CHAPTER 1: INTRODUCTION

1.1 Overview

The HE693DNT250 DeviceNet Scanner (DNT250) is an intelligent communications interface module that provides DeviceNet Scanner functionality to a GE Fanuc Series 90-30 PLC. The DNT250 allows the connection of up to 63 DeviceNet slave nodes. Depending on baud rate and the cable type used, the DeviceNet nodes may be located up to 1,500 feet from the PLC.

The DNT250 Polled data is mapped directly into the PLC's %I, %Q, %AI and %AQ registers. The ladder programmer can treat the DNT250 and its attached DeviceNet nodes as a large I/O module. Polled data is transferred between the DNT250 and the PLC using Backplane I/O which is fast and efficient.

The DNT250 provides two additional constructs known as Ladder Code Initiated Explicit Messaging (LIEM) and the Unconnected Message Manager (UCMM).

The LIEM allows the ladder code executing within the PLC to initiate dialogues with DeviceNet nodes through the use of explicit messaging. This enables the PLC to access data beyond that normally available using the Polled Connection. For LIEM, data is transferred between the DNT250 and the PLC using a technique known as Backplane Mail. Backplane Mail requires considerably more processing time than Polled messaging. LIEM should therefore only be used to access infrequently required data such as device configuration and tuning parameters.

The DeviceNet specification provides two methods of establishing communications between scanners and nodes. The first is known as “Group 2 Only”. This was the only method provided by older DNT250s. The second method makes use of the “Unconnected Message Manager” (UCMM). The new DNT250 allows both of these methods to be used simultaneously. Any single slave device on a DeviceNet network can be either a Group 2 Only node or a UCMM node, never both. A DeviceNet network can be made up of a mixture of “Group 2 Only” and UCMM” slave devices.

The “Group 2 Only” method is by far the simplest. Because the UCMM is a far more intense protocol, very few manufactures supported it in the early days of DeviceNet. Times have changed. Now a large percentage of DeviceNet manufactures support the UCMM. As a result, the DNT250 has been upgrade to support both the UCMM and Group 2 Only protocols.

1.2 HE693DNT250 Features

The DNT250 allows a GE Fanuc Series 90-30 PLC to supervise a DeviceNet network. From the viewpoint of the ladder program running in the PLC, the DNT250 appears as a single, very high density I/O module.

The DNT250 supports the following DeviceNet features:
Baud Rates: 125K, 250K, and 500K,
UCMM protocol,
Group 2 Only protocol,
The Polled Connection,
The LIEM (explicit messaging),
Fragmentation on both polled and explicit connections,
All four Message Body Formats under UCMM.

When using Polled Messaging, data is read from the PLC’s %Q and %AQ registers by the DNT250, formatted into DeviceNet packets and sent to the DeviceNet nodes. Likewise, data produced by the DeviceNet nodes is received by the DNT250, converted into PLC register notation and passed to the PLC's %I and %AI registers. This happens automatically without the need for block move, "COMREQ", or other ladder program instructions.

The ladder code running in the PLC can build Explicit Messages to access any network data that is known to be available through the node's Explicit Connection. See chapter 4 for more information on LIEM or explicit messaging.

1.3 Technical Specifications

The following HE693DNT250 DeviceNet Interface Module specifications are subject to change without notice.

Table 1.1 - H3693DNT250 Specifications

DeviceNet Network Specifications			
Parameter	**Minimum**	**Maximum**	**Units**
DeviceNet Power Voltage	11	25	V
DeviceNet Power Load		65	mA
DeviceNet Signal Baud Rate	125	500	KHz
DeviceNet Signal Driver Fanout	0	63	Devices
PLC Power Load Specifications			
Parameter	**Minimum**	**Maximum**	**Units**
+5Vdc (LOGIC)	0	175	mA
+24Vdc (RELAY)	0	0	mA
+24Vdc (ISOLATED)	0	0	mA
Environmental Specifications			
Parameter	**Minimum**	**Maximum**	**Units**
Operating Temperature	0	+60	Deg C
Storage Temperature	-40	+85	Deg C
Humidity (non-condensing)	5	95	% RH