QuidoDuplex

Two-state signal over-ethernet transmission
set based on I/O module Quido

internet
(Computer Network)

INPUT 1	→	OUTPUT 1
INPUT 2	→	OUTPUT 2
INPUT 3	→	OUTPUT 3
INPUT 4	→	OUTPUT 4
OUTPUT 1	←	INPUT 1
OUTPUT 2	←	INPUT 2
OUTPUT 3	←	INPUT 3
OUTPUT 4	←	INPUT 4

QuidoDuplex A   *QuidoDuplex B*
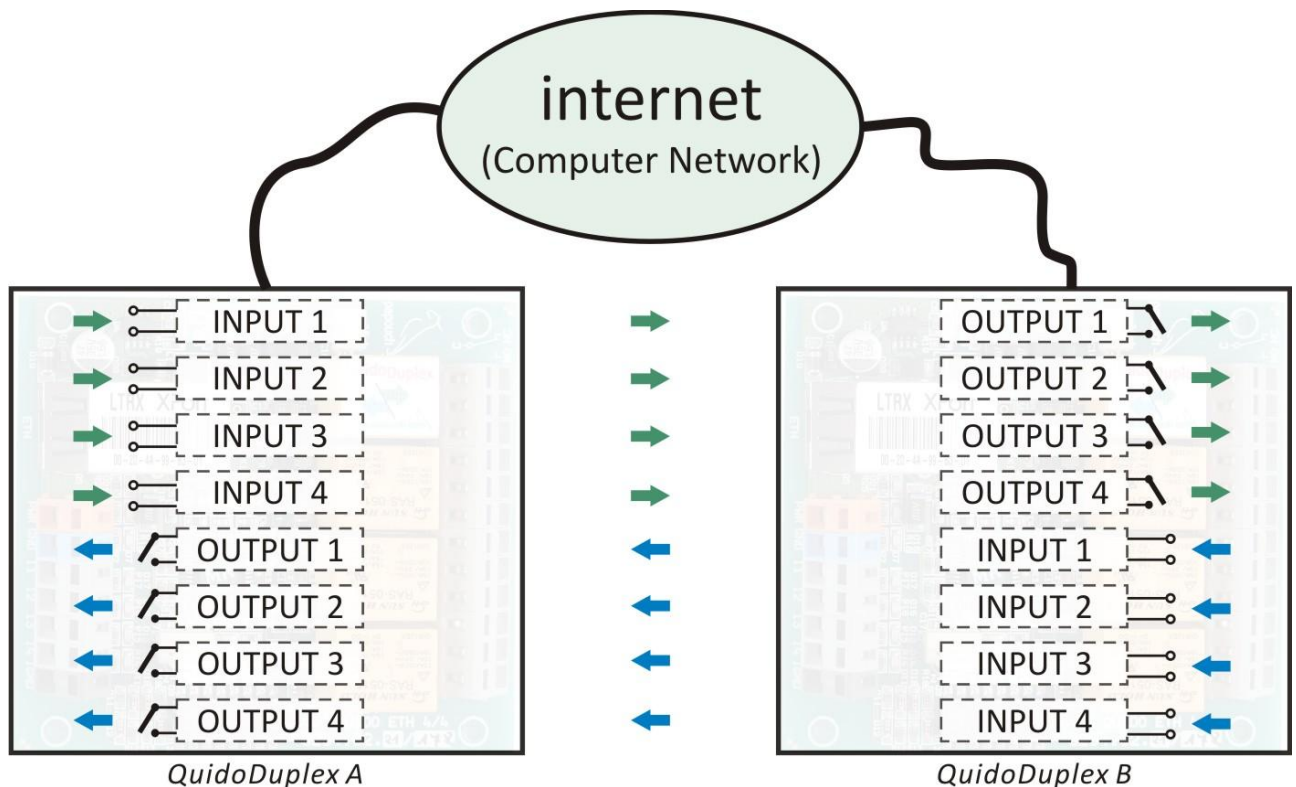
QuidoDuplex

Datasheet

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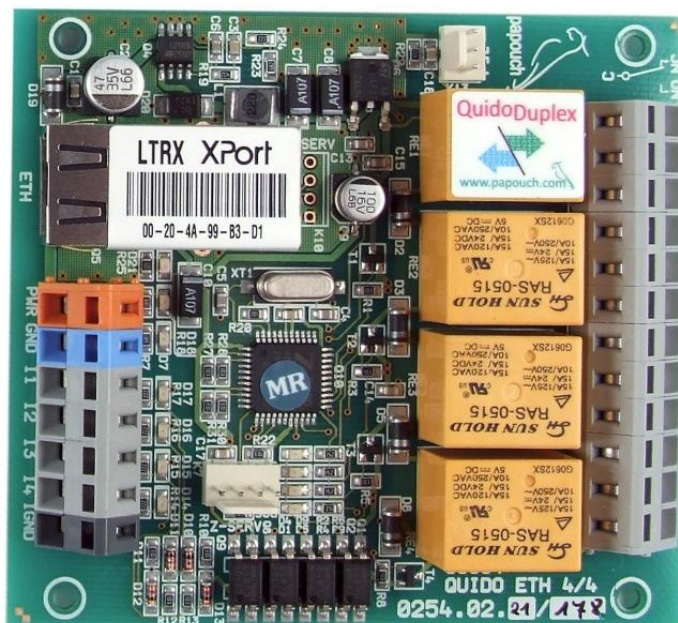E-mail:

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CONTENT

Fig. 1 – QuidoDuplex 4

BASIC INFORMATION

Description

QuidoDuplex enables the synchronisation of two I/O modules connected to the 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.

See the example shown in the figure on the front page of this document (it shows the transmission of four signals).

Application

- 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 Connection

The status of Input 1 in Module A is transmitted to Output 1 in Module B and vice versa. Thus the status of all signals is transmitted bi-directionally.
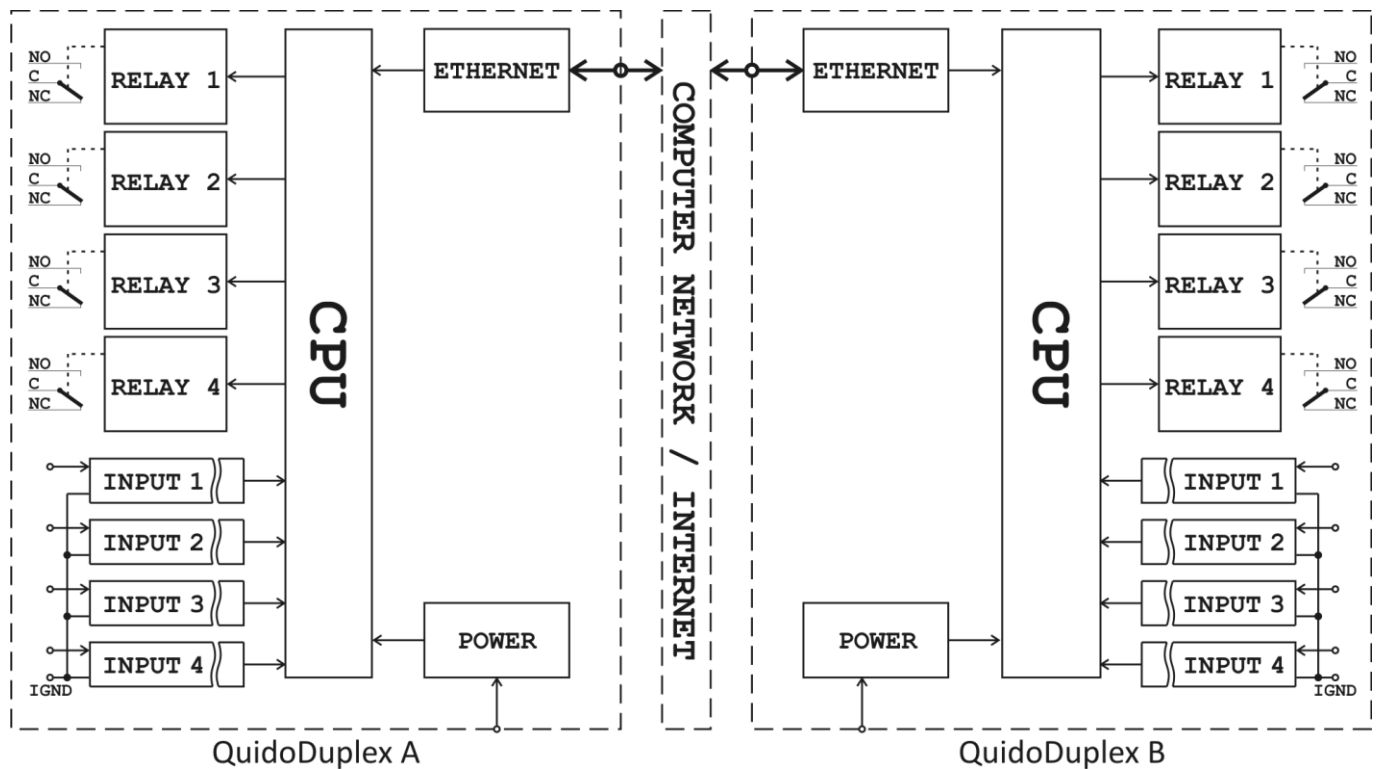

Fig. 2 – Block Connection

First Connection

1) Connect the input and output terminals. The description of input and output terminal connection options can be found in chapter Input and Output Terminal Connection on page 8.

2) Connect QuidoDuplex to a computer network or to a PC. If you connect QuidoDuplex to a computer network, use a standard (untwisted) cable and interconnect the ETH connector on Quido with the Ethernet connector on the HUB or switch. If you wish to connect Quido directly to a PC, use a patch cable.

3) Connect power supply to terminals PWR (+) and GND (-).[1]

4) Set Quido IP address and other parameters over the WEB interface (Network/IP Configuration). The default IP address is 192.168.1.254.[2][3]
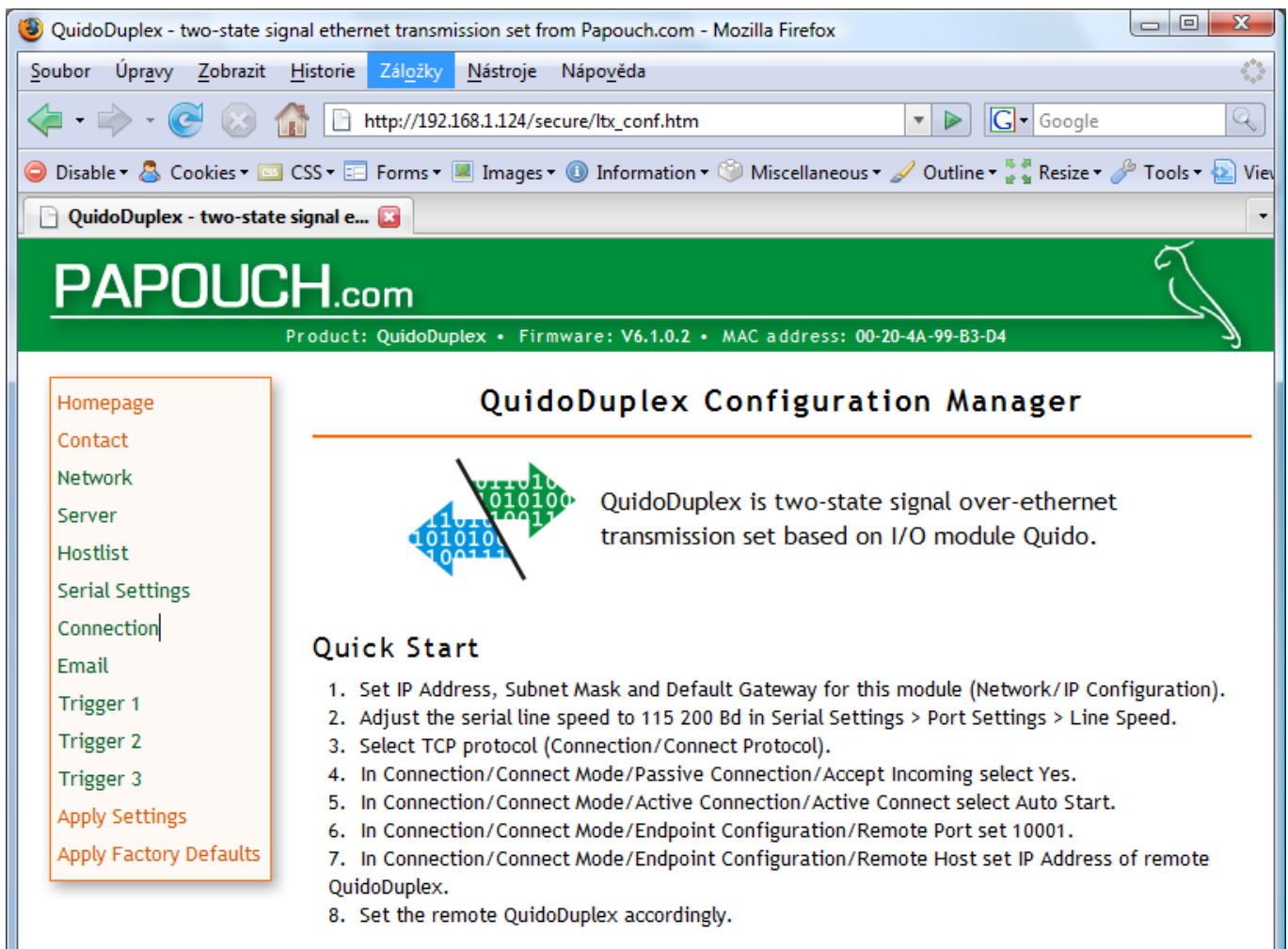

Fig. 3 – WEB interface

[1] The power supply input terminal is protected against the reversal of polarity.

[2] If your network contains a range of addresses which differs from the address of QuidoDuplex, the IP address needs to be set: Connect Quido directly to a PC via the patch cable. Then set the same network for the PC as used by Quido, e.g. within the range of 192.168.1.xxx and net mask to 255.255.255.0. Then it will be possible to use the WEB browser to connect to Quido and set its new network parameters.

[3] After entering the IP address and connecting to the device a dialog box for entering a name and password shows up. No default password has been set. Thus you can leave both fields empty and click OK.

5) Set the following parameters of Quido (they are also listed on the main WEB page of QuidoDuplex):

6) Set the serial line speed to 115200Bd in Serial Settings > Port Settings > Line Speed.

Serial Settings

Port Settings

Flow Control: None

Line speed: 115200   Character size: 8   Parity: None   Stop Bit: 1

Fig. 4 – Setting the speed of 115 200 Bd

7) Select TCP protocol in Connection/Connect Protocol.

8) Select *Yes* in Connection/Connect Mode/Passive Connection/Accept Incoming.

Connection Settings

Connect Protocol

Protocol: TCP

Connect Mode

Passive Connection:

Accept Incoming: Yes

Password Required: ○ Yes ● No

Password:

Active Connection:

Active Connect: With Any Character

Start Character: 0x 0D (in Hex)

Modem Mode: None

Mdm Esc Seq Pass Thru: ● Yes ○ No

Endpoint Configuration:

Local Port: 10001   ☐ Auto increment for active connect

Remote Port: 10001   Remote Host: 192.168.1.125

Common Options:

Telnet Mode: Disable   Connect Response: None

Terminal Name: Use Hostlist: ○ Yes ● No   LED: Blink

Disconnect Mode

On Mdm_Ctrl_In Drop: ○ Yes ● No   Hard Disconnect: ● Yes ○ No

Check EOT(Ctrl-D): ○ Yes ● No   Inactivity Timeout: 0 : 0 (mins : secs)

OK

Fig. 5 – Setting communication over Ethernet

9) Select *With Any Character* in Connection/Connect Mode/Active Connection/Active Connect.

10) Connection/Connect Mode/Endpoint Configuration/Remote Port set 10001.

11) In Connection/Connect Mode/Endpoint Configuration/Remote Host enter the IP address of the remote QuidoDuplex.

12) Set the remote QuidoDuplex accordingly.

13) The setup of both modules is now finished.

Operation

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.

Simple Indication of Lost Connection

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

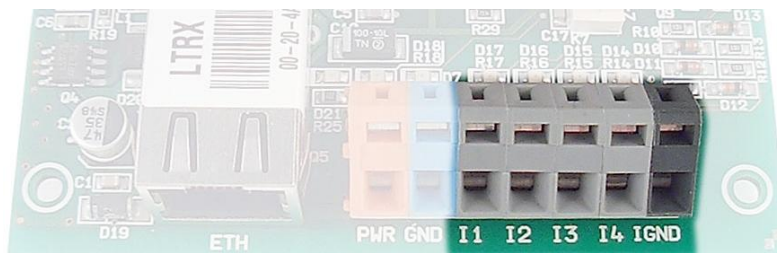The inputs can be controlled by connected voltage or a contact.

Fig. 6 – Input terminal box of QuidoDuplex with four signals

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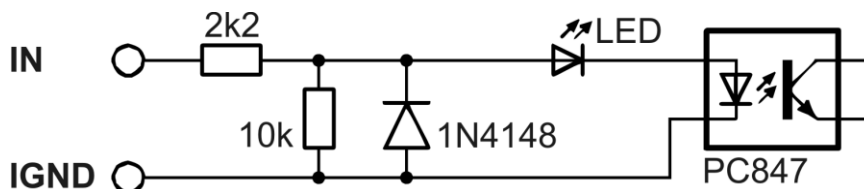

Fig. 7 – input circuit connection

Contact Input

Contact shall be connected as shown in Fig. 9 – contact voltage is provided by an external power source here.
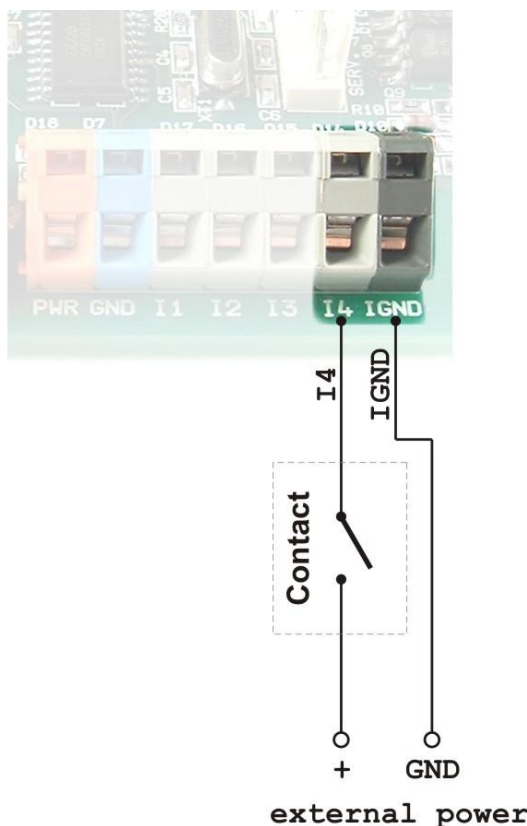

Fig. 8 – Contact input

Voltage Input

Voltage input connection is shown in the following figure.
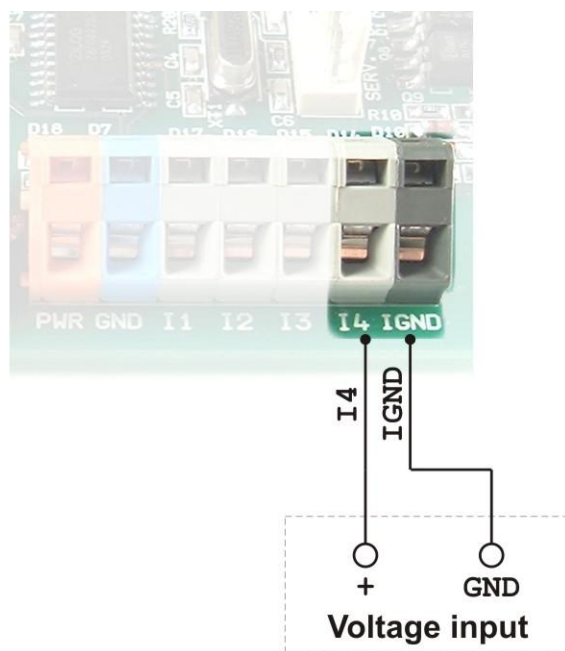

Fig. 9 – Voltage input

O u t p u t s

Each output is equipped with a relay with make-and-break contact. The contact is illustrated on the board next to the terminals. NO is the make contact, NC is the break contact.
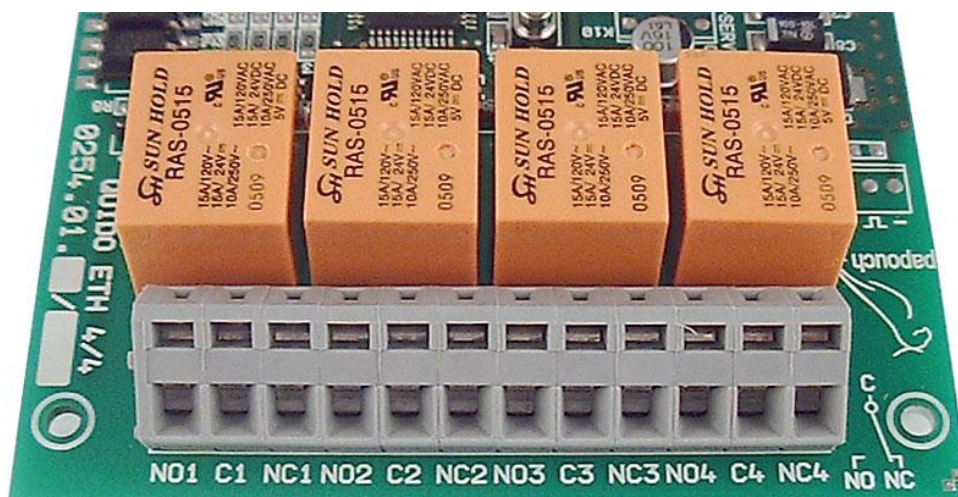

Fig. 10 – Make-brake contacts of output relays in QuidoDuplex with four signals

TECHNICAL PARAMETERS

Summary

Inputs:

No of digital inputs ....4 or 8 (according to the version)

Input type..for the connection of voltage or switching contact

Galvanic separation...........................optical

Speed of response to changes ....10 to 20 ms (ringing treated via sampling; see Fig. 11)

Input current ....4 mA

VERSION FOR VOLTAGE OF 5 V[4]:

Input voltage for status "1 "..............4.5 – 6.0 V

Input voltage for status "0 "..............0 – 3 V

Maximum input voltage ....6.5 V

VERSION FOR VOLTAGE OF 12 V4:

Input voltage for status "1 "..............8 – 20 V

Input voltage for status "0 "..............0 – 4 V

Maximum input voltage ....24 V

Fig. 11 – Wago 236 terminal box

VERSION FOR VOLTAGE OF 24 V4:

Input voltage for status "1 "..............13 – 38 V

Input voltage for status "0 "..............0 – 4 V

Maximum input voltage ....46 V

Outputs:

No of digital outputs.........................4 or 8 (according to the version)

Type..make-and-break relay contact

Maximum switching voltage...............120 V AC or 60 V DC

Maximum switching current ....5 A

Control interface:

Type..10/100 Ethernet

Connector...RJ45

Internal communication speed...........115 200 Bd (stable)

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[4] The standard configuration of Quido contains inputs for the 12V voltage.

Other parameters – Four-signal version:

Power supply .... 8 to 36 V DC, protection against polarity reversal

Current consumption........................ max. 350 mA at 12 V (all relays activated)

Input and output connector .... Wago 236 terminal box, conductor cross-section 2.5 mm max

Operating temperature .... −20 °C to +70 °C

Size .... 97 mm × 87 mm × 20 mm

Weight .... 110 g

Other parameters – Eight-signal version:

Power supply .... 7 to 36 V DC, protection against polarity reversal

Current consumption........................ max. 390 mA at 12 V (all relays activated)

Input and output connector .... Wago 236 terminal box, conductor cross-section 2.5 mm max

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

Size .... 137.5 mm × 96.5 mm × 20 mm

Weight .... 200 g
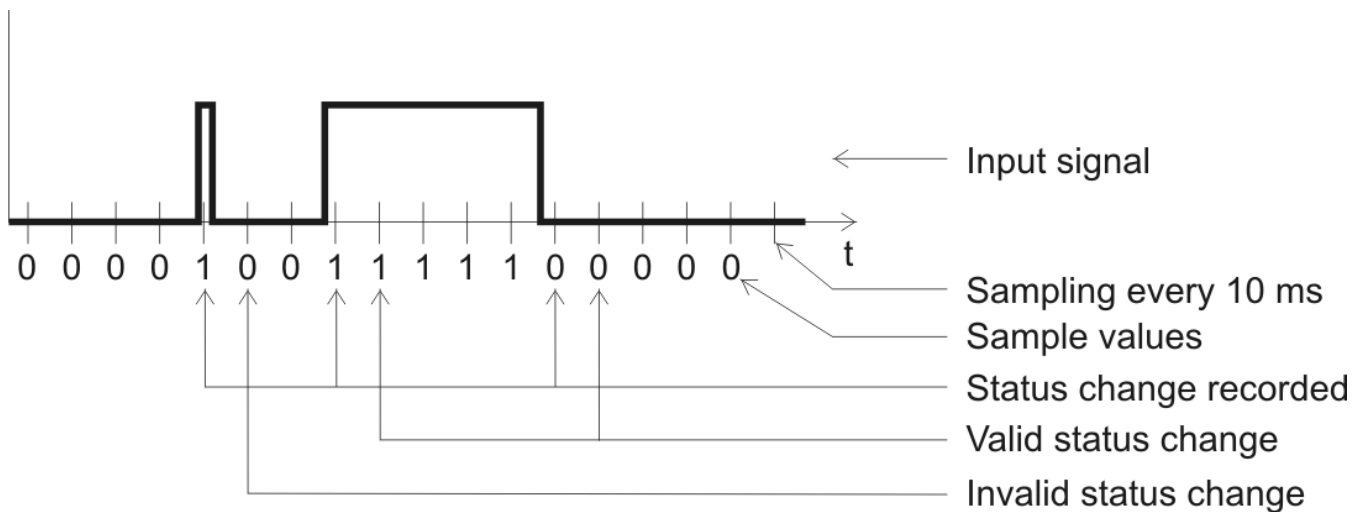
Principle of input status change evaluation

Fig. 12 – Principle of input status change evaluation

The value of the input is sampled in the interval of 10 ms[5]. The input status is considered valid if the same value is read in two consecutive samples.

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[5] If this sampling interval is not suitable for your application, we will be happy to change it.

Available designs

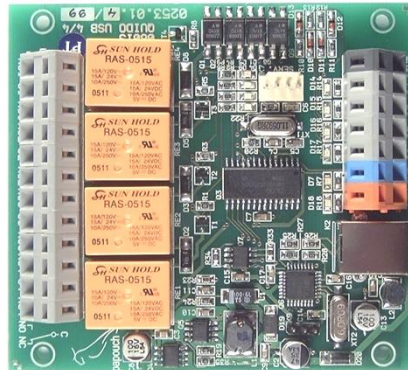**Assembly:**

- No holder *(standard design)*

Fig. 13 – Example of standard design (picture shows module with four signals)
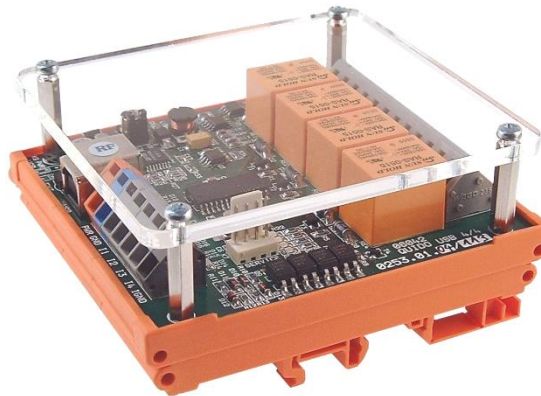
- With DIN rail holder

*Fig. 14 – example of design **with DIN rail holder** and **plexi cover** (picture shows module with four signals)*

Cover:

- No cover *(standard design)*
- With plexi cover (see Fig. 15)

Input voltage options:

- 5 V
- 12 V *(standard version)*
- 24 V

Examples of options which can be added upon request:

- More modules connected in synchronous operation.
- Change of input voltage.
- … and other customised functions to suit your application.

Do not hesitate to contact us in case of any other requirements concerning the design and functions of the QuidoDuplex module.

Available Accessories

Switched power supply unit 12V

Switched power supply unit 230 V/12 V DC, socket adapter design.

Power supply unit 230 V/12 V for DIN rail

Linear power supply unit 230 V/12 V DC for DIN rail.

Ethernet cable

Cable for connection to PC network.

Lever for Wago 236 terminals

A tool for easy control of Wago 236 terminals.

Fig. 15 – lever for Wago 236 terminals

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