PHYTEC

COMBI-Modul 167

Installation and Getting Started Guide

Edition March 2001

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Introduction

This manual is intended to enable the user to bring the COMBI-Modul 167 into operation and start a preexisting user program on the module. Sections are arranged so that the user is given step by step guidance through the initial start up of the module.

Complete function parameters of the COMBI-Modul 167, FlashTools16W and the software driver are not described in this manual. Instead only the most important functions required for initial start up are described. If problems should occur during initial start up, refer to the manuals included with the module. The following manuals are included with the COMBI-Modul 167:

Getting Started Manual

- Intended for initial use of the COMBI-Modul 167, in order to give the user a speedy introduction to the module.

Hardware Manual

- Gives complete descriptions of hardware properties, from technical data to memory models.

Software Module Driver

- Driver functions for access of COMBI-Modul 167 components are described and illustrated for applications with an user program.

- **FlashTools Manual**
- Is a general description of FlashTools 16W for use with PHYTEC products.

1 Initial Startup

This section describes preparations for and start up of the COMBI-Modul 167.

1.1 Startup Requirements

The following requirements must be met for successful start up of the COMBI-Modul 167.

The following software is required:

- FlashTools 16W for Windows from the TOOL CD-ROM
- User program „*Blinky*“ from the TOOL CD-ROM

The following hardware is required:

- COMBI-Modul 167 (phyPS-404)
- An RS-232 extension cable[1]
- RS-232 to Phoenix Adapter (for assembly instructions refer to section INSERT CROSSREFERENCE)
- At least one 24 V power supply 24 VDC/1..6 A
- an IBM-compatible host-PC (486 or higher running at least Windows95/98/NT)

1.2 Preparations for the COMBI-Modul 167

For start up of the COMBI-Modul 167 it is necessary to take off the removeable cover. This can be accomplished quite simply with a screw driver by carefully prying the cover away from the side engagements. Then the cover can be lifted directly from the module.

A label on the COMBICON-socket connector shows the function and pin assignment of the individual contacts. The following diagram represents the configuration of the function blocks on the COMBICON-socket connectors.

[1] : Not included with the product

Figure 1 gives an overview of the function blocks for the purpose of assisting during the subsequent start up process.

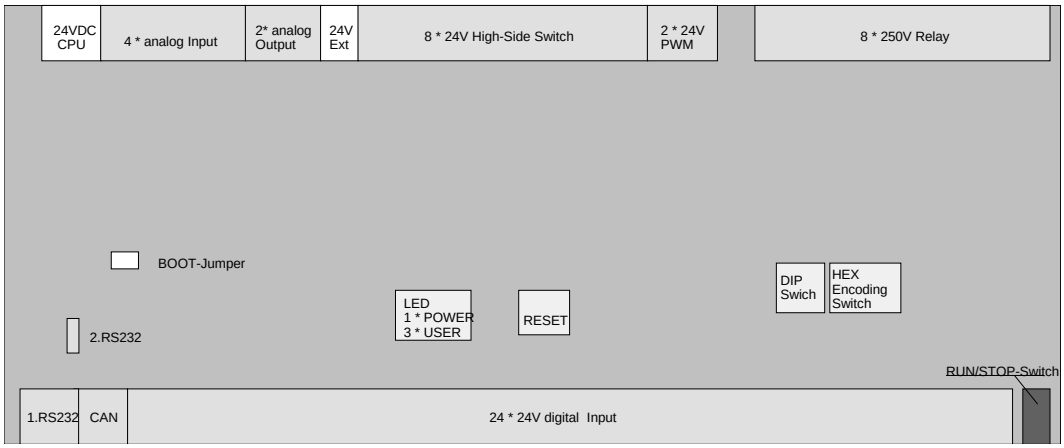

Figure 1: Function Blocks of the COMBI-Modul 167

1.3 Jumper Configuration

Only the BOOT Jumper JP300 is relevant for the user, since it is used to start FlashTools 16W firmware on the module. Insert the jumper bridge at Jumper JP300. The BOOT Jumper JP2 is only required for Flash programming purposes and needs to be removed at the end of the download process.

1.4 Connecting the COMBI-Modul 167 to a PC

A PC and the COMBI-Modul 167 can communicate by connecting the COMBI-Modul 167‘s first serial interface and one of the PC’s serial interfaces (preferably COM1 or COM2).

The serial interface on the COMBI-Moduls 167 extends to a 3-pin COMBICON-socket. To establish a connection, a Phoenix to DB-9 adapter must be used. The proper connection is described in INSERT.

Connect the RS-232 interface (socket of the cable) of your computer to the DB-9 socket on the Phoenix to DB-9 adapter using the included serial cable. The Phoenix screw clamp on the adapter connects to the RS-232 connector of the COMBI-Modul 167. This establishes the physical connection between the COMBI-Modul 167 and the PC.

Assembling the DB-9 to Phoenix COMBICON Adapter for the RS-232 connection:

COMBI-Modul 167	DB-9 Socket
RS-232_TxD	Pin 2
RS-232_RxD	Pin 3
RS-232_GND	Pin 5

Table 1: Phönix to DB-9 Adapter

1.5 Connecting a Power Supply

The COMBI-Modul 167 has two separate power supply inputs.

Input **24 VDC-CPU** supplies the controller circuitry of the COMBI-Modul 167. Typical current draw is 80..100mA.

Transistor outputs **(OUT8..15)**, PWM outputs **(OUT16..17)** and relays **(OUT0..7)** are supplied at input **24 VDC-Ext.** Current draw (max. 4 A) depends on the load connected to the transistor outputs.

For initial start up the power supply inputs can be run parallel to a 24 VDC/1..6 A adapter. For proper connection of the power supply refer to *Figure 2.* Be sure to connect the power supply when it is turned off.

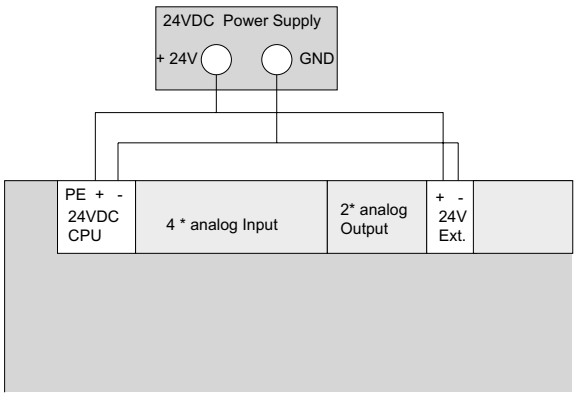

Figure 2: Connecting the Power Supply

1.6 Installing FlashTools 16W

FlashTools 16W is required to download a user program onto the COMBI-Modul 167. The software is located on the TOOL CD-ROM in the ***X:\TOOLS\Flasht16W*** folder.

Start the program *setup.exe*, in order to install FlashTools 16W, and follow the instructions for the installation process.

After installing FlashTools 16W, go to the ***X:\Products*** folder and copy the entire folder ***phyPS-404*** to the hard drive **C:** on your PC. The folder ***X:\phyPS-404\Software\Demos\Blinky\BlinkyFL*.**** contains a simple user program in Intel hexfile format (*Blinky.h86*) that can be executed on the COMBI-Modul 167.

2 Loading a Program with FlashTools 16W

Turn on the power supply adapter (24 V) and push the RESET button on the COMBI-Modul 167. Make sure BOOT Jumper JP300 is closed. Start FlashTools 16W by selecting it from the *Programs* menu using the Windows *Start* button.

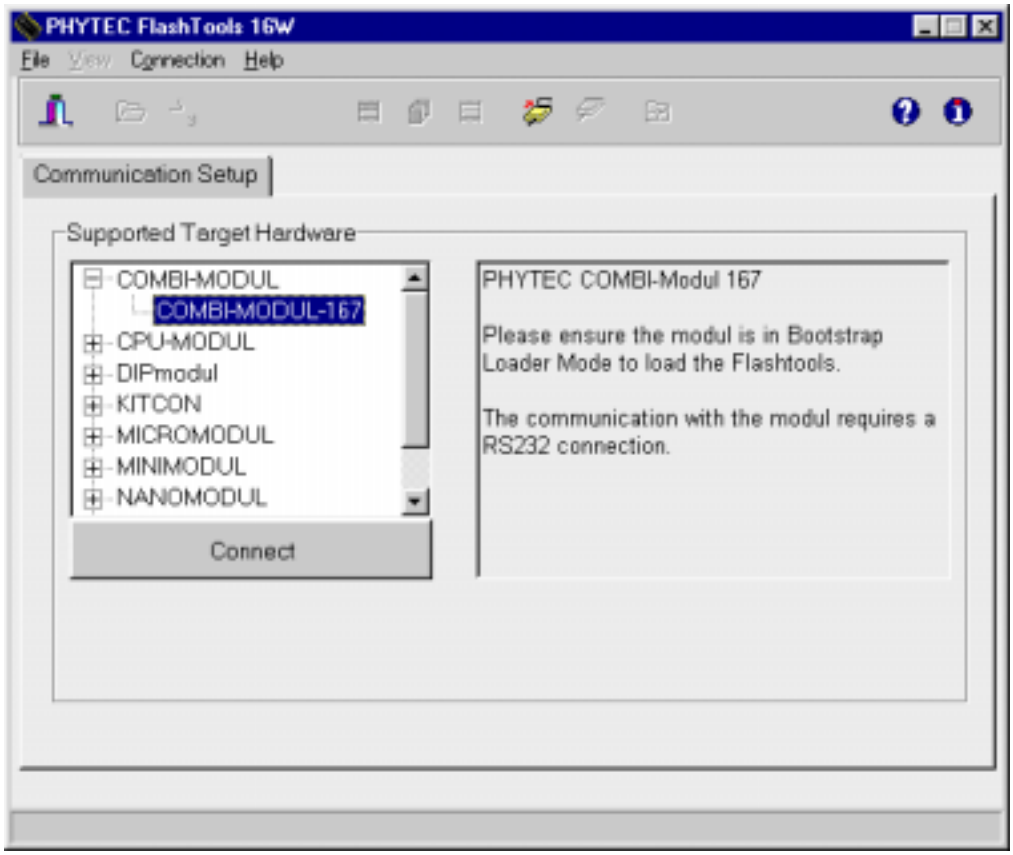

Figure 3: Communication Setup

Push the *Connect* button in order to activate the *Properties for serial communication* window of FlashTools 16W. Choose the correct serial port for your host-PC using the *Interface* pull-down menu and a 38,400 baudrate in *Baud rate*. Other supported baudrates are 9600, 19200, and 57600. The baudrate to be used depends on the properties of your PC's serial interfaces. However, a baudrate of 38400 baud should always function. Push the *OK* button in order to connect to the COMBI-Modul 167.

If no connection can be established, check to see if the BOOT jumper is inserted and if the COMBI-Modul 167 is properly connected to the host-PC via the serial cable. Furthermore, ensure that the power supply is connected correctly and that the power adapter (24 VDC) is turned on. If this is the case, push the RESET button on the COMBI-Modul 167.

Select a lower baudrate and try again to make a connection. If the connection to the COMBI-Modul 167 is established, the following window will appear:

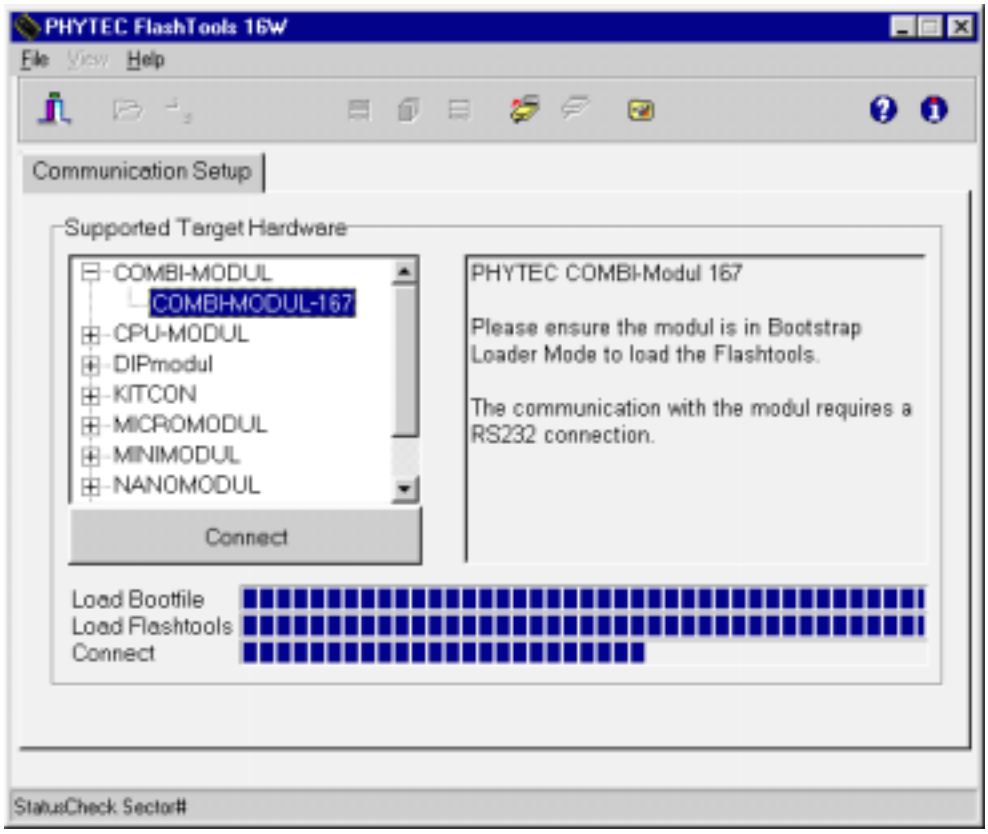

Figure 4: FlashTools 16W - Connect

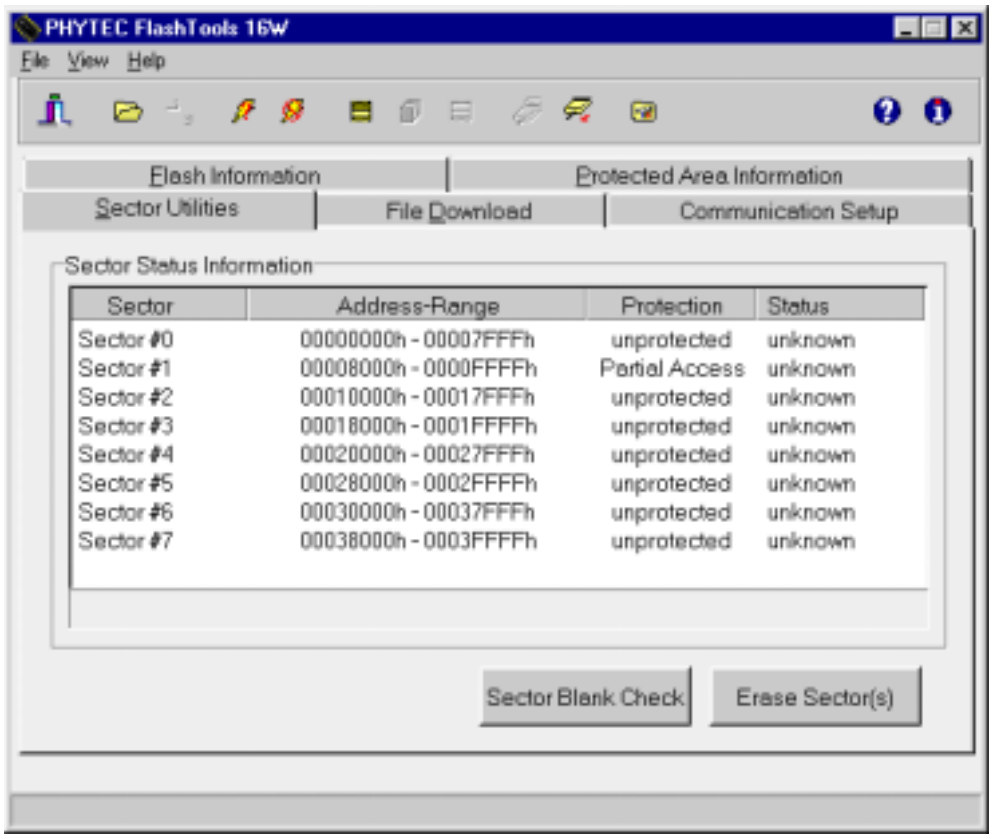

Figure 5: FlashTools 16W - Sector Status Information

Select all sectors and click on the *Erase Sector(s)* button. After the sectors have been successfully erased the status of the sectors will be given as *blank.* This will erase the entire Flash bank of the COMBI-Modul 167. The user program will be stored in this bank.

Next choose the *File Download* tab and click on the *File Open* button.

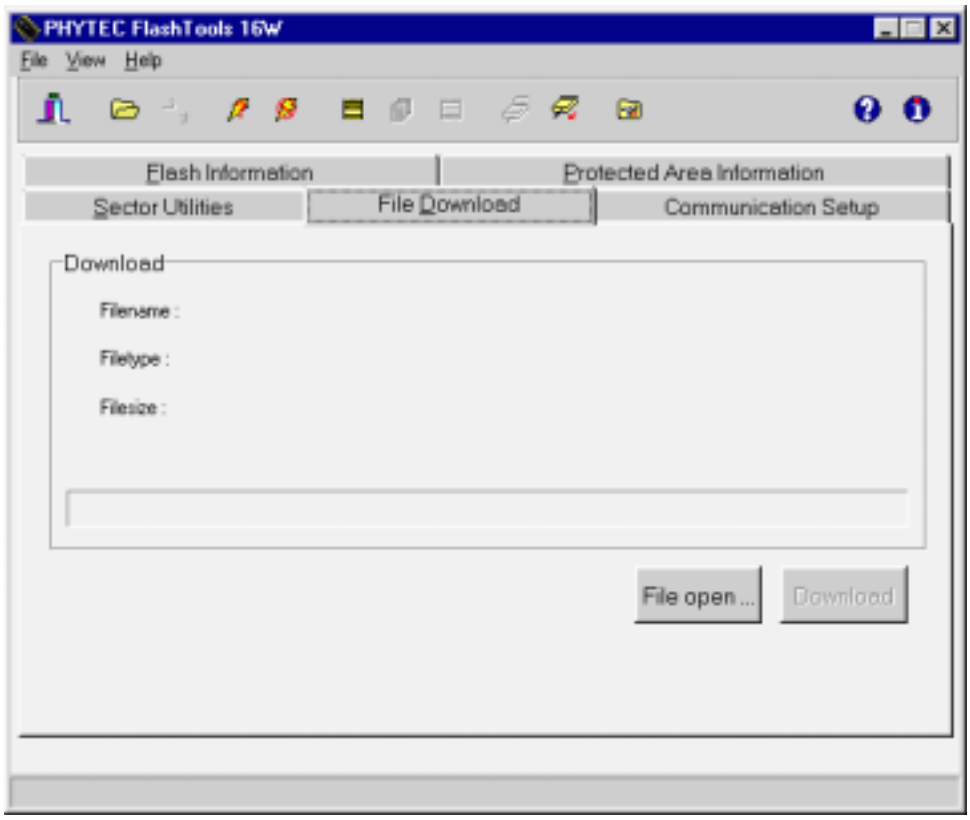

Figure 6: FlashTools 16W - File Download

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Choose the correct drive and path to the COMBI-Modul 167 demo folder (***C:\phyPS-404\Software\Demos\Blinky\BlinkyFL*.****). Open the file ***blinky.H86***.

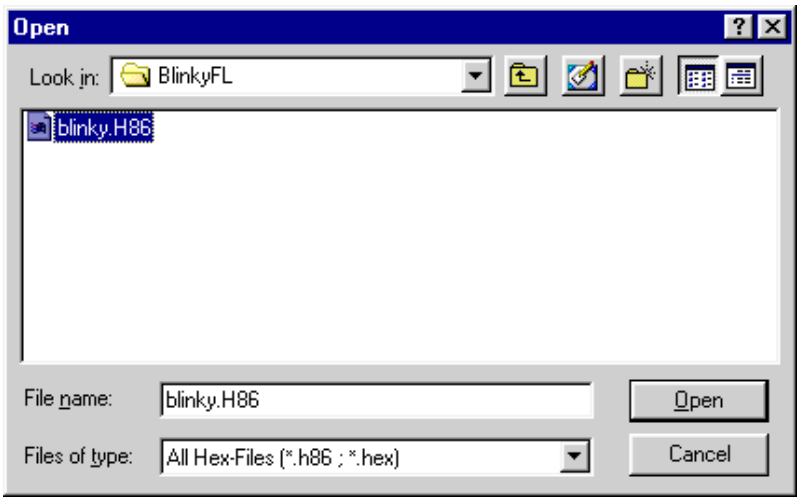

Figure 7: FlashTools 16W - File Open

The file is displayed in the *File Download* window. Click on the *Download* button. You can watch the status of the download of the ***blinky.H86*** into external Flash memory on the COMBI-Modul 167 in the *File Download* window.

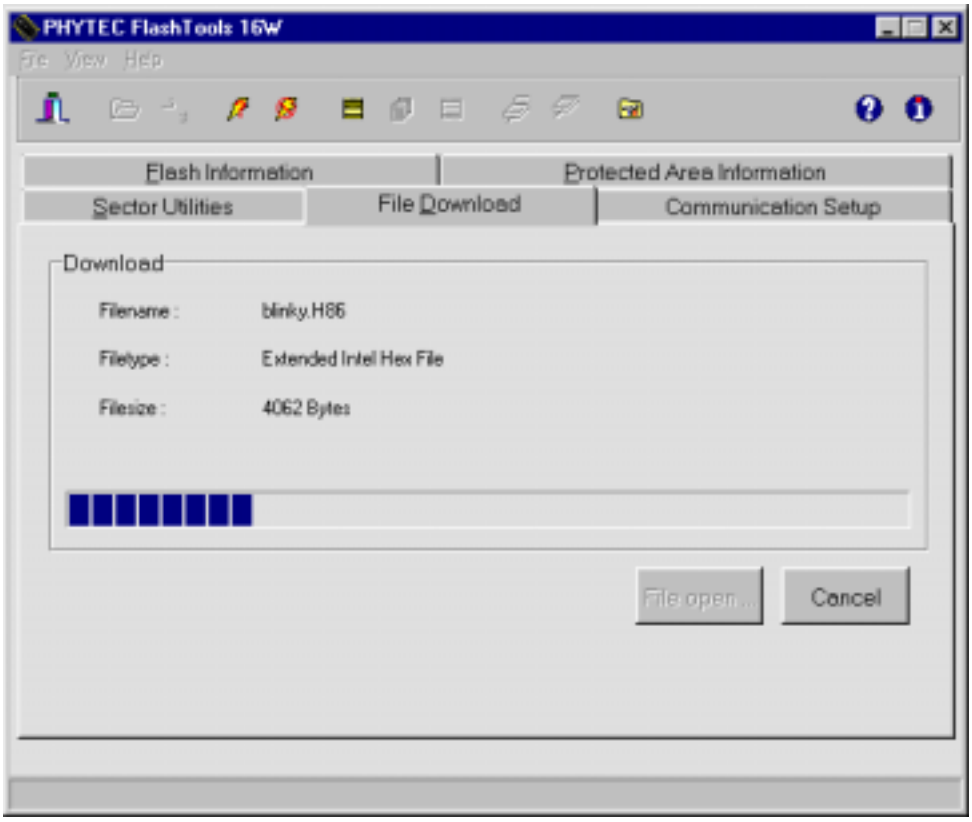

Figure 8: *FlashTools 16W* - File Download

Returning to the *Communications Setup* tab, click on the *Disconnect* button and exit FlashTools 16W. This terminates the serial connection between the COMBI-Modul 167 and the host-PC.

2.1 Starting Blinky

Remove the BOOT Jumper JP300 and push the RESET button. The user program should now run on the COMBI-Modul 167.

The user program „Blinky“ has the following functions:

- The green RUN-LED (D5) blinks.
- A running light (green LEDs) is generated at outputs OUT8-15. The red status LEDs indicate an OpenLoad, if the output is active. If a load consuming more than 100 mA of current at 24 V is connected to the output, the status LED remains inactive.
- If the RUN/STOP switch is set to position *RUN*, the DIP switch setting is displayed at outputs **OUT0..3**.
- If the RUN/STOP switch is set to position *STOP*, the HEX switch setting is displayed at outputs OUT0..7.
- If the RUN/STOP-Switch is set to *MRES*, the state of inputs **IN0..7** is displayed at outputs **OUT0..7**.

The first section has guided you through the following steps:

- Connecting the COMBI-Modul 167 properly to a power supply and a PC using an RS-232 cable.
- Downloading a user program into the COMBI-Modul 167‘s Flash memory using PHYTEC FlashTools 16W.
- Getting accostomed to the COMBI-Modul 167 and its peripheral units by start up and operation of a demonstration program.

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How would you improve this manual?

Did you find any mistakes in this manual? page

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