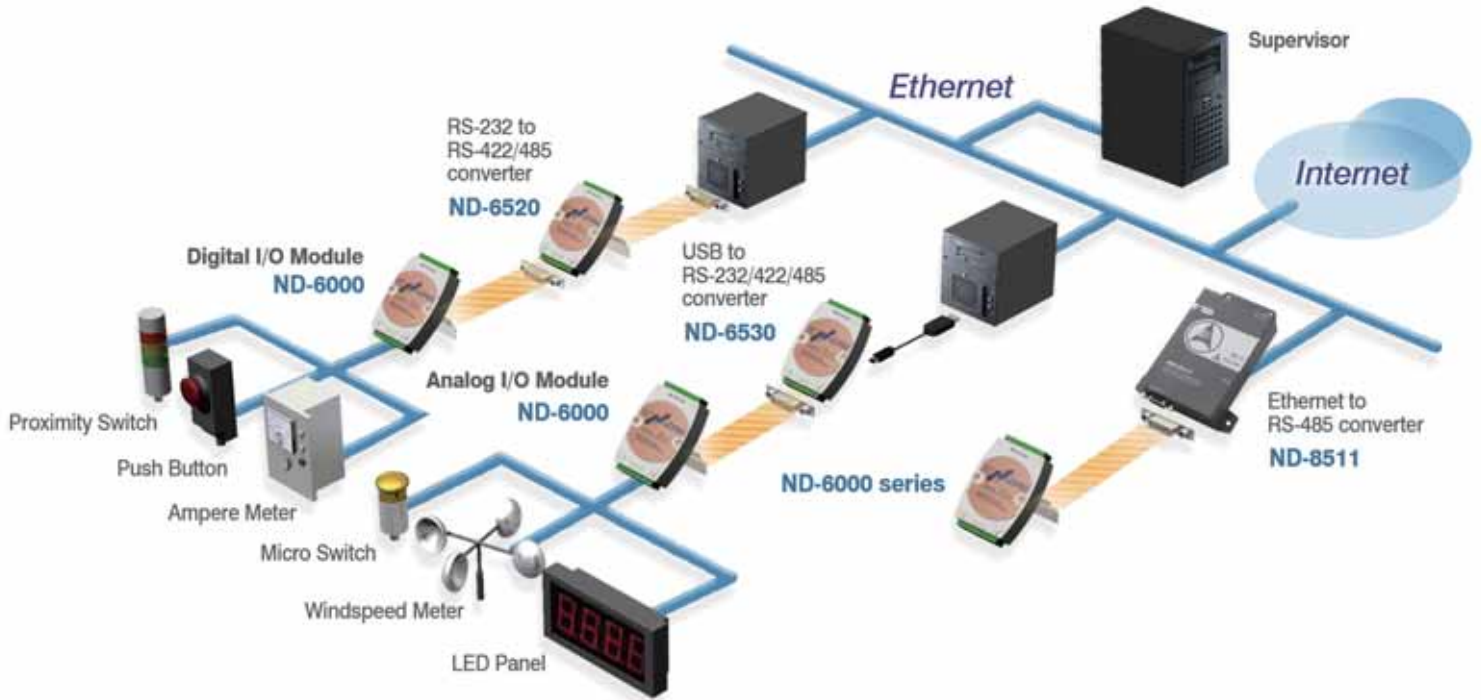


Intelligence Remote Data Acquisition & Control Modules

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. NuDAM modules are the key components in flexible and cost effective remote data acquisition and control systems.



Software Support

Windows® DLL

The NDS-DLL6 dynamic link library for NuDAM modules offers a high performance dataacquisition library for developing custom applications under Windows® 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.

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/RS-422 (Independent)	RS-232	USB	RS-485/RS-422
Output	RS-485/RS-422 (Independent)	RS-485/RS-422	RS-485/RS-422/RS-232 (DIP switch selected)	RS-232
Speed	Up to 230 kbps	Up to 230 kbps	Up to 115.2 kbps	Up to 115.2 kbps
Power Input	10 V to 30 V	10 V to 30 V	10 V to 30 V	10 V to 30 V
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Analog Modules

Model Name	ND-6013	ND-6017	ND-6018	ND-6021	ND-6024
Channels	3	8 (6 Isolation channels/ 2 Single End)	8	1	4
Input Type	RTD, Ohm	V, mA, mV	Thermocouple, V, mA, mV	-	7 TTL input
Output Type	-	-	-	V, mA	V
Sampling Rate	3 S/sec	20 S/sec	10 S/sec	-	-
Power Input	10 V to 30 V	10 V to 30 V	10 V to 30 V	10 V to 30 V	10 V to 30 V
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Digital Modules

Model Name	ND-6050	ND-6052	ND-6053	ND-6054	ND-6056
Input Channel No.	7	8 (6 Isolation channels/ 2 Single End)	16	15 (Common external 24 V power input)	-
Output Channel No.	8	-	-	-	15 (Common Ground output)
Counter	-	-	-	-	-
Switch Level	Input: TTL Output: open collector transistor	Low (0): +1 V (max.), High (1): +3.5 V to +24 V	TTL/Dry Contact	Low (0): +1 V (max.), High (1): +3.5 V to +24 V	Open collector
Power Input	+10 V to +30 V	+10 V to +30 V	+10 V to +30 V	+10 V to +30 V	+10 V to +30 V
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Model Name	ND-6058	ND-6060	ND-6063	ND-6067	ND-6080
Input Channel No.	24+4 (4 digital input)	4 (Common external 24 V power input)	-	-	-
Output Channel No.	24	4 Relays (2 form A/ 2 form C)	8 Relays (8 form A)	8 AC Relays (8 form A)	2
Counter	-	-	-	-	2 Isolated or TTL
Switch Level	TTL	Input: Low (0): 0.2 V High (1): +24 V Output: DC 1 A/30 V	DC 1 A / 30 V	AC 3 A / 250 V, DC 3 A / 30 V	Isolated input level: Logic level 0: +1 V max. Logic level 1: +3.5 V to 30 V TTL input level: (programmable threshold) Logic level 0: 0 to +5 V (default = 0.8 V) Logic level 1: 0 to +5 V (default = 2.4 V)
Power Input	+10 V to +30 V	+10 V to +30 V	+10 V to +30 V	+10 V to +30 V	+10 V to +30 V
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Ethernet Modules

Model Name	ND-8511(D)
Module Type Converter	RS-485/RS-422/RS-232 (DIP switch selected) to Ethernet
Power Input	Exclusive DC power adapter
Temperature	0°C to 70°C
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Converter Modules

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

Speeds: 115.2 k, 57.6 k, 38.4 k, 19.2 k, 9600, 4800, 2400, 1200

Auto baud rate and data format adjustment
Isolation Voltage: 2500 VRMS
Surge protector on communications signals
Connector: Plug-in screw terminal block
Replacer Request: Over 128 modules or distance over 4000 feet
Power Consumption: 1.104 W typical

ND-6520

RS-232 to RS-422/RS-485 Converter



Protocol

- RS-422 (4-wire, full-duplex)
- RS-485 (2-wire, half-duplex) protocol

Speeds: 115.2 k, 38.4 k, 19.2 k, 9600, 4800, 2400, 1200

Auto baud rate and data format adjustment
Isolation Side: RS-232 signal (TXD, RXD, GND)
Isolation Voltage: 2500 VRMS
Surge protector on RS-422/RS-485 communications signals
Connector: Female DB-9 and plug-in screw terminal block
Power Consumption: 0.912 W 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-)

Speeds: 1200 to 115.2 kbps
Isolation Voltage: 2500 VRMS

USB 1.1 compliant
Power Consumption: 0.795 W 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 to 115200 bps (RS-232 and RS-422/RS-485 can be set to different baud rate)

Convert RS-422/RS-485 to RS-232 with configurable address
Isolation Voltage: 1000 VDC
Surge protector on communications signals
Connector: Female DB-9 and plug-in screw terminal block
Power Consumption: 1.008 W typical

NDP-243, NDP-243U2

Panel Mounting Power Supply



NDP-243U2



NDP-243

Input Voltage

- NDP243: 85 to 132 VAC or 170-264 VAC, switchable
- NDP-243U: 90-264 VAC

Input Frequency: 47 to 63 Hz

Input Current: 1.4 A (max.)

Short Protection

Output Voltage

- NDP-243: +24 VDC $\pm 10\%$
- NDP-243U: +24 VDC 1 A, +12 VDC 1 A, +5 VDC 3 A

Output Current: 3 A (max.)

- Overload protection
- Dimensions: 5" (L) x 3.8" (W) x 1.6" (H)
- Operating Temperature: 0°C to +50°C

Analog Modules

ND-6013

3-CH RTD Input Module



Analog Input

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

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°C to +100°C	
Ni	-120°C to +100°C	
Ω	0 Ω to +60 Ω	

Isolation Voltage: 2500 VRMS
Sampling Rate: 3 samples/sec
Input Wiring: 2, 3, or 4 wires

Power

Requirement: unregulated +10 V to +30 Vdc
Power Consumption: 0.696 W typical

ND-6017

8-CH Analog Input Module



Analog Input

Channels: 6 differential & 2 singled-ended
Input Type: mV, V, and mA
Input Range: ± 150 mV, ± 500 mV, ± 1 V, ± 5 V, ± 10 V
Current Range: 0 to 20 mA
(with external 125 Ω resistor)
Isolated Voltage: 2500 VRMS
Sampling Rate: 20 samples/sec

Power

Requirement: unregulated +10 V to +30 Vdc
Power Consumption: 1.2 W 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 to 760°C • K: 0°C to 1,370°C
• T: -100°C to +400°C • E: 0°C to 1,000°C
• R: 500°C to 1,750°C • S: 500°C to 1,750°C
• B: 500°C to 1,800°C • N: -270°C to 1,300°C
• C: 0°C to 2,320°C
• Internal CJC can be enable/disable
Voltage Range: ± 15 mV, ± 50 mV, ± 100 mV, ± 500 mV, ± 1 V, ± 2.5 V
Current Range: 0 to 20 mA (with external 125 Ω resistor)
Isolated Voltage: 2500 VRMS
Sampling Rate: 10 samples/sec

Power

Requirement: unregulated +10 V to +30 Vdc
Power Consumption: 0.96 W typical

ND-6021

Analog Output Module



Single Channel Analog Output

Voltage Output: 0 to +10 V
Current Output: 0 to +20 mA, +4 to +20 mA
Output Isolation: 5000 VRMS
Resolution: 12-bit output resolution accuracy
Programmable Output Slope:
• 0.125 to 128 mA/sec
• 0.0625 to 64 V/sec
Current Load Resistor: 0 to 500 Ω

Power

Requirement: unregulated +10 V to +30 Vdc
Power Consumption: 1.32 W typical

ND-6024

4-CH Analog Output Module



Analog Output

Channels: 4
Voltage Output -10 V to +10 V
Resolution: 12-bit
Accuracy: $\pm 0.02\%$ of FSR
Maximum current output: ± 10 μA
Gain Drift: 10 ppm FSR/°C

Digital Input

Channels: 7
Switching Levels: TTL
Internal Pull-up Resistor: 10 k

Power

Requirement: unregulated +10 V to +30 Vdc
Power Consumption: 1.848 W typical

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Digital Modules

ND-6050

Digital I/O Module



Digital Input

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

Digital Output

Channels: 8
Maximum Current Sink: 50 mA
Maximum Power Dissipation: 300 mW
Programmable output polarity
Programmable power on/safety state

Power

Requirement: unregulated +10 V to +30 Vdc
Power Consumption: 0.336 W 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
• Low (0): +1 V (max.)
• High (1): +3.5 V to +24 V
Internal Current Limit Resistor: 1.2 k Ω
Isolated Voltage: 5,000 VRMS
Programmable input polarity

Power

Requirement: unregulated +10 V to +30 Vdc
Power Consumption: 0.264 W

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: 500 m (max)
TTL Contact
Internal Pull-Up Resistor: 10 k Ω
Programmable input polarity

Power

Requirement: unregulated +10 V to +30 Vdc
Power Consumption: 0.408 W typical

ND-6054

15-CH Isolated Digital Input Module



Digital Input

Channels: 15-bit digital input with 24 V external common power
Switching Level:
• Low (0): +1 V (max.)
• High (1): +3.5 V to +24 V
Internal Pull-Up Resistor: 1.2 k Ω
Isolated Voltage: 5,000 VRMS
Programmable input polarity

Power

Requirement: unregulated +10 V to +30 Vdc
Power Consumption: 0.216 W typical

ND-6056

15-CH Isolated Digital Output Module



Digital Output

Channels: 15-bit digital open collector output with common ground
Maximum Load Current: 300 mA
Isolated Voltage: 3,750 VRMS
Programmable input polarity

Power

Requirement: unregulated +10 V to +30 Vdc
Power Consumption: 1.32 W

ND-6058

28-CH PPI Module



Programmable I/O

8255 programmable peripheral interface mode 0 emulation

Channel: 24

Input Signal

- TTL level

Internal Pull-Up Resistor: 10 k Ω

Maximum Current: 0.5 mA

Output Signal

- TTL level

Digital Input

Channels: 4

TTL level

Power

Requirement: unregulated +10 V to +30 Vdc

Power Consumption: 1.488 W typical

Connector

50-pin female SCSI II

ND-6063

8-CH Relay Output Module



Relay Output

Channels: 8 independent relay outputs

Output Type: 8 form A

Contact Rating

- DC 1 A / 30 V

- ON/OFF interval time: 3 ms (at 20°C)

Internal Insulation

Resistance: 1000 M Ω @ 500 Vdc

Expected Life: 2 x 10⁵

(1 A 30 Vdc resistive at 20 cpm)

Power

Requirement: unregulated +10 V to +30 Vdc

Power Consumption: 1.416 W typical

ND-6067

8-CH AC Relay Output Module



Relay Output

Channels: 5 independent relay outputs and 3 common source replay outputs

Output type: 8 form A

Contact rating:

- AC 3 A / 250 V

- DC 3 A / 30 V

ON/OFF time interval: 6 ms/3 ms

• Operate time: approx. 6 ms

• Release time: approx. 3 ms

Insulation resistance: 1000 M Ω minimum

(at 500 Vdc)

Expected Life: 2 x 10⁵

(3 A 250 VAC, 3 A 30 Vdc at 20 cpm)

Power

Power Requirement: +10 V to +30 Vdc

Unregulated with against power reversal

Power Consumption: 1.392 W typical

ND-6060

Relay Output & Digital Input Module



Relay Output

Channels: 4 relay outputs

Output Type: 2 form C and 2 form A

Contact Rating:

- DC 2 A / 30 V

ON/OFF Interval Time: 3 ms

Internal Insulation Resistance:

1000 M Ω @ 500 VDC

Expected Life: 2 x 10⁵

(1 A 30 Vdc resistive at 20 cpm)

Programmable output polarity

Programmable output power on/safety state

Digital Input

Channels: 4

Common External Voltage: +24 V

Current Limit Resistor: 2.2 k Ω

Isolation Voltage: 5000 VRMS

Input Type: dry contact

Programmable input polarity

Power

Requirement: unregulated +10 V to +30 Vdc

Power Consumption: 0.84 W typical

ND-6080

2-CH Counter/Frequency Input Module



Counter Inputs

Channels: Two independent 32-bit counter

Input Frequency: 20 KHz max.

Input Mode: isolated or non-isolated

Isolation Voltage: 5000 VRMS

Isolation Input Level

- Logical level 0: +1 V max

- Logical level 1: 3.5 V to 30 V

Current Limit Resistor: 1.2 k Ω

Non-isolated Input Level programmable threshold

- Logical level 0: 0 V to +5 V

(default = 0.8 V)

- Logical level 1: 0 V to +5 V

(default = 2.4 V)

Input Pulse Width: > 5 μ s

Max Count: 4,294,967,295 (32-bit)

Programmable Digital Noise Filter: 4 μ s

to 1.02 ms

Alarm: alarm comparator on each counter

Frequency Measurement

Range: 1 Hz to 20 KHz

Programmable built-in gate time: 1.0 / 0.1 s

Digital Output

Channels: 2

Open collector to 30 V, 30 mA max. load

Power

Requirement: unregulated +10 V to +30 Vdc

Power Consumption: 2.016 W

ND-8511(D)

Serial to Ethernet Data Converter



Introduction

The ND-8511(D) is a single-port RS-232/422/485 to Ethernet data converter. This 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 10/100 Mbps Ethernet connection on the other, the ND-8511(D) also allows any device that supports asynchronous communications protocol to attach to a network. The 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), you can 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. The ND-8511(D) can be used with existing applications, and includes a utility program providing a simple step-by-step installation procedure and maintenance wizard that offers easy access to asynchronous devices.

Features

- 48 MHz, 186-based controller 12.5 MIPS
- Auto sensing 10/100Base-T Ethernet
- High speed serial port (up to 230 kbps) with hardware and modem flow controls
- Compact size for easy integration
- TCP/IP, UDP, DHCP, SNMP, Telnet, ARP, ICMP, and TFTP Protocol support
- Support for flow & modem control signals
- Module configuration utility
- Windows native COM drivers support, compatible with existing serial software

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

Applications

- Industrial control and process systems
- CIM (Computer Integrated Manufacturing) systems
- Security control systems
- Remote control systems

Specifications

CPU	48 MHz, 186-Based Controller 12.5 MIPS
Serial Interface	7 or 8 data bits; 1-2 stop bits; parity: odd, even, and none; software selectable baudrate (300 to 230400 bps)
Modem Control	DTR, DCD, CTS, RTS (Jumper selectable)
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: 0°C to 70°C
Relative Humidity	Operating: 5 % to 95 % non-condensing
Shock/Vibration	Non-operational shock: 500 G
Vibration	Non-operational vibration: 20 G
Power	10 to 30 Vdc

Ordering Information

ND-8511/230 V

1 port RS-232/RS-422/RS-485 to Ethernet data converter with power adapter (Euro spec.)

ND-8511/110 V

1 port RS-232/RS-422/RS-485 to Ethernet data converter with power adapter (USA spec.)

ND-8511D/230 V

1 port RS-232 to Ethernet data converter with power adapter (Euro spec.)

ND-8511D/110 V

1 port RS-232 to Ethernet data converter with power adapter (USA spec.)

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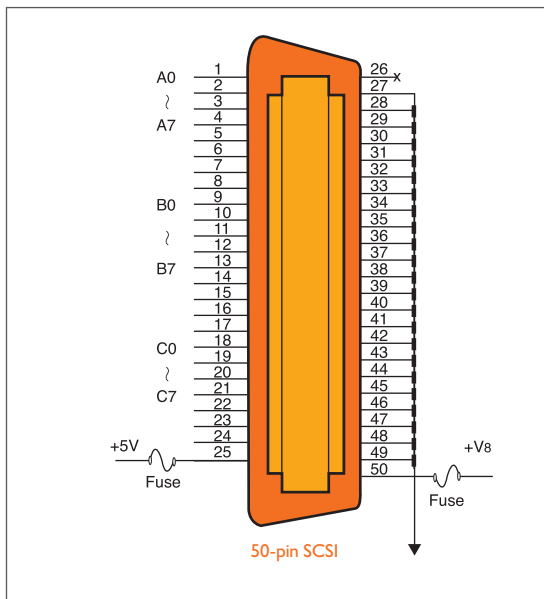
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50-pin SCSI Connector Pin Assignment



Connect DIN Socket with ND-6058



Dimensions

