CDN137
USER MANUAL

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DN137 I/O ADAPTER

CONTENTS

Please Note:

DN137 I/O ADAPTER

REVISION HISTORY

First Release	01/96
Updated for CCO support	03/97

DN137 I/O ADAPTER

DN137 OVERVIEW

The DN137 is a general purpose board level I/O adapter for DeviceNet systems. The unit has the following features:

8 Digital inputs (120 Vac or 24 Vdc)
8 Digital Outputs (120 Vac, 2 Amps or 24 Vdc, 1 Amp)
4 Analog Inputs (0-10 Vdc, 8 bits)

ISO 11898 CAN channel

120 Vac or 24 Vac/dc power

12 Vdc auxiliary power output

The base unit is provide with 120 Vac Inputs, Outputs and Power. OEM options include 24 VAC/DC for Inputs, Outputs and power. The power may be derived from the on-board 120/24 VAC power input or from the DeviceNet Bus power through a jumper option.

The CDN137 supports the D.I.P. CCO processing object set, allowing the unit to provide closed loop control on module I/O without intervention from the master node.

DN137 INSTALLATION

The DN137 measures 7.0" X 4.5" and may be mounted using 4/40 mounting hardware with standoffs (not supplied). The bottom right mounting hole as a GROUND ring to allow connections to earth ground through the mounting hardware.

HARDWARE RESET

The adapters will power on with all outputs in the OFF condition. When the on-board processor is operating the output states are determined by the DeviceNet commands.

POWER CONNECTIONS

The external 120 Vac is connected to the OUTPUT CONNECTOR pins 1 and 2. When powered from the 120 Vac, jumper E2-E3 must be installed.

13013702 03/97

DN137 I/O ADAPTER

If the unit is to be powered from the CAN Bus power jumper E1-E3 should be installed and E2-E3 removed.

The 120 Vac power is connected to the OUTPUT CONNECTOR.

DIGITAL OUTPUTS

The digital outputs interface through opto-couplers to solid state relays. For units configured with AC outputs the output driver is a TRIAC. For units configured as DC outputs the output driver is an NPN transistor. When using DC outputs the output RETURN terminal must be connected to the most negative voltage.

The digital outputs are available on the OUTPUT CONNECTOR.

TERMINAL	DESCRIPTION
3	OUTPUT 1 RETURN
4	OUTPUT 1
5	OUTPUT 2 RETURN
6	OUTPUT 2
7	OUTPUT 3 RETURN
8	OUTPUT 3
9	OUTPUT 4 RETURN
10	OUTPUT 4
11	OUTPUT 5 RETURN
12	OUTPUT 5
13	OUTPUT 6 RETURN
14	OUTPUT 6
15	OUTPUT 7 RETURN
16	OUTPUT 7
17	OUTPUT 8 RETURN
18	OUTPUT 8

CAN CONNECTIONS

The CAN channel is routed directly to a P82C250 transceiver which conforms to the ISO 11898 specification. Loss of ground and reverse polarity protection is provided on the Bus power signals.

DN137 I/O ADAPTER

The CAN signals are connected to the CAN CONNECTOR.

TERMINAL	DESCRIPTION
1	BUS POWER-
2	CAN L
3	SHIELD
4	CAN H
5	BUS POWER +

Jumper E4-E5 connects pin 3 of the CAN CONNECTOR to the earth ground ring available around the bottom right mounting hole.

AUXILIARY OUTPUT POWER

The DN137 provides a 12 Volt, 150 mA auxiliary power supply, powered from either the 120 Vac or the Bus power signals per jumpers E1..E3.

No current limiting is provided. The auxiliary power is intended to power local sensors and to provide a convenient supply voltage for potentiometers connected to the analog inputs.

The 12 Vdc power is available on the INPUT CONNECTOR.

TERMINAL	DESCRIPTION
1	AUX POWER Ground
2	AUX POWER +12

DIGITAL INPUTS

The digital inputs are separated as two groups of 4 inputs with a single common pin for each input group. The input signals are applied through a resistive divider to bidirectional opto couplers. The output of the opto-coupler is filtered and then applied to the micro-controller.

When used with 120 Vac, the input common should be connected to either L1 or L2 of the AC power. The individual inputs are connected to the actuator which completes the circuit.

When used with 24 Vdc the inputs may be configured for use with either sourcing or

DN137 I/O ADAPTER

sinking sensors. When used with SINKING sensors the input common should be connected to +24 Vdc. When used with SOURCING sensors the input common should be connected to 0 Vdc.

The inputs are available on the INPUT CONNECTOR.

TERMINAL	DESCRIPTION
3	INPUT 1
4	INPUT 2
5	INPUT 3
6	INPUT 4
7	INPUT 1-4 COMMON
8	INPUT 5
9	INPUT 6
10	INPUT 7
11	INPUT 8
12	INPUT 5-8 COMMON

ANALOG INPUTS

The analog inputs are not optically isolated. The signals are divided by a 2:1 resistive divider (2 Kohm input impedance) and then applied directly to the micro-controller inputs.

The analog inputs are available on the INPUT CONNECTOR.

TERMINAL	DESCRIPTION
13	ANALOG GROUND
14	ANALOG INPUT 1
15	ANALOG GROUND
16	ANALOG INPUT 2
17	ANALOG GROUND
18	ANALOG INPUT 3
19	ANALOG GROUND
20	ANALOG INPUT 4

LED INDICATORS

The DN137 has two LED indicators, referred to as the HEALTH and the COMM indicator.

13013702 03/97

DN137 I/O ADAPTER

Refer to the DeviceNet specifications for a complete description of these LED's. During the power up sequence each LED will cycle from RED to GREEN as part of the self diagnostics firmware.

Refer to the DeviceNet specifications for a full description of the indicators.

An LED array provides 10 additional indicators. The first 8 indicators reflect the state of each of the outputs. The remaining two indicators are reserved.

DN137 CONFIGURATION SWITCH

The DN137 has an eight position switch which sets both the adapter address and the communications speed.

The communications speed is determined by switch S1, positions 7 and 8. If both switches are in the ON position the adapter address and speed will be determined by software. In this position the DeviceNet master may reassign both the address and the speed.

Setting the SWITCHES to the value FFH (all on) and forcing a power cycle will preconfigure the unit to enable the CCO object set. The PRODUCT code will be set to 2.

Setting the SWITCHES to the value FEH (all on except position 1) and forcing a power cycle will preconfigure the unit to disable the CCO object set. The PRODUCT code will be set to 1.

S8	S7	Description
Off	Off	125 Kbits/second
Off	On	250 Kbits/second
On	Off	500 Kbits/second
On	On	Software settable

The adapter address is set by switch S1, positions 1-6. If the switch is in the OFF position it is

DEVICENET INFORMATION

The DN1370 (8 Digital In/Out, 4 Analog In) device operates as a slave on the DeviceNet network. The unit supports Explicit Messages and Polled I/O Messages of the predefined

13013702 03/97

DN137 I/O ADAPTER

master/slave connection set. It does not support the Explicit Unconnected Message Manager (UCMM).

For further information refer to the CDN137 DeviceNet Specification Manual.

ORDERING INFORMATION

DN137   General purpose I/O Adapter
13013701   User manual with EDS diskette

13013702 03/97

DN137 I/O ADAPTER

SPECIFICATIONS

	Min	Typ	Max	Units
Power (120 Vac)				
Voltage	90	120	130	Vac
Current		10		mA
Power (24 Vac/dc)				
Voltage	11	24	27	Vac/dc
Current		50		mA
Inputs (120 Vac)				
Von (min)		95		Vac
Ion (min)	5			mA
Voff (max)			50	Vac
Ioff (max)			1	mA
Inputs (24 Vac/dc)				
Von (min)	20			Vac
Ion (min)	5			mA
Voff (max)			10	Vac
Ioff (max)			1	mA
Outputs (120 Vac)				
Ion (max)			2	Amps
Ioff (max)			20	mA
Outputs (24 Vac/dc)				
Ion (max)			1	Amps
Ioff (max)			5	mA
Analog Inputs				
Operating range	0		10	Vdc
Maximum input level			25	Vdc
Auxiliary Output Voltage				
Output Voltage	11.0	12	12.5	Vdc
Maximum Load Current			150	mA

DN137 I/O ADAPTER

Environment
   Operating Temp   15   70 ^{o}C
   Humidity   80% Non-condensing

13013702 03/97