kontron

» Kontron User's Guide «



MPC-pONE

Document Revision 100

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1 User Information

1.1 About This Document

This document provides information about products from Kontron AG and/or its subsidiaries. No warranty of suitability, purpose, or fitness is implied. While every attempt has been made to ensure that the information in this document is accurate, the information contained within is supplied "as-is" and is subject to change without notice.

1.2 Copyright Notice

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1.3 Trademarks

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- IBM, XT, AT, PS/2 and Personal System/2 are trademarks of International Business Machines Corp.
- Microsoft is a registered trademark of Microsoft Corp.
- Intel is a registered trademark of Intel Corp.

All other products and trademarks mentioned in this manual are trademarks of their respective owners. For the circuits, descriptions and tables indicated, Kontron assumes no responsibility as far as patents or other rights of third parties are concerned.

1.4 Standards

Kontron AG is certified to ISO 9001:2000 standards.

1.5 Warranty

This Kontron AG product is warranted against defects in material and workmanship for the warranty period from the date of shipment. During the warranty period, Kontron AG will, at its discretion, decide to repair or replace defective products.

Within the warranty period, the repair of products is free of charge as long as warranty conditions are observed.

The warranty does not apply to defects resulting from improper or inadequate maintenance or handling by the buyer, unauthorized modification or misuse, operation outside of the product's environmental specifications or improper installation or maintenance.

Kontron AG will not be responsible for any defects or damages to other products not supplied by Kontron AG that are caused by a faulty Kontron AG product.

Empty batteries (external and onboard), as well as all other battery failures, are not covered by this manufacturer's limited warranty.

1.6 Technical Support

Technicians and engineers from Kontron AG and/or its subsidiaries are available for technical support. We are committed to making our products easy to use and will help you use our products in your systems.

For technical support, please consult our technical support department:

Web: http://support.kcc-ag.ch
Tel.: +41 (0) 32 681-5848
Fax: +41 (0) 32 681-5801

For the latest product documentation, utilities, drivers, additional tools and software please consult our website:

Web: http://kontron.com

1.7 Environmental Protection Statement

This product has been manufactured to satisfy environmental protection requirements wherever possible. Many of the components used (structural parts, printed circuit boards, connectors, batteries, etc.) are capable of being recycled. Final disposal of this product after its service life must be accomplished in accordance with applicable country, state, or local laws or regulations. All components within this product fulfill the requirements of the RoHS (Restriction of Hazardous Substances Directive). The product is soldered with a lead free process.

1.8 RoHS Commitment

Kontron Compact Computers AG (Switzerland) is committed to developing and producing environmentally friendly products according to the Restriction of Hazardous Substances (RoHS) Directive (2002/95/EC) and the Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC) established by the European Union. The RoHS directive was adopted in February 2003 by the European Union and came into effect on July 1, 2006. It is not a law but a directive, which restricts the use of six hazardous materials in the manufacturing of various types of electronic and electrical equipment. It is closely linked with the Waste Electrical and Electronic Equipment Directive (WEEE) 2002/96/EC, which has set targets for the collection, recycling and recovery of electrical goods and is part of a legislative initiative to solve the problem of huge amounts of toxic e-waste.

Each European Union member state is adopting its own enforcement and implementation policies using the Directive as a guide. Therefore, there could be as many different versions of the law as there are Member States in the EU. Additionally, non-EU countries like China, Japan, or states in the U.S. such as California may have their own regulations for green products, which are similar, but not identical, to the RoHS directive.

RoHS is often referred to as the "lead-free" directive but it restricts the use of the following substances:

- Lead
- Mercury
- Cadmium
- Chromium VI
- PBB and PBDE

The maximum allowable concentration of any of the above mentioned substances is 0.1% (except for Cadmium, which is limited to 0.01%) by weight of homogeneous material. This means that the limits do not apply to the weight of the finished product, or even to a component but to any single substance that could (theoretically) be separated mechanically.

1.8.1 RoHS Compatible Product Design

All standard products from Kontron Compact Computers (KCC) comply with RoHS legislation.

Since July 1, 2006, there has been a strict adherence to the use of RoHS compliant electronic and mechanical components during the design-in phase of all KCC AG standard products.

1.8.2 RoHS Compliant Production Process

KCC selects external suppliers that are capable of producing RoHS compliant devices verified by:

- A confirmation from the supplier indicating that their production processes and resulting devices are RoHS compliant.
- If there is any doubt of the RoHS compliancy, the concentration of the previously mentioned substances in a produced device will be measured. These measurements are carried out by an accredited laboratory.

1.8.3 WEEE Application

The WEEE directive is closely related to the RoHS directive and applies to the following devices:

- Large and small household appliances
- IT equipment
- Telecommunications equipment (although infrastructure equipment is exempt in some countries)
- Consumer equipment
- Lighting equipment – including light bulbs
- Electronic and electrical tools
- Toys, leisure and sports equipment
- Automatic dispensers

It does not apply to fixed industrial plants and tools. Compliance is the responsibility of the company that brings the product to market, as defined in the directive. Components and sub-assemblies are not subject to product compliance. In other words, since Kontron Compact Computers AG does not deliver ready-made products to end users the WEEE directive is not applicable for KCC. Users are nevertheless encouraged to properly recycle all electronic products that have reached the end of their life cycle.

1.9 The Swiss Association for Quality and Management Systems

The Swiss Association for Quality and Management Systems (SQS) provides certification and assessment services for all types of industries and services. SQS certificates are accepted worldwide thanks to accreditation by the Swiss Accreditation Service (SAS), active membership in the International Certification Network, IQNet, and co-operation contracts/agreements with accredited partners.

www.sqs.ch

The SQS Certificate ISO 9001:2000 has been issued to Kontron Compact Computers AG in the field of development, manufacturing and sales of embedded computer boards, embedded computer modules and computer systems. The certification is valid for three years at which time an audit is performed for recertification.

2 Specifications

2.1 Technical Data

Function	Description
CPU / Performance	Intel® Atom™ Z530 / 1.6GHz or Z510 / 1.1GHz
Chipset	Intel® US15W
Memory	One DDR2-400 / DDR2-533, unbuffered DDR-SDRAM (SODIMM form factor) up to 2 GB
Hard Disk / SSD	1x SATA 2.5" Hard Disk or SSD
Video Controller	Intel® GMA 500
3D-Support	DirectX 9
1st Video Interface	DVI-D
Display Resolution	Maximum 1280x800 (WXGA)
Keyboard / Mouse	USB
USB Ports	2x front panel (USB 2.0) / 2x back panel (USB 2.0)
Internal SATA Interface	SATA II
LAN PORT A	1Gbit/s / WakeOnLan function
Audio Controller	High Definition Audio
Audio SPK	Stereo Line-Out
Audio MIC	Stereo Line-In / Mic

2.2 MPC-pONE Ordering Information

Part / Option	Part No.	Description
MPC-pONE Z510	812200	MPC-pONE system with Intel® Atom™ Z510 / 1.1GHz, 1GB RAM
MPC-pONE Z530	812201	MPC-pONE system with Intel® Atom™ Z530 / 1.6GHz, 1GB RAM

2.3 Assembly Options

The product has different assembly options. Ask the factory for the detailed information about the currently available options and combination of options.

Part / Option	Part No.	Description
RAM 2GB DDR2 SODIMM	807364	Upgrade to 2GB DDR2 RAM
Hard Disk 320GB	872100	Hard disk 320GB
Solid State Drive 2.5" 40GB	872105	SSD for extended temperature and environment conditions
Solid State Drive 2.5" 80GB	872106	SSD for extended temperature and environment conditions
Micro SD Flash 4GB	807480	Internal Micro SD card
Power supply adapter	812210	Power supply; 230V AC to +5V DC
Power cord Euro	693061	2 wire for AC-Supply
Power cord USA/JP	693062	2 wire for AC-Supply
Power cord GB	693063	2 wire for AC-Supply
DIN Rail Kit	872200	Kit for DIN Rail (EN50022) mounting

2.4 Electrical Specifications

Note:	The computer system does not have an internal fuse. To protect the supply input from overcurrent, an external fuse or a current-limited power supply should be used.

The product is suitable for use in IT-power systems.

To completely power off the system, all power must be disconnected from the device by either removing the cords from the device or from the power sources. All connectors must always be easily accessible.

Be sure to disconnect the power supply before opening the system.

2.4.1 Supply Voltage

Input	DC In	Min. /Max.	Supply voltage ripple
DC Main	5V	±5%	Max. 100mV peak to peak (0-20MHz)

See Appendix A for the pin assignments of the DC Main Connector.

2.4.2 Supply Current

State	MPC-pONE Z510	P	MPC-pONE Z530	P
ON, WinXP, idle	0.9mA	4.5W	1.4A	7.0W
ON, WinXP SP3, 100% CPU load	1.5A	7.5W	2.1A	10.5W
Standby S3	80mA	0.4W	80mA	0.4W

2.5 Mechanical Specifications

Property	Description
Size (W x L x H in mm)	130 x 99 x 56/105 (See Appendix B)
Weight	0.6 kg
Housing	Aluminum
Color	Silver

2.6 Environmental Specifications

2.6.1 Temperature

» Operating: 0°C to +45°C

2.6.2 Humidity

» Operating: 10% to 90% (non-condensing)

2.7 Real-Time Clock Battery CR2032

- Nominal voltage: 3.0V
- Capacity: 230mAh

Lithium Battery Precautions:

CAUTION! Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.	VORSICHT! Explosionsgefahr bei unsachgemässem Austausch der Batterie. Ersatz nur durch denselben oder einem vom Hersteller empfohlenen gleichwertigen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.
ATTENTION! Risque d'explosion avec l'échange inadéquat de la batterie. Remplacement seulement par le même ou un type équivalent recommandé par le producteur. L'évacuation des batteries usagées conformément à des indications du fabricant.	PRECAUCION! Peligro de explosión si la batería se sustituye incorrectamente. Sustituya solamente por el mismo o tipo equivalente recomendado por el fabricante. Disponga las baterías usadas según las instrucciones del fabricante.
ADVARSEL! Lithiumbatteri – Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.	ADVARSEL! Eksplosjonsfare ved feilaktig skifte av batteri. Benytt samme batteritype eller en tilsvarende type anbefalt av apparatfabrikanten. Brukte batterier kasseres i henhold til fabrikantens instruksjoner.
VARNING! Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.	VAROITUS! Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan lalteval- mistajan suosittelemaan tyyppiln. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

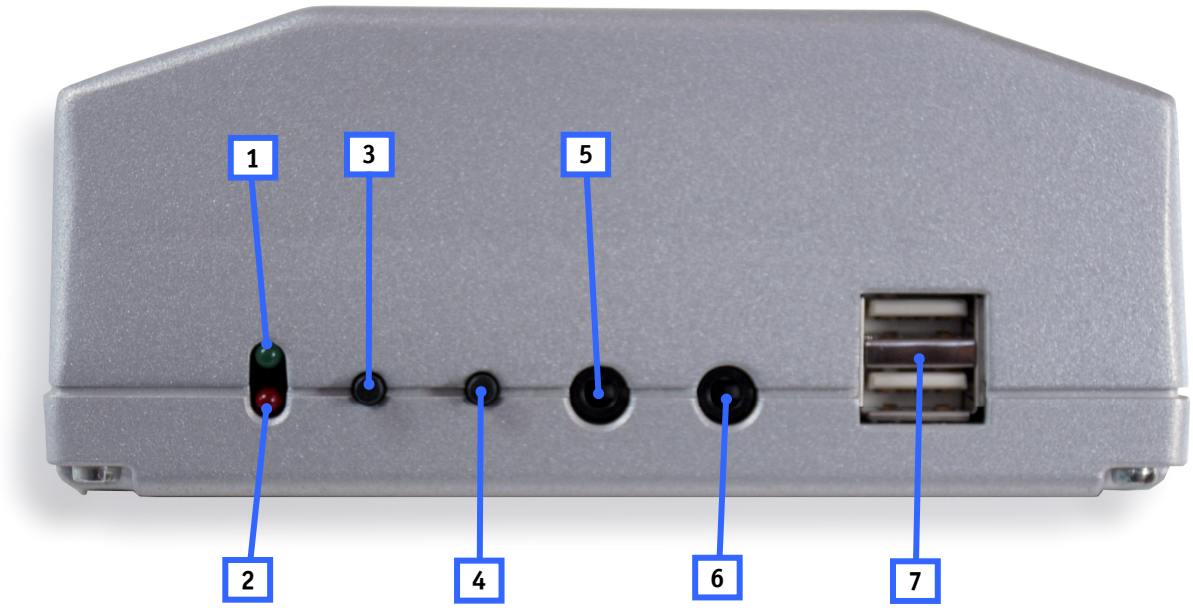
2.8 Electromagnetic Compatibility (EU)

This product is intended only for use in industrial areas. The most recent version of the EMC guidelines (EMC Directive 2004/108/EC) and/or the German EMC laws apply. If the user modifies and/or adds to the equipment (e.g. installation of add-on cards) the prerequisites for the CE conformity declaration (safety requirements) may no longer apply.

Warning	This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

3 MPC-pONE Connectors & Operating Elements

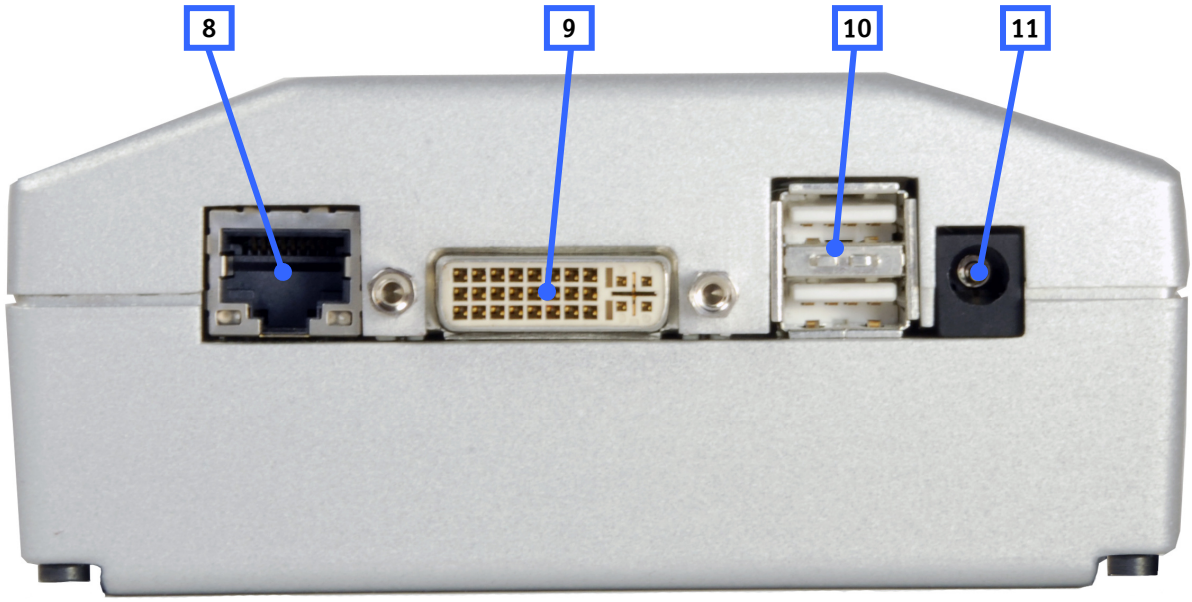
3.1 Front Panel



Position	Description	Connector Type	Information
1	Power indicator LED	Double LED (upper, green)	Section 4.2
2	Hard disk activity LED	Double LED (lower, red)	Section 4.3
3	Power switch		
4	Reset switch		
5	Audio Line-In	Audio jack 3.5mm	Stereo audio
6	Audio Line-Out	Audio jack 3.5mm	Stereo audio
7	Dual USB port	2x USB-A (female)	USB 2.0

See Appendix A for the pin assignments.

3.2 Back Panel



Position	Description	Connector Type	Information
8	LAN 1Gbit/s	RJ-45	
9	DVI-D	DVI	No VGA signal on DVI connector
10	Dual USB Port	2x USB-A (female)	USB 2.0
11	Power Jack	Power jack 2.1mm	Power supply +5V

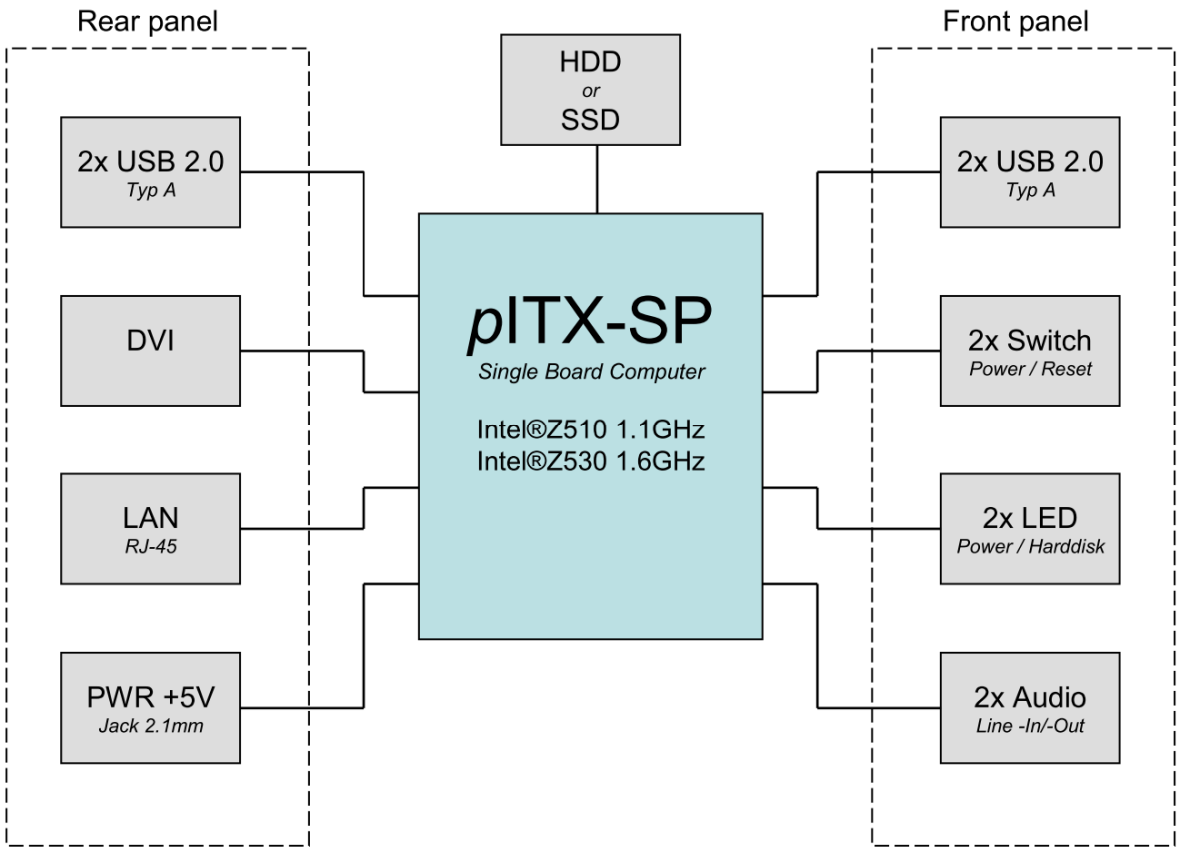
See Appendix A for the pin assignments.

4 Functions

4.1 Block Diagram

The MPC-pONE is equipped with a Single Board Computer (*pico*ITX-SP with Intel® Z510 1.1GHz or Intel® Z530 with Intel® Z530 1.6GHz) The pONE is a fanless system with a compact aluminum chassis with cooling fins.

You will find more information on the *pico*ITX-SP datasheet on www.kontron.com.

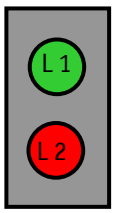


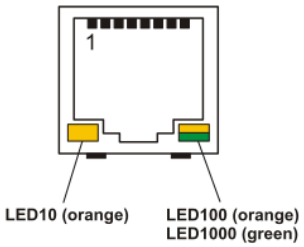
4.2 Power LEDs (ON / 5VSB)

LED	State	Description
L1	OFF	Off / S5
L1	OFF	Standby / S3
L1	ON	System is running / S0

4.3 Indicator LEDs L2, L3 & L4

LED	Description
L2	Disk activity (hard disk)
L3 / L4	The network transmission rate and activity are indicated by two LEDs. LED10 (10 Mbit; single color LED) and LED100/LED1000 (100 Mbit respectively 1 Gbit; two color LED).





4.4 WOL (Wake-on-LAN)

The LAN chip is powered in the S3 state and wakes up the system if a magic packet is received.

Note:	WakeOnLan must also be enabled in the operating systems.

5 BIOS Setup

The MPC-pONE setup is similar to the setup of the *pico*ITX-SP. The setup of this BIOS is described in the *pico*ITX-SP User Guide which is available on www.kontron.com.

5.1 Enter BIOS Setup

To enter the BIOS setup, press ***<DEL>*** after starting the MPC-pONE system.

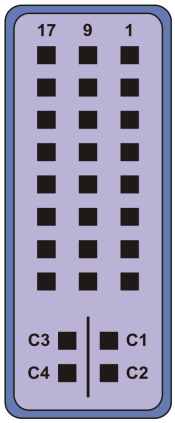
6 Getting Started

1. Connect a DVI monitor to the DVI connector.
2. Plug a keyboard and/or mouse to the USB connector(s).
3. Make sure all connections have been made correctly.
4. Connect the external power supply to the power supply (2.1mm jack) connector.
5. Turn on the system by pushing the power button on front panel.
6. Enter the BIOS by pressing the **Del** key during boot-up.
7. Make all changes in the BIOS Setup. (More information can be found on the *pico*ITX-SP datasheet at www.kontron.com).



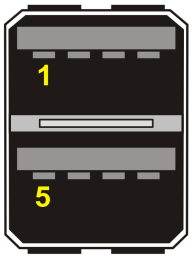
7 Appendix A: Pin Assignments of the Connectors

7.1 DVI



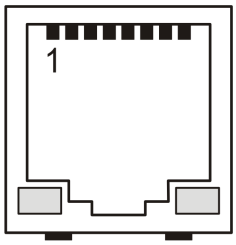
Pin	Signal Name	Pin	Signal Name
1	TMDS2-	16	TMDS_HPD
2	TMDS2+	17	TMDS0-
3	GND	18	TMDS0+
4	**NC**	19	GND
5	**NC**	20	**NC**
6	DDC_CLK	21	**NC**
7	DDC_DATA	22	GND
8	**NC**	23	TMDS_CLK+
9	TMDS1-	24	TMDS_CLK-
10	TMDS1+	C1	**NC**
11	GND	C2	**NC**
12	**NC**	C3	**NC**
13	**NC**	C4	**NC**
14	VCC5	C5	GND
15	GND		

7.2 Double USB Type A



Pin	USB (Upper)	Pin	USB (Lower)
1	+5V	5	+5V
2	Data -	6	Data -
3	Data +	7	Data +
4	GND	8	GND

7.3 LAN (RJ-45)



Pin	Signal Name	Function
1	TXD+ / BI_D1+	10/100 transmit / 1000 pair 1 (positive)
2	TXD- / BI_D1-	10/100 transmit / 1000 pair 1 (negative)
3	RXD+ / BI_D2+	10/100 receive / 1000 pair 2 (positive)
4	BI_D3+	1000 pair 3 (positive)
5	BI_D3-	1000 pair 3 (negative)
6	RXD- / BI_D2-	10/100 receive / 1000 pair 2 (negative)
7	BI_D4+	1000 pair 4 (positive)
8	BI_D4-	1000 pair 4 (negative)

7.4 Power (2.1mm)

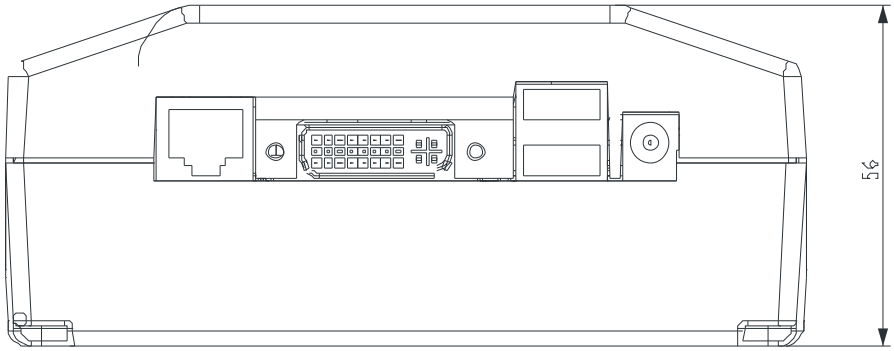


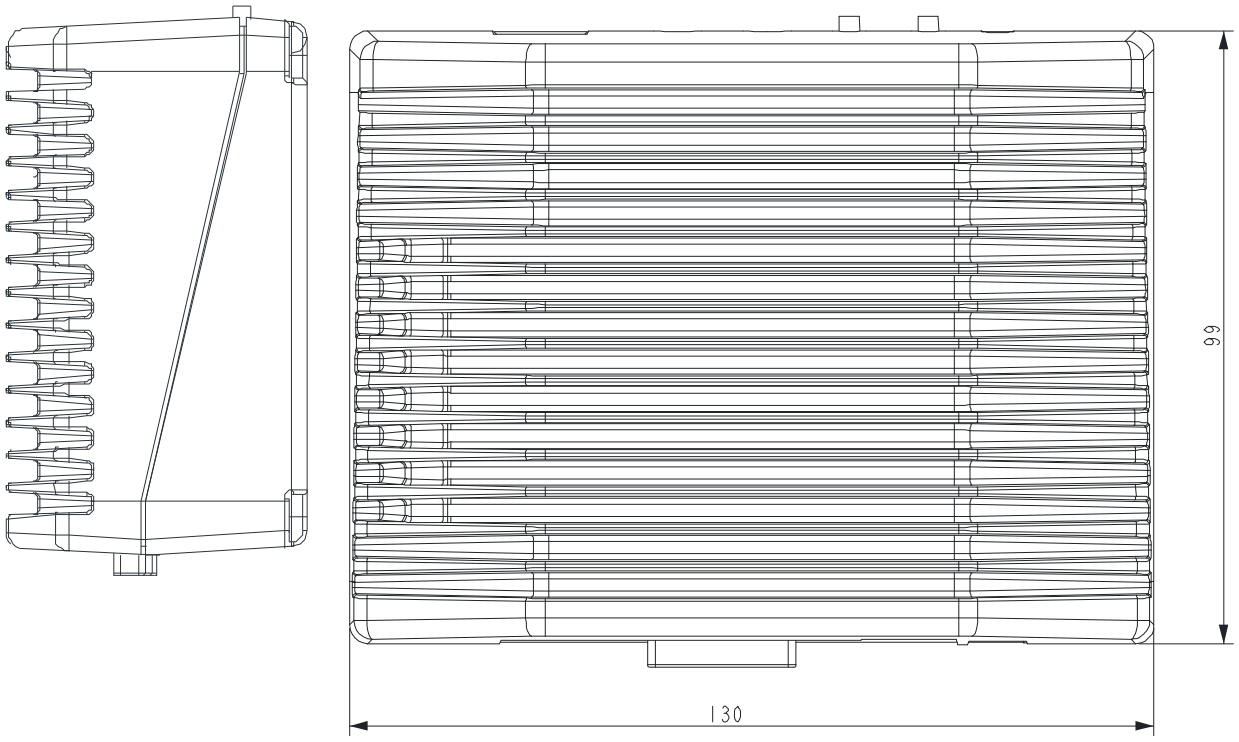


Pin	Signal Name	Function
1	VCC *	Power supply +5V
2	GND	Ground

* To protect the external power lines of peripheral devices, make sure that the wires have the right diameter to withstand the maximum available current and be sure the enclosure of the peripheral device fulfils the fire-protecting conditions of IEC/EN 60950.

8 Appendix B: Mechanical Dimensions





All dimensions are in mm.

9 Appendix C: Document Revision History

Revision	Date	Edited by	Changes
100	23.Apr.2012	WAS	Initial, released version.

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