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Restarting equipment with

Pico IP

and

RelayBoard (RelayBox2x)

Application Note

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Legend:

This text contains additional and usable information.

Text contains VERY IMPORTANT information which must be readed!

1. Introduction

PicoIP has limited output current at I/O pins, thus it is not possible to directly drive relays. The *RelayBoard/RelayBox2x* contains four/two independent and similar channels, which allows control of powerful devices (up to 7A at 220VAC) via the *PicoIP* module.

Another usefull application of relay outputs is for simulating pressing of RESET button of different computer machines – routers, switches, bitcoin mining machines etc.

2. Connecting *PicoIP* and *RelayBoard/RelayBox2x*

Every channel of *RelayBoard/RelayBox2x* has input signal cable and all channels have a single common cable (ground). The ground cable is in BLACK color.

The common cable must be connected to some of *PicoIP's* I/O pins marked with "GND". See Appendix for pin locations.

The necessary channels' input cables must be connected to I/O pins marked with "Output". Selection of output pins depends on the function needed by the end user. Channels of *RelayBoard* that will no be used may be left open (resp. the relay will stay in off).

There are two type of output pins to which relay channel can be connected:

– "Manually controlled pins": These are all sixteen I/O pins from ports JP3 and JP4 (see Appendix).

– "Automatically controlled pins": This is pin No. 6 from JP6 port ("TargetRST" signal). After executing "Target Restart" command (trough Web interface or via SNMP command) the connected relay channel of *RelayBoard/RelayBox2x* is switched on for a period of 15s (value can be change by user in *PicoIP's* IP settings page). After this period of time the relay is automatically switched off. The time can be adjusted to another value via Web/SNMP. This signal can be distributed an any of P5 pins.

After connecting both device, they must be supplied with input power. Both needs 12VDC power supply source. Total power consumption (with all relays on) is not more than 500mA.

For schematic diagram of example configuration with *PicoIP* and *RelayBoard/RelayBox2x* refer to APPENDIX B.

PicoIP doesn't share its 12VDC power to RelayBoard. Both devices must be externally powered from 12VDC source.

3. APPENDIX A: I/O ports of *PicoIP*.
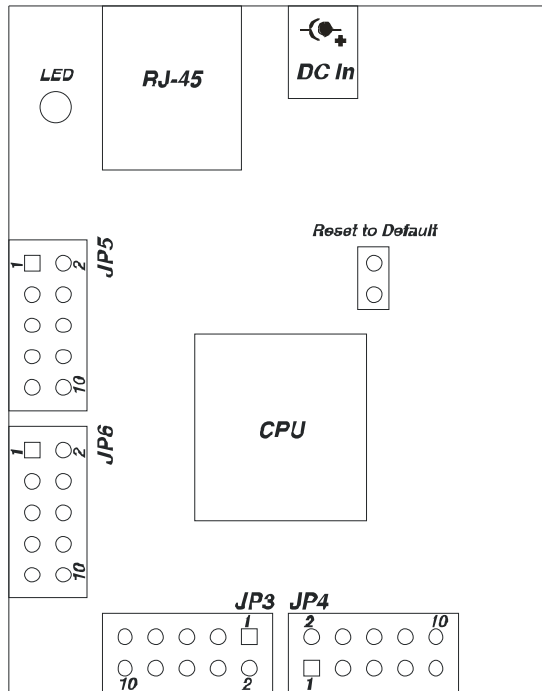

Table 1 I/O ports description

PIN No.	Port JP3 (P3) /Output/			Port JP4 (P5) /Output/			Port JP5 (P6) /Input/		
	Bit	FUNC	DIR	Bit	FUNC	DIR	Bit	FUNC	DIR

1	1	Free	Out	1	Free	Out	1	Free	Ain
2	2	Free	Out	2	Free	Out	2	Free	Ain
3	3	Free	Out	3	Free	Out	3	Free	Ain
4	4	Free	Out	4	Free	Out	4	Free	Ain
5	5	Free	Out	5	Free	Out	5	Free	Ain
6	6	Free	Out	6	Free	Out	6	Free	Ain
7	7	Free	Out	7	Free	Out	7	Free	Ain
8	8	Free	Out	8	Free	Out	8	Free	Ain
9	-	GND	PWR	-	+3.3V	PWR	-	+3.3V(Vref)	PWR
10	-	GND	PWR	-	GND	PWR	-	GND	PWR

Table 2 Description of system port (not accessible directly)

PIN No.	Bit	FUNC	DIR
		Port JP6 /system port/	
1	-	+3.3V	PWR
2	-	+3.3V	PWR
3	-	Reserved	-
4	-	Ping LED	Out
5	-	Reserved	-
6	-	Target RST	Out
7	-	Switch (RST)	Out
8	-	Switch (SCL)	Out
9	-	Switch (SDA)	In/Out
10	-	GND	PWR

Legend:

"Free" – I/O is free to use;

"*XXXXXX*" – I/O is used for special system function – can not be controlled by user
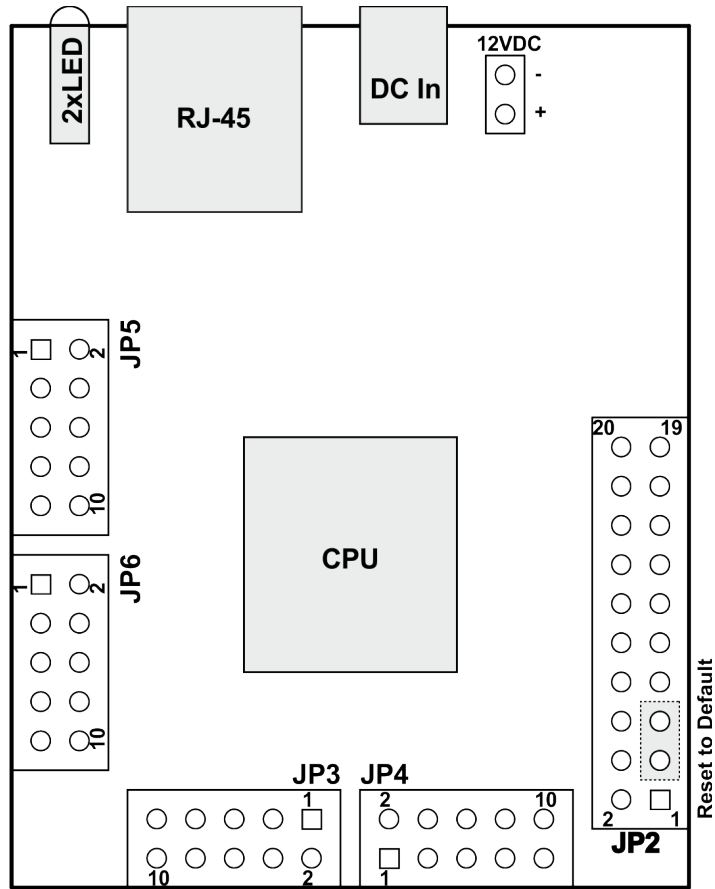
 "In" – Input ;

"Out" – Output;

"Ain" – Analog Input

I/O ports are not buffered! They are directly connection to CPU chip.
Maximum current drawn from output I/O pin must not exceed 1мA (3.3V logic);
Voltage between 0 and 3.3V can be applied to input I/O pins!

4. APPENDIX B: I/O ports of *PicoIP v2*

PIN No.	Bit	FUNC	DIR	
		Port JP2 /system reserved port/		
1	-	+3.3V	PWR	Connector for NMGS4Pxx-IS cable
2	-	SWIO		
3	-	Default/SWIO	In	
4	-	SWIO		
5	-	GND	PWR	
6	-	Reserved		
7	-	SWIO		
8	-	SWIO		
9	-	SWIO		
10	-	SWIO		
11	-	Reserved		
12	-	Reserved		
13	-	GND	PWR	
14	-	Reserved		
15	-	Reserved		
16	-	Reserved		
17	-	GND	PWR	
18	-	Reserved		
19	-	Reserved		
20	-	Reserved		

5. APPENDIX C: Schematic diagram for typical configuration PicoIP and RelayBoard restarting external equipment by power supply
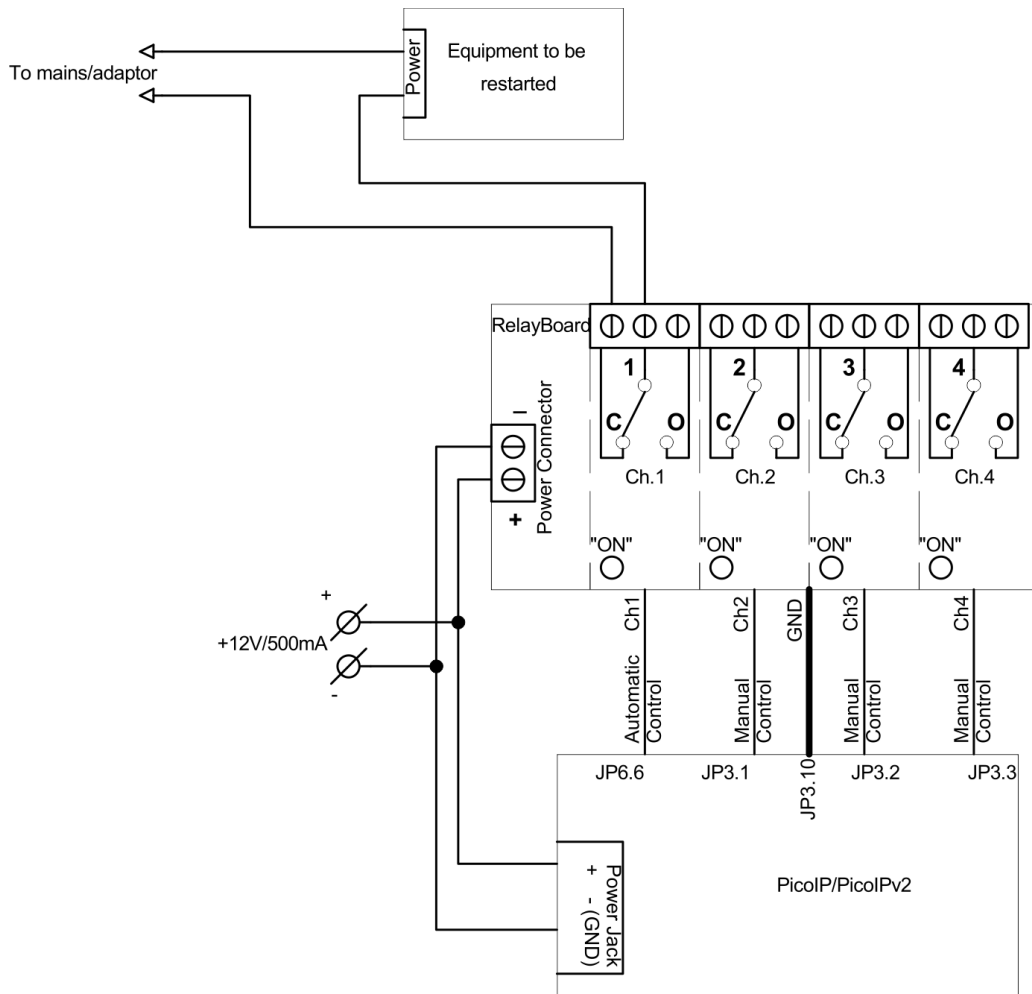
6. APPENDIX D: Schematic diagram for restarting by RESET pins

All connections are like previous variant, just must use here normal open (NO) contact of relay to simulate pressing of RESET button of equipment.

User must change I/O pin by Web interface/SNMP to switch on relay and then manually switch it off. It is possible to use also TargetRST signal – then restoring to initial state will be automatic.