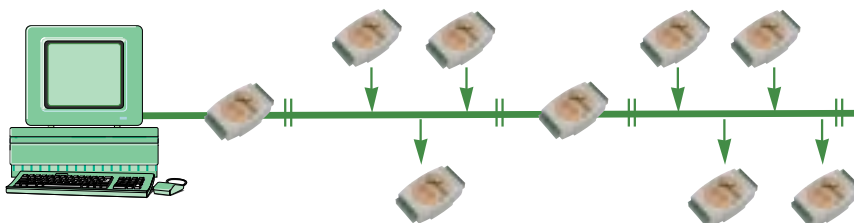


## NuDAM Products

### Overview

ADLINK's Intelligent Remote Data Acquisition & Control Modules (NuDAM) are designed for data acquisition systems based on PCs and other processor based equipment with standard serial I/O ports (RS-232 or RS-485 with autodirection control). The modules convert input/output signals to engineering units and transmit/receive, in ASCII format, to/from any host computer with an RS-232 or RS-485 port. The NuDAM modules are the key components in flexible and cost effective remote data acquisition and control systems.



### Software Support

#### Window® DLL

The NDS-DLL6 dynamic link library for NuDAM modules offers a high performance data acquisition library for developing custom applications under Windows® 98/NT/2000/XP

#### OPC Server 2.0

NDS-OPC, an OPC Data Access specification 2.0 compliant server, enables data exchange between OPC clients and NuDAM modules.

#### ActiveX Control

The NDS-OCX ActiveX control for NuDAM modules works with any ActiveX control container, including Visual Basic, Visual C++, Borland C++ Builder, Borland Delphi, etc.

#### Command Set

string commands can be used to access NuDAM modules. Commands are generally composed of several characteristics, including leading code, address ID, variables, optional check-sum bytes, and a carriage return to indicate the end of a command.

#### NuDAM Administration

NuDAM Administration provides a user-friendly and powerful interface to initialize, configure, and test NuDAM modules.



## Converter Modules

Model Name	ND-6510	ND-6520	ND-6530	ND-6531
Input	RS-485/422 (Independent)	RS-232	USB	RS-422/485
Output	RS-485/422 (Independent)	RS-485/422	RS-232/422/485 (DIP switch selected)	RS-232
Speed	300~115.2K	300~115.2K	300~115.2K	300~115.2K
Power Input	10V~30V	10V~30V	10V~30V	10V~30V
Page No.	8-2			

## Analog Modules

Model Name	ND-6013	ND-6017	ND-6018	ND-6021	ND-6024
Channels	3	8	8	1	4
Input Type	RTD	V, mA	Thermocouple, V, mA	--	--
Output Type	--	--	--	mA, V	V, 7 TTL input
Sampling Rate	10	10	10	--	--
Power Input	10V~30V	10V~30V	10V~30V	10V~30V	10V~30V
Page No.	8-3				

## Digital Modules

Model Name	ND-6050	ND-6052	ND-6053	ND-6054	ND-6056	ND-6058	ND-6060	ND-6063	ND-6067	ND-6080
Input Ch No.	7	8	16	15	--	24(1) + 4	4	--	--	--
Output Ch No.	8	--	--	--	15	24(1)	4(Relay)	8(Relay)	8(AC Relay)	2
Counter No. 2 Isolated	--	--	--	--	--	--	--	--	--	2 TTL
Switch level	Low(0): +1 Vmax, High(1): +2.4V~+5V	VLow(0): +0.2 Vmax, High(1): +1V~+30V	Low(0): +1 Vmax, High(1): +2.4V~+5V	Common Power (+24V)	Common Ground	Low(0): +1Vmax High(1): +2.4V~+5V	Low(0): +0.2 Vmax, High(1): +1V~+30V	--	--	--
Power Input	10V~30V	10V~30V	10V~30V	10V~30V	10V~30V	10V~30V	10V~30V	10V~30V	10V~30V	10V~30V
Page No.	8-4					8-5				

Note(1): 24CW 8255 PPI mode 0 emulation

# Converter Modules

## NDP-243, NDP-243U

Panel Mounting Power Supply

- **Input Voltage**
  - NDP-243: 85-132VAC or 170-264VAC, switchable
  - NDP-243U: 90-264VAC
- **Input Frequency: 47-63Hz**
- **Input Current: 1.4A (max.)**
- **Short Protection**
- **Output Voltage**
  - NDP-243: +24VDC  $\pm$ 10%
  - NDP-243U: +24VDC 1A, +12VDC 1A, +5VDC 3A
- **Output Current: 3A (max.)**
- **Overload Protection**
- **Dimensions: 5" (L) x 3.8" (W) x 1.6" (H)**
- **Operating Temperature: 0°-50° C**



NDP-243U

NDP-243

## ND-6510

RS-422/RS-485 Repeater

- **Input**
  - RS-422 (4-wire, full-duplex)
  - RS-485 (2-wire, half-duplex) protocol
- **Output**
  - RS-422 (4-wire, full-duplex)
  - RS-485 (2-wire, half-duplex) protocol
- **Speed: 115.2k, 57.6k, 38.4k, 19.2k, 9600, 4800, 2400, 1200, 600, 300**
- **Auto baud rate and data format adjustment**
- **Isolation Voltage: 2500V<sub>RMS</sub>**
- **Surge protector on communications signals**
- **Connector: Plug-in screw terminal block**
- **Power Consumption: 0.7W typical**



## ND-6520

RS-232 to RS-422/485 Converter

- **Protocol**
  - RS-422 (4-wire, full-duplex)
  - RS-485 (2-wire, half-duplex) protocol
- **Speed: 115.2k, 38.4k, 19.2k, 9600, 4800, 2400, 1200, 600, 300**
- **Auto baud rate and data format adjustment**
- **Isolation side: RS-232 signal (TXD, RXD, GND)**
- **Isolation Voltage: 2500V<sub>RMS</sub>**
- **Surge protector on RS-422/485 communications signals**
- **Repeater request: Over 128 modules or distance over 4000 feet**
- **Connector: Female DB-9 and plug-in screw terminal block**
- **Power Consumption: 0.75W typical**



## ND-6530

USB to RS-422/RS-485 Converter

- **Protocol (DIP switch selectable)**
  - RS-232 (5-wire: RXD, TXD, RTS, CTS, GND)
  - RS-422 (4-wire: TX+, TX-, RX+, RX-)
  - RS-485 (2-wire: Data+, Data-)
- **Speed: 300-115.2k bps**
- **Isolation Voltage: 2500V<sub>RMS</sub>**
- **USB 1.1 compliant**
- **Repeater request: Over 128 modules or distance over 4000 feet**
- **Power Consumption: 0.6W typical**



## ND-6531

Configurable Communications Controller

- **Protocol**
  - RS-232 (5-wire: RXD, TXD, RTS, CTS, GND)
  - RS-422 (4-wire: TX+, TX-, RX+, RX-)
  - RS-485 (2-wire: Data+, Data-)
- **Speed: 1200-115200 bps (RS-232 and RS-422/485 can set to different baud rate)**
- **Convert RS-422/485 to RS-232 with configurable address**
- **Isolation Voltage: 1000V<sub>DC</sub>**
- **Surge protector on communications signals**
- **Repeater Request: over 128 modules or 4,000 feet**
- **Connector: Female DB-9 and plug-in screw terminal block**
- **Power Consumption: 0.75W typical**



# Analog Modules

## ND-6013

3-CH RTD Input Module

Analog Input

- Channels: 3
- Input Type: Pt-100, Ni-100, or Ni-120 RTD

RTD Type	Temperature Range
Pt	-100°C to +100°C = 0.00385
Pt	0°C to +100°C = 0.00385
Pt	0°C to +200°C = 0.00385
Pt	0°C to +600°C = 0.00385
Pt	-100°C to +100°C = 0.003916
Pt	0°C to +100°C = 0.003916
Pt	0°C to +200°C = 0.003916
Pt	0°C to +600°C = 0.003916
Ni-100	0°C to +100°C
Ni-120	0°C to +100°C
Ω	0 Ω to +60 Ω

- Isolation Voltage: 2500V<sub>ins</sub>
- Sampling Rate: 10 samples/sec
- Input Wiring: 2, 3, or 4 wires

Power

- Requirement: unregulated +10V to +30V<sub>dc</sub>
- Power Consumption: 0.54W typical



## ND-6017

8-CH Analog Input Module

Analog Input

- Channels: 6 Differential & 2 Singled-ended
- Input Type: mV, V, and mA
- Input Range: ±150mV, ±500mV, ±1V, ±5V, ±10V
- Current Range: ±20mA (with external 125Ω resistor)
- Isolated Voltage: 2500V<sub>ins</sub>
- Sampling Rate: 10 samples/sec

Power

- Requirement: unregulated +10V to +30V<sub>dc</sub>
- Power Consumption: 1.08W typical



## ND-6018

8-CH Thermocouple Input Module

Analog Input

- Channels: 6 Differential & 2 Singled-ended
- Input Type: Thermocouple, mV, V, or mA
- Thermocouple Type: J, K, T, E, R, S, B, N, C
- Thermocouple Input Range

- J: 0°C-760°C
- K: 0°C-1,370°C
- T: -100°C-400°C
- E: 0°C-1,000°C
- R: 500°C-1,750°C
- S: 500°C-1,750°C
- B: 500°C-1,800°C
- N: -270°C-1,300°C
- C: 0°C-2,320°C
- Internal C/JC can be enable/disable

- Voltage Range: ±15mV, ±50mV, ±100mV, ±500mV, ±1V, ±2.5V
- Current Range: ±20mA (with external 125Ω resistor)
- Isolated Voltage: 2500V<sub>ins</sub>
- Sampling Rate: 10 samples/sec

Power

- Requirement: unregulated +10V to +30V<sub>dc</sub>
- Power Consumption: 0.7W typical



## ND-6021

Analog Output Module

Single Channel Analog Output

- Voltage Output: 0-10V
- Current Output: 0-20mA, 4-20mA
- Output Isolation: 5000V<sub>ins</sub>
- Resolution: 12-bit output resolution
- Accuracy
  - ±0.1% of FSR (current)
  - ±0.2% of FSR (voltage)
- Readback Accuracy: ±1% of FSR

- Programmable Output Slope
  - 0.125 to 128mA/sec
  - 0.0625 to 64V/sec
- Current Load Resistor: 0 to 500Ω

Power

- Requirement: unregulated +10V to +30V<sub>dc</sub>
- Power Consumption: 1.35W typical



## ND-6024

4-CH Analog Output Module

Analog Output

- Channels: 4
- Voltage Output: -10V to +10V
- Output Isolation: 2500V<sub>ins</sub>
- Resolution: 12-bit resolution
- Accuracy: ±1/2 LSB
- Gain Drift: ±5ppm/°C

Digital Input

- Channels: 7
- Switching Levels: TTL
- Pull-up Current: 0.5mA

Power

- Requirement: unregulated +10V to +30V<sub>dc</sub>
- Power Consumption: 1.35W typical



# Digital Modules

## ND-6050

Digital I/O Module

Digital Input

- Channels: 7
- Switching Level: TTL
- Internal Pull-Up Resistor: 10kΩ
- Maximum Current: 0.5mA
- Programmable input polarity

Digital Output

- Channels: 8
- Open collector to 30V, 30mA max. load
- Programmable output polarity
- Programmable power on/safety state

Power

- Requirement: unregulated +10V to +30V<sub>cc</sub>
- Power Consumption: 0.35W typical



## ND-6052

8-CH Isolated Digital Input Module

Digital Input

- Channels: 8
  - 6 independent isolated channels
  - 2 isolated channels with common ground
- Switching Levels (differential)
  - Low (0): +1V (max.)
  - High (1): +3.5V ~ 24V
- Internal Current Limit Resistor: 1.2kΩ
- Maximum Current: 0.5mA
- Isolated Voltage: 5,000V<sub>rms</sub>
- Programmable input polarity

Power

- Requirement: unregulated +10V to +30V<sub>cc</sub>
- Power Consumption: 0.37W



## ND-6053

16-CH Digital Input Module

Digital Input

- Channels: 16
- Dry Contact
  - Logical level 0: close to GND
  - Logical level 1: open
  - Effective distance: 500m (max)
- Wet Contact: TTL level
- Internal Pull-Up Resistor: 10kΩ
- Maximum Current: 0.5mA
- Programmable input polarity

Power

- Requirement: unregulated +10V to +30V<sub>cc</sub>
- Power Consumption: 0.3W typical



## ND-6054

15-CH Isolated Digital Input Module

Digital Input

- Channels: 15 bits digital input with 24V external common power
- Switching Level:
  - Low (0): +1V (max.)
  - High (1): +3.5V-24V
- Internal Pull-Up Resistor: 1.2kΩ
- Isolated Voltage: 5,000V<sub>rms</sub>
- Programmable input polarity

Power

- Requirement: unregulated +10V to +30V<sub>cc</sub>
- Power Consumption: 0.25W



## ND-6056

15-CH Isolated Digital Output Module

Digital Output

- Channels: 15 bits digital open collector output with common ground
- Switching Level: with +24V common power
- Maximum Load Current: 300mA
- Isolated Voltage: 5,000V<sub>rms</sub>
- Programmable input polarity

Power

- Requirement: unregulated +10V to +30V<sub>cc</sub>
- Power Consumption: 0.25W



# Digital Modules

## ND-6058

28-CH PPI Module

### Programmable I/O

- 8255 programmable peripheral interface mode 0 emulation
- Channel: 24
- Input Signal
  - Logical level 0: -0.5-0.8V
  - Logical level 1: 2.0-5.25V
- Internal Pull-Up Resistor: 10kΩ
- Maximum Current: 0.5mA
- Output Signal
  - Logical level 0: 0.5V max.
  - Logical level 1: 2.4V min.

### Digital Input

- Channels: 4
- Logical level 0: 2V max.
- Logical level 1: 3-5.25V

### Power

- Requirement: unregulated +10V to +30Vdc
- Power Consumption: 1.6W typical

### Connector

- 50-pin Female SCSI II



## ND-6060

Relay Output & Digital Input Module

### Relay Output

- Channels: 4 relay outputs
- Output Type: 2 Form C and 2 Form A
- Contact Rating
  - AC 0.6A/125V
  - DC 2A/30V
  - 0.6A/110V
- ON/OFF Interval Time: 3 ms
- Internal Insulation Resistance: 1000MΩ@500Vdc
- Expected Life: 2x10<sup>6</sup> (1A 30Vdc resistive)
- Programmable output polarity
- Programmable output power on/safety state

### Digital Input

- Channels: 4
- Common External Voltage: +24V or GND
- Current Limit Resistor: 2.2kΩ
- Isolation Voltage: 5000VRms
- Input Type: Switch or Transistor
- Programmable input polarity

### Power

- Requirement: unregulated +10V to +30Vdc
- Power Consumption: 1.0W typical



## ND-6063

8-CH Relay Output Module

### Relay Output

- Channels: 8 independent relay outputs
- Output Type: 8 Form A
- Contact Rating
  - AC 0.5A/125V
  - DC 1A/30V, 0.3A/110V
  - ON/OFF Interval Time: 3 ms
- Internal Insulation Resistance: 1000MΩ@500Vdc
- Expected Life: 2x10<sup>6</sup> (1A 30Vdc resistive)

### Power

- Requirement: unregulated +10V to +30Vdc
- Power Consumption: 0.7W typical



## ND-6067

8-CH AC Relay Output Module

### Relay Output

- Channels: 5 independent relay outputs and 3 common source relay outputs
- Output type: 8 from A
- Contact rating:
  - AC 3A/250V
  - DC 3A/30V
- ON/OFF time interval: 6ms
- Insulation resistance: 1000 MΩ minimum (at 500Vdc)

### Power

- Power Requirement: +10V to +30Vdc Unregulated with against power reversal
- Power Consumption: 120 mW



## ND-6080

2-CH Counter/Frequency Input Module

### Counter Inputs

- Channels: Two independent 32-bit counter
- Input Frequency: 100KHz max.
- Input Mode: isolated or non-isolated
- Isolation Voltage: 5000VRMS
- Isolation Input Level
  - Logical level 0: +1V max
  - Logical level 1: 3.5V to 30V
- Current Limit Resistor: 1.2kΩ
- Non-isolated Input Level Programmable threshold
  - Logical level 0: 0V ~ +5V (default = 0.8V)
  - Logical level 1: 0V ~ +5V (default = 2.4V)
- Input Pulse Width: > 10μ sec
- Max Count: 4,294,967,295 (32-bit)
- Programmable Digital Noise Filter: 4μ sec to 1.02 msec
- Alarm: alarm comparator on each counter

### Frequency Measurement

- Range: 1Hz to 100KHz
- Programmable built-in gate time: 1.0/0.1sec

### Digital Output

- Channels: 2
- Open collector to 30V, 30mA max. load

### Power

- Requirement: unregulated +10V to +30VDC
- Power Consumption: 2.0W



# ND-8511(D)

Serial to Ethernet Data Converter ❖



## Introduction

ND-8511(D) is a single-port RS-232/422/485 to Ethernet data converter. Its compact sized communication module allows users to control serial devices (RS-232/422/485) over a TCP/IP-based Ethernet network. Users may connect host computer systems (Windows/2000/XP) to a native serial port through a TCP/IP Ethernet. With one asynchronous serial port connection on one end and a 10/100Mbps Ethernet connection on the other, ND-8511(D) also allows any device that primarily supports the asynchronous communications protocol to attach to a network. ND-8511(D) works like an add-on single-port serial board to PC servers, but with advantages of the TCP/IP network protocol. With the ND-8511(D), users are able to control asynchronous serial devices from virtually any location. Serial devices connects through a virtual Ethernet link, but are recognized as a real COM port by Windows. ND-8511(D) can be used with existing applications, and comes with a utility program providing a simple step-by-step installation procedure and maintenance wizard that gives users easy access to asynchronous devices.

## Features

- 48MHz, 186-Based Controller 12.5MIPS
- Auto sensing 10/100Base-T Ethernet
- High speed serial port (up to 230kbps) with hardware and modem flow controls
- 3 digital I/O pins (software selectable, shared with serial port signal)
- Compact size for easy integration
- TCP/IP, UDP, DHCP, SNMP, Telnet, ARP, ICMP, and TFTP Protocol Support
- E-Mail function (send only)
- Support for flow & modem control signals
- Module configuration utility
- Windows native COM drivers support, compatible with existing serial software

## Specifications

CPU	48MHz, 186-Based Controller 12.5MIPS
Serial Interface	7 or 8 data bits; 1-2 stop bits; parity: odd, even, and none; software selectable baudrate (300-230400bps)
Modem Control	DTR, DCD, CTS, RTS
Flow Control	XON/XOFF (software), RTS/CTS (hardware)
Network Interface	RJ45 Ethernet 10base-T or 100base-TX (Auto-sensing)
Compatibility	Ethernet: Version 2.0/IEEE 802.3
Protocols support	ARP, UDP/IP, TCP/IP, Telnet, ICMP, SNMP, DHCP, BOOTP, TFTP, AutoIP, SMTP, and HTTP
Temperature	Operating range: -40°C to 85°C (-40°F to 185°F)
Relative Humidity	Operating: 5% to 95% non-condensing
Shock/Vibration	Non-operational shock: 500g's, Non-operational vibration: 20g's
Power	DC 10V to DC 30V

## Supported Serial Devices

- ATM Machines
- CNC Controllers
- Data Collection Devices
- Universal Power Supply (UPS) Management Units
- Telecommunications Equipment
- Data Display Devices
- Security Alarms and Access Control Devices
- Handheld Instruments
- Modems
- Time/Attendance Clocks and Terminals

## Ordering Information

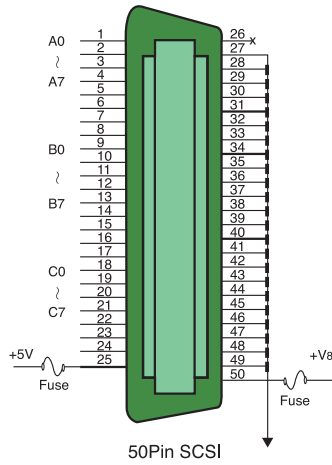
ND-8511/230V	1 Port RS-232/422/485 to Ethernet Data Converter with Power Adapter (Euro Spec.)
ND-8511/110V	1 Port RS-232/422/485 to Ethernet Data Converter with Power Adapter (USA Spec.)
ND-8511D/230V	1 Port RS-232 to Ethernet Data Converter with Power Adapter (Euro Spec.)
ND-8511D/110V	1 Port RS-232 to Ethernet Data Converter with Power Adapter (USA Spec.)

## Applications

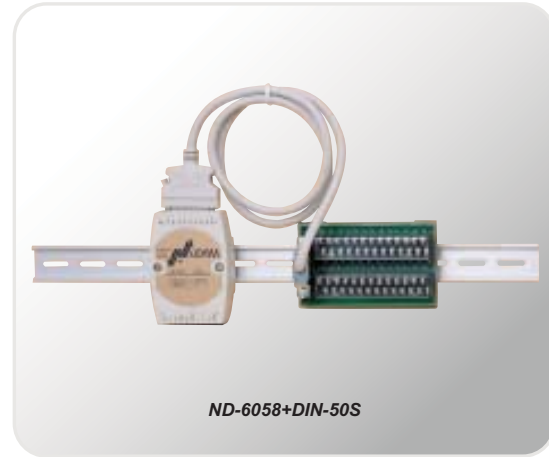
- Industrial Control and Process system
- CIM (Computer Integrated Manufacturing) system
- Security Control system
- Remote Control System

# Accessories and Dimensions

50 Pin SCSI Connector Pin Assignment



Connect DIN Socket with ND-6058



Dimensions

