

Digital 1 / Digital 2

Motherboard for the PCAN-MicroMod

User Manual



Products taken into account

Product Name	Model	Item Number
PCAN-MicroMod Motherboard Digital 1	Including casing and PCAN-MicroMod	IPEH-002200
PCAN-MicroMod Motherboard Digital 2	Including casing and PCAN-MicroMod	IPEH-002201

The picture on the front page shows the PCAN-MicroMod Motherboard Analog 1 in the foreground. All other Motherboards have the same design, but differ in port assignment and labeling.

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1 Introduction

The Motherboards from PEAK-System Technik provide an accommodated environment for the PCAN-MicroMod. This includes input and output circuits, an aluminum casing, and connectors. This way you can use the MicroMod e.g. at instrument manufacture, plant construction, or in the automotive industry.

The motherboards Digital 1 and Digital 2 (short: Digital 1/2) serve common digital requirements.



Note: This manual only refers to the motherboard itself as base for a PCAN-MicroMod. There is separate documentation regarding the hardware and the software of the PCAN-MicroMod.

1.1 Properties at a Glance

- └ 8 digital inputs with following properties:
 - Pull-up or pull-down circuit selectable (in 3 groups)
 - High state at 5 to 18 V input voltage
 - Schmitt trigger behavior, inverting
 - Low-pass behavior
 - Parallel connection of a frequency input (for each digital input 0 to 3) for alternative use (e.g. at fast changes of state, or at countings)

- └ 5 digital outputs with following properties:
 - Digital 1: 4 low-side switches, max. 45 V, 0.35 A
 - Digital 2: 4 high-side switches, max. 34 V, 1.1 A
 - 1 fast low-side switch, max. 55 V, 0.75 A ("Frequency output")
 - Short circuit protection
- └ Status LEDs for power supply and digital output
- └ Spring-cage connectors (optionally with screw connection)

1.2 Special Prerequisites for the operation

– None –

1.3 scope of supply

The scope of supply normally consists of the following parts:

- └ Module with following components: Motherboard Digital 1 or Motherboard Digital 2, PCAN-MicroMod, metal casing
- └ Terminal block connectors for the motherboard
- └ User manual

2 Configuring the Module

You can customize the motherboard by modifying the hardware. The following subsections contain descriptions about possible modifications.

Accessing the Motherboard

In order to carry out the modifications described in the following you must unscrew the lids of the casing, remove the motherboard from the casing, and remove the MicroMod, if needed.

Remounting the MicroMod

When you remount the MicroMod, take notice of the white triangular marks on each the motherboard and the MicroMod (upper left corner, see Figure 1). These marks must align. Another help may be the orientation of the labeling. With a mounted MicroMod the labels have the same orientation on both PCBs (not upside down).

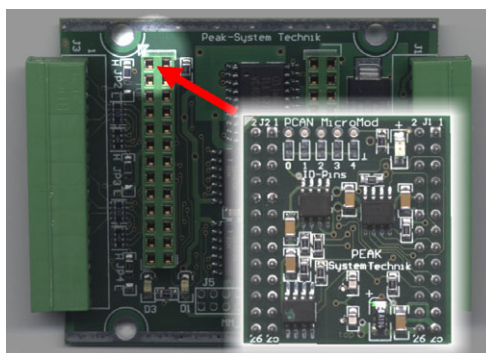


Figure 1: Positioning of the MicroMod

2.1 Pull-up/Pull-down Circuits of the Inputs

You can setup the digital inputs in groups so that they either have pull-up or pull-down circuits. This is done with 0-Ohm resistors or solder bridges respectively.



Note: At delivery all digital inputs are set to pull-up circuits with 0-Ohm resistors (as substitute for a solder bridge).

The assignment is as follows:

Solder bridge	Digital inputs
JP2	DIn 0 to DIn 2
JP3	DIn 3 to DIn 5
JP4	DIn 6 and DIn 7

Circuit	Solder bridge to ... (label on PCB)
Pull-up (+U _b)	H
Pull-down (GND)	L

The solder bridge JP1 on the motherboard Digital 1/2 is reserved for service purposes.



Attention! Double-check for inadvertently made short circuits after altering the setup of an input group.

3 operation

3.1 Pin Assignment

The motherboard has two connectors, J1/2 on the left and J3 on the right. The pin assignment is as follows:

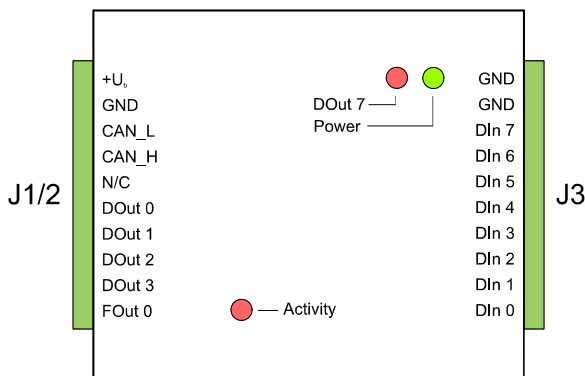








Figure 2: Connectors of the motherboards Digital 1 and Digital 2

Function label J1/2	Function
+U _b	Operating voltage 8 - 30 V DC
GND	Digital ground
CAN_L	Differential CAN signal
CAN_H	
N/C	Not connected
DOut 0	Digital output
DOut 1	
DOut 2	
DOut 3	
FOut 0	Frequency output

Function label J3	Function
GND	Digital ground
GND	
DIn 7	Digital input
DIn 6	
DIn 5	
DIn 4	
DIn 3	Digital input, frequency input parallel
DIn 2	
DIn 1	
DIn 0	

3.2 Assignment Functions/MicroMod Services

The motherboard's inputs and outputs are controlled by the services of the MicroMod. They are set up with PCAN-MicroMod Configuration, a Windows application coming with the PCAN-MicroMod. The following table shows the assignment of the motherboard functions to possible MicroMod services and indicates special settings (column "Remark").

Function on motherboard	Function label	MicroMod channels	MicroMod service(s)	Remark
Digital input, frequency input	DIn 0 ... DIn 7	DI 0 ... DI 7	 Digital Input  Digital Function  Rotary Encoder	
		FI 0 ... FI 3	 Frequency Input	Parallel to channels DI 0 ... DI 3
Digital output	DOut 0 ... DOut 3	DO 0 ... DO 3	 Digital Output	
Frequency output	FOut 0	FO 0	 PWM and Frequency Output	For higher-frequency status changes

3.3 Status LEDs

The motherboard incl. MicroMod has three LEDs with the following status indications:

LED	Indication
Power (green)	Power is applied.
DOut 7 (red)	Is directly related to the digital output DO 7 of the MicroMod and can be configured freely in its function for status indication. For example, you could implement an error indication with help of the MicroMod service "Constant Value / Statistic Data".
Activity (red)	Status of the MicroMod. During normal operation it blinks at a frequency of 1 Hz.

You can find further information about the MicroMod (configuration, status LED) in the corresponding documentation, e.g. the help for PCAN-MicroMod Configuration (Windows software).

4 Technical specifications

	Digital 1	Digital 2
Power supply		
Operating voltage +U _b	8 - 30 V DC (±5 %)	
Current consumption	Max. 200 mA	Max. 200 mA (w/o output driver)
	Typ. 35 mA at 12 V w/o load	
Reverse polarity protection	Yes, ±30 V	
Ripple (5 V)	< 50 mV (+U _b = 12 V, 200 mA load)	
Inputs		
Switching thresholds	UIH = 4 V; UIL = 3 V, contact or logic level	
Input impedance	2.7 kΩ	
Open input	Pull-up, optional pull-down (in groups)	
Overvoltage protection	±30 V static	
Low-pass	f _g = 7 kHz	
Special feature	Frequency inputs of the PCAN-MicroMod parallel (only DI 0 to DI 3)	
Outputs		
Type	Low-side	DOut: High-side FOut: Low-side
Voltage proof	DOut: < 45 V FOut: < 55 V	DOut: < 43 V FOut: < 55 V
Output current	DOut x: 0.35 A FOut: 0.75 A (constant current, all outputs active)	DOut x: 1.1 A FOut: 0.75 A
Short circuit protection	Yes, short circuit currents: DOut x: 0.5 A FOut: 1.2 A	DOut: 4 A FOut: 1.2 A

CAN	
Type	High-speed, typ. 500 kBit/s, setup with PCAN-MicroMod Configuration (Windows software)

Noise immunity	
Tests	According to IEC 61000 and DIN EN 61 326
Peculiarity surge	± 500 V (specification industrial sector: ± 1 kV) ¹
Peculiarity line-conducted HF compatibility	10 V _{eff} (specification: 3 V _{eff})



Measures	
Casing size (incl. connectors)	55 x 68 x 24 mm (3 1/16 x 1 5/8 x 13/16 Inches) (See also dimension drawing, Appendix B on page 14)
Weight	107 g (3.77 oz.)

Environment	
Operating temperature	-40 - +85 °C (-40 - +185 °F)
Temperature for storage and transport	-40 - +100 °C (-40 - +212 °F)
Relative humidity	15% - 90 %, not condensing

¹ This specification could only be fulfilled with ± 500 V due to the available space. Therefore the motherboard should be used with a local power supply.

Appendix A Certificates

A.1 CE

PCAN-MicroMod Motherboard IPEH-002200/01 PEAK-System Technik GmbH	EC declaration of conformity
Notes on the CE Symbol	
EC Directive	The following applies to the PCAN-MicroMod Motherboard product IPEH-002200/01. This product fulfills the requirements of EC directive 89/336/EEC on "Electromagnetic Compatibility," and is designed for the following fields of application as per the CE marking:
Electromagnetic immunity/emmission¹ DIN EN 61326, Release: 2004-05 Electrical equipment for measurement, control and laboratory use – EMC requirements (IEC 61326-1:1997 + IEC 61326-1/A1:1998 + IEC 61326/A2:2000 + Annex E & F of IEC 61326:2002 + corrigendum: 2002); German version: 61326:1997 + EN1326/A1:1998 + EN61326/A2:2001 + EN61326/A3:2003	
Declarations of Conformity	In accordance with the above mentioned EU directives, the EC declarations of conformity and the associated documentation are held at the disposal of the competent authorities at the address below:
PEAK-System Technik GmbH Mr. Wilhelm Otto-Röhm-Str. 69 D-64293 Darmstadt Germany phone: +49 6151 81 73-20 fax.: +49 6151 81 73-29 info@peak-system.com	
 Signed this 12 th day of September 2004	

Appendix B Dimension Drawing

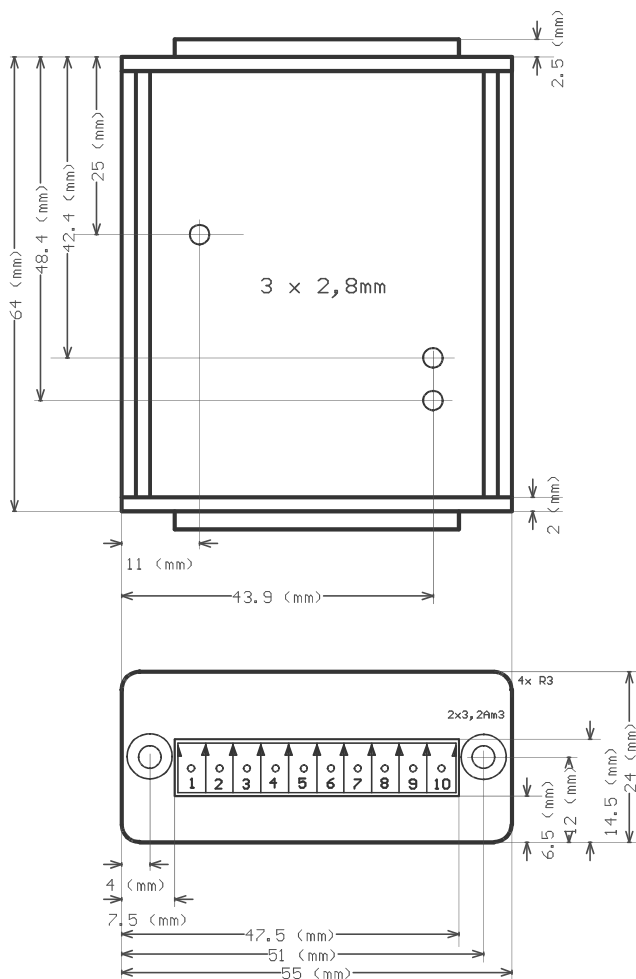


Figure 3: Top view and view of front side with connector

The figure doesn't show the actual size of the product.