

GE Fanuc IC694DNM200

<http://www.pdfsupply.com/automation/ge-fanuc/rx3i-pacsystem/IC694DNM200>

Rx3i PacSystem

DeviceNet Master Module for RX3i. Module can only be located in the CPUbase. IC694D IC694DN IC694DNM

919-535-3180
sales@pdfsupply.com

DeviceNet Master Module: IC694DNM200

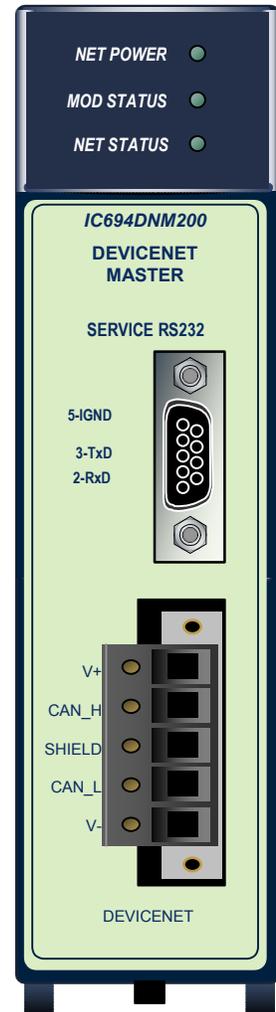
The DeviceNet Master Module allows the CPU to send and receive data over a DeviceNet network. It can act as master for up to 63 slaves on the DeviceNet network. It can also be configured to simultaneously function as a slave to another master on the bus.

DeviceNet is a communications network that transmits data between control systems (for example: PLCs, PCs, VMEbus computers, and robot controllers) and distributed industrial devices such as switches, sensors, valve manifolds, motor starters, bar code readers, drives, displays, and operator interfaces.

This module can be installed in any available I/O slot in any RX3i or Series 90-30 backplane. It is compatible with PACSystems™ RX3i IC695CPU310 CPU, release 3.5 or later. It is also compatible with any Series 90-30 CPU except IC693CPU321 or IC693CPU340 with release 8.0 or later CPU firmware. Release 10 or later is recommended. Machine Edition Logic Developer PLC version 3.0 SP1 Special 2 or later is required. This module is not compatible with VersaPro™, Control, or Logicmaster™ programming software. A Series 90-30 Hand-Held Programmer (IC693PRG300) cannot be used for configuration.

Features

- Bus communications at all standard DeviceNet data rates (125k, 250k, 500k baud)
- Up to 255 bytes input data transfer and 255 bytes output data transfer per slave.
- Up to 3972 bytes of input data transfer and 3972 bytes of output data transfer per master.
- UCMM-capable Group 2 Server
- One or two I/O connections per Slave - Typically one connection is used for Polled and the other is used for Strobe, Cyclic, or COS
- Supports Unconnected Message Manager (UCMM) with one proxy connection per slave device
- Configurable global scan rate
- Supports Poll, Strobe, Cyclic and COS I/O connections, Fragmented I/O and Explicit Messaging
- Configurable update rates for Poll and COS/Cyclic on a connection basis.
- Configurable response to loss of communication
- Firmware update via service port on module



LEDs and Connectors

The module's three DeviceNet-compliant LEDs show its operating and communications status. The RS-232 serial port is used for a computer connection during firmware upgrades. The DeviceNet connector is a removable spring-clamp terminal. It provides bus continuity and can be removed from the module without disrupting bus operation.

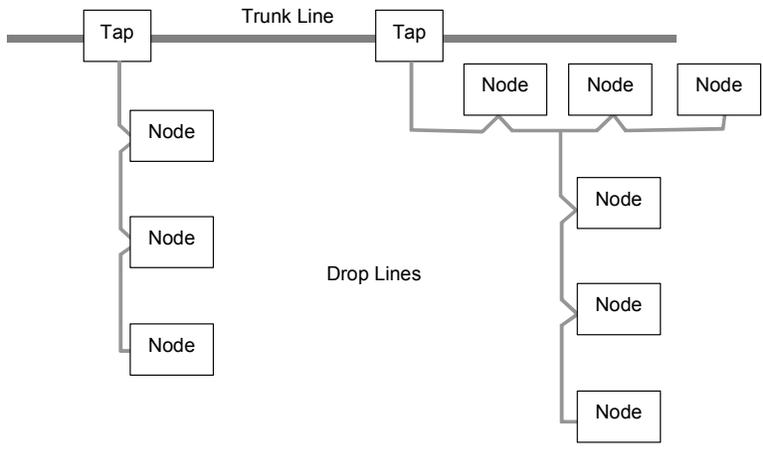
Specifications: IC694DNM200

Backplane Current Consumption	450mA at 5VDC (typical)
Thick Cable General Specifications	Two shielded pairs - Common axis with drain wire in center
	Overall braid shield - 65% coverage; 36 AWG or 0.12mm tinned Cu braid minimum (individually tinned)
	Drain wire- #18 Copper min.; 19 strands minimum (individually tinned)
	Outside diameter - 0.410 inches (min) to 0.490 inches (max.) roundness - radius delta to be within 15% of 0.5 O.D.
Thin Cable General Specifications	Two shielded pairs - Common axis with drain wire in center
	Overall braid shield - 65% coverage; 36 AWG or 0.12mm tinned Cu braid minimum (individually tinned)
	Drain wire - #22 Copper; 19 strands minimum (individually tinned)
	Outside diameter - 0.240 inches (min.) to 0.280 inches (max.) roundness - radius delta to be within 20% of 0.5 O.D.
Network Topology	Bus with limited branching (trunkline/dropline)
Redundancy	Not Supported
Network Power for Node devices	Nominal 24 VDC \pm 4%
Allowed Nodes (Bridging excluded)	64 nodes
Data Packet Size	0-8 bytes with allowance for message fragmentation
Duplicate Address Detection	Addresses verified at power-up
Error Detection / Correction	CRC - retransmission of message if validity not acknowledged by recipient

For product standards and general specifications, refer to Appendix A:

The DeviceNet Bus

Devices can be connected directly to the trunk cable, or to drop lines that are joined to the trunk cable with taps. Taps can be mounted in junction boxes or panels. Drop lines and daisy-chains are often used inside control panels where multiple devices are grouped together. When using drops with daisy-chains and branches, the maximum length from a tap to its farthest drop is 20 feet.



Bus Length

The maximum length of the trunk cable and drops both depend on the cable type and data rate. Individual drops may not exceed 6 meters and are limited to one network node per drop. However, the node may have multiple ports.

Data Rates	125kbps	250kbps	500kbps
thick cable, trunk length	500m (1640ft)	250m (820ft)	100m (328ft)
thin cable, trunk length	100m (328ft)	100m (328ft)	100m (328ft)
maximum drop length	6m (20ft)	6m (20ft)	6m (20ft)
total length of all drops	156m (512ft)	78m (256ft)	39m (128ft)

For each baud rate, the total drop length is the sum of all the drop lines of both cable types in the network.

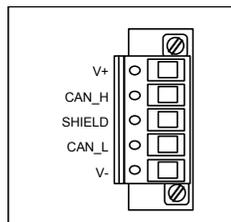
In addition, if the distance from a tap to the most distant device on its drop is longer than the distance from the tap to the nearest terminating resistor, the drop line length also counts as part of the trunk cable length (as well as the overall drop length).

DeviceNet Cable

Either DeviceNet thick cable or thin cable can be used. Thick cable permits greater cable lengths and higher current levels. Generally, thick cable is used for the trunk cable. Thin cable is normally used for shorter distances and is suitable for drop cables and for installations where more cable flexibility is needed. Both thick cable and thin cable are 5-wire, multi-conductor copper cable. Two wires form a transmission line for network communications. A second pair transmits network power. The fifth conductor forms an electromagnetic shield. Most cables have color coded leads which correspond to the color coding on the terminals on the DeviceNet Master Module.

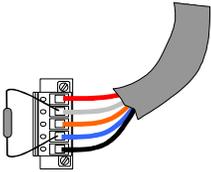
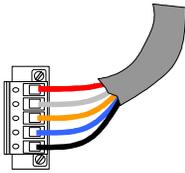
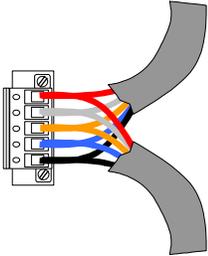
Bus Connector Pin Assignments

The DeviceNet connector on the RX3i DeviceNet Master module has five color-coded screw-clamp terminals.



Signal	Pin	Wire Color
V+	5	Red
CAN_H	4	White
Shield	3	Bare
CAN_L	2	Blue
V-	1	Black

Wiring to the DeviceNet Master module depends on its location on the network:

<p>121 Ohm, 1% ¼ watt terminating resistors MUST be installed at both ends of the DeviceNet network. The terminating resistor is placed across the data communication signals at pin 2 (CAN_L) and pin 4 (CAN_H).</p>  <p>If the DeviceNet module is located at either end of the bus trunk, it is wired with one cable connection and a terminating resistor:</p>	<p>If the module is installed at the end of a drop or drop segment, it is wired with one cable connection only.</p> 	<p>If the module is installed directly on the trunk cable or as part of a daisy-chained drop cable, it has both an incoming and outgoing cable connected:</p> 
---	---	---

Grounding

All DeviceNet cable shields must be tied to ground at each device connection. This is done by tying the bare wire of the cable to pin 3 (Shield) of the connector.

Power Requirements

The DeviceNet Master module consumes 450mA at 5VDC (typical) from the PLC backplane. This power is used for module operation, The DeviceNet Master powers its network transceiver from the 24VDC DeviceNet network power source. Linear power supplies are recommended for the DeviceNet power source. The DeviceNet power source should *not* also be used for device power. Transients caused by I/O devices can cause communications errors and even create bus-off conditions.

The DeviceNet specification recommends using a power tap to connect a power supply to the network. The power tap should be appropriately fused for the current capacity of the bus cables. The maximum current on the network depends on the cable type.

The DeviceNet network power supply must be grounded, but only at one point. The V- signal must be connected to protective earth ground at the power supply only. If multiple power supplies are used, only one power supply must have V- connected to earth ground.

Current Limit for Thick Cable

For thick cable, the maximum current on the network is 16 Amps. However, only 8 Amps is permitted on a single network segment. 16 Amps can be drawn from a single power supply by locating the power supply at the center point of two network segments, supplying 8 Amps to each segment.

Current Limit for Thin Cable

For thin cable, the maximum current permitted is 3 Amps.