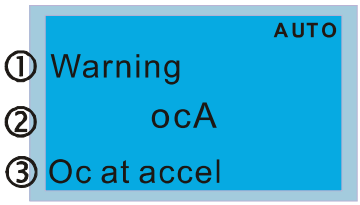
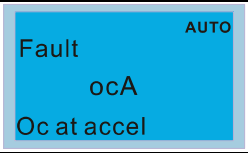
# Chapter 14 Fault Codes and Descriptions



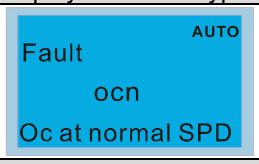

① Display error signal
② Abbreviate error code
③ Display error description

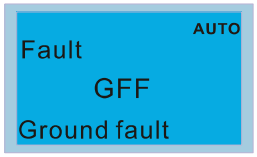
* : Refer to setting of Pr.06-17–Pr.06-22.

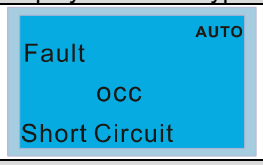
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 1 |   | Over-current during acceleration (ocA) | Output current exceeds 2.4 times of rated current during acceleration.<br>When ocA occurs, the drive closes the gate of the output immediately, the motor runs freely, and the display shows an ocA fault. |
| Action and Reset | | | |
| Action level | | | 240% of rated current |
| Action time | | | Act immediately |
| Fault treatment parameter | | | N/A |
| Reset method | | | Manual reset |
| Reset condition | | | Reset in 5 sec. after the fault is cleared |
| Record | | | Yes |
| Cause | | | Corrective Actions |
| Acceleration time is too short | | | 1. Increase the acceleration time<br>2. Increase the acceleration time of S curve<br>3. Set auto-acceleration and auto-deceleration parameter (Pr. 01-44)<br>4. Set over-current stall prevention function (Pr. 06-03)<br>5. Replace the drive with a larger capacity model. |
| Short circuit at motor output due to poor insulation wiring | | | Check the motor cable and remove causes of the short circuits, or replace the cable before turning on the power. |
| Check for possible burnout or aging insulation of the motor | | | Check the motor insulation value with megger. Replace the motor if the insulation is poor. |
| The load is too large. | | | Check if the output current during the whole working process exceeds the AC motor drive's rated current. If yes, replace the AC motor drive with a larger capacity model. |
| Impulsive change of the load | | | Reduce the load or increase the capacity of AC motor drive. |
| Use special motor or motor with larger capacity than the drive | | | Check the motor capacity (the rated current on the motor's nameplate should ≦ the rated current of the drive) |
| Use ON/OFF controller of an electromagnetic contactor at the output (U/V/W) of the drive | | | Check the action timing of the contactor and make sure it is not turned ON/OFF when the drive outputs the voltage. |
| V/F curve setting fault | | | Adjust V/F curve setting and frequency/voltage. When the fault occurs, and the frequency voltage is too high, reduce the voltage. |
| Torque compensation is too large | | | Adjust the torque compensation (refer to Pr.07-26 torque compensation gain) until the output current reduces and the motor does not stall. |
| Malfunction caused by interference | | | Verify the wiring of the control circuit and wiring/grounding of the main circuit to prevent interference. |
| The motor starts when in free run | | | Enable the speed tracking during start-up of Pr. 07-12. |
| Improper parameter settings for the speed tracking function (including restart after momentary power loss and restart after fault) | | | Correct the parameter settings for speed tracking.<br>1. Start the speed tracking function.<br>2. Adjust the maximum current for Pr. 07-09 speed tracking. |
| Incorrect combination of control mode and used motor | | | Check the settings for Pr. 00-11 control mode:<br>1. For IM, Pr. 00-11=0, 1, 2, 3, 5<br>2. For PM, Pr. 00-11=4, 6, or 7 |
| The length of motor cable is too long | | | Increase AC motor drive's capacity.<br>Install AC reactor(s) on the output side (U/V/W). |

| | |
|---|---|
| Hardware failure | The ocA occurs due to short circuit or ground fault at the output side of the drive.<br>Check for possible short circuits between terminals with the electric meter:<br>B1 corresponds to U, V, W; DC- corresponds to U, V, W; ⏚ corresponds to U, V, W.<br>If short circuit occur, return to the factory for repair. |
| Check if the setting for stall prevention is correct | Set the stall prevention to the proper value. |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 2 | AUTO<br>Fault<br>ocd<br>Oc at decel | Over-current during deceleration (ocd) | Output current exceeds 2.4 times of rated current during deceleration.<br>When ocd occurs, the drive closes the gate of the output immediately, the motor runs freely, and the display shows an ocd fault. |
| Action and Reset | | | |
| Action level | 240% of rated current | | |
| Action time | Act immediately | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Reset in 5 sec. after the fault is cleared | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Deceleration time too short | 1. Increase the deceleration time<br>2. Increase the deceleration time of S-curve<br>3. Set auto-acceleration and auto-deceleration parameter (Pr. 01-44)<br>4. Set over-current stall prevention function (Pr. 06-03)<br>5. Replace the drive with a larger capacity model | | |
| Check if the mechanical brake of the motor activates too early | Check the action timing of the mechanical brake | | |
| Short-circuit at motor output due to poor insulation wiring | Check the motor cable and remove causes of the short circuits, or replace the cable before turning on the power. | | |
| Check for possible burnout or aging insulation of the motor | Check the motor insulation value with megger. Replace the motor if the insulation is poor. | | |
| The load is too large | Check if the output current during the whole working process exceeds the AC motor drive's rated current. If yes, replace the AC motor drive with a larger capacity model. | | |
| Impulsive change of the load | Reduce the load or increase the capacity of AC motor drive. | | |
| Use special motor or motor with larger capacity than the drive | Check the motor capacity (the rated current on the motor's nameplate should ≦ the rated current of the drive) | | |
| Use ON/OFF controller of an electromagnetic contactor at the output (U/V/W) of the drive | Check the action timing of the contactor and make sure it is not turned ON/OFF when the drive outputs the voltage. | | |
| V/F curve setting fault | Adjust V/F curve settings and frequency/voltage. When the fault occurs, and the frequency voltage is too high, reduce the voltage. | | |
| Torque compensation is too large | Adjust the torque compensation (refer to Pr.07-26 torque compensation gain) until the output current reduces and the motor does not stall. | | |
| Malfunction caused by interference | Verify the wiring of the control circuit and wiring/grounding of the main circuit to prevent interference. | | |
| The length of motor cable is too long | Increase AC motor drive's capacity<br>Install AC reactor(s) on the output side (U/V/W) | | |
| Hardware fault | The ocd occurs due to short circuit or ground fault at the output side of the drive. Check for possible short circuits between terminals with the electric meter:<br>B1 corresponds to U, V, W; DC- corresponds to U, V, W; ⏚ corresponds to U, V, W.<br>If short circuits occur, return to the factory for repair. | | |
| Check if the setting of stall prevention is correct | Set the stall prevention to the proper value. | | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 3 |  | Over-current during steady operation (ocn) | Output current exceeds 2.4 times of the rated current during constant speed.<br>When ocn occurs, the drive closes the gate of the output immediately, the motor runs freely, and the display shows an ocn fault. |
| Action and Reset | | | |
| Action level | 240% of rated current | | |
| Action time | Act immediately | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Reset in 5 sec. after the fault is cleared | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Short-circuit at motor output due to poor insulation wiring | Check the motor cable and remove causes of the short circuits, or replace the cable before turning on the power. | | |
| Check for possible shaft lock, burnout or aging insulation of the motor | Troubleshoot the motor shaft lock.<br>Check the motor insulation value with megger. Replace the motor if the insulation is poor. | | |
| Impulsive change of the load | Reduce the load or increase the capacity of AC motor drive. | | |
| Use special motor or motor with larger capacity than the drive | Check motor capacity (the rated current on the motor's nameplate should ≦ the rated current of the drive) | | |
| Use ON/OFF controller of an electromagnetic contactor at the output (U/V/W) of the drive | Check the action timing of the contactor and make sure it is not turned ON/OFF when the drive outputs the voltage. | | |
| V/F curve setting fault | Adjust V/F curve settings and frequency/voltage. When the fault occurs, and the frequency voltage is too high, reduce the voltage. | | |
| Over-torque offset value too high | Adjust over-torque offset value (Refer to Pr. 07-26 torque compensation gain), until the output current is reduced and not motor stall. | | |
| Torque compensation is too large. | Adjust the torque compensation (refer to Pr.07-26 torque compensation gain) until the output current reduces and the motor does not stall. | | |
| Malfunction caused by interference | Verify the wiring of the control circuit and wiring/grounding of the main circuit to prevent interference. | | |
| The length of motor cable is too long | Increase the AC motor drive's capacity.<br>Install AC reactor(s) on the output side (U/V/W). | | |
| Hardware failure | The ocn occurs due to short circuit or ground fault at the output side of the drive. Check for possible short circuit between terminals with the electric meter:<br>B1 corresponds to U, V, W; DC- corresponds to U, V, W; ⏚ corresponds to U, V, W.<br>If short circuits occur, return to the factory for repair. | | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 4 |  | Ground fault (GFF) | When (one of) the output terminal(s) is grounded, short circuit current is larger than Pr. 06-60 setting value, and the detection time is longer than Pr. 06-61 time setting, GFF occurs.<br>NOTE: the short circuit protection is provided for AC motor drive protection, not to protect the user. |
| Action and Reset | | | |
| Action level | | Pr. 06-60 (Default = 60%) | |
| Action time | | Pr. 06-61 (Default = 0.10 sec.) | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset in 5 sec. after the fault is cleared | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Motor burnout or aging insulation occurred | | Check the motor insulation value with megger. Replace the motor if the insulation is poor. | |
| Short circuit due to broken cable | | Troubleshoot the short circuit.<br>Replace the cable. | |
| Larger stray capacitance of the cable and terminal ⏚ | | If the motor cable length exceeds 100m, decrease the setting value for carrier frequency.<br>Take remedies to reduce stray capacitance. | |
| Malfunction caused by interference | | Verify the grounding and wiring of the communication circuit. It is recommended to separate the communication circuit from the main circuit, or wire in 90 degree for effective sufficient anti-interference performance. | |
| Hardware failure | | Cycle the power after checking the status of motor, cable and cable length. If GFF still occurs, return to the factory for repair. | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 5 |  | IGBT short circuit between upper bridge and lower bridge (occ) | Short-circuit is detected between upper bridge and lower bridge of the IGBT module |
| Action and Reset | | | |
| Action level | | Hardware protection | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset in 5 sec. after the fault is cleared | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| IGBT fault | | Check the motor wiring. | |
| Short-circuit detecting circuit fault | | Cycle the power, if occ still occurs, return to the factory for repair. | |

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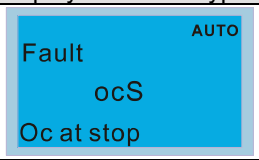
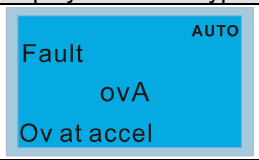
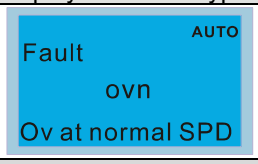
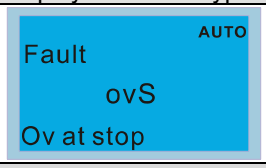
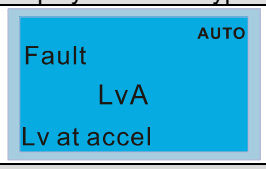
|---|---|---|---|
| 6 |  | Over-current at stop (ocS) | Over-current or hardware failure in current detection at stop.<br>Cycle the power after ocS occurs. If the hardware failure occurs, the display shows cd1, cd2 or cd3. |
| Action and Reset | | | |
| Action level | 240% of rated current | | |
| Action time | Act immediately | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Reset in 5 sec. after the fault is cleared | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Malfunction caused by interference | Verify the wiring of the control circuit and wiring/grounding of the main circuit to prevent interference. | | |
| Hardware failure | Check if other fault code such as cd1–cd3 occur after cycling the power. If yes, return to the factory for repair. | | |

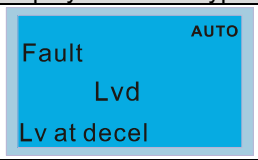
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 7 |  | Over-voltage during acceleration (ovA) | DC bus over-voltage during acceleration.<br>When ovA occurs, the drive closes the gate of the output, the motor runs freely, and the display shows an ovA fault. |
| Action and Reset | | | |
| Action level | 230V series: 410$V_{DC}$<br>460V series: 820$V_{DC}$<br>575V series: 1116$V_{DC}$<br>690V series: 1318$V_{DC}$ | | |
| Action time | Act immediately when DC bus voltage is higher than the level | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Reset only when DC bus voltage is lower than 90% of the over-voltage level | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Acceleration is too slow (e.g. hen lifting load decreases acceleration time) | Decrease the acceleration time<br>Use brake unit or DC bus<br>Replace the drive with a larger capacity model. | | |
| The setting for stall prevention level is smaller than no-load current | The setting for stall prevention level should be larger than no-load current | | |
| Power voltage is too high | Check if the input voltage is within the rated AC motor drive input voltage range, and check for possible voltage spikes. | | |
| ON/OFF switch action of phase-in capacitor in the same power system | If the phase-in capacitor or active power supply unit acts in the same power system, the input voltage may surge abnormally in a short time. In this case, install an AC reactor. | | |
| Regenerative voltage of motor inertia | Use over-voltage stall prevention function (Pr. 06-01)<br>Use auto-acceleration and auto-deceleration setting (Pr. 01-44)<br>Use a brake unit or DC bus | | |
| Acceleration time is too short | Check if the over-voltage warning occurs after acceleration stops.<br>When the warning occurs, do the following:<br>1. Increase the acceleration time<br>2. Set Pr. 06-01 over-voltage stall prevention<br>3. Increase setting value for Pr. 01-25 S-curve acceleration arrival time 2 | | |
| Motor ground fault | The ground short circuit current charges the capacitor in the main circuit through the power. Check if there is ground fault on the motor cable, wiring box and its internal terminals.<br>Troubleshoot the ground fault. | | |
| Incorrect wiring of brake resistor or brake unit | Check the wiring of brake resistor and brake unit. | | |
| Malfunction caused by interference | Verify the wiring of the control circuit and wiring/grounding of the main circuit to prevent interference. | | |

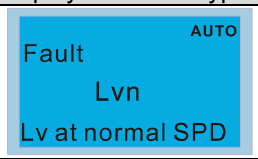
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 8 | AUTO<br>Fault<br>ovd<br>Ov at decel | Over-voltage during deceleration (ovd) | DC bus over-voltage during deceleration.<br>When ovd occurs, the drive closes the gate of the output immediately, the motor runs freely, and the display shows an ovd fault. |
| Action and Reset | | | |
| Action level | | | 230V series: 410$V_{DC}$<br>460V series: 820$V_{DC}$<br>575V series: 1116$V_{DC}$<br>690V series: 1318$V_{DC}$ |
| Action time | | | Act immediately when DC bus voltage is higher than the level |
| Fault treatment parameter | | | N/A |
| Reset method | | | Manual reset |
| Reset condition | | | Reset only when DC bus voltage is lower than 90% of the over-voltage level |
| Record | | | Yes |
| Cause | | | Corrective Actions |
| Deceleration time is too short, causing too large regenerative energy of the load | | | 1. Increase the setting value of Pr. 01-13, Pr. 01-15, Pr. 01-17 and Pr. 01-19 (deceleration time)<br>2. Connect brake resistor, brake unit or DC bus on the drive.<br>3. Reduce the brake frequency.<br>4. Replace the drive with a larger capacity model.<br>5. Use S-curve acceleration/deceleration.<br>6. Use over-voltage stall prevention (Pr. 06-01).<br>7. Use auto-acceleration and auto-deceleration (Pr. 01-44).<br>8. Adjust braking level (Pr. 07-01 or the bolt position of the brake unit). |
| The setting for stall prevention level is smaller than no-load current | | | The setting for stall prevention level should be larger than no-load current |
| Power voltage is too high | | | Check if the input voltage is within the rated AC motor drive input voltage range, and check for possible voltage spikes. |
| ON/OFF switch action of phase-in capacitor in the same power system | | | If the phase-in capacitor or active power supply unit acts in the same power system, the input voltage may surge abnormally in a short time. In this case, install an AC reactor. |
| Motor ground fault | | | The ground short circuit current charges the capacitor in the main circuit through the power. Check if there is ground fault on the motor cable, wiring box and its internal terminals.<br>Troubleshoot the ground fault. |
| Incorrect wiring of brake resistor or brake unit | | | Check the wiring of brake resistor or brake unit. |
| Malfunction caused by interference | | | Verify the wiring of the control circuit and wiring/grounding of the main circuit to prevent interference. |

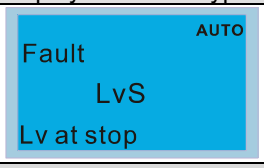
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 9 |  | Over-voltage at constant speed (ovn) | DC bus over-voltage at constant speed.<br>When ovn occurs, the drive closes the gate of the output immediately, the motor runs freely, and the display shows an ovn fault. |
| Action and Reset | | | |
| Action level | 230V series: 410$V_{DC}$<br>460V series: 820$V_{DC}$<br>575V series: 1116$V_{DC}$<br>690V series: 1318$V_{DC}$ | | |
| Action time | Act immediately when DC bus voltage is higher than the level | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Reset only when DC bus voltage is lower than 90% of over-voltage level | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Impulsive change of the load | 1. Connect brake resistor, brake unit or DC bus to the drive.<br>2. Reduce the load.<br>3. Replace to drive with a larger capacity model.<br>4. Adjust braking level (Pr. 07-01 or bolt position of the brake unit). | | |
| The setting for stall prevention level is smaller than no-load current | The setting of stall prevention level should be larger than no-load current | | |
| Regenerative voltage of motor inertia | Use over-voltage stall prevention function (Pr. 06-01)<br>Use a brake unit or DC bus | | |
| Power voltage is too high | Check if the input voltage is within the rated AC motor drive input voltage range, and check for possible voltage spikes. | | |
| ON/OFF switch action of phase-in capacitor in the same power system | If the phase-in capacitor or active power supply unit acts in the same power system, the input voltage may surge abnormally in a short time. In this case, install an AC reactor. | | |
| Motor ground fault | The ground short-circuit current charges the capacitor in the main circuit through the power. Check if there is ground fault on the motor cable, wiring box and its internal terminals.<br>Troubleshoot the ground fault. | | |
| Incorrect wiring of brake resistor or brake unit | Check the wiring of brake resistor or brake unit. | | |
| Malfunction caused by interference | Verify the wiring of the control circuit and wiring/grounding of the main circuit to prevent interference. | | |

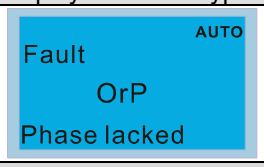
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 10 |  | Over-voltage at stop (ovS) | Over-voltage at stop |
| Action and Reset | | | |
| Action level | | | 230V series: 410$V_{DC}$<br>460V series: 820$V_{DC}$<br>575V series: 1116$V_{DC}$<br>690V series: 1318$V_{DC}$ |
| Action time | | | Act immediately when DC bus voltage is higher than the level |
| Fault treatment parameter | | | N/A |
| Reset method | | | Manual reset |
| Reset condition | | | Reset only when DC bus voltage is lower than 90% of over-voltage level |
| Record | | | Yes |
| Cause | | | Corrective Actions |
| Power voltage is too high | | | Check if the input voltage is within the rated AC motor drive input voltage range, and check for possible voltage spikes. |
| ON/OFF switch action of phase-in capacitor in the same power system | | | If the phase-in capacitor or active power supply unit activates in the same power system, the input voltage may surge abnormally in a short time. In this case, install an AC reactor. |
| Incorrect wiring of brake resistor or brake unit | | | Check the wiring of brake resistor or brake unit. |
| Malfunction caused by interference | | | Verify the wiring of the control circuit and wiring/grounding of the main circuit to prevent interference. |
| Hardware failure in voltage detection | | | Check if other fault code such as cd1–cd3 occur after cycling the power. If yes, return to the factory for repair. |
| Motor ground fault | | | The ground short circuit current charges the capacitor in the main circuit through the power. Check if there is ground fault on the motor cable, wiring box and its internal terminals.<br>Troubleshoot the ground fault. |

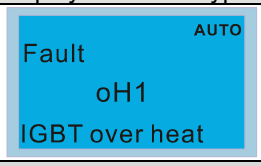
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 11 |  | Low-voltage during acceleration (LvA) | DC bus voltage is lower than Pr. 06-00 setting value during acceleration |
| Action and Reset | | | |
| Action level | | | Pr. 06-00 (Default = depending on the model) |
| Action time | | | Act immediately when DC bus voltage is lower than Pr. 06-00 |
| Fault treatment parameter | | | N/A |
| Reset method | | | Manual reset |
| Reset condition | | | Reset when DC bus voltage is higher than Pr. 06-00 + 30V (Frame A–D) / 40V (Frame E and below) |
| Record | | | Yes |
| Cause | | | Corrective Actions |
| Power-off | | | Improve power supply condition. |
| Power voltage changes | | | Adjust voltage to the power range of the drive |
| Start up the motor with large capacity | | | Check the power system.<br>Increase the capacity of power equipment. |
| The load is too large | | | Reduce the load.<br>Increase the drive capacity.<br>Increase the acceleration time. |
| DC bus | | | Install DC reactor(s). |
| Check if there is short-circuit plate or any DC reactor installed between terminal +1 and +2 | | | Connect short circuit plate or DC reactor between terminal +1 and +2.<br>If the fault still occurs, return to the factory for repair. |

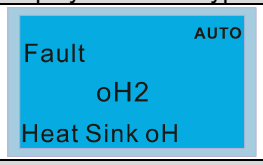
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 12 |  | Low-voltage during deceleration (Lvd) | DC bus voltage is lower than Pr. 06-00 setting value during deceleration |
| Action and Reset | | | |
| Action level | Pr. 06-00 (Default = depending on the model) | | |
| Action time | Act immediately when DC bus voltage is lower than Pr. 06-00 | | |
| Fault treatment parameter | NA | | |
| Reset method | Manual reset | | |
| Reset condition | Reset when DC bus voltage is higher than Pr. 06-00 + 30V (Frame A–D) / 40V (Frame E and above) | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Power-off | Improve power supply condition. | | |
| Power voltage changes | Adjust voltage to the power range of the drive. | | |
| Start up the motor with large capacity | Check the power system.<br>Increase the capacity of power equipment. | | |
| Sudden load | Reduce the load.<br>Increase the drive capacity. | | |
| DC bus | Install DC reactor(s). | | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 13 |  | Low-voltage at constant speed (Lvn) | DC bus voltage is lower than Pr. 06-00 setting value at constant speed |
| Action and Reset | | | |
| Action level | Pr. 06-00 (Default = depending on the model) | | |
| Action time | Act immediately when DC bus voltage is lower than Pr. 06-00 | | |
| Fault treatment parameter | NA | | |
| Reset method | Manual reset | | |
| Reset condition | Reset when DC bus voltage is higher than Pr. 06-00 + 30V (Frame A–D) / 40V (Frame E and above) | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Power-off | Improve power supply condition. | | |
| Power voltage changes | Adjust voltage to the power range of the drive | | |
| Start up the motor with large capacity | Check the power system.<br>Increase the capacity of power equipment. | | |
| Sudden load | Reduce the load.<br>Increase the drive capacity. | | |
| DC bus | Install DC reactor(s). | | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 14 |  | Low-voltage at stop (LvS) | 1. DC bus voltage is lower than Pr. 06-00 setting value at stop<br>2. Hardware failure in voltage detection |
| Action and Reset | | | |
| Action level | Pr. 06-00 (Default = depending on the model) | | |
| Action time | Act immediately when DC bus voltage is lower than Pr. 06-00 | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual/ auto<br>230V series:<br>Frame A–D = Lv level + 30$V_{DC}$ + 500ms<br>Frame E and above = Lv level + 40$V_{DC}$ + 500ms<br>460V series:<br>Frame A–D = Lv level + 60$V_{DC}$ + 500ms<br>Frame E and above = Lv level + 80$V_{DC}$ + 500ms<br>575V series:<br>Frame A–D = Pr. 06-00 + 100.0$V_{DC}$<br>Frame E and above = Pr. 06-00 + 120.0$V_{DC}$<br>690V series:<br>Frame A–D = Pr. 06-00 + 100.0$V_{DC}$<br>Frame E and above = Pr. 06-00 + 100.0$V_{DC}$ | | |
| Reset condition | 500ms | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Power-off | Improve power supply condition. | | |
| Incorrect drive models | Check if the power specification matches the drive. | | |
| Power voltage changes | Adjust voltage to the power range of the drive.<br>Cycle the power after checking the power. If LvS fault still occurs, return to the factory for repair. | | |
| Start up the motor with large capacity | Check the power system.<br>Increase the capacity of power equipment. | | |
| DC bus | Install DC reactor(s). | | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 15 |  | Phase loss protection (OrP) | Phase loss of power input |
| Action and Reset | | | |
| Action level | DC bus is lower than Pr. 07-00, and DC bus ripple is higher than Pr. 06-52 | | |
| Action time | N/A | | |
| Fault treatment parameter | Pr. 06-53 | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately when DC bus is higher than Pr. 07-00 | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Phase loss of input power | Correctly install the wiring of the main circuit power. | | |
| Single phase power input to three-phase model | Choose the model whose power matches the voltage. | | |
| Power voltage changes | If the main circuit power works normally, verify the main circuit.<br>Cycle the power after checking the power, if OrP fault still occurs, return to the factory for repair. | | |
| Loose wiring terminal of input power | Tighten the terminal screws according to the torque described in the user manual. | | |
| The input cable of three-phase power is cut off | Wire correctly.<br>Replace the cut off cable. | | |
| Input power voltage changes too much | Verify the setting value for Pr. 06-50 Time for Input Phase Loss Detection and Pr. 06-52 Ripple of Input Phase Loss | | |
| Unbalanced three-phase of input power | Check the power three-phase status. | | |

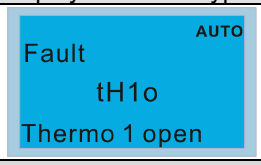
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 16 |  | IGBT overheating (oH1) | IGBT temperature exceeds the protection level |
| Action and Reset | | | |
| Action level | | When Pr.06-15 is higher than the IGBT overheating protection level, oH1 fault occurs instead of oH1 warning. | |
| Action time | | IGBT temperature exceeds the protection level for more than 100ms, oH1 fault occurs. | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset only when IGBT temperature is lower than oH1 fault level minus (-) 10°C | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Check if the ambient temperature or temperature inside the control cabinet is too high, or if there is obstruction in the ventilation hole of the control cabinet. | | 1. Check ambient temperature.<br>2. Regularly inspect the ventilation hole of the control cabinet.<br>3. Change the installed place if there are heating objects, such as braking resistors, in the surroundings.<br>4. Install/ add cooling fan or air conditioner to lower the temperature inside the cabinet. | |
| Check if there is any obstruction on the heat sink or if the fan is running. | | Remove the obstruction or replace the cooling fan. | |
| Insufficient ventilation space | | Increase ventilation space of the drive. | |
| Check if the drive matches the corresponding load | | 1. Reduce the load<br>2. Reduce the carrier<br>3. Replace the drive with a larger capacity model. | |
| The drive has run 100% or more than 100% of the rated output for a long time | | Replace the drive with a larger capacity model. | |

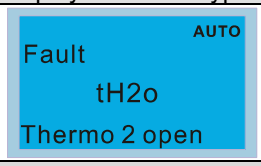
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 17 |  | Over-heat key components (oH2) | The drive has detected the key components are over heat |
| Action and Reset | | | |
| Action level | Refer to the table below for oH2 level of each models | | |
| Action time | The oH2 fault occurs when the temperature sensor of key components detects the temperature is higher than the protection level for 100ms. | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | The drive auto-resets when the temperature sensor of key components detects the temperature is lower than oH2 error level minus (–) 10°C | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Check if the ambient temperature or temperature inside the control cabinet is too high, or if there is obstruction in the ventilation hole of the control cabinet. | 1. Check ambient temperature.<br>2. Regularly inspect the ventilation hole of the control cabinet.<br>3. Change the installed place if there are heating objects, such as braking resistors, in the surroundings.<br>4. Install/ add cooling fan or air conditioner to lower the temperature inside the cabinet. | | |
| Check if there is any obstruction on the heat sink or if the fan is running. | Remove the obstruction or replace the cooling fan. | | |
| Insufficient ventilation space | Increase ventilation space of the drive. | | |
| Check if the drive matches the corresponding load | 1. Reduce the load<br>2. Reduce the carrier<br>3. Replace the drive with a larger capacity model. | | |
| The drive has run 100% or more than 100% of the rated output for a long time | Replace the drive with a larger capacity model. | | |
| Unstable power | Install reactor(s) | | |
| Load changes frequently | Reduce load changes | | |

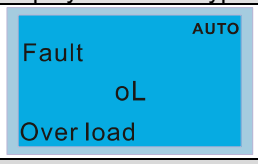
## oH1/ oH2 warning level

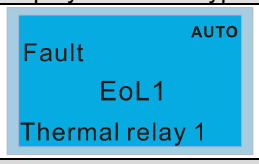
| Model | oH1 | oH2 | oH warning<br>oH1 warning = (Pr.06-15) |
|---|---|---|---|
| VFD007C23A-21 | 110 | 95 | oH1 Warning = oH1 – 5<br>oH2 Warning = oH2 – 5 |
| VFD015C23A-21 | | | |
| VFD022C23A-21 | | | |
| VFD037C23A-21 | | 100 | |
| VFD055C23A-21 | | 80 | |
| VFD075C23A-21 | | | |
| VFD110C23A-21 | | | |
| VFD150C23A-21 | | 75 | |
| VFD185C23A-21 | | | |
| VFD220C23A-21 | | | |
| VFD300C23A-00 / VFD300C23A-21 | | 65 | |
| VFD370C23A-00 / VFD370C23A-21 | | | |
| VFD450C23A-00 / VFD450C23A-21 | | | |
| VFD550C23A-00 / VFD550C23A-21 | | | |
| VFD750C23A-00 / VFD750C23A-21 | | | |
| VFD900C23A-00 / VFD900C23A-21 | | | |
| VFD007C43A-21 / VFD007C4EA-21 | 110 | 95 | oH1 Warning = oH1 – 5<br>oH2 Warning = oH2 – 5 |
| VFD015C43A-21 / VFD015C4EA-21 | | | |
| VFD022C43A-21 / VFD022C4EA-21 | | 100 | |
| VFD037C43A-21 / VFD037C4EA-21 | 110 | 105 | |
| VFD040C43A-21 / VFD040C4EA-21 | | 100 | oH1 Warning = oH1 – 5 |

<table>
<tr><th>Model</th><th>oH1</th><th>oH2</th><th>oH warning<br>oH1 warning = (Pr.06-15)</th></tr>
<tr><td>VFD055C43A-21 / VFD055C4EA-21</td><td rowspan="25"></td><td></td><td rowspan="25">oH2 Warning = oH2 – 5</td></tr>
<tr><td>VFD075C43A-21 / VFD075C4EA-21</td><td rowspan="3">80</td></tr>
<tr><td>VFD110C43A-21 / VFD110C4EA-21</td></tr>
<tr><td>VFD150C43A-21 / VFD150C4EA-21</td></tr>
<tr><td>VFD185C43A-21 / VFD185C4EA-21</td><td rowspan="3">85</td></tr>
<tr><td>VFD220C43A-21 / VFD220C4EA-21</td></tr>
<tr><td>VFD300C43A-21 / VFD300C4EA-21</td></tr>
<tr><td>VFD370C43S-00 / VFD370C43S-21</td><td rowspan="7">65</td></tr>
<tr><td>VFD450C43S-00 / VFD450C43S-21</td></tr>
<tr><td>VFD550C43A-00 / VFD550C43A-21</td></tr>
<tr><td>VFD750C43A-00 / VFD750C43A-21</td></tr>
<tr><td>VFD900C43A-00 / VFD900C43A-21</td></tr>
<tr><td>VFD1100C43A-00 / VFD1100C43A-21</td></tr>
<tr><td>VFD1320C43A-00 / VFD1320C43A-21</td></tr>
<tr><td>VFD1600C43A-00 / VFD1600C43A-21</td><td rowspan="7">70</td></tr>
<tr><td>VFD1850C43A-00 / VFD1850C43A-21</td></tr>
<tr><td>VFD2200C43A-00 / VFD2200C43A-21</td></tr>
<tr><td>VFD2800C43A-00 / VFD2800C43C-21</td></tr>
<tr><td>VFD3150C43A-00 / VFD3150C43C-21</td></tr>
<tr><td>VFD3550C43A-00 / VFD3550C43C-21</td></tr>
<tr><td>VFD4500C43A-00 / VFD4500C43C-21</td></tr>
<tr><td>VFD5000C43A-00 / VFD5000C43C-21</td><td colspan="3">Contact Delta</td></tr>
<tr><td>VFD5600C43A-00 / VFD5600C43C-21</td><td colspan="3">Contact Delta</td></tr>
<tr><td>VFD015C53A-21</td><td>100</td><td rowspan="2">85</td><td rowspan="8">oH1 Warning = oH1 – 5<br>oH2 Warning = oH2 – 5</td></tr>
<tr><td>VFD022C53A-21</td><td>105</td></tr>
<tr><td>VFD037C53A-21</td><td rowspan="6">100</td><td rowspan="6">70</td></tr>
<tr><td>VFD055C53A-21</td></tr>
<tr><td>VFD075C53A-21</td></tr>
<tr><td>VFD110C53A-21</td></tr>
<tr><td>VFD150C53A-21</td></tr>
<tr><td>VFD185C63B-21</td><td rowspan="4">90</td><td rowspan="4">85</td><td rowspan="20">oH1 Warning = oH1 – 5<br>oH2 Warning = oH2 – 5</td></tr>
<tr><td>VFD220C63B-21</td></tr>
<tr><td>VFD300C63B-21</td></tr>
<tr><td>VFD370C63B-21</td></tr>
<tr><td>VFD450C63B-00 / VFD450C63B-21</td><td rowspan="2">100</td><td rowspan="6">65</td></tr>
<tr><td>VFD550C63B-00 / VFD550C63B-21</td></tr>
<tr><td>VFD750C63B-00 / VFD750C63B-21</td><td rowspan="12">110</td></tr>
<tr><td>VFD900C63B-00 / VFD900C63B-21</td></tr>
<tr><td>VFD1100C63B-00 / VFD1100C63B-21</td></tr>
<tr><td>VFD1320C63B-00 / VFD1320C63B-21</td></tr>
<tr><td>VFD1600C63B-00 / VFD1600C63B-21</td></tr>
<tr><td>VFD2000C63B-00 / VFD2000C63B-21</td></tr>
<tr><td>VFD2500C63B-00 / VFD2500C63B-21</td><td rowspan="6">70</td></tr>
<tr><td>VFD3150C63B-00 / VFD3150C63B-21</td></tr>
<tr><td>VFD4000C63B-00 / VFD4000C63B-21</td></tr>
<tr><td>VFD4500C63B-00 / VFD4500C63B-21</td></tr>
<tr><td>VFD5600C63B-00 / VFD5600C63B-21</td></tr>
<tr><td>VFD6300C63B-00 / VFD6300C63B-21</td></tr>
</table>

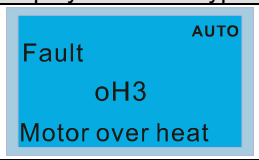
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 18 |  | IGBT temperature detection failure (tH1o) | IGBT hardware failure in temperature detection |
| Action and Reset | | | |
| Action level | | NTC broken or wiring failure | |
| Action time | | When the IGBT temperature is higher than the protection level, and detection time exceeds 100ms, the tH1o protection occurs. | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset immediately | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Hardware failure | | Wait for 10 minutes, and then cycle the power. Check if tH1o protection still occurs. If yes, return to the factory for repair. | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 19 |  | Capacitor hardware fault (tH2o) | Hardware failure in capacitor temperature detection |
| Action and Reset | | | |
| Action level | | NTC broken or wiring failure | |
| Action time | | When the IGBT temperature is higher than the protection level, and detection time exceeds 100ms, the tH2o protection occurs. | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset immediately | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Hardware failure | | Wait for 10 minutes, and then cycle the power. Check if tH2o protection still occurs. If yes, return to the factory for repair. | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 21 |  | Over load (oL) | The AC motor drive detects excessive drive output current. The overload capacity sustains for 1 minute when the drive outputs 120% of the drive's rated output current. |
| Action and Reset | | | |
| Action level | Based on over load curve and derating curve. | | |
| Action time | When the load is higher than the protection level and exceeds allowable time, the oL protection occurs. | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Reset in 5 sec. after the fault is cleared | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| The load is too large | Reduce the load | | |
| Accel./Decel. time or the working cycle are too short | Increase the setting value for Pr. 01-12–01-19 (accel./decel time) | | |
| V/F voltage is too high | Adjust the settings for Pr.01-01–01-08 (V/F curve), especially the setting value for the mid-point voltage (if the mid-point voltage is set too low, the load capacity decreases at low speed).<br>Refer to the V/F curve selection of Pr.01-43. | | |
| The capacity of the drive is too small | Replace the drive with a larger capacity model. | | |
| Overload during low-speed operation | Reduce the load during low-speed operation.<br>Increase the drive capacity.<br>Decrease the carrier frequency of Pr. 00-17. | | |
| Torque compensation is too large | Adjust the torque compensation (refer to Pr. 07-26 Torque Compensation Gain) until the output current reduces and the motor does not stall. | | |
| Check if the setting for stall prevention is correct. | Set the stall prevention to the proper value. | | |
| Output phase loss | Check the status of three-phase motor.<br>Check if the cable is broken or the screws are loose. | | |
| Improper parameter settings for the speed tracking function (including restart after momentary power loss and restart after fault) | Correct the parameter settings for speed tracking.<br>1. Start the speed tracking function.<br>2. Adjust the maximum current for Pr.07-09 speed tracking. | | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 22 |  | Electronics thermal relay 1 protection (EoL1) | Electronics thermal relay 1 protection. The drive coasts to stop once this fault occurs. |
| Action and Reset | | | |
| Action level | | | Start counting when output current > 105% of motor 1 rated current |
| Action time | | | Pr. 06-14 (if the output current is larger than 105% of motor 1 rated current again within 60 sec., the counting time reduces and is less than Pr. 06-14) |
| Fault treatment parameter | | | N/A |
| Reset method | | | Manual reset |
| Reset condition | | | Reset in 5 sec. after the fault is cleared |
| Record | | | Yes |
| Cause | | | Corrective Actions |
| The load is too large | | | Reduce the load. |
| Accel./Decel. time or the working cycle is too short | | | Increase the setting values for Pr. 01-12–01-19 (Accel./Decel time) |
| V/F voltage is too high | | | Adjust the settings for Pr.01-01–01-08 (V/F curve), especially the setting value for the mid-point voltage (if the mid-point voltage is set too low, the load capacity decreases at low speed).<br>Refer to the V/F curve selection of Pr.01-43. |
| Overload during low-speed operation.<br>When using a general motor, even it operates below rated current, an overload may still occur during low-speed operation. | | | Decrease low-speed operation time.<br>Replace the drive with a dedicated to VFD model.<br>Increase the motor capacity. |
| When using VFD dedicated motors, Pr. 06-13=0 (electronic thermal relay selection motor 1 = inverter motor) | | | Pr. 06-13=1 electronic thermal relay selection motor 1 = standard motor (motor with fan on the shaft). |
| Incorrect value of electronic thermal relay | | | Reset to the correct motor rated current. |
| The maximum motor frequency is set too low | | | Reset to the correct motor rated frequency. |
| One drive to multiple motors | | | Set Pr. 06-13=2 electronic thermal relay selection motor 1= disable, and install thermal relay on each motor. |
| Check if the setting for stall prevention is correct. | | | Set the stall prevention to the proper value. |
| Torque compensation is too large | | | Adjust the torque compensation (refer to Pr.07-26 torque compensation gain) until the current reduces and the motor does no stall. |
| Motor fan fault | | | Check the status of the fan, or replace the fan. |
| Unbalanced three-phase impedance of the motor | | | Replace the motor. |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 23 | AUTO<br>Fault<br>EoL2<br>Thermal relay 2 | Electronic thermal relay 2 protection (EoL2) | Electronic thermal relay 2 protection. The drive coasts to stop once this fault occurs. |
| Action and Reset | | | |
| Action level | Start counting when output current > 105% of motor 2 rated current | | |
| Action time | Pr. 06-28 (If the output current is larger than 105% of motor 2 rated current again within 60 sec., the counting time reduces and is less than Pr. 06-28) | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Reset in 5 sec. after the fault is cleared | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| The load is too large | Reduce the load | | |
| Accel./Decel. time or the working cycle are too short | Increase the setting values for Pr.01-12–01-19 (accel./decel. time) | | |
| V/F voltage is too high | Adjust the settings for Pr.01-01–01-08 (V/F curve), especially the setting value for the mid-point voltage (if the mid-point voltage is set too low, the load capacity decreases at low speed).<br>Refer to the V/F curve selection setting of Pr.01-43. | | |
| Overload during low-speed operation.<br>When using general motor, even it operates below rated current, an overload may still occur during low-speed operation. | Decrease low-speed operation time.<br>Replace the drive with a dedicated to VFD model.<br>Increase the motor capacity. | | |
| When using VFD dedicated motors, Pr. 06-27=0 (electronic thermal relay selection motor 2 = 0 inverter motor) | Pr. 06-27=1 Electronic thermal relay selection motor 2 = standard motor (motor with fan on the shaft). | | |
| Incorrect value of electronic thermal relay | Reset to the correct motor rated current. | | |
| The maximum motor frequency is set too low | Reset to the correct motor rated frequency. | | |
| One drive to multiple motors | Set Pr. 06-27=2 Electronic thermal relay selection motor 2 = disable, and install thermal relay on each motor. | | |
| Check if the setting for stall prevention is correct. | Set the stall prevention to the proper value. | | |
| Torque compensation is too large | Adjust the torque compensation (refer to Pr.07-26 torque compensation gain) until the current reduces and the motor does no stall. | | |
| Motor fan fault | Check the status of the fan, or replace the fan. | | |
| Unbalanced three-phase impedance of the motor | Replace the motor. | | |

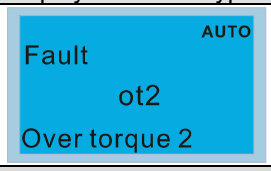
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 24_1 |  | Motor overheating (oH3) PTC | Motor overheating (PTC) (Pr. 03-00 – Pr. 03-02=6 PTC), when PTC input > Pr. 06-30, the fault treatment acts according to Pr. 06-29. |
| Action and Reset | | | |
| Action level | PTC input value > Pr. 06-30 setting (Default = 50%) | | |
| Action time | Act immediately | | |
| Fault treatment parameter | Pr. 06-29<br>0: Warn and keep operation<br>1: Fault and ramp to stop<br>2: Fault and coast to stop<br>3: No warning | | |
| Reset method | When Pr. 06-29=0, oH3 is a “Warning”. The “Warning” is automatically cleared.<br>When Pr. 06-29=1 or 2, oH3 is a “Fault”. You must reset manually. | | |
| Reset condition | Reset immediately | | |
| Record | When Pr. 06-29=1 or 2, oH3 is a “Fault”, and the fault is recorded. | | |
| Cause | Corrective Actions | | |
| Motor shaft lock | Remove the shaft lock. | | |
| The load is too large | Reduce the load.<br>Increase the motor capacity. | | |
| Ambient temperature is too high | Change the installed place if there are heating devices in the surroundings.<br>Install/ add cooling fan or air conditioner to lower the ambient temperature. | | |
| Motor cooling system fault | Check the cooling system to make it work normally. | | |
| Motor fan fault | Replace the fan. | | |
| Operate at low-speed too long. | Decrease low-speed operation time.<br>Replace the motor with a dedicated to VFD model.<br>Increase the motor capacity. | | |
| Accel./Decel. time and working cycle are too short | Increase the setting values for Pr. 01-12–01-19 (accel./decel. time) | | |
| V/F voltage is too high | Adjust settings for Pr.01-01–01-08 (V/F curve), especially the setting value for the mid-point voltage (if the mid-point voltage is set too low, the load capacity decreases at low speed). | | |
| Check if the motor rated current matches that on the motor nameplate. | Reset to the correct motor rated current. | | |
| Check if the PTC is properly set and wired. | Check the connection between PTC thermistor and the heat protection. | | |
| Check if the setting for stall prevention is correct. | Set the stall prevention to the proper value. | | |
| Unbalanced three-phase impedance of the motor | Replace the motor. | | |
| Harmonics are too high. | Use remedies to reduce harmonics. | | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 24_2 | AUTO<br>Fault<br>oH3<br>Motor over heat | Motor overheating (oH3) PT100 | Motor overheating (PT100) (Pr. 03-00 – Pr. 03-02=11 PT100). When PT100 input > Pr. 06-57 (default = 7V), the fault treatment acts according to Pr. 06-29. |
| Action and Reset | | | |
| Action level | PT100 input value > Pr. 06-57 setting (default = 7V) | | |
| Action time | Act immediately | | |
| Fault treatment parameter | Pr. 06-29<br>0: Warn and keep operation<br>1: Fault and ramp to stop<br>2: Fault and coast to stop<br>3: No warning | | |
| Reset method | When Pr. 06-29=0 and the temperature < Pr. 06-56, oH3 is automatically cleared.<br>When Pr. 06-29=1 or 2, oH3 is a “Fault”. You must reset manually. | | |
| Reset condition | Reset immediately | | |
| Record | When Pr. 06-29=1 or 2, oH3 is a “Fault”, and the fault is recorded. | | |
| Cause | Corrective Actions | | |
| Motor shaft lock | Remove the shaft lock. | | |
| The load is too large | Reduce the load.<br>Increase the motor capacity. | | |
| Ambient temperature is too high | Change the installed place If there are heating devices in the surroundings. Install/ add cooling fan or air conditioner to lower the ambient temperature. | | |
| Motor cooling system fault | Check the cooling system to make it work normally. | | |
| Motor fan fault | Replace the fan. | | |
| Operate at low-speed too long | Decrease low-speed operation time.<br>Replace the motor with a dedicated to VFD model.<br>Increase the motor capacity. | | |
| Accel./Decel. time and working cycle are too short | Increase the setting values for Pr. 01-12–Pr.01-19 (accel./decel. time) | | |
| V/F voltage is too high | Adjust settings for Pr.01-01–01-08 (V/F curve), especially the setting value for the mid-point voltage (if the mid-point voltage is set too low, the load capacity decreases at low speed). | | |
| Check if the motor rated current matches that on the motor nameplate. | Reset to the correct motor rated current. | | |
| Check if the PT100 is properly set and wired. | Check connection of PT100 thermistor. | | |
| Check if the setting for stall prevention is correct. | Set the stall prevention to the proper value. | | |
| Unbalanced three-phase impedance of the motor | Replace the motor. | | |
| Harmonics are too high | Use remedies to reduce harmonics. | | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 26 |  | Over torque 1 (ot1) | When output current exceeds the over-torque detection level (Pr.06-07) and exceeds over-torque detection time (Pr.06-08), and when Pr.06-06 or Pr.06-09 is set to 2 or 4, the ot1 fault displays. |

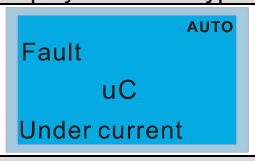
| Action and Reset | | |
|---|---|---|
| Action level | Pr. 06-07 | |
| Action time | Pr. 06-08 | |
| Fault treatment parameter | Pr. 06-06<br>0: No function<br>1: Continue operation after Over-torque detection during constant speed operation<br>2: Stop after Over-torque detection during constant speed operation<br>3: Continue operation after Over-torque detection during RUN<br>4: Stop after Over-torque detection during RUN | |
| Reset method<br>Reset condition | Auto | When Pr. 06-06=1 or 3, ot1 is a “Warning”. The warning is automatically cleared when the output current < (Pr. 06-07 – 5%) |
| | Manual | When Pr. 06-06=2 or 4, ot1 is a “Fault”. You must reset manually. |
| Record | Reset immediately | |
| Active level | When Pr. 06-06=2 or 4, ot1 is a “Fault”, and the fault is recorded. | |

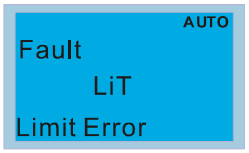
| Cause | Corrective Actions |
|---|---|
| Incorrect parameter setting | Reset Pr. 06-07 and Pr. 06-08 |
| Mechanical failure (e.g. over-torque, mechanical lock) | Remove the causes of malfunction. |
| The load is too large | Reduce the load.<br>Replace the motor with a larger capacity model. |
| Accel./Decel. time and working cycle are too short | Increase the setting values for Pr. 01-12–Pr. 01-19 (accel./decel. time) |
| V/F voltage is too high | Decrease the setting values for Pr.01-01–01-08 (V/F curve), especially the setting value for the mid-point voltage (if the mid-point voltage is set too low, the load capacity decreases at low speed). |
| The motor capacity is too small | Replace the motor with a larger capacity model. |
| Overload during low-speed operation | Decrease low-speed operation time.<br>Increase the motor capacity. |
| Torque compensation is too large | Adjust the torque compensation (refer to Pr.07-26 torque compensation gain) until the current reduces and the motor does no stall. |
| Improper parameter settings for speed tracking function (including restart after momentary power loss and restart after fault) | Correct the parameter settings for speed tracking.<br>1. Start the speed tracking function.<br>2. Adjust the maximum current for Pr.07-09 speed tracking. |

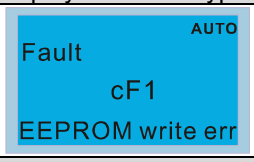
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 27 |  | Over torque 2 (ot2) | When output current exceeds the over-torque detection level (Pr.06-10) and exceeds over-torque detection time (Pr.06-11), and when Pr.06-09 is set to 2 or 4, the ot2 fault displays. |

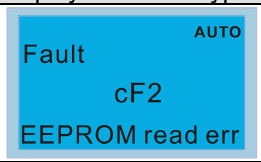
| Action and Reset | | |
|---|---|---|
| Action level | Pr. 06-10 | |
| Action time | Pr. 06-11 | |
| Fault treatment parameter | Pr. 06-09<br>0: No function<br>1: Continue operation after Over-torque detection during constant speed operation<br>2: Stop after Over-torque detection during constant speed operation<br>3: Continue operation after Over-torque detection during RUN<br>4: Stop after Over-torque detection during RUN | |
| Reset method<br>Reset condition | Auto | When Pr. 06-09=1 or 3, ot2 is a “Warning”. The warning is automatically cleared when the output current < (Pr. 06-10 – 5%). |
| | Manual | When Pr. 06-09=2 or 4, ot2 is a “Fault”. You must reset manually. |
| Record | Reset immediately | |
| Active level | When Pr. 06-09=2 or 4, ot2 is a “Fault”, and the fault is recorded. | |

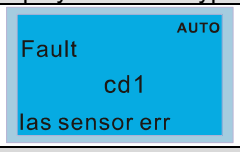
| Cause | Corrective Actions |
|---|---|
| Incorrect parameter setting | Reset Pr. 06-07 and Pr. 06-08 |
| Mechanical failure (e.g. over-torque, mechanical lock) | Remove the causes of malfunction. |
| The load is too large. | Reduce the load.<br>Replace the motor with a larger capacity model. |
| Accel./Decel. time and working cycle are too short | Increase the setting values for Pr.01-12–01-19 (accel./decel. time). |
| V/F voltage is too high | Adjust the settings for Pr.01-01–01-08 (V/F curve), especially the setting value for the mid-point voltage (if the mid-point voltage is set too low, the load capacity decreases at low speed). |
| The motor capacity is too small | Replace the motor with a larger capacity model. |
| Overload during low-speed operation | Decrease low-speed operation time.<br>Increase the motor capacity. |
| Torque compensation is too large | Adjust the torque compensation (refer to Pr.07-26 torque compensation gain) until the current reduces and the motor does no stall. |
| Improper parameter settings for speed tracking function (including restart at momentary power loss and restart after fault) | Correct the parameter settings for speed tracking.<br>1. Start the speed tracking function.<br>2. Adjust the maximum current for Pr.07-09 speed tracking. |

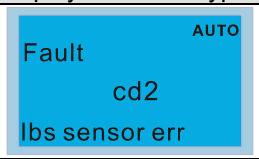
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 28 |  | Under current (uC) | Low current detection |
| Action and Reset | | | |
| Action level | | Pr. 06-71 | |
| Action time | | Pr. 06-72 | |
| Fault treatment parameter | | Pr. 06-73<br>0: No function<br>1: Fault and coast to stop<br>2: Fault and ramp to stop by 2nd deceleration time<br>3: Warn and operation continue | |
| Reset method<br>Reset condition | | Auto | When Pr. 06-73=3, uC is a “Warning”. The warning is automatically cleared when the output current > (Pr. 06-71+0.1A). |
| | | Manual | When Pr. 06-73=1 or 2, uC is a “Fault”. You must reset manually. |
| Record | | Reset immediately | |
| Active level | | When Pr. 06-71=1 or 2, uC is a “Fault”, and the fault is recorded. | |
| Cause | | Corrective Actions | |
| Motor cable disconnection | | Troubleshoot the connection between the motor and the load. | |
| Improper setting of low-current protection | | Reset Pr. 06-71, Pr. 06-72 and Pr. 06-73 to proper settings. | |
| The load is too low | | Check the load status.<br>Check if the motor capacity matches the load. | |

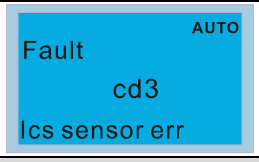
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 29 |  | Limit Error (LiT) | This code occurs when the motor drive is running under speed mode (not IMFOCPG/PMFOCPG) and the negative running limit or the positive running limit of the MI terminals is enabled. |
| Action and Reset | | | |
| Action level | | When under the speed mode (not FOCPG), negative running limit or positive running limit is enabled. | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Move the motor away from the limit position, press the STOP/ RESET button on the keypad (Manual reset). | |
| Reset condition | | Reset immediately | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| The limit ON/OFF switch may be on the wrong position | | Install the limit ON/OFF switch to correct position. | |
| MI terminal may not be working properly. | | Set Pr00-04=16 to verify if the MI terminals work properly.<br>16: The digital input status (ON / OFF) (i) | |
| Deceleration time may be too long, causing the motor cannot stop at limit position | | Reduce deceleration time.<br>Adjust setting value of DC brake current level (Pr.07-01 or the insert position on the brake unit). | |

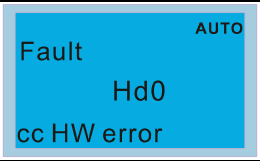
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 30 |  | EEPROM write error (cF1) | Internal EEPROM cannot be programmed |
| Action and Reset | | | |
| Action level | Firmware internal detection | | |
| Action time | cF1 acts immediately when the drive detects the fault. | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Internal EEPROM cannot be programmed | Press “RESET” key or reset the parameter to the default setting, if cF1 still occurs, return to the factory for repair.<br>Cycle the power, if cF1 still occurs, return to the factory for repair. | | |

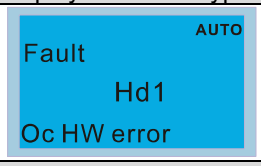
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 31 |  | EEPROM read error (cF2) | Internal EEPROM cannot be read |
| Action and Reset | | | |
| Action level | Firmware internal detection | | |
| Action time | cF2 acts immediately when the drive detects the fault | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Internal EEPROM cannot be read | Press “RESET” key or reset the parameter to the default setting, if cF2 still occurs, return to the factory for repair.<br>Cycle the power, if cF2 error still occurs, return to the factory for repair. | | |

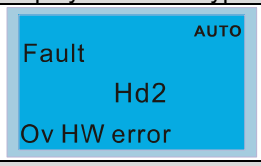
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 33 |  | U-phase error (cd1) | U-phase current detection error when power is ON |
| Action and Reset | | | |
| Action level | Hardware detection | | |
| Action time | cd1 acts immediately when the drive detects the fault | | |
| Fault treatment parameter | N/A | | |
| Reset method | Power-off | | |
| Reset condition | N/A | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Hardware failure | Cycle the power.<br>If cd1 still occurs, return to the factory for repair. | | |

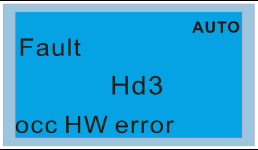
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 34 |  | V-phase error (cd2) | V-phase current detection error when power ON |
| Action and Reset | | | |
| Action level | Hardware detection | | |
| Action time | cd2 acts immediately when the drive detects the fault | | |
| Fault treatment parameter | N/A | | |
| Reset method | Power-off | | |
| Reset condition | N/A | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Hardware failure | Cycle the power.<br>If cd2 still occurs, return to the factory for repair. | | |

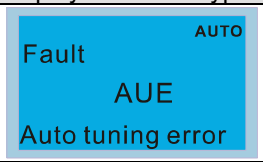
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 35 |  | W-phase error (cd3) | W-phase current detection error when power ON |
| Action and Reset | | | |
| Action level | Hardware detection | | |
| Action time | cd3 acts immediately when the drive detects the fault | | |
| Fault treatment parameter | N/A | | |
| Reset method | Power-off | | |
| Reset condition | N/A | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Hardware failure | Cycle the power.<br>If cd3 still occurs, return to the factory for repair. | | |

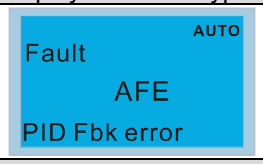
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 36 |  | cc hardware failure (Hd0) | cc (current clamp) hardware protection error when power is ON |
| Action and Reset | | | |
| Action level | Hardware detection | | |
| Action time | Hd0 acts immediately when the drive detects the fault | | |
| Fault treatment parameter | N/A | | |
| Reset method | Power-off | | |
| Reset condition | N/A | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Hardware failure | Cycle the power.<br>If Hd0 still occurs, return to the factory for repair. | | |

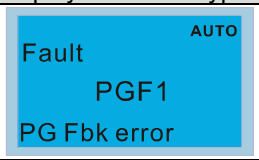
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 37 |  | Oc hardware error (Hd1) | oc hardware protection error when power is ON |
| Action and Reset | | | |
| Action level | Hardware detection | | |
| Action time | Hd1 acts immediately when the drive detects the fault | | |
| Fault treatment parameter | N/A | | |
| Reset method | Power-off | | |
| Reset condition | N/A | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Hardware failure | Cycle the power.<br>If Hd1 still occurs, return to the factory for repair. | | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 38 |  | ov hardware error (Hd2) | ov hardware protection error when power is ON |
| Action and Reset | | | |
| Action level | Hardware detection | | |
| Action time | Hd2 acts immediately when the drive detects the fault | | |
| Fault treatment parameter | N/A | | |
| Reset method | Power-off | | |
| Reset condition | N/A | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Hardware failure | Cycle the power.<br>If Hd2 still occurs, return to the factory for repair. | | |

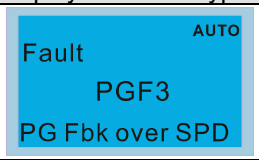
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 39 |  | occ hardware error (Hd3) | Protection error of occ IGBT short-circuit detection when power is ON |
| Action and Reset | | | |
| Action level | Hardware detection | | |
| Action time | Hd3 acts immediately when the drive detects the fault | | |
| Fault treatment parameter | N/A | | |
| Reset method | Power-off | | |
| Reset condition | N/A | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Hardware failure | Cycle the power.<br>If Hd3 still occurs, return to the factory for repair. | | |

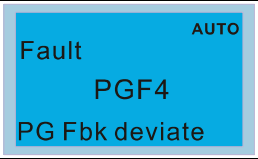
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 40 |  | Auto-tuning error (AUE) | Motor auto-tuning error |
| Action and Reset | | | |
| Action level | Hardware detection | | |
| Action time | Act immediately | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Press “STOP” key during auto-tuning | Re-execute auto-tuning. | | |
| Incorrect motor capacity (too large or too small) and parameter setting | Check motor capacity and related parameters.<br>Set the correct parameters, that is Pr. 01-01–Pr. 01-02.<br>Set Pr.01-00 larger than motor rated frequency. | | |
| Incorrect motor wiring | Check the wiring. | | |
| Motor shaft lock | Remove the cause of motor shaft lock. | | |
| The electromagnetic contactor is ON at output side (U/V/W) of the drive | Make sure the electromagnetic valve is OFF. | | |
| The load is too large. | Reduce the load.<br>Replace the motor with a larger capacity model. | | |
| Accel./Decel. time is too short | Increase the setting values for Pr. 01-12–Pr. 01-19 (Accel./Decel. time). | | |

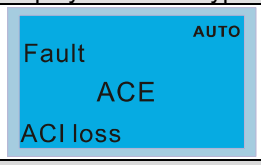
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 41 |  | PID loss ACI (AFE) | PID feedback loss (analog feedback signal is only valid when the PID function is enabled) |
| Action and Reset | | | |
| Action level | When the analog input < 4mA (only detects 4–20mA analog input) | | |
| Action time | Pr. 08-08 | | |
| Fault treatment parameter | Pr. 08-09<br>0: Warn and keep operation<br>1: Fault and ramp to stop<br>2: Warn and coast to stop<br>3: Fault and operate at last frequency | | |
| Reset method | Auto | When Pr. 08-09=3 or 4, AFE is a “Warning”. When the feedback signal is > 4mA, the ”Warning” is automatically cleared. | |
| | Manual | When Pr. 08-09=1 or 2, AFE is a “Fault”. You must reset manually. | |
| Reset condition | Reset immediately | | |
| Record | When Pr. 08-09=1 or 2, AFE is a “Fault”, and the fault is recorded; when Pr. 08-09=3 or 4, AFE is a “Warning”, and the warning is not recorded. | | |
| Cause | Corrective Actions | | |
| PID feedback cable is loose or cut off | Tighten the terminal.<br>Replace the cable with a new one. | | |
| Feedback device failure | Replace the device with a new one. | | |
| Hardware failure | Check all the wiring. If AFE fault still occurs, return to the factory for repair. | | |

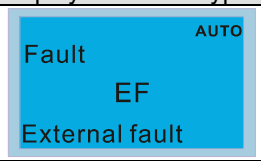
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 42 |  | PG feedback error (PGF1) | The motor runs in a reverse direction to the frequency command direction. |
| Action and Reset | | | |
| Action level | | Software detection | |
| Action time | | Pr. 10-09 | |
| Fault treatment parameter | | Pr. 10-08<br>0: Warn and keep operation<br>1: Fault and ramp to stop<br>2: Fault and coast to stop | |
| Reset method | | Manual reset | |
| Reset condition | | Reset immediately | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Incorrect parameter setting of encoder | | Reset encoder parameter (Pr. 10-02). | |
| Check wiring of the encoder | | Re-wire the encoder. | |
| PG card or PG encoder failure | | Replace PG card or encoder with a new one. | |
| Malfunction caused by interference | | Verify wiring of the control circuit and wiring/grounding of the main circuit to prevent interference. | |

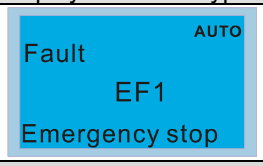
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 43 |  | PG feedback loss (PGF2) | Pr. 10-00 and Pr. 10-02 is not set in the PG control mode. When press “RUN” key, PGF2 fault occurs. |
| Action and Reset | | | |
| Action level | | Software detection | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset immediately | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Incorrect setting of encoder parameter | | Reset encoder parameters (Pr. 10-00 and Pr. 10-02) | |
| Incorrect selection of the control mode | | Choose the correct control mode. | |

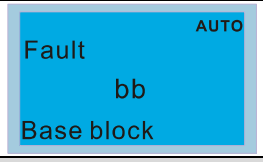
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 44 |  | PG feedback stall (GF3) | Under PG mode, when the motor frequency exceeds the encoder observer stall level (Pr. 10-10) and starts to count, the fault time is longer than the detection time of encoder observer stall (Pr. 10-11), then PGF3 fault occurs. |
| Action and Reset | | | |
| Action level | Pr. 10-10 | | |
| Action time | Pr. 10-11 | | |
| Fault treatment parameter | Pr. 10-12<br>0: Warn and keep operation<br>1: Fault and ramp to stop<br>2: Fault and coast to stop | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Incorrect setting of encoder parameter | Reset encoder parameter (Pr. 10-01) | | |
| Pr. 01-00 is set too small | Set proper value for Pr. 01-00. | | |
| Incorrect setting for ASR parameters and accel./decel. time | Reset ASR parameters.<br>Set correct accel./decel. time. | | |
| Incorrect setting for PG feedback stall | Reset proper values for Pr. 10-10 and Pr. 10-11 | | |

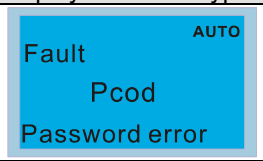
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 45 |  | PG slip error (PGF4) | Under PG mode, when the motor frequency exceeds encoder observer slip range (Pr. 10-13) and starts to count, the fault time is longer than the detection time of encoder observer slip (Pr. 10-14), PGF4 fault occurs. |
| Action and Reset | | | |
| Action level | Pr. 10-13 | | |
| Action time | Pr. 10-14 | | |
| Fault treatment parameter | Pr. 10-15<br>0: Warn and keep operation<br>1: Fault and ramp to stop<br>2: Fault and coast to stop | | |
| Reset method | Auto | When Pr. 10-15=0, PGF4 is a “Warning”, when the deviation between output frequency and motor frequency is smaller than the encoder observer slip range, the warning is automatically cleared. | |
| | Manual | When Pr. 10-15=1 or 2, PGF4 is a “Fault”. You must reset manually. | |
| Reset condition | Reset immediately | | |
| Record | When Pr. 10-15=1 or 2, PGF4 is a “Fault”, and the fault is recorded. | | |
| Cause | Corrective Actions | | |
| Incorrect settings for PG feedback parameters | Reset correct values for Pr. 10-13 and Pr. 10-14. | | |
| Incorrect settings for ASR parameters and accel./decel. time | Reset ASR parameters.<br>Set correct accel./decel time. | | |
| Incorrect settings of encoder parameters | Reset encoder parameters (Pr. 10-01). | | |
| Accel./Decel. time is too short | Reset proper accel./decel. time. | | |
| Incorrect settings of torque limit parameters (Pr. 06-12, Pr. 11-17–20) | Reset proper setting values for Pr. 06-12 and Pr. 11-17–Pr. 17-20. | | |
| Motor shaft lock | Remove causes of motor shaft lock. | | |
| Mechanical brake is not released | Check the action sequence of the system. | | |

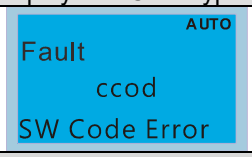
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 48 |  | ACI loss (ACE) | Analog input loss (including all the 4–20mA analog signal) |
| Action and Reset | | | |
| Action level | When the analog input is < 4mA (only detects 4–20mA analog input) | | |
| Action time | Act immediately | | |
| Fault treatment parameter | Pr. 03-19<br>0: Disable<br>1: Continue operation at the last frequency (warning, ANL is displayed on the keypad)<br>2: Decelerate to stop (warning, ANL is displayed on the keypad)<br>3: Stop immediately and display ACE | | |
| Reset method | Auto | When Pr. 03-19=1 or 2, ACE is a “Warning”. When analog input signal is > 4mA, the warning is automatically cleared. | |
| | Manual | When Pr. 03-19=3, ACE is a “Fault”. You must reset manually. | |
| Reset condition | Reset immediately | | |
| Record | When Pr. 03-19=3, ACE is a “Fault”, and the fault is recorded. | | |
| Cause | Corrective Actions | | |
| ACI cable is loose or cut off | Tighten the terminal.<br>Replace the cable with a new one. | | |
| External device failure | Replace the device with a new one. | | |
| Hardware failure | Check all the wiring. If ACE still occurs, return to the factory for repair. | | |

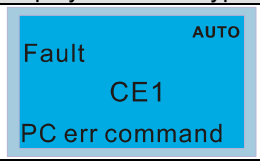
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 49 |  | External fault (EF) | External fault. When the drive decelerates based on the setting of Pr. 07-20, the EF fault displays on the keypad. |
| Action and Reset | | | |
| Action level | MIx=EF and the MI terminal is ON | | |
| Action time | Act immediately | | |
| Fault treatment parameter | Pr. 07-20<br>0: Coast to stop<br>1: Stop by 1st deceleration time<br>2: Stop by 2nd deceleration time<br>3: Stop by 3rd deceleration time<br>4: Stop by 4th deceleration time<br>5: System deceleration<br>6: Automatic deceleration (Pr. 01-46) | | |
| Reset method | Manual reset | | |
| Reset condition | Manual reset only after the external fault is cleared (terminal status is recovered) | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| External fault | Press RESET key after the fault is cleared. | | |

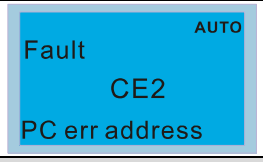
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 50 |  | Emergency stop (EF1) | When the contact of MIx=EF1 is ON, the output stops immediately and displays EF1 on the keypad. The motor is in free running. |
| Action and Reset | | | |
| Action level | MIx=EF1 and the MI terminal is ON | | |
| Action time | Act immediately | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Manual reset only after the external fault is cleared (terminal status is recovered) | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| When Mix = EF1 activates | Verify if the system is back to normal condition, and then press “RESET” key to go back to the default. | | |

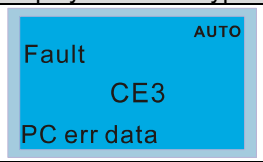
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 51 |  | External base block (bb) | When the contact of MIx=bb is ON, the output stops immediately and displays bb on the keypad. The motor is in free running. |
| Action and Reset | | | |
| Action level | MIx=bb and the MI terminal is ON | | |
| Action time | Act immediately | | |
| Fault treatment parameter | N/A | | |
| Reset method | The display “bb” is automatically cleared after the fault is cleared. | | |
| Reset condition | N/A | | |
| Record | No | | |
| Cause | Corrective Actions | | |
| When Mix = bb activates | Verify if the system is back to normal condition, and then press “RESET” key to go back to the default. | | |

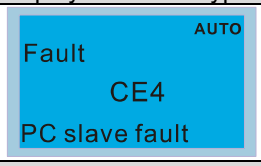
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 52 |  | Password is locked (Pcod) | Entering the wrong password three consecutive times |
| Action and Reset | | | |
| Action level | Entering the wrong password three consecutive times | | |
| Action time | Act immediately | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Power-off | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Incorrect password input through Pr. 00-07 | 1. Input the correct password after rebooting the motor drive.<br>2. If you forget the password, do the following steps:<br>Step 1: Input 9999 and press ENTER.<br>Step 2: Repeat step 1. Input 9999 and press ENTER.<br>(You need to finish step 1 and step 2 within 10 seconds. If you don’t finish the two steps in 10 seconds, try again.)<br>3. The parameter settings return to the default when the “Input 9999” process is finished. | | |

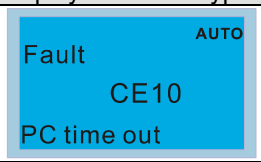
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 53 |  | SW Code Error (ccod) | This fault code occurs when the firmware version and the control board ID# don't match. |
| Action and Reset | | | |
| Action level | | N/A | |
| Action time | | N/A | |
| Fault treatment parameter | | N/A | |
| Reset method | | N/A | |
| Reset condition | | N/A | |
| Record | | N/A | |
| Cause | | Corrective Actions | |
| The firmware version may be wrong. For example: Firmware of C2000 series is burned into control board of CH2000 series. | | Return to the factory for repair. | |

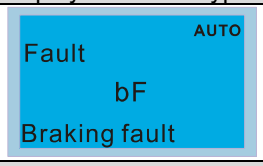
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 54 |  | Illegal command (CE1) | Communication command is illegal |
| Action and Reset | | | |
| Action level | | When the function code is not 03, 06, 10, or 63. | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset immediately | |
| Record | | No | |
| Cause | | Corrective Actions | |
| Incorrect communication command from the upper unit | | Check if the communication command is correct. | |
| Malfunction caused by interference | | Verify the wiring and grounding of the communication circuit. It is recommended to separate the communication circuit from the main circuit, or wire in 90 degree for effective anti-interference performance. | |
| Different communication setting from the upper unit | | Check if the setting for Pr.09-02 is the same as the setting for the upper unit. | |
| Disconnection or bad connection of the cable | | Check the cable and replace it if necessary. | |

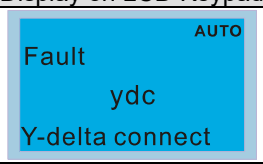
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 55 |  | Illegal data address (CE2) | Data address is illegal |
| Action and Reset | | | |
| Action level | When the data address is correct. | | |
| Action time | Act immediately | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately | | |
| Record | No | | |
| Cause | Corrective Actions | | |
| Incorrect communication command from the upper unit | Check if the communication command is correct. | | |
| Malfunction caused by interference | Verify the wiring and grounding of the communication circuit. It is recommended to separate the communication circuit from the main circuit, or wire in 90 degree for effective anti-interference performance. | | |
| Different communication setting from the upper unit | Check if the setting for Pr.09-02 is the same as the setting for the upper unit. | | |
| Disconnection or bad connection of the cable | Check the cable and replace it if necessary. | | |

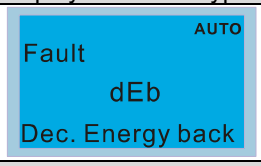
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 56 |  | Illegal data value (CE3) | Data value is illegal |
| Action and Reset | | | |
| Action level | When the data length is too long | | |
| Action time | Act immediately | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately | | |
| Record | No | | |
| Cause | Corrective Actions | | |
| Incorrect communication command from the upper unit | Check if the communication command is correct. | | |
| Malfunction caused by interference | Verify the wiring and grounding of the communication circuit. It is recommended to separate the communication circuit from the main circuit, or wire in 90 degree for effective anti-interference performance. | | |
| Different communication setting from the upper unit | Check if the setting for Pr.09-02 is the same as the setting for the upper unit. | | |
| Disconnection or bad connection of the cable | Check the cable and replace it if necessary. | | |

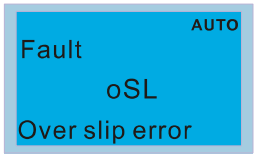
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 57 |  | Data is written to read-only address (CE4) | Data is written to read-only address |
| Action and Reset | | | |
| Action level | When the data is written to read-only address. | | |
| Action time | Act immediately | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately | | |
| Record | No | | |
| Cause | Corrective Actions | | |
| Incorrect communication command from the upper unit | Check if the communication command is correct. | | |
| Malfunction caused by interference | Verify the wiring and grounding of the communication circuit. It is recommended to separate the communication circuit from the main circuit, or wire in 90 degree for effective anti-interference performance. | | |
| Different communication setting from the upper unit | Check if the setting for Pr.09-02 is the same as the setting for the upper unit. | | |
| Disconnection or bad connection of the cable | Check the cable and replace it if necessary. | | |

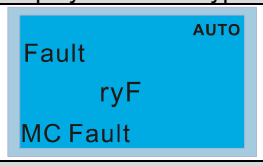
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 58 |  | MODBUS transmission time-out (CE10) | MODBUS transmission time-out occurs |
| Action and Reset | | | |
| Action level | When the communication time exceeds the detection time for Pr.09-03 time-out. | | |
| Action time | Pr. 09-03 | | |
| Fault treatment parameter | Pr. 09-02<br>0: Warn and continue operation<br>1: Fault and ramp to stop<br>2: Fault and coast to stop<br>3: No warning and continue operation | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| The upper unit does not transmit the communication command within Pr.09-03 setting time. | Check if the upper unit transmits the communication command within the setting time for Pr.09-03. | | |
| Malfunction caused by interference | Verify the wiring and grounding of the communication circuit. It is recommended to separate the communication circuit from the main circuit, or wire in 90 degree for effective anti-interference performance. | | |
| Different communication setting from the upper unit | Check if the setting for Pr.09-02 is the same as the setting for the upper unit. | | |
| Disconnection or bad connection of the cable | Check the cable and replace it if necessary. | | |

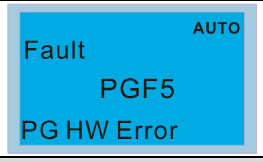
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 60 |  | Brake transistor fault (bF) | The brake transistor of the motor drive is abnormal. (for the models with built-in brake transistor) |
| Action and Reset | | | |
| Action level | | Hardware detection | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset immediately | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Hardware fault | | 1. Press “RESET” key to go back to the default. If bF still occurs, return to the factory for repair.<br>2. Power off the motor drive since the internal circuit is abnormal. Use a meter to check if it is short-circuit between B2 to DC-. If short-circuit occurs, return to the factory for repair. | |
| Malfunction caused by interference | | Verify wiring/grounding of the main circuit to prevent interference. | |
| Using the incorrect brake resistor | | Check if the resistance value of the brake resistor matches to the drive. | |
| Incorrect wiring of the brake resistor | | Refer to the optional accessories instruction in chapter 7, and verify the wiring. | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 61 |  | Y-connection / Δ-connection switch fault (ydc) | A fault occurs when Y-Δ switches |
| Action and Reset | | | |
| Action level | | 1. ydc occurs when the confirmation signals of Y-connection and Δ-connection are conducted at the same time.<br>2. If any of confirmation signals is not conducted within Pr. 05-25, ydc occurs. | |
| Action time | | Pr. 05-25 | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Can be reset only when the confirmation signal of Y-connection is conducted if it is Y-connection, or when the confirmation signal of Δ-connection is conducted if it is Δ-connection. | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| The electromagnetic valve operates incorrectly during Y-Δ switch. | | Check if the electromagnetic valve works normally.<br>If not, replace it. | |
| Incorrect parameter setting | | Check if related parameters are all set up and set correctly. | |
| The wiring of Y-Δ switch function is incorrect | | Check the wiring. | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 62 |  | Deceleration energy backup fault (dEb) | When Pr. 07-13 is not 0, and the power is suddenly off, causing the DC bus voltage lower than the dEb action level, the dEb function acts and the motor ramps to stop. Then dEb displays on the keypad. |
| Action and Reset | | | |
| Action level | | When Pr. 07-13 is not 0, and the DC bus voltage is lower than the level of dEb. | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Auto | When Pr. 07-13=2 (dEb with auto-acceleration / auto-deceleration, the drive outputs the frequency after the power is restored): dEb is automatically cleared. |
| | | Hand | When Pr. 07-13=1 (dEb with auto-acceleration / auto-deceleration, the drive does not output the frequency after the power is restored): The drive stops when dEb acts and the rotation speed becomes 0 Hz, then the drive can be reset manually. |
| Reset condition | | Auto: The fault is automatically cleared.<br>Hand: When the drive decelerates to 0 Hz. | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Unstable power source or the power is off | | Check the power system. | |
| There is any other large load operates in the power system | | 1. Replace power system with a larger capacity.<br>2. Use a different power system from the large load system. | |

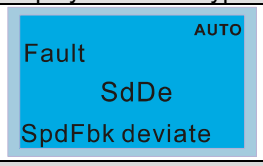
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 63 |  | Over slip error (oSL) | On the basis of the maximum slip limit set via Pr. 10-29, the speed deviation is abnormal. When the motor drive outputs at constant speed, F>H or F<H exceeds the level set via Pr. 07-29, and it exceeds the time set via Pr. 07-30, oSL shows. oSL occurs in induction motors only. |
| Action and Reset | | | |
| Action level | | Pr. 07-29<br>100% of Pr. 07-29 = the maximum limit of the slip frequency (Pr. 10-29) | |
| Action time | | Pr. 07-30 | |
| Fault treatment parameter | | Pr. 07-31<br>0: Warn and continue operation<br>1: Fault and ramp to stop<br>2: Fault and coast to stop<br>3: No warning | |
| Reset method | | Auto | Pr. 07-31=0 is a warning.<br>When the motor drive outputs at constant speed, and F>H or F<H does not exceed the level set via Pr. 07-29 anymore, oSL warning will be cleared automatically. |
| | | Hand | When Pr. 07-31=1 or 2, oSL is an error, and it needs to reset manually. |
| Reset condition | | Reset immediately | |
| Record | | Pr. 07-31=1 or 2, oSL is “Fault”, and will be recorded. | |
| Cause | | Corrective Actions | |
| Any of the motor parameters in parameter group 5 may be incorrect | | Check the motor parameters | |
| Overload | | Decrease the load | |
| Any of the setting value of Pr. 07-29, 07-30, and 10-29 is improper | | Check the setting of oSL protection function related parameters | |

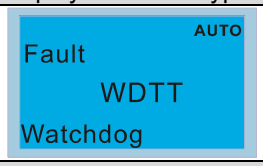
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 64 |  | Electric valve switch fault (ryF) | Electric valve switch fault when executing Soft Start |
| Action and Reset | | | |
| Action level | | Hardware detection (Frame D and above) | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset when the electric valve switch is correctly closed | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| The input power is abnormal | | Check if the power is shut down during the drive operation.<br>Check if the three-phase input power is normal. | |
| Malfunction caused by interference | | Verify the wiring/grounding of the main circuit to prevent interference. | |
| Hardware failure | | Cycle the power after checking the power. If ryF fault still occurs, return to the factory for repair. | |

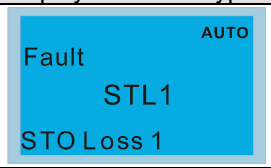
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 65 |  | Hardware error of PG card (PGF5) | Hardware error of PG card |
| Action and Reset | | | |
| Action level | | 1. The PG card (PG01U/PG02U) can only be used with the permanent magnetic motor. When the power is ON and Pr. 00-04=29 pole section shows 0 or 7 (wiring error or no U/V/W signal input), the PGF5 error will be activated.<br>2. The drive receives the operation command right after the power is ON, meanwhile, the PG card is not ready yet. | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset after cycle the power. | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Wiring error or there is no U/V/W signal input | | Re-connect the cables correctly | |
| Encoder failure | | Verify if it is the UVW encoder | |
| The setting of encoder parameter is incorrect | | Choose the correct setting of Pr. 10-00 | |
| If the motor selection switch of PG card on the correct position | | Check if it is the UVW encoder or Delta encoder | |
| PG card selection is incorrect | | Install the correct PG card | |

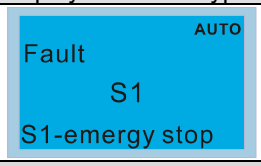
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 68 | AUTO<br>Fault<br>SdRv<br>SpdFbk Dir Rev | Reverse direction of the speed feedback (SdRv) | Rotating direction is different from the commanding direction detected by the sensorless |
| Action and Reset | | | |
| Action level | Software detection | | |
| Action time | Pr. 10-09 | | |
| Fault treatment parameter | Pr. 10-08<br>0: Warn and keep operation<br>1: Fault and ramp to stop<br>2: Fault and coast to stop | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately | | |
| Record | When Pr. 10-08=1 or 2, SdRv is a “Fault”, and the fault is recorded. | | |
| Cause | Corrective Actions | | |
| The setting of Pr.10-25 FOC bandwidth of speed observer is improper | Decrease the setting of Pr. 10-25 | | |
| The setting of motor parameter is incorrect | Reset the motor parameter and execute parameter tuning | | |
| The motor cable is abnormal or broken | Check if the cable is well functioned or replace the cable | | |
| A reverse force is exerted, or the motor runs in a reverse direction at start | Start speed tracking function (Pr. 07-12) | | |
| Malfunction caused by interference | Verify the wiring of the control circuit and wiring/grounding of the main circuit to prevent interference. | | |

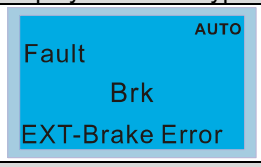
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 69 | AUTO<br>Fault<br>SdOr<br>SpdFbk over SPD | Over speed rotation feedback (SdOr) | Over speed rotation detected by sensorless |
| Action and Reset | | | |
| Action level | Pr. 10-10 | | |
| Action time | Pr. 10-11 | | |
| Fault treatment parameter | Pr. 10-12<br>0: Warn and keep operation<br>1: Fault and ramp to stop<br>2: Fault and coast to stop | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately | | |
| Record | When Pr. 10-12=1 or 2, SdOr is a “Fault”, and the fault is recorded. | | |
| Cause | Corrective Actions | | |
| The setting of Pr. 10-25 FOC bandwidth of speed observer is improper | Decrease the setting of Pr. 10-25 | | |
| The setting of ASR bandwidth of speed controller is improper | Increase the bandwidth of ASR speed controller | | |
| The setting of motor parameter is incorrect | Reset motor parameter and execute parameter tuning | | |
| Malfunction caused by interference | Verify the wiring of the control circuit and wiring/grounding of the main circuit to prevent interference. | | |

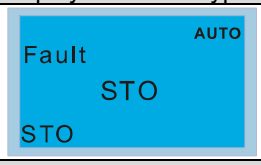
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 70 |  | Large deviation of speed feedback (SdDe) | A large deviation between the rotating speed and the command detected by the sensorless |
| Action and Reset | | | |
| Action level | Pr. 10-13 | | |
| Action time | Pr. 10-14 | | |
| Fault treatment parameter | Pr. 10-15<br>0: Warn and keep operation<br>1: Fault and ramp to stop<br>2: Fault and coast to stop | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately | | |
| Record | When Pr. 10-15=1 or 2, SdDe is a “Fault”, and the fault is recorded. | | |
| Cause | Corrective Actions | | |
| Improper parameter setting for abnormal rotating slip function | Reset proper setting for Pr. 10-13 and Pr. 10-14 | | |
| Improper parameter setting for ASR and acceleration/deceleration | Reset ASR parameters<br>Set proper acceleration/deceleration time | | |
| The acceleration/deceleration time is too short | Reset proper acceleration/deceleration time | | |
| Motor shaft lock | Remove the cause of motor shaft lock | | |
| The mechanical brake is not released | Verify the system action timeline | | |
| Incorrect parameter setting for torque limit (Pr. 06-12, Pr. 11-17 – 20) | Adjust the setting to proper value | | |
| Malfunction caused by interference | Verify the wiring of the control circuit and wiring/grounding of the main circuit to prevent interference. | | |

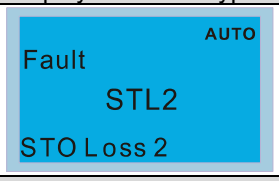
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 71 |  | Watchdog（WDTT） | Watchdog fault |
| Action and Reset | | | |
| Action level | Hardware detection | | |
| Action time | N/A | | |
| Fault treatment parameter | N/A | | |
| Reset method | Hardware failure, and cannot reset. Cycle the power. | | |
| Reset condition | N/A | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| Hardware interference | Verify the wiring of the control circuit and wiring/grounding of the main circuit to prevent interference.<br>If the WDTT fault still occurs, return to the factory for repair. | | |

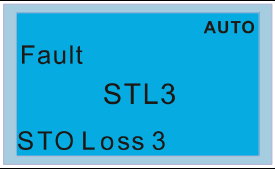
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 72 |  | STO Loss 1 (STL1) | STO1 – SCM1 internal loop detection fault |
| Action and Reset | | | |
| Action level | | Hardware detection | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Hardware failure, and cannot reset. Cycle the power. | |
| Reset condition | | N/A | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| STO1 and SCM1 short circuit lines are not connected | | Connect the short circuit line | |
| Hardware failure | | After you make sure all the wiring is correct, if STOL fault still occurs after cycling the power, please return to the factory for repair. | |
| Bad connection of the IO card | | Check if the PIN of IO card is broken.<br>Check if the IO card connects to the control board correctly, and if the screws are tightened well. | |
| The IO card does not match the version of the control board | | Contact local agent or Delta | |

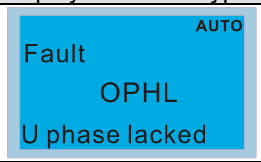
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 73 |  | Emergency stop for external safety (S1) | Emergency stop for external safety |
| Action and Reset | | | |
| Action level | | Hardware detection | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset only after S1 fault is cleared. | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| The switch action of S1 and SCM (OPEN) | | Reset the switch and cycle the power. | |
| S1 and SCM short circuit lines are not connected | | Re-connect the short circuit lines | |
| Malfunction caused by interference | | Verify the wiring/grounding of the main circuit, control circuit and encoder to prevent interference. | |
| Hardware failure | | If S1 fault still occurs after cycling the power, please return to the factory for repair. | |
| Poor connection of the IO card | | Check if the PIN of IO card is broken.<br>Check if the IO card connects to the control board correctly, and if the screws are tightened well. | |
| The IO card does not match the version of the control board | | Contact local agent or Delta | |

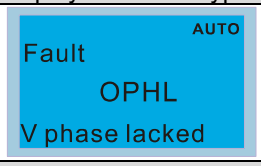
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 75 |  | External brake error (Brk) | External mechanical brake error<br>The MO terminal is active when MOx=12, 42, 47 or 63, but the MIx=55 does not receive signal for mechanical brake action during the set time of Pr. 02-56. |
| Action and Reset | | | |
| Action level | | MIx=55 did not receive signal for the mechanical brake action during the set time of Pr. 02-56. | |
| Action time | | Pr. 02-56 | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset immediately | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Mechanical brake error | | Verify if the mechanical brake can work correctly.<br>Replace mechanical brake. | |
| Incorrect parameter setting | | If there is no brake-confirming signal to use, set Pr. 02-56=0. | |
| Signal cable is loose or cut off | | Tighten the screws.<br>Replace the signal cable with a new one. | |
| The time of Pr. 02-56 is set too short | | Increase the time setting of Pr. 02-56 | |
| Malfunction caused by interference | | Verify the wiring/grounding of the main circuit, control circuit and encoder to prevent interference. | |

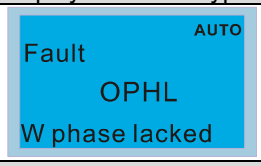
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 76 |  | STO (STO) | Safety Torque Off function active |
| Action and Reset | | | |
| Action level | | Hardware detection | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | Auto | When Pr. 06-44=1 and after STO fault is cleared, it automatically resets. | |
| | Manual | When Pr. 06-44=0 and after STO fault is cleared, reset it manually. | |
| Reset condition | | Reset only after STO fault is cleared. | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| The switch action of STO1/SCM1 and STO2/SCM2 (OPEN) | | Reset the switch (ON) and cycle the power | |
| Poor connection of the IO card | | Check if the PIN of IO card is broken.<br>Check if the IO card connects to the control board correctly, and if the screws are tightened well. | |
| The IO card does not match the version of the control board | | Contact local agent or Delta | |

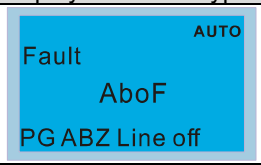
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 77 |  | STO Loss 2 (STL2) | STO2–SCM2 internal loop detection fault |
| Action and Reset | | | |
| Action level | | Hardware detection | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Hardware failure, and cannot reset. Cycle the power. | |
| Reset condition | | N/A | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| STO2 and SCM2 short circuit lines are not connected | | Connect the short circuit lines | |
| Hardware failure | | After you make sure all the wiring is correct, if STL2 fault still occurs after cycling the power, please return to the factory for repair. | |
| Poor connection of the IO card | | Check if the PIN of IO card is broken.<br>Check if the IO card connects to the control board correctly, and if the screws are tightened well. | |
| The IO card does not match the version of the control board | | Contact local agent or Delta | |

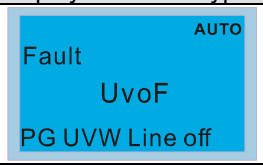
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 78 |  | STO Loss 3 (STL3) | STO1–SCM1 and STO2–SCM2 internal loop detection fault |
| Action and Reset | | | |
| Action level | | Hardware detection | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Hardware failure, and cannot reset. Cycle the power. | |
| Reset condition | | N/A | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| STO1 and SCM1, or STO2 and SCM2 short circuit lines are not connected | | Re-connect the short circuit lines | |
| Hardware failure | | After you make sure all the wiring is correct, if STL3 fault still occurs after cycling the power, please return to the factory for repair. | |
| Poor connection of the IO card | | Check if the PIN of IO card is broken.<br>Check if the IO card connects to the control board correctly, and if the screws are tightened well. | |
| The IO card does not match the version of the control board | | Contact local agent or Delta | |

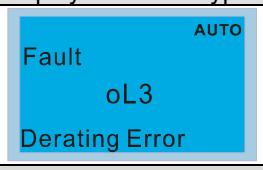
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 82 |  | Output phase loss U phase (OPHL) | U phase output phase loss |
| Action and Reset | | | |
| Action level | Pr. 06-47 | | |
| Action time | Pr. 06-46<br>Pr. 06-48: Use the setting value of Pr. 06-48 first if there is DC braking function, and then use that of Pr. 06-46. | | |
| Fault treatment parameter | Pr.06-45<br>0: Warn and keep operation<br>1: Fault and ramp to stop<br>2: Fault and coast to stop<br>3: No warning | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately | | |
| Record | Pr. 06-45=1 or 2 is “Fault”, and will be recorded. | | |
| Cause | Corrective Actions | | |
| The three-phase impedance of motor is unbalanced | Replace the motor. | | |
| The motor is wired incorrectly | Check the cable condition.<br>Replace the cable. | | |
| Using a single-phase motor | Choose a three-phase motor | | |
| The current sensor is damaged | Check the flat cable of the control board. Re-do the wiring and test again if the flat cable is loose. If the fault still occurs, return the unit to the factory.<br>Verify that the three-phase current is balanced via a current clamp meter. If it is balanced and the OPHL fault still occurs, return the unit to the factory | | |
| The drive capacity is much larger than the motor capacity | Make sure the capacity of the drive and motor match to each other. | | |

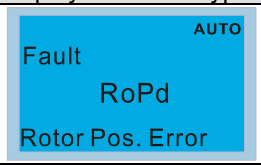
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 83 |  | Output phase loss V phase (OPHL) | V phase output phase loss |
| Action and Reset | | | |
| Action level | Pr. 06-47 | | |
| Action time | Pr. 06-46<br>Pr. 06-48: Use the setting value of Pr. 06-48 first. If DC braking function activates, use that of Pr. 06-46. | | |
| Fault treatment parameter | Pr. 06-45<br>0: Warn and keep operation<br>1: Fault and ramp to stop<br>2: Fault and coast to stop<br>3: No warning | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately | | |
| Record | When Pr. 06-45=1 or 2, OPHL is a “Fault”, and the fault is recorded. | | |
| Cause | Corrective Actions | | |
| Unbalanced three-phase impedance of the motor | Replace the motor. | | |
| Check if the wiring is incorrect | Check the cable and replace it if necessary. | | |
| Check if the motor is a single-phase motor | Choose a three-phase motor. | | |
| Check if the current sensor is broken | Check if the control board cable is loose. If yes, reconnect the cable and run the drive to test. If the fault still occurs, return to the factory for repair.<br>Check if the three-phase current is balanced with a current clamp meter. If the current is balanced and the OPHL fault still occurs, return to the factory for repair. | | |
| Check if the drive capacity is larger than the motor capacity | Choose the drive that matches the motor capacity | | |

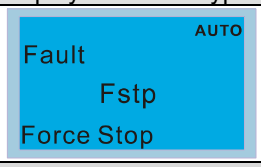
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 84 |  | Output phase loss W phase (OPHL) | W phase output phase loss |
| Action and Reset | | | |
| Action level | Pr. 06-47 | | |
| Action time | Pr. 06-46<br>Pr. 06-48: Use the setting value of Pr. 06-48 first. If DC braking function activates, use that of Pr. 06-46. | | |
| Fault treatment parameter | Pr. 06-45<br>0: Warn and keep operation<br>1: Fault and ramp to stop<br>2: Fault and coast to stop<br>3: No warning | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately | | |
| Record | When Pr. 06-45=1 or 2, OPHL is a “Fault”, and the fault is recorded. | | |
| Cause | Corrective Actions | | |
| Unbalanced three-phase impedance of the motor | Replace the motor. | | |
| Check if the wiring is incorrect | Check the cable and replace it if necessary. | | |
| Check if the motor is a single-phase motor | Choose a three-phase motor. | | |
| Check if the current sensor is broken | Check if the control board cable is loose. If yes, reconnect the cable and run the drive to test. If the fault still occurs, return to the factory for repair.<br>Check if the three-phase current is balanced with a current clamp meter. If the current is balanced and the OPHL fault still occurs, return to the factory for repair. | | |
| Check if the drive capacity is larger than the motor capacity | Choose the drive that matches the motor capacity | | |

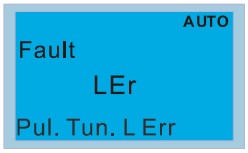
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 85 |  | PG ABZ line off (AboF) | The ABZ line off for protection when using PG02U |
| Action and Reset | | | |
| Action level | Hardware detection | | |
| Action time | Act immediately | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| The PG signal cable is not connected or cut off | Check the PG signal cable | | |
| PG card screw is loose | Tighten all the screws | | |
| Malfunction caused by interference | Verify the wiring/grounding of the main circuit, control circuit and encoder to prevent interference. | | |
| Hardware failure | 1. After you check the wiring, if AboF fault still occurs after cycle the power, return to the factory for repair.<br>2. Check if the VP power of PG card has no output, or the output voltage level is abnormal.<br>3. Check if the encoder is broken. | | |
| Encoder wiring is too long, causing large voltage drop of PG card VP power. | 1. Decrease the wiring length.<br>2. Power on the encoder by other power sources. | | |

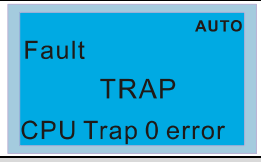
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 86 |  | PG UVW line off (UvoF) | UVW line off for protection when using PG02U |
| Action and Reset | | | |
| Action level | Hardware detection | | |
| Action time | Act immediately | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| The PG signal cable is not connected or cut off | Check the PG signal cable | | |
| PG card screw is loose | Tighten all the screws | | |
| Malfunction caused by interference | Verify the wiring/grounding of the main circuit, control circuit and encoder to prevent interference. | | |
| Hardware failure | 1. After you check the wiring, if AboF fault still occurs after cycle the power, return to the factory for repair.<br>2. Check if the VP power of PG card has no output, or the output voltage level is abnormal.<br>3. Check if the encoder is broken. | | |
| Encoder wiring is too long, causing large voltage drop of PG card VP power. | 1. Decrease the wiring length.<br>2. Power on the encoder by other power sources. | | |

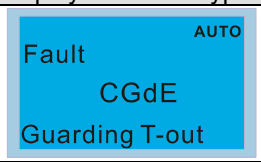
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 87 |  | Overload protection at low frequency (oL3) | Low frequency and high current protection |
| Action and Reset | | | |
| Action level | Software detection | | |
| Action time | Act immediately | | |
| Fault treatment parameter | N/A | | |
| Reset method | Manual reset | | |
| Reset condition | Reset immediately | | |
| Record | Yes | | |
| Cause | Corrective Actions | | |
| The drive operates in the low frequency range (High HP: below 15 Hz; Low HP: below 5 Hz) and IGBT temperature (High HP: 20°C; Low HP: 50°C) | 1. Enhance the heat dissipation capacity for the cabinet.<br>2. Lower the carrier frequency (Pr.00-17).<br>3. Decrease the voltage settings that correspond to frequency below 15 Hz in the V/F curve.<br>4. Change Pr.00-11 to general control mode.<br>5. Replace the drive with a larger power model. | | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 89 |  | Rotor position detection error (RoPd) | Rotor position detection error protection |
| Action and Reset | | | |
| Action level | | Reset the software | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset immediately | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Check if the motor cable is abnormal or broken | | Check or replace the cable. | |
| Motor coil error | | Replace the motor. | |
| Hardware failure | | IGBT broken. Return to the factory for repair. | |
| Drive's current feedback line error | | Cycle the power. If RoPd still occurs during operation, return to the factory for repair. | |

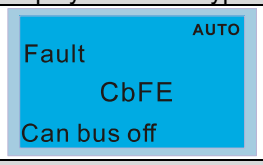
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 90 |  | Force to stop (FStp) | Keypad forces PLC to Stop |
| Action and Reset | | | |
| Action level | | When Pr. 00-32=1, STOP button on the keypad is valid. When giving the STOP command during the PLC operation, FStp fault occurs. | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset immediately | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Pr. 00-32=1: keypad STOP button is valid | | Check if it is necessary to set Pr. 00-32=0, so the keypad STOP button is invalid. | |
| Press STOP button during PLC operation | | Verify the timing of STOP function. | |

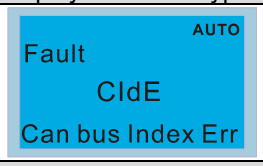
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 92 |  | Pulse Tuning Inductance (L) Error (LEr) | This fault code occurs when D-axis and Q- axis inductance auto-tunes for more than 3 times. |
| Action and Reset | | | |
| Action level | | Software detection | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset immediately | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| The motor drive doesn't disengaging the load. | | Verify if the motor drive is auto-tuning. | |
| Mistake on setting up the motor parameters. | | Verify if you set up the motor parameters according to the nameplate on the motor. | |

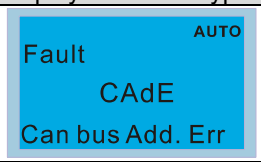
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 93 |  | CPU error 0 (TRAP) | CPU crash |
| Action and Reset | | | |
| Action level | | Hardware detection | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Cannot reset, power off. | |
| Reset condition | | N/A | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Hardware interference | | Verify the wiring of control circuit, and the wiring/grounding of the main circuit to prevent interference.<br>If TRAP fault still occurs, return to the factory for repair. | |
| Hardware failure | | Return to the factory for repair. | |
| CPU is in an infinite loop | | Cycle the power. If the TRAP fault still occurs, return to the factory for repair. | |

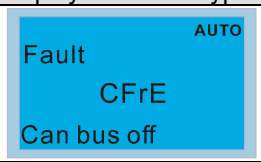
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 101 |  | CANopen guarding fault (CGdE) | CANopen guarding fault |
| Action and Reset | | | |
| Action level | | | When CANopen Node Guarding detects that one of the slaves is not responding, the CGdE fault occurs.<br>The upper unit sets factor and time during configuration. |
| Action time | | | The time that upper unit sets during configuration |
| Fault treatment parameter | | | N/A |
| Reset method | | | Manual reset |
| Reset condition | | | The upper unit sends a reset package to clear this fault |
| Record | | | Yes |
| Cause | | | Corrective Actions |
| The guarding time is too short, or less detection times | | | Increase the guarding time (Index 100C) and detection times |
| Malfunction caused by interference | | | 1. Verify the wiring and grounding of the communication circuit. It is recommended to separate the communication circuit from the main circuit, or wire in 90 degree for effective anti-interference performance.<br>2. Make sure the communication circuit is wired in series.<br>3. Use CANopen cable or add terminating resistance. |
| Communication cable is broken or bad connected | | | Check or replace the communication cable. |

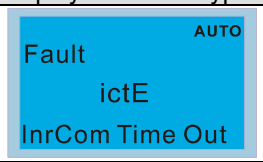
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 102 |  | CANopen heartbeat fault (CHbE) | CANopen heartbeat fault |
| Action and Reset | | | |
| Action level | | | When CANopen Heartbeat detects that one of the slaves is not responding, the CHbE fault occurs.<br>The upper unit sets the confirming time of producer and consumer during configuration. |
| Action time | | | The confirming time that upper unit sets for producer and consumer during configuration. |
| Fault treatment parameter | | | N/A |
| Reset method | | | Manual reset |
| Reset condition | | | The upper unit sends a reset package to clear this fault |
| Record | | | Yes |
| Cause | | | Corrective Actions |
| The heartbeat time is too short | | | Increase heartbeat time (Index 100C) |
| Malfunction caused by interference | | | 1. Verify the wiring and grounding of the communication circuit. It is recommended to separate the communication circuit from the main circuit, or wire in 90 degree for effective anti-interference performance.<br>2. Make sure the communication circuit is wired in series.<br>3. Use CANopen cable or add terminating resistance. |
| Communication cable is broken or bad connected | | | Check or replace the communication cable. |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 104 |  | CANopen bus off fault (CbFE) | CANopen bus off fault |
| Action and Reset | | | |
| Action level | | Hardware | When CANopen card is not installed, CbFE fault occurs. |
| | | Software | When the master received wrong communication package, CbFE fault occurs.<br>Too much interference on BUS<br>When the CAN_H and CAN_L communication cable is short, the master will receive wrong package, and CbFE fault occurs. |
| Action level | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Cycle the power | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Check if the CANopen card is installed | | Make sure the CANopen card is installed. | |
| Check if the CANopen speed is correct | | Reset CANopen speed (Pr. 09-37) | |
| Malfunction caused by interference | | 1. Verify the wiring and grounding of the communication circuit. It is recommended to separate the communication circuit from the main circuit, or wire in 90 degree for effective anti-interference performance.<br>2. Make sure the communication circuit is wired in series.<br>3. Use CANopen cable or add terminating resistance. | |
| Communication cable is broken or bad connected | | Check or replace the communication cable. | |

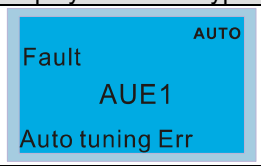
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 105 |  | CANopen index error (CIdE) | CANopen index error |
| Action and Reset | | | |
| Action level | | Software detection | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Upper unit sends a reset package to clear this fault | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Incorrect setting of CANopen index | | Reset CANopen Index (Pr. 00-02=7) | |

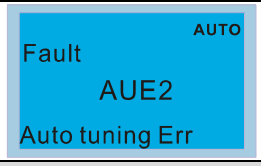
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 106 |  | CANopen station address error (CAdE) | CANopen station address error (only supports 1 – 127) |
| Action and Reset | | | |
| Action level | | Software detection | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset (Pr.00-02=7) | |
| Reset condition | | N/A | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Incorrect setting of CANopen station address | | 1. Disable CANopen (Pr.09-36=0)<br>2. Reset CANopen (Pr.00-02=7)<br>3. Reset CANopen station address (Pr.09-36) | |

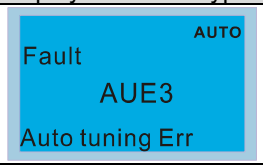
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 107 |  | CANopen memory error (CFrE) | CANopen memory error |
| Action and Reset | | | |
| Action level | | When the user update firmware version of the control board, but the FRAM internal data remains the same, then CFrE fault occurs. | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Pr. 00-02=7 | |
| Record | | Pr. 00-21=3, the fault is recorded | |
| Cause | | Corrective Actions | |
| CANopen internal memory error | | 1. Disable CANopen (Pr. 09-36=0)<br>2. Reset CANopen (Pr. 00-02=7)<br>3. Reset CANopen station address (Pr. 09-36) | |

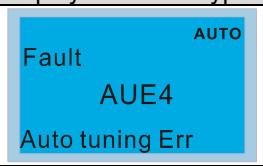
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 111 |  | InrCOM time-out error (ictE) | Internal communication time-out |
| Action and Reset | | | |
| Action level | | Pr.09-31=-1 ~ -10 (there is no -9), when the internal communication between Slave and Master is abnormal, IctE fault occurs. | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Automatically reset after the internal communication is normal | |
| Reset condition | | N/A | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Malfunction caused by interference | | Verify the wiring and grounding of the communication circuit. It is recommended to separate the communication circuit from the main circuit, or wire in 90 degree for effective anti-interference performance. | |
| The communication condition is different with the upper unit | | Verify the setting of Pr. 09-02 is the same as the setting of upper unit. | |
| Communication cable is broken or bad connected | | Check or replace the communication cable. | |

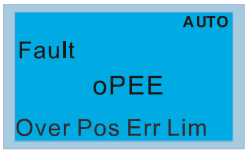
| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 112 |  | PMLess shaft lock (SfLK) | The drive has RUN command with output frequency, but the permanent magnetic motor does not turn. |
| Action and Reset | | | |
| Action level | | Software detection | |
| Action time | | 3 sec. | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset immediately | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Improper setting of the speed observer bandwidth | | Increase the setting value. | |
| Motor shaft lock | | Remove causes of the motor shaft lock. | |
| Motor error (e.g. demagnetization) | | Replace the motor with a new one. | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 142 |  | Auto-tune error 1 (AUE1) | No feedback current error when motor parameter automatically detects |
| Action and Reset | | | |
| Action level | | Software detection | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset immediately | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Motor is not wired | | Wire the motor correctly | |
| The electromagnetic contactor is used as an open circuit on the output side of the drive (U/V/W). | | Verify that the electromagnetic valve is closed. | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 143 |  | Auto-tune error 2 (AUE2) | Motor phase loss error when motor parameter automatically detects |
| Action and Reset | | | |
| Action level | | Software detection | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset immediately | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Incorrect motor wiring | | Wire the motor correctly. | |
| Motor error | | Check if the motor works normally. | |
| The electromagnetic contactor is used as an open circuit on the output side of the drive (U/V/W). | | Verify that the three-phases of the electromagnetic valve are all closed. | |
| Motor U/V/W wire error | | Check if the wires are broken. | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 144 |  | Auto-tune error 3 (AUE3) | No load current $I_0$ measurement error when motor parameter automatically detects. |
| Action and Reset | | | |
| Action level | | Software detection | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset immediately | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Incorrect settings for the motor parameter (rated current) | | Check the settings for Pr. 05-01 / Pr. 05-13 / Pr. 05-34. | |
| Motor error | | Check if the motor works normally. | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 148 |  | Auto-tune error 4 (AUE4) | Leakage inductance Lsigma measurement error when motor parameter automatically detects. |
| Action and Reset | | | |
| Action level | | Software detection | |
| Action time | | Act immediately | |
| Fault treatment parameter | | N/A | |
| Reset method | | Manual reset | |
| Reset condition | | Reset immediately | |
| Record | | Yes | |
| Cause | | Corrective Actions | |
| Motor error | | Check if the motor works normally. | |
| Incorrect setting of motor parameters (base frequency) | | Check the setting of Pr. 01-01. | |

| ID* | Display on LCD Keypad | Fault Name | Fault Descriptions |
|---|---|---|---|
| 171 |  | Over Position Error Limit (oPEE) | This fault code occurs:<br>1. When the positioning error of a position controller is bigger than Pr.11-51 <Maximum allowable position-following error><br>2. .And when Pr.11-54: Treatment to the large position control error is set as 1: Fault and ramp to stop or 2: Fault and coast to stop. |

| Action and Reset | |
|---|---|
| Action level | Pr.11-51 |
| Action time | Act immediately |
| Fault treatment parameter | Pr.11-54 |
| Reset method | Manual reset |
| Reset condition | |
| Record | Yes |

| Cause | Corrective Actions |
|---|---|
| The acceleration/ deceleration time may not be correct. | Verify if the acceleration/ deceleration time is correct. |
| Setting value of Pr.11-51 may be too small. | Verify if the setting value of Pr.11-51 is too small. |
| The positon control of the motor drive may not be working properly. | 1. Verify if the position control works properly.<br>2. Verify if the settings of APR bandwidth control and the gain value for the APR feed forward are correct. |
| The setting of command curve at the upper unit during the whole pulse positioning process may not be right. | If you set Pr.11-40 =1 (Input from external pulse) or set MI=90 (Position command source switch and choose 1: Input from external pulse), you need to verify if the acceleration/ deceleration curve of the pulse given by the upper unit is correct. |