Command Mode and Frequency Mode Control

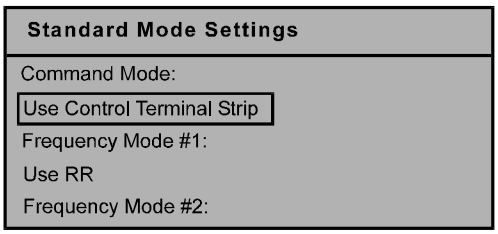
Command control includes instructions such as **Stop**, **Run**, **Jog**, etc. The source of the **Command** signal must be established for normal operation.

Frequency commands control the output speed of the ASD. The source of the frequency (speed) control signal must be established for normal operation.

The source of the command control and speed control may be either internal or external. Once the source signal is selected for either function, the system may be configured to use the selected signal all of the time or switch under user-defined conditions.

Command and **Frequency** control may be carried out using any one of several control methods (signal sources) or combinations thereof. In the event that multiple control commands are received, the signal sources are assigned priority levels. The primary control method for **Command** and **Frequency** control uses the settings of **F003** and **F004**, respectively.

Command Control (F003)



The **Command Mode** selection of **F003** establishes the primary source of the command input for the ASD. However, the **Override** feature may supersede the **F003** setting as indicated in Table 5 on page 41.

Table 5 on page 41 shows the hierarchy of the control sources managed by the **Override** function. The level of the control item on the hierarchy is listed from left to right, most to least, respectively. As indicated in the table, the **Override** setting may supersede the **F003** setting.

Placing the EOI in the **Local** mode selects either the **RS232/485** or the **Common Serial (TTL)** as the **Command Mode** control source. Once in the **Local** mode, the **LCD Port Connection** setting determines if the **RS232/485** or the **Common Serial (TTL)** will be used for **Command** control. **Local** mode operation may be superseded by other **Communications Override** settings.

Example: With the EOI set to **Local** and the **LCD Port Connection** set to **Common Serial (TTL)**, setting the **Communication Card** or **RS232/485** control to **Override** will supersede the **Common Serial (TTL)** setting.

The remaining control sources may be placed into the override mode using communications.

The source of the **Command** control signal may be selected by:

- The **F003** setting,
- Placing an item from the list below in the **Override** mode via communications, or
- Placing the EOI in the **Local** mode (places only the RS232/485 or the Common Serial [TTL] in the Override mode).

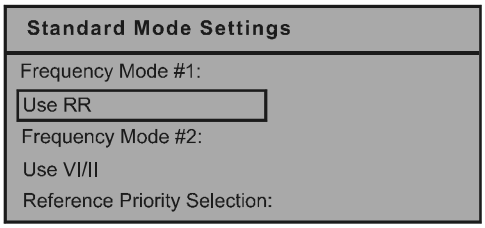
Possible **Command** signal source selections include the following:

- Use Control Terminal Strip (default),
- Use LED Keypad Option,
- Use Common Serial (TTL),
- Use RS232/485,
- Use Communication Card, or

- **F003** setting (is used if no signal sources are in the Override mode).

Note: *The **Control Terminal Strip** is placed in the **Override** mode by assigning a discrete terminal to **Command Control Terminal Strip Priority** and connecting the terminal to **CC**. Once activated (Run command required), the **Control Terminal Strip** settings will be used for **Override Command** control (F, R, Preset Speeds, etc.).*

Frequency Control (F004)



The **Frequency Mode #1** (or the **Frequency Mode #2**) setting establishes the user-selected source of the frequency-control input for the ASD. The signal source selected here is used for speed control unless the **Reference Priority Selection** parameter is configured to automatically switch this setting (see **F200**) or if the **Override** feature is enabled (via communications or via the Local mode operation).

Table 5 on page 41 shows the hierarchy of the control sources managed by the **Override** function. The level of the control item on the hierarchy is listed from left to right, most to least, respectively. As indicated in the table, the **Override** setting may supersede the selection at **F004**.

Placing the EOI in the **Local** mode selects either the **RS232/485** or the **Common Serial (TTL)** as the **Frequency Mode #1** control source. Once in the **Local** mode, the **LCD Port Connection** setting determines if the **RS232/485** or the **Common Serial (TTL)** will be used for **Frequency Mode #1** control. **Local** mode operation may be superseded by other **Communications Override** settings.

Example: With the EOI set to **Local** and the **LCD Port Connection** set to **Common Serial (TTL)**, setting the **Communication Card** or **RS232/485** control to **Override** will supersede the **Common Serial (TTL)** setting.

The remaining control sources may be placed into the override mode using communications.

The source of the **Frequency** control signal may be selected by:

- The **F004** setting,
- Placing an item from the list below in the **Override** mode via communications, or
- Placing the EOI in the **Local** mode (places only the RS232/485 or Common Serial in the Override mode).

Possible **Frequency** control source selections include the following:

- Communication Card,
- RS232/485,
- Common Serial (TTL),
- LED Keypad,
- Control Terminal Strip (default setting), or
- **F004** setting (used if no other items are in the Override mode).

Note: *The **Control Terminal Strip** is placed in the **Override** mode by assigning a discrete terminal to **VI/II Terminal Priority** and connecting the terminal to **CC**. Once the discrete terminal is activated, **VI/II** is used as the **Control Terminal Strip Override** control item.*

Command and Frequency Control Selections

The user may select only one **Command** source and only one source for **Frequency** control. The default settings for **Command** and **Frequency** control are **Use Control Terminal Strip** and **Use RR**, respectively.

The **G7 ASD** has a command register for each item listed as a **Command** or **Frequency** source. The registers store the **Override** setting for each control source. The registers are continuously scanned to determine if any of the listed items are in the **Override** mode.

For each scan cycle, the command registers of the control sources are scanned for the **Override** setting in the order that they are listed in Table 5 on page 41. The first item of the **Command** section and the first item of the **Frequency** section detected as being in the **Override** mode will be used for **Command** and **Frequency** control, respectively. If no items are detected as being in the **Override** mode, the settings of **F003** and **F004** will be used for **Command** and **Frequency** control, respectively.

Any or all of the **Command** and **Frequency** control input sources may be placed in the **Override** mode.

Placing the **G7 ASD** in the **Local** mode (Local/Remote LED on) via the EOI places the **RS232/485** or the **Common Serial** (TTL) control selections in the **Override** mode for **Command** and **Frequency** input (see the section titled Override Operation below for the proper setting). The **Local/Remote** control **Override** feature for **Command** and **Frequency** (or either) may be enabled/disabled at Program ⇒ EOI Option Setups ⇒ **Local-Remote Key** (enabled with check in box).

Communications may be used to place the remaining **Command** and eligible **Frequency** control input sources in the **Override** mode. Once placed in the **Override** mode this setting is valid until it is cancelled, the power supply is turned off, or the unit is reset.

Override Operation

The command registers of the listed signal sources are scanned in the order that they are listed in Table 5 to determine which input sources are in the **Override** mode. During each register scan cycle, the first item detected as having the **Override** function turned on is the selection that is used for **Command** or **Frequency** control input.

The **Override** control setting supersedes the setting of the **Command** mode setting (**F003**) and the **Frequency** mode setting (**F004**). However, the **F003** and **F004** settings will be used in the event that the register scan returns the condition that none of the listed items have the **Override** feature turned on (see Table 5).

Command and Frequency-Control Override Hierarchy

Table 5 lists the input conditions and the resulting output control source selections for **Command** and **Frequency** control **Override** operation. The **G7 ASD** reads the command registers of the listed control items from left to right. In the table the number **1** indicates that the **Override** feature is turned on for that control input source; **X** = Don't Care; and **0** = Override Off.

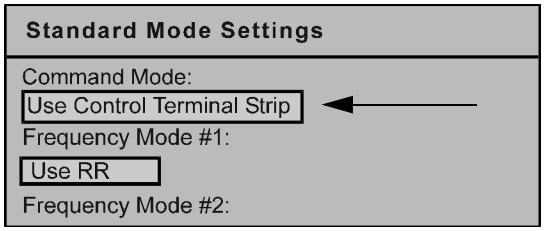
The first item to be read that has the **Override** feature turned on will be used for **Command** or **Frequency** control.

Table 5. Command and **Frequency** control hierarchy.

1	2	3	4	5	6	⇐ Priority Level
Communication Card	**RS232/485**	**Common Serial**	**Panel (LED Keypad)**	**Control Terminal (Binary/BCD Input)**	**F003/F004**	**Command/ Frequency Mode**
1	X	X	X	X	X	Communication Card
0	**1**	X	X	X	X	RS232/485
0	0	**1**	X	X	X	Common Serial
0	0	0	**1**	X	X	Panel (LED Keypad)
0	0	0	0	**1**	X	Control Terminal
0	0	0	0	0	**F003/F004 Setting**	F003/F004 Setting

Command Control-Source Selection

The following is a listing and description of the **Command Mode** (**F003**) selections (Program ⇒ Fundamental Parameters ⇒ Standard Mode Selection ⇒ **Command Mode**).



Settings:

Use Control Terminal Strip

Allows for **Command** control input via the 25-pin terminal strip on the **Control Terminal Strip** PCB.

Use LED Keypad Option

The **LED Keypad** is unavailable at the time of this release.

Use Common (TTL)

Set the **LCD Port Connection** to **Common Serial (TTL)** to use this feature.

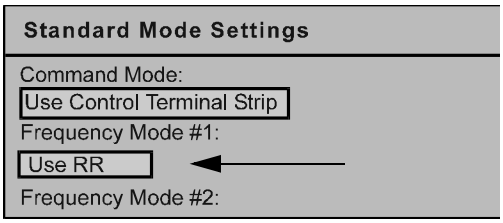
Use RS232/485

Set the **LCD Port Connection** to **RS232/485** to use this feature.

Use Communication Card

Routes the control and monitoring I/O to CNU3 of the **Control Board** of the **G7 ASD** (Communication Card connector).

Frequency Control-Source Selection



The following is a listing and description of the **Frequency Mode** (**F003**) selections (Program ⇒ Fundamental Parameters ⇒ Standard Mode Selection ⇒ **Frequency Mode #1**).

Settings:

Use VI/II

0 to 10-volt DC analog input connected to **VI** or a 4 – 20 mA (or 0 to 1 mA) DC current connected to **II** (cannot use both simultaneously).

Use RR

0 to 10-volt DC analog input connected to **RR**.

Use RX

-10 to +10-volt DC analog input connected to **RX**.

Use Option Card RX2

-10 to +10-volt DC analog input connected to **RX2**.

Use LED Keypad Option

The LED Keypad is unavailable at the time of this release.

Use Binary/BCD Input

Allows for discrete terminal input to control the ASD output.

Use Common Serial (TTL)

To use the EOI for control requires that the **LCD Port Connection** be set to **Common Serial (TTL)** to use this feature.

Use RS232/485

To use the EOI for control requires that the **LCD Port Connection** be set to **RS232/485** to use this feature.

Use Communication Card

Routes the control and monitoring I/O to CNU3 of the **Control Board** of the **G7 ASD** (Option Card connector).

Use Motorized Pot Simulation

A discrete terminal may be configured to increase or decrease the speed of the motor by momentarily connecting the assigned terminal to **CC**. See Table 8 on page 81 for further information on this feature.

Use Pulse Input Option

Configures the system to receive pulse input. See **PG Speed Reference Setpoint** on pg. 112 for further information on this feature.