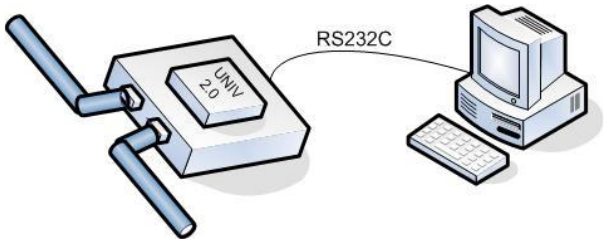
RS232C interface application

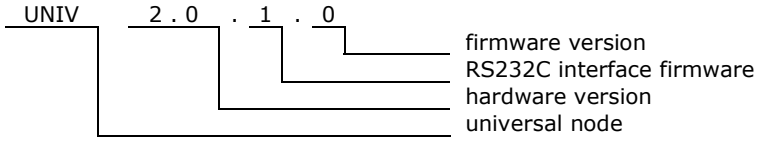
for universal module UNIV 2.0
and processor UNIV 2.0 (CPU)

Features:

- RS232C PC interface for HAPCAN system.
- Operation voltage 10-24V
- Current consumption 35mA
- Module is transparent for all messages sent from PC to HAPCAN bus, and vice versa.
- There is set a 2ms time when module waits to receive all 12 bytes from UART port.
- Application can be uploaded into devices with uart bootloader version uart 1.1 or compatible.



Application version



1. Operation overview

This is not galvanically isolated RS232C <-> HAPCAN interface. The module is transparent for all messages sent from PC to HAPCAN bus, and vice versa. There is set a 2ms time when module waits to receive all 12 bytes from UART port. If 12 bytes don't arrive within this time, then transmission has to start from beginning, and another 2ms will be counted. Received 12 bytes are formed into HAPCAN message and are sent to the bus.

2. Technical data

Bus side

Parameter	Symbol	Value	Unit
Power supply voltage	U_s	10-24V	V
Current consumption	I_s	35	mA

UART port side

Parameter	Symbol	Value	Unit
Baud Rate	K	115200	bps
Data length	L	8	bit
Parity	-	NONE	-
UART delay time to receive whole message	t_{WAIT}	2	ms

3. Hardware

3.1. Connections

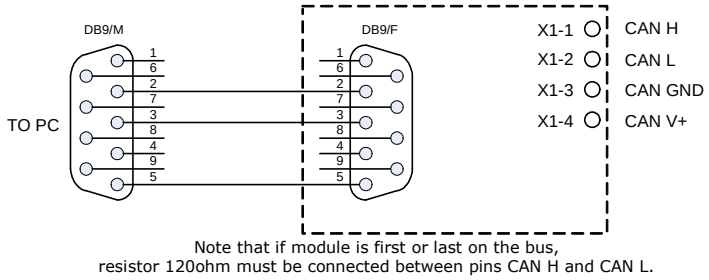


Figure 1. Connection schematic.

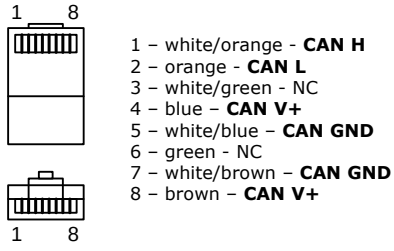


Figure 2. Option of RJ45 bus connector.

3.2. Schematic

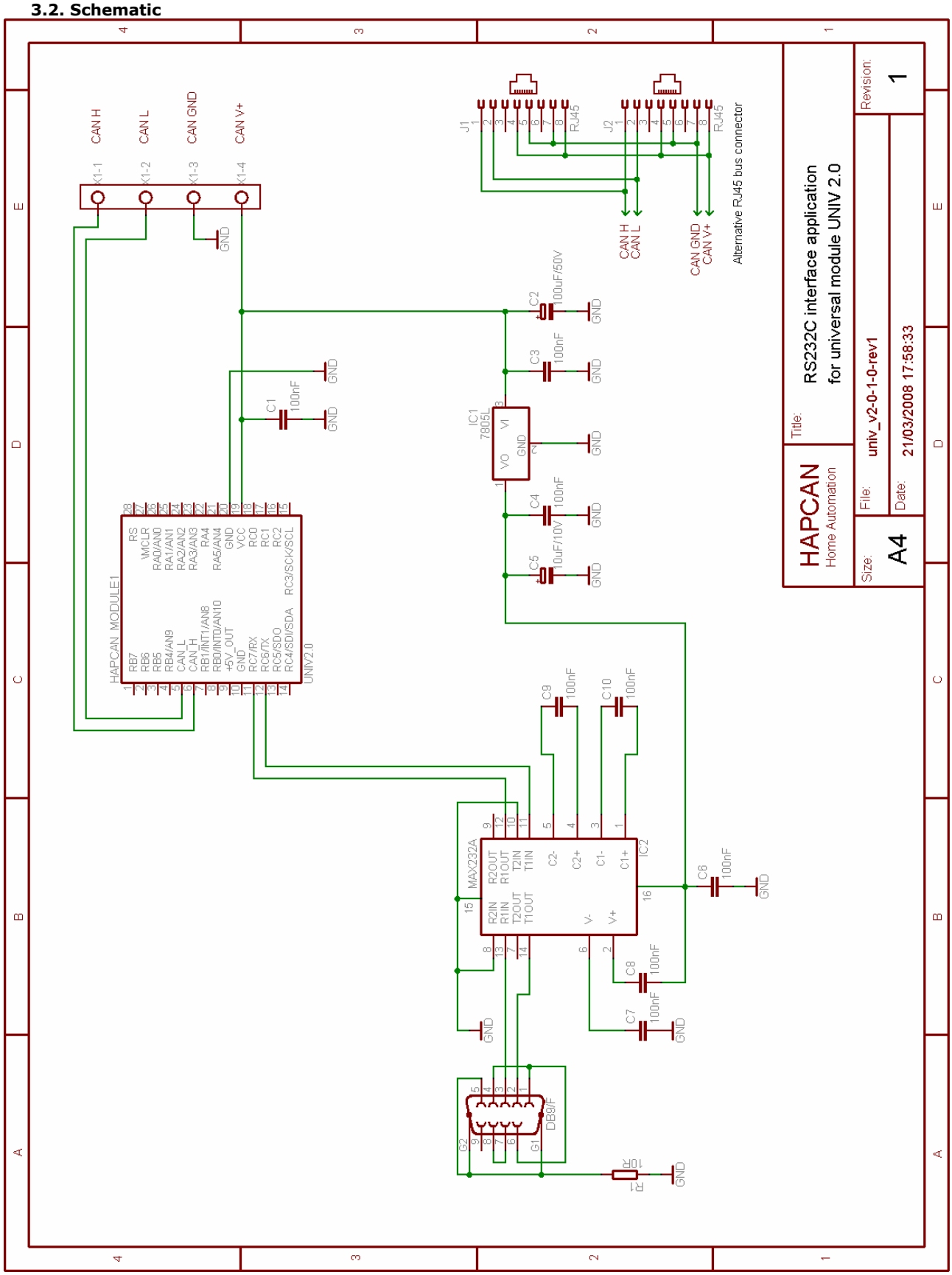


Figure 3. Schematic of RS232C application for universal module UNIV 2.0

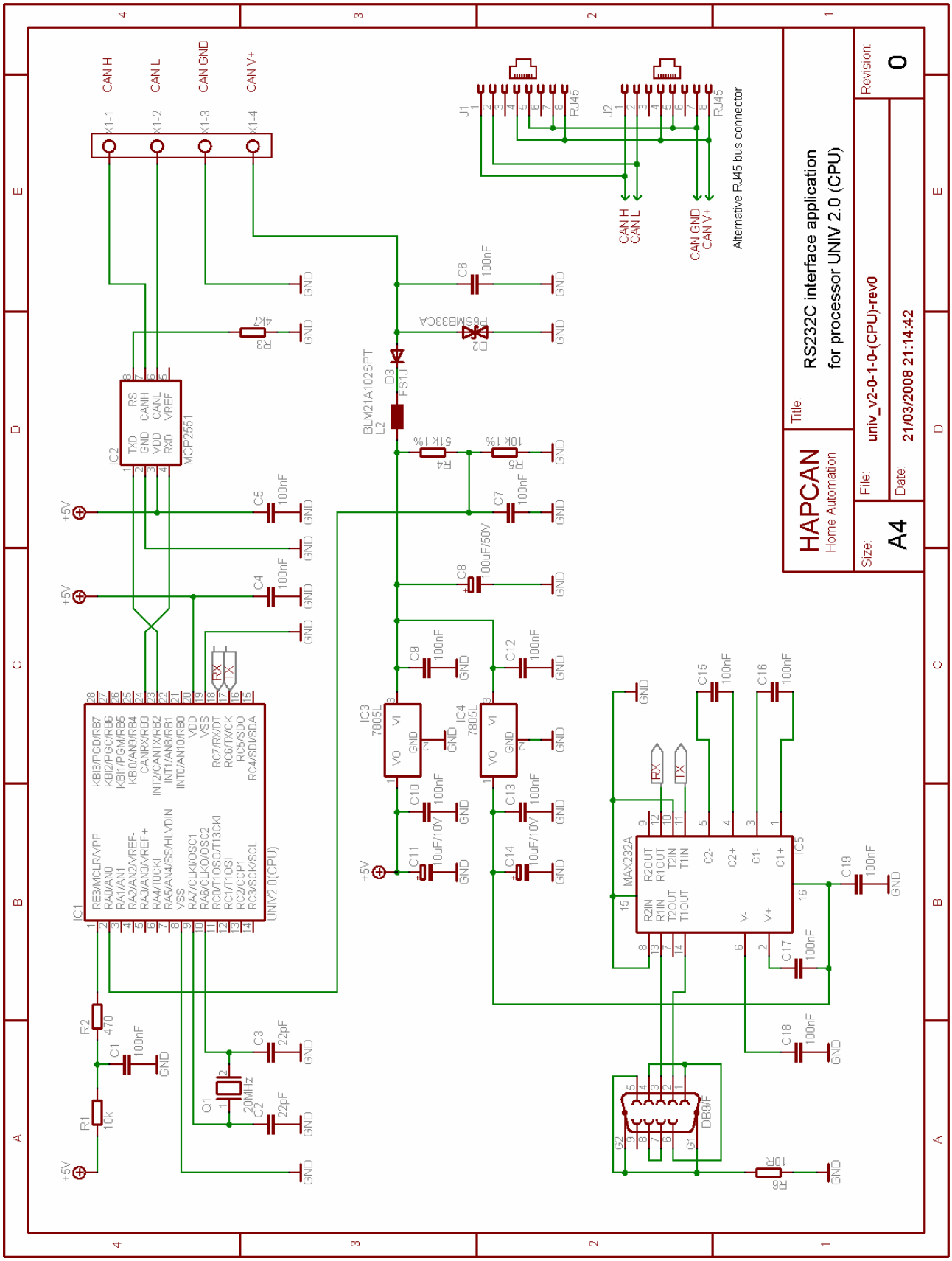


Figure 4. Schematic of RS232C application for processor UNIV 2.0 (CPU).

4. Firmware

Firmware can be uploaded by using HAPCAN Programmer, which can be downloaded from site http://siwilo.com/hapcan/software.

4.1. Frame construction

HAPCAN frame is built when module receives from computer a chain of 12 bytes within 2ms. First 4 bytes form the identifier of the HAPCAN frame. Next 8 are data bytes (D0 - D7).

Table 1. RS232C INTERFACE FRAME

CAN	Frame type		Flags	Module	Group	D0	D1	D2	D3	D4	D5	D6	D7
UART	Byte 1	Byte 2		Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11	Byte 12

4.2. Configuration

Only module description needs to be set up. Configuration process can be done by using HAPCAN Programmer.

4.2.1. Module description.

Every module can have 16 char description, which makes easier for user (programmer) to distinguish nodes. Example of node descriptions: RS232C-gate1 etc.

5. Document version

File	Note	Date
univ_v2-0-1-0a.pdf	Original version	July 2007
univ_v2-0-1-0b.pdf	Position 4.1. Compatible bootloader version was added.	October 2007
univ_v2-0-1-0c.pdf	Position 4.1. Compatible bootloader version was added.	November 2007
univ_v2-0-1-0d.pdf	UNIV 2.0 (CPU) update	March 2008