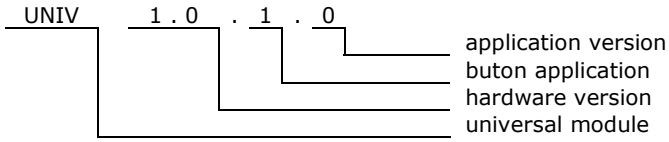
Button Application
UNIV 1.0.1.0

1. Features:

- 6 channel button module. Up to 6 buttons with free voltage contacts can be connected to the module
- Operation voltage 10-24V
- Current consumption from the bus 14mA
- For DIN rail mounting
- Dimensions 90x58x53 mm
- Operating of module depends on firmware uploaded into it.

2. Application version



3. Technical data

Bus side

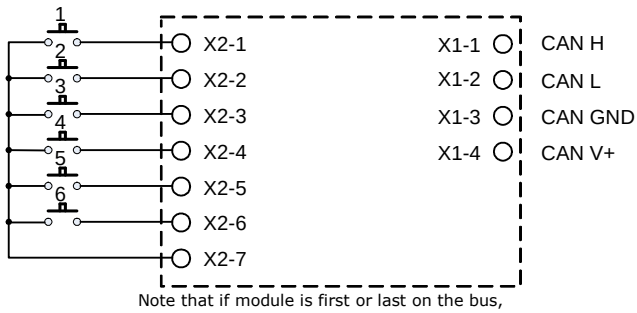
Parameter	Symbol	Value	Unit
Power supply voltage	U_s	10-24V	V
Current consumption	I_s	17	mA

Button input side

Parameter	Symbol	Value	Unit
Maximal resistance of input loop	R_{MAX}	500	Ohm
Anti bounce reaction time	T_{RCT}	20	ms

4. Hardware

4.1. Wiring



Note that if module is first or last on the bus, resistor 120ohm must be connected between pins CAN H and CAN L.

Figure 1. Wiring diagram

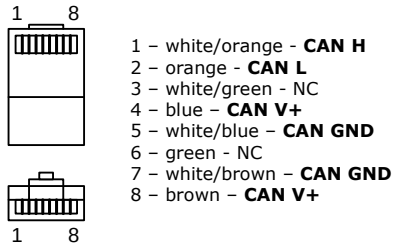


Figure 2. RJ45 bus connector.

4.2. Schematics

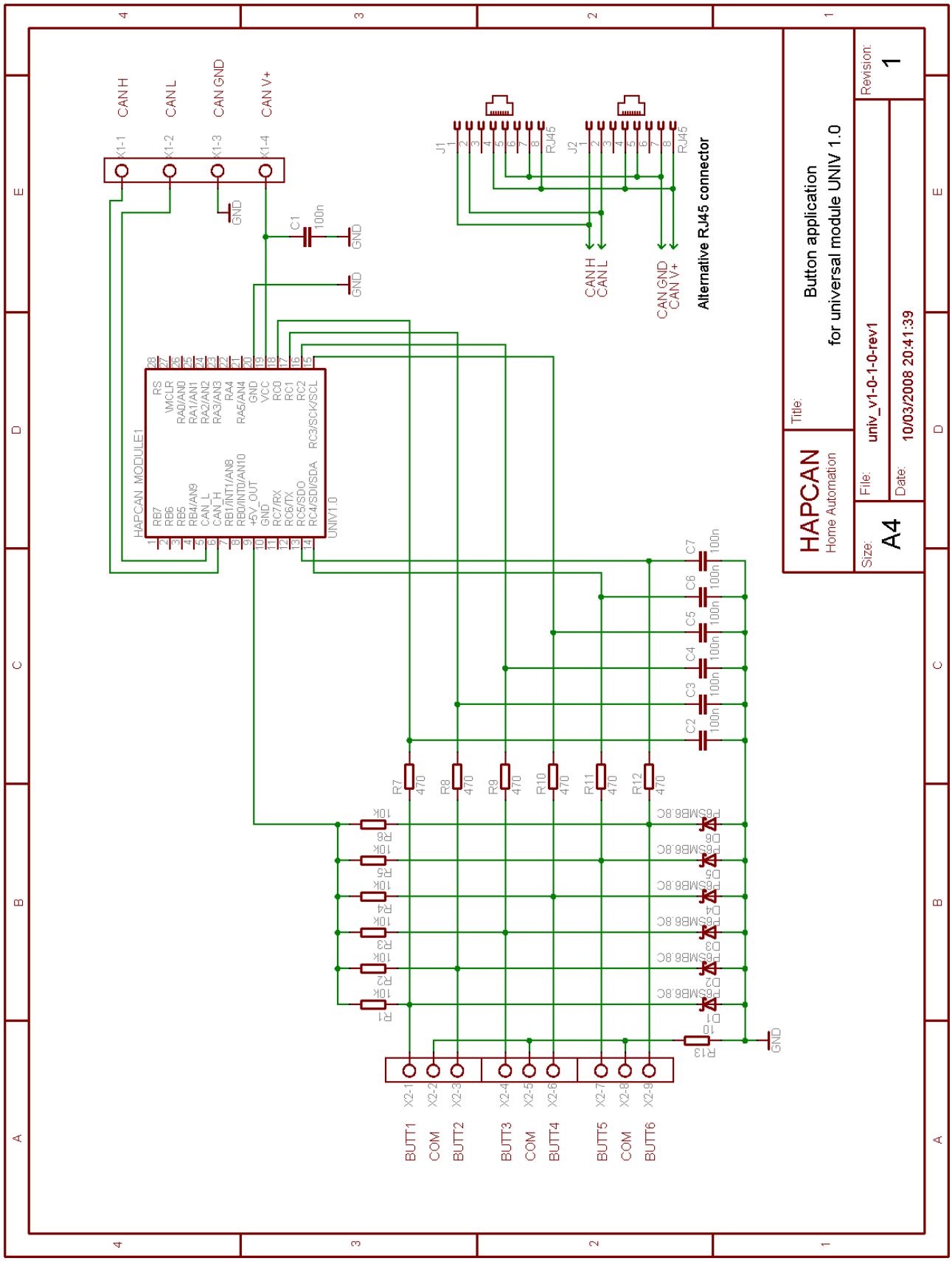


Figure 3. Schematic of button application for universal module UNIV 1.0

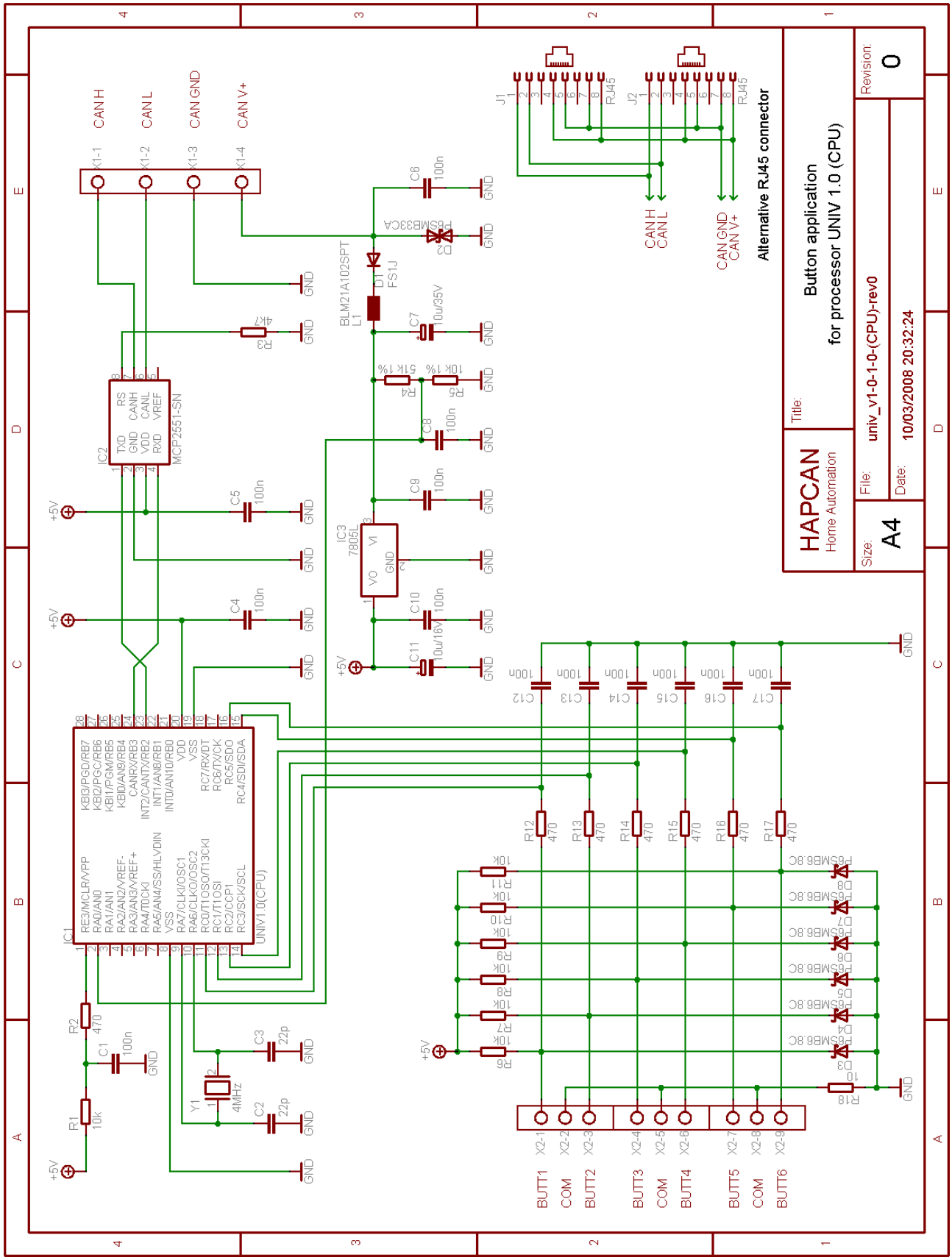
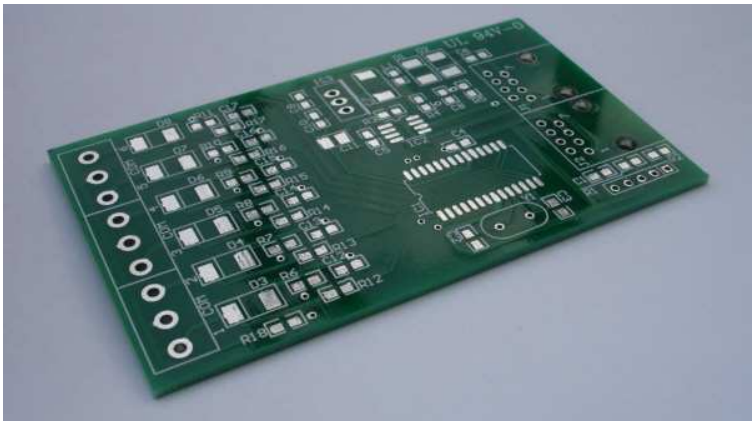


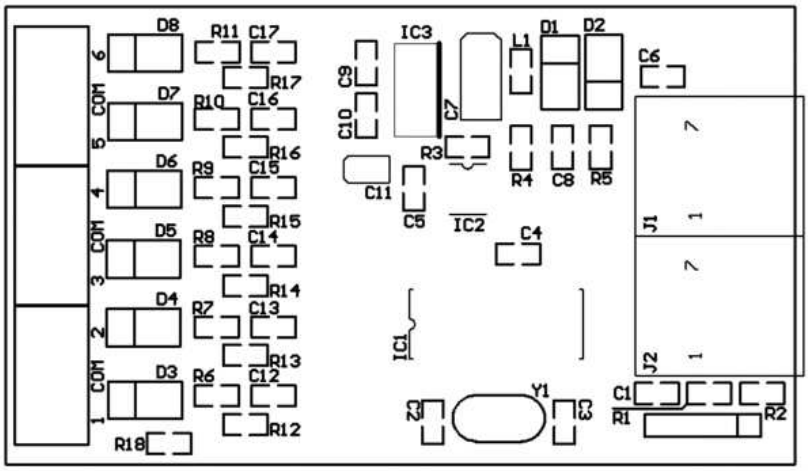
Figure 4. Schematic of button application for processor UNIV 1.0 (CPU)

4.3. Printed Circuit Board

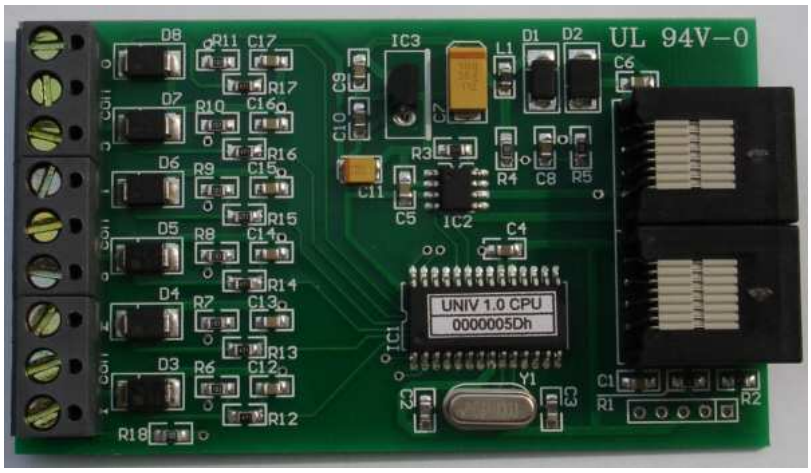
- Printed circuit board for button application UNIV 1.0.1.0 with use of processor UNIV 1.0 (CPU)
- PCB dimensions: 86mm x 50mm



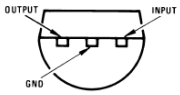
4.3.1. Assembly schematic



4.3.2. Assembled PCB

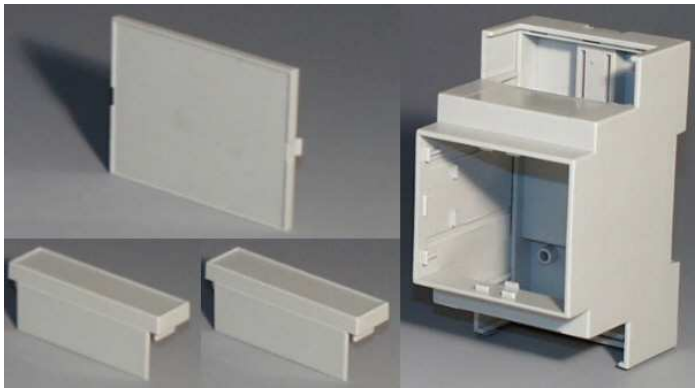


4.3.3. Components

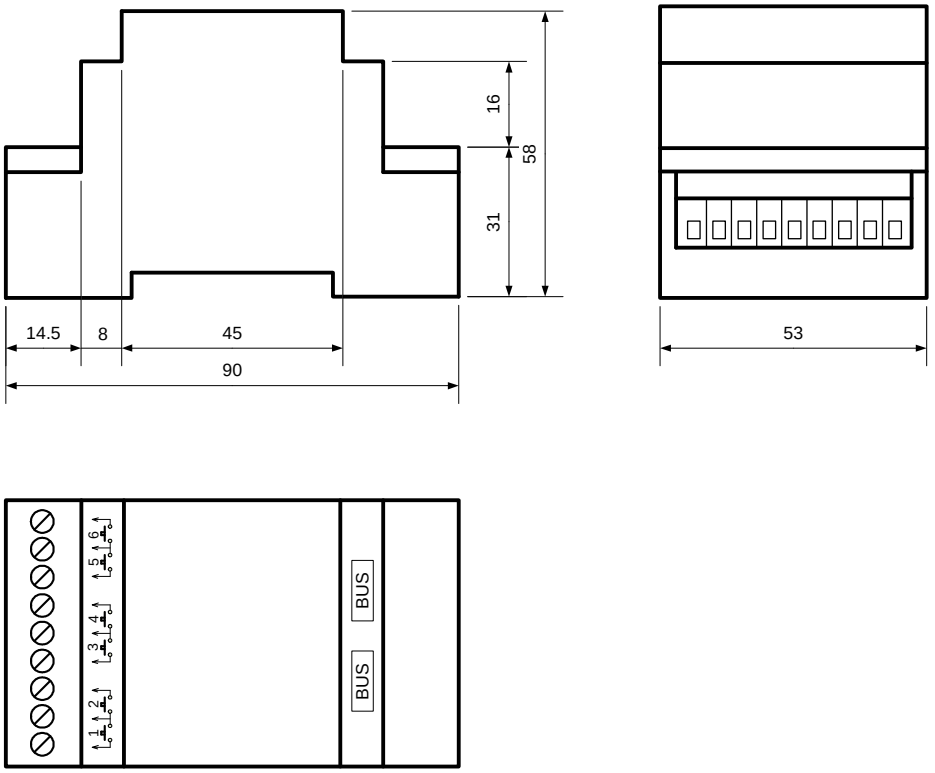
Designator	Type	Footprint	Description
C1, C4, C5, C6, C8, C9, C10, C12, C13, C14, C15, C16, C17	100nF	0805	Capacitor
C2, C3	22pF	0805	Capacitor
C7	10uF/35V	SME	Electrolytic Capacitor
C11	10uF/16V	SMB	Electrolytic Capacitor
R1, R6, R7, R8, R9, R10, R11	10k	0805	Resistor
R2, R12, R13, R14, R15, R16, R17	470 Ohm	0805	Resistor
R3	4k7	0805	Resistor
R4	51k 1%	0805	Resistor
R5	10k 1%	0805	Resistor
R18	10 Ohm	0805	Resistor
L1	BLM21A102SPT	0805	Choke
Y1	4MHz	HC49-S	Quartz crystal
D1	FS1J	DO-214	Diode
D2	P6SMB33CA	DO-214	Transil diode
D3, D4, D5, D6, D7, D8	P6SMB6.8C	DO-214	Transil diode
IC1	UNIV 1.0 (CPU)	SOIC-28	Processor of HAPCAN universal module
IC2	MCP2551-SN	SOIC-8	CAN Transceiver
IC3	LM7805L	TO-92	Voltage regulator 
J1,J2	RJ45	L18xW15xH11	Connector
X2	3x ARK3	H=12,5mm raster=5mm	Terminal block

4.4. Enclosure

- 3 module wide 35mm DIN rail enclosure
- Enclosure dimensions: 90mm x 58mm x 53mm



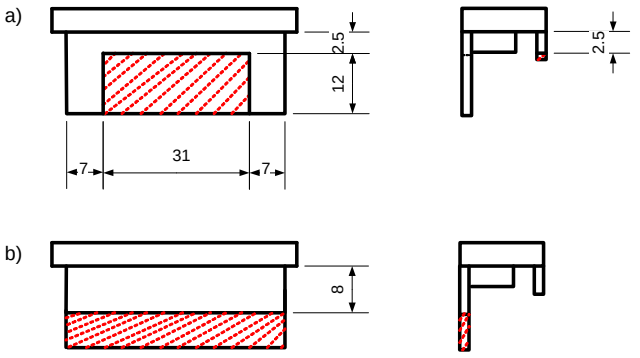
4.4.1. Dimensions



4.4.2. Mechanical processing

4.4.2.1. Main part
Does not need processing.

4.4.2.2. Terminal guards



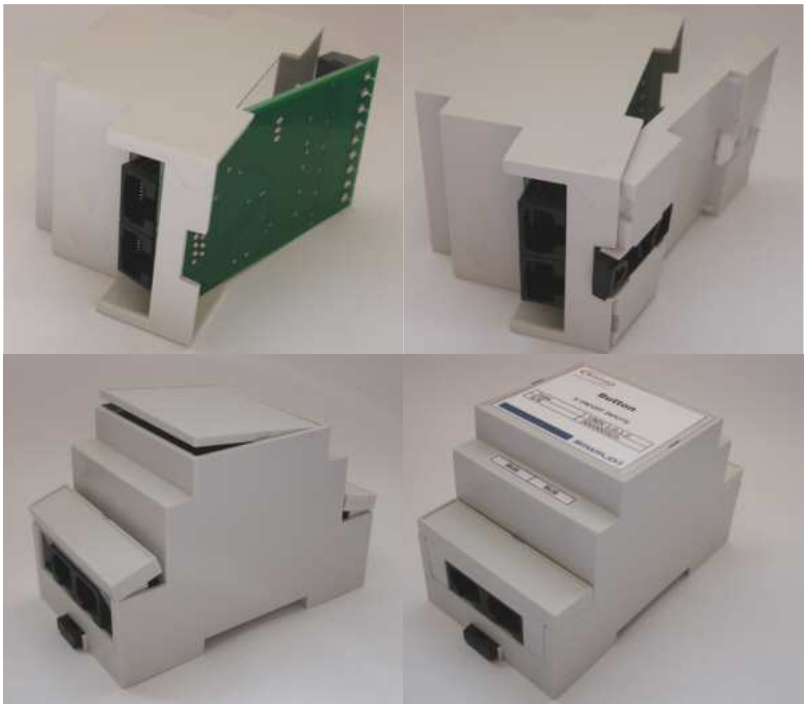
Striped parts must be removed.

Drawing a) shows RJ45 connector guard.

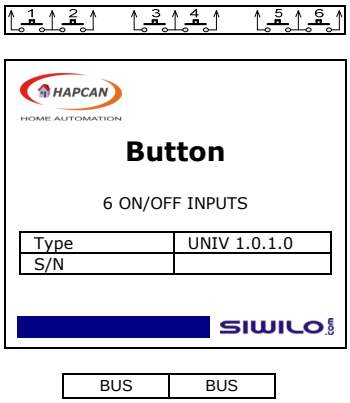
Drawing b) shows terminal block guard.

4.4.2.3. Front panel
Does not need processing.

4.4.3. Assembling



4.4.4. Labels



5. Document version

File	Description	Date
univ_v1-0-1-0-pcba.pdf	Original version	May 2008
univ_v1-0-1-0-pcbc.pdf	Update with schematics	May 2010