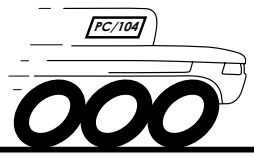
PC/104



USER MANUAL

Version 1.1

K-Team S.A.

Lausanne, 26 February 2001

Documentation author:

K-Team S.A.
Chemin du Vuasset, CP 111
1028 Préverenges
Switzerland

info@k-team.com
http://www.k-team.com

Trademark Acknowledgements:

AirEZY2400: OTC Telecom Inc.
Brooktree: Conexant Systems Inc.
Koala: K-Team S.A.

NOTICE:

- The contents of this manual are subject to change without notice.
- The information contained in this manual is, to the best of our knowledge, complete, accurate and up to date. However, K-Team can assume no responsibility or liability for any inaccuracies or omissions. Should any errors be detected please inform K-Team S.A.

Contents

1. INTRODUCTION 3

1.1. PC/104 SPECIFICATIONS 4
1.2. GENERALITIES 4

2. DESCRIPTION OF PACKAGES 5

2.1. PC/104 PACKAGE 5
2.2. PC/104 + FRAMEGRABBER PACKAGE 5
2.3. WIRELESS ETHERNET PACKAGE 5

3. DESCRIPTION OF COMPONENTS 6

3.1. KOALA PC/104 EXTENSION BOARD 6
3.2. PC/104 MAIN BOARD 6
3.3. PC/104 FRAME GRABBER 6
3.4. WIRELESS ETHERNET 7

1. Introduction

Thanks for choosing the PC/104 extension for Koala! The PC/104 extension for Koala is a powerful extension to the computational autonomy of the Koala.

PC/104 is a standard for PC-compatible circuit board modules that can be stacked together to create an embedded computer system. PC/104 systems are very similar to standard desktop PCs but with a far smaller form factor. These systems can be programmed with the same development tools used with full-size PCs which reduces the need and cost of custom development efforts. A wide variety of third-party modules is available for the PC/104 bus including sound I/O, data acquisition boards, and GPS. More than 200 vendors world-wide supply hardware, software, and engineering services to support the growing PC/104 standard.

A custom interface board connects the PC/104 and Koala providing communications and power. Communication between the Koala and the PC/104 is done via the Koala's RS232 serial port, meaning that the front and back serial ports on the Koala can no longer be used.

PC/104 processor boards provided by K-Team have the following features:

- Pentium MMX 266 MHz with 64MB RAM
- Onboard Video Display (CT 69000 chipset)
- Onboard Ethernet Interface (SMC9000 chipset)
- EIDE, Floppy, keyboard, mouse and SVGA monitor interface
- PC/104 and PC/104+ extension bus
- Ultra Slim ATA disk (2.5")

We also provide the following optional extensions:

- Video FrameGrabber (BT 848 chipset)
- Radio ethernet connection from 2 to 5.5 Mbps for remote control
- Single or double pan-tilt camera to interface with the onboard frame-grabber

1.1. PC/104 Specifications

Technical Aspect	Details
Power supply	15W, 5VDC
Interface	PC/104 and PC/104+ Extension
Communication	RS232, up to 56kbps
Koala Autonomy	30 to 40 minutes according to configuration

1.2. Generalities

To get the latest information on K-Team products, please visit http://www.k-team.com

Safety Precautions

- Check the operating voltage of all components before operation. It must correspond to your local power supply. The operating voltage is indicated on the nameplate of the power supply.
- Don't plug or unplug any connector when the system is switched ON.
- All connections (including addiing or disconnecting extensions) must be made when the robot and the interface are switched OFF, otherwise damage can occur.
- Switch OFF the robot and any additional power supplies if you will not use them for more than a day.
- Do not open the robot unless explicitly directed to do so by K-Team technicians. Perform this operation by carefully following the instructions given in appendix C.
- Do not manually force any mechanical parts, such as pushing the robot and forcing its wheels.

If you have any questions or problems concerning the robot, please contact your Koala dealer.

Recycling

Think about the end of life of your robot! Parts of the robot can be recycled and it is important to do so. It is for instance important to keep batteries out of the solid waste stream. When you throw away a battery, it eventually ends up in a landfill or municipal incinerator. These batteries can contribute to the toxicity levels of landfills or incinerator ash. By recycling the batteries through battery recycling programs, you can help to create a cleaner and safer environment for generations to come. For these reasons please take care to recycle your robot and robot accessories at the end of its life cycle, by for instance sending back the old equipment to the manufacturer or to your local dealer.

Thanks for your contribution to a cleaner environment!

2. Description of Packages

There are two standard PC/104 packages: PC/104 and PC/104 + Framegrabber. We also offer an optional Wireless Ethernet Package. For information on the pan-tilt camera package, please see the separate Pan-Tilt documentation or contact a K-Team representative.

2.1. PC/104 Package

You should have received the following items:

- **Two** stacked printed circuit boards:
  - Koala PC/104 Extension Board (KPEB)
  - PC/104 processor board (PMB)
- Cable Set:
  - Standard VGA connector
  - DIN keyboard connector
  - Serial connector
  - Parallel connector
  - Floppy Drive Converter (MSFC)
  - CD-ROM documentation

2.2. PC/104 + FrameGrabber Package

You should have received the following items:

- **Three** stacked printed circuit boards:
  - Koala PC/104 Extension Board (KPEB)
  - PC/104 processor board (PMB)
  - ***PC/104 frame grabber (PFG)***
- Cable Set:
  - Standard VGA connector
  - DIN keyboard connector
  - Serial connector
  - Parallel connector
  - Floppy Drive Converter (MSFC)
  - CD-ROM documentation

2.3. Wireless Ethernet Package

You should have received the following items:

- AirEZY 2400 wireless ethernet emitter installed in the Koala.
- AirEZY 2400 wireless base, including:
  - documentation
  - short straight cable (station)
  - long crossover cable (hub)
  - AC/DC power adapter

3. Description of Components

This section describes the following components:

- Koala PC/104 Extension Board
- PC/104 Main Board
- PC/104 Frame Grabber
- Wireless Ethernet

3.1. Koala PC/104 Extension Board

The Koala PC/104 Extension Board (KPEB) provides the connection between the Koala and the PC/104. The KPEB is also used for mounting a 12v/5v DC/DC converter and the hard disk.

The KPEB connects to the following components:

- Koala using an MMA connector.
- PC/104 Main Board using three connectors:
  - Power: a 6-pole AMP connector to a 6-pole connector + Hard Disk power connector.
  - Serial Port.
  - Network Port.
- Wireless Station (installed in the Koala) using a RJ-45 connector.

3.2. PC/104 Main Board

Take care that the serial communication cable from the Koala is plugged into COM1 on the PC/104.
If you want to plug in a CDROM, you need a special cable with a supplementary EIDE connector and a converter (not provided by K-Team).

The Digital Logic Documentation CDROM provides PDF help files that address the following issues:

/products/msm/msmp5se_/manual/MSMP5SE.pdf

- How to connect a floppy, a keyboard, a monitor, a serial (COM2) or a parallel device
- Problems with the BIOS
- Problems with the Ethernet Card

/products/misc/msfc/manual/fdconv.pdf

- More details on how to connect a floppy

3.3. PC/104 Frame Grabber

The MSMFG104 is based on a BrookTree 848 chipset (BT848), a well supported device on both Linux and Windows.

You will find additional information on the MSMFG104 (in particular regarding connections), on the Digital Logic Documentation CDROM in the following PDF help file:

/products/msm/msmfg104/manual/MSMFG104pl.pdf

You can also consult the most recent information about Digital Logic products on their web site:

http://www.digitallogic.ch/

To access protected information on the DigitalLogic website, please use username "custdl" and password "dalca".

3.4. Wireless Ethernet

You are provided with an AirEZY emitter (installed in the Koala) and base station that can be connected either to a hub or to a computer workstation. Use a blue crossed cable to connect to a hub, or a white straight cable to connect to a workstation.

When setting up your Koala, please be sure to turn on the base station *first*, then the Koala.

You will find more information in the manual included with the AirEZY package.