

1. Features

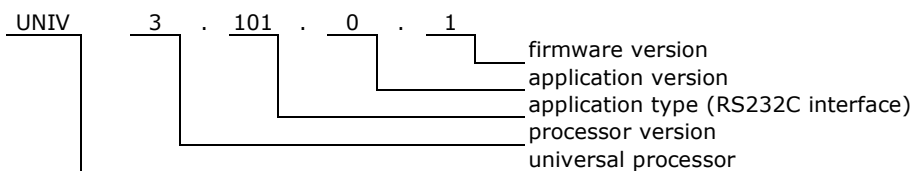
- Firmware for RS232C Interface UNIV 3.101.0.x.
- Provides the ability to control devices connected to the RS232C serial port
- It has got built-in ASCII or HEX <-> CAN translator for 128 messages in each direction (RS232-> CAN and CAN-> RS232C)
- The maximum length of serial port message is 30 characters or hexadecimal values
- CAN and UART FIFO buffers (42 messages each)
- Firmware can be uploaded from either CAN or UART port



2. Compatibility

- Firmware for **UNIV 3.101.0.x application**
- Firmware UNIV 3.101.0.1 is not an update, but has a different functionality than UNIV 3.101.0.0
- Firmware can be uploaded into processor with bootloader version 3.1 or newer.

3. Firmware version



4. Firmware

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

4.1. Frame building

The firmware allows to create 128 text messages or in hexadecimal format, which will be sent through the serial port of the module, if a frame defined in the module memory cell (box) appears on the CAN bus. If a message not defined in the box appears on the CAN bus, the message will be rejected. The software also allows to create another 128 text messages or in hexadecimal format, which received by the serial port of the module will cause the CAN to send a frame defined in the box. If an undefined message appears on the UART serial port, the message will be rejected.

If the translation is turned off, the device sends all messages from CAN to UART and vice versa. It can then act as an interface for the HAPCAN Programmer if the serial port speed is set to 115200bps.

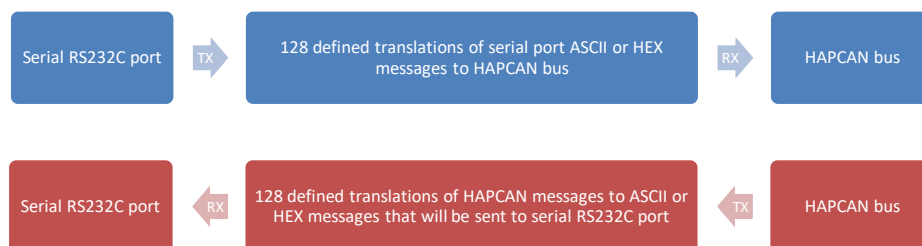


Figure 1. Translation diagram

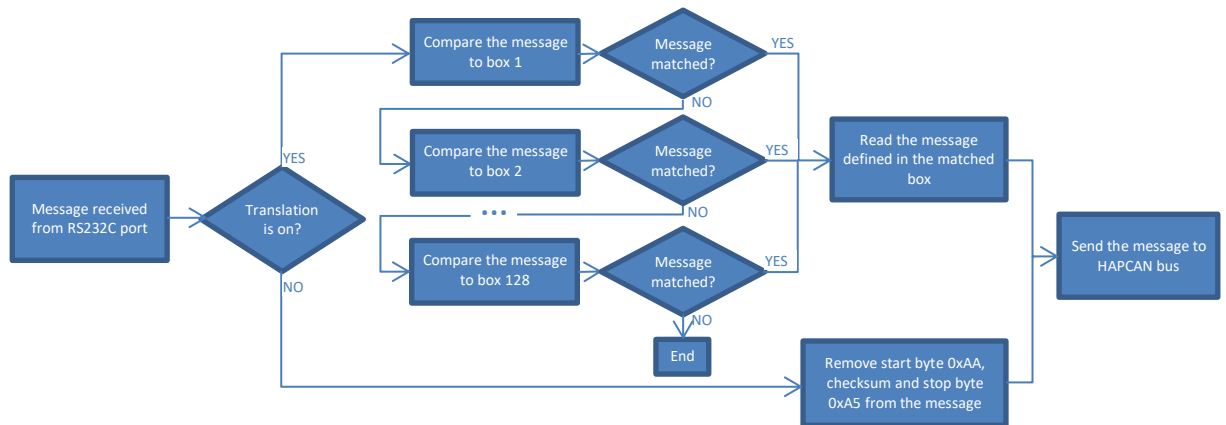


Figure 2. HAPCAN->RS232C message translation algorithm

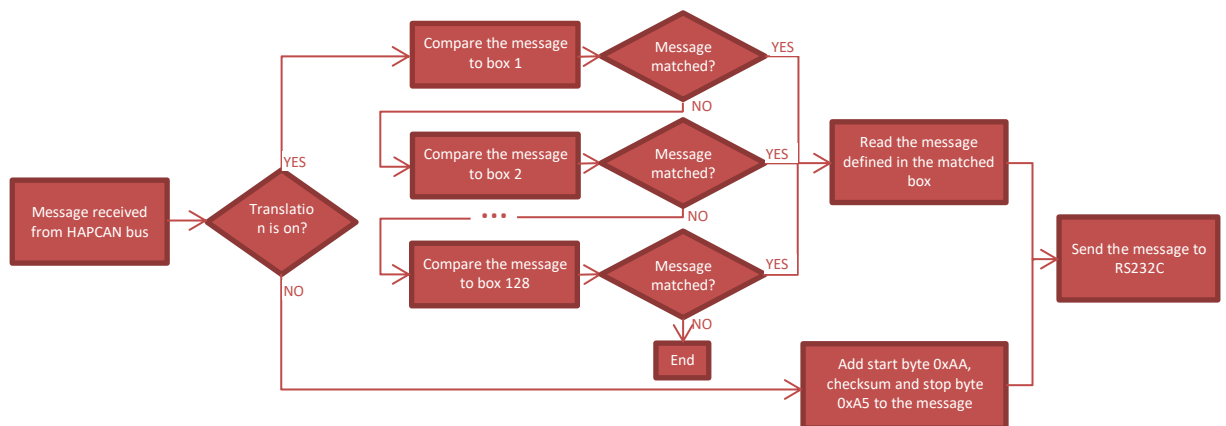


Figure 3. RS232C-> HAPCAN message translation algorithm

4.2. Configuration

Parameters that can be configured with this firmware:

- Module identifier (module number and group number);
- Module description (16 chars);
- Serial port settings
- Translation turned ON/OFF
- Translation settings

Configuration process can be done using HAPCAN Programmer.

4.2.1. Module identifier

Every module on the network must have unique identifier. The identifier is made of two bytes, module number (1 byte) and group number (1 byte). Identifier of the Ethernet Interface can be changed in HAPCAN Programmer in software settings.

4.2.2. Module description

Every module can have 16 char description, which makes easier for user (programmer) to distinguish nodes.

4.2.3. Serial port settings

Speed: 1200bps, 2400bps, 4800bps, 9600bps, 19200bps, 28800bps, 38400bps, 57600bps, 115200bps. Other parameters: 8 data bits, 1 stop bit, no parity, no flow control.

4.2.4. Translation turned ON/OFF

With the translation turned off, incoming messages from the UART port are sent directly to the CAN port and from CAN directly to the UART port. With the translation enabled, messages are previously compared to those saved in the configuration boxes and then the configured message is sent to the opposite port.

4.2.5. Translation settings

The firmware allows to define up to 128 messages that received by the RS232C serial port will be converted to HAPCAN messages and sent to the bus. Messages received through the serial port can take the form of ASCII text characters or binary hexadecimal values. The maximum length of messages received through the serial port is 30 ASCII characters or 30 hexadecimal numbers.

Another 128 memory cells allows defining the translations in the opposite direction - from the HAPCAN bus to the serial port.

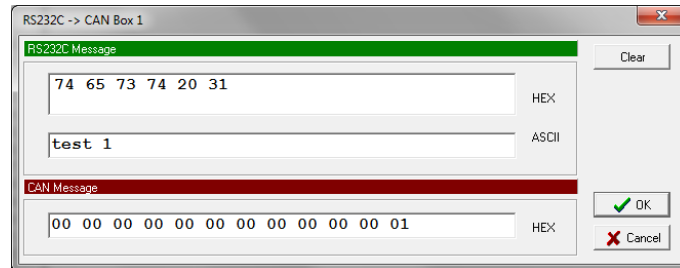


Figure 4. Example of RS232C to HAPCAN translation

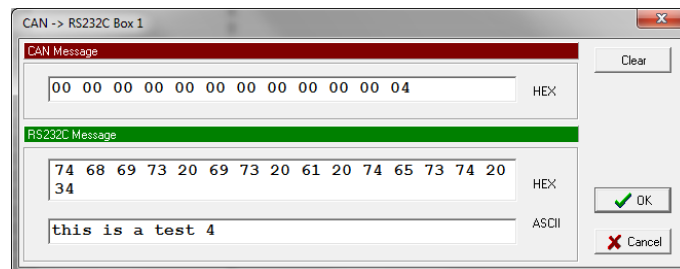


Figure 5. Example HAPCAN to RS232C translation

5. Document version

File	Note	Date
univ_3-101-0-1a.pdf	Original version	September 2012
univ_3-101-0-1b.pdf	General update	December 2017