16A Monostable Relay Application

UNIV 1.0.2.3

1. Features

- Controller of 6 monostable relays (6x16A).
- Operation voltage 16-24V
- Current consumption from the bus 17mA, maximum 217mA
- For DIN rail mounting.
- Dimensions 90x106x53 mm (6 mod)
- Operating of module depends on firmware uploaded into it.

2. Application version

UNIV 1 . 0 . 2 . 3

- 3 – application version
- 2 – relay application
- 0 – hardware version
- 1 – universal node

3. Technical data

Bus side

Parameter	Symbol	Value	Unit
Power supply voltage	U_s	16-24V	V
Current consumption	I_s	17	mA
Maximum current consumption	I_{SMAX}	217	mA
Bus connector type	2x RJ45 connectors		

Relay side

Parameter	Symbol	Relay type		
		RT314012 RT334012	RTS3L012	RTS3T012
Nominal coil voltage	U_{NCOIL}	12V DC		
Nominal coil current	I_{NCOIL}	33mA		
Maximum contacts voltage	U_{CMAX}	250V AC / 30V DC		
Maximum continuous current	I_{CMAX}	16A		
Maximum inrush current	I_{IMAX}	30A/4s	30A/4s 120A/20ms	30A/4s 120A/20ms 800A/200µs
Relay connector type	Terminal Block (max wire size 4 mm^2)			

4. Hardware

4.1. Wiring

⚠ WARNING 1. This module must be connected only to **one phase** of mains.
⚠ WARNING 2. When inductive load connected, use varistors pararelly with relay contacts.

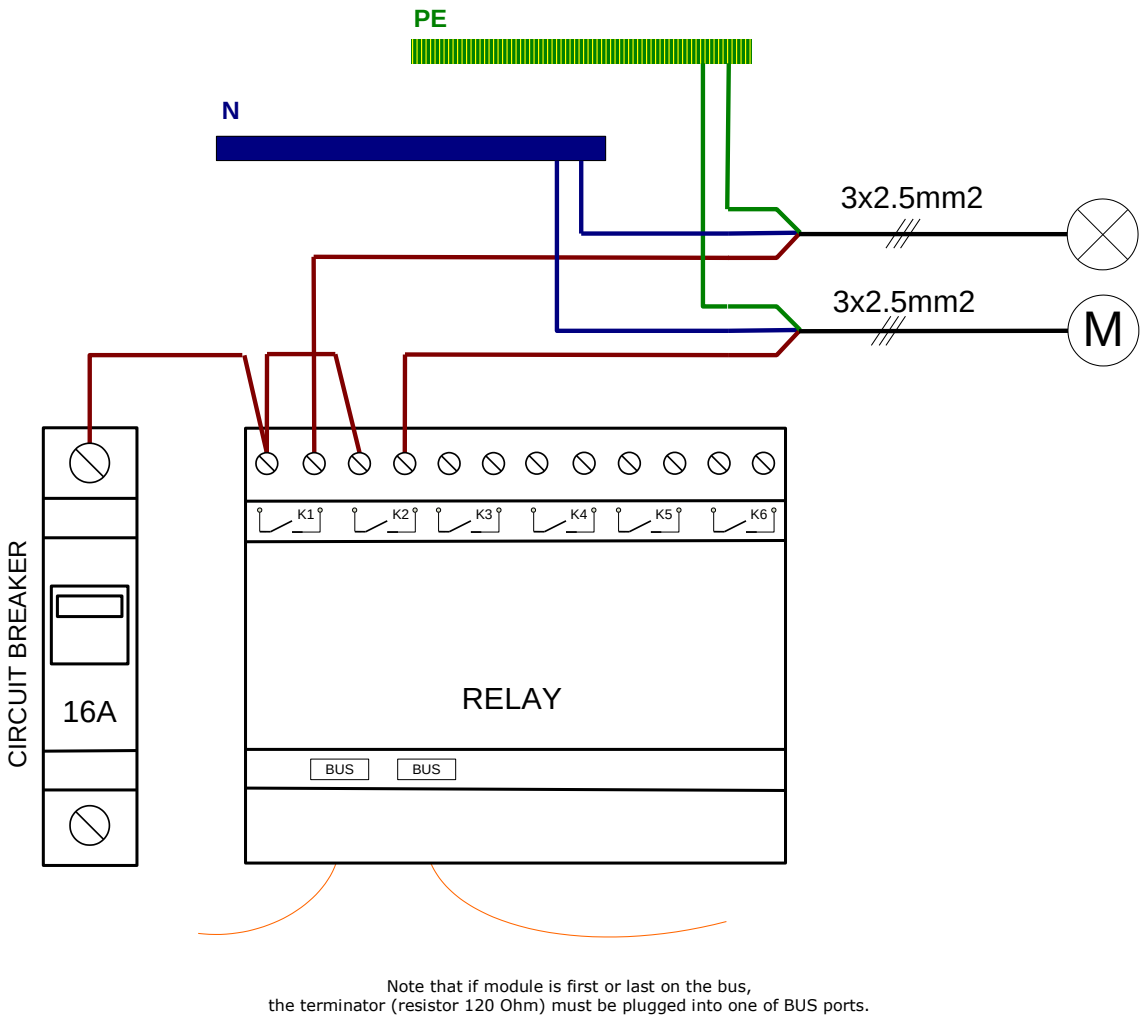
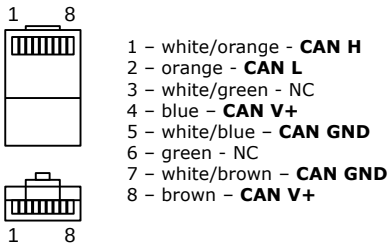


Figure 1. Relay wiring.



1 – white/orange - **CAN H**
2 – orange - **CAN L**
3 – white/green - NC
4 – blue – **CAN V+**
5 – white/blue – **CAN GND**
6 – green - NC
7 – white/brown – **CAN GND**
8 – brown – **CAN V+**

Figure 2. RJ45 bus connector wiring.

4.2. Schematic

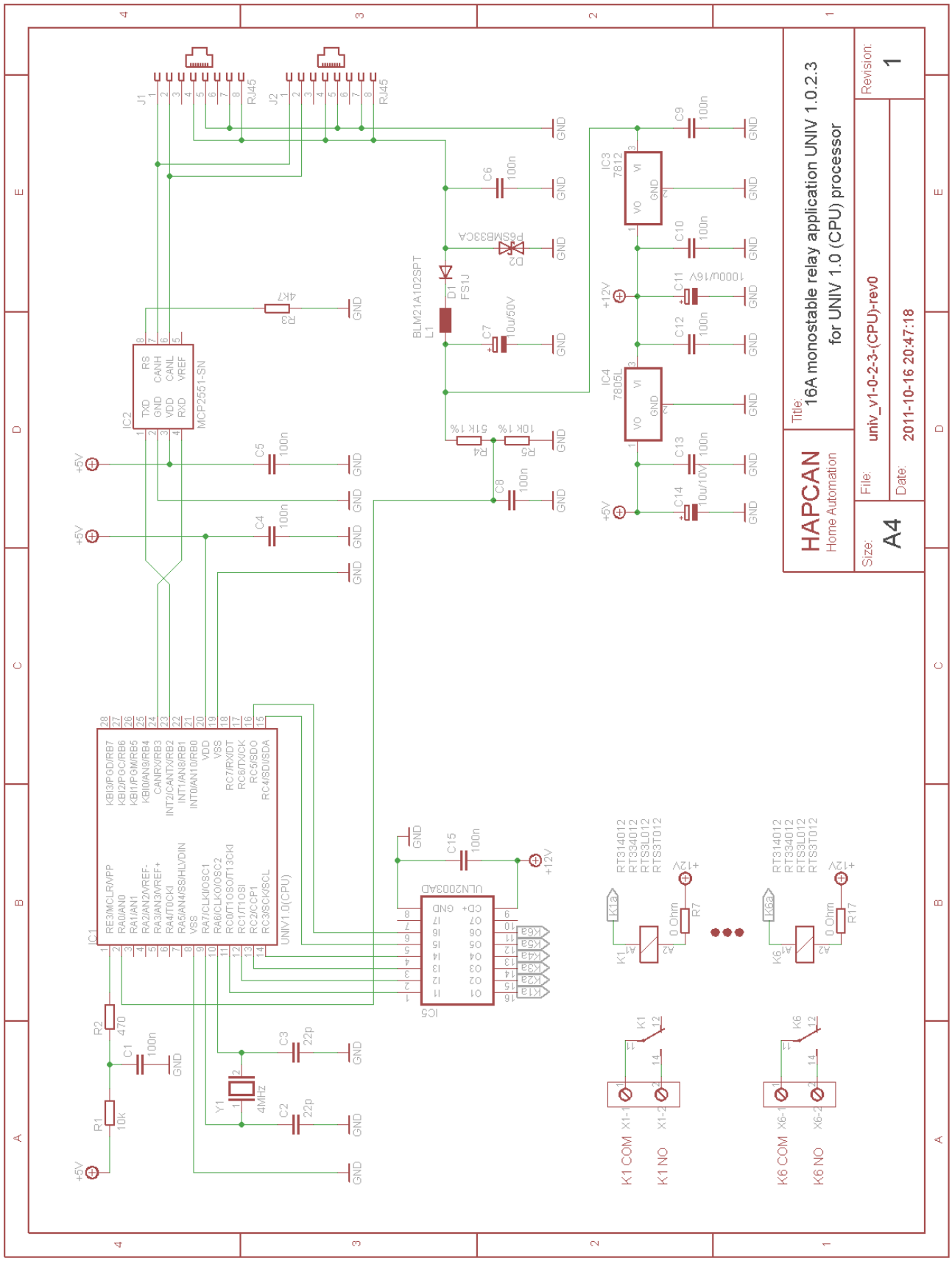
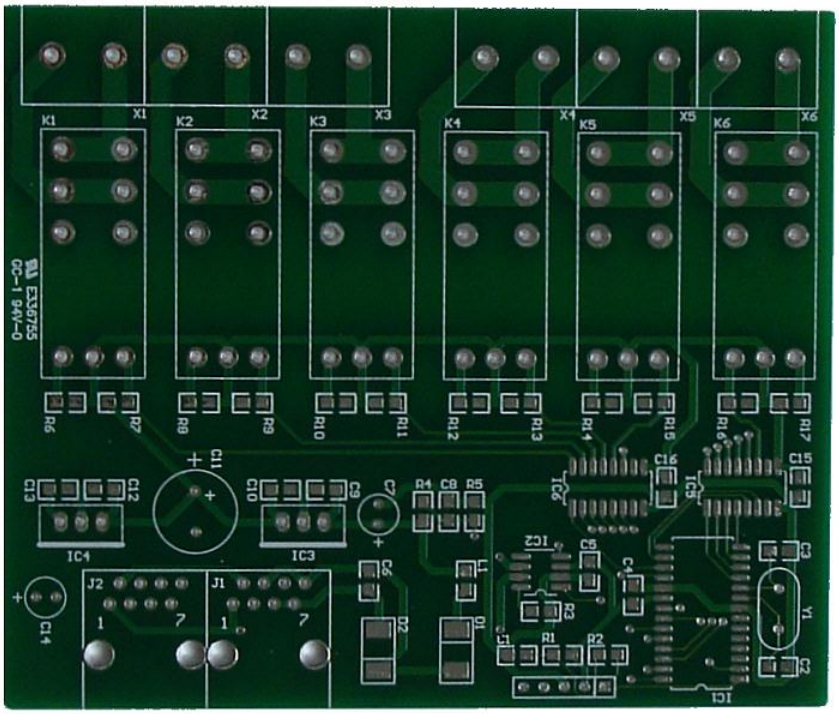


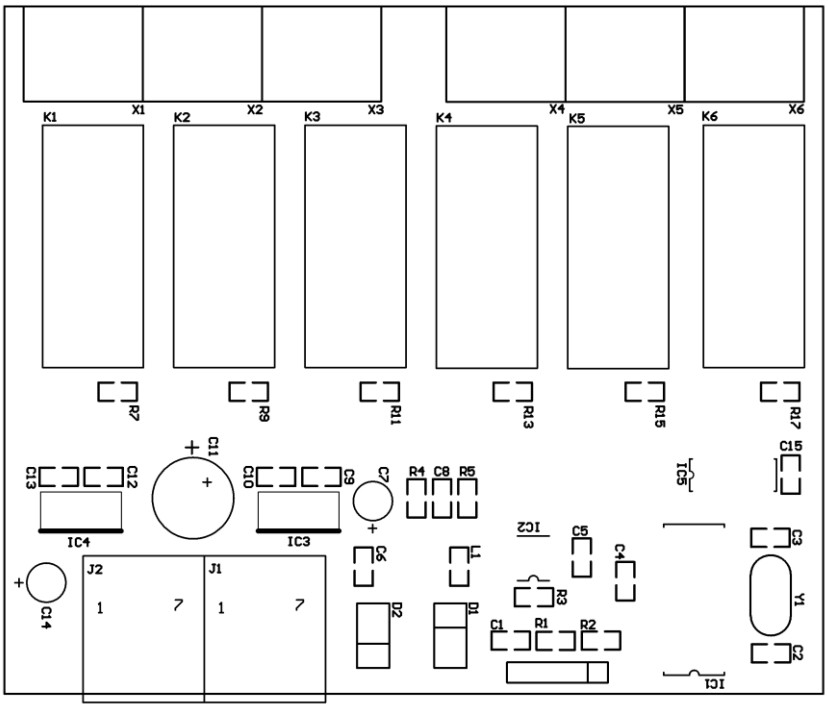
Figure 3. Schematic of monostable relay application UNIV 1.0.2.3

4.3. Printed Circuit Board

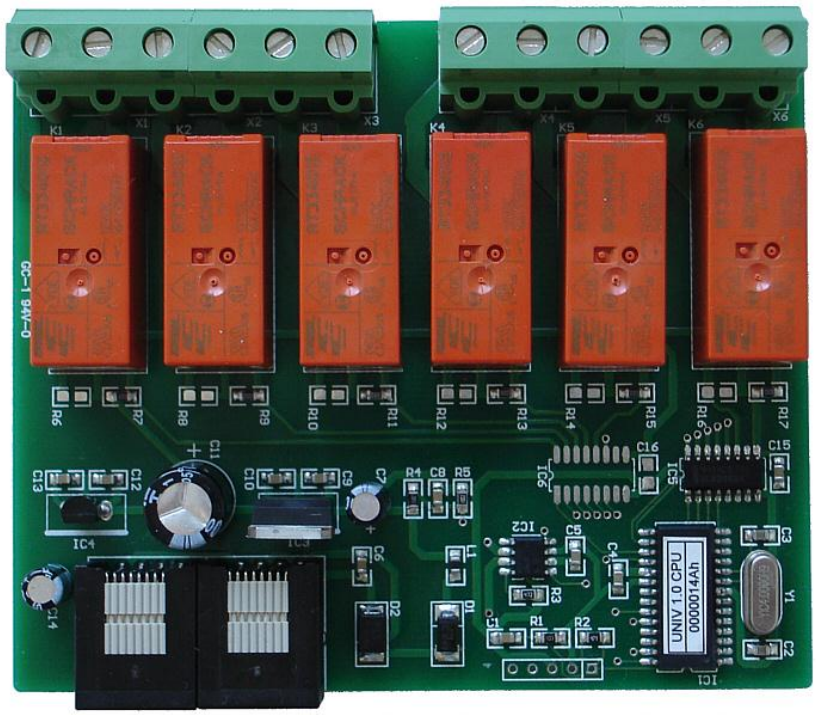
- Printed circuit board for relay application UNIV 1.0.2.3
- PCB dimensions: 86mm x 103mm



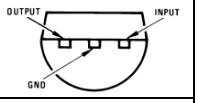
4.3.1. Assembly schematic

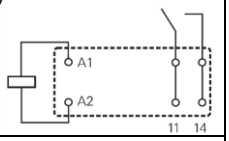
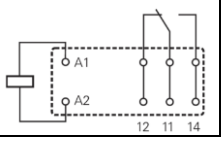


4.3.2. Assembled pcb



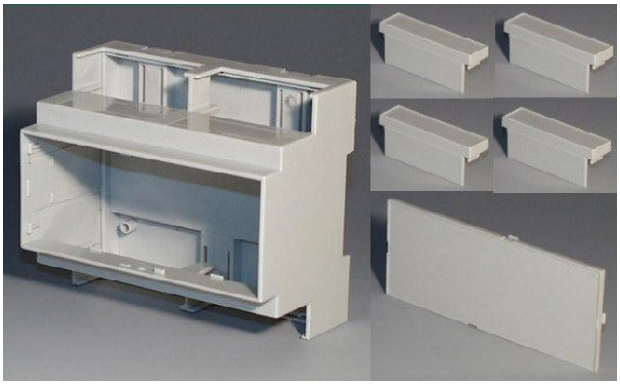
4.3.3. Components

Designator	Type	Footprint	Description
C1, C4, C5, C6, C8, C9, C10, C12, C13, C15	0.1uF	0805	Capacitor
C2, C3	22pF	0805	Capacitor
C7	10uF/50V	2.5/5	Electrolytic Capacitor
C11	1000uF/16V	5/10	Electrolytic Capacitor
C14	10uF/10V	2.5/5	Electrolytic Capacitor
R1	10k	0805	Resistor
R2	470 Ohm	0805	Resistor
R3	4k7	0805	Resistor
R4	51k 1%	0805	Resistor
R5	10k 1%	0805	Resistor
R7, R9, R11, R13, R15, R17	0 Ohm	0805	Resistor
L1	BLM21A102SPT	0805	Choke
Y1	4MHz	HC49-S	Quartz crystal
D1	FS1J	DO-214	Diode
D2	P6SMB33CA	DO-214	Transil diode
IC1	UNIV 1.0 (CPU)	SOIC-28	Processor of HAPCAN universal module
IC2	MCP2551-SN	SOIC-8	CAN Transceiver
IC3	LM7812	TO-220	Voltage regulator 
IC4	LM7805L	TO-92	Voltage regulator 
IC5	ULN2003A	SOIC-16N	IC
J1, J2	RJ45	L18xW15xH11	Connector

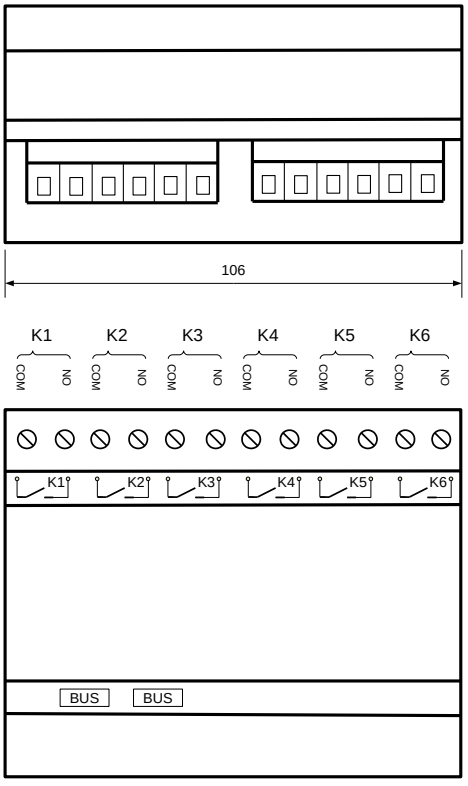
X1, X2, X3, X4, X5, X6	ARK2	raster=7.5mm	Terminal block
K1, K2, K3, K4, K5, K6	RT334012 RTS3L012 RTS3T012 SCHRACK contacts 16A/250V coil 12V/33mA	L29xW12,7xH16	Monostable relay 
	RT314012 SCHRACK contacts 16A/250V coil 12V/33mA	L29xW12,7xH16	Monostable relay 

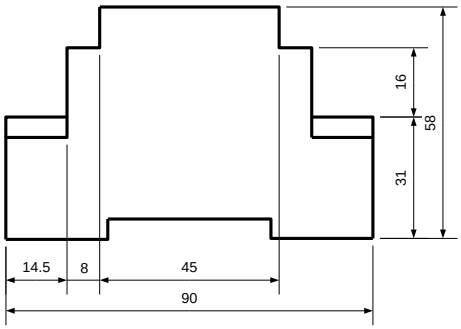
4.4. Enclosure

- Rail mounting enclosure, 6 modules size
- Dimensions: 90mm x 106mm x 58mm



4.4.1. Dimensions

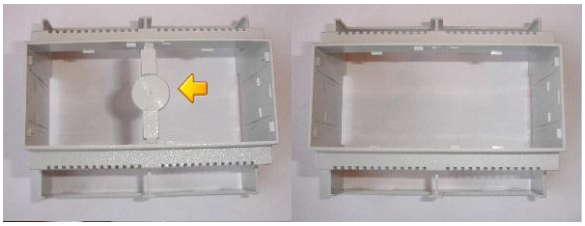




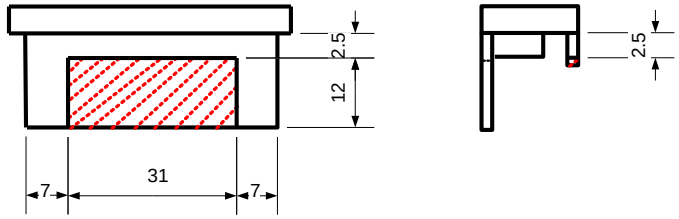
4.4.2. Mechanical processing

4.4.2.1. Main part

The part shown on drawings has to be removed from enclosure.



4.4.2.2. Terminal guards



Striped parts must be removed.

Drawing shows RJ45 connector guard (1 piece).

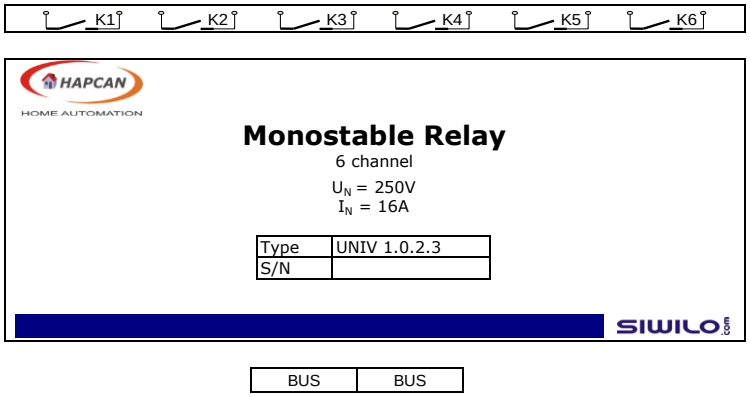
There is nothing to change in second piece; third and forth piece is not used.

4.4.2.3. Front panel

Does not need processing.

4.4.3. Enclosure Assembling

4.4.4. Labels



5. Document version

File	Description	Date
univ_v1-0-2-3-pcba.pdf	Original version	July 2011
univ_v1-0-2-3-pcbb.pdf	Updated relay side parameters, figure 3 & components list	September 2011