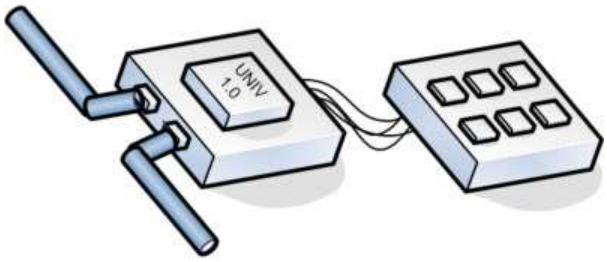
Button Firmware
UNIV 1.0.1.0

1. Features:

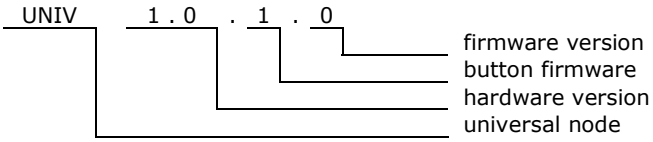
- 6 channel button module. Up to 6 buttons with free voltage contacts can be connected to the module
- There is a 20ms reaction time. Button has to be pressed for at least 20ms to send a message. It avoids contacts bouncing.



2. Compatibility:

- Firmware for **UNIV 1.0.1.0. application**.
- Firmware can be uploaded into devices with bootloader version 2.5 or compatible.

3. Firmware version



4. Operation overview

Node sends message to the bus saying which button was pressed. It sends another message, when button is released.

5. Firmware

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

5.1. Button message

It sends message to the bus, when the status of input changed and was held for at least 20ms. The table below shows meaning of each byte in the button frame.

Table 1. BUTTON MESSAGE frame – input state.

Frame type	Flags				Module	Group	D0	D1	D2	D3	D4	D5	D6	D7
0x301	3	2	1	0	Node Nr	Group Nr	0xFF	0xFF	CHANNEL	STATUS	0xFF	0xFF	0xFF	0xFF

0x301		– universal module frame, button application
	3	- - not used flag, read as "0"
	2	- - not used flag, read as "0"
	1	- - not used flag, read as "0"
	0	RE - response flag. Flag is equal "1" if node was requested. If flag is equal „0" it means that status of input has just changed.

Node Nr	- node number on the network
Group Nr	- group number of the node on the network
CHANNEL	- input channel
STATUS	- actual status of input 0x00 – open, 0xFF - close

5.2. Status request

Status of module can be checked by sending from computer STATUS REQUEST frame (0x109) (see Table 2).

Table 2. STATUS REQUEST frame (0x109).

Frame type	Flags	Module	Group	D0	D1	D2	D3	D4	D5	D6	D7
0x109	0x0	COMP ID1	COMP ID2	0xXX	0xXX	Node Nr	Group Nr	0xXX	0xXX	0xXX	0xXX

0x109 – STATUS REQUEST frame

COMP ID1 - computer identifier (must be unique on the network)

COMP ID2 - computer identifier (must be unique on the network)

Node Nr - node number of requested module

Group Nr - group number of requested module

0xXX - inessential data

As response the module will send status frames (Table 3). Meaning of bytes is the same as in Table 1.

Table 3. Response to STATUS REQUEST.

Frame type	Flags	Module	Group	D0	D1	D2	D3	D4	D5	D6	D7
0x301	0x1	Node Nr	Group Nr	0xFF	0xFF	0x01	STATUS	0xFF	0xFF	0xFF	0xFF
0x301	0x1	Node Nr	Group Nr	0xFF	0xFF	0x02	STATUS	0xFF	0xFF	0xFF	0xFF
0x301	0x1	Node Nr	Group Nr	0xFF	0xFF	0x03	STATUS	0xFF	0xFF	0xFF	0xFF
0x301	0x1	Node Nr	Group Nr	0xFF	0xFF	0x04	STATUS	0xFF	0xFF	0xFF	0xFF
0x301	0x1	Node Nr	Group Nr	0xFF	0xFF	0x05	STATUS	0xFF	0xFF	0xFF	0xFF
0x301	0x1	Node Nr	Group Nr	0xFF	0xFF	0x06	STATUS	0xFF	0xFF	0xFF	0xFF

5.3. Configuration

With this version of application parameters below can be configured:
- Module identifier (module number and group number);
- Module description (16 chars);
- Linking device with other modules (indirect control of module)

Configuration process can be done by using HAPCAN Programmer.

5.3.1. 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). Belonging to particular group might be important when linking devices.

5.3.2. Module description

Every module can have 16 char description, which makes easier for user (programmer) to distinguish nodes. Examples of node descriptions: living-button, living-lamp, bed2-button etc.

6. Document version

File	Note	Date
univ_v1-0-1-0a.pdf	Original version	April 2007
univ_v1-0-1-0b.pdf	Schematic correction	May 2007
univ_v1-0-1-0c.pdf	UNIV 1.0 (CPU) update	March 2008
univ_v1-0-1-0d.pdf	Schematics removed	May 2010