Value & Technology

NK1 Series PLC Manual

NK1-B4AD2DA-2 Function Board

[1st Edition]

KOYO ELECTRONICS (WUXI) CO., LTD.

Contents

Chapter 1 Preface

Thank you for purchasing our company's NK1 series PLC products!

This document is technical information about optional function boards NK1-B4AD2DA-2 used with NK1 series PLC. It mainly introduces the hardware specifications, hardware performance, software settings, external wiring of this function board. When using this technical information, please refer to other user manuals, instruction manuals and other materials related to NK1 in order to obtain comprehensive and complete usage information of the product.

It supports the installation of a backup lithium battery for calendar and clock, but the backup lithium battery is not provided at the factory. If you need backup lithium battery, please purchase separately. Model is RB-50.

For the installation and removal of the option function board, please refer to the relevant chapter in the NK1 User Manual.

Note: Only NK1-CPU40 * sub-series products support the installation of option function boards; NK1-CPU20 * sub-series and NK1L series products do not support the installation of option function boards.

When using our products, if you have any question, please contact our local offices or contact us directly.

Modification History

Name：NK1 Series PLC Optional Function Board Manual

No.	Data	Description of Changes
KEW-M2523A-2	2015.12	Original Edition

Note: KEW-M2523A-1: The document for **NK1-B08CDT1** board
KEW-M2523A-2: The document for **NK1-B4AD2DA-2** board

If you need to contact us about this manual, please first determine the version number of the manual!

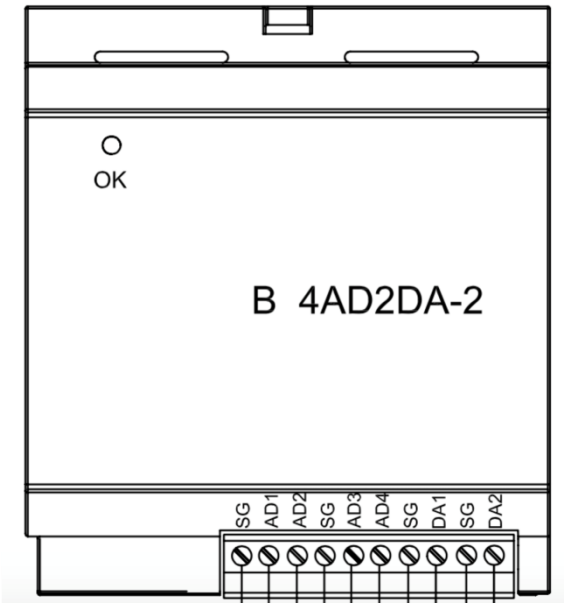
Chapter 2 NK1-B4AD2DA-2 Specifications

2.1 Introduction

NK1-B4AD2DA-2 is an analog voltage input /output optional function board for NK1 series PLC. The voltage range is 0-10V. The function board has 12-bit resolution. It has non-isolated 4 analog input channels and 2 analog output channels.

The main features of this optional function board are as follows:

- The resolution of analog input is 12 bit.
- The resolution of analog output is 12 bit.
- No external power supply required.
- With OK indicator (green),it will be on during normal work.



2.2 General Specifications

Item	Specifications
Dimensions(mm)	47.2L×53.0W ×18.69H
Weight	21g
Storage Temperature	-40～70 ℃
Operating Temperature	0～55 ℃
Relative Humidity	30%～95%(non-condensing)
Environmental Air	No corrosive gases permitted
Vibration/Shock	Same as NK1 main unit
Optional Battery (not included)	RB-50, for calendar & clock of main unit

2.3 Input Specifications

Number of Input Channels	4
Range	0-10V
Resolution	12 bit
Input Impedance	1MΩ ±5%
PLC Update Rate	4 input channels per scan
Conversion Method	Successive approximation
Isolation Type	None
Maximum Error	±0.3% of full scale

2.4 Output Specifications

Number of Output Channels	2
Range	0-10V
Resolution	12 bit
Load Impedance	Minimum 2000Ω
PLC Update Rate	2 output channels per scan
Isolation Type	None
Maximum Error	±1.0% of full scale

2.5 Wiring

2.5.1 Wiring Guidelines

Your company may have guidelines for wiring and cable installation. If so, check the guidelines before beginning the installation. Here are some general things to consider:

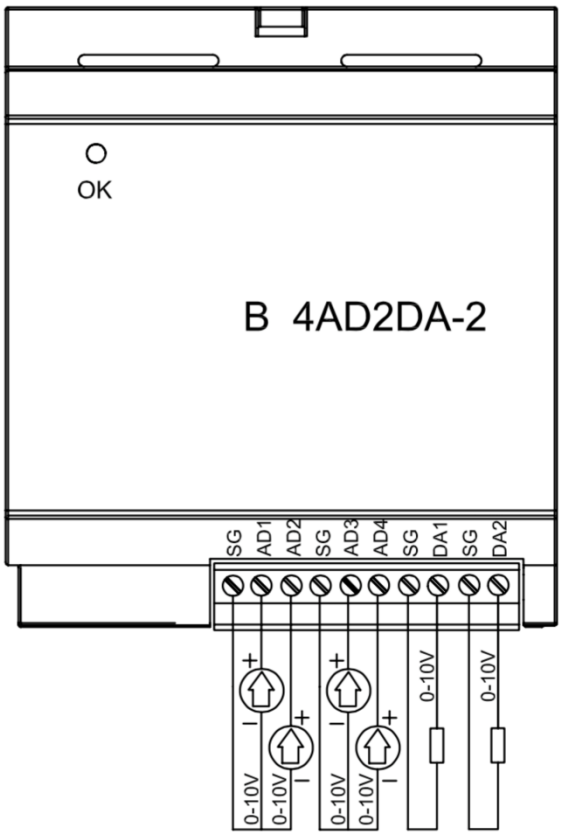
1、Use the shortest wiring route whenever possible.

2、Wire strictly according to the label on the terminal, do not mix the wires of different channels to avoid interference.

3、Do not run the signal wiring next to large motors, high current switches, or transformers. This may cause noise problems.

4、Users can choose the wiring method that suits them, but all wiring must meet the safety requirements to avoid accidental danger.

2.5.2 Wiring Diagram



Note:
1、Do not mix the wires of different channels to avoid interference.
2、Connect the unused ADn to SG to avoid interference.
3、All SG terminals are internally connected.

ADn represents input channels AD1, AD2, AD3, and AD4.

2.6 Registers Used by NK1-B4AD2DA-2

The use of the optional function board does not require any settings, as long as the unit is installed on the NK1 series PLC (for specific installation methods, please refer to the chapter about the optional function board in the "NK1 User Manual"), you can read or write the relevant registers directly through the program to implement the analog input and output functions. The registers used by this option function board are shown in the following table.

NK1-B4AD2DA-2 (0-10V)	Channel	Register
Analog Input	AD1	R37420
	AD2	R37421
	AD3	R37422
	AD4	R37423
Analog Output	DA1	R37424
	DA2	R37425

Note: After the optional function board is installed on the NK1 series PLC, the registers listed in the table above are provided for the exclusive use of the optional function board. Please do not use these registers for other purposes in the user system.

The option function board does not occupy the normal I / O points.

The following describes The registers used by the analog input / output of this option function board are described as follow.

2.6.1 Analog Input Registers

This optional function board has 4 analog input channels. Each channel has its designated R register to store the digital conversion data (HEX) of the analog voltage value from the corresponding input terminal. The input registers corresponding to its input channels: AD1 - R37420, AD2 - R37421, AD3 - R37422, and AD4 - R37423. The format of the conversion data is as follows:

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	*	*	*	*	*	*	*	*	*	*	*	*

The range of conversion data is 0 ~ 0x0FFF.

Note: Please do not apply voltage signals other than 0-10V to the input terminal of this function board, otherwise the option function board and NK1 series PLC main unit may be damaged.

2.6.2 Analog Output Registers

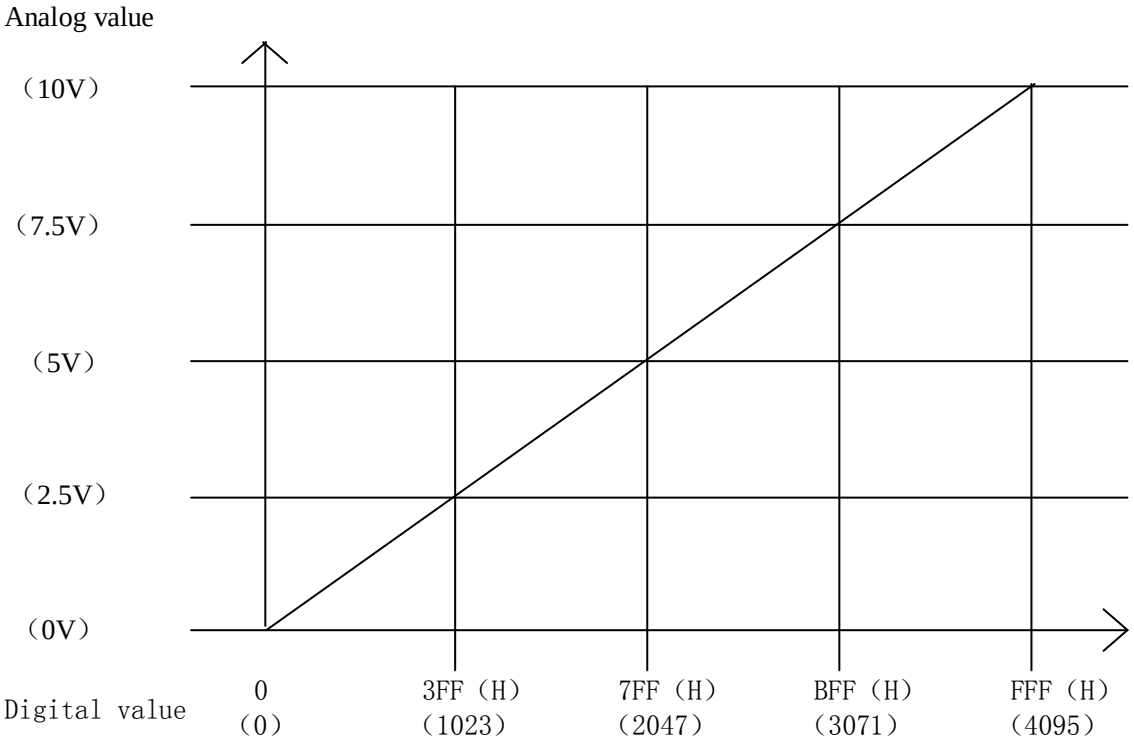
This option function board has 2 analog output channels, and each analog output channel has its designated R register for setting the analog value (HEX) . When a value is set in this register, this function board automatically outputs a 0-10V voltage signal corresponding to the set value at the corresponding analog output terminal.

The setting registers corresponding to the output channels: DA1 - R37424 and DA2 - R37425. The format of its analog output setting data is as follows:

bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
					*	*	*	*	*	*	*	*	*	*	*	*

Note: The valid setting range of the output analog data is 0 ~ 0xFFF; if the setting data is greater than 0xFFF, the system automatically intercepts the valid part of the setting value.

2.6.3 Module Resolution



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