Hardware Documentation

Power supply
ADP-NT24V3
for HW Revision 1.00

Version 001
(2025-10-27)

Elektronik Systeme

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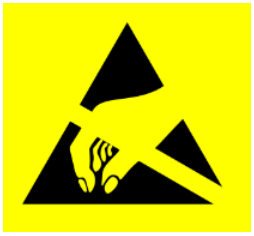
About This Document

This document describes how to use the adapter board ADP-NT24V3, with mechanical and electrical information. The latest version of this document can be found at: http://www.fs-net.de.

ESD Requirements



All F&S hardware products are electrostatic sensitive devices. All products are handled and packaged according to ESD guidelines. Please do not handle or store ESD-sensitive material in ESD-unsafe environments. Negligent handling will harm the product and warranty claims become void.

History

Date	V	Platform	A,M,R	Chapter	Description	Au
18.02.24	001	All		-	Initial Version	SM
27.10.25	002	All	M	-	Final Version, typo	SM

V	Version
A, M, R	Added, Modified, Removed
Au	Author

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1 Mechanical Characteristics

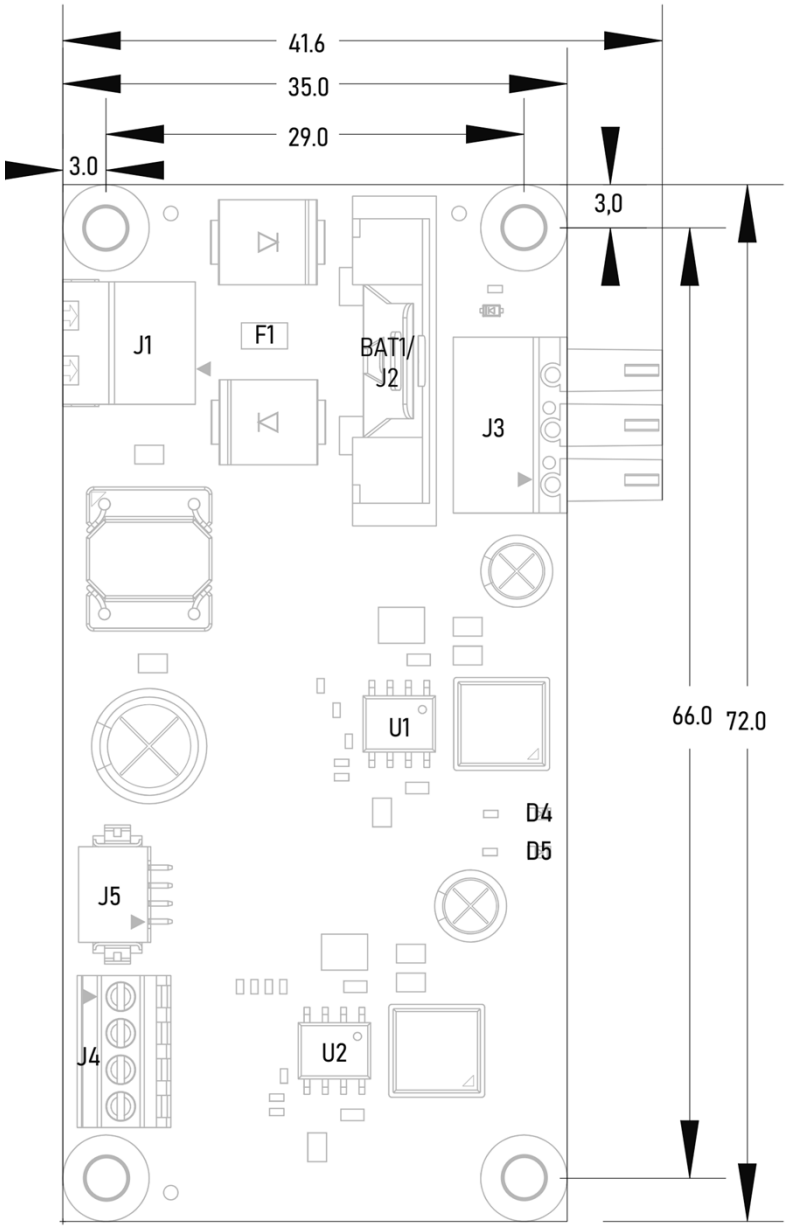

Figure 1: Top side, all dimensions in mm; Pin1 marked with a triangle

Dimensions	Description
PCB Thickness	1.60mm ± 0.16mm
Max. part height on top side	18.40mm ± 0.20mm (25mm with Battery Cell)
Weight	≈24.00g (excl. Battery cell)
Mounting holes diameter	3.20mm

Table 1: Mechanical Dimensions

2 Connectors

Ref.	Description	Connector Type	Pin Layout
J1	Input – Power	Würth WR-TBL Series 322 2-pins	1) POWER 2) GND
BAT1	Input – VBAT	MPD BS-05 (for CR2032 battery)	-
J2	Input – VBAT (optional)	1x2 Pin Header RM: 2.54mm	1) VBAT 2) GND
J3	Output – Module	Würth WR-TBL Series 3093 3-pins	1) GND 2) POWER 3) VBAT
J4	Output – Backlight	Würth WR-TBL Series 2109 4-pins AWG 30 to18	1) BL_CONTROL 2) BACKLIGHT_ON 3) POWER 4) GND
J5	Input – Backlight Control	Hirose DP13 4-pins	1) NC 2) BACKLIGHT_ON 3) BL_CONTROL 4) GND

Table 2: Connector List and Pin Layouts

3 Electrical Characteristics

Parameter	Description	Min.	Typ.	Max.	Unit
V_{IN}	Power supply input voltage	7.50	24.00	36.00	V
P_{IN}	Power consumption under maximum load conditions	-	-	36	W
V_{BAT}	RTC supply voltage	2.20	3.00	3.45	V
V_{OUT_J3}	Module supply voltage output	4.75	5.00	5.25	V
V_{OUT_J4}	Backlight supply voltage output	4.75	5.00[1]	5.25	V
I_{OUT_J3}	Load current	-	-	3.00[2]	A
I_{OUT_J4}	Load current	-	-	3.00[2]	A
T	Working temperature	-25		+85	°C

[1]: Changeable, if needed for other backlight voltages. Please contact F&S Support for further information

[2]: Maximum 3A for continuous load current, 3.60A for short-time peaks

Table 3: Recommended Operation Conditions

4 Detailed Description

4.1 General

The adapter can supply a suitable F&S module and a display backlight out of one source. For simple integration, the adapter can be connected directly (see Fig. 2). A battery socket for a Real Time Clock (RTC), is provided additionally.

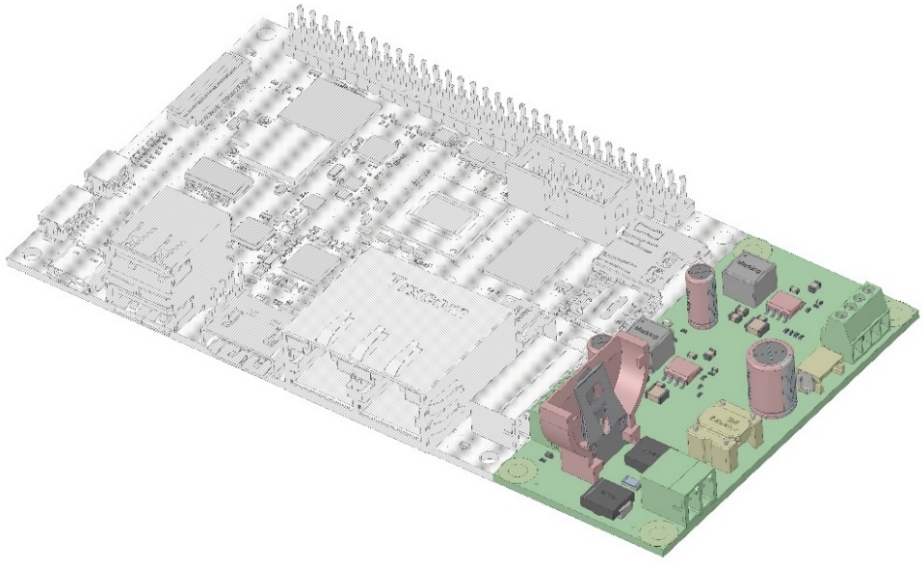

Figure 2: ADP-NT24V3 (highlighted) mounted on a armStone™MX8MP (shaded)

4.2 Power Input

The power input is protected against polarity reversal, overvoltage and overcurrent.
If triggered, replace F1 with a 5A slow type fuse (size 1206).
A matching connector can be purchased at F&S (Article No.: B.MBU.1R2PS.4).

4.3 RTC Supply VBAT

For the RTC supply, a CR2032 battery can be attached into the socket BAT1. A pin header (J2) can be assembled instead of the battery socket.

4.4 Backlight Supply & Control Bypass

The adapter delivers the supply voltage for display backlights at connector J4. Additionally, two backlight control signals can be bypassed from connector J5 to connector J4 (see Table 2).

4.5 LED Indicator

Ref	Description
D4	Module voltage available
D5	Backlight voltage available

Table 4: LED Indicator

5 ESD and EMI Implementation

On the ADP-NT24V3 adapter board there is an ESD protection diode for 24V input connector. The other connectors do not have any protection. The inputs and outputs of the power circuits were widely filtered in order to reduce the EMI. We highly recommend using the adapter board with wires as short as possible.

6 Second source rules

F&S qualifies their second sources for parts autonomously, as long as this does not touch the technical characteristics of the product. This is necessary to guarantee delivery times and product life. A setup of release samples with released second sources is not possible.
F&S does not use broker components without the consent of the customer.

7 Storage conditions

Maximum storage on room temperature with non-condensing humidity:	6 months
Maximum storage on controlled conditions 25 ±5 °C, max. 60% humidity:	12 months

For longer storage, we recommend vacuum dry packs.

8 ROHS and REACH statement

All F&S designs are created from lead-free components and are completely ROHS compliant. The products we supply do not contain any substance on the latest candidate list published by the European Chemicals Agency according to Article 59(1,10) of Regulation (EC) 1907/2006 (REACH) in a concentration above 0.1 mass %.
Consequently, the obligations in No. 1 and 2 paragraphs in Annex are not relevant here.
Please understand that F&S is not performing any chemical analysis on its products to testify REACH compliance and is therefore not able to fill out any detailed inquiry forms.

9 Packaging

All F&S ESD-sensitive products will shipping either in trays or in bags.

10 Matrix Code Sticker

All F&S hardware will ship with a matrix code sticker including the serial number. Enter your serial number here https://www.fs-net.de/en/support/serial-number-info-and-rma/ to get information on shipping date and type of board.

Figure 2: Matrix Code Sticker

11 Appendix

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