NuDAM -6013 RTD Analog Input Module

1. Introduction

NuDAM-6013 is an RTD input module with 3 input channels. It supports 2, 3 or 4 wires RTD input device with engineering or ohm format display.

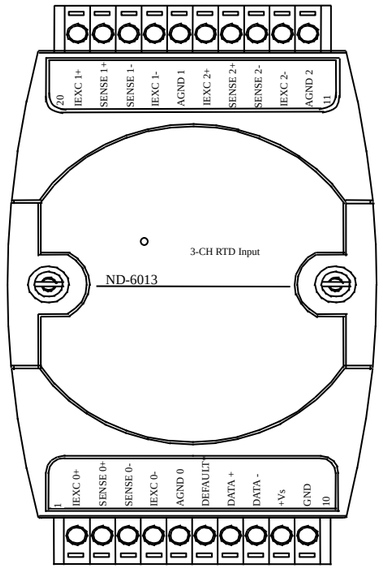
Features

- 3 RTD input channels
- 2, 3 or 4 wire RTD input support
- Programmable RTD input range
- Programmable host watchdog timer for host failure protection
- 2500 Vrms analog input isolation
- Internal watchdog timer for device failure protection
- Easy programming by software
- Easy installation and wiring
- RTD wiring open detection

Specifications

- Interface:
  RS-485, 2 wires
  Speed (bps): 600, 1200, 2400, 4800, 9600, 19.2k, 38.4k, 57.6k, 115.2k
- RTD Input:
  RTD type: Pt-100, Ni-100 or Ni-120 (2, 3 or 4 wires)
  Channels number: 3
  Resolution: 16 bits
  Unit conversion: °C or Ohm
  Sampling rate: 3
  Temperature range: programmable 4 levels:
  ±100°C, 0~100°C, 0~200°C, 0~600°C
  Isolation Voltage: 2500 Vrms
- Storage Temperature Range: -25 to 80 °C
- Operating Temperature Range: -10 to 70 °C
- Power Requirement: +10V to +30V_{DC} Unregulated with against power reversal
- Power Consumption: 1.5 W
- Case: ABS with captive mounting hardware
- CE Class A Conformity

2. Pin Assignment



Pin Definitions

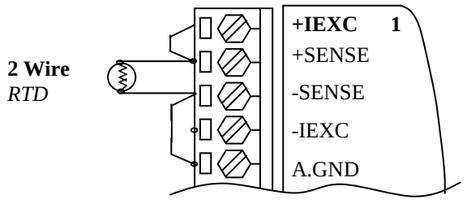
Pin #	Signal Name	Description
1	**+IEXC0**	Current source of CH0
2	+SENSE0	Differential positive input of CH0
3	-SENSE0	Differential negative input of CH0
4	-EXC0	Current source of CH0
5	AGND0	Analog signal ground of CH0
6	**DEFAULT***	Initial state setting
7	**(Y)DATA+**	RS-485 signal, positive
8	(G)DATA-	RS-485 signal, negative
9	(R)+VS	Power supply, +10V ~ +30Vdc
10	(B)GND	Ground
11	**AGND2**	Analog signal ground of CH2
12	-IEXC2	Current source of CH2
13	-SENSE2	Differential negative input of CH2
14	+SENSE2	Differential positive input of CH2
15	+IEXC2	Current source of CH2
16	**AGND1**	Analog signal ground of CH1
17	-IEXC1	Current source of CH1
18	-SENSE1	Differential negative input of CH1
19	+SENSE1	Differential positive input of CH1
20	+IEXC1	Current source of CH1

***The module is in DEFAULT mode when DEFAULT* pin connected to GND while applying power on the module.**

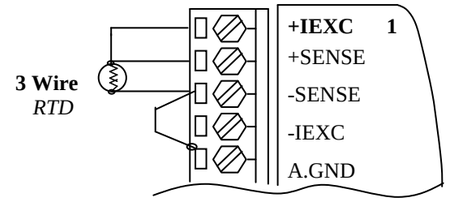
***Do not apply any power signal to DEFAULT* pin, just left it open or connected it to GND.**

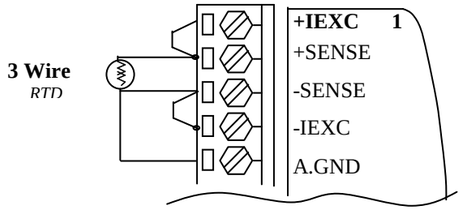
3. Application Wiring

2 Wire RTD Input

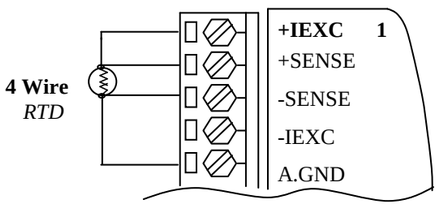


3 Wire RTD Input

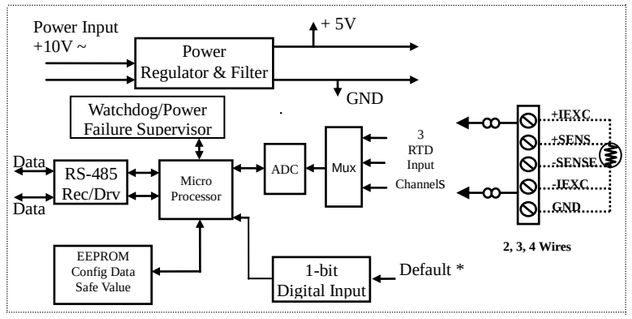




4 Wire RTD Input



4. Functional Block Diagram



5. Installation

Equipment for Installation

A existing RS-485 network

NuDAM modules

DC Power supply (+10V~+30V)

Wires for power, communication and I/O signal

Installation Procedure

1. Configure every single NuDAM module under the administration utility.
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 identity with the application network. The address ID must not be conflict with other modules on the network.
4. Plug the new module to the existing network.
5. Use the NuDAM administration utility to check the entire network.

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6. Command Set

There are three categories of NuDAM commands. The first is the ***general commands***, including set configuration command, read configuration, reset, read module's name or firmware version, etc. Every NuDAM can response to the general commands. The second is the ***functional commands***, which depends on functions of each module. Not every module can execute all function commands. The third is the ***special commands*** including functions about the programmable watchdog timer, safe values, and the programmable leading code. All the commands used in the NuDAM analog input module are list 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**
Functional Command	
Span Calibration	**$(Addr)0**
Offset Calibration	**$(Addr)1**
Read Analog Data Channel 0	**#(Addr)**
Read Analog Data From Channel N	**#(Addr)(Channel No)**
Read All Analog Data	**#(Addr)A**
Enable/Disable Channel for Multiplexing	**$(Addr)5(ChannelVal)**
Read Channel Status	**$(Addr)6**
Open RTD Detection of Channel N	**$(Addr)B(ChannelNo)**
Enable/Disable Open RTD Detection	**$(Addr)O(Status)**
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	**~****

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

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

7. ADLINK on the Internet

The full version manual can be download from website
http://www.adlink.com.tw/download/manual/index.htm#6000

Homepage: http://www.adlink.com.tw
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