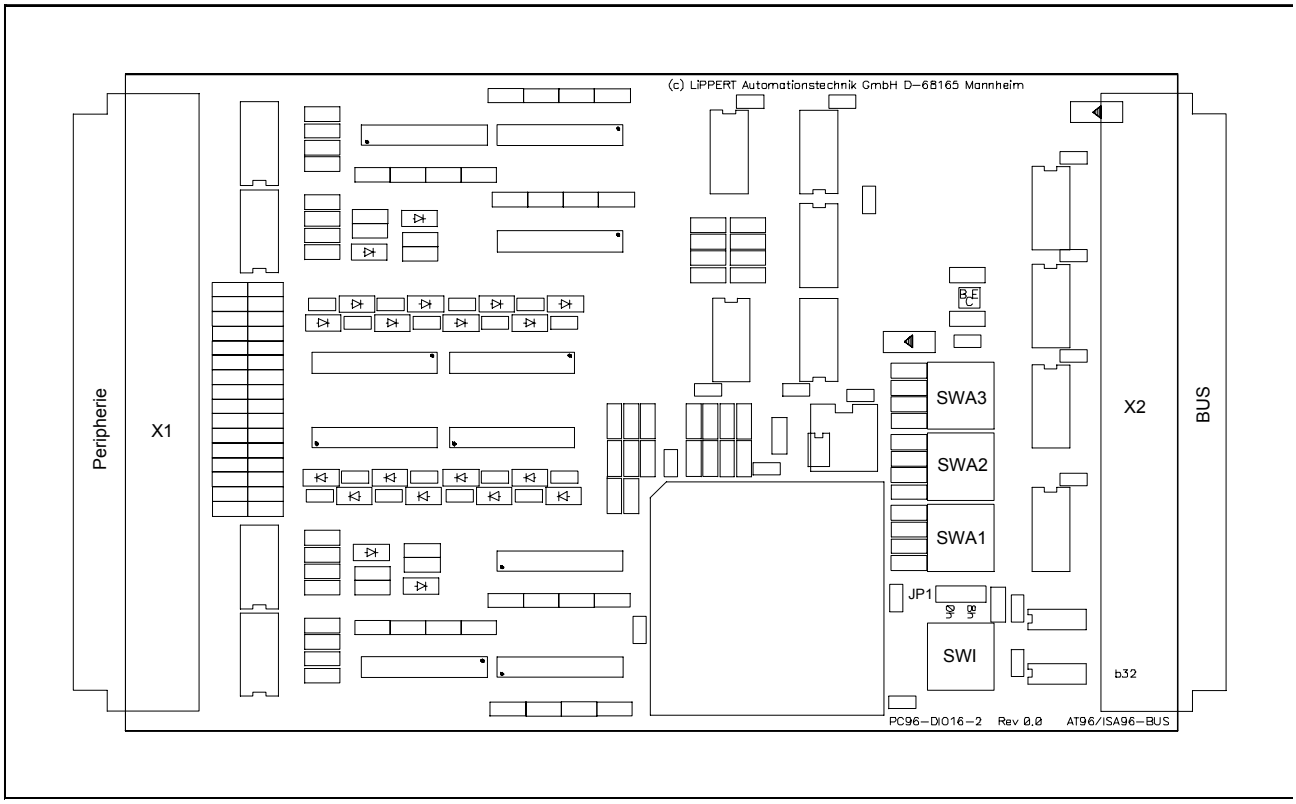
PC96-DIO16-2

QUICK-REFERENCE, Rev. 0.5, PCB Rev. 0.0, Variant 1.0

Description

PC96-DIO16-2 is an I/O module for the AT96 or ISA96 bus, which sports 16 optically isolated digital inputs (18…32 VDC) and 16 optically isolated digital outputs (18…32 VDC / max. 1A). AT96 and ISA96 buses are automatically recognized. No manual configuration is necessary.
Connecting outputs in parallel can increase the current load. The outputs can be read back. They are short circuit proof; overvoltage protected up to 43 VDC and are safe concerning thermal overload.
The outputs get their external power supply in groups of 4. The power supply voltage may be different for each group.
The outputs proved a status byte that allows checking whether an output is open, shorted to V_{ext} or switched off due to thermal overload.
The inputs are able to request an interrupt when the input signal changes.



Address Settings

PC96-DIO16-2 uses 8 I/O addresses. The base address is freely selectable within the 64 KByte I/O range. The I/O address is set with the hex switches SWA1 to SWA3 and the jumper JP1.

The I/O address is set as follows:

SWA3	SA15…SA12
SWA2	SA11…SA8
SWA1	SA7…SA4
JP1	SA3

The first 3 digits of the I/O address can be directly read from the switches. The least significant digit is always 0 or 8 and is determined with jumper JP1.

Default-settings: 03E0h (SWA3='0', SWA2='3', SWA1='E', JP1='0h')

Interrupt Settings

PC96-DIO16-2 can request an interrupt when the input values change. The interrupt mask register bits L→H and/or H→L select the edge, which creates an interrupt request. A '1' in the mask enables the interrupt for the related input; a '0' disables it. For each input can be defined whether the interrupt is requested at the raising or falling edge of the signal. SWI selects the interrupt number on the system bus. Please make sure that there are no conflicting interrupt sources within a given system.
Reading of the interrupting input clears the corresponding interrupt. Setting SWI to '0' globally disables interrupts

Register Description

The module's 8 I/O addresses are used as follows:

Address	**Function**	
	read	***write***
base address + **0**	inputs 0…7	none
base address + **1**	inputs 8…15	none
base address + **2**	outputs 0…7	outputs 0…7
base address + **3**	outputs 8…15	outputs 8…15
base address + **4**	output state	interrupt mask L→H, input 0…7
base address + **5**	none	interrupt mask L→H, input 8…15
base address + **6**	none	interrupt mask H→L, input 0…7
base address + **7**	none	interrupt mask H→L, input 8…15

Output State

Two outputs share on status bit:

Outputs 0…1	Status bit 0
Outputs 2…3	Status bit 1
Outputs 4…5	Status bit 2
Outputs 6…7	Status bit 3
Outputs 8…9	Status bit 4
Outputs 10…11	Status bit 5
Outputs 12…13	Status bit 6
Outputs 14…15	Status bit 7

Status bit = 1: no error
Status bit = 0: outputs are disturbed (output open, short circuit to V_{ext}, thermal overload)
Note: an output is considered open when the current is less than 30 µA

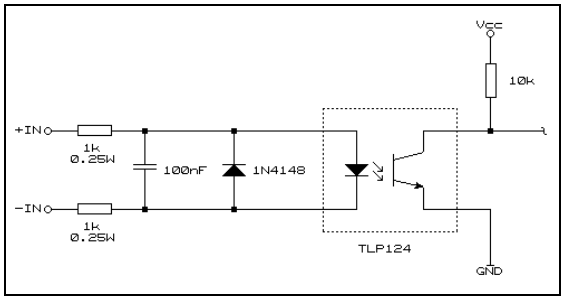
Interrupt Masks

A '1' in the interrupt mask L→H enables the interrupt for the raising edge of the input signal. Accordingly, a '1' in the H→L mask enables interrupts on the falling edge.

Front Connector X1 (VG64, male)

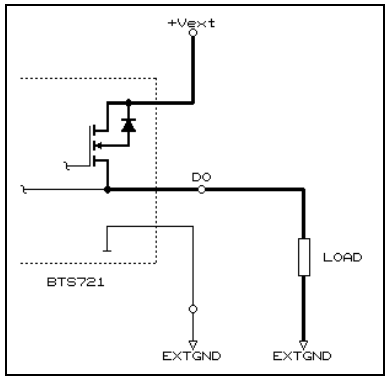
Pin	A	C
1	EXTGND0	EXTGND1
2	+OUT0-0	+VEXT2
3	+OUT0-1	+OUT0-2
4	+VEXT0	+OUT0-3
5	+OUT1-0	+VEXT3
6	+OUT1-1	+OUT1-2
7	+VEXT1	+OUT1-3
8	-IN0	+IN0
9	-IN1	+IN1
10	-IN2	+IN2
11	-IN3	+IN3
12	-IN4	+IN4
13	-IN5	+IN5
14	-IN6	+IN6
15	-IN7	+IN7
16	-IN8	+IN8
17	-IN9	+IN9
18	-IN10	+IN10
19	-IN11	+IN11
20	-IN12	+IN12
21	-IN13	+IN13
22	-IN14	+IN14
23	-IN15	+IN15
24	+OUT2-0	+VEXT2
25	+OUT2-1	+OUT2-2
26	+VEXT0	+OUT2-3
27	+OUT3-0	+VEXT3
28	+OUT3-1	+OUT3-2
29	+VEXT1	+OUT3-3
30	+VEXT0	+VEXT2
31	+VEXT1	+VEXT3
32	EXTGND2	EXTGND3

Input diagram



18V < Uin (V+IN - V-IN) < 32V

Output diagram



18V < Uext (VEXTx - EXTGNDx) < 32V

Technical Characteristics:

Size (LxBxH):	100x160x20 mm (single Euro Card size 3HE, 4TE)
Operating temperature:	-20…60 °C
Storage temperature:	-40…70 °C
Temperature change:	max. 10K / 30 min
Relative humidity:	10…90 %
Pressure:	450…1100 hPa
Supply voltage:	5V
Supply current:	80 mA typ.

Warning: The board must not be connected or disconnected to the AT96 or ISA96 bus with power supply switched ON!

Warning: Never plug the I/O connector X1 into the AT96 or ISA96 backplane!
(The I/O connector X1 is marked on the PCB)

Note: Guarantee is void if the connections are not done according to the instructions.

If you have any questions regarding this product, please contact support@lippert-at.com or use the phone number given below.