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