

7 Troubleshooting – Hướng dẫn xử lý lỗi Biến tần Yaskawa

General Fault and Alarms

Faults and alarms indicate problems in the drive or in the machine.

An alarm is indicated by a code on the data display and the flashing ALM LED. The drive output is not necessarily switched off.

A fault is indicated by a code on the data display and the ALM LED is on. The drive output is always switched off immediately and the motor coast to stop.

To remove an alarm or reset a fault, trace the cause, remove it and reset the drive by pushing the Reset key on the operator or cycling the power supply.

This lists up the most important alarms and faults only. Please refer to the Technical Manual for a complete list.

Digital Operator	AL	FLT	Cause	Corrective Action
Base Block bb			The software base block function is assigned to one of the digital inputs and the input is off. The drive does not accept Run commands.	<ul style="list-style-type: none"> • Check the digital inputs function selection. • Check the upper controller sequence.
Control Fault CF			The torque limit was reached during deceleration for longer than 3 s. when in Open Loop Vector control <ul style="list-style-type: none"> • The load inertia is too big. • The torque limit is too low. • The motor parameters are wrong. 	<ul style="list-style-type: none"> • Check the load. • Set the torque limit to the most appropriate setting (L7-01 through L7-04). • Check the motor parameters.
Control Circuit Fault CPF02 to CPF24			There is a problem in the drive's control circuit.	<ul style="list-style-type: none"> • Cycle the drive power supply. • Initialize the drive. • Replace the drive if the fault occurs again.
Control Circuit Fault CPF25			There is no terminal board connected to the control board.	<ul style="list-style-type: none"> • Check if the terminal board is installed properly. • Uninstall and Reapply the terminal board. • Change the drive.
Cannot Reset CrST			Fault reset was input when a Run command was active.	Turn off the Run command and reset the drive.
Option External Fault EFO			An external fault was tripped by the upper controller via an option card.	<ul style="list-style-type: none"> • Remove the fault cause, reset the fault and restart the drive. • Check the upper controller program.
External Fault EF			A forward and reverse command were input simultaneously for longer than 500 ms. This alarm stops a running motor.	<ul style="list-style-type: none"> • Check the sequence and make sure that the forward and reverse input are not set at the same time.
External Faults EF1 to EF8			<ul style="list-style-type: none"> • An external fault was triggered by an external device via one of the digital inputs S1 to S8. • The digital inputs are set up incorrectly. 	<ul style="list-style-type: none"> • Find out why the device tripped the EF. Remove the cause and reset the fault. • Check the functions assigned to the digital inputs.
Ground Fault GF			<ul style="list-style-type: none"> • Ground leakage current has exceeded 50% of the drives rated output current. • Cable or motor insulation is broken. • Excessive stray capacitance at drive output. 	<ul style="list-style-type: none"> • Check the output wiring and the motor for short circuits or broken insulation. Replace any broken parts. • Reduce the carrier frequency.
Safe Disable Hbb			Both Safe Disable inputs are open. The drive output is safely disabled and the motor can not be started.	<ul style="list-style-type: none"> • Check why the upper controller's safety device disabled the drive. Remove the cause and restart. • Check the wiring. • If the Safe Disable function is not utilized for the ISO13849-1, Category 3 PLd, and IEC61508, SIL2 or for disabling the drive, the terminals HC, H1, H2 must be linked.

Safe Disable Fault HbbF		<p>Drive output is disabled while only one of the Safe Disable inputs is open. (normally both input signals H1 and H2 should be open)</p> <ul style="list-style-type: none"> • One channel is internally broken and does not switch off, even if the external signal is removed. • Only one channel is switched off by the upper controller. 	<ul style="list-style-type: none"> • Check the wiring from the upper controller and make sure that both signals are set correctly by the controller. • If the signals are set correctly and the alarm does not disappear, replace the drive.
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Digital Operator	AL	FLT	Cause	Corrective Action
Output Phase Loss PF			<p>Output cable is disconnected or the motor winding is damaged. Loose wires at the drive output. Motor is too small (less than 5% of drive current).</p>	<ul style="list-style-type: none"> • Check the motor wiring. • Make sure all terminal screws in the drive and motor are properly tightened. • Check the motor and drive capacity.
Overcurrent oC			<p>Short circuit or ground fault on the drive output side The load is too heavy. The accel./decel. times are too short. Wrong motor data or V/f pattern settings. A magnetic contactor was switched at the output.</p>	<ul style="list-style-type: none"> • Check the output wiring and the motor for short circuits or broken insulation. Replace the broken parts. • Check the machine for damages (gears, etc.) and repair any broken parts. • Check the drive parameter settings. • Check the output contactor sequence.
Heatsink Overheat oH or oH1			<p>Surrounding temperature is too high. The cooling fan has stopped. The heatsink is dirty. The airflow to the heatsink is restricted.</p>	<ul style="list-style-type: none"> • Check the surrounding temperature and install cooling devices if necessary. • Check the drive cooling fan. • Clean the heatsink. • Check the airflow around the heatsink.
Motor Overload oL1			<p>The motor load is too heavy. The motor is operated at low speed with heavy load. Cycle times of accel./ decel. are too short. Incorrect motor rated current has been set.</p>	<ul style="list-style-type: none"> • Reduce the motor load. • Use a motor with external cooling and set the correct motor in parameter L1-01 • Check the sequence. • Check the rated current setting.
Drive Overload oL2			<p>The load is too heavy. The drive capacity is too small. Too much torque at low speed.</p>	<ul style="list-style-type: none"> • Check the load. • Make sure that the drive is big enough to handle the load. • The overload capability is reduced at low speeds. Reduce the load or increase the drive size.
DC Overvoltage ov			<p>DC bus voltage rose too high. The deceleration time is too short. Stall prevention is disabled. Braking chopper / resistor broken. Unstable motor control in OLV. Too high input voltage.</p>	<ul style="list-style-type: none"> • Increase the deceleration time. • Enable stall prevention by parameter L3-04. • Make sure the braking resistor and braking chopper are working correctly. • Check motor parameter settings and adjust torque and slip compensation as needed. • Make sure that the power supply voltage meets the drives specifications.
Input Phase Loss LF			<p>Input voltage drop or phase imbalance. One of the input phase is lost. Loose wires at the drive input.</p>	<ul style="list-style-type: none"> • Check the power supply. • Make sure that all cables are properly fixed to the correct terminals.
Braking Transistor Fault rr			<p>The internal braking transistor is broken.</p>	<ul style="list-style-type: none"> • Cycle the power supply. • Replace the drive if the fault reoccurs.
Thermistor Disconnect THo			<p>The motor thermistor is not connected properly.</p>	<p>Check the wiring for the thermistor.</p>
DC Undervoltage Uv1			<p>The voltage in the DC bus fell below the undervoltage detection level (L2-05). The power supply failed or one input phase has been lost. The power supply is too weak.</p>	<ul style="list-style-type: none"> • Check the power supply. • Make sure, that the power supply is strong enough.
Controller Undervoltage Uv2			<p>The drives controller power supply voltage is too low.</p>	<ul style="list-style-type: none"> • Cycle power to the drive. Check if the fault reoccurs. • Replace the drive if the fault continues to occur.

DC Charge Circuit Fault Uv3		The charge circuit for the DC bus is broken.	<ul style="list-style-type: none"> • Cycle power to the drive. Check if the fault reoccurs. • Replace the drive if the fault reoccurs.
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Operator Programming Errors

An Operator Programming Error (oPE) occurs when an inapplicable parameter is set or an individual parameter setting is inappropriate. When an oPE error is displayed, press the ENTER button to display U1-18 (oPE fault constant). This monitor will display the parameter that is causing the oPE error.

Digital Operator	Cause	Corrective Action
oPE01	Drive capacity and value set to o2-04 do not match.	Correct the value set to o2-04.
oPE02	Parameters were set outside the allowable setting range.	Set parameters to the proper values.
oPE03	<p>A contradictory setting is assigned to multi-function contact inputs H1-01 through to H1-08.</p> <ul style="list-style-type: none"> • The same function is assigned to two inputs. (this excludes “External fault” and “Not used”) • Input functions which require the setting of other input functions were set alone. • Input functions that are not allowed to be used simultaneously have been set. 	<ul style="list-style-type: none"> • Fix any incorrect settings. • Refer to the Technical Manual for more details.
oPE05	<ul style="list-style-type: none"> • The run command source (b1-02) or frequency reference source (b1-01) is set to 3 but no option card is installed. • The frequency reference source is set to pulse input but H6-01 is not 0. 	<ul style="list-style-type: none"> • Install the required option card. • Correct the values set to b1-01 and b1-02.
oPE07	<p>Settings to multi-function analog inputs H3-02 and H3-10 and PID functions conflict.</p> <ul style="list-style-type: none"> • H3-02 and H3-10 are set to the same value. (this excludes settings 0 and F) • PID functions have been assigned to both analog inputs and the pulse input at the same time. 	<ul style="list-style-type: none"> • Fix any incorrect setting. • Refer to the Technical Manual for more details.
oPE08	A function has been set that cannot be used in the control mode selected. (might appear after control mode change)	<ul style="list-style-type: none"> • Fix any incorrect setting. • Refer to the Technical Manual for more details.
oPE10	The V/f pattern setting is incorrect.	<ul style="list-style-type: none"> • Check the V/f pattern settings. • Refer to the Technical Manual for more details.
oPE18	<p>One of the following setting errors has occurred while Online Tuning is enabled in OLV (A1-02 = 2):</p> <ul style="list-style-type: none"> • E2-02 has been set below 30% of the original default value • E2-06 has been set below 50% of the original default value • E2-03 = 0 	Make sure E2-02, E2-03, and E2-06 are set the correct values.

Auto-Tuning Errors

Digital Operator	Cause	Corrective Action
Er-01	<p>Motor data fault</p> <p>The input motor data are not valid. (e.g. the base frequency and base speed do not fit).</p>	Re-enter the data and repeat Auto-Tuning.
Er-02	<p>Minor Fault</p> <ul style="list-style-type: none"> • The wiring is faulty. • The load is too heavy. 	<ul style="list-style-type: none"> • Check the wiring. • Check the load. Always perform Auto-Tuning with the load decoupled from the motor.
Er-03	The STOP button was pressed and Auto-Tuning was canceled.	Repeat the Auto-Tuning.
Er-04	<p>Resistance fault</p> <ul style="list-style-type: none"> • Wrong input data. • Auto tuning exceeded the given time frame. • Calculated values out of range. 	<ul style="list-style-type: none"> • Check the input data. • Check the wiring. • Re-enter the data and repeat the Auto-Tuning.

Er-05	No-Load Current Error • Incorrect data was entered. • Auto tuning took too long. • Calculated values out of range.
Er-08	Rated Slip Error • Wrong data input. • Auto tuning exceeded the given time frame. • Calculated values out of range.

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Digital Operator	Cause	Corrective Action
Er-09	Acceleration error The motor did not accelerate for the specified acceleration time.	<ul style="list-style-type: none"> • Increase the acceleration time C1-01. • Check the torque limits L7-01 and L7-02.
Er-11	Motor speed fault. The torque reference was too high.	<ul style="list-style-type: none"> • Increase the acceleration time (C1-01). • If possible, disconnect the load.
Er-12	Current detection error • One or all output phases are lost. • Current is either too low or exceeds the drives rating. • The current sensors are faulty.	<ul style="list-style-type: none"> • Check the wiring. • Make sure, that the drive rating fits to the motor. • Check the load. (Auto-Tuning should have been performed without the load connected.) • Replace the drive.
Er-13	Leakage Inductance Error Drive was unable to complete tuning for leakage inductance within 300 s.	<ul style="list-style-type: none"> • Check all wiring and correct any mistakes. • Double check the motor rated current value that was entered to T1-04 for Auto-Tuning. • Check the motor rated current value written on the motor nameplate and enter the correct value.
End1	Excessive V/f Setting • The torque reference exceeded 20% during Auto-Tuning. • The calculated no-load current is above 80% of the motor rated current.	<ul style="list-style-type: none"> • Check the V/f pattern setting. • Perform Auto-Tuning without the load connected. • Check the input data and repeat Auto-Tuning.
End2	Motor iron-core saturation alarm • Calculated core saturation values out of range. • Incorrect data was entered.	<ul style="list-style-type: none"> • Check the input data. • Check the motor wiring. • Perform Auto-Tuning without load connected.
End3	Rated current alarm	Check the input data and repeat tuning.
End4	Adjusted Slip Calculation Error The slip that was calculated is outside the allowable range.	<ul style="list-style-type: none"> • Make sure the data entered for Auto-Tuning is correct. • Execute Rotational Auto-Tuning instead. If not possible, try Stationary Auto-Tuning 2.
End5	Resistance Tuning Error The resistance value that was calculated is outside the allowable range.	<ul style="list-style-type: none"> • Double check the data that was entered for the Auto-Tuning process. • Check the motor and motor cable connection for faults.
End6	Leakage Inductance Alarm The leakage inductance value that was calculated is outside the allowable range.	Double check the data that was entered for the Auto-Tuning process.
End7	No-Load Current Alarm • The entered no-load current value was outside the allowable range. • Auto-Tuning results were less than 5% of the motor rated current.	<ul style="list-style-type: none"> • Check and correct faulty motor wiring. • Double check the data that was entered for the Auto-Tuning process.