

13. Before Contacting your Toshiba distributor

- Trip information and remedies

13.1 Trip causes/warnings and remedies

When a problem arises, diagnose it in accordance with the following table.

If it is found that replacement of parts is required or the problem cannot be solved by any remedy described in the table, contact your Toshiba distributor.

[Trip information]

Error code	Failure code	Name	Description	Remedies
E	E	0011	Emergency stop	• During automatic operation or remote operation, an emergency stop command is entered from the operation panel or an external (terminal or communication). • Reset the inverter. • If the emergency stop signal is input, reset after releasing this signal.
E-13	E-13	0045	Over speed fault	• The input voltage fluctuates abnormally. • Over speed fault due to the overvoltage limit operation. • Check the input voltage. • Install an optional braking module.
* E-18	E-18	0032	Brea in analog signal cable	• The input signal from VI is equal to or less than the F 6 3 3 setting. • Check the VI signal cable for breaks. Also, check the input signal value or setting of F 6 3 3.
E-19	E-19	0033	CPU communications error	• A communications error occurs between control CPUs. • Contact your Toshiba distributor.
E-20	E-20	0034	Excessive torque boosted	• The automatic torque boost parameter F 4 0 2 setting is too high. • The motor has too small impedance. • Set a lower automatic torque boost parameter F 4 0 2 setting. • Make an auto-tuning.
E-21	E-21	0035	CPU fault 2	• The control CPU is defective. • Contact your Toshiba distributor.
E-26	E-26	003A	CPU fault 3	
EEP1	EEP1	0012	EEPROM fault 1	• The EEPROM is writing error. • Turn off the inverter, then turn it again. If it does not recover from the error, contact your Toshiba distributor.
EEP2	EEP2	0013	EEPROM fault 2	• LP operation was aborted by power supply off etc. • The EEPROM is reading error. • Turn off the inverter, then turn it again, and then try LP operation again. • Turn off the inverter, then turn it again. If it does not recover from the error, contact your Toshiba distributor.
EEP3	EEP3	0014	EEPROM fault 3	• The EEPROM is defective. • Contact your Toshiba distributor.
EF2	EF2	0022	Ground fault trip	• A ground fault occurs in the output cable or the motor. • Check the cable and the motor for ground faults.
* EPH1	EPHI	0008	Input phase failure	• A phase failure occurred in the input line of the main circuit. • The capacitor in the main circuit lacks capacitance. • Check the main circuit input line for phase failure. • Set input phase failure detection selection F 6 0 8=0. • Check the capacitor in the main circuit for exhaustion.
* EPH0	EPHO	0009	Output phase failure	• A phase failure occurred in the output line of the main circuit. • The motor has too big impedance. • Check the main circuit output line, motor, etc. for phase failure. • Set output phase failure detection selection F 6 0 5=0.

* You can select a trip ON/OFF by parameters.

[Trip information]

Error code	Failure code	Name	Description	Remedies
$\overline{E}rr2$	ERR2	0015	Main unit RAM fault	• Contact your Toshiba distributor.
$\overline{E}rr3$	ERR3	0016	Main unit ROM fault	
$\overline{E}rr4$	ERR4	0017	CPU fault 1	• Check the remote control device, cables, etc.
$\overline{E}rr5$	ERR5	0018	Remote control error	
$\overline{E}tn$	ETN	0028	Auto-tuning error	- Set the left column parameters correctly as a motor name plate and make an auto-tuning again. - Set parameter $F415$ to smaller 70% of the present value, and execute the auto-tuning again. - Set the left column parameters correctly as a motor name plate and make an auto-tuning again. - Then set $F400=1$, when trip occurs.
$\overline{E}tn1$	ETN1	0054		
$\overline{E}tn2$	ETN2	0055		
$\overline{E}tn3$	ETN3	0056		
$\overline{E}tP$	ETYP	0029	Inverter type error	• Connect the motor.
$\overline{O}C1$	OC1	0001	Overcurrent during acceleration	• Check whether the secondary magnetic contactor.
				• Make an auto-tuning again after the rotation of the motor stops.
				• Contact your Toshiba distributor.
				• Increase the acceleration time ACC .
				• Check the V/F parameter.
			Overcurrent during deceleration	• Use $F301$ (auto-restart) and $F302$ (ride-through control).
				• In case of $Pt=0$, 1, decrease ub .
				• In case of $Pt=2, 3, 4$, set $F415$ (Motor rated current) and make an auto-tuning.
				• AC reactors etc. are required for the output side. (Refer to section 1.4.3-(4))
				• Increase the deceleration time dEC .
$\overline{O}C2$	OC2	0002	Overcurrent during constant speed operation	• AC reactors etc. are required for the output side. (Refer to section 1.4.3-(4))
$\overline{O}C3$	OC3	0003		• Reduce the load fluctuation.
				• Check the load (operated machine).
				• AC reactors etc. are required for the output side. (Refer to section 1.4.3-(4))
				• Contact your Toshiba distributor.
$\overline{O}CA$	OCA	0005	Arm overcurrent at start-up	• Check the secondary wiring and insulation state.
$\overline{O}CL$	OCL	0004	Overcurrent (An overcurrent on the load side at start-up)	
$\overline{O}H$	OH	0010	Overheat	• Set $F513=2, 3$
				• The cooling fan requires replacement if it does not rotate during operation. Contact your Toshiba distributor.
			• The cooling fan is life or fault	• Operate at a specified ambient temperature.
			• The ambient temperature is high or low outside a specified ambient temperature.	

* You can select a trip ON/OFF by parameters.

[Trip information]

Error code	Failure code	Name	Description	Remedies	
OL 1	OL1	000D	Inverter overload	• The acceleration time ACC is too short. • The DC braking amount is too large. • The V/F setting is improper. • A restart signal is input to the rotating motor after a momentary stop, etc. • The load is too large.	• Increase the acceleration time ACC. • Reduce the DC braking amount F251 and the DC braking time F252. • Check the V/F parameter setting. • Use F301 (auto-restart) and F302 (ride-through control). • Use an inverter with a larger rating. • Reduce F300 (PWM carrier frequency) to 4kHz or less.
OL 2	OL2	000E	Motor overload	• The V/F setting is improper. • The motor is locked up. • Low-speed operation is performed continuously. • An excessive load is applied to the motor during operation.	• Check the V/F parameter setting. • Check the load (operated machine). • Adjust OLN to the overload that the motor can withstand during operation in a low speed range.
OL 3	OL3	003E	Main module overload	• The carrier frequency is high and load current has increased at low speeds (mainly at 15Hz or less).	• Raise the operation frequency. • Reduce the load. • Reduce F300: PWM carrier frequency. • When an operating motor is started up at 0Hz, use the auto-restart function. • Set F315=1 (Carrier frequency with automatic reduction).
OP 1	OP1	000A	Overvoltage during acceleration	• The input voltage fluctuates abnormally. (1) The power supply has a capacity of 200kVA or more. (2) A power factor improvement capacitor is opened or closed. (3) A system using a thyristor is connected to the same power distribution line. • A restart signal is input to the rotating motor after a momentary stop, etc.	• Insert a suitable input reactor. • Use F301 (auto-restart) and F302 (ride-through control).
OP 2	OP2	000B	Overvoltage during deceleration	• The deceleration time dEC is too short. (Regenerative energy is too large.) • Overvoltage limit operation F305 is set to 1. (Disabled). • The input voltage fluctuates abnormally. (1) The power supply has a capacity of 200kVA or more. (2) A power factor improvement capacitor is opened and closed. (3) A system using a thyristor is connected to the same power distribution line.	• Increase the deceleration time dEC. • Set overvoltage limit operation F305 to 0, 2, 3. • Insert a suitable input reactor.
OP 3	OP3	000C	Overvoltage during constant-speed operation	• The input voltage fluctuates abnormally. (1) The power supply has a capacity of 200kVA or more. (2) A power factor improvement capacitor is opened or closed. (3) A system using a thyristor is connected to the same power distribution line. • The motor is in a regenerative state because the load causes the motor to run at a frequency higher than the inverter output frequency.	• Insert a suitable input reactor. • Install an optional brake module.

[Trip information]

Error code	Failure code	Name	Description	Remedies
* <i>OT</i>	OT	0020	Over-torque trip	- Over-torque reaches to a detection level during operation. - Enable <i>F6 15</i> (over-torque trip selection). - Check system error.
* <i>UC</i>	UC	001D	Low-current operation Trip	- The output current decreased to a low-current detection level during operation. - Enable <i>F6 10</i> (low-current detection). - Check the suitable detection level for the system (<i>F6 09</i>, <i>F6 11</i>, <i>F6 12</i>). - Contact your Toshiba distributor if the setting is correct.
* <i>UP 1</i>	UP1	001E	Under voltage trip (main circuit)	- The input voltage (in the main circuit) is too low. - Check the input voltage. - Enable <i>F6 2 7</i> (undervoltage trip selection). - To take measures to momentary power failure, set <i>F6 2 7=0</i> or <i>2</i>. Regenerative power ride-through control <i>F3 0 2</i> and Auto-restart control selection <i>F3 0 1</i>.

* You can select a trip ON/OFF by parameters.

[Alarm information] Each message in the table is displayed to give a warning but does not cause the inverter to trip.

Error code	Name	Description	Remedies
<i>A-05</i>	A-05	Output frequency upper limit	- An attempt was made to operate at a frequency higher than 10 times the base frequency (<i>UL</i> or <i>F 1 70</i>). - Operate at a frequency within 10 times the base frequency.
<i>A-17</i>	A-17	Operation panel key alarm	- The RUN or STOP key is held down for more than 20 seconds. - The RUN or STOP key is faulty. - Check the operation panel.
<i>At n</i>	ATN	Auto-tuning	- Auto-tuning in process - Normal if it the message disappears after a few seconds.
<i>CLR</i>	CLR	Clear command acceptable	- This message is displayed when pressing the STOP key while an error code is displayed. - Press the STOP key again to clear the trip.
<i>db</i>	DB	DC braking	- DC braking in process - The message goes off in several tens of seconds if no problem occurs. Note 1)
<i>E1</i> <i>E2</i> <i>E3</i>	E1 E2 E3	Flowing out of excess number of digits	- The number of digits such as frequencies is more than 4. (The upper digits have a priority.) - Lower the frequency free unit magnification <i>F 70 2</i>.
<i>E-49</i>	E-49	External power supply input logic switching check alarm	After removing connection of the control circuit terminals reset or turn the power off and then back on again. This switches the logic.
<i>E-50</i>	E-50	Source logic switching check alarm	
<i>E-51</i>	E-51	Sink logic switching check alarm	
<i>EASY/Std</i>	EASY/STD	Switching display of Easy setting mode / Standard setting mode	- The EASY key was pushed in the standard monitor mode. - When <i>EASY</i> is displayed, setting mode becomes easy setting mode. When <i>Std</i> is displayed, it becomes standard setting mode.
<i>EOFF</i>	EOFF	Emergency stop command acceptable	- The operation panel is used to stop the operation in automatic control or remote control mode. - Press the STOP key for an emergency stop. To cancel the emergency stop, press any other key.
<i>Err 1</i>	ERR1	Frequency point setting error alarm	- The frequency setting signals at points 1 and 2 are set too close to each other. - Set the frequency setting signals at points 1 and 2 apart from each other.
<i>HEAD/End</i>	HEAD/END	Display of first/last data items	- The first and last data item in the <i>RUN</i> data group is displayed. - Press MODE key to exit the data group.
<i>HI/LO</i>	HI/LO	Setting error alarm / An error code and data are displayed alternately twice each.	- An error is found in a setting when data is reading or writing. - Check whether the setting is made correctly.

Note 1) When the ON/OFF function is selected for DC braking (DB), using the input terminal selection parameter, you can judge the inverter to be normal if "*db*" disappears when opening the circuit between the terminal and CC.

[Alarm information] Each message in the table is displayed to give a warning but does not cause the inverter to trip.

Error code	Name	Description	Remedies
<i>in iE</i>	INIT	Parameters in the process of initialization	- Parameters are being initialized to default values. - Normal if the message disappears after a while (several seconds to several tens of seconds).
<i>LStP</i>	LSTP	Auto-stop because of continuous operation at the lower-limit frequency	- The automatic stop function selected with <i>F256</i> was activated. - This function is cancelled, when frequency reference reaches LL+0.2Hz or operation command is OFF.
<i>MOFF</i>	MOFF	Undervoltage in main circuit	- The supply voltage between R, S and T is under voltage. - Measure the main circuit supply voltage. If the voltage is at a normal level, the inverter requires repairing. - In case of single phase 120V class, the shorting-bar between P0 and PA/+ is removed. - Connect the shorting-bar between P0 and PA/+.
<i>nErr</i>	NERR	No trip of past trip	- No new record of past trip, after past trips were clear. - Normal operation.
<i>n---</i>	N---	No detailed information of past trip	- The detailed information of past trip is read by pushing the center of setting dial during blinking <i>nErr</i> ⇄ number. - Normal operation.
<i>OFF</i>	OFF	ST terminal OFF	- The ST-CC circuit is opened. - To be returned by pressing MODE key. - Close the ST-CC circuit.
<i>PASS/FAIL</i>	PASS/FAIL	Password verification result	- After the password setting (<i>F73B</i>), the password was input to <i>F739</i> (password verification). - If the password is correct, <i>PASS</i> is displayed and if it is incorrect, <i>FAIL</i> is displayed.
<i>rtRY</i>	RTRY	Retry in process	- The inverter is in process of retry. - A momentary stop occurred. - The motor speed is being detected. - The inverter restarts automatically. Be careful of the machine because it may suddenly restart.
<i>SEt</i> Note 2)	SET	Input requirement of region setting	- Power was supplied to the inverter at first time. - Set the parameter <i>SEt</i> to 0. - Set the parameter <i>t4P</i> to 13. - Set a region setting by using setting dial. Refer to section 3.1.
<i>StOP</i>	STOP	Deceleration stop during power failure function activated.	- The deceleration stop during power failure with <i>F302</i> is activated. - To restart operation, power supply reset or input an operation signal again.

Note 2) *SEt* is blinking when setup menu starts. Key operation is not allowed.

But parameter *SEt* doesn't blink as same as other parameters.

[Pre-alarm information] Each message in the table is displayed to give a warning but does not cause the inverter to trip.

The following error code and the frequency will flash alternately.

Error code	Name	Description	Remedies
<i>E</i>	C	Overcurrent pre-alarm	- When a current flows at or higher than the over current stall prevention level. - Same as <i>OC</i> (overcurrent)
<i>H</i>	H	Overheat pre-alarm	- When the overheat protection pre-alarm level is reached. - Same as <i>OH</i> (overheat)
<i>L</i>	L	Overload pre-alarm	- When the cumulative amount of overload reaches 50% or more of the overload trip value. - When the main circuit element temperature reaches the overload pre-alarm level. - Same as <i>OL</i> (overload)
<i>P</i>	P	Overvoltage pre-alarm	- When a voltage is generated at or higher than the over voltage stall prevention level. - When a voltage is generated at or higher than the over voltage stall prevention level. - Even if it was lower than the over voltage stall prevention level, when a voltage is generated at sharp increase. - Same as <i>OP</i> (overvoltage)
<i>t</i>	T	Communication pre-alarm	- When the communication was broken off at or higher than the over parameter <i>F803</i> setting. - Same as <i>ErrS</i> (communication fault)

If two or more problems arise simultaneously, one of the following pre-alarms appears and blinks.

EP, PL, tPL (The blinking alarms *E, P, L, t* are displayed in this order from left to right.)

13.2 Restoring the inverter from a trip

Do not reset the inverter when tripped because of a failure or error before eliminating the cause. Resetting the tripped inverter before eliminating the problem causes it to trip again.

The inverter can be restored from a trip by any of the following operations:

- (1) By turning off the power (Keep the inverter off until the LED turns off.)
Note See inverter trip hold selection $F502$ for details.
- (2) By means of an external signal (Short circuit across RES and CC on control terminal block → Open): The reset function must be assigned to the input terminal block. (function number 8, 9)
- (3) By panel keypad operation
- (4) By inputting a trip clear signal from communication
(Refer to communication manual (E6581657) for details.)

To reset the inverter by panel keypad operation, follow these steps.

1. Press the STOP key and make sure that $L1$ is displayed.
2. Pressing the STOP key again will reset the inverter if the cause of the trip has already been eliminated.

- ★ When any overload function [$OL1$: inverter overload, $OL2$: motor overload] is active, the inverter cannot be reset by inputting a reset signal from an external device or by operation panel operation before the virtual cooling time has passed.

Virtual cooling time ... $OL1$: about 30 seconds after the occurrence of a trip

$OL2$: about 120 seconds after a occurrence of a trip

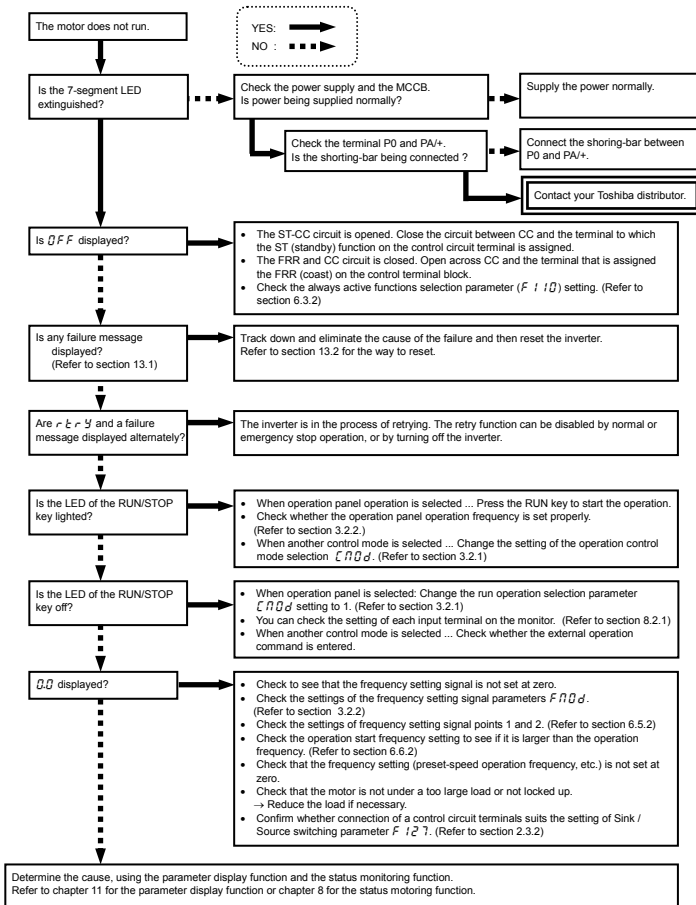
- ★ As to $OL3$ (Main module overload), there is no virtual cooling time.
- ★ In case of a trip due to overheat (OH), the inverter checks the temperature within. Wait until the temperature in the inverter falls sufficiently before resetting the inverter.
- ★ The inverter cannot be reset while the emergency stop signal is being input from the terminal.

[Caution]

Turning the inverter off then turning it on again resets the inverter immediately. You can use this mode of resetting if there is a need to reset the inverter immediately. Note, however, that this operation may damage the system or the motor if it is repeated frequently.

13.3 If the motor does not run while no trip message is displayed ...

If the motor does not run while no trip message is displayed, follow these steps to track down the cause.



13.4 How to determine the causes of other problems

The following table provides a listing of other problems, their possible causes and remedies.

Problems	Causes and remedies
The motor runs in the wrong direction.	• Invert the phases of the output terminals U, V and W. • Invert the forward/reverse run-signal terminals of the external input device. (Refer to section 7.2.1 "Assignment of functions to control terminals") • Change the setting of the parameter F_r in the case of panel operation.
The motor runs but its speed does not change normally.	• The load is too heavy. Reduce the load. • The soft stall function is activated. Disable the soft stall function. (Refer to section 3.5) • The maximum frequency F_H and the upper limit frequency U_L are set too low. Increase the maximum frequency F_H and the upper limit frequency U_L. • The frequency setting signal is too low. Check the signal set value, circuit, cables, etc. • Check the setting characteristics (point 1 and point 2 settings) of the frequency setting signal parameters. (Refer to section 6.5.2) • If the motor runs at a low speed, check to see that the stall prevention function is activated because the torque boost amount is too large. Adjust the torque boost amount (u_b) and the acceleration time (R_L). (Refer to section 5.12 and 5.3)
The motor does not accelerate or decelerate smoothly.	• The acceleration time (R_L) or the deceleration time (dE) is set too short. Increase the acceleration time (R_L) or the deceleration time (dE).
A too large current flows into the motor.	• The load is too heavy. Reduce the load. • If the motor runs at a low speed, check whether the torque boost amount is too large. (Refer to section 5.12)
The motor runs at a higher or lower speed than the specified one.	• The motor has an improper voltage rating. Use a motor with a proper voltage rating. • The motor terminal voltage is too low. Check the setting of the base frequency voltage parameter (u_L). (Refer to section 5.10) • Replace the cable with a cable larger in diameter. • The reduction gear ratio, etc., are not set properly. Adjust the reduction gear ratio, etc. • The output frequency is not set correctly. Check the output frequency range. • Adjust the base frequency. (Refer to section 5.10)
The motor speed fluctuates during operation.	• The load is too heavy or too light. Reduce the load fluctuation. • The inverter or motor used does not have a rating large enough to drive the load. Use an inverter or motor with a rating large enough. • Check whether the frequency setting signal changes. • If the V/F control selection parameter P_L is set at 3, check the vector control setting, operation conditions, etc. (Refer to section 5.11)
Parameter settings cannot be changed.	Change the setting of the parameter setting selection prohibited parameter F_{700} to $\bar{0}$ (enabled) if it is set to 1 or 2 (prohibited). * For reasons of safety, some parameters cannot be reprogrammed while the inverter is running. (Refer to section 6.18.1 and 11.8)
Communication will not take place.	Refer to "Appendix 4 Troubleshooting" in Communication Manual (E6581656).
The 7-segment LED display " $dRtR$ " or " 0000 ".	• The setting of the parameter F_{710} (Initial panel display selection) is set at $\bar{1}B$ (Arbitrary code from communication). • Change the setting of the parameter F_{710}. ⇒ See section 6.18.5. • For more information of the F_{710} set "$\bar{1}B$", refer to "RS485 Communication Function Instruction Manual (E6581657)".

How to cope with parameter setting-related problems

If you forget parameters which have been reset	• You can search for all reset parameters and change their settings. * Refer to section 4.3.1 for details.
If you want to return all reset parameters to their respective default settings	• You can return all parameters which have been reset to their default settings. * Refer to section 4.3.2 for details.