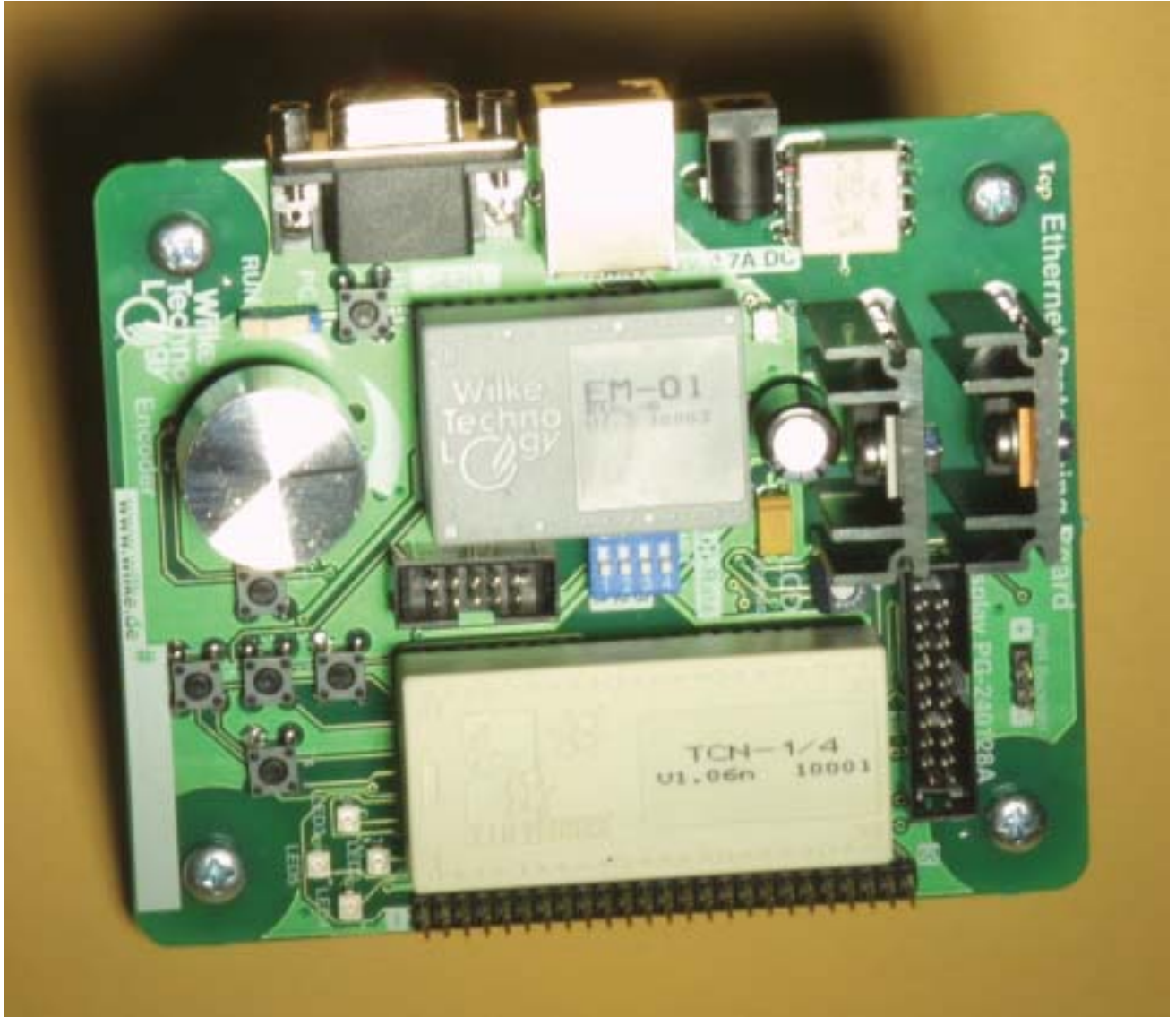


Ethernet Prototyping Board



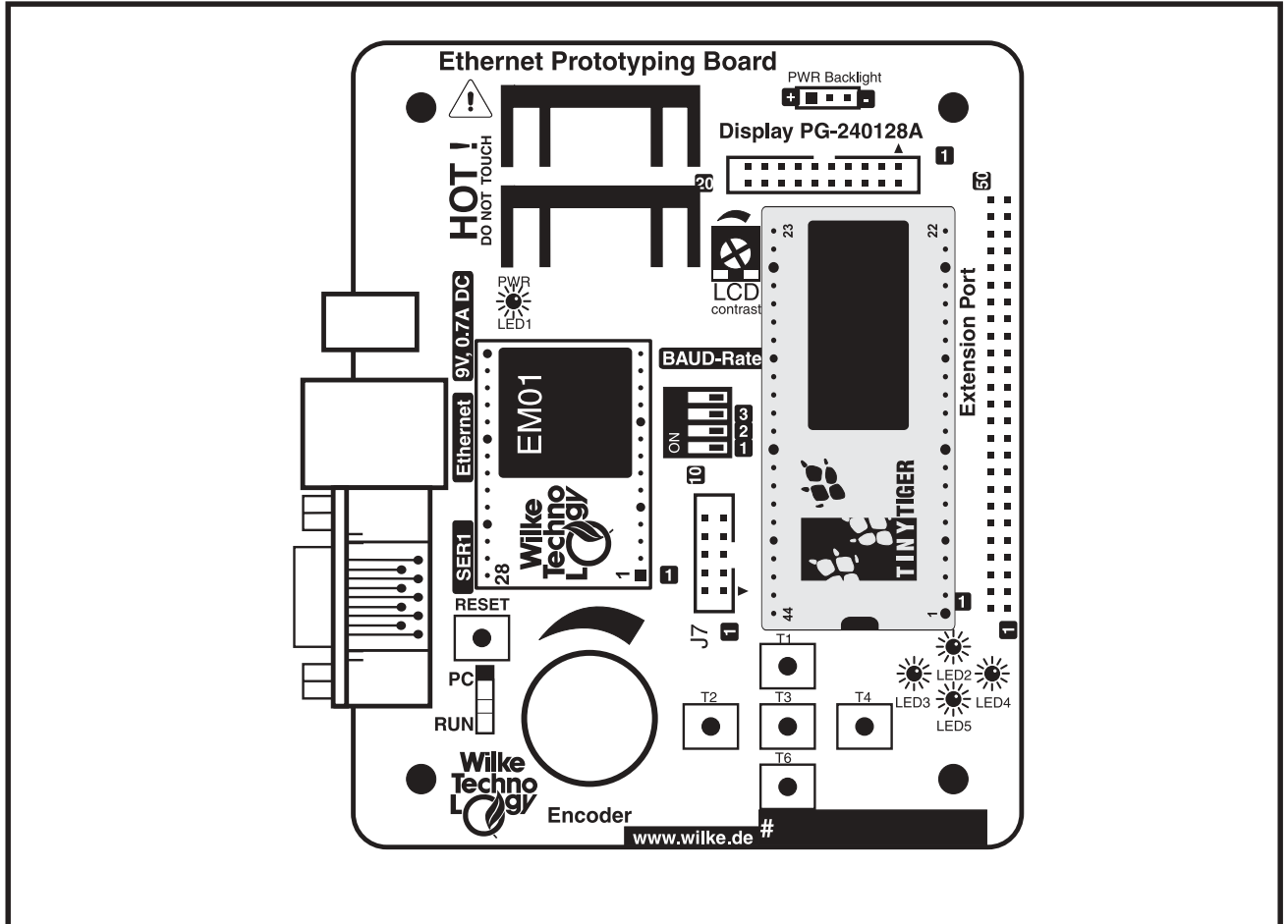
Version 1.1

Technical Documentation



Ethernet Prototyping Board

Overview



The Ethernet Prototyping Board presents the easiest way to develop Applications with connection to the Ethernet. It is a ready to go multitasking computer with Ethernet connection.

You can easily develop your own application by copying and modifying the schematics and demonstration programs of the prototyping board.

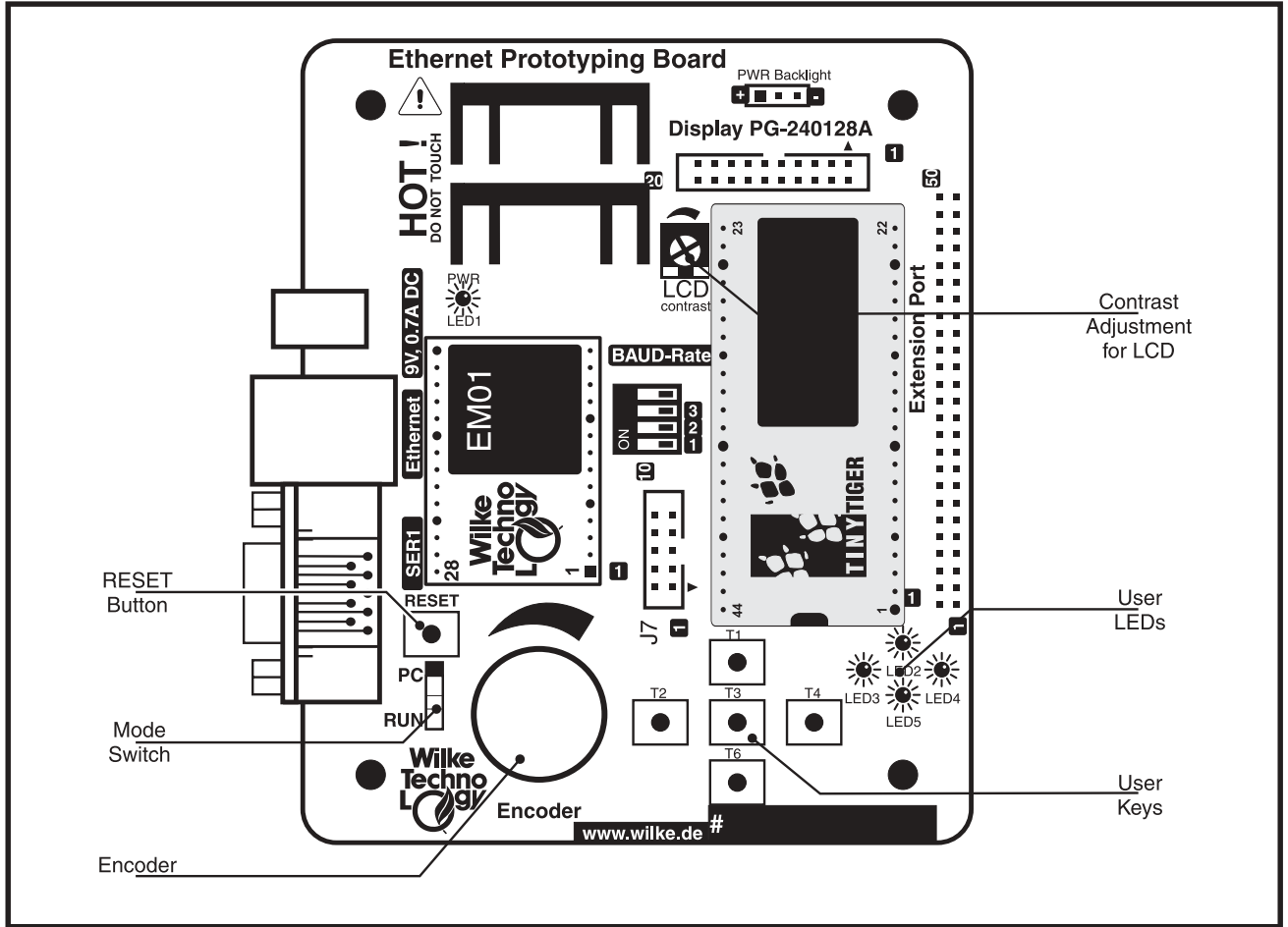
- Features:**
- Ethernet Adapter EM01
 - Connector with filter-elements to Ethernet
 - Tiny Tiger Multitasking Computer
 - RS232 Interface for communication or program download
 - Connector for LC Graphic Display
 - Power supply for Prototyping board and LCD
 - 5 push buttons, 4 LEDs
 - Encoder with push button
 - Extension Port to connect your own hardware

- Size:**
- PCB board: 100mm x 120mm
 - Overall size: 111mm x 120mm x 37mm

Ethernet Prototyping Board



Control Elements



RESET Button:

Pressing the button will reset the TINY-Tiger and the Ethernet Adapter EM01.

Mode Switch:

Shift the switch to position „RUN“ and press RESET to start your application in RUN-Mode or to „PC“ to download a new program into the TINY-Tiger or to run the TINY-Tiger in debug mode.

Encoder:

The encoder can be rotated in both directions without limitation. The rotation creates two transposed pulse chains, indicating both the direction of rotation and the number of the angle steps. The shaft encoder is supported by the DEVICE driver „ENC1_723.TDD“. Program menus can be scrolled with the shaft encoder and the additional key function by pressing the axis serves as an enter key. The shaft encoder is connected to the Pins L72 and L73. The key is connected to L87.

Contrast Adjustment:

If you have connected a LC Display, you can adjust the contrast of the display here. **Note:** You can reduce the contrast of the display down to no contrast. If you can't see your outputs at the display increase the contrast by turning the contrast adjustment clockwise. If the screen is too black, reduce the contrast.

User LEDs:

The 4 LEDs can be controlled by your application. The LEDs are connected to PORT 3 bits 6 and 7 and to PORT 7 bits 0 and 1. Writing 0 to these port-bits will turn on the LEDs

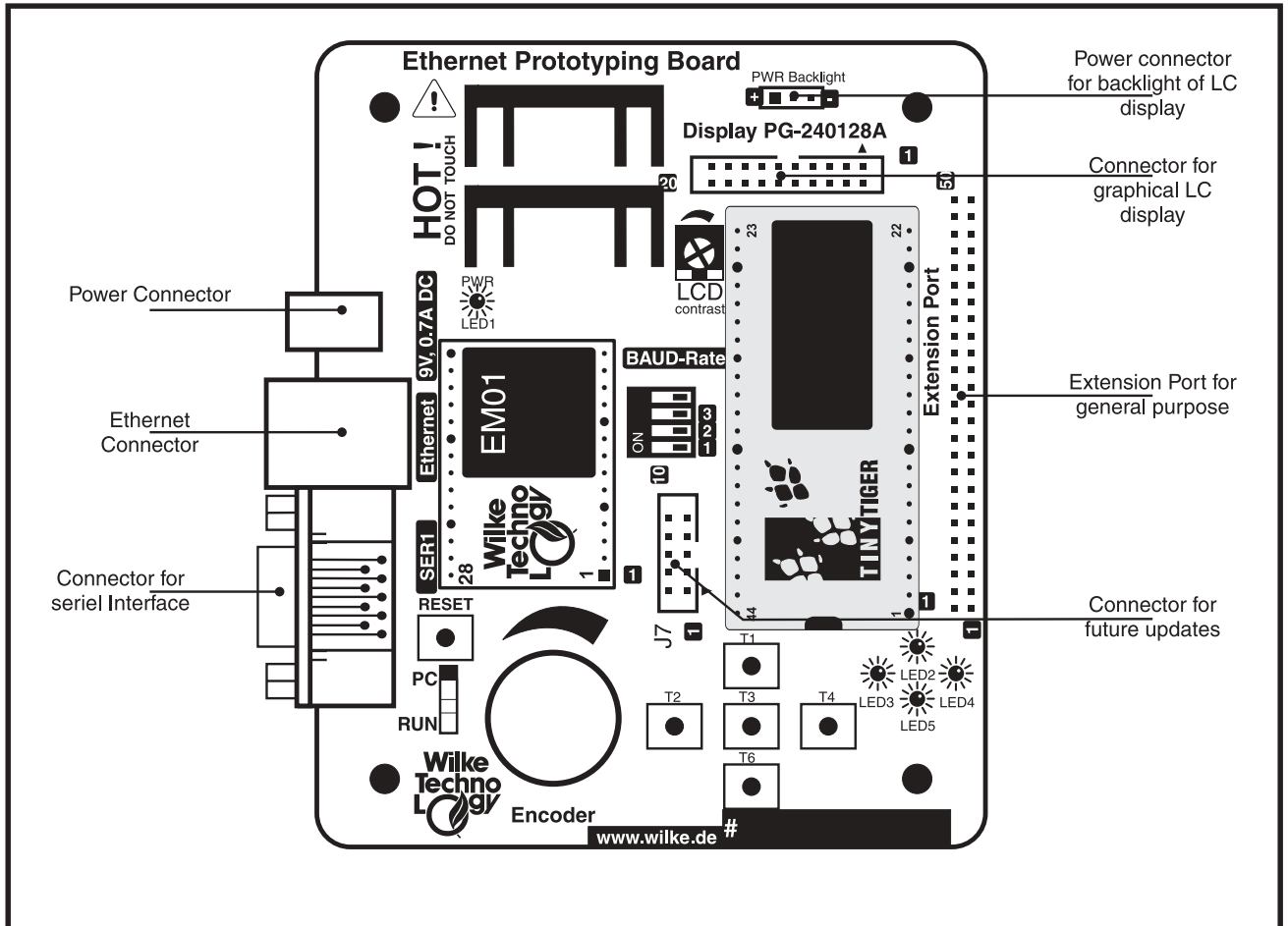
User Keys:

The 5 keys can be read by your application reading PORT 6 bits 0 to 4. A bit value of 0 indicates a pressed key. To use the keys, the Eport system must be disabled and before every reading you have to disable the task switching and set the pins to input.

Ethernet Prototyping Board



Connectors



Power Connector:

Use the power supply shipped with the Ethernet Prototyping Board or one with at least 0.7A and 9V +/-10%.

Ethernet Connector:

Connect the Ethernet here. The used connector of type LF1S028 contains necessary filter elements for the Ethernet connection. You can purchase such connectors at Wilke Technology GmbH.

SER1:

RS232 Interface of the TINY Tiger. Connect to your PC for running the TINY Tiger in PC Mode or for data transfer.

PWR Backlight:

Power output for backlight of LC display. This is a current limited power output for the white LED of a display of type PG-240128A.

Display PG-240128A:

You can connect a LC display of type PG-240128A or compatible here. The display is supported by the device driver "LCD-6963.TDD".

Extension Port:

All pins of the TINY Tiger are directly connected to the extension port of the Ethernet Prototyping Board. To develop your application you can connect your components here.

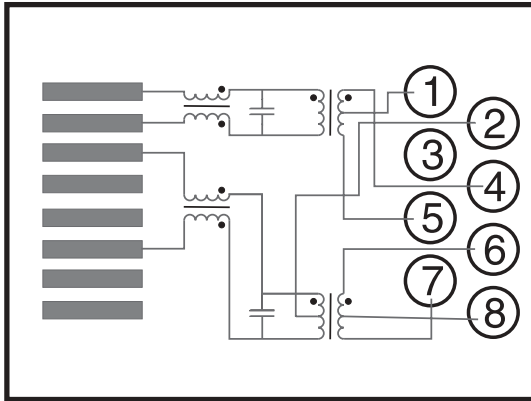
Connector J7:

This connector is reserved for future updates.

Ethernet Prototyping Board



Ethernet Connector



- 1 connected via 100nF to GND
- 2 connected via 100nF to GND
- 3 not connected
- 4 TX_P positive transmit line
- 5 TX_M negative transmit line
- 6 RX_P positive receive line
- 7 RX_M negative receive line
- 8 not connected

Ethernet Connector top view

Connector

The Ethernet connector of type LF1S028 includes all necessary magnetics and filters to connect the Ethernet Adapter EM01 to the Ethernet.

You cannot connect the EM01 to Ethernet without such elements. The connector is available at Wilke Technology GmbH.

Connection to Ethernet

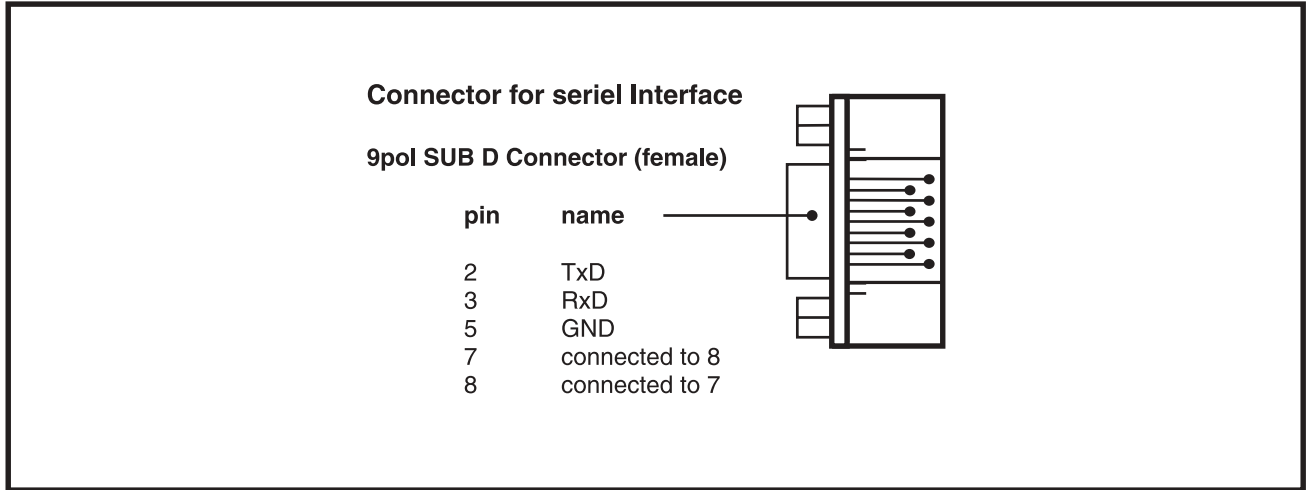
Use a straight Ethernet cable to connect the Ethernet Prototyping Board to a hub or a switch.

To directly connect two Ethernet Prototyping Boards or directly connect the Ethernet Prototyping Board to a PC use a crosslinked cable.

Ethernet Prototyping Board



Connector for serial interface SER1



SER1:

Connect the Ethernet Prototyping Board to a PC for running the TINY Tiger in PC mode or for data transfer at the serial Port SER1 with a straight 9 pole RS232 cable.

SER0:

The serial PORT 0 is not implemented on the board.

Pinning:

2 - TXD (output)

Data transmit line of the TINY Tiger
The outgoing data from the Ethernet Prototyping Board are transmitted here.

3 - RxD (input)

Data receive line of the TINY Tiger
The incoming data to the Ethernet Prototyping Board are received here.

5 - GND

System ground

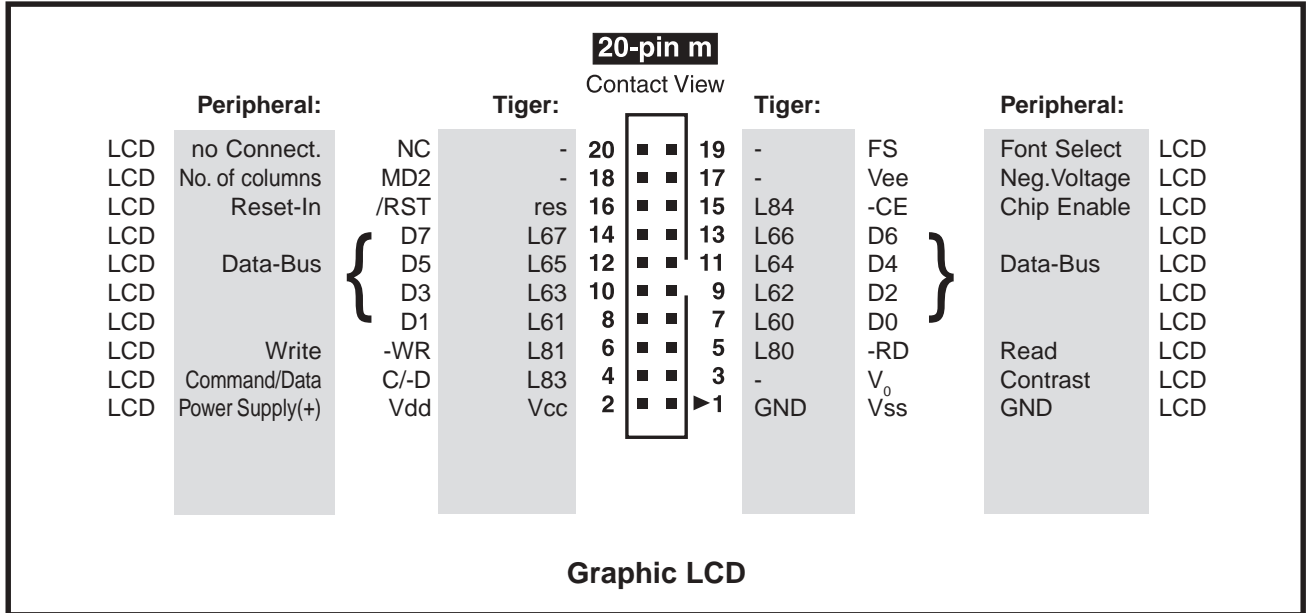
7 and 8

Pin 7 and 8 are tied together to loop back an incoming handshake signal (RTS / CTS)

Ethernet Prototyping Board



Connector for graphical LC display



With this connector a graphical LC display (Type PG-240128A) can be connected to the Ethernet Prototyping Board.

- LCD type:** 240 x 128 pixel, T6963C Controller
- Selection pins:** The displays Font Select (Pin 19) is by default set to low. The displays Number of Columns Select (Pin 18) is by default set to high.
- LCD backlight:** Is activated by connecting power to the separate "Power connector for backlight of LC display" on the Ethernet Prototyping Board.
- LCD contrast:** Set by adjusting the LCD contrast potentiometer on the Ethernet Prototyping Board.
- LCD reset:** LC display reset is low active, two re-

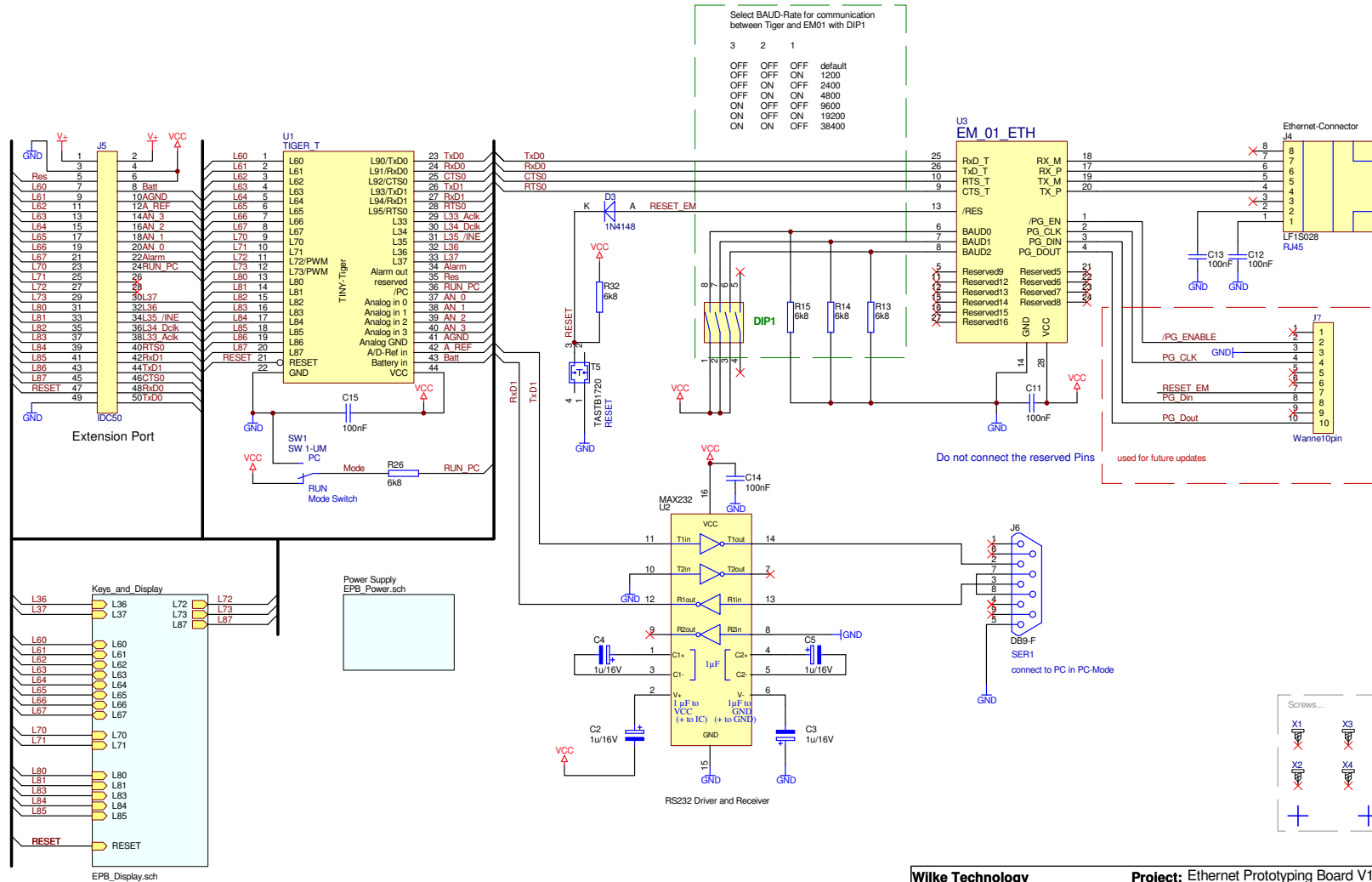
set sources are combined (AND):
 - RESET (System reset)
 - Tiger output pin L85
 so that the LCD is resetted at power-up and by system reset, as well as by explicitly setting Tiger pin P85 to low.

LCD bus lines:

Data bus:	
Data I/O	D0 L60

	D7 L67
Control bus:	
Read	-RD L80
Write	-WR L81
Command / Data	C/-D L83
Chip Enable	-CE L84
Reset-In	/RST L85
	and
	-Reset

Ethernet Prototyping Board V1.1



Wilke Technology		Project: Ethernet Prototyping Board V1.1	
Project No.: P:ETHERNET_Web_Adapter/Prototyping_Board/PCB/V1.1/Protel_Source/EPB_V1.1.dtb - Documents/EPB_Main.Sch	PCB No.: 03.1200.V1.1	Sheet 1 of 3	
Date: 01.Jul.2003 05.Aug.2003	Revision: V1.0 V1.1	Design: Andreas Kupper Andreas Kupper	test/final Changes documented in: P:ETHERNET_Web_Adapter/Prototyping_Board/PCB/History_EPB.doc P:ETHERNET_Web_Adapter/Prototyping_Board/PCB/History_EPB.doc

