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Chapter

1

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Product Overview

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General Description

The *D-version* family of Independent Motion Controllers provides state-of-the-art motion control for many types of machinery requiring the control of one or more independent axes of servo and/or stepping motors. The *D-version* provides the all digital, real-time response needed for today's automation applications. In addition, the self-contained and compact packaging results in a unit that is cost-effective for machine builders and users alike by minimizing costly point-to-point wiring and panel space. Like other GE Fanuc stand-alone motion controllers, the *D-version* is programmed using an easy-to-understand, mnemonic command set. Once programmed, the unit and associated mechanical system will stand-alone as an "island of automation," supervising and executing all motion control activities.

System Configuration

Key design features have been incorporated into the new *D-version* Independent Motion Controllers to provide the flexibility, performance, and serviceability demanded by the industrial user. These features include:

■   common capabilities and programming language for servo and stepping motors

■   complete software configuration of critical drive parameters such as peak and continuous current

■   optional plug and play operator interface

■   industrially hardened discrete input and outputs rated up to 24VDC

■   quick disconnect terminals for ease of installation and replacement

■   elimination of switch settings wherever possible

■   common mechanical specifications among all units

Each Independent Motion Controller contains its own application program. This program also contains all the programming required for the optional operator interface. The operator interface can communicate with multiple motor controllers over the serial-data link.

The *D-version* Independent Motion Controllers will easily accommodate a variety of installations.

Discrete Inputs and Outputs

Inputs	
Operating Range	12-24 VDC, 30 VDC maximum
Maximum Off Input Voltage	4 VDC
Minimum On input Voltage	10 VDC
Load	2K Ohms
Interface Format	source/sink user configurable

Outputs	
Operating Range	12-24 VDC, 30 VDC maximum
Maximum On Resistance	35 Ohms
Maximum Load Current	100 mA
Maximum Off Leakage Current	200 nA
Interface Format	source/sink user configurable

Analog Inputs and Outputs

Inputs		
Model	IMC-105X-1-D IMC-105D-1-D IMC-200X-X-D IMC-200D-X-D IMC-3_ _X-X-D IMC-3_ _D-X-D	IMC-105E-1-D IMC-105P-1-D IMC-200E-X-D IMC-200P-X-D IMC-3_ _E-X-D IMC-3_ _P-X-D
Number	0	1
Operating Range	n.a.	+/- 10 VDC
Resolution	n.a.	12 bits
Input Impedance	n.a.	50K Ohms

Outputs		
Model	IMC-105_-1-D IMC-3_ _ _-X-D	IMC-200_-X-D
Number	1	1
Parameter	user programmable, or velocity, current, or following error	control output to external servo amplifier
Operating Range	+/- 10 VDC	
Resolution	12 bits	
Current	5 mA	

feedback cables must contain individually shielded pairs for the feedback signals. The shields must be terminated to the isolated ground pins on the DB-15 connector.

I/O Connector Wiring

The discrete inputs and outputs may be wired for either sinking or sourcing operation. The operational voltage range is 12 to 24 volts DC. The output can sink or source 100ma maximum. The wiring to this connector should be of appropriate size and insulation quality for the application. For wiring diagrams, see Appendix A, "User Connections".

Motors

The IMC-1/D controllers are designed for use with stepping motors rated for 1 to 5 amperes per phase with 3 mH per phase minimum inductance. The motors must be designed to run from a 170 VDC bus.

The IMC-3/D controllers are designed for use with ac brushless servo motors rated for 0.75 to 6 amperes per phase with 2 mH per phase minimum inductance. In general, the best system performance is achieved by choosing a motor with a continuous current rating approximately equal to or less than the continuous current rating of the IMC-3/D.

The IMC-3/D controllers are designed to be used with motors which include a thermal switch or positive-temperature-coefficient (PTC) thermistor. The switch should be closed at acceptable motor operating temperatures and open at temperatures which exceed the motor's thermal rating. If a PTC is employed, it should exhibit a resistance less than 1000 ohms at acceptable motor temperatures and above 10,000 ohms at temperatures which exceed the motor's thermal rating. All GE Fanuc MTR-Series brushless AC servo motors include a PTC.