Variable Frequency Drives

**Mitsubishi D700
Variable Frequency Drive**

The 6.5 through 25-ton package units are equipped with a premium VFD-Rated Indoor Blower Motor and Programmed, Factory Wired Variable Frequency Drive (VFD).

Variable Frequency Drives provide an adjustable output frequency for electric motor speed regulation. 60 Hertz AC power entering the VFD is internally rectified to more malleable DC where the output can be controlled, pulsed and sequenced for motor speed control. The VFD microprocessor oversees speed regulation and monitors VFD condition in a microsecond timeframe for protective functions.

Other benefits of using variable frequency drives include:

- Partial load energy savings
- Low motor starting current
- Reduction of thermal and mechanical stresses on motors, belts and drive components during motor starts

The VFDs are preprogrammed with the proper selection for indoor blower applications, motor horsepower and other essential parameters. Replacement part VFDs will also be preprogrammed and have distinct part numbers for direct replacement. Programming parameters are listed on the unit label located on the backside of the indoor blower compartment door.

The following VFD parameters may be changed for application needs:

- ➢ Acceleration Time (Mitsubishi Parameter 7) (3-10 seconds)
- ➢ Deceleration Time (Mitsubishi Parameter 8) (3-10 seconds)

The following VFD parameters must be set to the Unit's Motor Specifications:

- ➢ Motor Full Load Amps (Mitsubishi Parameter 9) (FLA times 1.15)
- ➢ Motor Voltage (Mitsubishi Parameter 19)
  - (208, 230 or 460)

Mitsubishi VFD Programming

Programming

- Press STOP / RESET
- Press PU / EXT
- Press MODE (Changes PU to PRM)
- Turn Dial to Parameter 77
- Press SET
- Change setting from 1 to 2 using the dial
  - Setting 1 prohibits parameter changes
  - Setting 2 allows parameter changes
- Press SET
- Press SET twice to return to Parameters

Changing Parameters

- Turn Dial to find Parameter
- Press SET
- Change Parameter setting using dial
- Press SET to save

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When programming is complete

- Select Parameter 77
- Change setting from 2 to 1 (protects drive from unwanted parameter changes by others)
- Press SET to save
- Press MODE twice to return to Monitor Mode
- Press RUN

Resetting a VFD to 'Mitsubishi Factory Defaults'. (A last resort effort to restore a problem VFD to normal operation.)

- Press PU / EXT
- Press MODE
- Use Dial to scroll left to Parameter ALLC
- Press Set
- Select '1'
- Press Set
- Important Note – Once 'Mitsubishi Factory Defaults' have been restored, all of the Parameters listed in the chart below must be changed to the York Settings listed in the chart.
- Settings highlighted in Orange (Parameters 9, 19) must be set to the Motor Data Plate requirements.
- Settings highlighted in Yellow (Parameters 1, 2, 7, 8) may be changed as needed for optimized operation of a VFD.

Mitsubishi D700 / E560 Drive Parameter Factory Settings (York USA Units)

Parameter	Settings	Description	Notes
C3 (902)	2.0 V	Terminal 2 Frequency Setting Bias	Minimum Input Voltage on Terminal A1
C4 (903)	9.8 V	Terminal 2 Frequency Setting Gain	Minimum Input Voltage on Terminal A2
1	60.0 HZ	Maximum Frequency (0 to 120)	0 to 120
2	25.0 Hz	Minimum Frequency (0 to 120)	Must be equal to or less than the Maximum Frequency Setting (Parameter 1)
7	3.0 Sec	Acceleration Time	Ramp-up Time
8	3.0 Sec	Deceletation Time	Ramp-down Time
9	Motor FLA	Electronic Thermal Overload Relay	Motor's nameplate rated Full Load Amps. (Value must be between 30-120% of VFD's rated output current)
19	Motor Voltage	Motor's Nameplate Voltage	Default for low voltage is 230 V. Must reprogram for 208 V applications.
22	115	Stall Prevention Operation Level	% Over Torque
60	9	Energy Saving Control Selection	Enable selection between normal mode and optimum excitation control mode. Energy Savings Mode = 9
65	2	Retry on Over-Voltage Alarms only	Enable automatic reset during STOP state due to Over-Voltage fault caused by high line voltage
67	10	Number of Retries at Fault Occurrence	Number of times to restart after a fault occurs
71	13	Applied Motor	Electronic Thermal Overload relay selection
72	11	PWM frequency selection	PWM Carreir Frequency
73	0	Analog Input Selection (Terminal 2 Input)	0 = (0 - 10) VDC 1 = (0 - 5) VDC
78	1	Reverse Rotation prevention selection	Disable Reverse Operation
167	1	Output current detection operation selection	Stop drive after over-torque detected
241	1	Terminal 2 analog input display	0 = Displayed in % 1 = Displayed in V/ma
250	0 sec	Stop Method	Coast to Stop