



**CAN-PC Interface**

**CPC-USB/embedded**

User Manual

## User manual for CAN Interface CPC-USB/embedded

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Our products are continuously improved. Due to this fact specifications may be changed at any time and without announcement.

**WARNING:** CPC-USB/embedded hardware and software may not be used in applications where damage to life, health or private property may result from failures in or caused by these components.

## Content

<b>1</b>	<b>Overview</b>	<b>1</b>
1.1	Attributes	1
1.2	General Description	1
1.3	Ordering Information	2
<b>2</b>	<b>Electrical Characteristics</b>	<b>3</b>
2.1	Absolute Limiting Values	3
2.2	Nominal Values	3
<b>3</b>	<b>Operating Instructions</b>	<b>5</b>
3.1	Pin Configuration of CAN Connector	5
3.2	Pin Assignment of USB connection cable	5
3.3	Dimensions	6
3.4	Installation	7
<b>4</b>	<b>Appendix</b>	<b>9</b>
4.1	Instruction for Disposal	9
4.2	FCC Statement	9
4.3	CE Conformity	10

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# 1 Overview

## 1.1 Attributes

- Powerful Cortex M3 microcontroller with internal CAN controller
- Extended temperature range
- Supports CAN protocols 2.0A and 2.0B
- Supply over USB
- Galvanic isolation
- Firmware flashable over USB
- Development kits for Windows 2000/XP/Vista/7/8.x and Linux available
- Linux socketCAN is supported

## 1.2 General Description

CPC-USB/embedded is a CAN interface for internal USB ports. Due to its compact size it is eminently suitable for applications in embedded PCs. It is installed directly at a SUB-D9 case opening or a slot panel and wired with the included cable to a pin connector of an internal USB interface of the mainboard.

The interface is equipped with a Cortex M3 microcontroller providing onChip CAN and USB controllers. By combining the powerful CPU with internal peripherals low latencies can be achieved. The interface is powered via USB, a separate supply for the CAN side is not needed. CPC-USB/embedded provides galvanic decoupling between CAN and USB and has an extended operating temperature range. It supports 11-Bit and 29-Bit CAN identifiers.

Application development kits for the operating systems Windows and Linux are offered additionally. Linux socketCAN is supported as well.

### 1.3 Ordering Information

10-08-241-yy	<b>CPC-USB/embedded</b> CAN-PC interface for internal USB ports with Cortex M3 microcontroller and galvanic separation of the CAN transceiver
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**Note:** yy denotes language of delivery:

10    german  
20    english

## 2 Electrical Characteristics

### 2.1 Absolute Limiting Values

Any (also temporary) stress in excess of the limiting values may cause permanent damage on CPC-USB/embedded and connected devices. Exposure to limiting conditions for extended periods may affect the reliability and shorten the life cycle of the device.

Parameter	Min.	Max.	Unit
Storage temperature	-40	+80	°C
Operating temperature	-30	+70	°C
Supply voltage	0	+6	V
Voltage on bus connections	-30	+30	V

### 2.2 Nominal Values

Parameter	Min.	Typ.	Max.	Unit
Current consumption	-	100	500	mA
Supply voltage	4,0	5,0	5,5	V

All values, unless otherwise specified, refer to a supply voltage of 5V and an environmental temperature of 20°C.

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### 3 Operating Instructions

#### 3.1 Pin configuration of CAN connector D-Sub 9 male

Pin 1	-	Not connected
Pin 2	CAN_L	CAN bus line, dominant low
Pin 3	GND	Ground
Pin 4	-	Not connected
Pin 5	-	Not connected
Pin 6	-	Not connected
Pin 7	CAN_H	CAN bus line, dominant high
Pin 8	-	Not connected
Pin 9	-	Not connected

#### 3.2 Pin Assignment of USB connection cable

Pin 1	red	+5V
Pin 2	white	USB-
Pin 3	green	USB+
Pin 4	black	GND
Pin 5	black	SHIELD

### 3.3 Dimensions

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED

  

6.23  
12.52  
5  
0  
35

36  
0  
6.3  
18  
28.5  
36  
35

35  
0  
35

  

DRAWN	el	DATE	10/13/15	<b>Solid Edge</b>
CHECKED				
ENG APPR				
MGR APPR				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS ANGLES ±XX° 2 PL ±XXX 3 PL ±XXXX				TITLE CPC-USB/embedded
SIZE A4		DWG NO REV	FILE NAME USB_embedded.dft	
SCALE:			WEIGHT:	SHEET 1 OF 1

### 3.4 Installation

CPC-USB/embedded may be connected to a free USB port of a computer. To avoid damage please pay attention to the following hints:

**WARNING:** Avoid damage by achieving equal potential between the corresponding devices before plugging any connections to CPC-USB/embedded.

To the CAN connector of CPC-USB/embedded only CAN networks with a connector and electrical character complying with this specification may be attached.

Besides the instructions mentioned in this manual carefully observe the instructions in your computers users manual.

If you are not sure about the installation please contact EMS Dr. Thomas Wünsche.

CPC-USB/embedded needs a driver to operate on Windows operating systems. This driver is part of the 'CPC-Series Runtime Kit for MS-Windows Environment', which is part of the delivery.

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## **4 Appendix**

### **4.1 Instruction for Disposal**

#### **Electronic Equipment Act (WEEE)**

EMS is selling its products exclusively to commercial customers. This is the reason why all devices are designed for commercial use and have to be disposed appropriately. In accordance to § 10 para. 2 clause 3 Electronic Equipment Act (WEEE) the disposal of EMS products is regulated the following way.

The equipment must not be disposed at the public collection points. In accordance with the applicable law the disposal has to be done by the customer for own account. The same applies to products, which have been sold to third parties, if those parties do not take care of a disposal in accordance to the applicable law. As an alternative the products can be returned to EMS free of charge.

### **4.2 FCC Statement**

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## 4.3 CE Conformity

### Declaration of Conformity



The manufacturer

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Germany**

hereby declares, that the following product:

Name	Article Number
CPC-USB/embedded	10-08-241-xx

meets the requirements of the following standards:

#### **Electromagnetic Immunity**

EN 55024; VDE 0878-24:2011-09 – Information technology equipment – Immunity characteristics – Limits and methods of measurement (CISPR 24:2010); German version EN 55024:2010

#### **Electromagnetic Emission**

EN 55022; VDE 0878-22:2011-12 – Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement (CISPR 22:2008, modified); German version EN 55022:2010

and therefore conform with the EU requirements on:

#### **Electromagnetic compatibility (2004/108/EG)**

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.

#### **RoHS 2 EEE**

The RoHS 2 Directive (2011/65/EU) commits manufacturers of „Electrical and Electronic Equipment“ (EEE) to secure compliance with the RoHS Directive before placing a CE mark.

Based on technical documentation and to the best of our knowledge, we hereby confirm that the above mentioned products do not contain any of the restricted substances according to Article 4 of the RoHS Directive in excess of the maximum concentration values tolerated by weight in any of their homogeneous materials.

Ilmmünster, 09.02.2015

Dr. Thomas Wünsche