

ETR 2002-02

august 2002

ET 38110.08

Update: November 2002

AT8535

A plug-on processor board.

The board was originally designed to interface the serial port of a PC to the RasNik system, the optical alignment system in ATLAS.

Most processor pins are accessible from the main-board on which it is plugged. It contains an RS232 converter and provides room for extra EEPROM.

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http://www.nikhef.nl/pub/departments/et/misc/at8535/at8535_wrd.pdf

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Specifications

Board size: 64 * 52 mm.

Processor AT80S8535-8SJ, Atmel documentation (2.5 MB):

http://www.nikhef.nl/pub/departments/et/misc/at8535/at8535_dat.pdf

RS232 via 2 * 5 pin connector, flat cable connection to standard DB9 (female) connector.

Programming via 2 * 5 pin connector from STK200/300 programmer(LED indication).

Two 20-pin connectors on the back of the board to connect to the main board (spaced 1.6 inch).

Power supply: 5 V or 7 to 9 V.

On board power-up reset.

Room for 8 pin SMD EEPROM with SPI interface.

Room for 32 kHz watch crystal (if not installed, the processor pins can be accessed from main board).

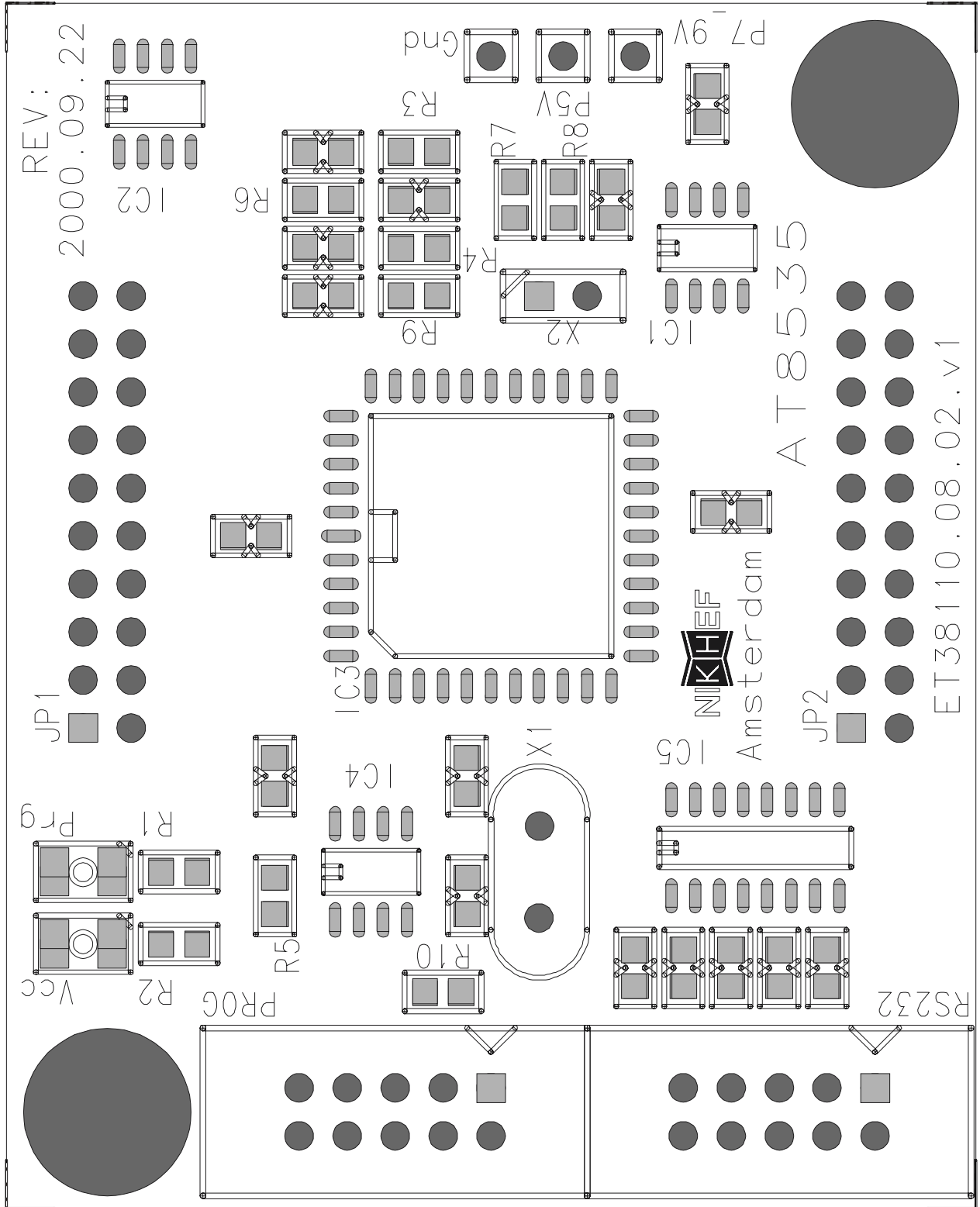


Figure 2: PCB layout

Modifications

Wrong hardware handshake implementation:

- lift IC5, pin 7
- connect RS232 pin 4 and 6
- connect RS232 pin 1 and 2

ZSM560N8 not available, replaced by TL7757CD.

Load capacitors for crystal added (27 pF for 8 MHz, 18 pF for 7.3728 MHz).

Input current of pin ARef to high for R4/R9 divider. R4 replaced by 1 k Ω .

MAX202 generates noise on the processors' AD converter. Power supply filter added: 100 μ H, 1 μ F.

Take care that there is no conflict on the CTS line: Either lift IC 5, pin 9 or define PD3 as input.

In BasCom: `Config Pind.3 = Input 'no CTS conflict`

Resulting schematic on next page.

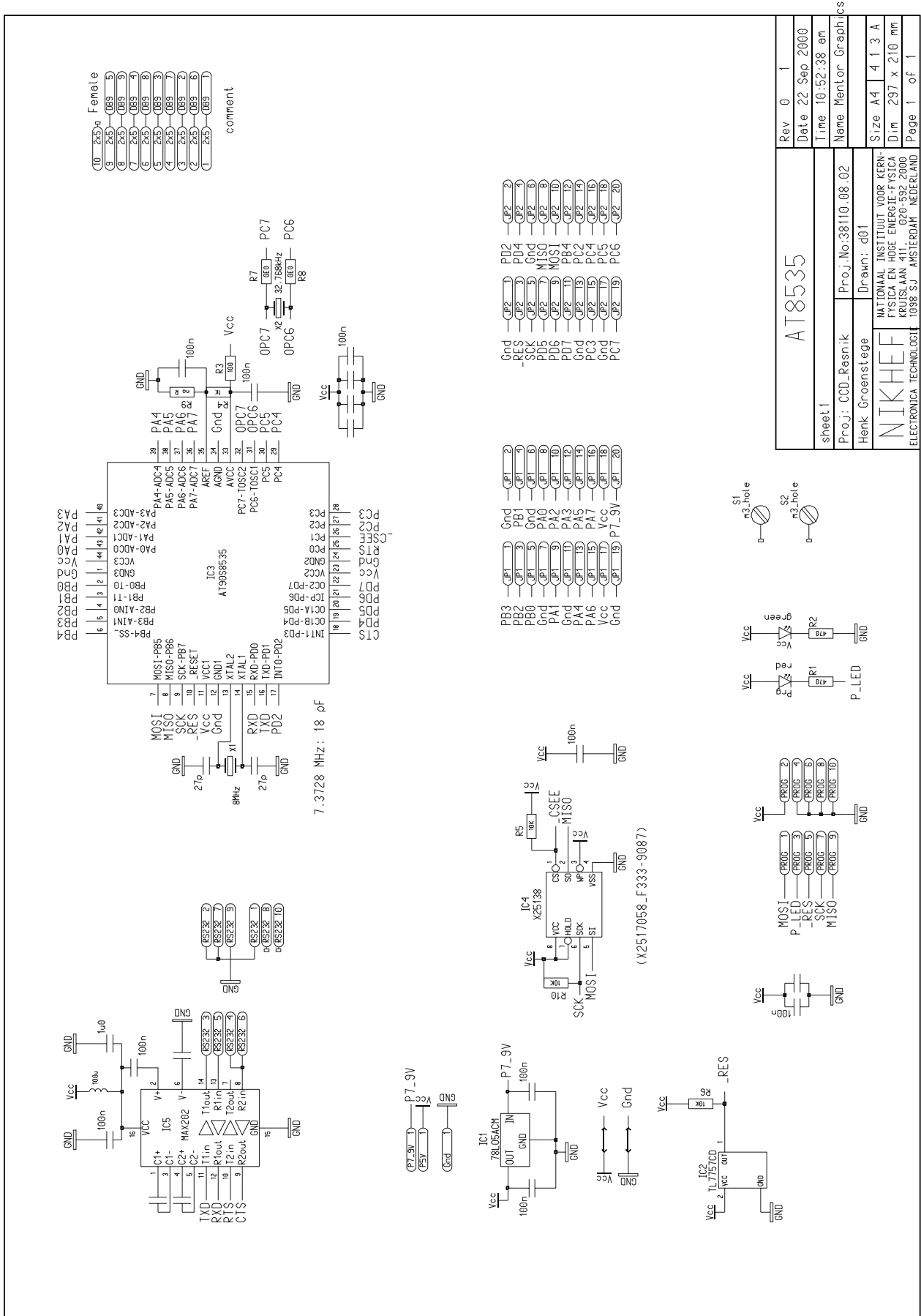


Figure 3: Schematic after modifications

Pin list

| JP1 | |
|------------|-------|
| 1 | PB3 |
| 2 | GND |
| 3 | PB2 |
| 4 | PB1 |
| 5 | PB0 |
| 6 | GND |
| 7 | GND |
| 8 | PA0 |
| 9 | PA1 |
| 10 | PA2 |
| 11 | GND |
| 12 | PA3 |
| 13 | PA4 |
| 14 | PA5 |
| 15 | PA6 |
| 16 | PA7 |
| 17 | VCC |
| 18 | VCC |
| 19 | GND |
| 20 | P7 9V |

| JP2 | |
|------------|----------|
| 1 | GND |
| 2 | PD2 |
| 3 | RES |
| 4 | PD4 |
| 5 | SCK-PB7 |
| 6 | GND |
| 7 | PD5 |
| 8 | MISO-PB6 |
| 9 | PD6 |
| 10 | MOSI-PB5 |
| 11 | PD7 |
| 12 | PB4 |
| 13 | GND |
| 14 | PC2 |
| 15 | PC3 |
| 16 | PC4 |
| 17 | GND |
| 18 | PC5 |
| 19 | PC7 |
| 20 | PC6 |

| RS232 | |
|--------------|-------|
| 1 | Loop |
| 2 | Loop |
| 3 | TXD |
| 4 | (RTS) |
| 5 | RXD |
| 6 | (CTS) |
| 7 | Loop |
| 8 | NC |
| 9 | GND |
| 10 | NC |

| Prog | |
|-------------|-------|
| 1 | MOSI |
| 2 | Vcc |
| 3 | P_LED |
| 4 | GND |
| 5 | RES |
| 6 | GND |
| 7 | SCK |
| 8 | GND |
| 9 | MISO |
| 10 | GND |