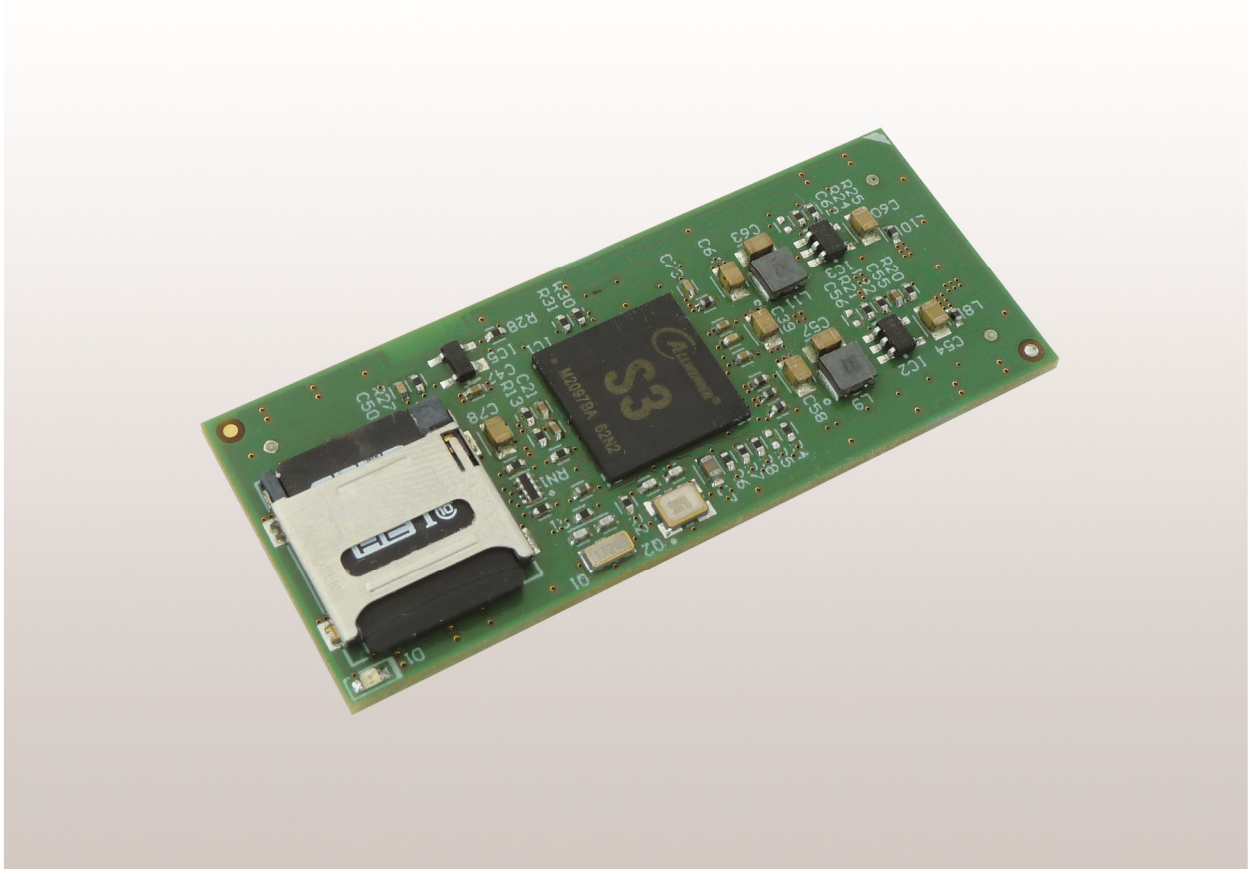


DIL/NetPC DNP/8331

Board Revision 1.0

Hardware Reference



SSV Embedded Systems

Dünenweg 5
D-30419 Hannover
Phone: +49 (0)511/40 000-0
Fax: +49 (0)511/40 000-40
E-mail: sales@ssv-embedded.de

Document Revision: 1.0
Date: 2022-04-04

CONTENT

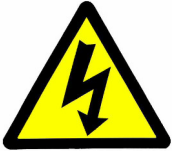
| | | |
|----------|---|-----------|
| 1 | INTRODUCTION | 3 |
| 1.1 | Safety Guidelines | 3 |
| 1.2 | Conventions | 3 |
| 1.3 | Block Diagram | 4 |
| 1.4 | Features and Technical Data | 5 |
| 2 | PINOUTS | 7 |
| 3.1 | DIL-40 Connector – J1 | 7 |
| 3.2 | DIL-40 Connector Function Multiplexing..... | 8 |
| 3 | MECHANICAL DIMENSIONS..... | 9 |
| 4 | HELPFUL LITERATURE | 10 |
| | CONTACT | 10 |
| | DOCUMENT HISTORY | 10 |

1 INTRODUCTION

This document describes the basic hardware components of the DIL/NetPC DNP/8331.

1.1 Safety Guidelines

Please read the following safety guidelines carefully! In case of property or personal damage by not paying attention to this document and/or by incorrect handling, we do not assume liability. In such cases any warranty claim expires.



ATTENTION!

Observe precautions for handling – electrostatic sensitive device!

- The installation of the device should be done only by qualified personnel.
- Discharge yourself before you work with the device, e.g. by touching a heater of metal, to avoid damages.
- Stay grounded while working with the device to avoid damage through electrostatic discharge.

1.2 Conventions

| Convention | Usage |
|------------------------|--|
| bold | Important terms |
| <code>monospace</code> | Pathnames, filenames, command lines and program code |

Table 1: Conventions used in this Document

1.3 Block Diagram

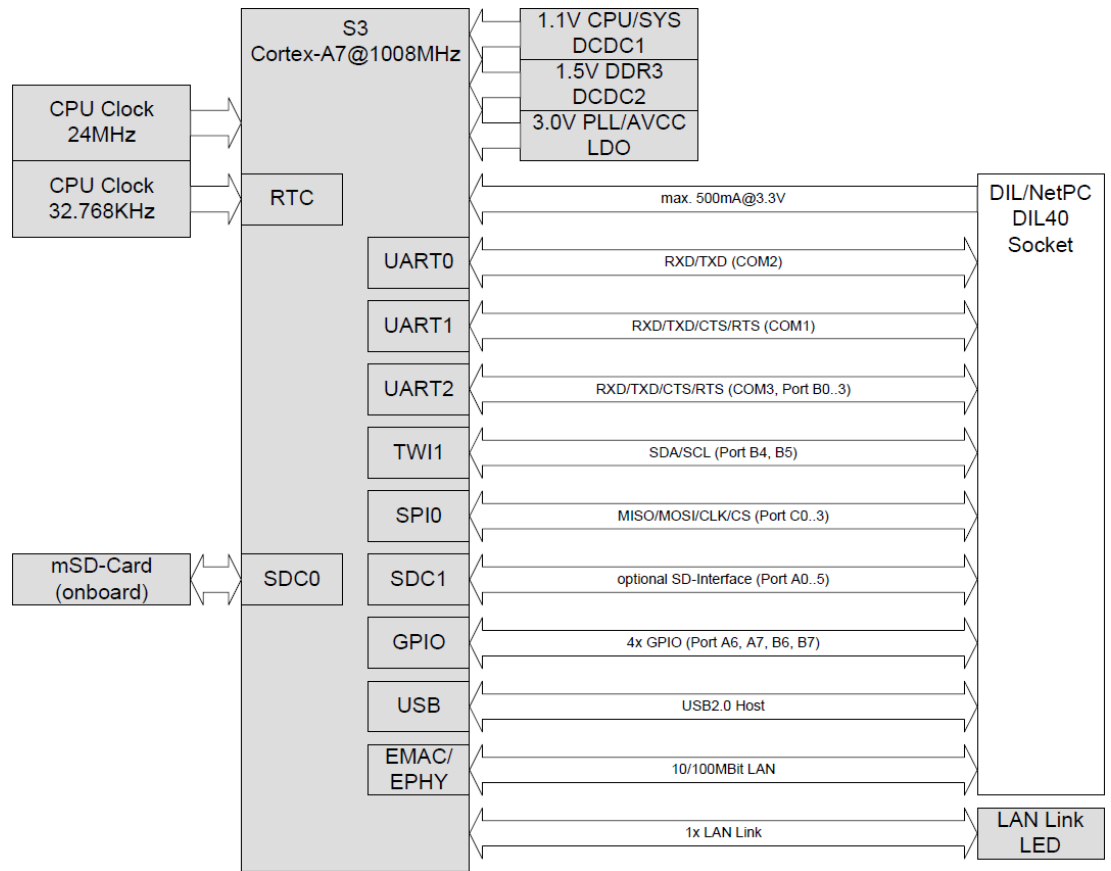
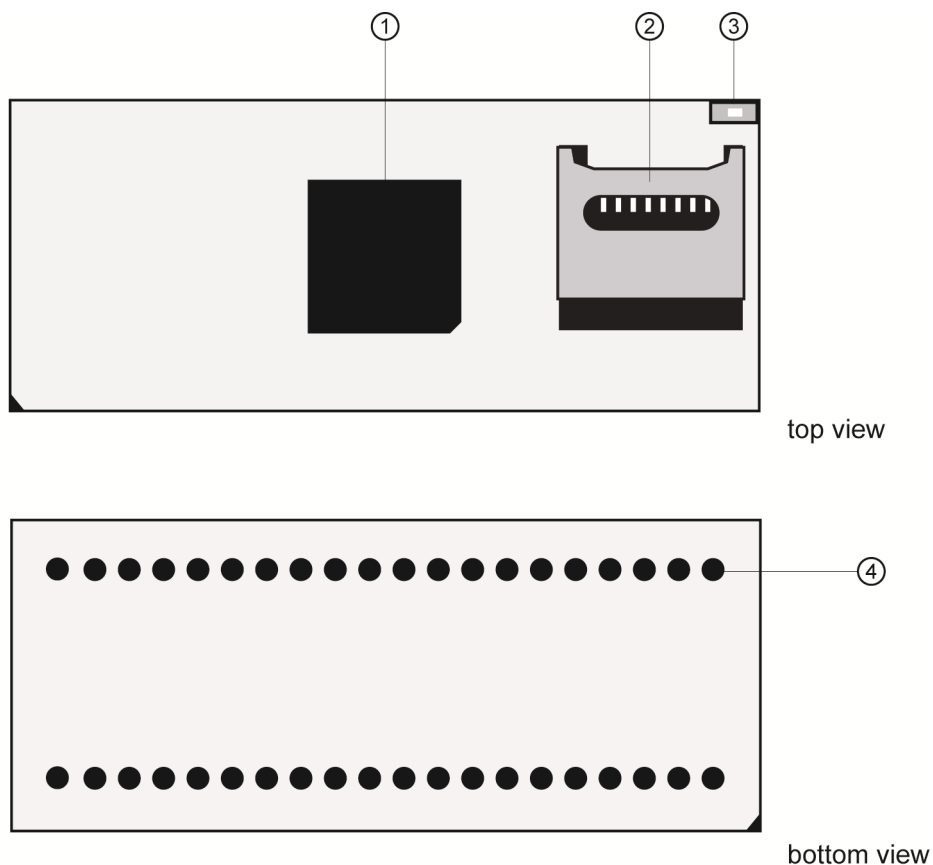


Figure 1: Block diagram of DIL/NetPC DNP/8331

1.4 Features and Technical Data

| Processor | |
|-------------------------------------|--|
| Manufacturer / Type | Sochip S3 with ARM Cortex-A7 CPU |
| Clock speed | 1008 MHz |
| Memory | |
| RAM | 128 MB DDR3 SDRAM |
| Storage media | 1x internal microSD card holder (with pre-installed microSD) |
| Interfaces | |
| Ethernet | 1x 10/100 Mbps |
| USB | 1x USB 2.0 host port with max. 480 Mbps |
| UART | 3x UART (COM1 with all hardware handshake signals, COM2 TX/RX only, COM3 TX/RX/RTS/CTS - functional OR with four GPIO signals) |
| SPI | 1x SPI master controller, functional OR with four GPIO signals |
| I2C | 1x I2C master controller, functional OR with two GPIO signals |
| GPIO | 20-bit GPIO (General Purpose Input Output) |
| Special Functions | |
| Watchdog | 1x Timer watchdog (hardware-based, software-configurable) 1x Power supervisor (hardware-based) |
| Displays / Control Elements | |
| LEDs | 1x LAN link LED |
| Software | |
| Boot loader | Preinstalled U Boot boot loader |
| Operating system | Preinstalled Linux operating system |
| Electrical Characteristics | |
| Supply voltage | 3.3 VDC \pm 5% |
| Supply current | 300 mA typical / 500 mA max. |
| Mechanical Characteristics | |
| Socket | 40 pin JEDEC DIL 40 connector, 2.54 mm centers (Pin-compatible to other SSV DIL-40 devices) |
| Mass | < 150 g |
| Dimensions | 55 mm x 23 mm |
| Operating temperature | 0 .. 70 °C |
| Standards and Certifications | |
| EMC | CE |
| Environmental standards | RoHS, WEEE |

Table 2: Features and technical data



- ① IC1: Sochip S3 with ARM Cortex-A7 CPU
- ② J2: microSD card hinge
- ③ D1: LAN LED
- ④ J1: DIL-40 connector

Figure 2: Board layout DIL/NetPC DNP/8331

2 PINOUTS

3.1 DIL-40 Connector – J1



Please note:

The arrangement of the signals in groups has compatibility reasons. Other products of SSV with DIL-40 pinout are fully or conditionally pin compatible to the DIL/NetPC DNP/8331 by observance of the corresponding application note.

| Pin | Name | Group | Function |
|-----|-------|-------|---------------------------------|
| 1 | PA0 | PIO | Parallel I/O, Port A, Bit 0 |
| 2 | PA1 | PIO | Parallel I/O, Port A, Bit 1 |
| 3 | PA2 | PIO | Parallel I/O, Port A, Bit 2 |
| 4 | PA3 | PIO | Parallel I/O, Port A, Bit 3 |
| 5 | PA4 | PIO | Parallel I/O, Port A, Bit 4 |
| 6 | PA5 | PIO | Parallel I/O, Port A, Bit 5 |
| 7 | PA6 | PIO | Parallel I/O, Port A, Bit 6 |
| 8 | PA7 | PIO | Parallel I/O, Port A, Bit 7 |
| 9 | PB0 | PIO | Parallel I/O, Port B, Bit 0 |
| 10 | PB1 | PIO | Parallel I/O, Port B, Bit 1 |
| 11 | PB2 | PIO | Parallel I/O, Port B, Bit 2 |
| 12 | PB3 | PIO | Parallel I/O, Port B, Bit 3 |
| 13 | PB4 | PIO | Parallel I/O, Port B, Bit 4 |
| 14 | PB5 | PIO | Parallel I/O, Port B, Bit 5 |
| 15 | PB6 | PIO | Parallel I/O, Port B, Bit 6 |
| 16 | PB7 | PIO | Parallel I/O, Port B, Bit 7 |
| 17 | RESIN | RESET | Reset Input (Low Active) |
| 18 | HDMA | USB | USB Host Port - |
| 19 | HDPA | USB | USB Host Port + |
| 20 | GND | --- | Ground |
| 21 | RCM | --- | RCM (Remote Console Mode) Input |
| 22 | TX+ | LAN | 10/100 Mbps LAN, TX+ Pin |
| 23 | TX- | LAN | 10/100 Mbps LAN, TX- Pin |
| 24 | RX+ | LAN | 10/100 Mbps LAN, RX+ Pin |
| 25 | RX- | LAN | 10/100 Mbps LAN, RX- Pin |
| 26 | TXD2 | SIO | COM2 Serial Port, TXD Pin |
| 27 | RXD2 | SIO | COM2 Serial Port, RXD Pin |
| 28 | RI1 | SIO | COM1 Serial Port, RI Pin |
| 29 | DTR1 | SIO | COM1 Serial Port, DTR Pin |
| 30 | DSR1 | SIO | COM1 Serial Port, DSR Pin |

Table 3: Pinout DIL-40 connector part 1

| Pin | Name | Group | Function |
|-----|------|-------|-----------------------------|
| 31 | DCD1 | SIO | COM1 Serial Port, DCD Pin |
| 32 | RTS1 | SIO | COM1 Serial Port, RTS Pin |
| 33 | CTS1 | SIO | COM1 Serial Port, CTS Pin |
| 34 | TXD1 | SIO | COM1 Serial Port, TXD Pin |
| 35 | RXD1 | SIO | COM1 Serial Port, RXD Pin |
| 36 | PC0 | PIO | Parallel I/O, Port C, Bit 0 |
| 37 | PC1 | PIO | Parallel I/O, Port C, Bit 1 |
| 38 | PC2 | PIO | Parallel I/O, Port C, Bit 2 |
| 39 | PC3 | PIO | Parallel I/O, Port C, Bit 3 |
| 40 | VCC | --- | 3.3 Volt Power Input |

Table 4: Pinout DIL-40 connector part 2

3.2 DIL-40 Connector Function Multiplexing

Some pins of the DIL-40 connector of the DNP/8331 have multiple meanings. The pins have a main and an alternate function (function multiplexing).

The main functions correspond with the standard pinout of the DIL-40 connector as shown in **table 2**. The alternate functions are shown in **table 3** below.

| Pin | Name | Main Function | SoC Signal Name | Alternate SoC Function |
|-----|------|-----------------------------|-----------------|------------------------|
| 1 | PA0 | Parallel I/O, Port A, Bit 0 | PG0 (SDC1_CLK) | SD Card Clock |
| 2 | PA1 | Parallel I/O, Port A, Bit 1 | PG1 (SDC1_CMD) | SD Card Command |
| 3 | PA2 | Parallel I/O, Port A, Bit 2 | PG2 (SDC1_D0) | SD Card Data Bit 0 |
| 4 | PA3 | Parallel I/O, Port A, Bit 3 | PG3 (SDC1_D1) | SD Card Data Bit 1 |
| 5 | PA4 | Parallel I/O, Port A, Bit 4 | PG4 (SDC1_D2) | SD Card Data Bit 2 |
| 6 | PA5 | Parallel I/O, Port A, Bit 5 | PG5 (SDC1_D3) | SD Card Data Bit 3 |
| 7 | PA6 | Parallel I/O, Port A, Bit 6 | PE23 | --- |
| 8 | PA7 | Parallel I/O, Port A, Bit 7 | PE24 | --- |
| 9 | PB0 | Parallel I/O, Port B, Bit 0 | PB0 (UART2_TX) | COM3 Serial Port, TXD |
| 10 | PB1 | Parallel I/O, Port B, Bit 1 | PB1 (UART2_RX) | COM3 Serial Port, RXD |
| 11 | PB2 | Parallel I/O, Port B, Bit 2 | PB2 (UART2_RTS) | COM3 Serial Port, RTS |
| 12 | PB3 | Parallel I/O, Port B, Bit 3 | PB3 (UART2_CTS) | COM3 Serial Port, CTS |
| 13 | PB4 | Parallel I/O, Port B, Bit 4 | PE21 (TWI1_CLK) | I2C Clock |
| 14 | PB5 | Parallel I/O, Port B, Bit 5 | PE22 (TWI1_SDA) | I2C Data |
| 15 | PB6 | Parallel I/O, Port B, Bit 6 | PB4 | --- |
| 16 | PB7 | Parallel I/O, Port B, Bit 7 | PB5 | --- |
| 36 | PC0 | Parallel I/O, Port C, Bit 0 | PC3 (SPI0_MOSI) | SPI MOSI |
| 37 | PC1 | Parallel I/O, Port C, Bit 1 | PC0 (SPI0_MISO) | SPI MISO |
| 38 | PC2 | Parallel I/O, Port C, Bit 2 | PC1 (SPI0_CLK) | SPI Clock |
| 39 | PC3 | Parallel I/O, Port C, Bit 3 | PC2 (SPI0_CS0) | SPI Chip Select 0 |

Table 5: DNP/8331 function multiplexing

3 MECHANICAL DIMENSIONS

All length dimensions have a tolerance of 0.5 mm.

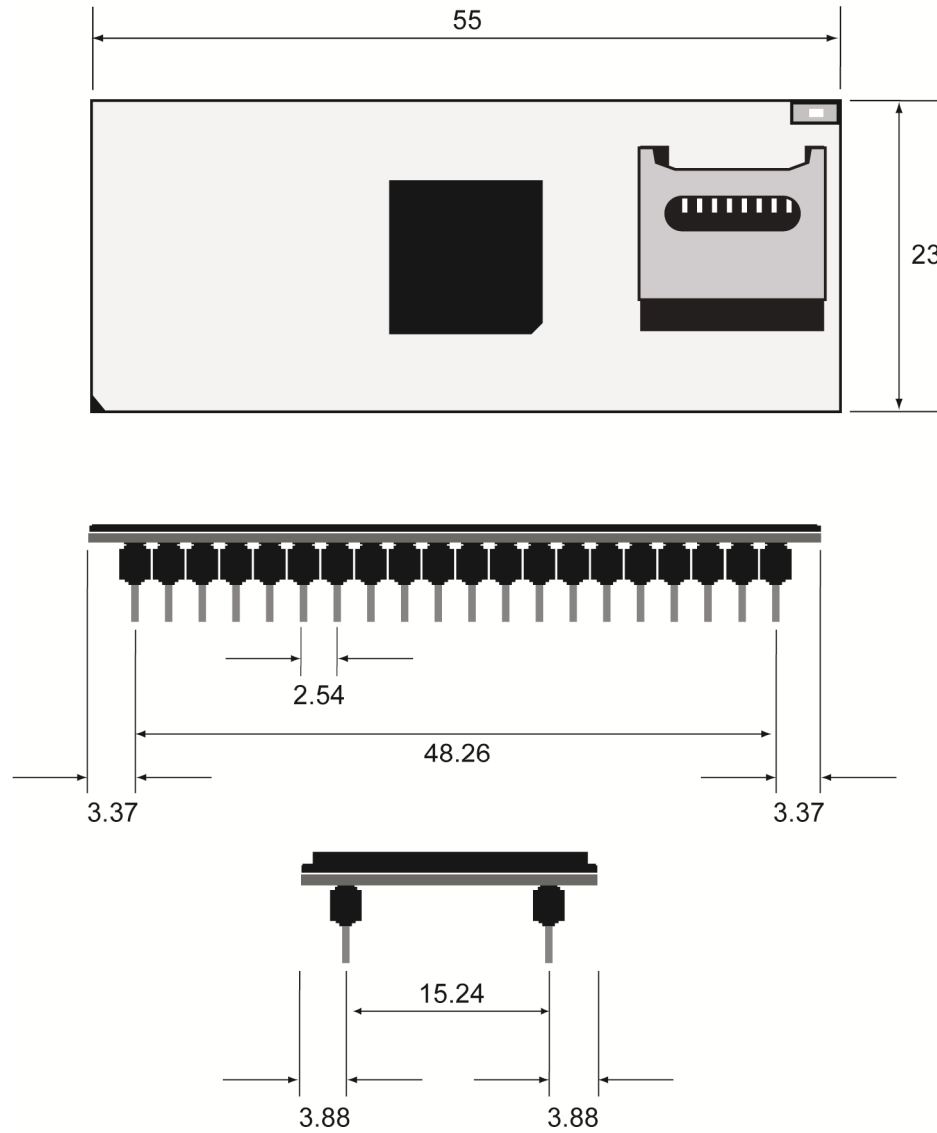


Figure 3: Mechanical dimensions of DIL/NetPC DNP/8331

4 HELPFUL LITERATURE

- Sochip S3 datasheet

CONTACT

SSV Software Systems GmbH

Dünenweg 5
D-30419 Hannover

Phone: +49 (0)511/40 000-0
Fax: +49 (0)511/40 000-40
E-mail: sales@ssv-embedded.de

Internet: www.ssv-embedded.de
Forum: www.ssv-comm.de/forum
LinkedIn: www.linkedin.com/company/ssv-software-systems

DOCUMENT HISTORY

| Revision | Date | Remarks | Name | Review |
|----------|------------|---------------|------|--------|
| 1.0 | 2022-04-04 | first version | WBU | SSC |

The content of this document can change any time without announcement. There is taken over no guarantee for the accuracy of the statements. The user assumes the entire risk as to the accuracy and the use of this document. Information in this document is provided 'as is' without warranty of any kind. Some names within this document can be trademarks of their respective holders.

© 2022 SSV SOFTWARE SYSTEMS GmbH. All rights reserved.