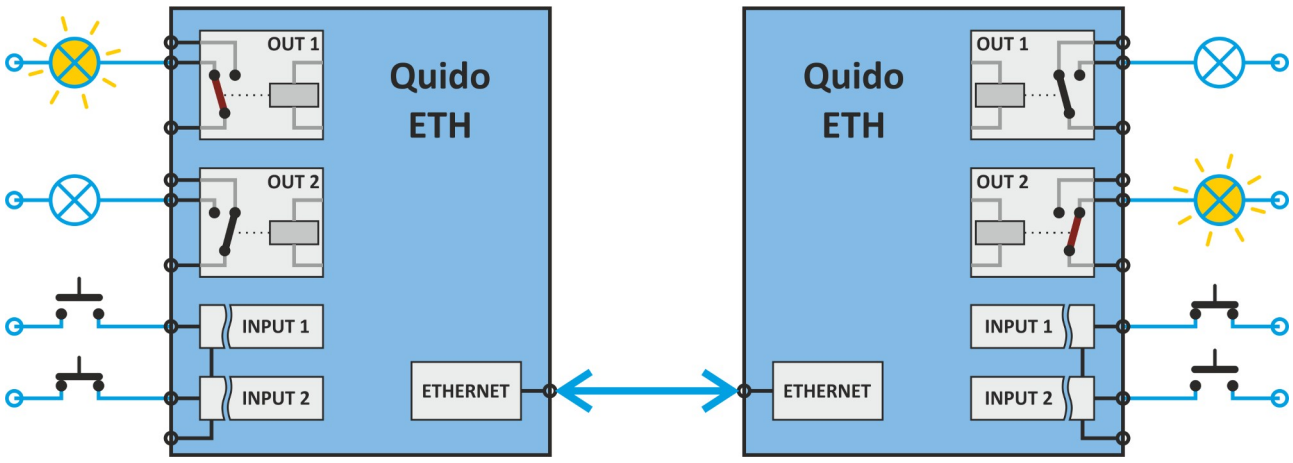
QuidoDuplex

Set for transmission of 4 or 8 two-state signals bidirectionally over Ethernet



QuidoDuplex

Data sheet

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CONTENT

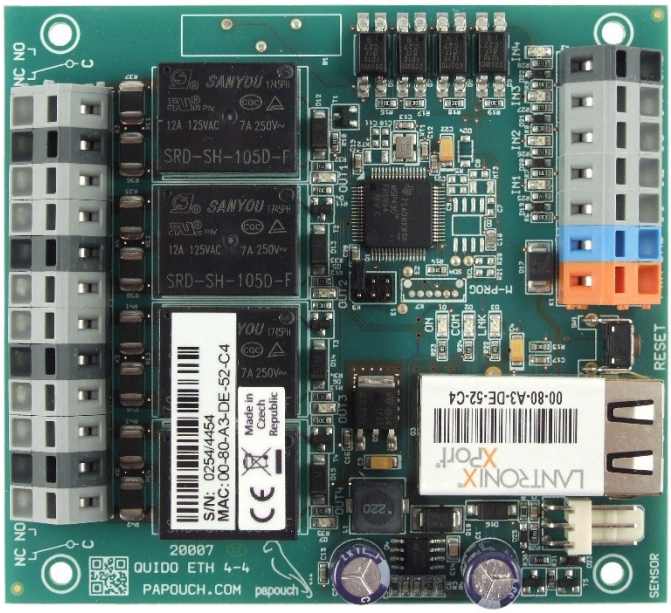

Fig. 1 – One part of the QuidoDuplex ETH kit for four signals

BASIC INFORMATION

The QuidoDuplex ETH allows you to synchronize two I/O modules connected to Ethernet. Activating the input of one module switches on the relay in the second module and vice versa.

Thus, it is possible to transmit the status of contacts or other two-stage signals over the Ethernet, as can be seen in the example in Fig. 2.

Application

- Bidirectional transmission of four or eight digital signals.
- Remote control using the two-state signals over the Ethernet.
- Using the existing Ethernet network to transmit control signal without the necessity to install any additional data conductors.

Block diagram

The schematic drawing in Fig. 2 shows how the Quido Duplex works. The state of input 1 on the Quido on the left is transmitted to output 1 on the Quido on the right, and similarly the switched state of input 2 is transmitted to output 2 so that the connected bulb is lit. The other inputs and outputs are similarly virtually connected. The connection also works in the reverse direction, so that a switched input on the right Quido lights the bulb on output 1 of the left Quido.

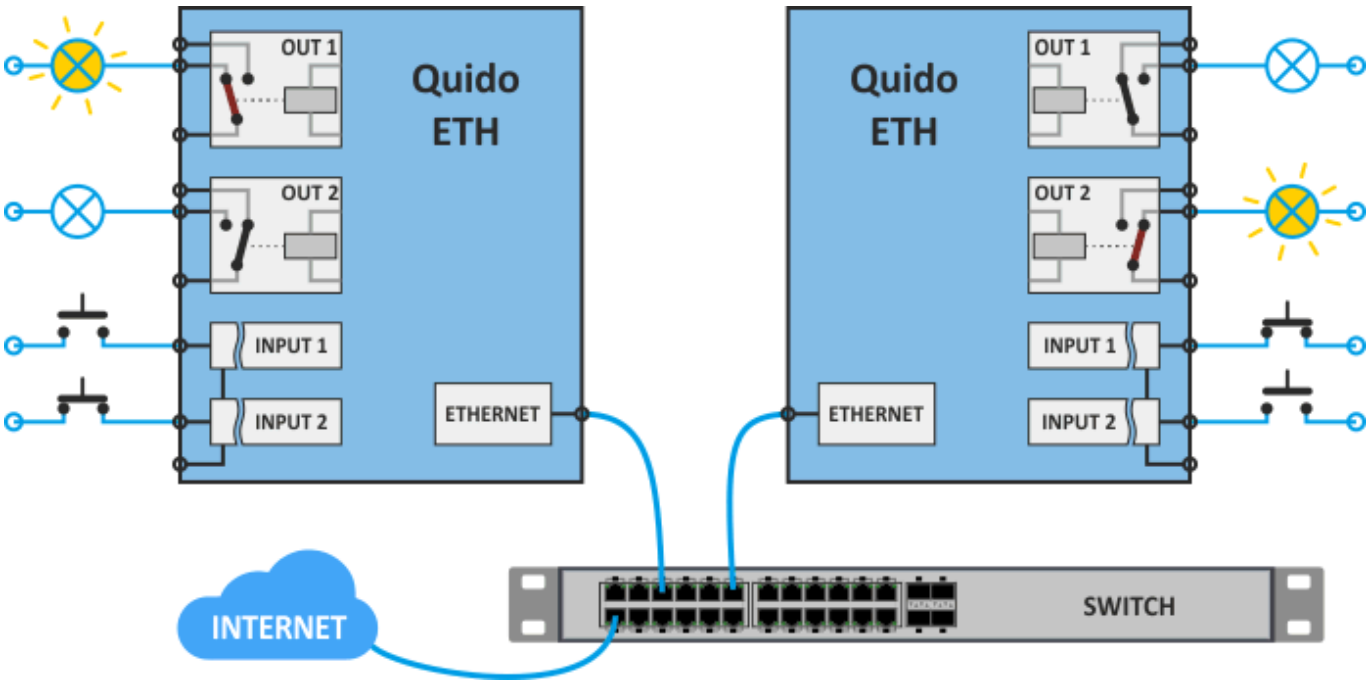

Fig. 2 – Block Connection

Default Quido Duplex firmware connects all inputs on one board to all outputs on the other board.

We can modify the standard firmware upon request to suit your needs. For example, one those outputs can be used as an indicator of an established connection.

Operations

After being switched on, both modules synchronize within ten seconds, if there are no troubles with the Ethernet connection. If there are no troubles with the Ethernet connection, both modules synchronize within ten seconds upon start-up.

In case there is a failure of Ethernet connection for longer than 5 seconds, both modules open the output relay.

If the status of any input is changed, a command is sent immediately to the other module to change the status of the corresponding relay (for Input 1 to Relay 1, for Input 2 to Relay 2, etc.). The time necessary for the output to change the status depends entirely on the speed of the information transmission over the Ethernet. The response of the module is immediate without any delay.

This set transmits digital input states over network. Up to 10 changes can be transmitted from one side to another within 1 second (with regards to network utilization and the number of network devices in the way, it can differ).

CONNECTIONS AND CONFIGURATION

Tip: Quido is always delivered with a plastic lever tool to easily connect its terminals. Usage is indicated on the following picture.[1]

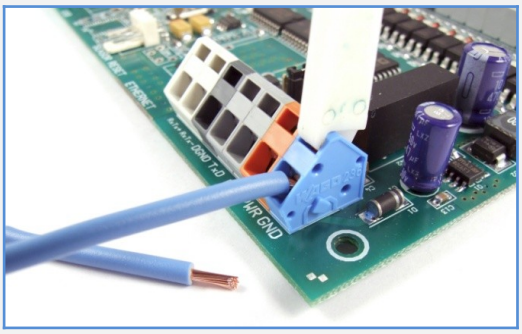

Fig.. 3 – the use of plastic lever tool coeasily connect wires

1) Connect power voltage from 8 to 30 V to PWR (+ orange terminal) and GND (– blue terminal). Quido has reverse polarity protection integrated. PWR indicator is lit once the power is applied.

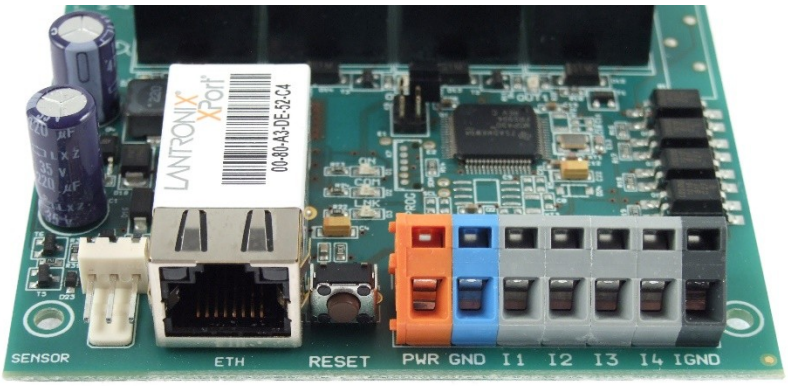

fig. 4 – terminals and connectors on Quido ETH 4/4 (from left): sensor, ethernet, power and inputs

2) Connect input and output terminals based on your topology. Detailed description is in chapter Input and Output terminal connection on page 8.

[1] Terminals can also be operated using a small flat head screwdriver.

3) Now connect Quido to Ethernet.

   a. Connect Quido to a regular switch using a standard non-cross-wired cable.[2]

   b. If your network range is incompatible with IP address (**192.168.1.254**) a subnet mask (**255.255.255.0**) of Quido, set a compatible range and subnet using Ethernet configurator.

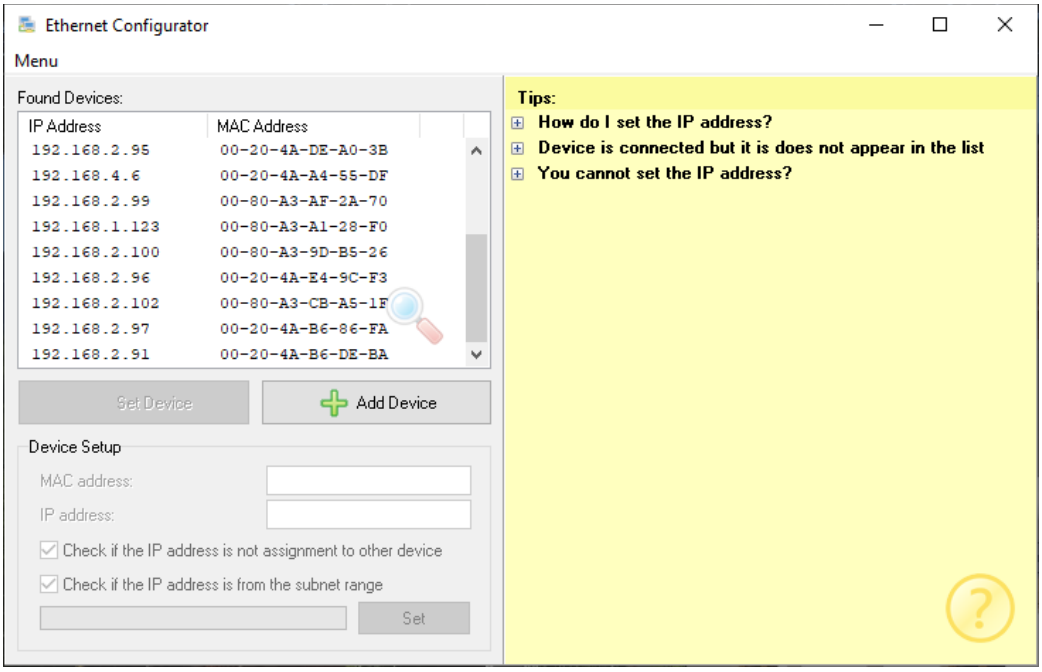

fig. 5 – Ethernet Configurator for easy IP address setup

   c. Set first Quido to a different IP address than the other. Following examples have addresses 192.168.1.44 and 192.168.1.45.

   d. After the IP address is set, use WEB browser to configure Quido.

Quido configuration

The following settings are not necessary if you have ordered two Quidos as a Duplex set! Settings must be done in case you want to make a duplex set out of two standard Quidos with standard firmware.

Following settings are only available in Quido units delivered after march 2020 with firmware from version 6.9/20 and 04.39 core (red marked details on fig. 6).

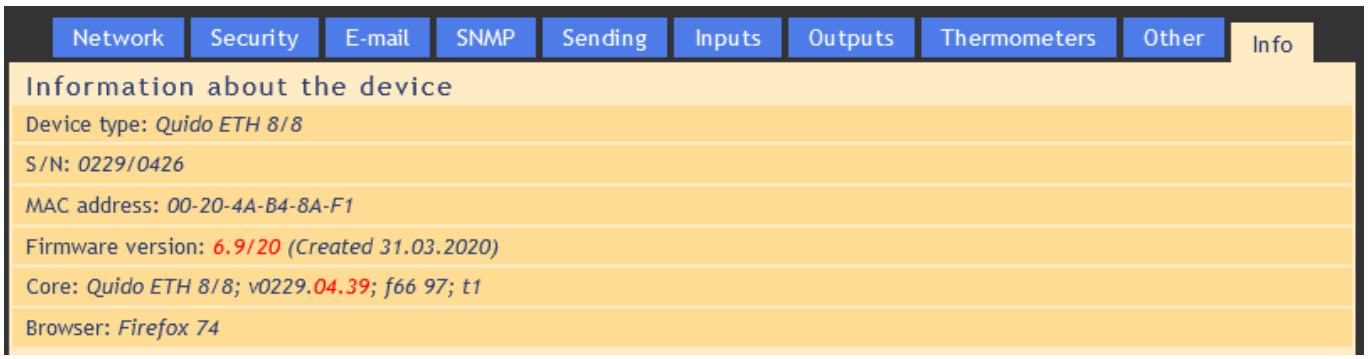

fig. 6 - Firmware version information in the WEB interface

4) Shorten the *Duplex* jumper on both units.

[2] If you need to Connect Quido directly to your PC, use cross-wired patch cable.

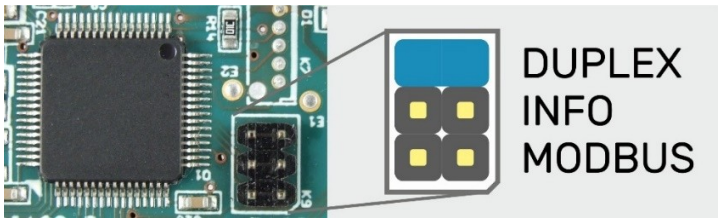

fig. 7 – placement of the Duplex jumper on Quido board

5) After that, **set first Quido** according to the following picture. Key settings are highlighted red.

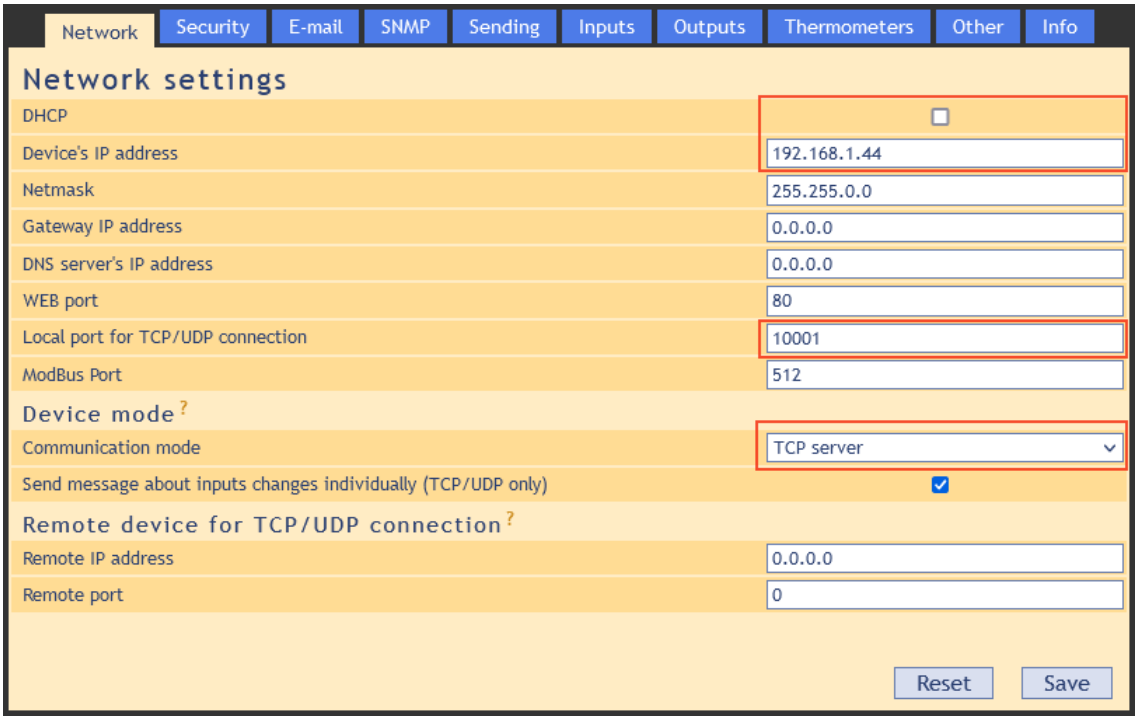

Fig. 8 – Network settings of the first Quido

(*IP address* field and *remote address* field will probably be different according to your network. These have to be different IP addresses.)

Save settings by clicking the *Save* button.

6) Similarly, **set the second Quido** unit based on the following picture. Key settings are highlighted blue. The second Quido unit is set to a different communication mode than the first.

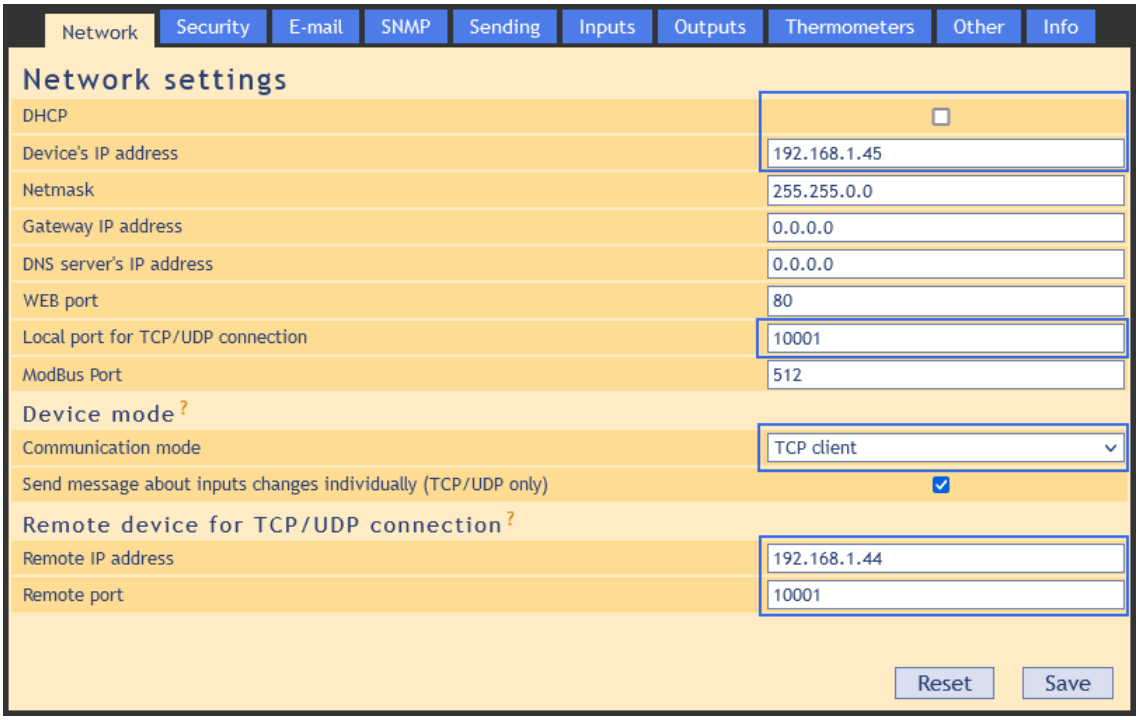

fig. 9 - Network settings of the second Quido

Save settings by clicking the *Save* button.

7) Quido Duplex set is ready to be used.

Simple indication of connection loss

The established connection can be tested in a simple way in case that the system does not use all communication signals.

Make a permanent activation of one of the unused inputs in one module. This causes permanent activation of one relay in the second module. Its contacts, which are open as long as communication is carried out, can be connected to a light bulb, a buzzer etc. If the connection is lost then, the module disconnects all contacts after five seconds including the relay connected to the indication of lost connection. Thus the indication bulb switches on, the buzzer sounds etc.

INPUT AND OUTPUT TERMINAL CONNECTION

Inputs

The inputs can be controlled by connected voltage or a contact.

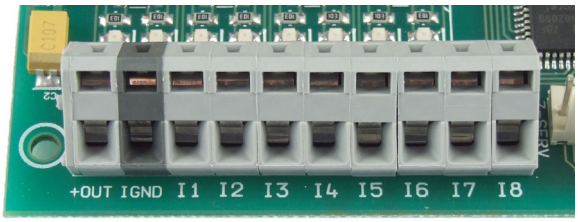

Fig. 10 – Input terminal box of QuidoDuplex with eight signals

Each input is connected as shown in Fig. 8. IGND grounding is galvanically isolated from the device GND.

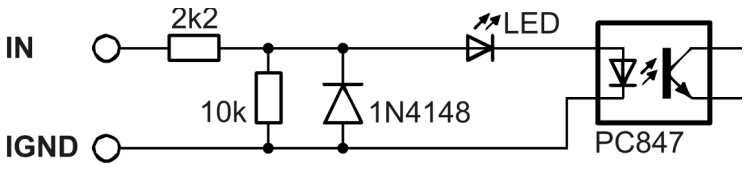

Fig. 11 – input circuit connection

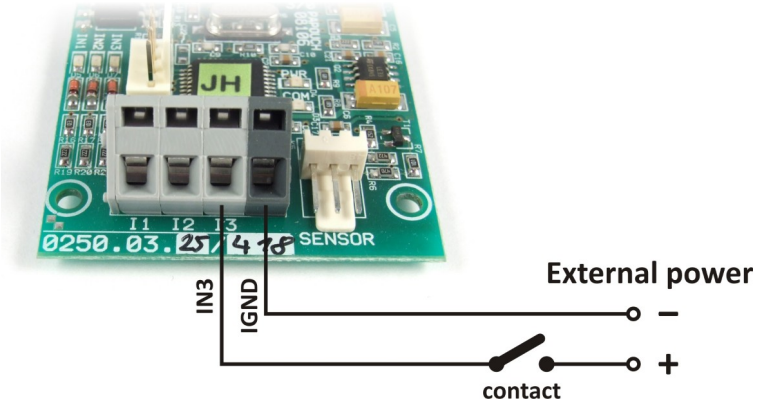

Fig. 12 – dry contact connection example [3]

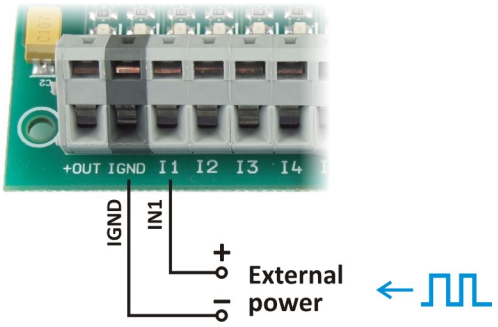

Fig. 13 – voltage pulses source connection example (see Operations section on page 5)

[3] If an external power supply is used to connect inputs, inputs are galvanically isolated. If the same power supply is used instead to power both inputs and Quido itself, galvanic isolation is canceled and inputs are connected to the Quido main board.

Outputs

Each output has a relay with SPDT contact (max. 60 V AC or 85 V DC! [4]).

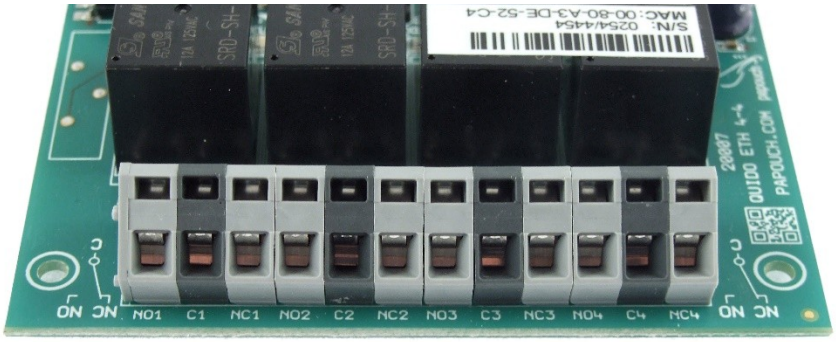

Fig. 14 – switching contacts of output relays on Quido ETH 4/4

Then output is connected as shown below:

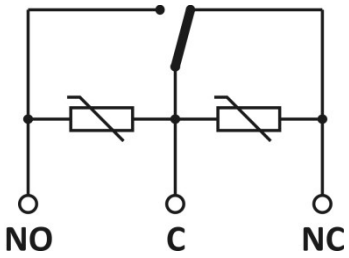

Fig. 15 – relay contact and protection varistors diagram

How to use Quido to switch higher voltages (i.e. 230 V AC)

To switch 230V using Quido, an external relay has to be connected.[5] Example is shown on the following picture and diagram.

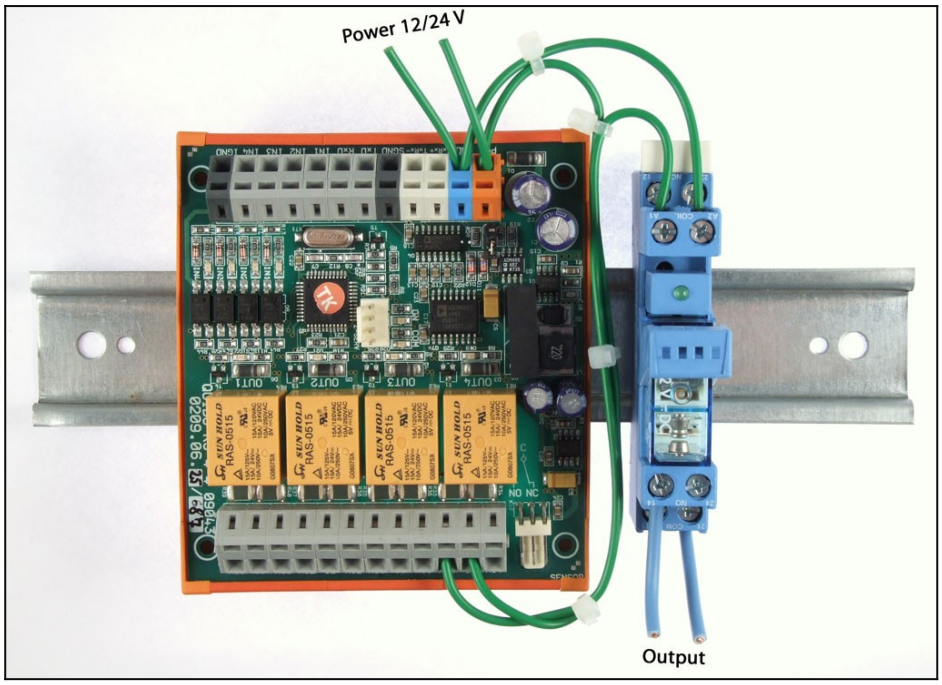

Fig. 16 – 230 V AC switching example

[4] Connection diagram example is on the following page.

[5] Power relay up to 300V AC shown on the picture can be ordered using article ID RELE_DIN_12 (12 V DC), RELE_DIN_24 (24 V DC), RELE_DIN_48 (48 V DC).

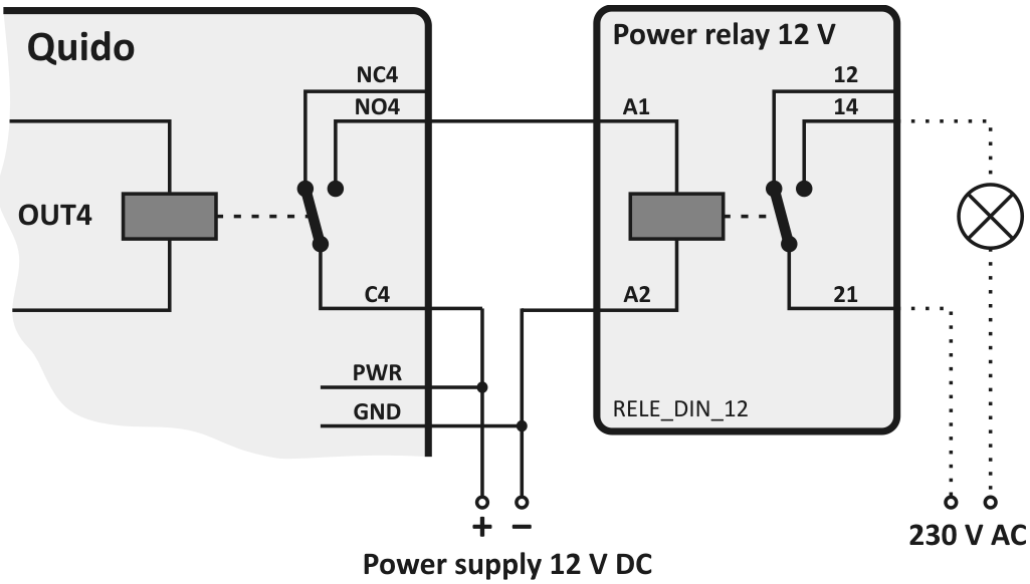

Fig. 17 – 230V AC bulb switching schematic diagram

TECHNICAL PARAMETERS

Only basic technical parameters are listed here. Full data sheet of your Quido module can be downloaded on a given page on en.papouch.com/quido.

Inputs:

Input voltage for state “1”.....7 – 28 V

Input current at 12 V.....typically 3.5 mA

Input current at 24 V.....typically 7.8 mA

Outputs:

Maximum switching voltage.....AC voltage: 60 V, DC voltage 85 V

Maximum switched current.....5 A

Protective varistor.....U_{AC} = 60 V; E_{MAX} = 5 J; C = 0,64 nF

Other:

Power supply.....8 to 30 V DC, with reverse polarity protection

Quido ETH 4/4 – current consumption.....typ. 280 mA at 12 V (with all relays switched on)
typ. 140 mA at 12 V (without relays switched)

Quido ETH 8/8 – current consumption.....typ. 385 mA at 12 V (with all relays switched on)
typ. 140 mA at 12 V (without relays switched)

Connection terminal block.....Wago 236, max. conductor cross-section 2.5 mm

Operating temperature.....–20 °C to +60 °C

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