NuDAM®

ND-6067 AC Relay

Output Module

User's Manual



Recycled Paper

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How to Use This Guide

This manual is designed to assist users in understanding the NuDAM® 6067 AC Relay.

Chapter 1 **Introduction**
Overview of product features, applications, and specifications.

Chapter 2 **Getting Started**
Lists the equipment required for installation as well as illustrating connector pin assignments.

Chapter 3 **Installation**
Describes setup and installation.

Chapter 4 **Command Set**
Describes the different commands and functions used.

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Introduction

The NuDAM-6067 provides eight relay output channels and can control high power devices without external circuits. Channel isolation on each channel guarantees industrial safety.

1.1 Features

- 8 channel relay output
- Programmable power on output state
- Programmable output polarity setting
- Programmable host watchdog timer for host failure protection
- Internal watchdog timer for device failure protection
- Easy programming by software
- Easy installation and wiring

1.2 Specifications

- Interface: RS-485, 2 wires
- Speed (bps): 600, 1200, 2400, 4800, 9600, 19.2k, 38.4k, 57.6k, 115.2k
- Output: AC POWER RELAY
- Number of channels: 8
- Contact rating: AC 3A/250V,DC 3A/30V
- Operate time: Approx. 6ms
- Release time: Approx. 3ms
- Insulation resistance: 1000 MΩ minimum (at 500VDC)
- Operating Temperature Range: -40 to 40 °C
- Power Requirement: +10V to +30V_{DC} Unregulated with power reversal protection

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- Power Consumption: 120mW
- Case: ABS with captive mounting hardware
- Safety or Certificate : FCC Class A, CE Class A, EN 61010-1

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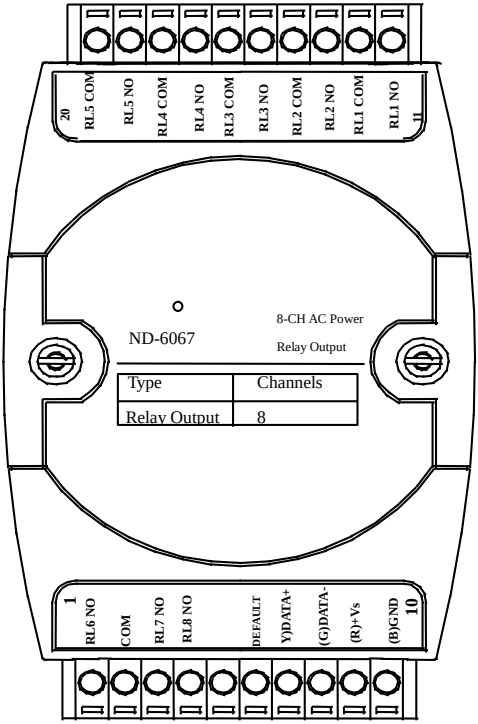
Getting Started

2.1 Equipment required for installation

- An existing RS-485 network
- NuDAM® modules
- DC Power supply (+10V to +30V)
- Wires for power, communication and I/O signals.

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2.2 Pin Assignment



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2.3 Pin Definitions

Pin #	Signal Name	Description
1	RL6 NO	Relay 6, normal open
2	RL6 7 8COM	Relay 6, 7, 8, common
3	RL7 NO	Relay 7, normal open
4	RL8 NO	Relay 8, normal open
5	NC	No connection
6	DEFAULT*/	Initial state setting
7	(Y)DATA+	RS-485 signal, positive
8	(G)DATA-	RS-485 signal, negative
9	(R)+VS	Power supply, +10V to +30Vdc
10	(B)GND	Ground
11	RL1 NO	Relay 1, normal open
12	RL1 COM	Relay 1, common
13	RL2 NO	Relay 2, normal open
14	RL2 COM	Relay 2, common
15	RL3 NO	Relay 3, normal open
16	RL3 COM	Relay 3, common
17	RL4 NO	Relay 4, normal open
18	RL4 COM	Relay 4, common
19	RL5 NO	Relay 5, normal open
20	RL5 COM	Relay 5, common

This module is in DEFAULT mode when the DEFAULT pin is connected to GND while power is applied to the unit.

*Do **not** apply any power signals to the DEFAULT* pin, either connect it to GND or leave it open.

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Installation

Installation Procedure

1. Configure all NuDAM® modules using the administration utility before installation.
2. The baud rate setting and calibration procedure must be done under the DEFAULT* mode.
3. The baud rate and check-sum status must be identical to the application network. The address ID must not conflict with other modules in the network.
4. Plug the new module into the existing network.
5. Use the NuDAM administration utility to check the entire network.

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Command Set

There are three categories of NuDAM® commands. The first type are the ***general commands***, which includes: set configuration command, read configuration, reset, read module's name, and firmware version. All NuDAM® modules response to the general commands. The second are the ***functional commands***, which depend on the functions of the module. The third are the ***special commands*** including functions for programming the watchdog timer, safe values, and the programmable leading code. All commands used in the NuDAM® analog input module are listed in the following table.

Command	Syntax
General Command	
Set Configuration	**%(OldAddr)(NewAddr)(InputRange)(BaudRate)(DataFormat)**
Read Configuration	**$(Addr)2**
Read Module Name	**$(Addr)M**
Read Firmware Version	**$(Addr)F**
Software Reset	**$(Addr)RS**
Reset Status	**$(Addr)5**

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Functional Command	
Read Digital Output Status	**$(Addr)6**
Digital Output	**#(Addr)(ChannelNo)(OutData)**
Special Command	
Read Command Leading Code Setting	**~(Addr)0**
Change Command Leading Code Setting	**~(Addr)10(C1)(C2)(C3)(C4)(C5)(C6)**
Set Host Watchdog / Safety Value	**~(Addr)2(Flag)(TimeOut)(SafeValue)**
Read Host WatchDog / Safe Value	**~(Addr)3**
Host is OK	**~****
I/O Polarity Setting	**~(Addr)CP(State)**
Read Polarity Setting	**~(Addr)CR**

* The module accepts calibration command, baud rate, and checksum configuration setting under the DEFAULT* mode.

* Please refer to the manual in PDF file format in the CD for detail description of these commands.

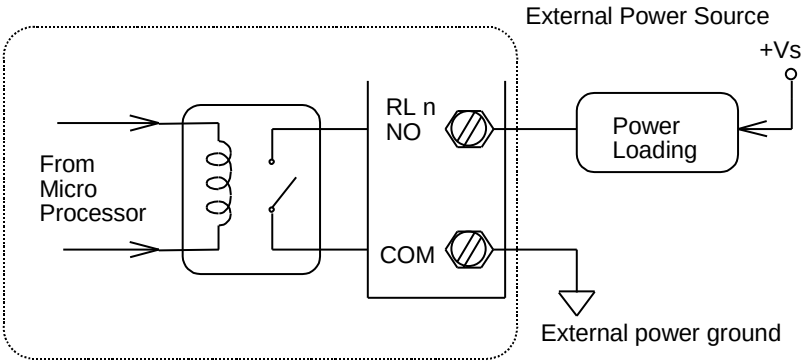
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Appendix A

Application Wiring

Form A Relay Output



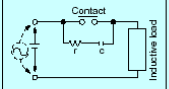
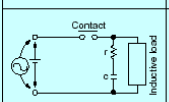
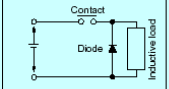
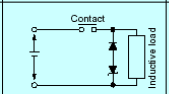
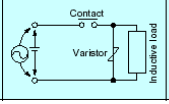
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Appendix B

Contact Protection Circuit

Using a contact protective device or a protection circuit can lower the counter emf level. However if these are used incorrectly, an adverse effect may result.

Typical contact protection circuits are given in the table below.

Circuit		Application AC	Application DC	Features/Others	Devices Selection
CR circuit		*	G	If the load is a timer, leakage current flows through the CR circuit causing faulty operation. * If used with AC voltage, be sure the impedance of the load is sufficiently smaller than that of the CR circuit	As a guide in selecting r and c, r: 0.5 to 1Ω per 1V contact voltage c: 0.5 to 1μF per 1A contact current Values vary depending on the properties of the load and variations in relay characteristics. Capacitor c acts to suppress the discharge the moment the contacts open. Resistor r acts to limit the current when the power is turned on the next time. Test to confirm. Use a capacitor with a breakdown voltage of 200 to 300V. Use AC type capacitors (non-polarized) for AC circuits.
		G	G	If the load is a relay or solenoid, the release time lengthens. Effective when connected to both contacts if the power supply voltage is 24 or 48V and the voltage across the load is 100 to 200V.	
Diode circuit		NG	G	The diode connected in parallel causes the energy stored in the coil to flow to the coil in the form of current and dissipates it as joule heat at the resistance component of the inductive load. This circuit further delays the release time compared to the CR circuit. (2 to 5 times the release time listed in the catalog)	Use a diode with a reverse breakdown voltage at least 10 times the circuit voltage and a forward current at least as large as the load current. In electronic circuits where the circuit voltages are not so high, a diode can be used with a reverse breakdown voltage of about 2 to 3 times the power supply voltage.
Diode and zener diode circuit		NG	G	Effective when the release time in the diode circuit is too long.	Use a zener diode with a zener voltage about the same as the power supply voltage.
Varistor circuit		G	G	Using the stable voltage characteristics of the varistor, this circuit prevents excessively high voltages from being applied across the contacts. This circuit also slightly delays the release time. Effective when connected to both contacts if the power supply voltage is 24 or 48V and the voltage across the load is 100 to 200V.	———

G = Good

NG= Not Good

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Warranty Policy

Thank you for choosing ADLINK. To understand your rights and enjoy all the after-sales services we offer, please read the following carefully:

1. Before using ADLINK's products please read the user manual and follow the instructions exactly.
2. When sending in damaged products for repair, please attach an RMA application form.
3. All ADLINK products come with a two-year guarantee, repaired free of charge.
   - The warranty period starts from the product's shipment date from ADLINK's factory.
   - Peripherals and third-party products not manufactured by ADLINK will be covered by the original manufacturers' warranty.
   - End users requiring maintenance services should contact their local dealers. Local warranty conditions will depend on local dealers.
4. This warranty will not cover repair costs due to:

- Damage caused by not following instructions.
- Damage caused by carelessness on the users' part during product transportation.
- Damage caused by fire, earthquakes, floods, lightening, pollution, other acts of God, and/or incorrect usage of voltage transformers.
- Damage caused by unsuitable storage environments (i.e. high temperatures, high humidity, or volatile chemicals.
- Damage caused by leakage of battery fluid.
- Damage from improper repair by unauthorized technicians.
- Products with altered and/or damaged serial numbers.
- Other categories not protected under our guarantees.

5. Customers are responsible for shipping costs to transport damaged products to our company or sales office.
6. To ensure the speed and quality of product repair, please download a RMA application form from our company website: www.adlinktech.com. Damaged products with attached RMA forms receive priority.

For further questions, please contact our FAE staff.

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