MAINTENANCE AND TROUBLESHOOTING



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MAINTENANCE AND INSPECTIONS

Modern AC drives are based on solid state electronics technology, including ICs, resistors, capacitors, transistors, cooling fans, relays, etc. These components have a limited life under normal operation. Preventive maintenance is required to operate the GS10 drive in its optimal condition, and to ensure a long life. We recommend that a qualified technician perform a regular inspection of the GS10 drive. Some items should be checked once a month, and some items should be checked yearly.



CAUTION: All inspections should be accomplished with Safety in mind with due and required caution. Some of these Inspection items may require the Drive to be powered down, while others may require power to be applied. Proper safety precautions including the use of PPE are/may be required. Please review cautionary statements in each section

MONTHLY INSPECTION

Check the following items at least once a month.

- 1) Make sure the motors are operating as expected.
- 2) Make sure the drive installation environment is normal.
- 3) Make sure the enclosure and drive cooling systems are operating as expected.
- 4) Check for irregular vibrations or sounds during operation.
- 5) Make sure the motors are not overheating during operation.
- 6) Check the input voltage to the GS10 drive and make sure the voltage is within the operating range. Check the voltage with a voltmeter.

ANNUAL INSPECTION

Check the following items once annually.

- 1) Check the torque of the GS10 power and control terminal screws and tighten if necessary. They may loosen due to vibration or changing temperatures.
- 2) Make sure the conductors and insulators are not corroded or damaged.
- 3) Check the resistance of cable insulation with a megohmmeter.
- 4) Clean off any dust and dirt with a vacuum cleaner. Pay special attention to cleaning the ventilation ports and PCBs. Always keep these areas clean. Accumulation of dust and dirt in these areas can cause unforeseen failures.
- 5) Recharge the capacitors of any drive that is in storage or is otherwise unused.

RECHARGE CAPACITORS (FOR DRIVES NOT IN SERVICE)

Recharge the DC link before using any drive that has not been operated within a year:

- 1) Disconnect the motor from the drive.
- 2) Apply input power to the drive for 2 hours.



If the drive is stored or is otherwise unused for more than a year, the drive's internal DC link capacitors should be recharged before use. Otherwise, the capacitors may be damaged when the drive starts to operate. We recommend recharging the capacitors of any unused drive at least once per year.



DISCONNECT AC POWER AND ENSURE THAT THE INTERNAL CAPACITORS HAVE FULLY DISCHARGED BEFORE INSPECTING THE GS10 DRIVE! WAIT AT LEAST FIVE MINUTES AFTER ALL DISPLAY LAMPS HAVE TURNED OFF.

- ☑ Wait 5 seconds after a fault has been cleared before performing reset via keypad or input terminal.
- When the power is off after 5 minutes for ≤ 30hp models and 10 minutes for ≥ 40hp models, please confirm that the capacitors have fully discharged by measuring the voltage between + and -. The voltage between + and should be less than 25VDC.



- Only qualified personnel can install, wire and maintain drives.
 Please take off any metal objects, such as watches and rings, before operation. And only insulated tools are allowed.
- ☑ Never reassemble internal components or wiring.
- ☑ Make sure that installation environment complies with regulations without abnormal noise, vibration and smell.

Recommended Inspection Schedules

Before the check-up, always turn off the AC input power and remove the cover. Wait at least 10 minutes after all display lamps have gone out, and then confirm that the capacitors have fully discharged by measuring the voltage between DC+ and DC-. The voltage between DC+ and DC-should be less than 25VDC.

Ambient environment

		Mainte	enance	Period
Check Items	Methods and Criteria	Daily	Half Year	One Year
Check the ambient temperature, humidity, vibration and see if there is any dust, gas, oil or water drops	Visual inspection and measurement with equipment against standard specifications	0		
If there are any dangerous objects	Visual inspection	\bigcirc		

Voltage

		Maintenance Period			
Check Items	Methods and Criteria	Daily	Half Year	One Year	
Check if the voltage of main circuit and control circuit is correct	Measure with multimeter against standard specifications	0			

Digital Keypad Display

		Mainte	enance	Period
Check Items	Methods and Criteria	Daily	Half Year	One Year
Is the display clear for reading	Visual inspection	\bigcirc		
Any missing characters	Visual inspection	\bigcirc		

Mechanical parts

		Mainte	enance l	Period
Check Items	Methods and Criteria	Daily	Half Year	One Year
If there is any abnormal sound or vibration	Visual and audible inspection		\bigcirc	
If there are any loose screws	Tighten the screws		\bigcirc	
If any part is deformed or damaged	Visual inspection		\bigcirc	
If there is any color change due to overheating	Visual inspection		\bigcirc	
If there is any dust or dirt	Visual inspection		\bigcirc	

Recommended Inspection Schedules (continued)

Main circuit

		Mainte	enance l	Period
Check Items	Methods and Criteria	Daily	Half Year	One Year
If there are any loose or missing screws	Tighten or replace the screw	\bigcirc		
If any drive or wiring insulation is deformed, cracked, damaged or has changed color due to overheating or aging	Visual inspection NOTE: Ignore any color change of copper plate		\bigcirc	
If there is any dust or dirt	Visual inspection		\bigcirc	

Terminals and wiring of main circuit

		Maintenance Period		
Check Items	Methods and Criteria	Daily	Half Year	One Year
If the terminal color or the placement has changed due to overheating	Visual inspection		\bigcirc	
If the wiring insulation is damaged or there has been a color change	Visual inspection		\bigcirc	
If there is any damage	Visual inspection	\bigcirc		

DC capacity of main circuit

		Maintenance Period			
Check Items	Methods and Criteria	Daily	Half Year	One Year	
If there is any liquid leaking, color change, crack or deformation	Visual inspection	0			
If the capacitor safety vent is bulging or inflated.	Visual inspection	0			
Measure static capacity when required (if drive overloads/faults during normal operation)	Measure with multimeter against standard specifications	0			

Recommended Inspection Schedules (continued)

Resistor of main circuit

		Maintenance Period			
Check Items	Methods and Criteria	Daily	Half Year	One Year	
If there is any peculiar smell or insulation cracks due to overheating	Visual inspection, smell	0			
If there is any disconnection or discoloration	Visual inspection	0			
If the connection is damaged	Measure with a multimeter against standard specifications	0			

Transformer and reactor of main circuit

		Maintenance Period			
Check Items	Methods and Criteria	Daily	Half Year	One Year	
If there is any abnormal vibration or peculiar smell	Visual, audible inspection and smell	0			

Magnetic contactor and relay of main circuit

		Maintenance Period			
Check Items	Methods and Criteria	Daily	Half Year	One Year	
If there are any loose screws	Visual and audible inspection	\bigcirc			
If the contact works correctly	Visual inspection	\bigcirc			

Printed circuit board and connector of main circuit

		Mainte	enance l	Period
Check Items	Methods and Criteria	Daily	Half Year	One Year
If there are any loose screws and connectors	Tighten the screws and press the connectors firmly in place		\bigcirc	
If there is any peculiar smell and/or color change	Visual and smell inspection		\bigcirc	
If there is any crack, damage, deformation or corrosion	Visual inspection		\bigcirc	
If there is any liquid leakage or deformation in capacity	Visual inspection		\bigcirc	

Recommended Inspection Schedules (continued)

Cooling fan of cooling system

		Maintenance Period			
Check Items	Methods and Criteria	Daily	Half Year	One Year	
If there is any abnormal sound or vibration	Visual, audible inspection and turn the fan with hand (turn off the power before operation) to see if it rotates smoothly		\bigcirc		
If there is any loose screw	Tighten the screw		\bigcirc		
If there is any color change due to overheating	Change the fan		\bigcirc		

Ventilation channel of cooling system

		Maintenance Period		
Check Items	Methods and Criteria	Daily	Half Year	One Year
If there is any obstruction in the heat sink, air intake or air outlet	Visual inspection		\bigcirc	

Please use a clean lint free cloth for cleaning and use a dust cleaner to remove dust when necessary.

TROUBLESHOOTING

WARNING CODES

The GS10 drive has a comprehensive diagnostic system that includes several different warning codes. The most common warning codes can be read on the digital keypad display.

For communication errors, "Upper unit" is referring to the Master controller of the serial network. Always ensure the communication settings of the drive (P09.01 and P09.04) match those of the master controller and network.



	Warning Codes							
Display on GS10 Keypad	ID No.	Warning Name and Description	Action and Res	et	Со	rrective Action		
n/a	0	No error	n/a	n/a	n/a	1		
			Action Level Action Time	When the length of communication data is too long Immediately act	1) 2)	Check if the communication command is correct. Verify the wiring and grounding of		
		Communication error	Warning setting parameter	N/A		the communication circuit. Separate the communication circuit from the		
[ЕЭ з	3	3 (CE3) RS-485 Modbus illegal data value	Reset method	"Warning" occurs when P09.02=0 and the motor drive keeps running. The drive resets automatically when receiving the correct communication data value.	3)	main circuit, or wire in 90 degree for effective anti-interference performance. Check if the setting for P09.04 is the same as the setting for the upper unit.		
			Reset condition	Immediately reset	4)	Check the cable and replace it if		
			Record	N/A		necessary.		
ЕЕЧ 4			Action Level	When the data is written to read-only address	1)	Check if the communication command is correct		
		Communication error 4 (CE4) 4 RS-485 Modbus data is written to read-only address	Action Time	Immediately act	2)	Verify the wiring and grounding of		
			Warning setting parameter	N/A		the communication circuit. Separate the communication circuit from the		
	4		Reset method	"Warning" occurs when P09.02=0 and the motor drive keeps running. The drive resets automatically when receiving the correct written address of communication data.	3)	main circuit, or wire in 90 degree for effective anti-interference performance. Check if the setting for P09.04 is the same as the setting for the upper unit.		
			Reset condition	Immediately reset	4)	Check the cable and replace it if		
			Record	N/A		necessary.		
			Action Level	When the communication time exceeds the detection time of P09.03 communication time- out	1) 2)	Check if the upper unit transmits the communication command within the setting time for P09.03. Verify the wiring and grounding		
			Action Time	P09.03		of the communication circuit. It		
		Communication error 10 (CE10)	Warning setting parameter	N/A		is recommended to separate the communication circuit from the		
CE 10	5	RS-485 Modbus transmission time-out	Reset method	"Warning" occurs when P09.02=0 and the motor drive keeps running. The drive resets automatically when receiving the next communication packet.	3)	main circuit, or wire in 90 degree for effective anti-interference performance. Check if the setting for P09.04 is the same as the setting for the upper		
			Reset condition	Immediately reset		unit.		
			Record	N/A	4)	Check the cable and replace it if necessary.		
	(continued next page)							

Warning Codes (continued)										
Display on GS10 Keypad	ID No.	Warning Name and Description	Action and Res	et	Corrective Action					
5E I	7	Save error 1 (SE1) Kevpad COPY error 1:	Action Level	"SE1" warning occurs when the GS4-KPD optional keypad does not transmit the COPY command to the drive, and does not transmit any data to the drive again in 10 ms at the time you copy the parameters to the drive.	SE1: The causes of error are mostly communication problems between the keypad and control board. Potential causes include communication signal interference and the unacceptable communication command to the Slave. Check if the error occurs randomly, or only occurs when copying certain					
		Keypad copy time-out	Action Time	10 ms	parameters (the error displays on the					
			warning setting parameter	N/A	upper right corner of the copy page).					
			Reset method	Manual reset (or cycle power)	contact AutomationDirect Technical					
			Reset condition	Immediately reset	Support.					
562	8	Save error 2 (SE2) Keypad COPY error 2:	Action Level	"SE2" warning occurs when writing the parameters incorrectly at the time you copy parameters to the drive. For example, you copy the new firmware version with added parameters to the drive with old firmware version.	SE2: In this stage, the copied data has been transmitted to the Slave. The Slave compares and processes the copied data, and then saves the data to the Data ROM. During the process, the data error (should be attribution error) may occur, or the data cannot be saved to EEPROM. At this time, the warning					
		parameter writing error	Action Time	N/A	occurs.					
			Warning setting parameter	N/A	Check the status of Data ROM and remove the error causes first.					
			Reset method	Manual reset (or cycle power)	If you cannot clear the error, please					
			Record		Support					
			Action Level	P06.15	1) Check the ambient temperature.					
		IGBT over-heating warning (oH1) The AC motor drive detects IGBT overheating and exceeds the protection level of oH1 warning. (When P06.15 is higher than the IGBT overheating protection level, the drive shows oH1 error without displaying oH1 warning.)	Action Time	"oH1" warning occurs when IGBT temperature is higher than P06.15 setting value.	 Regularly inspect the ventilation hole of the control cabinet. Change the installed location if there are booting objects, such as braking 					
			Warning setting parameter	N/A	resistors, in the surroundings.Install/add cooling fan or air					
oHI	9		Reset method	Auto-reset	conditioner to lower the temperature inside the cabinet.5) Check for and remove obstructions or replace the caping for					
			Reset condition	The drive auto-resets when IGBT temperature is lower than oH1 warning level minus (–) 5°C	 6) Increase ventilation space of the drive. 7) Decrease loading. 8) Decrease the carrier wave. 9) Replace the drive with higher 					
			Record	N/A	capacity model.					
			(conti	(continued next page)						

Chapter 6: Maintenance and Troubleshooting

Warning Codes (continued)							
Display on GS10 Keypad	ID No.	Warning Name and Description	Action and Res	et	Corrective Action		
		DID foodbook orror	Action Level Action Time Warning setting parameter	When the analog input is lower than 4 mA (only detects analog input 4–20 mA) P08.08 P08.09 setting is: 0: Warn and continue operation 1: Fault and ramp to stop 2: Fault and coast to stop 3: Warn and operate at last frequency.	1) Check the PID feedback wiring and		
PId	(PID) PI d 11 PID feedback loss (warning for analog feedback signal; works only when PID enables)	Reset method	 Auto: "Warning" occurs when P08.09=0 or 3. The "Warning" automatically clears when the feedback signal is larger than 4 mA. Manual: "Error" occurs when P08.09=1 or 2. You must reset manually. 	 tighten the terminals. 2) Replace the cable. 3) Replace the feedback device. 4) If the PID error still occurs after checking all the wiring, contact AutomationDirect Technical Support. 			
			Record	Records when P08.09=1 or 2 ("Error"). Does not record when P08.09=3 ("Warning").			
			Action Level	When the analog input is lower than 4 mA (only detects analog input 4–20 mA)			
			Action Time	Immediately act			
RnL	12	 AI-C analog signal loss (AnL) 12 Analog input current loss (including all analog 4–20 mA signals) 	Warning setting parameter	P03.19 setting is: 0: Disable 1: Continue operation at the last frequency (warning, keypad displays ANL) 2: Decelerate to 0 Hz (warning, keypad displays ANL) 3: Stop immediately and display "ACE"	 Check the Al wiring and tighten the terminals. Replace the cable. Replace the external device. 		
			Reset method	 Auto: "Warning" occurs when P03.19=1 or 2. The "Warning" automatically clears when the feedback signal is larger than 4 mA. Manual: "Error" occurs when P03.19=3. You must reset manually. 	 If the AnL error still occurs after checking all the wiring, contact AutomationDirect Technical Support. 		
			Record	Does not record when	-		
			Necolu .	P03.19=1 or 2 ("Warning").			
			(conti	nued next page)			

Warning Codes (continued)							
Display on GS10 Keypad	ID No.	Warning Name and Description	Action and Res	et	Corrective Action		
∐[13		Under current (uC) 3 Low current	Action Level Action Time Warning setting parameter	P06.71 P06.72 P06.73 setting is: 0: No function 1: Fault and coast to stop 2: Fault and ramp to stop by the 2nd deceleration time 2: Warn and continue operation	 Check for a broken motor cable, then 		
	13		Reset method	 Yuan and continue operation Auto: "Warning" occurs when P06.73=3. The "Warning" automatically clears when the output current is larger than (P06.71+0.1 A). Manual: "Error" occurs when P06.73=1 or 2. You must reset manually. 	 exclude the connection issue of the motor and its load. 2) Verify low current protection settings. If needed, set the proper settings for P06.71, P06.72 and P06.73. 3) Check the loading status and make sure the loading matches the motor capacity. 		
			Reset condition Record	Immediately reset Does not record when P06.73=3 and uC displays ("Warning").			
			Action Level	P06.07	1) Configure the settings for P06.07 and		
			Action Time	P06.08	P06.08 again.		
ot 1 20	20	Over-torque 1 (ot1) Over-torque 1 warning	Warning setting parameter	P06.06 Over-torque Detection Selection (Motor 1) = 1 or 3 0: No function 1: Continue operation after over-torque detection during constant speed operation 2: Stop after over-torque detection during constant speed operation 3: Continue operation after over-torque detection during RUN 4: Stop after over-torque detection during RUN	 Check for mechanical error and remove the causes of malfunction. Verify load and decrease the loading or replace with a motor with larger capacity if load is too high. Verify accel/decel time and increase the setting values for P01.12–P01.19 (accel./ decel. time) if work cycle is too short. Verify V/F voltage and adjust the V/F curve (Motor 1, P01.01–P01.08), especially the setting value for the mid-point voltage (if the mid-point voltage is set too small, the load capacity decreases at low-speed). Replace motor with a larger capacity motor. 		
			Reset method	When the output current < P06.07, the ot1 warning automatically clears	 Check for overload during low-speed operation and decrease the loading during low-speed operation or increase the motor capacity. Verify torque compensation and adjust P07 26 torque compensation 		
			Reset condition	When the output current < P06.07, the ot1 warning automatically clears	 gain until the output current decreases and the motor does not stall. 9) Correct the parameter settings for speed tracking. Start the speed 		
			Record	N/A	tracking function. Adjust the maximum current for P07.09 speed tracking.		
			(contii	nued next page)			

Warning Codes (continued)							
Display on GS10 ID No. Keypad UD Scription	Action and Res	set	Corrective Action				
	Action Level	P06.10	1) Configure the settings for P06.10 and				
ロヒマ 21 Over-torque (ot2) Over-torque 2 warning	Action Time Warning setting parameter	P06.11 P06.09 Over-torque Detection Selection (Motor 2) =1 or 3 0: No function 1: Continue operation after over-torque detection during constant speed operation 2: Stop after over-torque detection during constant speed operation 3: Continue operation after over-torque detection during RUN 4: Stop after over-torque detection during RUN	 P06.11 again. 2) Check for mechanical error and remove the causes of malfunction. 3) Verify load and decrease the loading or replace with a motor with larger capacity if load is too high. 4) Verify accel/decel time and increase the setting values for P01.12–P01.19 (accel./ decel. time) if work cycle is too short. 5) Verify V/F voltage and adjust the V/F curve (Motor 2, P01.35–P01.42), especially the setting value for the mid-point voltage (if the mid-point voltage is set too small, the load capacity decreases at low-speed). 6) Replace motor with a larger capacity 				
	Reset method	When the output current < P06.10, the ot2 warning automatically clears	 Motor. 7) Check for overload during low-speed operation and decrease the loading during low-speed operation or increase the motor capacity. 8) Verify torque compensation and 				
	Reset condition	When the output current < P06.10, the ot2 warning automatically clears	 adjust P07.71 torque compensation gain until the output current decreases and the motor does not stall. 9) Correct the parameter settings for 				
	Record	N/A	speed tracking. Start the speed tracking function. Adjust the maximum current for P07.09 speed tracking.				
	(conti	nued next page)					

Warning Codes (continued)						
Display on GS10 Keypad	ID No.	Warning Name and Description	Action and Res	et	Corrective Action	
□H∃ 2			Action Level	P03.00=6 (PTC), PTC input level > P06.30 PTC level (default=50%)	 Check if motor is locked and clear the motor lock status. Verify load and decrease the loading or replace with a motor with larger 	
			Action Time	Immediately act	capacity if load is too high. 3) Verify ambient temperature and change the installed location if	
	22_1	22_1 Motor over-heating (oH3) PTC Motor overheating warning. The AC motor drive detects the temperature inside the motor is too high	Warning setting parameter	Error treatment: P06.29 0: Warn and continue operation 1: Fault and ramp to stop 2: Fault and coast to stop 3: No warning When P06.29=0 and when the temperature is \leq P06.30 level, the oH3 warning automatically clears. When P06.29=0 ("Warning"), it automatically resets.	 there are heating devices in the surroundings, or install/add cooling fan or air conditioner to lower the ambient temperature. 4) Check the cooling system and ensure it's working normally. 5) Verify the motor fan is working and replace the fan if needed. 6) Verify duration of low speed operation. Decrease low-speed operation time. Change to dedicated motor for the drive. Increase the motor capacity. 7) Verify accel/decel time and increase setting values for P01.12–P01.19 (accel./ decel. time) if working cycle is too short. 	
			Reset method	When P06.29=0, oH3 displays as "Warning". When the temperature is \leq P06.30 level, the oH3 warning automatically clears.	 8) Verify V/F voltage and adjust settings for P01.01–P01.08 (V/F curve), especially the setting value for the mid-point voltage (if the mid-point voltage is set too small, the load capacity decreases at low-speed). 9) Verify the motor rated current matches the motor namenlate and 	
			Reset condition	When the temperature is ≤ P06.30 level, the oH3 warning automatically clears.	 configure the correct rated current value of the motor if needed. 10) Check the connection between PTC thermistor and the heat protection. 11) Verify stall prevention setting and set the stall prevention to the proper 	
			Record	N/A	 value if needed. 12) Check for unbalanced three-phase motor impedance. Replace the motor if needed. 13) Verify harmonics and reduce harmonics if too high. 	
			(conti	nued next page)		

Chapter 6: Maintenance and Troubleshooting

Warning Codes (continued)								
Display on GS10 Keypad	ID No.	Warning Name and Description	Action and Res	et	Corrective Action			
			Action Level	P03.00=11 (PT100), PT100 RTD input level > P06.57 (default=7V)	 Check if motor is locked and clear the motor lock status. Verify load and decrease the loading or replace with a motor with larger capacity if load is too high. Verify ambient temperature and 			
			Action Time	Immediately act	change the installed location if there are heating devices in the surroundings, or install/add cooling			
□H∃ 22_2 M wa Th dr te m	Motor over-heating (oH3) PT100 RTD Motor overheating warning.	Warning setting parameter	Error treatment: P06.29 0: Warn and continue operation 1: Fault and ramp to stop 2: Fault and coast to stop 3: No warning When P06.29=0 and when the temperature is ≤ P06.56 level, the oH3 warning automatically clears. If the temperature is between P06.56 and P06.57, the frequency outputs according to the operating frequency setting for P06.58.	 fan or air conditioner to lower the ambient temperature. 4) Check the cooling system and ensure it's working normally. 5) Verify the motor fan is working and replace the fan if needed. 6) Verify duration of low speed operation. Decrease low-speed operation time. Change to dedicated motor for the drive. Increase the motor capacity. 7) Verify accel/decel time and increase setting values for P01.12–P01.19 (accel./ decel. time) if working cycle is too short 				
		drive detects the temperature inside the motor is too high	Reset method	When P06.29=0, oH3 displays as "Warning". When the temperature is \leq P06.56 level, the oH3 warning automatically clears.	 8) Verify V/F voltage and adjust settings for P01.01–P01.08 (V/F curve), especially the setting value for the mid-point voltage (if the mid-point voltage is set too small, the load capacity decreases at low-speed). 			
			Reset condition	When the temperature is ≤ P06.56 level, the oH3 warning automatically clears.	 9) Verify the motor rated current matches the motor nameplate and configure the correct rated current value of the motor if needed. 10) Check the connection between PT100 RTD and the heat protection. 11) Verify stall prevention setting and set the stall prevention to the proper 			
			Record	N/A	12) Check for unbalanced three-phase motor impedance. Replace the motor if needed.13) Verify harmonics and reduce harmonics if too high.			
o5L 24		Over slip warning (oSL) Over slip warning. By using the maximum slip (P10.29) as the base, when the drive outputs at constant speed, and the F>H or F <h exceeds="" p07.29<br="">level and P.07.30 setting time, 100% P07.29 = P10.29.</h>	Action Level	When the drive outputs at constant speed, and F>H or F <h exceeds="" level<="" p07.29="" td="" the=""><td></td></h>				
	24		Action Time Warning setting parameter	P07.30 P07.31=0 Warning 0: Warn and continue operation 1: Fault and ramp to stop 2: Fault and coast to stop 3: No warning	 Check the motor parameter. Verify load and decrease the loading if needed. Verify the parameter settings for 			
			Reset method	When P07.31=0 and when the drive outputs at constant speed, and F>H or F <h no<br="">longer exceeds the P07.29 level, the oSL warning automatically clears.</h>	oSL protection (P07.29, P07.30, and P10.29) are correctly set.			
			Reset condition	N/A	-			
		1	(conti	nued next naae)	1			

	Warning Codes (continued)						
Display on GS10 Keypad	ID No.	Warning Name and Description	Action and Res	et	Corrective Action		
		Auto tuning (the)	Action Level	When running P05.00 motor parameter auto-tuning, the keypad displays "tUn".			
			Action Time	N/A			
Flla	25	Parameter auto-tuning	Warning setting parameter	N/A	When the auto-tuning is finished, the		
		When running auto- tuning, the keypad	Reset method	When auto-tuning is finished and no error occurs, the warning automatically clears.	warning automatically clears.		
		displays "tun".	Reset condition	When auto-tuning is finished and no error occurs.			
			Record	N/A			
			Action Level	P06.47	1) Check for unbalanced three-phase motor impedance and replace the		
			Action Time	N/A	motor if needed. 2) Check the cable and replace if		
oPHL	28	Output phase loss (oPHL) Output phase loss of the drive	Warning setting parameter	P06.45 setting is: 0: Warn and continue operation 1: Fault and ramp to stop 2: Fault and coast to stop 3: No warning	needed.3) Ensure a three-phase motor is being used.4) Check if the control board cable is loose. If yes, reconnect the cable and run the drive to test. If the error still		
			Reset method	If P06.45 is set to 0, the oPHL warning automatically clears after the drive stops.	 occurs, contact AutomationDirect Technical Support. 5) Check if the three-phase current is balanced with a current clamp meter. 		
			Reset condition	N/A	oPHL error still shows on the display,		
			Record	N/A	Support.Verify the drive's capacity matches or exceeds the motor's.		
		Copy model error 3	Action Level	"SE3" warning occurs when different drive identity codes are found during copying parameters.			
563	30	(SE3)	Action Time	Immediately act when the error is detected	It is mainly to prevent parameter copies		
		Keypad COPY error 3: copy model error	Warning setting parameter	N/A			
			Reset method	Manual reset			
			Reset condition	N/A			
			Kecord	IN/A			
(continued next page)							

Warning Codes (continued)							
Display on GS10 Keypad	ID No.	Warning Name and Description	Action and Res	et	Corrective Action		
			Action Level	When P07.13 is not 0 and the DC bus voltage is lower than the level of dEb.	-		
			Action Time	Immediately act	-		
			Warning setting parameter	N/A	-		
dЕb	102	Deceleration energy backup error (dEb) When P07.13 is not 0 and the power shuts off resulting in DC bus voltage lower than the dEb action level, the dEb function acts and the motor ramps to stop. dEb displays on the keypad.	Reset method Reset condition	Auto: when P07.13=2 (dEb with auto-acceleration/auto- deceleration, drive outputs frequency after power is restored), dEb is automatically cleared. Manual: When P07.13=1 (dEb with auto-acceleration/auto- deceleration, drive does not output frequency after power is restored), the drive stops when dEb acts. When the rotation speed is 0Hz the drive can be manually reset. Auto: the fault is automatically cleared. Manual: When the drive	Check the power system.1) Replace power system with a larger capacity system.2) Use a different power system from the large load system.		
				decelerates to 0Hz	-		
			Kecord	Yes			
			Action Level	feedback deviation is lower than the setting at P08.13.			
			Action Time	P08.14	1) Check for PID feedback pressure loss		
45	103	PID feedback fault (dEv)	Warning setting parameter	P08.62	or feedback error. 2) Check for pressure sensor fault or		
מכט	105	PID feedback fault	Reset method	Manual reset	feedback error.		
			Reset condition	When the feedback value is back to the setting range of P08.13, this warning resets	 Check for insufficient pressure or feedback error. 		
			Record	Yes	4		
1	1	1	necoru	100			

FAULT CODES

The GS10 drive has a comprehensive fault diagnostic system that include a variety of fault messages. When a fault is detected, the GS10 drive will shut down in order to protect internal components. The following faults are displayed as shown on the GS10 digital keypad display. For communication errors, "Upper unit" is referring to the Master controller of the serial network. Always ensure the communication settings of the drive (P09.01 and P09.04) match those of the master controller and network.



Gaps in the fault ID numbers below are set aside as "reserved" faults for possible future use. Should your GS10 drive <u>repeatedly</u> display a reserved fault, please note the fault ID number and contact AutomationDirect technical support.

Fault Codes						
Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, and Corrective Action			
on GS10 Keypad	<i>ID No.</i>	Fault Name and Description Over-current during acceleration (ocA) Output current exceeds three times of the rated current during acceleration. When ocA occurs, the drive closes the gate of the output immediately, the motor runs freely, and the display shows an ocA error.	Action, Reset, of Action Level Action Time Fault setting parameter Reset method Record Corrective Actions	300% of the rated current Immediately act N/A Manual reset Reset in five seconds after the fault is cleared Yes 1) Check acceleration time. If too short: a) Increase the acceleration time of S-curve c) Set auto-acceleration and auto-deceleration parameter (P01.44) d) Set over-current stall prevention function (P06.03) e) Replace the drive with a larger capacity model. Check the motor cable and remove causes of any short circuits, or replace the cable before turning on the power. Check the motor insulation value with megger. Replace the motor if the insulation is poor. Check the motor drive's rated current. If yes, replace the AC motor drive with a larger capacity model. Reduce the load or increase the capacity of AC motor drive. Check the motor capacity (the rated current on the motor's nameplate should ≤ the rated current on the motor's nameplate should ≤ the rated current of the drive). Check the vire exetting and frequency/voltage. When the fault occurs, and the frequency voltage is too high, reduce the voltage. Adjust the torque compensation (refer to P07.26 torque compensation gain) until the output current reduces and the motor does not stall. Verify the wiring of the control circuit and the wiring/grounding of the main circuit to prevent interference. Enable speed tracking during start-up of P07.12. Correct the parameter settings for speed tracking. Adjust the targe tracking function. Adjust the maximum current for P07.09 speed tracking. Check the settings for P00.11 control mode: 		
				 Increase the AC motor drive's capacity. Install AC reactor(s) on the output side (U/V/W). 		
			(contir	nued next nage)		

Display on GS10 Keypad D No. Fault Name and Description Action, Reset, and Corrective Action 0 C A (continued) Action, Reset, and Corrective Action 16 In the case of hardware failure, the ocA occurs due to the shor or ground fault at the output side of the drive. a Check for possible short circuits between terminals with the electric meter: 0 C A (continued) Corrective Actions (cont) 16 In the case of hardware failure, the ocA occurs due to the shor or ground fault at the output side of the drive. a Check for possible short circuits between terminals with the electric meter: 0 C A (continued) Corrective Actions (cont) 17 (Dheck the stall prevention setting and set the stall prevention proper value. 10 C H Z Action Time Fault setting parameter Action Time Action Time Parameter 10 Check if the deceleration time is too short. If so: a Increase the deceleration time of S-curve c) Set auto-acceleration function (POG.03) e) Replace the drive with a larger capacity model 2) Check if the mechanical brake of the motor activates too early 3) Check the the motor activates too admy 3) Check the motor calbe and renove causes of any short circuit replace the active traned current of the odd and reduce the load on increase the deceleration funce of the load and reduce the load on increase the deceleration funce of the soft and make sure it is not turned 0 with a larger capacity, the rated current on the motor's nar should s the rated current of the load and reduce the load o increase the deceleration funce of the control frave as needed the dr	Fault Codes (continued)				
Over-current during deceleration (cold) Over-current during deceleration (cold) Output current exceeds three times of the ated current. If yes, replace the AC motor drives an eaded. Over-current during deceleration (cold) Actions and cold current tail prevention reparative the cold before turning on the power. Output current exceeds three times of the ated current tail prevention reparative the cold before turning on the power. Oteck the motor cable and remove causes of any short circuits replace the cable before turning on the power. Output current exceeds three times of the ated current the drive with a larger capacity model. Over current the motor active the tower of the drive. Over current the drive current tail prevention time of the current on the motor active the tower to the drive current. Overe the current tail current tail prevention reparative	Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, c	and Corrective Action
Occ d 2 Action Level 300% of the rated current Action Time Immediately act Fault setting parameter N/A Reset method Manual reset Record Yes 1 Check if the deceleration time is too short. If so: a) Increase the deceleration time of S-curve c) Set auto-acceleration and auto-deceleration parameter (P d) Set over-current stall prevention function (P06.03) expace the drive with a larger capacity model Check if the motor rabilition is poor. 30 Output current exceeds three times of the rated current during deceleration. Corrective 4 Check the motor insulation value with megger. Replace the mot increase the capacity model. Corect if the output current during of the output current during of the output current during of the contor drive's rated current. If yes, replace the AC moto increase the capacity of AC motor drive as needed. 7 Verify the motor capacity, the rated current on the motor's nar should ≤ the rated current of the drive. 8 If using an ON/OFF controler at the (U/V/W) drive output, che action timing of the contactor and make sure it is not tur	oc A	1	ocA (continued)	Corrective Actions (cont'd)	 16) In the case of hardware failure, the ocA occurs due to the short circuit or ground fault at the output side of the drive. a) Check for possible short circuits between terminals with the electric meter: b) B1 corresponds to U, V and W; DC- corresponds to U, V and W; corresponds to U, V and W. c) If short circuit occurs, contact AutomationDirect Technical Support. 17) Check the stall prevention setting and set the stall prevention to the proper value.
Over-current during deceleration (ocd) Perse the deceleration time is too short. If so: a) Increase the deceleration time of 5-curve c) Set auto-acceleration and auto-deceleration preameter (P d) Set over-current stall prevention function (P06.03) e) Replace the drive with a larger capacity model 2) Check if the mechanical brake of the motor activates too early 3) Check the motor cable and remove causes of any short circuits replace the cable before turning on the power. 4) Check the motor insulation value with megger. Replace the active with a larger capacity model. 5) Check if the output current during the whole working process the AC motor drive's rated current. If yes, replace the AC moto with a larger capacity model. 6) Check the impulsive change of the load and reduce the load o increase the capacity of AC motor drive's aneeded. 7) Verify the motor capacity, the rated current on the motor's nar should ≤ the rated current of the drive. 8) If using an ON/OFF controller at the (U/V/W) drive output, che at the drive output sthe voltage. 9) Adjust the V/F curve settings and frequency/voltage. When the occurs, and the frequency voltage is too high, reduce the voltation time ground the word opes not stall. 11) Verify the wiring of the control circuit and the wiring/groundin the main circuit to prevent interference. 12) Check the length of the motor cable. If it is too long, increase the AC motor drive's capacity or install AC reactor(s) on the output (UV/W). 				Action Level Action Time Fault setting parameter Reset method Reset condition	300% of the rated current Immediately act N/A Manual reset Reset in five seconds after the fault is cleared
 13) In the case of a hardware error, the ocd occurs due to the shore or ground fault at the output side of the drive. a) Check for possible short circuits between terminals with the electric meter: b) B1 corresponds to U, V and W; DC- corresponds to U, V and Corresponds to U, V and W. c) If short circuits occurs, contact AutomationDirect Technica Support. 14) Verify the stall prevention setting and set the stall prevention to proper value. 	ocd	2	Over-current during deceleration (ocd) Output current exceeds three times of the rated current during deceleration. When ocd occurs, the drive closes the gate of the output immediately, the motor runs freely, and the display shows an ocd error.	Corrective Actions	 Yes Check if the deceleration time is too short. If so: a) Increase the deceleration time b) Increase the deceleration time of S-curve c) Set auto-acceleration and auto-deceleration parameter (P01.44) d) Set over-current stall prevention function (P06.03) e) Replace the drive with a larger capacity model Check if the mechanical brake of the motor activates too early. Check the motor cable and remove causes of any short circuits, or replace the cable before turning on the power. Check the motor insulation value with megger. Replace the motor if the insulation is poor. Check if the output current during the whole working process exceeds the AC motor drive's rated current. If yes, replace the load or increase the capacity model. Check the impulsive change of the load and reduce the load or increase the capacity of AC motor drive as needed. Verify the motor capacity, the rated current on the motor's nameplate should ≤ the rated current of the drive. If using an ON/OFF controller at the (U/V/W) drive output, check the action timing of the contactor and make sure it is not turned ON/OFF when the drive outputs the voltage. Adjust the V/F curve settings and frequency/voltage. When the fault occurs, and the frequency voltage is too high, reduce the voltage. Adjust the P07.26 torque compensation gain until the output current reduces and the motor does not stall. Verify the wiring of the control circuit and the wiring/grounding of the main circuit to prevent interference. Check the length of the motor cable. If it is too long, increase the AC motor drive's capacity or install AC reactor(s) on the output side (U/V/W). In the case of a hardware error, the ocd occurs due to the short circuit or ground fault at the output side of the drive. B1 corresponds to U, V and W. C) If short circuits occurs, contact AutomationDirect Tech

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Fault Codes (continued)				
Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, c	and Corrective Action
Keypad	3	Over-current during steady operation (ocn) Output current exceeds three times of the rated current during constant speed. When ocn occurs, the drive closes the gate of the output immediately, the motor runs freely, and the display shows an ocn error.	Action Level Action Time Fault setting parameter Reset method Reset condition Record	 300% of the rated current Immediately act N/A Manual reset Reset in five seconds after the fault is cleared Yes 1) Check the motor cable and remove causes of any short circuits, or replace the cable before turning on the power. 2) Check for possible shaft lock, burnout or aging insulation of the motor. a) Check the motor insulation value with megger. Replace the motor if the insulation is poor. 3) Check for impulsive change of the load, and reduce the load or increase the capacity of AC motor drive. 4) Check motor capacity (the rated current on the motor's nameplate should ≤ the rated current of the drive) 5) If using an ON/OFF controller at the drive output, check the action timing of the contactor and make sure it is not turned ON/OFF when the drive outputs the voltage. 6) Adjust the V/F curve settings and frequency/voltage. When the fault occurs, and the frequency voltage is too high, reduce the voltage. 7) Adjust P07.26 torque compensation gain until the output current reduces and the motor does not stall. 8) Verify the wiring of the control circuit and the wiring/grounding of the main circuit to prevent interference. 9) Check the length of the motor cable. If too long: a) Increase the AC motor drive's capacity. b) Install AC reactor(s) on the output side (U/V/W). 10) In the case of hardware failure, the ocn may occur due to a short circuit or ground fault at the output side of the drive. a) Check for possible short circuit between terminals with the electric meter: b) B1 corresponds to U, V and W; DC- corresponds to U, V, and W; corresponds to U, V and W.
			Action Level	c) If short circuits occurs, contact AutomationDirect Technical Support. N/A
9FF	4	Ground fault (GFF) When the drive detects grounding short circuit on the output terminals (U/V/W), the drive closes the gate of the output immediately, the motor runs freely, and the display shows a GFF error.	Action Time Fault setting parameter Reset method Reset condition Record	 N/A N/A Manual reset Reset in five seconds after the fault is cleared Yes 1) Check for motor burnout or aging insulation. a) Check the motor insulation value with megger. b) Replace the motor if the insulation is poor. 2) Check the cable for short circuits and replace the cable if needed. 3) If the motor cable length exceeds 100 m, decrease the setting value for the carrier frequency and take remedies to reduce stray capacitance. 4) Verify the grounding and wiring of the communication circuit. Separate the communication circuit from the main circuit, or wire in 90 degree for effective anti-interference performance. 5) Cycle the power after checking the status of motor, cable, and cable length. If GFF still exists, contact AutomationDirect Technical Support. 6) Refer to the corrective actions for ocn. 7) Refer to the corrective actions for ocn.
			(contir	nied next nage)

ID No.	Fault Name and Description	Action, Reset, a	and Corrective Action
	Over-current at stop	Action Level	300% of the rated current
	(ocS)	Action Time	Immediately act
	Over-current or	Fault setting parameter	N/A
	hardware failure in	Reset method	Manual reset
6	current detection at	Reset condition	Reset in five seconds after the fault is cleared
	Siop. Cycle the nower after	Record	Yes
	ocS occurs. If the hardware failure occurs, the display shows cd1, cd2 or cd3.	Corrective Actions	 Verify the wiring of the control circuit and the wiring/grounding of the main circuit to prevent interference. Check if other error codes such as cd1–cd3 occur after cycling the power. If yes, return to the factory for repair.
		Action Level	120V/230V series: 410VDC 460V series: 820VDC
		Action Time	Immediately act when the DC bus voltage is higher than the level
		Fault setting parameter	N/A
		Reset method	Manual reset
		Reset condition	Reset only when the DC bus voltage is lower than 90% of the over- voltage level
		Record	Yes
7	Over-voltage during acceleration (ovA) DC bus over-voltage during acceleration. When ovA occurs, the drive closes the gate of the output, the motor runs freely, and the display shows an ovA error.	Corrective Actions	 a) Decrease the acceleration time b) Use a braking unit or DC bus c) Replace the drive with a larger capacity model. 2) Check the setting for stall prevention level. If the value is lower than no-load current, adjust it to be higher than no-load current. 3) Check if the input voltage is within the rated AC motor drive input voltage range, and check for possible voltage spikes. 4) 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. 5) Check for regenerative voltage of motor inertia. If regenerative voltage is being generated: a) Use over-voltage stall prevention function (P06.01) b) Use a uto-acceleration and auto-deceleration setting (P01.44) c) Use a braking unit or DC bus 6) Check if the over-voltage Fault occurs after acceleration stops, which indicates acceleration time is too short. Do the following: a) Increase the acceleration time b) Set P06.01 over-voltage stall prevention c) Increase the setting value for P01.25 S-curve acceleration arrival time 2 7) The ground short circuit current charges the capacitor in the main circuit through the power. Check if there is a ground fault on the motor cable, wiring box, or its internal terminals. 8) If using a braking resistor or brake unit, check the wiring. 9) Verify the wiring of the control circuit and the wiring/grounding of the main circuit to prevent interference.
	6 7	D No. Description 0ver-current at stop (ocS) Over-current or hardware failure in current detection at stop. Cycle the power after ocS occurs. If the hardware failure occurs, the display shows cd1, cd2 or cd3. Over-voltage during acceleration (ovA) DC bus over-voltage during acceleration. When ovA occurs, the drive closes the gate of the output, the motor runs freely, and the display shows an ovA error.	D No. Description Action, Reset, or seven of the

	Fault Codes (continued)				
Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, c	and Corrective Action	
			Action Level	120V/230V series: 410VDC	
			Action Time	460V series: 820VDC	
			Fault setting		
			parameter	N/A	
			Reset method	Manual reset	
			Reset condition	Reset only when the DC bus voltage is lower than 90% of the over-	
			Pacard	voltage level	
			Record	 Deceleration time may be too short, resulting in too much 	
				regenerative energy.	
		Over-voltage during		a) Increase the setting value of P01.13, P01.15, P01.17 and P01.19	
		deceleration (ovd)		(deceleration time)	
				 b) Connect a braking resistor, braking unit or DC bus on the drive. c) Peduce the braking frequency. 	
		DC bus over-voltage		d) Replace the drive with a larger capacity model.	
1	0	during deceleration.		e) Use S-curve acceleration/deceleration.	
000	0	drive closes the gate of		f) Use over-voltage stall prevention (P06.01).	
		the output immediately.		g) Use auto-acceleration and auto-deceleration (P01.44).	
		the motor runs freely,		n) Adjust the braking level (P07.01 or the bolt position of the	
		and the display shows	Corrective	2) Verify that the setting for stall prevention level is larger than no-load	
		an ovd error.	Actions	current	
				3) Check if the input voltage is within the rated AC motor drive input	
				voltage range, and check for possible voltage spikes.	
				4) If the phase-in capacitor or active power supply unit acts in the same	
				time. In this case, install an AC reactor.	
				5) 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, or its internal terminals.	
				7) Verify the wiring of the control circuit and the wiring/grounding of	
				the main circuit to prevent interference.	
			Action Level	120V/230V series: 410VDC	
			Action Time	460V series: 820VDC	
			Fault setting	Infinediately act when the DC bus voltage is higher than the level	
			parameter	N/A	
			Reset method	Manual reset	
			Reset condition	Reset only when the DC bus voltage is lower than 90% of the over-	
			Record	Yes	
		Over-voltage during constant speed (ovn)		1) Check for impulsive change of the load, then do the following:	
				a) Connect a brake resistor, braking unit or DC bus to the drive.	
				b) Reduce the load.	
		DC bus over-voltage at		 c) Replace the drive with a larger capacity model. d) Adjust the braking level (P07.01 or bolt position of the brake 	
חווח	9	When ovn occurs, the		unit).	
00	-	drive closes the gate of		2) Verify the stall prevention level setting is higher than no-load current.	
		the output immediately,		3) Check for regenerative voltage, then enable over-voltage stall	
		the motor runs freely,	Corrective	prevention function (P06.01) or use a braking unit or DC bus	
		and the display shows	Actions	voltage range, and check for possible voltage spikes	
				5) 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.	
				b) The ground short circuit current charges the capacitor in the main circuit through the power. Check if there is ground fault on the mater	
				cable, wiring box, or its internal terminals	
				7) If using a braking resistor or braking unit, check the wiring.	
				8) Verify the wiring of the control circuit and the wiring/grounding of	
				the main circuit to prevent interference.	
			(contir	nued next naae)	

Fault Codes (continued)				
Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, o	and Corrective Action
			Action Level	120V/230V series: 410VDC 460V series: 820VDC
			Action Time	Immediately act when the DC bus voltage is higher than the level
			Fault setting	N/A
			parameter	
			Reset method	Manual reset
			Reset condition	Reset only when the DC bus voltage is lower than 90% of the over-
			Record	
		Over-voltage at stop	Record	1) Check if the input voltage is within the rated AC motor drive input
	10	(ovS)		voltage range, and check for possible voltage spikes.
000	10			2) If the phase-in capacitor or active power supply unit acts in the same
		Over-voltage at stop		power system, the input voltage may surge abnormally in a short
				time. In this case, install an AC reactor.
			Corrective	3) The ground short circuit current charges the capacitor in the main circuit through the power. Check if there is ground fault on the motor.
			Actions	cable wiring box or its internal terminals
				4) If using a braking resistor or braking unit, check the wiring.
				5) Verify the wiring of the control circuit and the wiring/grounding of
				the main circuit to prevent interference.
				6) Check if other error codes such as cd1–cd3 occur after cycling the
				power. If yes, contact AutomationDirect Technical Support.
		Low-voltage during acceleration (LvA)	Action Loval	P06.00 (120)/(220)/ corrige = 180)/DC
	11		ACTION LEVEL	(1200/2500 series = 1600 DC)
			Action Time	Immediately act when the DC bus voltage is lower than P06.00
			Fault setting	Ν/Δ
			parameter	
			Reset method	Manual reset
			Record	
				1) Improve power supply condition.
10				2) Adjust voltage to the power range of the drive
		lower than P06 00		3) Check the power system and increase the capacity of power
		setting value during acceleration		equipment if needed.
				 a) Peduce the load
			Corrective	b) Increase the drive capacity
			Actions	c) Increase the acceleration time.
				5) Check the DC bus and install DC reactor(s).
				6) Check for a short circuit plate or DC reactor installed between
				terminal +1 and +2. Connect short circuit plate or DC reactor between
				leminal + 1 and +2.
				P06.00
			Action Level	(120V/230V series = 180VDC
				460V series = 360VDC
Lud			Action Time	Immediately act when the DC bus voltage is lower than P06.00
		Low voltage during	Fault setting	N/A
		deceleration (Lvd)	Reset method	Manual reset
			Reset condition	Reset when the DC bus voltage is higher than P06.00 + 30 V
	12	DC bus voltage is	Record	Yes
		lower than P06.00		1) Improve power supply condition.
		setting value during		 Adjust voltage to the power range of the drive Charle the power autom and ingenerative for the formula
		deceleration	Corrective	equipment if needed
			Actions	4) The fault may be triggered by sudden load. If so:
				a) Reduce the load.
				b) Increase the drive capacity.
				5) Check the DC bus and install DC reactor(s).
(continued next page)				

Fault Codes (continued)				
Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, c	and Corrective Action
			Action Level	P06.00 (120V/230V series = 180VDC 460V series = 360VDC
			Action Time	Immediately act when the DC bus voltage is lower than P06.00
			Fault setting	N/A
		Low-voltage at	Reset method	Manual reset
		constant speed (Lvn)	Reset condition	Reset when the DC bus voltage is higher than P06.00 + 30 V
Lun	13	DC bus voltage is lower	Record	Yes
		than P06.00 setting value at constant speed	Corrective Actions	 Improve power supply condition. Adjust voltage to the power range of the drive Check the power system and increase the capacity of power equipment if needed. The fault may be triggered by sudden load. If so: a) Reduce the load. b) Increase the drive capacity. Check the DC bus and install DC reactor(s).
				P06.00
			Action Level	(120V/230V series = 180VDC
			Action Time	460V series = 360VDC
			Fault setting	
		Low-voltage at stop	parameter	N/A
	14	(LvS) DC bus voltage is lower than P06.00 setting value at stop or a hardware failure in voltage detection had occurred.	Reset method	Manual / Auto:
				120V/230V series: LV level + $30VDC$ + $500ms$
LuS			Reset condition	500 ms
			Record	Yes
			Corrective Actions	 Improve power supply condition. Check if the power specification matches the drive. Adjust voltage to the power range of the drive. Cycle the power after checking the power. If LvS error still exists, return to the factory for repair. Check the power system. Increase the capacity of power equipment. Install DC reactor(s).
			Action Level	When DC bus ripple is higher than the protection level, and the output
			Action Level	the counting value reaches the upper limit, an orP error occurs.
			Action Time	The action time varies with different output current.
			Fault setting	P06.53
			Reset method	Manual reset
			Reset condition	Immediately reset when DC bus is higher than P07.00
		Phase loss protection	Record	Yes
or P	15	(orP)		 Verify the wiring of the main circuit power is installed correctly. Check that a single-phase power supply is not being used with a
	15	Phase loss of power		three-phase model. Choose the model whose power matches the
		input		voltage.
			Corrective	 Power voltage changes can trigger this fault. If the main circuit power works normally, verify the main circuit. Cycle the power after checking.
			Actions	the power, if orP error still exists, contact AutomationDirect Technical
				Support.
				4) Check for loose terminal wiring, tighten the terminal screws according
				5) Verify the input cable is undamaged and replace if needed
				6) Check for unbalanced three-phase input power.
	-		(contir	nued next page)

Fault Codes (continued)				
Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, a	and Corrective Action
			Action Level	Depending on the model power, model default of P06.15 +5°C. When the setting for P06.15 is higher than the oH1 level, oH1 error occurs instead of oH1 warning. An IGBT overheating error occurs, and the drive stops.
			Action Time	Immediately when limit is reached.
			Fault setting	N/A
		IGBT overheating (oH1)	parameter	
		j (*)	Reset method	Manual reset
		IGBT temperature	Reset condition	10°C
- H 1	16	level	Record	Yes
041	10	Ievel. Protection level is model default of P06.15 + 5°C	Corrective Actions	 Check the ambient temperature. Regularly inspect the ventilation hole of the control cabinet. Change the installed location if there are heating objects, such as braking resistors, in the surroundings. Install/add cooling fan or air conditioner to lower the temperature inside the cabinet. Check for and remove obstructions or replace the cooling fan. Increase ventilation space of the drive. Decrease loading. Decrease the carrier wave. Replace the drive with higher capacity model
			Action Level	NTC broken or wiring failure
		IGBT temperature detection failure (tH1o)	Action Time	When the IGBT temperature is higher than the protection level, and detection time exceeds 100 ms, the tH10 protection activates.
	18		Fault setting	N/A
FH In			parameter	
		IGBT hardware failure in	Reset method	Immediately reset
		temperature detection	Record	Yes
			Corrective	Wait for 10 minutes, and then cycle the power. Check if tH10 protection
			Actions	still exists. If yes, contact AutomationDirect Technical Support.
		Over load (oL)	Action Level	Based on overload curve and derating curve.
	21	The AC motor drive	Action Time	When the load is higher than the protection level and exceeds allowable time, the oL protection activates.
		 detects excessive drive output current. Overload capacity: Variable Torque (VT): Sustains for one minute when the drive outputs 120% of the drive's rated output current. Sustains for three seconds when the drive outputs 150% of the drive's rated output current. Constant Torque (CT): Sustains for one minute when the drive outputs 150% of the drive's rated output current. Sustains for three seconds when the drive outputs 200% of the drive's rated output current. 	Fault setting parameter	N/A
			Reset method	Manual reset
			Reset condition	Reset in five seconds after the fault is cleared
oL			Corrective Actions (contin	 Yes 1) Reduce the load. 2) Increase the setting value for P01.12–P01.19 (accel./decel. time) 3) Adjust the settings for P01.01–P01.08 (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). Refer to the V/F curve selection of P01.43. 4) Replace the drive with a larger capacity model. 5) If the oL only occurs during low-speed operations: a) Reduce the load during low-speed operation. b) Increase the drive capacity. c) Decrease the carrier frequency of P00.17. 6) Adjust P07.26 Torque Compensation Gain until the output current reduces and the motor does not stall. 7) Verify stall prevention is set to the proper value. 8) Check the status of three-phase motor and verify the cable is not broken or screws are loose. 9) Verify the parameter settings for speed tracking. a) Start the speed tracking function. b) Adjust the maximum current for P07.09 speed tracking.

Fault Codes (continued)				
Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, o	and Corrective Action
			Action Level	Start counting when the output current > 150% of the motor 1 rated current P06.14 (If the output current is larger than 105% of the motor 1 rated
			Fault setting	P06.14)
			parameter	N/A
			Reset method	Manual reset
			Reset condition	Reset in five seconds after the fault is cleared
EoL I	22	Electronics thermal relay 1 protection (EoL1) Electronics thermal relay 1 protection. The drive coasts to stop once it activates.	Corrective Actions	 Reduce the load. Increase the setting value for P01.12–P01.19 (accel./decel. time) Adjust the settings for P01.01–P01.08 (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). Refer to the V/F curve selection of P01.43. If the EoL1 only occurs during low-speed operations: a) Replaced the drive with a dedicated VFD model. b) Increase the motor capacity. If using a VFD dedicated motor, verify P06.13=1: Standard motor (motor with fan on the shaft). Verify motor rated current and reset if needed. If using one drive to run multiple motors, set P06.13=2: Disable, and install thermal relay on each motor. Set stall prevention to the proper value. Adjust P07.26 torque compensation gain until the current reduces and the motor does not stall. Check the status of the fan, or replace the fan.
	23	Electronic thermal relay 2 protection (EoL2) Electronic thermal relay 2 protection. The drive coasts to stop once it activates.	Action Level Action Time Fault setting	Start counting when the output current > 150% of the motor 2 rated current P06.28 (If the output current is larger than 105% of the motor 2 rated current again within 60 sec., the counting time reduces and is less than P06.28) N/A
			Reset method	Manual reset
			Reset condition	Reset in five seconds after the fault is cleared
EoL 2			Corrective Actions (contin	 Yes 1) Reduce the load. 2) Increase the setting value for P01.12–P01.19 (accel./decel. time) 3) Adjust the settings for P01.35–P01.42 (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). Refer to the V/F curve selection of P01.43. 4) If the EoL2 only occurs during low-speed operations: a) Replaced the drive with a dedicated VFD model. b) Increase the motor capacity. 5) If using a VFD dedicated motor, verify P06.27=1: Standard motor (motor with fan on the shaft). 6) Verify motor rated current and reset if needed. 7) Verify motor rated frequency and reset if needed. 8) If using one drive to run multiple motors, set P06.27=2: Disable, and install thermal relay on each motor. 9) Set stall prevention to the proper value. 10) Adjust P07.71 torque compensation gain until the current reduces and the motor does not stall. 11) Check the status of the fan, or replace the fan. 12) Replace the motor.

Fault Codes (continued)					
Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, o	and Corrective Action	
			Action Level	PTC input value > P06.30 setting (Default = 50%)	
			Action Time	Immediately act	
				P06.29 setting is:	
			Facult anticas	0: Warn and continue operation	
			Fault setting	1: Fault and ramp to stop	
			parameter	2: Fault and coast to stop	
				3: No warning	
				When P06.29=0, oH3 is a "Warning". The "Warning" is automatically	
			Reset method	cleared.	
				When P06.29=1 or 2, oH3 is a "Fault". You must reset manually.	
			Reset condition	Immediately reset	
			Record	When P06.29=1 or 2, oH3 is a "Fault", and the fault is recorded.	
				1) Check if motor is locked and remove the motor shaft lock.	
				2) Verify load and decrease the loading or replace motor with a higher	
	24_1	Motor overheating		capacity model if load is too high.	
		(oH3) PTC Motor overheating		3) Verify ambient temperature and change the installation location if	
				there are heating devices in the surroundings, or install/add cooling	
				fan or air conditioner to lower the ambient temperature.	
6Ho		(PTC) (P03.00–P03.01=6		4) Check the cooling system and ensure it's working normally.	
		PTC), when PTC		5) Verify the motor fan is working and replace the fan if needed.	
		input > P06.30, the		6) Verify duration of low speed operation.	
		fault treatment acts according to P06.29.	Corrective	a) Decrease low-speed operation time.	
				b) Change to dedicated motor for the drive.	
				c) Increase the motor capacity.	
				7) Verify accel/decel time and increase setting values for P01.12–P01.19	
			/ ctions	(accel./ decel. time) if working cycle is too short.	
				8) Verify V/F voltage and adjust settings for P01.01–P01.08 (V/F curve),	
				especially the setting value for the mid-point voltage (if the mid-point	
				voltage is set too small, the load capacity decreases at low-speed).	
				9) Verify the motor rated current matches the motor nameplate and	
				configure the correct rated current value of the motor if needed.	
				10) Check the connection between PTC thermistor and the heat	
				protection.	
				11) Verity stall prevention is set correctly and adjust the value if needed.	
				12) Check for unbalanced three-phase motor impedance. Replace the	
				motor if needed.	
				13) Verify harmonics and reduce harmonics if too high.	
	(continued next page)				

Fault Codes (continued)				
Display on GS10 Kevpad	ID No.	Fault Name and Description	Action, Reset, c	and Corrective Action
			Action Level Action Time Fault setting parameter	PT100 RTD input value > P06.57 setting (default = 7V) Immediately act P06.29 setting is: 0: Warn and continue operation 1: Fault and ramp to stop 2: Fault and coast to stop
			Reset method	3: No warning When P06.29=0 and the temperature < P06.56, oH3 is automatically cleared. When P06.29=1 or 2, oH3 is a "Fault". You must reset manually.
			Reset Condition	When D06 20-1 or 2, old2 is a "Fault" and the fault is recorded
οΗЭ	24_2	Motor overheating (oH3) PT100 RTD Motor overheating (PT100) (P03.00– P03.01=11 PT100). When PT100 input > P06.57 (default = 7V), the fault treatment acts according to P06.29.	Record Corrective Actions	 When P06.29=1 or 2, oH3 is a "Fault", and the fault is recorded. Check if motor is locked and remove the motor shaft lock. Verify load and decrease the loading or replace motor with a higher capacity model if load is too high. Verify ambient temperature and change the installation location if there are heating devices in the surroundings, or install/add cooling fan or air conditioner to lower the ambient temperature. Check the cooling system and ensure it's working normally. Verify the motor fan is working and replace the fan if needed. Verify duration of low speed operation. a) Decrease low-speed operation time. b) Change to dedicated motor for the drive. c) Increase the motor capacity. Verify V/F voltage and adjust settings for P01.01–P01.08 (V/F curve), especially the setting value for the mid-point voltage is set too small, the load capacity decreases at low-speed). Verify the motor rated current matches the motor nameplate and configure the correct rated current value of the motor if needed. Check the connection of PT100 RTD. Verify stall prevention is set correctly and adjust the value if needed. Check for unbalanced three-phase motor impedance. Replace the motor if needed. Yerify harmonics and reduce harmonics if too high.
ot 1	26	Over torque 1 (ot1) When the output current exceeds the over-torque detection level (P06.07) and exceeds over-torque detection time (P06.08), and when P06.06 or P06.09 is set to 2 or 4	Action Level Action Time Fault setting parameter Reset method Reset condition Record	P06.07 P06.08 P06.06 setting is: 0: No function 1: Continue operation after over-torque detection during constant speed operation 2: Stop after over-torque detection during constant speed operation 3: Continue operation after over-torque detection during RUN 4: Stop after over-torque detection during RUN When P06.06=1 or 3, ot1 is a "Warning". The warning is automatically cleared when the output current < (Pr.06-07 – 5%)
		the ot1 error displays.	Corrective Actions (contin	 value for the mid-point voltage (if the mid-point voltage is set too low, the load capacity decreases at low speed). 6) If error occurs during low-speed operation: a) Decrease low-speed operation time. b) Increase the motor capacity. 7) Adjust P07.26 torque compensation gain until the current reduces and the motor does not stall. 8) Very speed tracking settings and correct the parameter settings as needed. a) Start the speed tracking function. b) Adjust the maximum current for P07.09 speed tracking.

	Fault Codes (continued)			
Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, a	and Corrective Action
			Action Level	P06.10
			Action Time Fault setting parameter	P06.11 P06.09 setting is: 0: No function 1: Continue operation after over-torque detection during constant speed operation 2: Stop after over-torque detection during constant speed operation 3: Continue operation after over-torque detection during RUN 4: Stop after over-torque detection during RUN
		Over torque 2 (ot2)	Reset method	When P06.09=1 or 3, ot2 is a "Warning". The warning is automatically cleared when the output current < (P06.10 – 5%). When P06.09=2 or 4, ot2 is a "Fault". You must reset manually.
		current exceeds the	Reset condition	Immediately reset
		over torque detection	Record	When P06.09=2 or 4, ot2 is a "Fault", and the fault is recorded.
o£2 27	27	over-torque detection level (P06.10) and exceeds over-torque detection time (P06.11), and when P06.09 is set to 2 or 4, the ot2 error displays.	Corrective Actions	 Verify the settings for P06.10 and P06.11. Check for mechanical failure and remove any causes of malfunction. Reduce the load or replace the motor with a higher capacity model. Increase the setting values for P01.12–P01.19 (accel./decel. time) Adjust the V/F curve (Motor 1, P01.35–P01.42), 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). If error occurs during low-speed operation: a) Decrease low-speed operation time. b) Increase the motor capacity. Adjust P07.71 torque compensation gain until the current reduces and the motor does not stall. Very speed tracking settings and correct the parameter settings as needed. a) Start the speed tracking function. b) Adjust the maximum current for P07.09 speed tracking.
		Under current (uC) Low current detection	Action Level	P06.71
			Action Time Fault setting parameter	P06.72 P06.73 setting is: 0: No function 1: Fault and coast to stop 2: Fault and ramp to stop by the 2nd deceleration time 3: Warn and continue operation
IJΕ	28		Reset method	When P06.73=3, uC is a "Warning". The warning is automatically cleared when the output current > (P06.71+0.1A). When P06.73=1 or 2, uC is a "Fault". You must reset manually.
			Reset condition	Immediately reset
			Corrective Actions	 When PU6.71=1 or 2, uC is a "Fault", and the fault is recorded. Confirm the motor cable is connected properly. Verify settings of P06.71, P06.72, and P06.73 and set to correct values if needed. Check if the load is too low and whether the motor capacity matches the load.
- 62			Action Level	Firmware internal detection
	31	EEPROM read error (cF2)	Action Time Fault setting parameter Reset method Reset condition	cF2 acts immediately when the drive detects the fault N/A Manual reset Immediately reset
	.	Internal FFPROM	Record	Yes
		cannot be read	Corrective Actions	 Press "RESET" key or reset the parameter to the default setting. If cF2 still occurs, contact AutomationDirect Technical Support. Cycle the power, if cF2 error still occurs, contact AutomationDirect Technical Support.
(continued next page)				

Display ID No. Four Name and Description Action, Reset, and Corrective Action c d i 33 Lphase error (cd) Fault Name and Description Action, Reset, and Corrective Action c d i 33 Lphase error (cd) Fault Name and Description Fault Name and Description c d i 33 Lphase current detection error when power is ON Power-off c d i Y-phase error (cd) Fault Name and Description C dia ts timediately when the drive detects the fault c d i Y-phase error (cd) Fault Name and Description C dia ts timediately when the drive detects the fault c d i Y-phase error (cd) Fault Name and Description C dia ts timediately when the drive detects the fault c d i Y-phase error (cd) Fault Name detection C dia ts timediately when the drive detects the fault c d i Y-phase error (cd) Fault Name detection C dia ts timediately when the drive detects the fault c d i Y-phase error (cd) Fault Name detection C dia ts timediately when the drive detects the fault c d i Y-phase error (cd) Fault Na Reset condition NA c c hardware error when pow	Fault Codes (continued)					
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Height of the second rescond	~ 서 \	33	U-phase current	Reset method	Power-off	
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b) Set P01.00 larger than the motor rated frequency. 3) Check the motor wiring. 4) Check for motor shaft lock and remove cause of lock if needed. 5) Check for electromagnetic contactor at output (U/V/W) and make sure the electromagnetic valve is OFF. 6) Verify load. If too heavy: a) Reduce the load. b) Replace the motor with a larger capacity model	AUE	40	Motor auto turing		a) Set the correct parameters P01.01–P01.02.	
 3) Check the motor wiring. 4) Check for motor shaft lock and remove cause of lock if needed. 5) Check for electromagnetic contactor at output (U/V/W) and make sure the electromagnetic valve is OFF. 6) Verify load. If too heavy: a) Reduce the load. b) Replace the motor with a larger capacity model 			error		b) Set P01.00 larger than the motor rated frequency.	
 Corrective (4) Check for motor shaft lock and remove cause of lock if needed. Actions (5) Check for electromagnetic contactor at output (U/V/W) and make sure the electromagnetic valve is OFF. (6) Verify load. If too heavy: a) Reduce the load. b) Replace the motor with a larger capacity model 				c i	3) Check the motor wiring.	
 Actions Check for electromagnetic contactor at output (0/v/w) and make sure the electromagnetic valve is OFF. Verify load. If too heavy: a) Reduce the load. b) Replace the motor with a larger capacity model 				Corrective	 4) Check for motor shaft lock and remove cause of lock if needed. 5) Check for electromagnetic contactor at output (110/000 and make) 	
6) Verify load. If too heavy: a) Reduce the load. b) Replace the motor with a larger capacity model				Actions	sure the electromagnetic value is OFF	
a) Reduce the load. b) Replace the motor with a larger capacity model					6) Verify load. If too heavy:	
b) Replace the motor with a larger capacity model					a) Reduce the load.	
b) Replace the motor with a larger capacity model.					b) Replace the motor with a larger capacity model.	
7) Check if accel/decel time is too short, then increase the setting values					7) Check if accel/decel time is too short, then increase the setting values	
for PU1.12–PU1.19 (accel./decel. time) if needed.				loontin	Tor PUI.12–PUI.19 (accel./decel. time) if needed.	

Fault Codes (continued)					
Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, d	and Corrective Action	
			Action Level	When the analog input < 4 mA (only detects 4–20 mA analog input)	
			Action Time	P08.08	
				PU8.09 Setting IS: 0: Warn and continue operation	
			Fault setting parameter	1: Fault and ramp to stop	
				2: Fault and coast to stop	
		PID loss AI-C (AFF)		3: Warn and operate at last frequency	
			Deset method	When P08.09=3 or 4, AFE is a "Warning". When the feedback signal is > 4	
AFF	41	PID feedback loss	Reset method	When P08.09=1 or 2, AFE is a "Fault". You must reset manually.	
		(analog feedback signal	Reset condition	Immediately reset	
		PID function is enabled)	Record	When P08.09=1 or 2, AFE is a "Fault", and the fault is recorded; when	
		,		1) Check the PID feedback cable and tighten the terminal Replace the	
				cable with a new one if needed.	
			Corrective	2) Check for feedback device failure and replace the device with a new	
			Actions	One.	
				Technical Support.	
			Action Level	When the analog input is < 4 mA (only detects 4–20 mA analog input)	
			Action Time	Immediately act	
				PU3.19 setting is: 0: Disable	
			Fault setting	1: Continue operation at the last frequency	
			parameter	(warning, ANL is displayed on the keypad)	
		AI-C loss (ACE) Analog input loss (including all the 4–20 mA analog signal)		2: Decelerate to stop (warning, ANL is displayed on the keypad)	
				3: stop immediately and display ACE When P03 19=1 or 2. ACE is a "Warning" When analog input signal is > 4	
AEE	48		Reset method	mA, the warning is automatically cleared.	
			D. I'll	When P03.19=3, ACE is a "Fault". You must reset manually.	
			Reset condition	When PO3 19=3 ACE is a "Fault" and the fault is recorded	
				1) Check the Al2 feedback cable and tighten the terminal. Replace the	
			Corrective	cable with a new one if needed.	
				2) Check for external device failure and replace the device with a new	
			Actions	3) Check all the wiring. If ACE fault still exists, contact AutomationDirect	
				Technical Support.	
		External fault (EF) External fault. When the drive decelerates based on the setting of P07.20, the EF fault	Action Level	DIx=10: External fault (EF) and the DI terminal is ON	
			Action nine	P07.20 setting is:	
	49		Fault setting	0: Coast to stop	
				1: Stop by the 1st deceleration time	
				2: Stop by the 2nd deceleration time	
			parameter	4: Stop by the 4th deceleration time	
				5: System deceleration	
			Deset method	6: Automatic deceleration (P01.46)	
		displays on the keypad.	Reset method	Manual reset Manual reset only after the external fault is cleared (terminal status is	
			Reset condition	recovered)	
			Record	Yes	
			Corrective	Press RESET key after the fault is cleared.	
		Emorgoney stop (EE1)	Action Level	DIx=28: Emergency Stop (EF1) and the DI terminal is ON	
EF I		Emergency stop (EFT)	Action Time	Immediately act	
		When the contact	Fault setting	N/A	
	50	of DIx=EF1 is ON,	Reset method	Manual reset	
	50	the output stops	Reset condition	Manual reset only after the external fault is cleared (terminal status is	
		displays EF1 on the	Pacard	recovered)	
		keypad. The motor is in	Corrective	Verify if the system is back to normal condition, and then press "RESET"	
		free running.	Actions	key to go back to the default.	
(continued next page)					

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	Fault Codes (continued)								
Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, and Corrective Action						
		External base block (bb)	Action Level	DIx=11: Base Block (BB) and the DI terminal is ON					
			Action Time	Immediately act					
		When the contact of DIx=bb is ON,	Fault setting parameter	N/A					
66	51	the output stops	Reset method	The display "bb" is automatically cleared after the fault is cleared.					
		immediately and	Reset condition	N/A					
		displays bb on the	Record	No					
		keypad. The motor is in	Corrective	Verify if the system is back to normal condition, and then press "RESET"					
		free running.	Actions	key to go back to the default.					
			Action Level	Entering the wrong password three consecutive times					
			Action Time	Immediately act					
			Fault setting	Ν/Δ					
			parameter						
		Password is locked	Reset method	Manual reset					
		(Pcod)	Reset condition	Power-off					
			Record	Yes					
Pcod	52	Entering the wrong password three		 Input the correct password after rebooting the motor drive. If you forget the password, do the following steps: 					
		consecutive times		a) Step 1: Input 9999 and press ENTER.					
		through P00.07	Corrective	b) Step 2: Repeat step 1. Input 9999 and press ENTER.					
			Actions	(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.)					
				3) The parameter settings return to the default when the "Input 9999"					
			A	process is finished.					
			Action Level	When the function code is not 03, 06, 10, or 63.					
			Fault setting						
			narameter	N/A					
			Reset method	Manual reset					
			Reset condition	Immediately reset					
		Illegal command (CE1)	Record	No					
CE I	54			1) Check if the communication command is correct.					
		Communication command is illegal		 Verify the wiring and grounding of the communication circuit. It is recommended to separate the communication circuit from the 					
			Corrective	main circuit or wire in 90 degree for effective anti-interference					
			Actions	nerformance					
			/ ctions	3) Check if the setting for P09 04 is the same as the setting for the upper					
				unit					
				4) Check the cable and replace it if necessary					
			Action Level	When the data address is correct.					
			Action Time	Immediately act					
			Fault setting						
CE2			parameter	N/A					
			Reset method	Manual reset					
		Illegal data address	Reset condition	Immediately reset					
		(CE2)	Record	No					
	55			1) Check if the communication command from the upper limit is correct.					
		Data address is illegal		2) Verify the wiring and grounding of the communication circuit.					
			Corrective	Separate the communication circuit from the main circuit, or wire in					
			Actions	90 degree for effective anti-interference performance.					
			Actions	3) Check if the setting for P09.04 is the same as the setting for the upper					
				unit.					
				4) Check the cable and replace it if necessary.					
			(contir	(continued next page)					

Fault Codes (continued)						
Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, o	and Corrective Action		
			Action Level	When the data length is too long		
			Action Time	Immediately act		
			Fault setting	N/A		
			parameter			
			Reset method	Manual reset		
		Illegal data value (CE3)	Record	No		
LE3	56			1) Check if the communication command from the upper limit is correct.		
		Data value is illegal		2) Verify the wiring and grounding of the communication circuit.		
			Corrective	Separate the communication circuit from the main circuit, or wire in		
			Actions	90 degree for effective anti-interference performance.		
				3) Check if the setting for P09.04 is the same as the setting for the upper		
				4) Check the cable and replace it if necessary		
			Action Level	When the data is written to read-only address.		
			Action Time	Immediately act		
			Fault setting	Ν/Δ		
			parameter			
		Data is written to read-	Reset method	Manual reset		
		only address (CE4)	Record	No		
LE4	57			1) Check if the communication command from the upper limit is correct.		
		Data is written to read-		2) Verify the wiring and grounding of the communication circuit.		
		only address	Corrective	Separate the communication circuit from the main circuit, or wire in		
			Actions	90 degree for effective anti-interference performance.		
				3) Check if the setting for P09.04 is the same as the setting for the upper		
				4) Check the cable and replace it if necessary		
				When the communication time exceeds the detection time for P09.03		
			Action Level	communication time-out.		
			Action Time	P09.03		
		Modbus transmission time-out (CE10)	Fault setting parameter	P09.02		
				0. Warn and continue operation 1: Fault and ramp to stop		
				2. Fault and coast to stop		
				3: No warning, no fault, and continue operation		
			Reset method	Manual reset		
LEIU	58		Reset condition	Immediately reset		
		Modbus transmission time-out occurs	Record	Yes 1) Charly if the upper unit transmits the communication command within		
			Corrective Actions	the setting time for PO9.03		
				 Verify the wiring and grounding of the communication circuit. 		
				Separate the communication circuit from the main circuit, or wire in		
				90 degree for effective anti-interference performance.		
				3) Check if the setting for P09.04 is the same as the setting for the upper		
				Unit.		
				POT 29		
		Over slip error (oSL)	Action Level	100% of P07.29 = the maximum limit of the slip frequency (P10.29)		
			Action Time	P07.30		
		On the basis of the		P07.31 setting is:		
		maximum slip limit set via P10.29, the speed	Fault setting	0: Warn and continue operation		
			parameter	1: Fault and ramp to stop		
		deviation is abnormal.		2. rauit and coast to stop 3. No warning		
		When the motor drive		P07.31=0 is a warning. When the motor drive outputs at constant speed.		
ן סאנ	63	outputs at constant	Docot mostly	and F>H or F <h anymore,="" does="" exceed="" level="" not="" osl<="" p07.29="" set="" td="" the="" via=""></h>		
		exceeds the level set via	Reset method	warning will be cleared automatically.		
		P07.29, and it exceeds		When P07.31=1 or 2, oSL is an error, and it needs to reset manually.		
		the time set via P07.30,	Reset condition	Immediately reset		
		oSL shows. oSL occurs	Record	1) Verify the group 5 motor parameters		
		in induction motors	Corrective	2) Decrease the load		
		only.	Actions	3) Check the setting of oSL protection function related parameters		
				P07.29, P07.30, and P10.29		
	(continued next page)					

	Fault Codes (continued)					
Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, c	and Corrective Action		
			Action Level	Hardware detection		
		STO	Action Time	Immediately act		
			Fault setting	N/A		
		GS10 does not have	parameter			
Sto	76	STO function. Fault occurs due to	Reset method	Auto: When P06.44=1 and after STO error is cleared, it automatically resets. Manual: When P06.44=0 and after STO error is cleared, reset it manually		
		missing jumper on the	Reset condition	Reset only after STO error is cleared		
		bypass pins or internal	Record	Yes		
		drive problem	Corrective	1) Check if bypass pin jumper is correctly installed.		
			Actions	2) If STO fault still exists after cycling the power, please contact ADC"		
			Action Level	300% of the rated current		
			Action Time	Immediately act		
			Fault setting	Ν/Δ		
			parameter			
			Reset method	Manual reset		
			Reset condition	Reset in five seconds after the fault clears		
			Record	Yes 1) Check if the motor's internal wiving and the UVAN wiving of the drive		
		U-phase over-current before run (Aoc)		 Check if the motor's internal wiring and the UVW wiring of the drive output terminal are correct. Check the motor cable and remove causes of any short circuits, or replace the cable before turning on the power 		
				3) Check the motor insulation value with megger. Replace the motor if		
Boc	79	U-phase short circuit		the insulation is poor.		
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		detected when the output wiring detection is performed before the drive runs.	Corrective Actions	4) Verify the wiring of the control circuit and the wiring/grounding of		
				the main circuit to prevent interference.		
				5) Check the length of the motor cable. If it's too long:		
				a) Increase the AC motor drive's capacity.		
				b) Install AC reactor(s) on the output side (U/V/W).		
				6) The Aoc may occur due to a short circuit or ground fault at the output side of the drive. Check for possible short circuits between terminals with an electric meter:		
				 a) B1 corresponds to U, V and W; DC- corresponds to U, V and W; corresponds to U, V and W. b) If short circuit occurs, contact AutomationDirect Technical 		
				Support.		
			Action Level	300% of the rated current		
			Action Time	Immediately act		
			Fault setting	NI/A		
			parameter	N/A		
			Reset method	Manual reset		
			Reset condition	Reset in five seconds after the fault clears		
			Record	Yes		
				1) Check if the motor's internal wiring and the UVW wiring of the drive		
		V-phase over-current		output terminal are correct.		
		before run (boc)		2) Check the motor cable and remove causes of any short circuits, or		
				replace the cable before turning on the power.		
,	00	V-phase short circuit		 Check the motor insulation value with megger. Replace the motor if the insulation is near. 		
000	80	detected when the		the insulation is poor.		
		output wiring detection		the main circuit to prevent interference		
		is performed before the	Corrective	5) Check the length of the motor cable. If it's too long:		
		drive runs.	Actions	a) Increase the AC motor drive's capacity		
			Actions	b) Install AC reactor(s) on the output side (11//////		
				 6) The Aoc may occur due to a short circuit or ground fault at the output side of the drive. Check for possible short circuits between terminals 		
				with an electric meter:		
				a) B1 corresponds to U, V and W; DC- corresponds to U, V and W:		
				corresponds to U, V and W.		
				b) If short circuit occurs, contact AutomationDirect Technical		
				Support.		
	(continued next page)					

Display no GS10 (Keypad) 10 No. Fault Name and Description Action, Reset, and Corrective Action Reprint Action Level 300% of the rated current Immediately act Action Time Immediately act Immediately act grammeter N/A Reset method Manual reset Reset method Reset method W-phase over-current before run (cc) Reset method W-phase short circuit detected when the output terming and the UWW wiring of the drive output terming and the DUW wiring of the drive output terming and the power. Corrective drive runs. Corrective Actions Corrective drive runs. Corrective Actions Action Level Po6.46 Dutput terming on the control circuit and the wing/grounding of the main circuit to greent interference. Corrective drive runs. Action Level Action Level Po6.47 Distal AC reactor(s) on the output sits too long: an increase the AC motor drive's capacity. Distal Level drive runs. Action Level Po6.46 Po6.48 Corrective drive runs. Action Time parameter Bit corresponds to U, V and W; DC- corresponds to U, V and W; corresponds to U, V and W; by if sh	Fault Codes (continued)						
PL I 81 Action Level 300% of the rated current W-phase over-current before run (coc) Manual reset Manual reset Resct ondition Reset ondition Reset ondition V-phase short circuit detected when the output terminal are correct. 1 Check if the motor sinternal wining and the UVW wining of the drive output terminal are correct. 2 Check the motor calues of any short circuits, or replace the cable before turning on the power. 3 Check the motor calues of any short circuits, or replace the cable before turning on the power. 3 Check the motor calues of any short circuits, or replace the cable before turning on the power. 3 Check the motor calues of any short circuits, or replace the cable before turning on the power. 3 Check the motor calues of any short circuits, or replace the cable before turning on the power. 3 Check the motor calues of any short circuits, or replace the cable before turning on the power. 3 Check the motor calues of any short circuits, or replace the cable before turning on the power. 3 Check the motor calues of any short circuits, or replace the cable before turning on the power. 3 Check the motor calues of any short circuits, or replace the cable before turning on the power. 3 Check the motor calues of any short circuits, or replace the cable before turning on the power. 3 Check the motor calues of any short circuits or replace the cable before turning on the power. 3 Check the motor calues of any short circuits powereminals. 3 C	Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, c	and Corrective Action		
PL 1 82 Output phase loss Up hase output phase before runs. Not warning Reset method Reset condition Reset in five seconds after the fault clears Record 10 81 W-phase over-current before run (coc) 11 Check if the motor internal wiring and the UVW wiring of the drive output terminal are correct. 10 W-phase short circuit dive runs. W-phase short circuit dive runs. 10 Check the motor cable and remove causes of any short circuits, or replace the cable before turing on the output side dive runs. 10 Corrective drive runs. Corrective Actions 10 Check the motor cable. If it's too long: a) 10 10 Install A Creactor(s) on the output side (U/V/W). 10 Install A Creactor(s) on the output side (U/V/W). 11 Fault and the drive Check for possible short circuits between terminals with an electric meter: a) 10 11 11 Reset (Del and the drive Check for possible short circuits between terminals with an electric meter: a) 10 11 12 P06.45 P06.46 P06.46 P06.45 Four sponds to U, V and W. 11 P06.45 P06.45 P06.45 Four sponds to stop 3. No warning 13 Reset condition parameter 11 Fault and ramp to stop 3. No warning 22 Fault and cost to stop 3. No warning 11 Fault and cost to stop 3. No warning 24 P0				Action Level Action Time Fault setting	300% of the rated current Immediately act N/A		
PIL I 82 W-phase over-current before run (coc) Record Yes 1) Check if the motor's internal wring and the UVW wring of the drive output terminal are correct. 1) Check if the motor sable and remove causes of any short circuits, or replace the cable before turning on the power. 3) M-phase short circuit detected when the output wring detection is performed before the drive runs. 2) Check the motor insulation value with megger. Replace the motor if the insulation is poor. 4) Verify the wring of the control circuit and the wiring/grounding of the main circuit to prevent interference. 3) Check the length of the motor cable. If it's too long: 4) 6) Increase the AC motor drive: capacity. b) Instal AC reactor(s) on the output side (U/VM). 6) 6) The Acc may occur due to a short circuit or ground fault at the output side of the drive. Check for possible short circuits between terminals with an electric meter: a) B1 corresponds to U, V and W; a) B1 corresponds to U, V and W; Decorresponds to U, V and W; Decorresponds to U, V and W; Decorresponds to U, V and W; b) If short circuit orground fault at the output side of the drive. Check for possible short circuit and the not activates, use that of P06.48 first. If DC braking function activates, use that of P06.48 first. If DC braking function activates, use that of P06.48 first. If DC braking function activates, use that of P06.48				parameter Reset method	Manual reset		
PCDC 81 W-phase over-current before run (coc) Percent for the construction of the construction of the construction of the power. 81 W-phase short circuit detected when the output terminal are correct. Check the motor cable and enone causes of any short circuits, or replace the cable before turning on the power. 81 W-phase short circuit detected when the output terminal are correct. Check the motor insulation value with megger. Replace the motor if the insulation is poor. 9 Verify the wiring of the control circuit and the wiring/grounding of the motor cable. If it's too long: a) Increase the AC motor drive's capacity. b) Install AC reactor(s) on the output side (U/V/W). The Acc may occur due to a short circuit between terminals with an electric meter: a) Increase the AC motor drive's capacity. b) Install AC reactor(s) on the output side (U/V/W). The Acc may occur due to a short circuit between terminals with an electric meter: a) In corresponds to U, V and W; DC- corresponds to U, V and W; b) If short circuit occurs, contact AutomationDirect Technical Support. Output phase loss U phase (oPL1) U phase (oPL1) U phase output phase loss log short is motor in the fault is recorded. Corrective Actions Reset method Manual reset Corrective Actions Corective Actions Corrective Actions <li< td=""><td></td><td></td><td></td><td>Reset condition</td><td>Reset in five seconds after the fault clears</td></li<>				Reset condition	Reset in five seconds after the fault clears		
B1 W-phase over-current before run (coc) 0 Check if the motor isnutane are correct. 2) Check the motor cable and renove causes of any short circuits, or replace the cable before turning on the power. B1 W-phase short circuit detected when the output wining detection is performed before the motor insulation value with megger. Replace the motor if the insulation is poor. 3) Check the motor cable and renove causes of any short circuits, or replace the cable before turning on the power. B1 W-phase short circuit detected when the output wining detection is performed before turns. Corrective Actions 6) Check the motor cable and the wiring/grounding of the main circuit to prevent interference. B1 Strength Corrective Actions Corresponds to U, V and W: Corresponds to U, V and W; Corresponds to U				Record	Yes		
OLL I 82 Output phase loss U phase (oPL1) Fault setting parameter P06.47 P06.48: Use the setting value of P06.48 first. If DC braking function activates, use that of P06.46. P00.41 Fault setting parameter P06.45 setting is: 0: Warn and continue operation 1: Fault and coast to stop 3: No warning Reset method Manual reset Reset condition Immediately reset U phase (oPL1) P06.45=1 or 2 is "Fault", and the fault is recorded. U phase output phase loss Corrective Actions Corrective Actions Corrective Actions Corrective Actions Corrective Actions Mate sure a single-phase motor is not being used with a three-phase drive Verify motor is wired correctly. Check the cable condition and replace the cable if necessary. Set the flat cable of the control board. Re-do the wiring and test again if the flat cable is loose. If the fault still exists, contact AutomationDirect Technical Support. Verify that the three-phase current is balanced with a current clamp metr. If it is balanced and the oPL1 fault still exists, contact AutomationDirect Technical Support. Make sure the capacity of the drive and motor match each other.	coc	81	W-phase over-current before run (coc) W-phase short circuit detected when the output wiring detection is performed before the drive runs.	Corrective Actions	 Check if the motor's internal wiring and the UVW wiring of the drive output terminal are correct. Check the motor cable and remove causes of any short circuits, or replace the cable before turning on the power. Check the motor insulation value with megger. Replace the motor if the insulation is poor. Verify the wiring of the control circuit and the wiring/grounding of the main circuit to prevent interference. Check the length of the motor cable. If it's too long: a) Increase the AC motor drive's capacity. b) Install AC reactor(s) on the output side (U/V/W). The Aoc may occur due to a short circuit or ground fault at the output side of the drive. Check for possible short circuits between terminals with an electric meter: a) B1 corresponds to U, V and W; DC- corresponds to U, V and W; corresponds to U, V and W. b) If short circuit occurs, contact AutomationDirect Technical Support. 		
OPL 1 82 Output phase loss U phase (oPL1) Fault setting parameter P06.45 setting is: 0: Warn and continue operation 1: Fault and ramp to stop 2: Fault and coast to stop 3: No warning Reset method Manual reset Output phase loss U phase (oPL1) Reset condition U phase output phase loss Record P06.45 = 1 or 2 is "Fault", and the fault is recorded. U phase output phase loss Corrective Actions 1) Check for unbalanced three-phase motor impedance. If unbalanced, replace the motor. 2) Verify motor is wired correctly. Check the cable condition and replace the cable if necessary. 3) 3) Ensure a single-phase motor is not being used with a three-phase drive 4) 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 exists, contact AutomationDirect Technical Support. 5) Verify that the three-phase current is balanced with a current clamp meter. If it is balanced and the oPL1 fault still exists, contact AutomationDirect Technical Support. 6) Make sure the capacity of the drive and motor match each other.			Output phase lass	Action Level Action Time	P06.47 P06.46 P06.48: Use the setting value of P06.48 first. If DC braking function activates use that of P06.46		
Output phase loss U phase (oPL1) Reset condition Immediately reset U phase (oPL1) Record P06.45=1 or 2 is "Fault", and the fault is recorded. U phase output phase V phase output phase No provide the motor. U phase output phase Verify motor is wired correctly. Check the cable condition and replace the motor. Verify motor is wired correctly. Check the cable condition and replace the cable if necessary. Secord Verify motor is wired correctly. Check the cable condition and replace the cable if necessary. Secord Corrective Actions Corrective Actions Corrective Actions Manual reset Secord Corrective Actions Manual reset Manual reset Manual reset Secord Verify motor is wired correctly. Check the cable condition and replace the cable if necessary. Secord Corrective Actions Actions Corrective Actions Secord Corrective Actions Manual reset Secord Secord Corrective Actions Manual reset Secord Mate secord Secord Secord Secord Secord Corrective Actions Mate s				Fault setting parameter	P06.45 setting is: 0: Warn and continue operation 1: Fault and ramp to stop 2: Fault and coast to stop 3: No warning		
OULDUT phase loss Neset conduitor Inimediately reset U phase (oPL1) Record P06.45=1 or 2 is "Fault", and the fault is recorded. U phase output phase U phase output phase 1) Check for unbalanced three-phase motor impedance. If unbalanced, replace the motor. U phase output phase Corrective 1) Check for unbalanced three-phase motor is not being used with a three-phase drive Output phase Corrective 2) Verify motor is wired correctly. Check the cable condition and replace the cable if necessary. Best control Corrective Actions 1) 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 exists, contact AutomationDirect Technical Support. Verify that the three-phase current is balanced with a current clamp meter. If it is balanced and the oPL1 fault still exists, contact AutomationDirect Technical Support. Make sure the capacity of the drive and motor match each other.				Reset method	Manual reset		
 Corrective Actions Corrective Actions Corrective Actions Corrective Corrective Actions Corrective Actions Correc			U phase (oPI 1)	Record	P06.45=1 or 2 is "Fault", and the fault is recorded.		
	oPL I	82	U phase (oPL1) 82 U phase output phase loss	Corrective Actions	 Check for unbalanced three-phase motor impedance. If unbalanced, replace the motor. Verify motor is wired correctly. Check the cable condition and replace the cable if necessary. Ensure a single-phase motor is not being used with a three-phase drive 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 exists, contact AutomationDirect Technical Support. Verify that the three-phase current is balanced with a current clamp meter. If it is balanced and the oPL1 fault still exists, contact AutomationDirect Technical Support. Make sure the capacity of the drive and motor match each other. 		

Fault Codes (continued)					
Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, and Corrective Action		
			Action Level	P06.47	
			Action Time	P06.46 P06.48: Use the setting value of P06.48 first. If DC braking function activates, use that of P06.46. P06.45 setting is:	
			Fault setting parameter	0: Warn and keep operation 1: Fault and ramp to stop 2: Fault and coast to stop 3: No warning	
			Reset method	Manual reset	
		Output phase loss	Reset condition	Immediately reset	
		V phase (oPL2)	Record	When P06.45=1 or 2, oPL2 is a "Fault", and the fault is recorded.	
oPL2	83	V phase (OPL2) V phase output phase loss		 Check for unbalanced three-phase motor impedance. If unbalanced, replace the motor. Verify motor is wired correctly. Check the cable condition and replace the cable if necessary. Ensure a single-phase motor is not being used with a three-phase 	
			Corrective Actions	 drive 4) 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 exists, contact AutomationDirect Technical Support. 5) Verify that the three-phase current is balanced with a current clamp meter. If it is balanced and the oPL2 fault still exists, contact AutomationDirect Technical Support. 	
				6) Make sure the capacity of the drive and motor match each other.	
			Action Level	P06.47	
			Action Time	P06.46 P06.48: Use the setting value of P06.48 first. If DC braking function activates, use that of P06.46.	
			Fault setting parameter	P06.45 setting is: 0: Warn and continue operation 1: Fault and ramp to stop 2: Fault and coast to stop 3: No warning	
			Reset method	Manual reset	
		Output phase loss	Reset condition	Immediately reset	
oPL 3	84	W phase (oPL3) W phase output phase loss	Record	 When P06.45=1 or 2, oPL3 is a "Fault", and the fault is recorded. 1) Check for unbalanced three-phase motor impedance. If unbalanced, replace the motor. 2) Verify motor is wired correctly. Check the cable condition and replace the cable if necessary. 3) Ensure a single-phase motor is not being used with a three-phase drive. 	
			Corrective Actions	 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 exists, contact AutomationDirect Technical Support. Verify that the three-phase current is balanced with a current clamp meter. If it is balanced and the oPL3 fault still exists, contact AutomationDirect Technical Support. Make sure the capacity of the drive and motor match each other. 	
			Action Level	Software detection	
			Action Time	Immediately act	
			Fault setting	Ν/Δ	
			parameter		
		Low frequency overload	Reset method	Manual reset	
		protection (oL3)	Reset condition	Immediately reset	
oL3	87	87 Low frequency and high current protection	Record	Yes 1) Enhance the heat dissipation capacity for the cabinet. 2) Lower the carrier frequency (P00.17).	
			Corrective Actions	 Decrease the voltage settings that correspond to frequency below 15 Hz in the V/F curve. Set P00.11=0 (V/F, general control mode). 	
				5) Replace the drive with a higher power model.	
	(continued next page)				

Fault Codes (continued)					
Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, o	and Corrective Action	
			Action Level	Software detection	
		Auto-tune error 1	Action Time	Immediately act	
		(AuF1)	Fault setting	N/A	
		(/(021))	parameter		
AUE I	142	No feedback current	Reset method	Manual reset	
		error when the	Reset condition	Immediately reset	
		motor parameter	Record	Yes	
		automatically detects	Corrective	1) Verity the motor is wired correctly.	
		,	Actions	2) If a contactor is used as an open state on the output side of the drive	
			Action Loval	(U/V/W), check if the contactor coil is closed.	
			Action Time	Jonwale detection	
			Fault setting		
		Auto-tune error 2	narameter	N/A	
		(AuE2)	Reset method	Manual reset	
			Reset condition	Immediately reset	
HUEC	143	Motor phase loss	Record	Yes	
		error when the motor parameter automatically detects	Corrective Actions	 Verify that the motor is wired correctly and no wires are broken. Confirm that the motor works normally outside of auto-tuning. If an electromagnetic contactor is used as an open state on the output side of the drive (U/V/W), verify that the three phases of the electromagnetic valve are all closed. 	
			Action Level	Software detection	
		Total resistance	Action Time	Immediately act	
		measurement fault	Fault setting	N/A	
ouce		(AuE5)	parameter		
HUES	149	(******	Reset method	Manual reset	
		Fault on measuring	Reset condition	Immediately reset	
		total resistance.	Record	Yes	
			Actions	Check if the motor works normally.	
			Action Level	Software detection	
			Action Time	Immediately act	
		No-load current IO	Fault setting		
		measurement fault	parameter	N/A	
ALIER	150	(AUE6)	Reset method	Manual reset	
			Reset condition	Immediately reset	
		Fault on measuring no-	Record	Yes	
		load current IO.	Corrective	Chack if the motor works permally	
			Actions		
			Action Level	Software detection	
	454	dq axis inductance measurement fault (AUE7)	Action Time	Immediately act	
			Fault setting	N/A	
0,000			parameter		
HUEI	151		Reset method	Manual reset	
		Fault on measuring dq axis inductance	Reset condition	Immediately reset	
			Corrective	res	
			Actions	Check if the motor works normally.	
			Action Level	Software detection	
		High frequency	Action Time	Immediately act	
		injection measurement	Fault setting	N/A	
		fault (AUE8)	parameter		
AUEB	152		Reset method	Manual reset	
		Fault on measuring	Reset condition	Immediately reset	
		high frequency	Record	Yes	
		injection	Corrective	Check if the motor works normally.	
			ACTIONS	und novt nago)	
(continued next page)					

Fault Codes (continued)					
Display on GS10 Keypad	ID No.	Fault Name and Description	Action, Reset, and Corrective Action		
			Action Level	Feedback value < target value × (1 - P08.13)	
			Action Time	P08.14	
		Pump PID feedback	Fault setting parameter	P08.62	
		error (dEv)	Reset method	Self-recovery or manual reset.	
l dEu	157			Set as Warning: Feedback value ≥ target value (1 - P08.13) automatic	
		Pump PID feedback	Reset condition	recovery.	
		error		Set as Fault: Immediately reset	
			Record	Yes	
			Corrective	1) Check P08.14 time extension for unreasonable parameter settings.	
			Actions	2) Check if the motor works normally.	
			Action Level	Hardware detection	
	159		Action Time	Hd7 acts immediately when the drive detects the fault	
		Cata driver error (Ud7)	Fault setting	N1/A	
		Gate driver error (Hd7)	parameter	N/A	
Hdl		Hardware error when power is ON Reset	Reset method	Power-off	
			Reset condition	N/A	
			Record	Yes	
				Corrective	Cycle the power, if Hd7 error still occurs, contact AutomationDirect
			Actions	Technical Support.	

TYPICAL AC DRIVE PROBLEMS AND SOLUTIONS

NOTE: Drive photos in this section are not GS10 drives, just typical representative AC drives.

GREASE AND DIRT PROBLEMS

In those industries where grease and dirt are common. Please be aware of the possible damage that grease, oil, and dirt, may cause to your GS10 drive:

- 1) Electronic components that silt up with greasy oil may cause the drive to burn out or even explode.
- 2) Most greasy dirt contains corrosive substances that may damage the drive.

Solution:

Install the GS10 drive in a suitable enclosure to protect it from grease and dirt. Clean and remove grease and dirt regularly to prevent damage of the drive.





FIBER DUST PROBLEM

Problems related to fiber dust are typical in the textile industry. Please be aware of the possible damage that fiber dust may cause to your GS10 drive:

- 1) Fiber dust that accumulates or adheres to the fans will result in poor ventilation and cause overheating problems.
- 2) Textile plant environments with high humidity levels may experience GS10 drive failure or damage as a result of wet fiber dust adhering to components within the drive.

Solution:

Install the GS10 drive in a suitable enclosure to protect it from fiber dust. Clean and remove fiber dust regularly to prevent damage to the drive.







CORROSION PROBLEM

Corrosion problems may occur if any fluids or liquid in vapor form flows into the GS10 drive. Please be aware of the damage that corrosion may cause to your drive.

• Corrosion of internal components may cause the GS10 drive to malfunction and possibly explode.

Solution:

Install the GS10 drive in a suitable enclosure to protect it from fluids. Clean the drive regularly to prevent corrosion.







INDUSTRIAL DUST PROBLEM

Serious industrial dust pollution frequently occurs in stone processing plants, flour mills, cement plants, and so on. Please be particularly aware of any metal dust, filings or if metalized vapor is present as these may cause damage to your drives:

- 1) Dust accumulating on electronic components may cause overheating problems and shorten the service life of the drive.
- 2) Conductive dust may damage the circuit board and may cause the drive to explode.

Solution:

Install the GS10 drive in a suitable enclosure and protect it from dust. Clean the cabinet and ventilation filter regularly for good ventilation.





WIRING AND INSTALLATION PROBLEM

When wiring the GS10 drive, the most common problems are connection to the wrong terminal or poor wiring practice. Please be aware of the possible damage that poor wiring practice may cause to your GS10 drive:

- 1) Screw terminals where the wire is not fully inserted or the terminal screw is not adequately tightened may result in sparking or high temperature due to a high resistance connection.
- 2) If circuit boards in the GS10 drive have been modified, components on the affected boards may have been damaged.

Solution:

Inspect all power and control terminal connections in the GS10 drive to ensure adequate wire insertion. Do not attempt to disassemble or repair control boards in the GS10 drive.







DIGITAL INPUT/OUTPUT TERMINAL PROBLEMS

Problems with digital I/O are usually the result of improper termination, or failure to segregate control wiring from power wiring. This may result in errant signals due to induced voltage, capacitive coupling or electrical noise. Incorrect voltage levels applied to the digital I/O terminals can damage the I/O circuitry of the drive.

• Input/Output circuit may burn out when the terminal usage exceeds its limit.

Solution:

Refer to the user manual for multi-function input output terminals usage and follow the specified voltage and current. DO NOT exceed the specification limits.







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