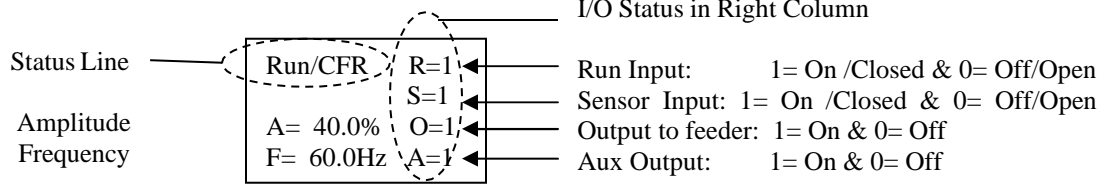


Automation Devices. Variable Frequency Control Troubleshooting Guide

Control must be connected to a known GOOD LOAD prior to testing

Status Line Messages on the LCD and the I/O status on the right column should identify most problems. The normal operating LCD layout is shown below:



VF Series LCD display shown above

The normal operating display shows the “Status Line” of the control regarding input signals and control settings. The highest priority message takes precedence over all other messages. The messages are listed below from highest to lowest priority.

- Stop/Run -** The 1/0 button has been pushed to disable control operation.
- Override -** The 1/0 button has been pushed and held so the control will feed, ignoring the “Run” and “Sensor” inputs.
- Run Input -** The run jumper circuit has not been made.
- Parts Sens -** The parts sensor logic is telling the control to stay off.
- Empty/jam -** Empty bowl timer has timed out because parts did not pass by the parts sensor to reset the timer. Press 1/0
- Analog -** An external signal is in control of the speed input.
- Low -** Low Speed used when 2 speed has been selected and the sensor is not made.
- Zero Speed -** The output is off because the output is set to 0.0%.
- Run –** The feeder is running normally.
- Run/CFR –** Constant Feed Rate sensor is regulating the feed rate (Autotune®).

<u>Problem:</u>	<u>Possible Cause:</u>	<u>Solution:</u>
No output from the control	<p>No AC line voltage</p> <p>No AC voltage on circuit board at terminal block TB1 from the left: #1 is COM. #2 is HOT</p> <p>Circuit board fuses F1 and/or F2 are blown</p> <p>Status line on the LCD identifies a condition that prevents operation.</p> <p>**Bad sensor or incorrect sensor wiring</p> <p>Sensor status line remains the same even though the sensor changes states.</p> <p>The amplitude changes but no vibration</p> <p>Max output setting adjusted too low</p> <p>4-20mA or 0-10VDC remote analog speed control signal is missing on TB2-11 and 12 or TB2-10 and 11 respectfully.</p> <p>***Bad control board</p>	<p>Plug in control.</p> <p>Check / Replace Control Switch</p> <p>Check/Replace blown fuse(s)</p> <p>Satisfy the identified condition to make the control run. (See Status Line Messages)</p> <p>Check the sensor wiring</p> <p>Sensor input under “I/O Settings” needs to be set to NPN or PNP in the programming menu</p> <p>The Frequency needs to adjusted for the bowl</p> <p>Adjust the Max setting per the application note</p> <p>Ensure that 4-20mA or 0-10VDC signal is coming to the board from the PLC</p> <p>Replace control and/or return for repair</p>

Feeder only hums or moves parts slowly	<p>The frequency supplied by the control may not be adjusted to the vibration frequency of the feeder.</p> <p>Max setting is set too low</p> <p>Potential Feeder problem</p> <p>Electrical noise has disrupted the unit</p>	<p>Manually adjust the frequency setting to find the right frequency like finding an AM radio station.</p> <p>Adjust setting per the control’s application note</p> <p>See Automation Devices Solution “Control, Feeder or PowerLine Problem?”</p> <p>Download Automation Devices Solution “Good Wiring Practices” Turn the power switch off for 20 seconds and then on.</p>
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Variable Frequency Control Troubleshooting Guide –

<u>Problem:</u>	<u>Possible Cause:</u>	<u>Solution:</u>
Full output with no change in the output when the power setting is adjusted	Electrical noise has disrupted the unit	Download Automation Devices Solution “Good Wiring Practices” Turn the power switch off for 20 seconds and then on.
	Control is not connected to a known good load	Connect a load to the unit. (not just a voltmeter)
Full output with no CFR regulation	CFR sensor detached from feeder	Re-attach the sensor to the feeder. Additional tape is available from Automation Devices
Output is not turning on and off properly	The time delay setting is set too long	Adjust the time delay settings to a lower value.
	The sensor is being blocked and unblocked within a fraction of a second	Check sensor alignment and parts position.
	**Bad sensor	Replace sensor. See “Troubleshooting Guide for Three Wire DC sensors.”
	***Bad board	Replace control and/or return for repair
Interlocked board does not turn off with the VF controller	Run jumper or paddle switch may not be across interlock terminals (where used)	See the application note for the control to be interlocked to determine the proper connections.
Erratic output when making no adjustment to the control	Electrical noise has disrupted the unit	Download Automation Devices Solution “Good Wiring Practices” Turn the power switch off for 20 seconds and then on.
	***Bad control board	Reconnect CFR sensor cable.
The CFR sensor is not regulating the feeder speed (where CFR sensor is used)	Incorrect CFR sensor wiring	Check the sensor wiring: Brown to “ACCEL +” and Blue to “ACCEL -”
	Broken or disconnected CFR sensor cable.	Re-attach the sensor to the feeder. Additional tape is available from Automation Devices
	CFR Sensor is no longer attached to the vibratory feeder.	Re-connect the CFR sensor cable. Additional tape is available from Automation Devices
	The power setting is set to “100.0%”.	The control cannot increase the power above 100.0% so speed variations may occur.
Output oscillates or surges (It speeds up, and then slows down) (where CFR sensor is used)	The feeder is unstable at the current feed rate.	Readjust the amplitude power setting higher or lower.
	Control over-compensates for feeder fluctuations	Reduce the CFR Pos Gain to 10 or lower.
	The feeder is not capable of being stable at the current feed rate.	Change the frequency mode to “Manual” and operate 2Hz below the below the resonate frequency.
No LCD display read-out, but the control runs	Electrical noise has disrupted the unit	Download Automation Devices Solution “Good Wiring Practices.” Turn the power switch off for 20seconds and then on.
	*Damaged LCD on main lid	Check LCD connector at the board, replace control or return for repair
	*** Bad control board(s)	Replace control and/or return for repair
The buttons have no effect on the control.	Electrical noise has disrupted the unit	Turn the power switch off for 20 seconds and then on.
	The keypad connector has come loose	Re-attach the keypad connector to the board
	The keypad cable has been torn	Replace control and/or return for repair

Variable Frequency Control Troubleshooting Guide –

** To test if the parts sensor is functionally correctly, see accompanying Part Sensor Test Sheet.

*** To determine if the problem is in the feeder or control: see the accompanying solution guide “Control or Feeder Problem.”

Note: Malfunctioning controls can be sent back to Automation Devices Inc. for repair or to be updated to the latest revision. Please send in the product to Automation Devices Inc., 7050 W. Ridge Rd., Erie PA 16415, Attention Repair Department. Please include your address, telephone number, name of person to contact and a description of the symptoms of the control problem. For further assistance visit Automation www.autodev.com or call us at 814-474-5561

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Page 3