

OI16

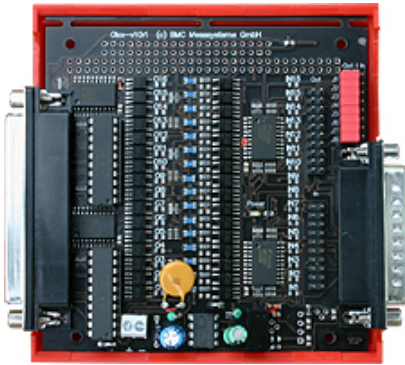
Optocoupler board

Features

- electrical isolation for digital inputs and outputs
- for DIN rail mounting
- power supply: 7..35V

Applications

- status supervision
- digital controls



With the optocoupler card **OI16** you can easily connect

... digital signals ...

to measuring and control systems.

... 16 digital outputs and
16 digital inputs ...

are provided at the 37-pole D-Sub female connector. These are

... electrically isolated

from the measurement system by
optocouplers.

The external device **OI16** can be
plugged directly to a *USB-PIO* at
the 25-pole D-Sub connector. It
comes with a DIN rail carrier.

The incoming digital signals are
transmitted to the I/O card via
optocouplers so that the connec-

tions at the PC data acquisition
system are TTL compatible.

The digital outputs of the OI16
controlled by the 5V signals of the
measurement system feature an

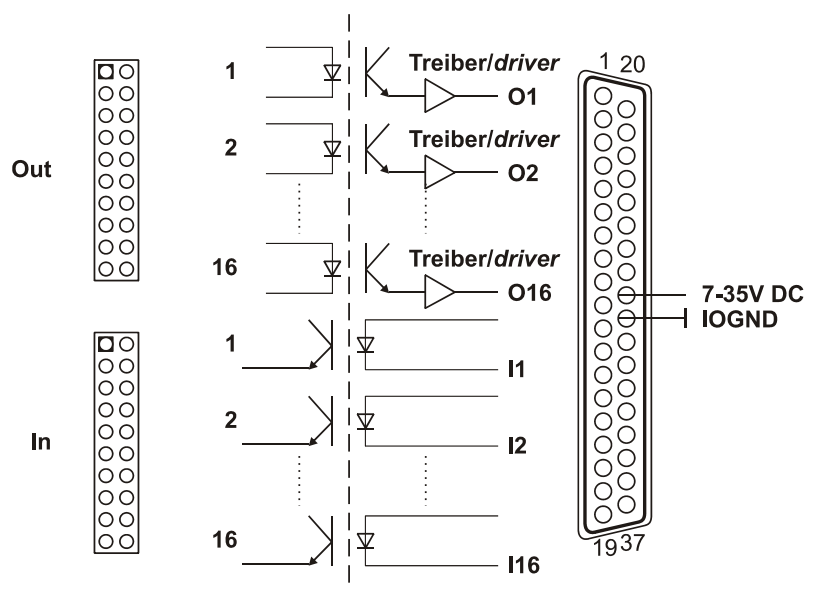
... output driver for
7-35V voltages ...

to operate a relay or a valve, for
example.

For further information please visit
our website at:

<http://www.bmcm.de/us>

1 Block diagram



2 Connections and assignments

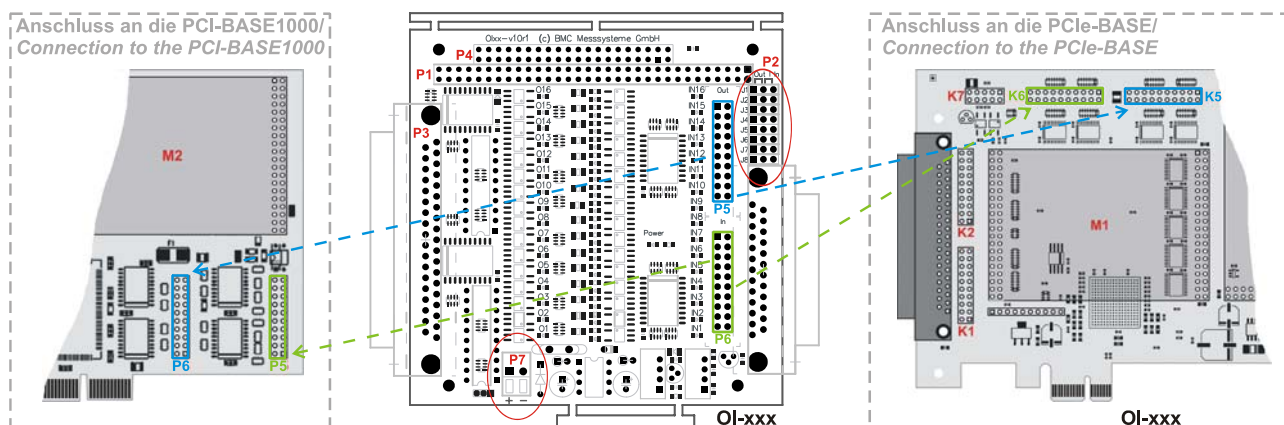















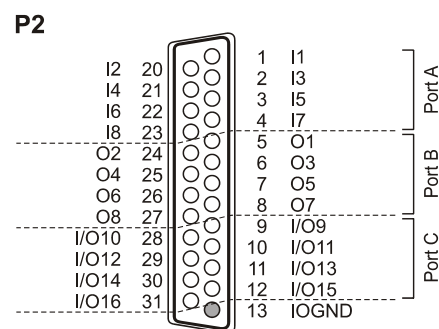


figure 1

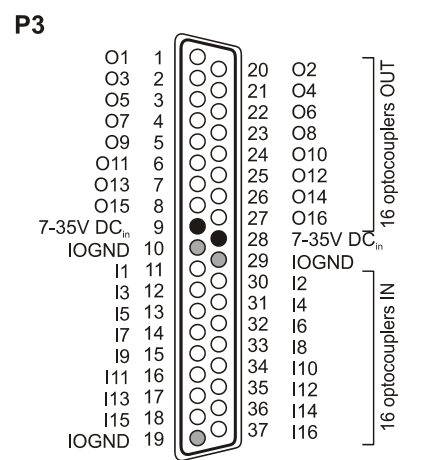
The **OI16** board allows for the connection of up to 16 digital inputs and 16 digital outputs at a 25-pole D-Sub male connector (**P2**) or at two 20-pole pin connectors (**P5**, **P6**). These lines are electrically isolated by 16 optocouplers each for input and output. They can be reached at the 37-pole D-Sub female connector **P3** of the **OI** board.

The connection of the digital channels depends on the DAQ system used. The eight hard-wired digital inputs and outputs are each connected at the 25-pole D-Sub male connector (**P2**). With jumpers (**J1-J8**), another eight lines can optionally be set to input (connect pin 2-3) or output (connect pin 1-2).

| Digital line | D-Sub25 (P2, OI16 only) | 20-pole pin connector (P5/P6) | D-Sub 37 (P3) |
|--------------|--|----------------------------------|------------------|
| I1 | 1 | P6 / 1 | 11 |
| I2 | 14 | P6 / 2 | 30 |
| I3 | 2 | P6 / 3 | 12 |
| I4 | 15 | P6 / 4 | 31 |
| I5 | 3 | P6 / 5 | 13 |
| I6 | 16 | P6 / 6 | 32 |
| I7 | 4 | P6 / 7 | 12 |
| I8 | 17 | P6 / 8 | 33 |
| I9 | 9 (with J1: 2-3 ) | P6 / 9 | 15 |
| I10 | 22 (with J2: 2-3 ) | P6 / 10 | 34 |
| I11 | 10 (with J3: 2-3 ) | P6 / 11 | 16 |
| I12 | 23 (with J4: 2-3 ) | P6 / 12 | 35 |
| I13 | 11 (with J5: 2-3 ) | P6 / 13 | 17 |
| I14 | 24 (with J6: 2-3 ) | P6 / 14 | 36 |
| I15 | 12 (with J7: 2-3 ) | P6 / 15 | 18 |
| I16 | 25 (with J8: 2-3 ) | P6 / 16 | 37 |
| O1 | 5 | P5 / 1 | 1 |
| O2 | 18 | P5 / 2 | 20 |
| O3 | 6 | P5 / 3 | 2 |
| O4 | 19 | P5 / 4 | 21 |
| O5 | 7 | P5 / 5 | 3 |
| O6 | 20 | P5 / 6 | 22 |
| O7 | 8 | P5 / 7 | 4 |
| O8 | 21 | P5 / 8 | 23 |
| O9 | 9 (with J1: 1-2 ) | P5 / 9 | 5 |
| O10 | 22 (with J2: 1-2 ) | P5 / 10 | 24 |
| O11 | 10 (with J3: 1-2 ) | P5 / 11 | 6 |
| O12 | 23 (with J4: 1-2 ) | P5 / 12 | 25 |
| O13 | 11 (with J5: 1-2 ) | P5 / 13 | 7 |
| O14 | 24 (with J6: 1-2 ) | P5 / 14 | 26 |
| O15 | 12 (with J7: 1-2 ) | P5 / 15 | 8 |
| O16 | 25 (with J8: 1-2) | P5 / 16 | 27 |



● IOGND = digital ground

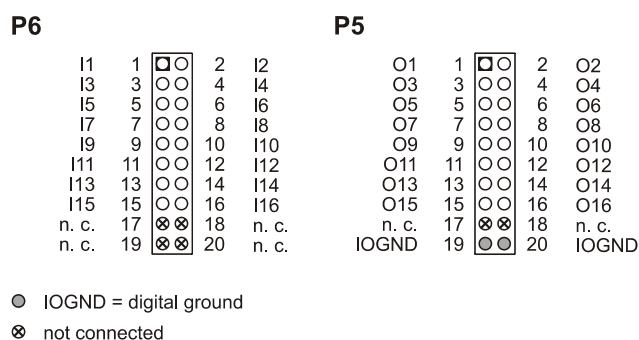


● IOGND = digital ground
● 7-35V DC power supply

If using a *USB-PIO*, the connectors can be directly connected with each other or by a 25-pole D-Sub cable (e.g. *ZUKA25*). For other DAQ systems (e.g. *USB-AD*, *USB-AD12f*, *LAN-AD16f*) a special cable has to be made.

Set the first eight lines (port A) of the *USB-PIO* to input and the next eight lines (port B) to output and make sure that the direction of the remaining 8 digital lines (port C) corresponds to the jumper setting on the **OI16**.

If more than 24 digital lines (e.g. *PIO48II*) are required, the other channels are attached at pin 9-16 of the pin connectors **P5** (for DOut 9 - DOut 16) and **P6** (for DIn 9 - DIn 16) (see figure 1).



- Please carefully observe the polarity indicated on the board! Only apply voltages within the adjusted range!
- It is very important to set the direction of the port packages to input! Otherwise the outputs of the **OI16** might drive against the outputs of the DAQ system!

3 Power supply

The **OI16** is supplied with 7..35V DC at the terminal connector **P7** or at the D-Sub37 female connector **P3** (see figure 1). The applied voltage 7..35V DC is the switching voltage for the DOut1-16 at the D-Sub37 connector. The supply of the measuring system with 5V is done by an integrated small DC/DC converter.

4 Important notes for using the OI16

- The **OI16** is only suitable for extra-low voltages – please observe the relevant regulations!
- For power supply an electrically isolated power unit (with CE) must be used.
- All accessible pins are electrostatic sensitive devices. Provide for an earthed conductive work place when installing.
- For cleaning use water and mild detergent only. The board is designed to be maintenance free.
- The product must not be used for safety-relevant tasks. With the use of the product the customer becomes manufacturer by law and is therefore fully responsible for the proper installation and use of the product. In case of improper use and/or unauthorized interference our warranty ceases and any warranty claim is excluded.



Do not dispose of the product in the domestic waste or at any waste collection places. It has to be either duly disposed according to the WEEE directive or can be returned to bmcm at your own expense.

5 Technical Data (typical at 20°C and 24V supply)

Digital inputs

| | |
|----------------------|--|
| Number: | 16 optocoupler inputs |
| Input voltage range: | 7..35V DC (>4.5V = high), max. 60V DC for 10sec. |
| Input current: | max. 10mA |

Digital outputs

| | |
|--------------------|--|
| Number: | 16 optocoupler outputs with output high-side drivers |
| Switching voltage: | 7..35V DC |
| Voltage drop: | app. 1.5V |
| Switching current: | max. 0.25A per output, max. 0,8A in total per 8-bit port at 25°C |

General

| | |
|--------------------------------|---|
| Power supply (DAQ system): | 5V DC, ±5%, max. 1W DC |
| Power supply (consumer): | 7-35V DC, ±5%, own consumption max. 1W DC |
| Temperature ranges: | operating temp. -25°C..+60°C / storage temp. -25°C..+70°C |
| Relative humidity: | 0 - 90% (non condensing) |
| Digital input and output plug: | 37-pole D-Sub female connector |
| Galvanic isolation: | 60V DC acc. to VDE |
| Optocoupler speed: | app. 0.05ms |
| Bandwidth: | 0..10kHz |
| CE standards: | EN61000-6-1, EN61000-6-3, EN61010-1; for decl. of conformity (PDF) visit www.bmcm.de |
| ElektroG // ear registration | RoHS and WEEE compliant // WEEE Reg.-No. DE75472248 |
| Dimensions (L x W x H): | app. 100mm x 100mm x 30mm |
| Delivery: | product, description |
| Accessories (optional): | connecting cables ZUKA25, ZUKA37SB, ZUKA37SS, D-Sub plug ZUST37, waterproof housings ZU-PBOX-PG, ZU-PBOX-LAN |
| Guarantee: | 2 years with effect from sales date, damages at product resulting from improper use excluded |