

6. List of Inverter Protective Functions



- The motor coasts when an alarm is issued. Install a brake on the driven machine side if you need to stop the motor.

An accident may occur.

- When you reset the inverter while applying the operation command, the motor restarts suddenly. Make sure the operation command is turned off before you restart.

Function	Description	Display	Related function code
DB resistor overheating	When the built-in braking resistor overheats, the inverter stops discharging and running. You must set the function codes E35 to 37 corresponding to the resistor (built-in/external).	dbH	E35 - 37
DC fuse blown	When a fuse at the main DC circuit blows due to a short-circuit in the IGBT circuit, the inverter stops operation. This function prevents secondary disaster. A damage to the inverter is suspected and contact FUJI immediately.	dCF	
Ground fault	Activated by a ground fault in the inverter output circuit. If a large current flows due to ground fault, the overcurrent protective function may operate to protect the inverter. Connect a separate earth-leakage protection relay or an earth-leakage circuit breaker for accident prevention such as human damage and fire.	EF	
Excessive position deviation	Activated when the position deviation between the reference and the detected values exceeds the function code o18 "Excessive deviation value" in synchronized operation. The option code "o" becomes valid and is displayed on the KEYPAD panel after installing options.	dO	o18
Memory error	Activated when a fault such as "write error" occurs in the memory.	E-r1	
KEYPAD panel communication error	Activated if a communication error is detected between the inverter control circuit and the KEYPAD panel when the start/stop command from the KEYPAD is valid (function code F02=0). Note: KEYPAD panel communication errors do not indicate the alarm display and issue the alarm relay output when the inverter is operated by external signal input or the link function. The inverter continues operating.	E-r2	F02
CPU error	Activated when a CPU error occurs due to noise.	E-r3	
Network error	Activated if a communication error occurs due to noise when the inverter is operated through T- Link, SX bus or field bus.	E-r4	o30,31
RS485 communication error	Activated if: - RS485 communication error occurs while the function code H32 is set to 0 to 2. - A disconnection continues for more than the specified period of 0.1 to 60.0 with the function code H38.	E-r5	H32,H33 H38
Operation procedure error	Activated if multiple network options (T- Link, SX bus, and field bus) are installed. Though you can install multiple SI, DI and PG options, this error is issued if the two SW settings are identical. Activated when you use H01 and H71 to start auto-tuning while either [BX], [STOP1], [STOP2], or [STOP3] is ON. Activated when you do not turn ON the FWD key on the KEYPAD panel for more than 20 sec after you selected the auto-tuning operation of H01 and H71.	E-r6	
Output wiring error	Activated when the measured data are out of the motor characteristic data range during executing tuning or the wires are not connected in the inverter output circuit.	E-r7	H01,H71
A/D converter error	Activated when an error occurs in the A/D converter circuit.	E-r8	
Speed disagreement	Activated when the deviation between the speed reference (speed setting) and the motor speed (detected speed, predicted speed) becomes excessive.	E-r9	
UPAC error	Activated when a hardware failure in the UPAC option, a communication error with the controller part of the inverter or a backup battery exhaustion occurs.	E-rA	

Function	Description	Display	Related function code
Inter-inverter communication error	Activated when a communication error occurs in an inter-inverter communication using the high-speed serial cards (optional).	Er b	
IPM error	Activated when the self cut-off function of the IPM operates due to an overcurrent or overheat.	IP E	
Input phase loss	The inverter is protected from being damaged due to input phase loss.	L in	
Undervoltage	Activated if the DC link circuit voltage decreases to the undervoltage level due to a reduction in the supply voltage. The alarm output is not issued when the DC link circuit voltage decreases and the function code F14 is set to "3 to 5". ■ Undervoltage detection level: 200V series: 186Vdc, 400V series: 371Vdc.	LU	F14
NTC thermistor disconnection	Activated if the thermistor circuit is disconnected when the application of NTC thermistors to corresponding motors (M1, 2, 3) is specified with the function codes P30, A31 and A47.	nr b	P30,A31 A47
Overcurrent	Activated if the momentary value of the inverter output current exceeds the overcurrent detection level due to a short-circuit or ground fault. Inverters with a capacity of 15 kW use an IPM (Intelligent Power Module). This protection function is activated when an alarm (such as overcurrent) is detected on the IPM.	OC	
Overheating at heat sink	Activated if the temperature of the heat sink to cool the rectifier diodes and the IGBTs increases due to cooling fan stoppage.	OH 1	
External alarm	The inverter stops on receiving the external alarm signal (THR). It is activated by a terminal signal when the control circuit terminals (THR assignment) are connected to alarm terminals of external devices such as a braking unit or a braking resistor.	OH 2	E01 - E04
Inverter internal overheat	Activated if the ambient temperature of the control PC board increases due to poor ventilation of the inverter.	OH 3	
Motor overheat	Activated if the temperature detected by the NTC thermistor built in the VG7 dedicated motor exceeds the data of the function code E30 "Motor overheat protection".	OH 4	E30,E31
Motor 1 overload	Activated when the motor 1 current (inverter output current) exceeds the operation level set by function code F11.	OL 1	F11
Motor 2 overload	Activated when the motor 2 current (inverter output current) exceeds the operation level set by function code A33.	OL 2	A33
Motor 3 overload	Activated when the motor 3 current (inverter output current) exceeds the operation level set by function code A49.	OL 3	A49
Inverter unit overload	Activated if the output current exceeds the overload characteristic of the inverse time characteristic.	OL U	
Overspeed	Activated if the motor speed (detected speed value/predicted speed value) exceeds 120% of the specified value by the function code "maximum speed".	OS	F03,A06 A40
Overvoltage	Activated if the DC link circuit voltage exceeds the overvoltage level due to an increase of supply voltage or regenerative braking current from the motor. However, the inverter cannot be protected from excessive voltage (high voltage, for example) supplied by mistake. ■ Overvoltage detection level 200V series: 400Vdc, 400V series: 800Vdc	OU	
PG error	Activated when the pulse generator terminal PA/PB circuits are disconnected. It is not activated when the sensorless control or the V/f control is selected.	PG	
Charging circuit error	Activated if the bypass circuit of the DC link circuit is not formed (the magnetic contactor for the charging circuit bypass is not closed) two minutes after power is supplied.	P b F	

Note 1: All protective functions are reset automatically if the control power voltage decreases to where maintaining the operation of the inverter control circuit is impossible.

Note 2: Fault history data is stored for the last ten trips.

Note 3: Stoppage due to a protective function can be reset by the RST key of the KEYPAD or turning OFF and then ON between the X terminal (RST assigning) and the CM. Note that this action is invalid if the cause of an alarm is not found and resolved.

Note 4: In addition to these protective functions, there can be further protective from surge voltage by connecting surge suppressors to the main circuit power terminals (L1/R, L2/S, L3/T) and the auxiliary control power terminals (R0, T0).