✔️ How to use the Optoisolated Input Module of Industrial Shields

How to use the Optoisolated Input Module of Industrial Shields

20 December, 2018 by Alejandro Jabalquinto

Introduction

This post it is shown how to correctly use the optoisolated Input Module of Industrial Shields.

Description

This module is thought for expandability in really simple logic implementations. The module consists of 10 inputs and 10 outputs interconnected between them. When the input I0.X detects a HIGH value, the corresponding output Q0.X gets a HIGH value, being X any value between 0 and 9. This process is completely implemented by hardware. There is no software that interacts with this Optoisolated Input Module.

General Features

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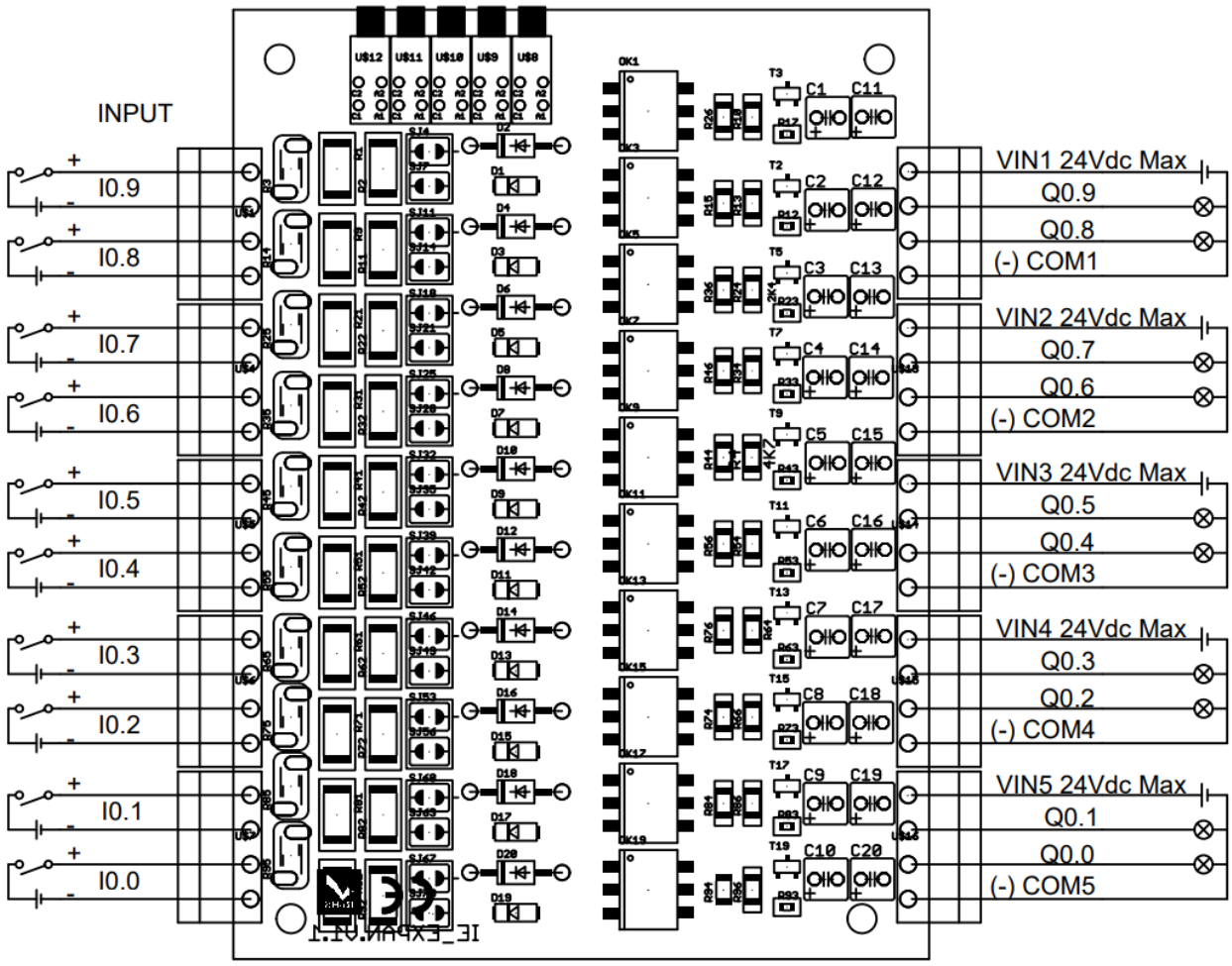
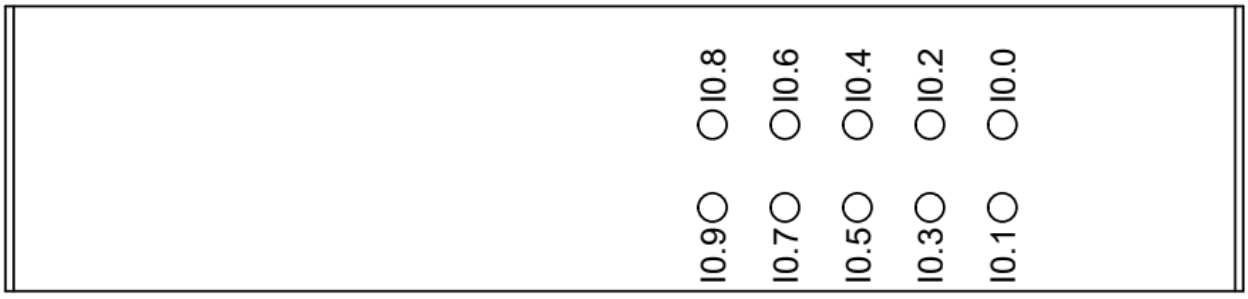
Number of optoisolated inputs	10
Number of isolated outputs	10 - (5 blocks of 2 outputs per block)
Input Voltage	12 to 24Vdc / 220Vac
Input Current	2 to 12mA
Output Voltage	5 to 24Vdc
Output current	20mA

Schematic

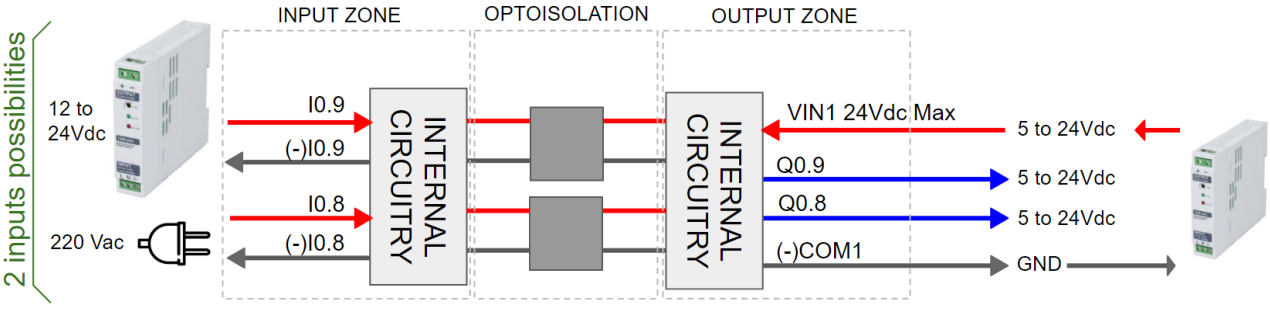




Distribution

Implementation

As an example of using, we will use the pair of inputs/outputs I0.8-I0.9/Q0.8-Q0.9. This example can be used in any of the other pairs of inputs/outputs. We will show it in pairs as there are 5 different output voltages.



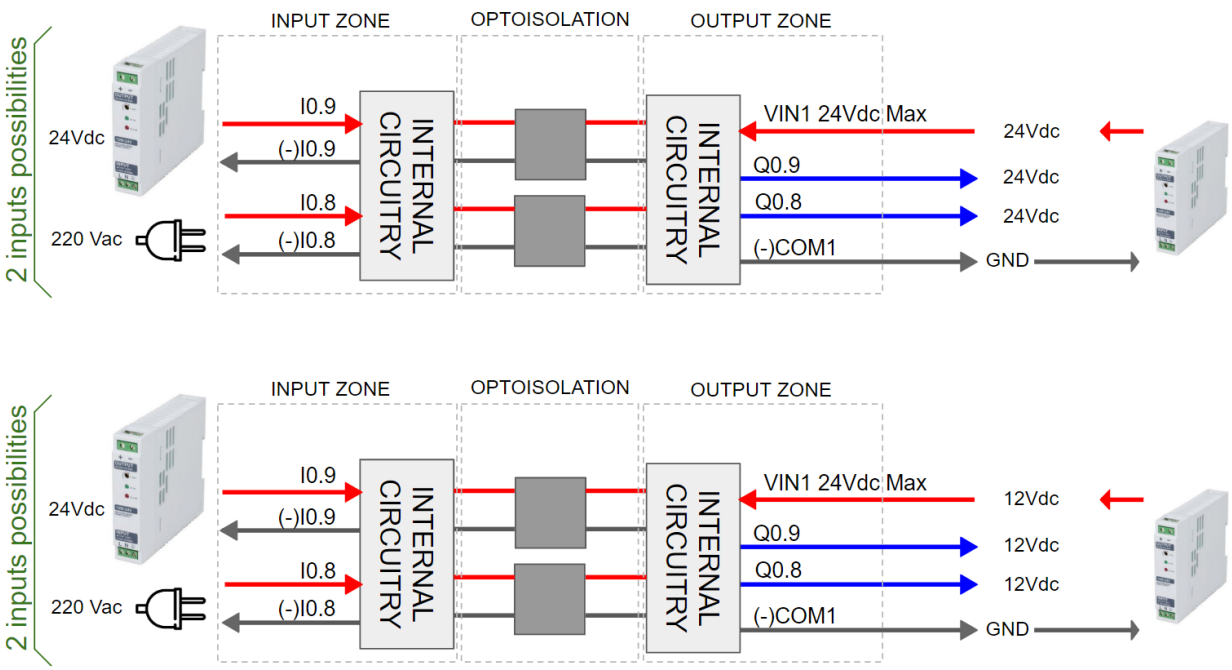
This is a representation of the functioning of this Optoisolated input module. The module is composed of 3 parts: The input zone, the optoisolation and the output zone.

The first thing to take in consideration is the output zone. Each block(pair) of outputs is contained in a VINx/COMx supply. This basically means that the voltage that will provide each block of outputs (Q0.9 & Q0.8 for example) will be the one that we set in the VINx/(-)COMx, being X any value between 1 and 5.

It must be considered that Q0.9 & Q0.8 won't provide any voltage if the VIN1/(-)COM1 are not supplied. Furthermore these outputs won't provide any voltage if the I0.9 & I0.8 are not detecting a HIGH value. To get a HIGH value it is required a DC voltage between 12 or 24V or an AC voltage of 220V. Once the HIGH value is detected all the internal circuitry starts working enabling the VIN1 voltage to arrive to Q0.9 & Q0.8 outputs.

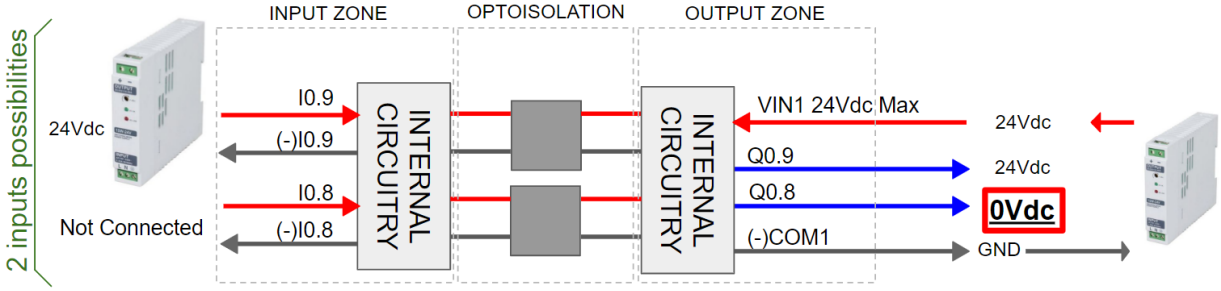
Examples

- VIN1 voltage stablished as 24Vdc and 12Vdc.



As you can see in these two representations, the voltage established on the VIN1 will be the one that will get the Q0.9 & Q0.8 outputs. The module can provide up to 5 different voltages in pairs of 2 outputs.

- What happens if not connecting an input, although VIN1 is getting supplied.



Now we are seeing that the AC supply on the input I0.8 is not present. This means that the input I0.8 is detecting a LOW value. However I0.9 is getting supplied as in all the examples, so it is getting a HIGH value. We can see now that although the VIN1 is getting

supplied, the only output that is giving a voltage is the Q0.9 as the input is detecting a HIGH value. Q0.8 will supply a LOW value (Telling that when the outputs are in the air, they are not established as pull-up or pull-down).