THINKIO-USER-HINTS-LINUX-CODESYS

User Hints for
Linux and CoDeSys PLC
on Kontron ThinkIO

January 2005

The product described in this manual
is in compliance with all applied CE
standards.

1 Copyright

2 Contents

3 Virtual Console

ThinkIO (for CoDeSys with Target Visualization) supports two virtual consoles:

- Console 1: login text console
- Console 2: graphic console (used for CoDeSys Target Visualization)

The default resolution of the graphic console is 640 x 480 pixels, 16 bit color depth.
To switch between both consoles, use the keys <ALT><F1> and <ALT><F2>.

4 Transfer a CoDeSys Application to the ThinkIO

The standard way to bring a CoDeSys application program to the ThinkIO is to login to the ThinkIO and load it via the CoDeSys Development Environment. This requires a Ethernet network connection. See also the next chapter 'First Steps with CoDeSys on ThinkIO'.

Another way is the on-the-fly update of a CoDeSys boot project from an external non bootable CompactFlash card. First create a CoDeSys boot project and copy it on the CompactFlash card within a directory "*data*" in the root directory. The boot project files have to be renamed (DEFAULT.CHK, DEFAULT.PRG). Then switch off the ThinkIO, insert the CF card and restart the ThinkIO. At boot time the ThinkIO detects the files */data/DEFAULT.CHK* and */data/DEFAULT.PRG* on the external CompactFlash, and then */data* will be recursively copied to the onboard flash memory */data* directory (read/writable partition). After the copy is finished the user may halt the system, power off, remove the external CompactFlash card and reboot the system.

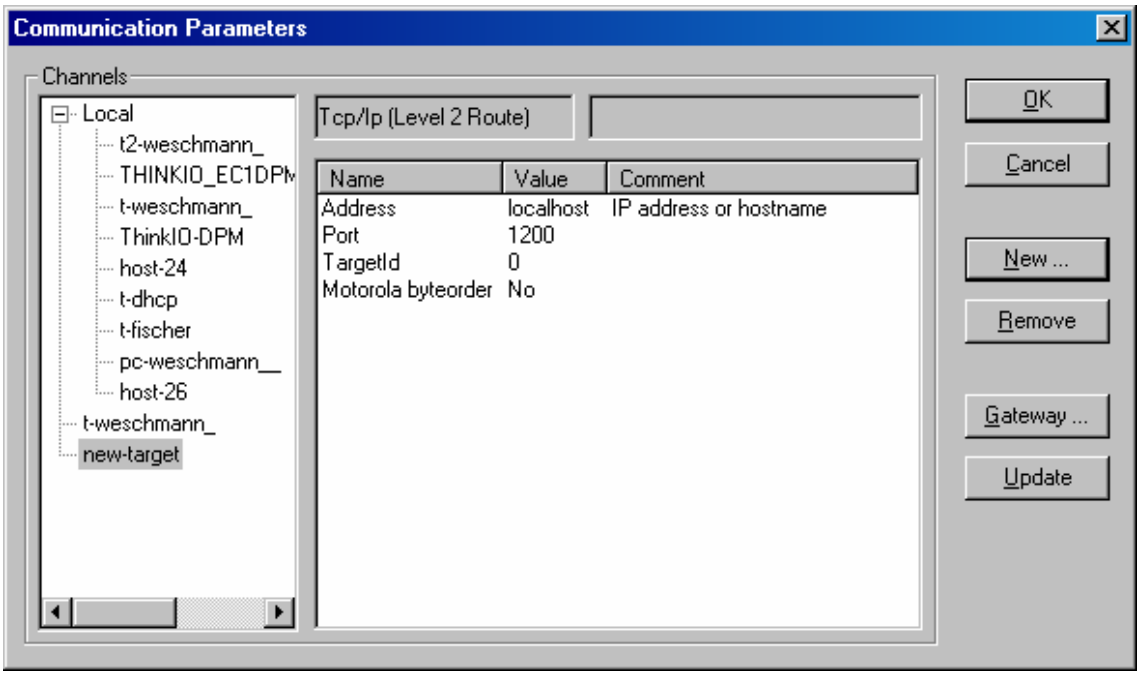
This solution can be used only if enough memory is available on the onboard flash.

5 First Steps with CoDeSys on ThinkIO

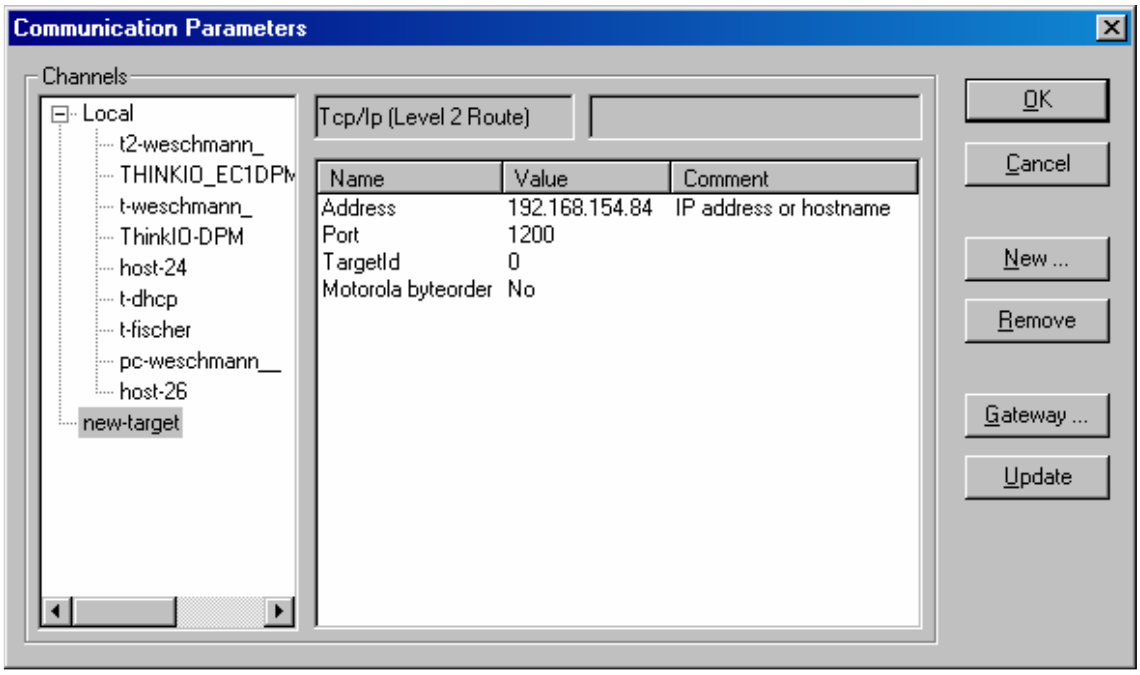
This chapter gives a short step by step overview on creating a new CoDeSys taget, setting up the target settings, compiling, downloading and starting a CoDeSys program within the CoDeSys workbench (IDE). For further details please consult the CoDeSys documentation.

5.1 Creating a New Target

Menu:
Online->Communication Parameters ->New

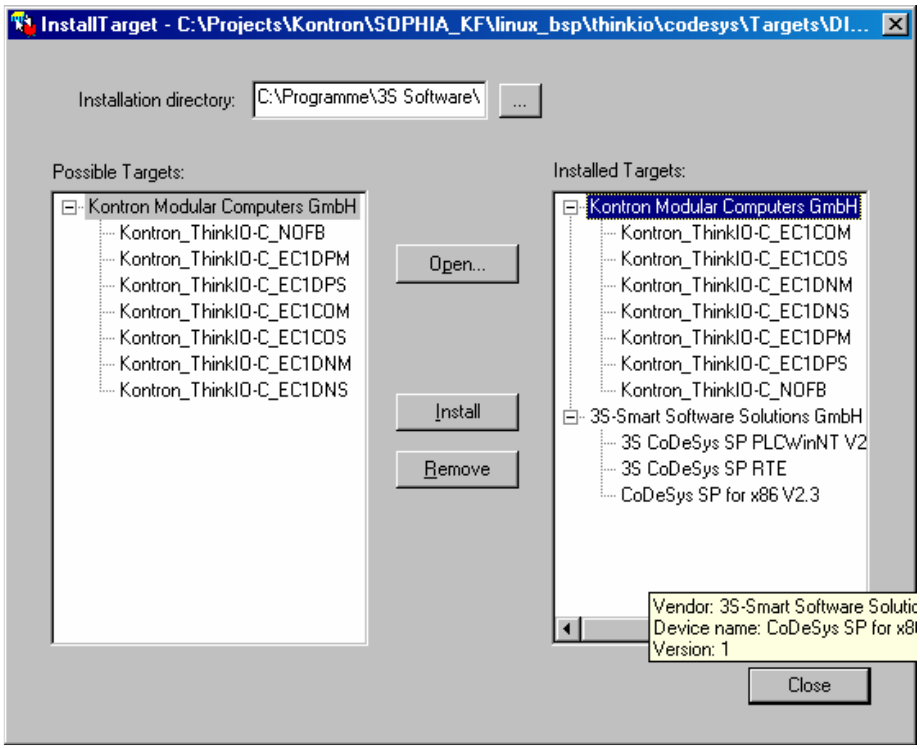


Double click on „localhost“ and insert the ip-address of the Thinkio.

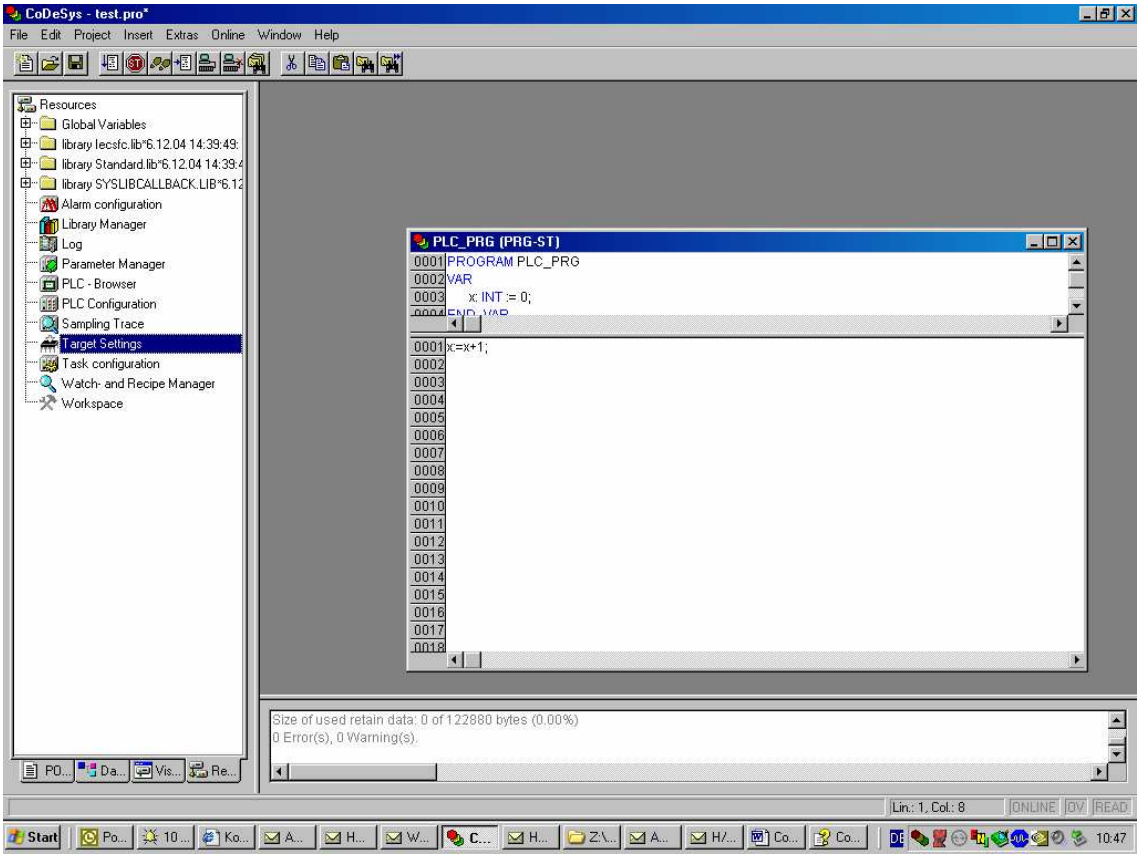


5.2 Set up the Target Settings

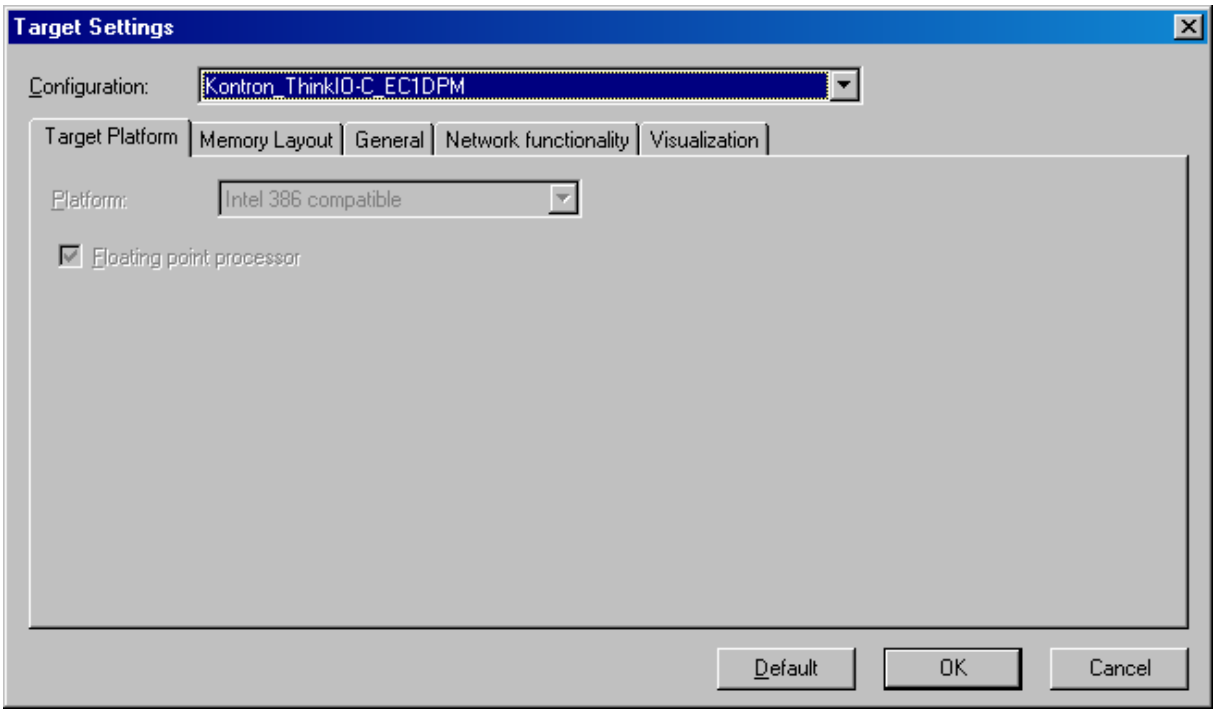
Note: You first have to install the ThinkIO targets using the 3S InstallTarget program:



Depending on the target type (Profibus-Master, Profibus-Slave, CanOpen-Master or CanOpen-Slave) set the corresponding configuration by selecting the **TargetSettings**:

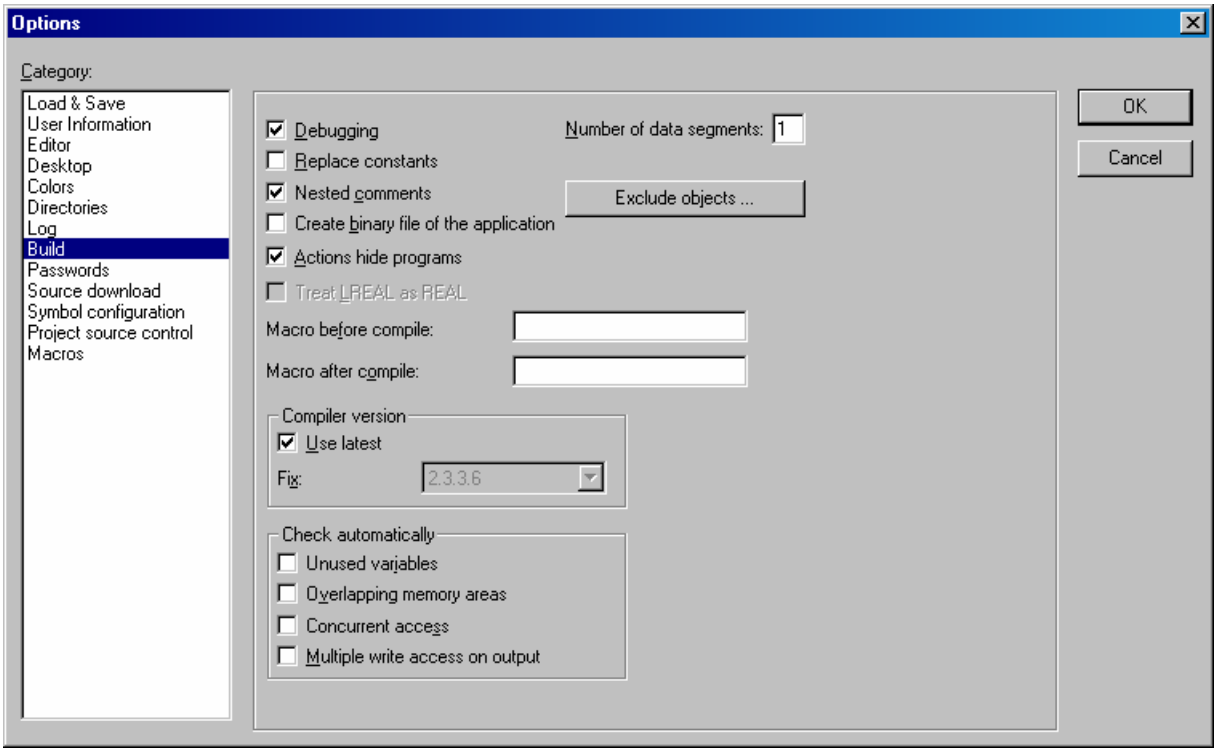


Here is an example for a Profibus Master configuration:



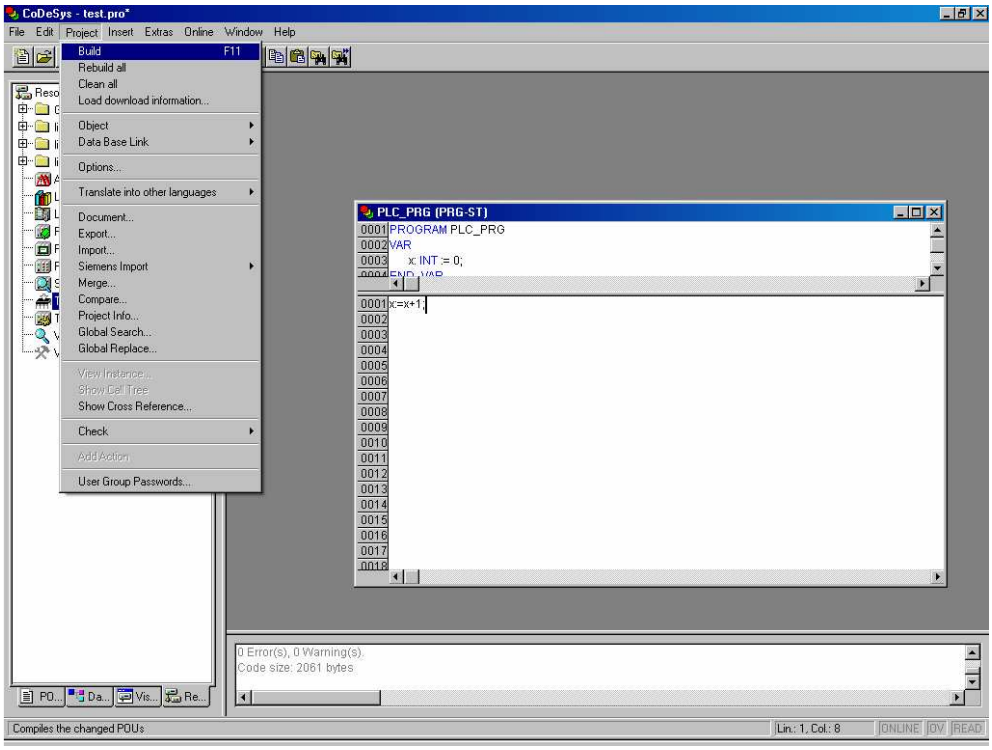
Menu: Project->Options…

Assure that the **Number of data segments** is set to 1.



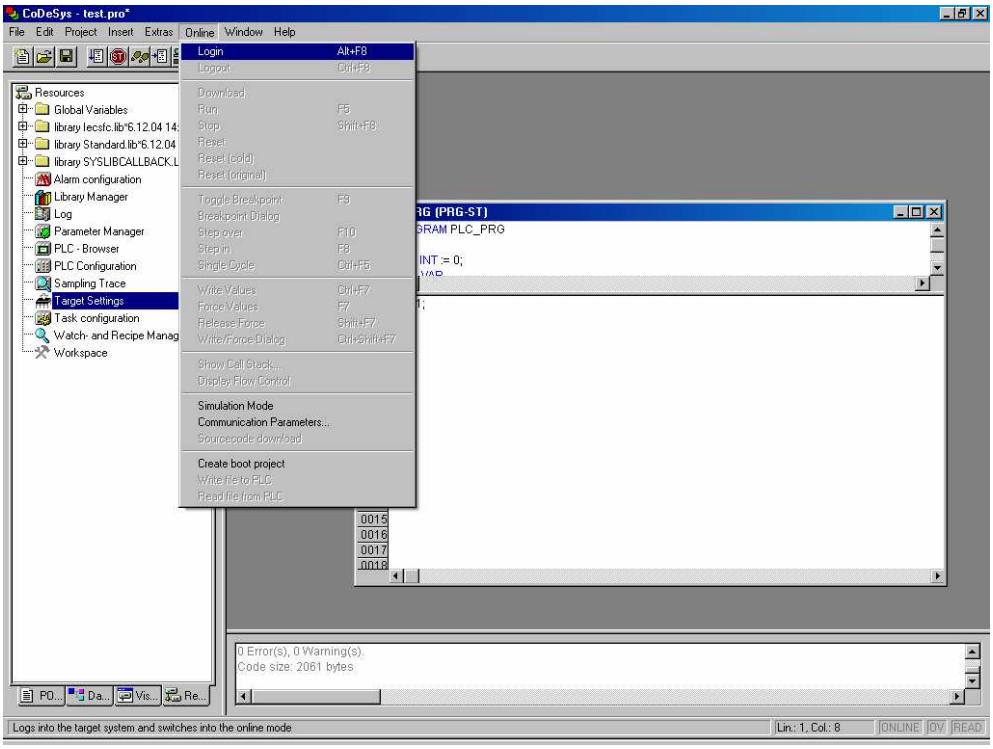
5.3 Compiling the Program

Menu: Project->Build



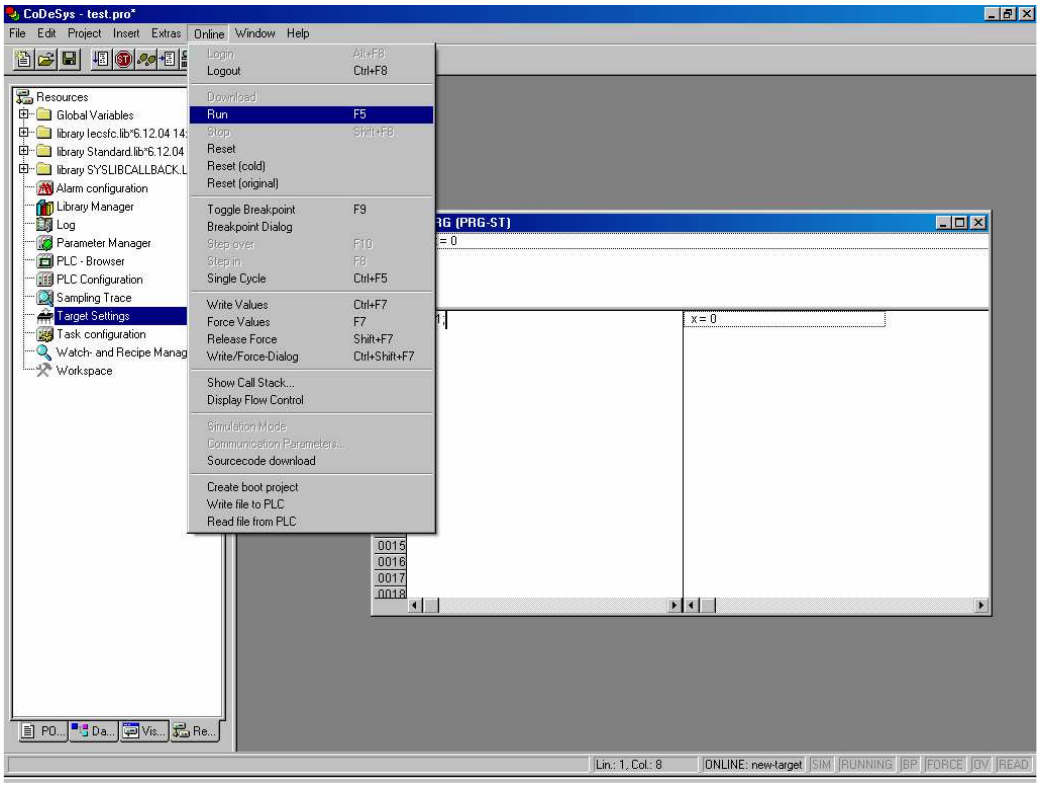
5.4 Download the Program

Menu: Online->Login



5.5 Start the Program

Menu: Online -> Run



6 How to Restore ThinkIO Software

This chapter describes how to restore the ThinkIO software if the original software image delivered with the ThinkIO was damaged. A binary update image "update-thinkio-32MB-rt-lin-codesys-tv-0200.img" for a 128 MB CompactFlash (CF) is provided on the CDROM. We recommend to you to use a **128 MB CF-Card from SanDisk**. CF-Cards from other manufacturers may not work correctly (they may differ in the virtual geometry factors, as number of cylinders and sectors). Please follow the steps described below.

6.1 Copy the Update Image to the CompactFlash Card

- Under Windows
  Use the **PhsyDiskWrite** Tool which is supplied with the CD. The tool is described in the document "PhysDiskWrite.pdf".

- Under Linux
  Copy this binary image to the CompactFlash with the **dd** command. Depending on the type of CompactFlash adapter (USB, PCMCIA, IDE) this device number will be something like /dev/sdx, /dev/hdx. For using dd-command you must be logged in as root. It is not necessary to mount the device to execute the dd-command.

```
# dd if=update-thinkio-32MB-rt-lin-codesys-tv-0200.img of=/dev/sda
```

6.2 Update the ThinkIO Software with the CompactFlash Card

You need:

- a CRT or DVI monitor plus a USB keyboard, or
- a serial terminal (e.g. minicom under Linux or Hyper terminal under Windows) with the serial communication parameters set to 19200,n,8,1.

After plugging in the CompactFlash and attaching the console, power up the ThinkIO. Now the ThinkIO should boot from the CF Card.

On a CRT or DVI monitor, the complete boot process can be observed. On a serial console, only the login prompt is displayed.

At the login prompt enter "root" and press [ENTER] - there is no password. The following screen is displayed:

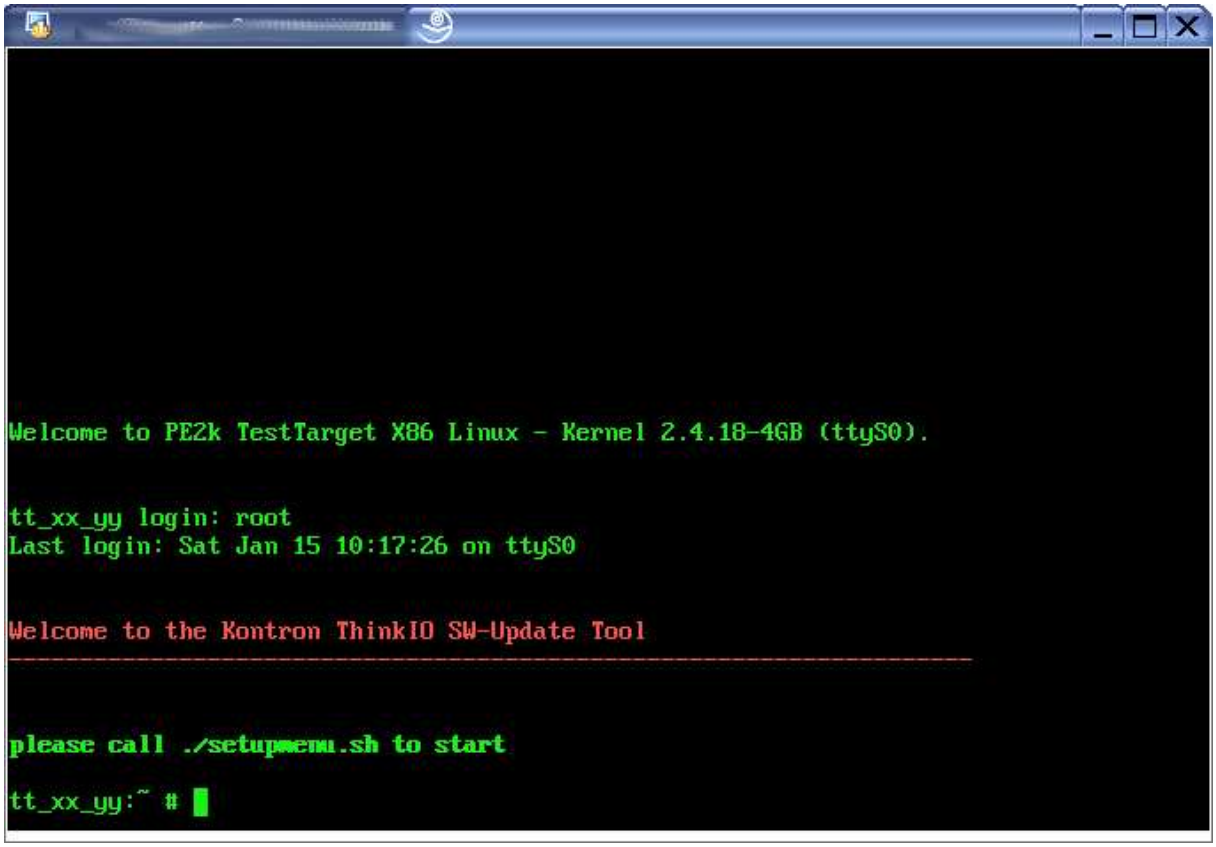


Figure 1: First screen after login on the ThinkIO Update CompactFlash.

Now start the setupmenu with:

```
tt_xx_yy:~  # ./setupmenu.sh
```

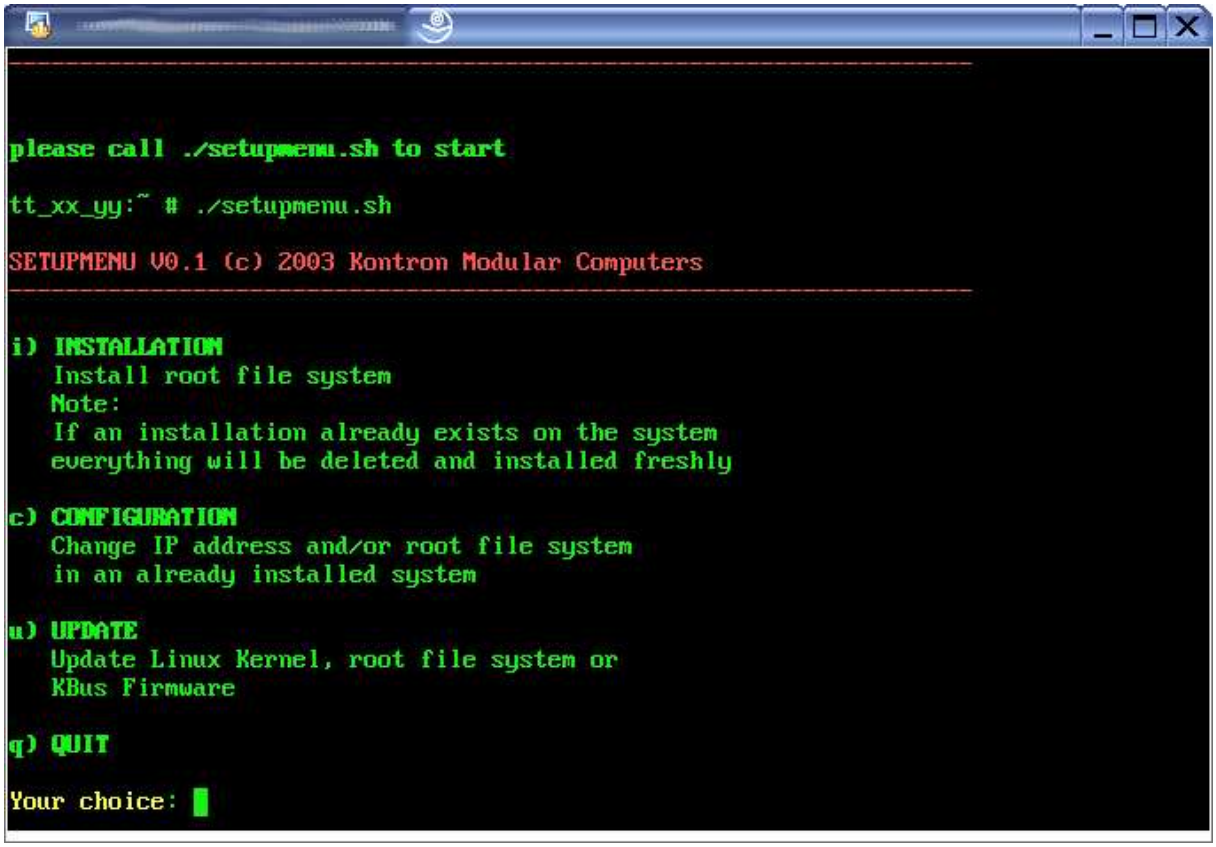


Figure 2: Main screen of the Setup Menu.

The following steps should be done:

1. Choose **u** for updating the installed Software on the ThinkIO.

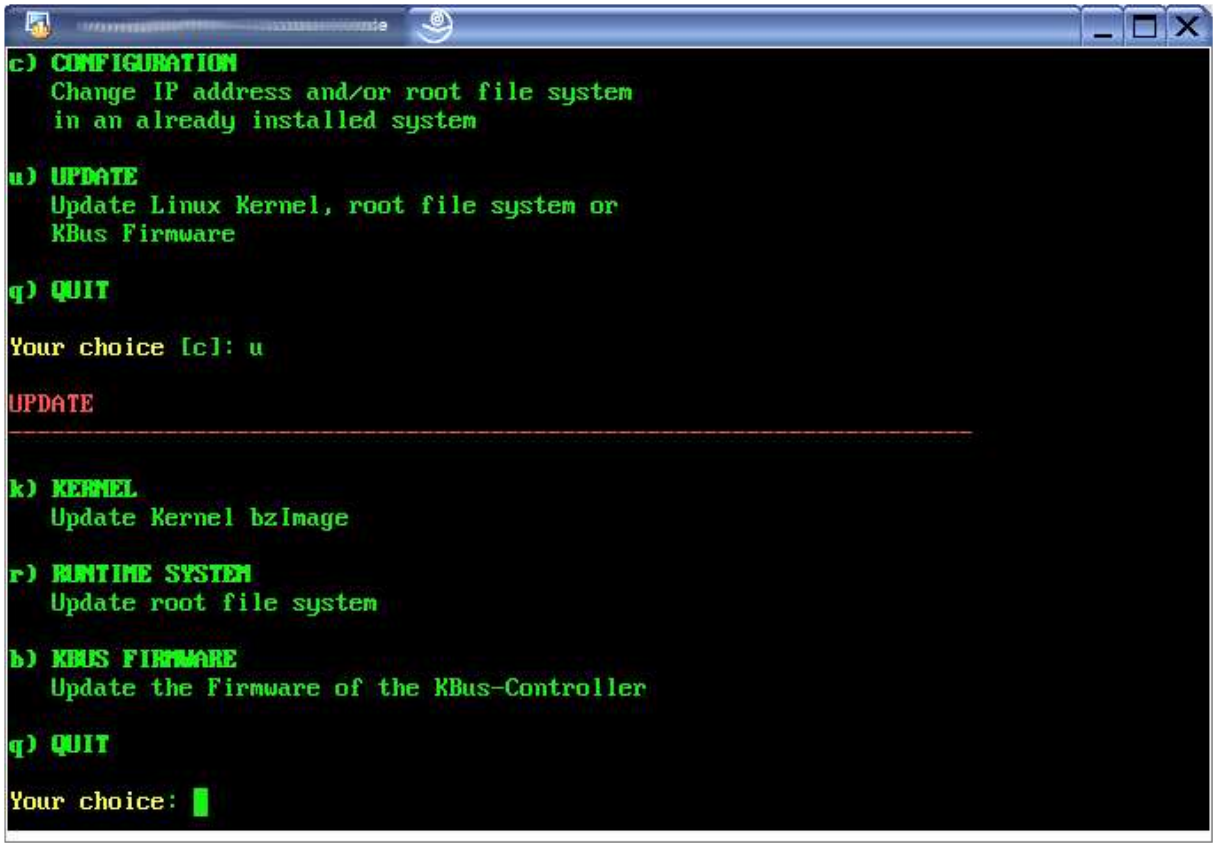


Figure 3: Update screen of the Setup Menu.

2. Choose **k** for kernel updating.
3. Choose **r** for updating the runtime system.
4. Choose **b** for KBus firmware update only, if you have to update the firmware too.
5. Leave the tool with entering **q**.

Now enter "**halt**" to shutdown the ThinkIO.

```
tt_xx_yy:~ # halt
```

Final steps:

1. Switch off the device.
2. Remove the CF Card from the ThinkIO.
3. Switch on the device for booting the ThinkIO with the new software image.

Note

With the setup tool "setupmenu" you also may change the TCP/IP configuration or the root file system.