AMETEK®
PATRIOT SENSORS

DeviceNet Linear Transducer
Gemco™
Instruction Manual

DeviceNet Linear Displacement Transducer Instruction Manual

This Manual covers Series 960 DeviceNet Linear Displacement Transducer

DeviceNet
CONFORMANCE TESTED

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Chapter 1: Overview

The DeviceNet LDT combines the reliability and resolution of continuous linear position sensing with the added flexibility of DeviceNet communications...all in a single device. The LDT technology is the same as other Gemco LDT's, proven in such rugged applications such as stamping press automation. The rugged housing construction is ideal for harsh industrial environments. All embedded electronics are SMT constructed for the ultimate in reliability.

The DeviceNet LDT plugs in, as a node on any control system with a DeviceNet Scanner. Additional LDT's are added by simply plugging into the network. Continuous linear position data with resolution of 0.01" is provided. In addition, eight (8) built-in user programmable setpoints allow direct control of critical functions. All programming is done over the DeviceNet network.

The DeviceNet LDT provides flexibility and cost savings when compared to other methods of continuous position sensing. Each LDT is easy to mount and wire, using mini-change plug connectors, saving cumbersome traditional LDT cables. Since every DeviceNet network is bus powered, there is no need for a separate power supply. There are no port concentrators to buy, since all of the sensing and network electronics are embedded within the LDT's housing. The DeviceNet LDT, with continuous linear position and eight discrete setpoints built-in, plus a DeviceNet scanner card is competitively priced with a plain LDT and PLC input card. Additional DeviceNet LDT units can be added on the same DeviceNet network without adding additional scanner cards, making this approach very attractive when more than one LDT is needed on the same system.

By using the DeviceNet LDT, it is now possible to eliminate separate stand alone programmable limit switches, or other added electronic modules. This means savings on equipment and installation with improved reliability, which translates directly to improved productivity and lower costs.

Chapter 2: DeviceNet Information

The DeviceNet LDT operates as a "Group 2 only slave" device. It operates as an input only device on the DeviceNet network. All device configurations are accomplished by using any DeviceNet software configuration tool.

The DeviceNet LDT is capable of communicating at all three DeviceNet baud rates, 125K, 250K, and 500K. The node address can be set to any address, 0 - 63. There are several parameters, such as, counting direction, and 8 programmable setpoints that are configured or modified by the user through the Parameter Object. (See section 4.0: DeviceNet LDT Object Model).

2.1: LED Operation

The DeviceNet LDT is equipped with a Network Status LED. The network Status LED operates as follows:

Solid Green = Allocated by Master

Flashing Green = Passed Duplicate MAC ID Test and is awaiting to be allocated by Master

Solid Red = Fatal error. Requires user intervention. Check for duplicate MAC ID or baud rate communication rate setting.

2.2: I/O Messaging

The DeviceNet LDT supports Bit-Strobe Message Connection as well as a Polled I/O Message connection. The DeviceNet LDT does **not** support Cyclic I/O or Change-of-State Message Connections.

Bit Strobe Message

A bit strobed message connection is a very fast method by which a master sends one bit (Bit Strobe Command) out on the network and receives up to 8 bytes of data (Bit Strobe Response) from each slave device that supports a Bit Strobe Message Connection. The DeviceNet LDT disregards the command message. No user-defined configuration is required.

Polled I/O Message

A polled message connection is used for devices that have inputs and outputs. It can also be used for "Input Only" devices. The master sends out a Polled Command to each individual device and the device responds with an 8 byte Polled Response. The Polled message connection is not the most efficient message connection to use for "Input Only" devices because there is a Command message sent to and a Response message sent from each device. This creates a lot of unnecessary network traffic.

2.3: Data Format

The setpoint status is supplied in the first 8 bits of the I/O message. One bit for each setpoint, "0 = off" and "1 = on". The next 16 bits will provide the scaled LDT position information . The entire I/O message is 24 bits long. You will need to reserve 24 bits in your controller I/O image table.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23								

Legend:

Setpoint Data	0 - 7
Position Data	8 - 23
Not Used	40 - 63

Chapter 3: Getting Started

3.1: Establishing DeviceNet Communications

NOTE: This manual assumes that the network is configured in accordance with the DeviceNet wiring specification.

1. Remove the DeviceNet LDT from the box and connect your DeviceNet cable to the 5-pin mini connector on the end of the LDT according to the DeviceNet wiring specifications.

2. Make sure that there is power on the DeviceNet network when you connect the DeviceNet LDT to the network.

3. The DeviceNet LDT will undergo an initialization sequence, flashing the network status LED. The LED will first turn green then red and then flash green. At this point, the DeviceNet LDT has passed its duplicate MAC ID test and is ready to be allocated by a master.

4. If the network status LED stays solid red, remove the DeviceNet LDT from the network and then reconnect. If the LED is still solid red, then go to section 3.2: Configuring the Node Address and Baud Rate.

3.2: Configure the Node Address and Baud Rate

1. When the network status is flashing green you may change the device node address (MAC ID) and the baud rate using any DeviceNet software configuration tool. Defaults are node address 63 and 125K baud.

2. If you change the node address, the DeviceNet LDT will undergo the initialization sequence and assume the new node address.

3. If you change the baud rate, the new baud rate will not take effect until power is cycled to the DeviceNet LDT and the initialization sequence occurs.

4. Confirm new node address and baud rate are set correctly by using the software configura tion tool to scan the network for the DeviceNet LDT.

3.3: Parameter Configuration

After the baud rate and node address have been established, the device parameters are ready to be configured. The parameters must be configured in the following sequence:

3.3.1: Counting Direction

The DeviceNet LDT can be configured to count (increment) in either direction. The default direction is increased counts from bottom of probe.

Set **Parameter Instance 2 Attribute ID 1** ***Desired Value***
Desired Value = 0 for increased counts from bottom of probe
1 for increased counts from top of probe

3.3.2: Position Offset

The indicated positon of the LDT can be changed to synchronize or "zero" the LDT to the machine it is attached to. The LDT position can be changed by moving the LDT at the desired position and writing the desired indicated position to attribute 1 of the Position Object. All setpoints will be based on this offset position. A valid position value can range between, and include, -32700 to 32767.

3.3.3: Setpoints

As indicated the DeviceNet LDT has 8 programmable setpoints. Each setpoint is individually programmed through the Parameter Object. Each setpoint has an "On Position" value and an "Off Position" value. All setpoint defaults are set to 0. **Each setpoint has only one "On" and one "Off" per revolution.**

Setpoint 1 “On” Position

Set **Parameter Instance 3 Attribute ID 1** ***Desired On Position Value***

Setpoint 1 “Off” Position

Set **Parameter Instance 4 Attribute ID 1** ***Desired Off Position Value***

Setpoint 2 “On” Position

Set **Parameter Instance 5 Attribute ID 1** ***Desired On Position Value***

Setpoint 2 “Off” Position

Set **Parameter Instance 6 Attribute ID 1** ***Desired Off Position Value***

Setpoint 3 “On” Position

Set **Parameter Instance 7 Attribute ID 1** ***Desired On Position Value***

Setpoint 3 “Off” Position

Set **Parameter Instance 8 Attribute ID 1** ***Desired Off Position Value***

Setpoint 4 “On” Position

Set **Parameter Instance 9 Attribute ID 1** ***Desired On Position Value***

Setpoint 4 “Off” Position

Set **Parameter Instance 10 Attribute ID 1** ***Desired Off Position Value***

Setpoint 5 “On” Position

Set **Parameter Instance 11 Attribute ID 1** ***Desired On Position Value***

Setpoint 5 “Off” Position

Set **Parameter Instance 12 Attribute ID 1** ***Desired Off Position Value***

Setpoint 6 “On” Position

Set **Parameter Instance 13 Attribute ID 1** ***Desired On Position Value***

Setpoint 6 “Off” Position

Set **Parameter Instance 14 Attribute ID 1** ***Desired Off Position Value***

Setpoint 7 “On” Position

Set **Parameter Instance 15 Attribute ID 1** ***Desired On Position Value***

Setpoint 7 “Off” Position

Set **Parameter Instance 16 Attribute ID 1** ***Desired Off Position Value***

Setpoint 8 “On” Position

Set **Parameter Instance 17 Attribute ID 1** ***Desired On Position Value***

Setpoint 8 “Off” Position

Set **Parameter Instance 18 Attribute ID 1** ***Desired Off Position Value***

Chapter 4: DeviceNet Object Model

4.1: Object Model

4.1.1: Objects Present in the DeviceNet LDT

Object	Optional/Required	# of Instances
Identity (1)	Required	1
Message Router (2)	Required	1
DeviceNet (3)	Required	1
Assembly (4)	Required	1
Connection (5)	Required	3
Parameter (15)	Required	20
Position (100)	Required	1
Setpoint (101)	Required	8

4.1.2: Objects That Effect Behavior

Object	Effect on Behavior
Identity (1)	Supports the Reset Service
Message Router (2)	No Effect
DeviceNet (3)	Configures Port Attributes
Assembly #1 (4)	I/O Assembly
Assembly #2 (4)	Config Assembly
Connection (5)	Establishes the number of connections
Position (100)	Configures the position offset
Setpoint (101)	Configures the setpoint positions

4.1.3: Object Interfaces

Object	Interface
Identity (1)	Message Router
Message Router (2)	Explicit Message Connection Instance
DeviceNet (3)	Message Router
Assembly #1 (4)	I/O Connection or Message Router
Assembly #2 (4)	Message Router
Connection (5)	Message Router
Position (100)	Message Router
Setpoint (101)	Message Router

4.1.4: Identification of I/O Assembly Instances

Instance Number	Type	Name
1	Input	Position Data/Setpoint Status
2	Input	Setpoint Data

4.1.5: Format of I/O Assembly Data Attribute

Assembly #1 - I/O Assembly

Byte	7	6	5	4	3	2	1	0
0	Setpoint Status							
1	Position Low							
2	Position High							

Assembly #2 - Config Assembly

Byte	7	6	5	4	3	2	1	0
0	Setpoint 1 On Position (Low Byte)							
1	Setpoint 1 On Position (High Byte)							
2	Setpoint 1 Off Position (Low Byte)							
3	Setpoint 1 Off Position (High Byte)							
4	Setpoint 2 On Position (Low Byte)							
5	Setpoint 2 On Position (High Byte)							
6	Setpoint 2 Off Position (Low Byte)							
7	Setpoint 2 Off Position (High Byte)							
8	Setpoint 3 On Position (Low Byte)							
9	Setpoint 3 On Position (High Byte)							
10	Setpoint 3 Off Position (Low Byte)							
11	Setpoint 3 Off Position (High Byte)							
12	Setpoint 4 On Position (Low Byte)							
13	Setpoint 4 On Position (High Byte)							
14	Setpoint 4 Off Position (Low Byte)							
15	Setpoint 4 Off Position (High Byte)							
16	Setpoint 5 On Position (Low Byte)							
17	Setpoint 5 On Position (High Byte)							
18	Setpoint 5 Off Position (Low Byte)							
19	Setpoint 5 Off Position (High Byte)							
20	Setpoint 6 On Position (Low Byte)							
21	Setpoint 6 On Position (High Byte)							
22	Setpoint 6 Off Position (Low Byte)							
23	Setpoint 6 Off Position (High Byte)							
24	Setpoint 7 On Position (Low Byte)							
25	Setpoint 7 On Position (High Byte)							
26	Setpoint 7 Off Position (Low Byte)							
27	Setpoint 7 Off Position (High Byte)							
28	Setpoint 8 On Position (Low Byte)							
29	Setpoint 8 On Position (High Byte)							
30	Setpoint 8 Off Position (Low Byte)							
31	Setpoint 8 Off Position (High Byte)							

4.2: Standard Objects

4.2.1: Identity Object (Class ID = 1)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Vendor	UINT	0x009C
2	Get	Product Type	UINT	0x0000
3	Get	Product Code	UINT	0x03C0
4	Get	Revision	STRUCT	01.00
5	Get	Status	WORD	0x0000
6	Get	Serial #	UDINT	0x00000000
7	Get	Product Name	STRUCT	9, "960DN LDT"

4.2.2: Message Router Object (Class ID = 2)

There is no externally visible interface to the Message Router Object

4.2.3: DeviceNet Object (Class ID = 3)

There is a single instance of the DeviceNet Object for the DeviceNet LDT. No class attributes are supported.

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	MACID	USINT	0x63
2	Get/Set	Baud Rate	USINT	125K
3	Get/Set	BOI	BOOL	0x00 Hold in Reset
4	Get/Set	Bus-off Counter	USINT	0x00
5	Get	Allocation Information	STRUCT	Allocate Service

4.2.4: Connection Object (Class ID = 5)

There are three instances of the connection object. Instance #1 is assigned to the explicit messaging connection. Instance #2 is assigned to the Polled I/O connection. Instance #3 is assigned to the bit-strobe I/O connection.

Explicit Message Connection Object (Instance #1)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	State	USINT	0x03
2	Get	Instance Type	USINT	0x00
3	Get	Xport Class Trigger	USINT	0x83

Attribute ID	Access Rule	Name	Data Type	Value
4	Get	Produced Connection ID	UINT	0x5FB for MAC ID 63
5	Get	Consumed Connection ID	UINT	0x5FC for MAC ID 63
6	Get	Initial Comm Characteristics	USINT	0x21
7	Get	Produced Connection Size	UINT	0x0025
8	Get	Consumed Connection Size	UINT	0x0025
9	Get/Set	Expected Packet Rate	UINT	Application Dependent
10	N/A	N/A	N/A	Not Used
11	N/A	N/A	N/A	Not Used
12	Get	Watchdog Timeout Action	USINT	0x01
13	Get	Produced Path Length	UINT	0x0000
14	Get	Produced Path	Array of USINT	0x20 0x04 0x24 0x01 0x30 0x03
15	Get	Consumed Path	UINT	0x0000
16	Get	Consumed Path	Array of USINT	<NULL>

Poll I/O Message Connection Object (Instance #2)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	State	USINT	0x03
2	Get	Instance Type	USINT	0x01
3	Get	Xport Class Trigger	USINT	0x82
4	Get	Produced Connection ID	UINT	0x3FF for MAC ID 63
5	Get	Consumed Connection ID	UINT	0x5FD for MAC ID 63
6	Get	Initial Comm Characteristics	USINT	0x01
7	Get	Produced Connection Size	UINT	0x0003
8	Get	Consumed Connection Size	UINT	0x0000
9	Get/Set	Expected Packet Rate	UINT	Application Dependent
10	N/A	N/A	N/A	Not Used
11	N/A	N/A	N/A	Not Used
12	Get	Watchdog Timeout Action	USINT	0x00
13	Get	Produced Path Length	UINT	0x0006
14	Get	Produced Path	Array of USINT	0x20 0x04 0x24 0x014 0x30 0x03
15	Get	Consumed Path Length	UINT	0x0000
16	Get	Consumed Path	Array of USINT	<NULL>

Bit Strobe I/O Message Connection Object (Instance #3)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	State	USINT	0x03
2	Get	instance_type	USINT	0x01
3	Get	Xport Class trigger	USINT	0x82
4	Get	Produced connection ID	UINT	0x3BF for MAC ID 63
5	Get	consumed connection ID	UINT	0x408 for MAC ID 1
6	Get	initial comm characteristics	USINT	0x02
7	Get	produced connection size	UINT	0x0003
8	Get	consumed connection size	UINT	0x0008
9	Get/Set	expected packet rate	UINT	Application Dependent
10	N/A	N/A	N/A	Not Used
11	N/A	N/A	N/A	Not Used
12	Get	Watchdog timeout action	USINT	0x00
13	Get	Produced path length	UINT	0x0006
14	Get	Produced path	Array of USINT	0x20 0x04 0x24 0x01 0x30 0x03
15	Get	consumed path length	UINT	0x0000
16	Get	consumed path	Array of USINT	<NULL>

4.2.5: Parameter Object (Class ID = 15)

The parameter object supports the class attributes and 20 instances.

Class Attributes

Attribute ID	Access Rule	Name	Data Type	Value
2	Get	Max Instance	UINT	0x0014
8	Get	Parameter Class Descriptor	WORD	0x0009
9	Get	Configuration Assembly Instance	UINT	0x0002

Parameter Instance #1 (Position)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Parameter Value	UINT	Current Position
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x64 0x24 0x01 0x30 0x01"
4	Get	Descriptor	WORD	0x0030
5	Get	Data Type	USINT	0x02
6	Get	Data Size	USINT	0x02

Parameter Instance #2 (Direction)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Parameter Value	USINT	Current Direction
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x64 0x24 0x01 0x30 0x03"
4	Get	Descriptor	WORD	0x0002
5	Get	Data Type	USINT	0x08
6	Get	Data Size	USINT	0x01

Parameter Instance #3 (Setpoint 1 on position)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Parameter Value	USINT	Setpoint 1 on position
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x65 0x24 0x01 0x30 0x02"
4	Get	Descriptor	WORD	0x0000
5	Get	Data Type	USINT	0x03
6	Get	Data Size	USINT	0x02

Parameter Instance #4 (Setpoint 1 off position)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Parameter Value	USINT	Setpoint 1 off position
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x65 0x24 0x01 0x30 0x03"
4	Get	Descriptor	WORD	0x0000
5	Get	Data Type	USINT	0x03
6	Get	Data Size	USINT	0x02

Parameter Instance #5 (Setpoint 2 on position)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Parameter Value	USINT	Setpoint 2 on position
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x65 0x24 0x02 0x30 0x02"
4	Get	Descriptor	WORD	0x0000
5	Get	Data Type	USINT	0x03
6	Get	Data Size	USINT	0x02

Parameter Instance #6 (Setpoint 2 off position)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Parameter Value	USINT	Setpoint 2 off position
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x65 0x24 0x02 0x30 0x03"
4	Get	Descriptor	WORD	0x0000
5	Get	Data Type	USINT	0x03
6	Get	Data Size	USINT	0x02

Parameter Instance #7 (Setpoint 3 on position)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Parameter Value	USINT	Setpoint 3 on position
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x65 0x24 0x03 0x30 0x02"
4	Get	Descriptor	WORD	0x0000
5	Get	Data Type	USINT	0x03
6	Get	Data Size	USINT	0x02

Parameter Instance #8 (Setpoint 3 off position)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Parameter Value	USINT	Setpoint 3 off position
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x65 0x24 0x03 0x30 0x03"
4	Get	Descriptor	WORD	0x0000
5	Get	Data Type	USINT	0x03
6	Get	Data Size	USINT	0x02

Parameter Instance #9 (Setpoint 4 on position)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Parameter Value	USINT	Setpoint 4 on position
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x65 0x24 0x04 0x30 0x02"
4	Get	Descriptor	WORD	0x0000
5	Get	Data Type	USINT	0x03
6	Get	Data Size	USINT	0x02

Parameter Instance #10 (Setpoint 4 off position)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Parameter Value	USINT	Setpoint 4 off position
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x65 0x24 0x04 0x30 0x03"
4	Get	Descriptor	WORD	0x0000
5	Get	Data Type	USINT	0x03
6	Get	Data Size	USINT	0x02

Parameter Instance #11 (Setpoint 5 on position)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Parameter Value	USINT	Setpoint 5 on position
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x65 0x24 0x05 0x30 0x02"
4	Get	Descriptor	WORD	0x0000
5	Get	Data Type	USINT	0x03
6	Get	Data Size	USINT	0x02

Parameter Instance #12 (Setpoint 5 off position)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Parameter Value	USINT	Setpoint 5 off position
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x65 0x24 0x05 0x30 0x03"
4	Get	Descriptor	WORD	0x0000
5	Get	Data Type	USINT	0x03
6	Get	Data Size	USINT	0x02

Parameter Instance #13 (Setpoint 6 on position)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Parameter Value	USINT	Setpoint 6 on position
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x65 0x24 0x06 0x30 0x02"
4	Get	Descriptor	WORD	0x0000
5	Get	Data Type	USINT	0x03
6	Get	Data Size	USINT	0x02

Parameter Instance #14 (Setpoint 6 off position)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Parameter Value	USINT	Setpoint 6 off position
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x65 0x24 0x06 0x30 0x03"
4	Get	Descriptor	WORD	0x0000
5	Get	Data Type	USINT	0x03
6	Get	Data Size	USINT	0x02

Parameter Instance #15 (Setpoint 7 on position)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Parameter Value	USINT	Setpoint 7 on position
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x65 0x24 0x07 0x30 0x02"
4	Get	Descriptor	WORD	0x0000
5	Get	Data Type	USINT	0x03
6	Get	Data Size	USINT	0x02

Parameter Instance #16 (Setpoint 7 off position)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Parameter Value	USINT	Setpoint 7 off position
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x65 0x24 0x07 0x30 0x03"
4	Get	Descriptor	WORD	0x0000
5	Get	Data Type	USINT	0x03
6	Get	Data Size	USINT	0x02

Parameter Instance #17 (Setpoint 8 on position)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Parameter Value	USINT	Setpoint 8 on position
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x65 0x24 0x08 0x30 0x02"
4	Get	Descriptor	WORD	0x0000
5	Get	Data Type	USINT	0x03
6	Get	Data Size	USINT	0x02

Parameter Instance #18 (Setpoint 8 off position)

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Parameter Value	USINT	Setpoint 8 off position
2	Get	Link Path Size	USINT	0x06
3	Get	Link Path	ARRAY	"0x20 0x65 0x24 0x08 0x30 0x03"
4	Get	Descriptor	WORD	0x0000
5	Get	Data Type	USINT	0x03
6	Get	Data Size	USINT	0x02

4.3: Application Specific Objects

4.3.1: Position Object (Class ID = 100)

There is a single instance of the position object for the DeviceNet LDT. No class attributes are supported. All the instances are getable and settable. The table below shows the values:

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	Magnet Position	UINT	Current Position
2	Get/Set	Direction	USING	Current Direction

Valid position values range from -32700 to 32767. Direction value 0 indicates that the counts will increase from bottom of probe. Direction value 1 indicates that the counts will increase from top of probe.

4.3.2: Setpoint Object (Class ID = 101)

There are eight instances of the setpoint object in the DeviceNet LDT. No class attributes are supported. All setpoint position data is getable and settable. The setpoint status is getable.

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Setpoint Status	BOOL	0x00
2	Get/Set	Setpoint On Position	UINT	0x0000
3	Get/Set	Setpoint Off Position	UINT	0x0000

Valid setpoint values range between, and include, -32700 to 32767.

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4.4: Configuration Notes

Network Baud Rate	
DeviceNet LDT Node Address	
Counting Direction	
Setpoint 1 "On"	
Setpoint 1 "Off"	
Setpoint 2 "On"	
Setpoint 2 "Off"	
Setpoint 3 "On"	
Setpoint 3 "Off"	
Setpoint 4 "On"	
Setpoint 4 "Off"	
Setpoint 5 "On"	
Setpoint 5 "Off"	
Setpoint 6 "On"	
Setpoint 6 "Off"	
Setpoint 7 "On"	
Setpoint 7 "Off"	
Setpoint 8 "On"	
Setpoint 8 "Off"	

Appendix

Linear Displacement Transducer

Resolution	**0.01”**
	-327.00 to 327.67

DeviceNet

Power Requirements	**92mA @ 11Vdc typical**
	67mA @ 24Vdc typical
Inrush	**350 mA @ 11Vdc for 20 msec.**
	450 mA @ 25Vdc for 10 msec.
Device Type	**“Generic”**
Communications	**Group 2 slave only**
Messages supported	**Polled, Bit Strobed, Explicit**
Baud Rates	**125K, 250K, 500K**
Data	
Update rate	
Position Rate	**5ms**
Position Range	**-327.00” to 327.67”**
Setpoints	**Separate ON and OFF points for each setpoint**
Quantity	**8**

Environmental

Temperature	
Operating	**-20°C to +70°C**
Storage	**-40°C to +85°C**

EMC Specifications

Specifications and Related Documents
The DeviceNet LDT was tested to and complied with the limits of the following specifications.

IEC 1000-4-2 (1995)	Electromagnetic compatibility, Part 4: Testing and measurement techniques, Section 2: Electrostatic discharge
IEC 1000-4-4 (1995)	Electromagnetic compatibility, Part 4: Testing and measurement techniques, Section 4: Electrical fast transient/burst immunity test.

List of Tests
The following is a list of tests, which were required for compliance with the above specifications:

Electrostatic Discharge Test	Level 3, 8kV air discharge only.
Electrical Fast Transient Tests	Level 4, 2kV signal lines, capacitive coupling only.

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