Failure Indication and Countermeasures

Inverter itself has various alarm data, like overvoltage, undervoltage, and over-current, as protective functions. the "alarm" detection function which, upon detection of an abnormal state, displays the alarm code on the LED monitor and causes the inverter to trip, the "light alarm" detection function which displays the alarm code but lets the inverter continue the current operation, Alarm history are stored in the memory of inverter, and can be read by the keypad. If any problem arises, understand the protective functions listed below table and onwards for troubleshooting.

Protection functions	Description	Related parameters
"Alarm" detection	This function detects an abnormal state, displays the corresponding alarm code, and causes the inverter to trip. The "alarm" codes are check-marked in the "Alarm" object column in Table 7.1. For details of each alarm code, see the corresponding item in the troubleshooting. The inverter retains the last four alarm codes and their factors together with their running information applied when the alarm occurred, so it can display them.	04.98
Light Alarm	This function detects an abnormal state categorized as a "light alarm" displays L-AL,and lets the inverter continue the current operation without tripping. without raising alarm. The "light alarm" codes are check-marked in the "Light alarm" object column in table below.	04.81 04.82
Stall prevention	When the output current exceeds the current limiter level (00. 44) during acceleration/ deceleration or constant speed running, this function decreases the output frequency to avoid an overcurrent trip.	00.44
Overload prevention control	Before the inverter trips due to a heat sink overheat (OH1) or inverter overload (OLU), this function decreases the output frequency to reduce the load.	04.70
Automatic deceleration (Anti-regenerative control)	If regenerative energy returned exceeds the inverter's braking capability, this function automatically increases the deceleration time or controls the output frequency to avoid an overvoltage trip.	04.69
Deceleration characteristics (Excessive regenerative energy proof braking capability)	During deceleration, this function increases the motor energy loss and decreases the regenerative energy returned to avoid an overvoltage trip (OU).	04.71
Reference loss detection	This function detects a reference frequency loss (due to a broken wire, etc.), continues the inverter operation at the specified frequency, and issues the "Command loss detected" alarm signal.	01.65
Automatic lowering of carrier frequency	Before the inverter trips due to an abnormal surrounding temperature or output current, this function automatically lowers the carrier frequency to avoid a trip.	04.98
Dew condensation prevention	Even when the inverter is in stopped state, this function feeds DC current across the motor at certain intervals to raise the motor temperature for preventing dew condensation.	08.21
Motor overload early warning	When the inverter output current has exceeded the specified level protection,this function issues the "Motor overload early warning" signal by the thermal overload protection function before inverter raise alarm (This function exclusively applies to the 1st motor)	01.34 01.35

Protection functions	Description	Related parameters
Auto-reset	When the inverter has stopped because of a trip, this function allows the inverter to automatically reset and restart itself,The number of retries and the latency between stop and reset can be specified.	04.04 04.05
Forced stop	Upon receipt of the "Force to stop" terminal command [mSTOP], this function interrupts the run and other commands currently applied in order to forcedly decelerate the inverter to a stop.	04.56

"Alarm" object

Code	Name	Code	Name
OOC1，OC2，OC3	overcurrent	OS	Overspeed
EF	Ground fault	Er1	Memory error
OU1，OU2，OU3	Overvoltage	Er2	Keypad communications error
LU	Undervoltage	Er3	CPU error
Lin	Input phase loss	Er6	Operation error
OPL	Output phase loss	Er7	Auto-tuning error
OH1	Cooler Overheat	Er8 Erp	RS485 communications error(COM port 1) RS485 communications error(COM port 2)
OH2	External alarm	ErF	Data saving error during undervoltage
OH3	Inverter internal overheat	ErE	Speed mismatch or excessive speed deviation
OH4	Motor protection (PTC/NTC thermistor)	nrb	NTC wire break error
dbH	Braking resistor overheated	Err	Mock alarm
OL1~OL4	Overload of motor 1~4	CoF	PID feedback wire break
OLU	Inverter overload		

“Light Alarm" Objects

Code	Name	Code	Name
OH1	Cooler Overheat	Er8 Erp	RS485 communications error(COM port 1) RS485 communications error(COM port 2)
OH2	External alarm	ErE	Speed mismatch or excessive speed deviation
OH3	Inverter internal overheat	Pid	PID alarm output
dbH	Braking resistor overheated	UTL	Low torque output
OL1~OL4	Overload of motor 1~4	PTC	PTC Thermistor activated
CoF	PID feedback wire break	rTE	Inverter life (Motor cumulative run time)
OL	Motor overload early warning	CnT	Inverter life (Number of startups)
OH	Cooler overheat early warning	LiF	Lifetime alarm
rEF	Reference command loss detected		

Problems and Troubleshooting Procedure

Code	Description for problem and Possible Causes	Checking	Suggested Measures
OC1 (Overcurrent occurred during acceleration.) OC2 (Overcurrent occurred during deceleration) OC3 (Overcurrent occurred during running at a constant speed)	(1)The inverter output lines were short-circuited	Disconnect the wiring from the inverter output terminals ([U], [V] and [W]) and measure the interphase resistance of the motor wiring. Check if the resistance is too low	Remove the short-circuited part (including replacement of the wires, relay terminals and motor).
	(2)Ground faults have occurred at the inverter output lines	Disconnect the wiring from the output terminals ([U], [V] and [W]) and perform a Megger test.	Remove the grounded parts (including replacement of the wires, relay terminals and motor).
	(3) Overload	Measure the motor current with a measuring device to trace the current trend. Then, use this data to judge if the trend is over the calculated load value for your system design.	If the load is too heavy, reduce it or increase the inverter capacity
		Trace the current trend and check if there are any sudden changes in the current	①If there are any sudden changes, make the load fluctuation smaller or increase the inverter capacity. ②Enable instantaneous overcurrent limiting (04.12 = 1)
	(4) Excessive torque boost specified. (manual torque boost (when 00. 37=0, 1, 3, 4))	Check whether decreasing the torque boost (00. 09) decreases the output current but does not stall the motor.	If no stall occurs, decrease the torque boost 00. 09.
	(5)The acceleration/ deceleration time was too short	Check that the motor generates enough torque required during acceleration or deceleration.That torque is calculated from the moment of inertia for the load and the acceleration/deceleration time.	①Increase the acceleration /deceleration time(00.07,00. 08,01.10~01.15,04.56) ②Enable the current limiter (00.43)and torque limiter(00. 40,00.41,01.16,01.17) ③Increase the inverter capacity.
	(6) Malfunction caused by noise	Check if noise control measures are appropriate (e.g., correct grounding and routing of control and main circuit wires)	①Implement noise control measures ②Enable the Auto-reset (04.04). ③Connect a surge absorber to magnetic contactor's coils or other solenoids (if any) causing noise.
EF (Ground fault)	Inverter output terminal(s) grounded (ground fault)	Disconnect the wiring from the output terminals ([U], [V], and [W]) and perform a Megger test.	Remove the grounded parts (including replacement of the wires, relay terminals and motor).
OU1 (Overvoltage occurred during acceleration) OU2 (Overvoltage occurred during deceleration)	(1) The power supply voltage exceeded the inverter's specification range	Measure the input voltage	Decrease the voltage to within the specified range
	(2) A surge current entered the input power supply	In the same power line, if a phase-advancing capacitor is turned ON/OFF or a thyristor converter is activated, a surge (momentary large increase in the voltage or current) may be caused in the input power	Install a DC reactor

Code	Description for problem and Possible Causes	Checking	Suggested Measures
OU1 (Overvoltage occurred during acceleration) OU2 (Overvoltage occurred during deceleration) OU3 (Overvoltage occurred during running at constant speed)	(3) The deceleration time was too short for the moment of inertia for load	Recalculate the deceleration torque based on the moment of inertia for the load and the deceleration time	①Increase the deceleration time (00.08,01.11,01.13,01.15, 04.56). ②Enable the automatic deceleration (anti-regenerative control) (04.69), or deceleration characteristics(04.71). ③Enable torque limiter(00.40, 00.41,01.16,01.17,04.73). ④Set the rated voltage (at base frequency) (00.05) to "0" to improve the braking capability. ⑤Consider the use of a braking resistor
	(4) The acceleration time was too short	Check if the overvoltage alarm occurs after rapid acceleration	①Increase the acceleration time (00.07,01.10,01.12,01.14). ②Select the S-curve pattern(04.07). ③Consider the use of a braking resistor
	(5)Braking load was too heavy	Compare the braking torque of the load with that of the inverter	①Set the rated voltage (at base frequency) (00.05) to "0" to improve the braking capability ②Consider the use of a braking resistor
	(6) Malfunction caused by noise	Check if the DC link bus voltage was below the protective level when the overvoltage alarm occurred	①Implement noise control measures ②Enable the auto-reset (04.04) ③Connect a surge absorber to magnetic contactor's coils or other solenoids (if any) causing noise
LU (Undervoltage)	(1) A momentary power failure occurred	①Release the alarm ②If you want to restart running the motor without treating this condition as an alarm, set 00.14 to "3", "4", or "5", depending on the load type.	
	(2)The power to the inverter was switched back to ON too soon (when 00.14=1)	Check if the power to the inverter was switched back to ON while the control power was still alive. (Check whether the LEDs on the keypad light.)	Turn the power ON again after all LEDs on the keypad go off
	(3) The power supply voltage did not reach the inverter's specification range	Measure the input voltage	Increase the voltage to within the specified range
	(4) Peripheral equipment for the power circuit malfunctioned, or the connection was incorrect.	Measure the input voltage to find which peripheral equipment malfunctioned or which connection is incorrect.	Replace any faulty peripheral equipment, or correct any incorrect connections.
	(5) Any other loads connected to the same power supply has required a large starting current, causing a temporary voltage drop.	Measure the input voltage and check the voltage fluctuation	Reconsider the power supply system configuration

Code	Description for problem and Possible Causes	Checking	Suggested Measures
LU (Underv-oltage)	(6) Inverter's inrush current caused the power voltage drop because the power supply transformer capacity was insufficient.	Check if the alarm occurs when a molded case circuit breaker (MCCB), residual-current-operated protective device (RCD)/earth leakage circuit breaker (ELCB) (with overcurrent protection) or magnetic contactor (MC) is turned ON.	Reconsider the capacity of the power supply transformer
Lin (Input phase loss)	(1) Breaks in wiring to the main power input terminals	Measure the input voltage	Repair or replace the main circuit power input wires or input devices (MCCB, MC, etc.)
	(2) The screws on the main power input terminals are loosely tightened	Check if the screws on the main power input terminals have become loose	Tighten the terminal screws to the recommended torque
	(3) Interphase voltage unbalance between three phases was too large	Measure the input voltage	①Connect an AC reactor (ACR) to lower the voltage unbalance between input phases ②Increase the inverter capacity
	(4) Overload cyclically occurred	Measure the ripple wave of the DC link bus voltage	If the ripple is large, increase the inverter capacity.
	(5) Single-phase voltage was input to the three-phase input inverter	Check the inverter settings and service condition	Correct inverter for single-phase use to meet the power supply(on single-phase input)
OPL (Output phase loss)	(1) Inverter output wires are broken	Measure the output current	Replace the output wires
	(2) The motor winding is broken	Measure the output current	Replace the motor
	(3) The terminal scre ws for inverter output were not tight enough	Check if any screws on the inverter output terminals have become loose	Tighten the terminal screws to the recommended torque
	(4) A single-phase motor has been connected		Single-phase motors cannot be used. Note that (S3100 inverter only drives 3-phase induction motors)
OH1 (Cooler Overheat)	(1) Temperature around the inverter exceeded the inverter's specification range	Measure the temperature around the inverter	E.g., ventilate the panel where the inverter is mounted, Lower the temperature around the inverter.
	(2) Ventilation path is blocked	Check if there is sufficient clearance around the inverter	Change the mounting place to ensure the clearance
		Check if the cooler is not clogged	Clean the cooler
	(3) Cooling fan's airflow volume decreased due to the service life expired or failure	Check the cumulative run time of the cooling fan	Replace the cooling fan
	(4) Overload	Measure the output current	①Reduce the load (use cooler's overheat early warning (01. 01~01. 09)/or overload early warning (01. 34) and reduce the load before the overload protection is activated) ②Decrease the motor sound (carrier frequency)(00. 26) ③Enable the overload prevention control (04. 70)

Code	Description for problem and Possible Causes	Checking	Suggested Measures
OH2 (External alarm)	(1) An alarm function of external equipment was activated	Check the operation of external equipment	Remove the cause of the alarm that occurred
	(2) Wrong connection or poor contact in external alarm signal wiring	Check if the external alarm signal (d-ada= 9) wiring is correctly connected to the terminal to which the "Enable external alarm trip" terminal command has been assigned.	Connect the external alarm signal wire correctly
	(3) Incorrect setting of function parameter data	Check whether the "Enable external alarm trip" terminal command has been assigned to an unavailable terminal 01. 01~01. 09, 01. 98, 01. 99	Correct the assignment
		Check whether the logic (normal/negative) of the external signal matches that of the [mTHR] command specified by 01. 01~01. 09, 01. 98, 01. 99	Ensure the matching of the normal/negative logic
OH3 (Inverter internal overheat)	The surrounding temperature exceeded the inverter's specification limit	Measure the surrounding temperature	E.g., ventilate the panel where the inverter is mounted, Lower the temperature around the inverter.
OH4 (Motor protection (PTC/NTC thermistor))	(1) The temperature around the motor exceeded the motor's specification range.	Measure the temperature around the motor	Lower the temperature
	(2) Cooling system for the motor defective	Check if the cooling system of the motor is operating normally	Repair or replace the cooling system of the motor
	(3) Overload	Measure the output current	①Reduce the load (e.g. Use the overload early warning early(01. 34)and reduce the load before the overload protection is activated.) (In winter, the load tends to increase.) ②Lower the temperature around the motor ③Increase the motor sound (Carrier frequency) (00.26)
	(4) The activation level (04.27) of the PTC thermistor for motor overheat protection was set inadequately	Check the PTC thermistor specifications and recalculate the detection voltage	Modify the data of function parameter data
	(5) Settings for the PTC/NTC thermistor are improper	Check the setting of the thermistor mode selection (04. 26) and the slider position of terminal AUI property switch SW5	Change 04.26 to the setting which is appropriate for the thermistor used and switch the control board switch to PTC / NTC side
	(6) Excessive torque boost specified (00.09)	Check whether decreasing the torque boost (00. 09) does not stall the motor	If no stall occurs, decrease the 00. 09 data.
	(7) The V/f pattern did not match the motor	Check if the base frequency (00. 04) and the rated voltage at base frequency (00. 05) match the values on the motor's nameplate	Match the function parameter data with the values on the motor's nameplate
	(8) Incorrect setting of function parameter data	Although no PTC/NTC thermistor is used, the thermistor mode is enabled (04. 26) is still in action.	Set the 04. 26 data to "0" (Disable)

Code	Description for problem and Possible Causes	Checking	Suggested Measures
dbH (Braking resistor overheated)	(1) Braking load is too heavy	Reconsider the relationship between the braking load estimated and the real load	①Lower the real braking load ②Review the selection of the braking resistor and increase the braking capability.(Parameters (00. 50，00. 51，00. 52) data is also required to be modified)
	(2) Specified deceleration time is too short	Recalculate the deceleration torque and time needed for the load currently applied, based on a moment of inertia for the load and the deceleration time.	①Increase the deceleration time (00. 08，01. 11，01. 13，01. 15，04. 56). ②Review the selection of the braking resistor and increase the braking capability (Parameters (00. 50，00. 51，00. 52) data is also required to be modified)
	(3) Incorrect setting of function parameters (00. 50, 00. 51, 00. 52) data	Recheck the specifications of the braking resistor	Review data of function parameters 00. 50，00. 51，00. 52, then modify it.
OL1~OL4 (Overload of motor 1~4)	(1) The electronic thermal characteristics do not match the motor overload characteristics	Check the motor characteristics	①Reconsider the data of function parameters（00. 10*，00. 12*） ② Use an external thermal relay
	(2) Activation level for the electronic thermal protection was inadequate	Check the continuous allowable current of the motor	Reconsider and change the data of function parameter (00. 11*), and make change accordingly.
	(3) The specified acceleration/ deceleration time was too short	Recalculate the acceleration/deceleration torque and time needed for the load, based on the moment of inertia for the load and the acceleration/deceleration time.	Increase the acceleration/ deceleration time (00. 07，00. 08，01. 10~01. 15，04. 56)
	(4) Overload	Measure the output current	Reduce the load (e.g. Use the overload early warning (01. 34) and reduce the load before the overload protection is activated.). (In winter, the load tends to increase.)
	(5) Excessive torque boost specified (00. 09)	Check whether decreasing the torque boost (00. 09) does not stall the motor	If no stall occurs, decrease the 00. 09* data.
OLU (Inverter overload)	(1) Temperature around the inverter exceeded the inverter's specification range	Measure the temperature around the inverter	E.g., ventilate the panel where the inverter is mounted, Lower the temperature.
	(2) Excessive torque boost specified (00. 09)	Check whether decreasing the torque boost (00. 09) does not stall the motor	If no stall occurs, decrease the 00. 09 data.
	(3) The specified acceleration/ deceleration time was too short	Recalculate the acceleration/deceleration torque and time needed for the load, based on the moment of inertia for the load and the acceleration/deceleration time.	Increase the acceleration /deceleration time (00. 07，00. 08，01. 10~01. 15，04. 56)

Code	Description for problem and Possible Causes	Checking	Suggested Measures
OLU (Inverter overload)	(4) Overload	Measure the output current	①Reduce the load (e.g., Use the overload early warning (01. 34) and reduce the load before the overload protection is activated.) (In winter, the load tends to increase.) ②Decrease the motor sound (Carrier frequency) (00. 26) ③Enable overload prevention control (04. 70)
	(5) Ventilation paths are blocked	Check if there is sufficient clearance around the inverter	Change the mounting place to ensure the clearance
		Check if the cooler is not clogged	Clean the cooler
	(6) Cooling fan's airflow volume decreased due to the service life expired or failure	Check the cumulative run time of the cooling fan	Replace the cooling fan
		Visually check that the cooling fan rotates normally	Replace the cooling fan
	(7) The wires to the motor are too long, causing a large leakage current from them	Measure the leakage current	Insert an output circuit filter (OFL)
OS (Overspeed)	(1)Incorrect setting of function parameter data	Check the motor parameter "Number of poles" (03. 01)	Specify the 03. 01 data in accordance with the motor to be used. according to the motor used.
		Check the max. frequency setting (00. 03)	Specify the 00. 03 data in accordance with the output frequency
		Check the setting of speed limit function (09. 32, 09. 33)	Disable the speed limit function (09. 32, 09. 33)
	(2) Insufficient gain of the speed controller	Check whether the actual speed overshoots the commanded one in higher speed operation	Increase the speed controller gain (09. 03) (Depending on the situations, reconsider the setting of the filter constant or the integral time)
	(3) Noises superimposed on the PG wire	Check whether appropriate noise control measures have been implemented (e.g., correct grounding and routing of signal wires and main circuit - wires)	Implement noise control measures
Er1 (Memory error)	(1) When writing data (especially initializing or copying data), the inverter was shut down so that the voltage to the control PCB has dropped	Initialize the function parameter data with (04. 03); After initialization, check if pressing the RESET key releases the alarm .	Revert the initialized function code data to their previous settings, then restart the operation.
	(2) Inverter affected by strong electrical noise when writing data (especially initializing or copying data)	Check if appropriate noise control measures have been implemented (e.g., correct grounding and routing of control and main circuit wires). Also, perform the same check as described in (1) above.	Implement noise control measures. Revert the initialized function code data to their previous settings, then restart the operation.
	(3) The control PCB failed	Initialize the function code data by setting (04. 03) to "1", then reset the alarm by pressing the RESET key and check that the alarm goes on	The control PCB (on which the CPU is mounted) is defective.Contact your SAVCH Electric representative

Code	Description for problem and Possible Causes	Checking	Suggested Measures
Er2 (Keypad communications error)	(1) Broken communications cable or poor contact	Check continuity of the cable, contacts and connections	①Re-insert the connector firmly ②Replace the cable
	(2) Connecting many control wires hinders the front cover from being mounted, lifting the keypad.	Check the mounting condition of the front cover	①Use wires of the recommended size (0.75mm²) for wiring ②Change the wiring layout inside the unit so that the front cover can be mounted firmly
	(3) Inverter affected by strong electrical noise	Check if appropriate noise control measures have been implemented (e.g., correct grounding and routing of communication cables and main circuit wires)	Implement noise control measures
	(4) A keypad failure occurred	Replace the keypad with another one and check whether a keypad communications error (Er2) occurs	Replace the keypad
Er3 (CPU error)	(1) Inverter affected by strong electrical noise	Check if appropriate noise control measures have been implemented (e.g. correct grounding and routing of signal wires, communications cables, and main circuit wires)	Implement noise control measures
Er6 (Operation error)	(1)The (STOP) key was pressed when (04.96 = 1, 3)	Check that the (STOP) key was pressed when a run command had been entered from the input terminal or through the communications port	If this was not intended, check the setting of 04.96 .
	(2) The start check function was activated when 04.96 = 2, 3	Check that any of the following operations has been performed with a run command being entered. • Turning the power ON • Releasing the alarm	Review the running sequence to avoid input of a Run command when this error (Er6) occurs. If this was not intended, check the setting of 04.96 (Turn the run command OFF before releasing the alarm)
	(3) The forced stop digital input [mSTOP] was turned OFF	OFF Check that turning the [mSTOP] OFF decelerated the inverter to stop	If this was not intended, check the settings of 01.01 ~01.09 terminals MI1~MI9.
Er7 (Auto-tuning error)	(1) A phase was missing (There was a phase loss) in the connection between the inverter and the motor		Properly connect the motor to the inverter
	(2) V /f or the rated current of the motor was not properly set	Check whether the data of function parameter (00. 04，00. 05，04. 50，04. 51，04. 52，04. 53，04. 65，04. 66，03. 02，03. 03) matches the motor specifications.	Check whether the data of function parameter (00. 04，00. 05，04. 50，04. 51，04. 52，04. 53，04. 65，04. 66，03. 02，03. 03) matches the motor specifications.
	(3) The wiring length between the inverter and the motor was too long	Check whether the wiring length between the inverter and the motor exceeds 164 ft (50m). (Small capacity inverters are greatly affected by the wiring length)	①Review, and if necessary, change the layout of the inverter and the motor to shorten the connection wire. Alternatively, minimize the wiring length without changing the layout. ②Disable both auto-tuning and auto-torque boost (set as 00. 37=1).

Code	Description for problem and Possible Causes	Checking	Suggested Measures
Er7 (Auto-tuning error)	(4) The rated capacity of the motor was significantly different from that of the inverter	Check whether the rated capacity of the motor is three or more ranks lower, or two or more ranks higher than that of the inverter.	①Replace the inverter with one with an appropriate capacity ②Manually specify the values for the motor parameter (03．06，03．07，03．08). ③Disable both auto-tuning and auto-torque boost (set as 00．37=1)
	(5) The motor was a special type such as a high-speed motor		Disable both auto-tuning and auto-torque boost (set as 00.37 = 1)
	(6) A tuning operation involving motor rotation (03．04 = 2 or 3) was attempted while the brake was applied to the motor		①Specify the tuning that does not involve the motor rotation (03.04 = 1) ②Release the brake before tuning that involves the motor rotation (03.04 = 2 or 3)
Er8（RS485 communications error (COM port 1)) Erp (RS485 communications error (COM port 2))	(1) Communications conditions of the inverter do not match that of the host equipment	Compare the settings of the 11．01~11．10/11．11~11．20 with those of the host equipment	Correct any settings that differ
	(2) Even though no-response error detection time (11．08, 11．18) has been set, communications is not performed within the specified cycle.	Check the host equipment	Change the settings of host equipment software or disable the no-response error detection (11.08/11.18 = 0)
	(3) The host equipment did not operate due to defective software, settings, or defective hardware.	Check the host equipment (e.g., PLCs and computers)	Remove the cause of the equipment error
	(4) The RS485 converter did not operate due to incorrect connections and settings, or defective hardware.	Check the RS485 converter (e.g., check for poor contact)	Change the various RS485 converter settings, reconnect the wires, or replace hardware with recommended devices as appropriate.
	(5) Broken communications cable or poor contact	Check the continuity of the cables, contacts and connections.	Replace the cable
	(6) Inverter affected by strong electrical noise	Check if appropriate noise control measures have been implemented (e.g., correct grounding and routing of communications cables and main circuit wires)	①Implement noise control measures ②Implement noise reduction measures on the host side ③Replace the RS485 converter with a recommended insulated one
	(7) Terminating resistor not properly configured	Check that the inverter serves as a terminating device in the network	Configure the terminating resistor switch(es) (SW2/SW3) for RS485 communication correctly. (That is, turn the switch(es) to ON.)

Code	Description for problem and Possible Causes	Checking	Suggested Measures
ErF (Data saving error during undervoltage)	(1) During data saving performed when the power was turned OFF, the voltage fed to the control PCB dropped in an abnormally short period due to the rapid discharge of the DC link bus.	Check how long it takes for the DC link bus voltage to drop to the preset voltage when the power is turned OFF	Remove whatever is causing the rapid discharge of the DC link bus voltage. After pressing the PRG RESET key and releasing the alarm, return the data of the relevant function parameters the frequency commands and PID commands (specified through the keypad) or the output frequencies modified by the [mUP]/[DOWN] terminal commands) back to the original values and then restart the operation.
	(2) Inverter operation affected by strong electrical noise when the power was turned OFF	Check if appropriate noise control measures have been implemented (e.g., correct grounding and routing of control and main circuit wires)	Implement noise control measures. After pressing the PRG RESET key and releasing the alarm, return the data of the relevant function codes (such as the frequency commands and PID commands (specified through the keypad) or the output frequencies modified by the [mUP]/[DOWN] terminal commands) back to the original values and then restart the operation.
	(3) The control circuit failed	Check if ErF occurs each time the power is turned ON	The control PCB (on which the CPU is mounted) is defective. Contact your SAVCH Electric representative.
ErE (Speed mismatch or excessive speed deviation)	(1) overload	Measure the output current	Reduce the load
		Check whether any mechanical brake is working	Release the mechanical brake
	(2) The motor speed does not rise due to the current limiter operation	Check the data of function parameter (00.44) (Current limiter (Level))	Change the 00.44 data correctly. Or, set the 00.43 data to "0" (Disable) if the current limiter operation is not needed.
		Check the data of function parameter 00.04，00.05，03.01~03.12 to ensure that the V/f pattern setting is right.	① Match the V/f pattern setting with the motor ratings ② Change the function parameter data in accordance with the motor parameters
	(3) Function parameter settings do not match the motor characteristics.	Check whether the data of 03.01,03.02,03.03,03.06,03.07,03.08,03.09,03.10,03.12 match the parameters of the motor.	Perform auto-tuning of the inverter, using the function parameter 03.04.
	(4) Wiring to the motor is incorrect	Check the wiring to the motor	Connect the inverter output terminals U, V, and W to the motor input terminals U, V, and W, respectively.
	(5) The motor speed does not rise due to the torque limiter operation	Check the data of Torque limiter (00.40)	Correct the 00.40 data. Or, set the 00.40 data to "999" (Disable) if the torque limiter operation is not needed

Code	Description for problem and Possible Causes	Checking	Suggested Measures
nrb (NTC wire break error)	(1)The NTC thermistor cable is broken	Check whether the motor cable is broken	Replace the motor cable
	(2) The temperature around the motor is extremely low (lower than -30°C)	Measure the temperature around the motor	Reconsider the use environment of the motor
	(3) The NTC thermistor is broken	Measure the resistance of the NTC thermistor	Replace the motor
Err (Mock alarm)	Set the function parameter 04. 45 data to “1” for performing this alarm		Press RESET key for recovery
Cof (PID feedback wire break)	(1) The PID feedback signal wire is broken	Check whether the PID feedback signal wires are connected correctly	①Check whether the PID feedback signal wires are connected correctly. Or, tighten up the related terminal screws. ②Check whether any contact part bites the wire sheath
	(2) PID feedback related circuit affected by strong electrical noise	Check if appropriate noise control measures have been implemented (e.g., correct grounding and routing of signal wires, communication cables, and main circuit wires)	①Implement noise control measures ②Separate the signal wires from the main power wires as far as possible