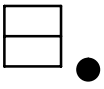
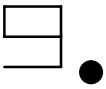
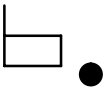
FANUC A06B-6089 Alarm List QUESTIONS?
FANUC A06B-6090 Alarm List

# 3.1 SERVO AMPLIFIER UNIT

## 3.1.1 LED Indications and Meanings

If an alarm condition related to the servo amplifier unit occurs, the 7-segment LED indicator on the amplifier front panel behaves as listed below.

| Type | LED indication | Description |
|---|---|---|
| Over-voltage alarm (HV) |  | This alarm occurs if the DC voltage of the main circuit power supply is abnormally high. |
| Low control power voltage alarm (LV) |  | This alarm occurs if the control power voltage is abnormally low. |
| Low DC link voltage alarm (LVDC) |  | This alarm occurs if the DC voltage of the main circuit power supply is abnormally low or the circuit breaker trips. |
| Regenerative discharge control circuit failure alarm (DCSW) |  | This alarm occurs if :<br>– The short-time regenerative discharge energy is too high.<br>– The regenerative discharge circuit is abnormal. |
| Over-regenerative discharge alarm (DCOH) |  | This alarm occurs if :<br>– The average regenerative discharge energy is too high (too frequent acceleration/deacceleration).<br>– The transformer overheats. |
| Dynamic brake circuit failure alarm (DBRLY) |  | This alarm occurs if the relay contacts of the dynamic brake welds together. |
| L-axis over-current alarm (HCL) |  | This alarm occurs if an abnormally high current flows in the L-axis motor. |
| M-axis over-current alarm (HCM) |  | This alarm occurs if an abnormally high current flows in the M-axis motor. |
| L-and M-axis over-current alarm (HCM) |  | This alarm occurs if an abnormally high current flows in the L-and M-axes motor. |
| L-axis IPM alarm (IPML) |  | This alarm is detected by the IPM (intelligent power module) of the L-axis. (Note 1) |
| M-axis IPM alarm (IPML) |  | This alarm is detected by the IPM (intelligent power module) of the M- axis. (Note 1) |
| L-and M-axis IPM alarm (IPMLM) |  | This alarm is detected by the IPM (intelligent power module) of the L-and M-axes. (Note 1) |
| Circuit breaker | Trips | The circuit breaker trips if an abnormally high current (exceeding the working current of the circuit breaker) flows through it. Note 2) |

**Notes**
1 The IPM can detect the following alarms.
  – Over-current
  – Over-heat
  – Drop in IPM control power voltage
2 When the control power is separated from the main power, if the circuit breaker of the servo amplifier is off, low DC link voltage alarm (LVDC) is detected.

## 3.1.2 Actions to be Taken on Each Alarm

| Type | LED | Action |
|---|---|---|
| Over-voltage alarm (HV) |  | (1) The three-phase input voltage is probably higher than the rating. Check the voltage and correct it as required.<br>(2) The connection of the separate regenerative discharge unit is probably incor rect. Check the connection.<br>(3) The resistor of the separate regenerative discharge unit is probably defec tive.Disconnect the wiring of the regenerative discharge unit and check the resistance. If it is not within +20% of the rating (described in Section 3. 5), replace the regenerative discharge unit.<br>→ If any of the above three items does not fit the case,replace the servo amplifier. |
| Low control power voltage alarm (LV) |  | (1) The single-phase input voltage (for control circuit) is probably lower than the rating. Check the voltage and correct it as required.<br>(2) The emergency stop input signal is probably short- circuited. Remove the CX4 connector from the amplifier. If the alarm condition disap pears,check the connection of the external cable.<br>(3) For the type B interface,the pulse coder is probably short- circuited. Remove the JF* connector from the amplifier. If the alarm condition disap pears,check the connection of the external cable.<br>→ If any of the above three items does not fit the case,replace the servo amplifier. |
| Low DC link voltage alarm (LVDC) |  | (1) The circuit breaker is probably off. Check the circuit breaker.<br>(2) The three-phase input voltage is probably lower than the rating. Check the volt age and correct it as required.<br>→ If either of the above two items does not fit the case, replace the servo am plifier |
| Regenerative discharge control circuit failure alarm (DCSW) |  | (1) The connection of the separate regenerative discharge unit is probably incor rect. Check the connection.<br>(2) The resistor of the separate regenerative discharge unit is probably defec tive.Disconnect the wiring of the regenerative discharge unit and check the resistance. If it is not within +20% of the rating (described in Section 3. 5), replace the regenerative discharge unit.<br>→ If either of the above two items does not fit the case, replace the servo amplifier |

| Type | LED | Action |
|---|---|---|
| Over-regenerative discharge alarm (DCOH) |  | (1) The average regenerative discharge energy is probably too high. Reduce the frequency of acceleration/deceleration.<br>(2) The connection of the thermostat line to the separate regenerative discharge unit is probably incorrect. Check the connection.<br>(3) The thermostat of the separate regenerative discharge unit is probably defec tive.Disconnect the wiring of the regenerative discharge unit, and check the thermostat. If the thermostat is open when the regenerative discharge unit is not hot, replace the regenerative discharge unit.<br>(4) The transformer has probably overheated. Check the ambient temperature, motor output, and transform rating.<br>→ If any of the above four items does not fit the case,replace the servo amplifier. |
| Dynamic brake circuit failure alarm (DBRLY) |  | The connection between the NC and servo amplifier is probably incorrect. Check the connection.<br>→ If the above items does not fit the case,replace the servo amplifier. |

| Type | LED | Type | LED | Type | LED |
|---|---|---|---|---|---|
| L-axis over-current alarm (HCL) |  | M-axis over-current alarm (HCM) |  | L-and M-axes over-current alarm (HCL) |  |

## Action

(1) Check that following parameters are set to standard values. If they are not, normal current control is impossible.

| No. 1809 | |
|---|---|
| No. 2004 | No. 8X04 |

| No. 1884 | |
|---|---|
| No. 2006 | No. 8X06 |

| No. 1954 (15-A), 1955 (15-B) | |
|---|---|
| No. 2011 | No. 8X10 |

| No. 1852 | |
|---|---|
| No. 2040 | No. 8X40 |

| No. 1853 | |
|---|---|
| No. 2041 | No. 8X41 |

| No. 1967 | |
|---|---|
| No. 2074 | No. 8X74 |

| No. 1991 | |
|---|---|
| No. 2098 | No. 8X98 |

(2) Disconnect the power wires from the amplifier terminals,and release the emergency stop condition.

→ If an overcurrent alarm is issued, replace the amplifier.

→ If an overcurrent alarm is not issued,go to (3).

(3) Disconnect the power wires from the amplifier terminals, and check the U, V, and W wires for isolation from the grounding wire sequentially.

→ If they are isolated from the grounding wire, go to (4) and (5).

If any of the power wires is short-circuited to the grounding wire, disconnect the power wires from the motor connector, and check the U, V, and W terminals of the motor for isolation from the ground terminal sequentially.

→ If the U,V,or W terminal of the motor is short- circuited to the ground terminal,replace the motor.

→ If they are isolated from the ground terminal,replace the power wires.

(4) Connect the wires again,and observe the motor current(IR,IS)waveforms when the motor is accelerating or decelerating. (See Subsec. 4.2.2 in Part I for how to measure)

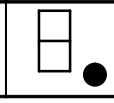
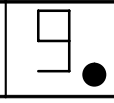
→ If the motor current waveforms are abnormal,replace the amplifier.

(5) Check that noise is induced on the motor current (IR, IS) waveforms.

→ If there is noise,shield the wires and ground the shielding.

→ If there is no noise,replace the amplifier.

(6) If any of the above five items does not fit the case,the pulse coder,command cable or the hardware inside the CNC is probably defective.

| Type | LED | Type | LED | Type | LED | Remarks |
|---|---|---|---|---|---|---|
| L-axis IPM alarm (IPML) |  | M-axis IPM alarm (IPMM) |  | L-and M-axes IPM alarm (IPMLM) |  | Both figure and period appear simultaneously. |

## Action

(1) Only the SVU1- 20(A06B- 6089- H102)has a built- in fan. If this fan stops,an IPM alarm (“8.” in the LED indicator) is issued. So, if this alarm is issued on the SVU1- 20, first check that the fan is rotating. A spare of the fan motor can be ordered using the spare list code A06P- 6089- H102.

(2) After keeping the amplifier switched off for about ten minutes, release the emergency stop condition.

→ If the alarm was due to IPM overheat, it will not be issued this time because the IPM is not hot any longer. The probable causes of IPM overheat include high ambient temperature and excessively strict operating condition for the motor.Check for these conditions.

→ If the IPM alarm is still issued, go to (3).

(3) Disconnect the power wires from the amplifier terminals, and release the emergency stop condition.

→ If the IPM alarm is still issued, the probable cause is the operation of the IPM protection function (overcurrent or power supply failure). Replace the IPM or amplifier.

→ If the IPM alarm is not issued, go to (4).

(4) Disconnect the power wires from the amplifier terminals, and check the U, V, and W wires for isolation from the grounding wire sequentially.

→ If they are isolated from the grounding wire, go to (5) and (6).

If any of the power wires is short- circuited to the grounding wire, disconnect the power wires from the motor connector, and check the U, V, and W terminals of the motor for isolation from the ground terminal sequentially.

→ If the U, V, or W terminal of the motor is short-circuited to the ground terminal, replace the motor.

→ If they are isolated from the ground terminal, replace the power wires.

(5) Connect the wires again,and observe the motor current (IR, IS) waveforms when the motor is accelerating or decelerating. (See Section 4.2.2 for how to measure.)

→ If the motor current waveforms are abnormal, replace the amplifier.

(6) Check to see if noise is induced on the motor current (IR, IS) waveforms.

→ If there is noise, shield the wires and ground the shielding.

→ If there is no noise, replace the amplifier.

(7) Any of the above six items does not fit the case,the pulse coder, command cable or the hardware inside the CNC is probably defective.

## 3.2 CURRENT CONVERSION FAILURE ALARM

(1) Exchange the command cables as shown in the example below. Turn on CNC in an emergency stage.
  – If the alarm is issued on the same axis, go to (2).
  – If the alarm is issued now on the axis that was normal, go to (3).

(2) The module for current conversion in the CNC is defective.

(3) Disconnect the command cable from the axis on which the alarm was issued, and connect it to a normal axis.
  – If the alarm is issued on the same axis, go to (4)
  – If the alarm is issued now on the axis that was normal, go to (5).

(4) The servo amplifier is defective.

(5) The command cable is defective. Replace it.