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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 GS30 drive in its optimal condition, and to ensure a long life. We recommend that a qualified technician perform a regular inspection of the GS30 drive. Some items should be checked once a month, and some items should be checked yearly.



NOTE: 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 is 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 GS30 drive and make sure the voltage is within the operating range.

ANNUAL INSPECTION

Check the following items once annually.

- 1) Check the torque of the GS30 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 GS30 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

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

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 with standard specification	0		

Digital Keypad Display

		Mainte	Maintenance Period		
Check Items	Methods and Criteria	Daily	Half Year	One Year	
Is the display clear for reading	Visual inspection	0			
Any missing characters	Visual inspection	0			

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		\circ	
If there is any dust or dirt	Visual inspection			



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	\circ		
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		0	
If there is any dust or dirt	Visual inspection		\circ	

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		0		
If the wiring insulation is damaged or there has been a color change	Visual inspection		0		
If there is any damage	Visual inspection	0			

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 with standard specification	0			



<u>Recommended Inspection Schedules (continued)</u>

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 with 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	0			
If the contact works correctly	Visual inspection	0			

Printed circuit board and connector of main circuit

		Maintenance 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		\circ	
If there is any peculiar smell and/or color change	Visual and smell inspection		0	
If there is any crack, damage, deformation or corrosion	Visual inspection		0	
If there is any liquid leakage or deformation in capacity	Visual inspection		0	



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		0		
If there is any loose screw	Tighten the screw		\bigcirc		
If there is any color change due to overheating	Change the fan		0		

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		0		

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



TROUBLESHOOTING

WARNING CODES

The GS30 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.



Display on GS30				Warning Codes									
Keypad	ID No.	Warning Name and Description	Action and Res		Corrective Action								
n/a	0	No error	n/a	n/a	n/a								
			Action Level	When the function code is 03, 06, 10, and 63	Check if the communication command is correct								
			Action Time	Immediately act	2) Verify the wiring and grounding of								
		Communication error	Warning setting parameter	N/A	the communication circuit. Separate the communication circuit from the								
CE I	1	1 (CE1)		"Warning" occurs when P09.02=0 and the motor drive	main circuit, or wire in 90 degree for effective anti-interference								
		RS-485 Modbus illegal	Reset method	keeps running. The drive resets	performance.								
		function code.		automatically when receiving	3) Check if the setting for P09.04 is the								
				the correct function code.	same as the setting for the upper								
			Reset condition	Immediately reset	unit. 4) Check the cable and replace it if								
			Record	N/A	necessary.								
		Communication error 2 (CE2) RS-485 Modbus illegal data address	Action Level When the input data addre		Check if the communication command is correct.								
			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								
CE2	2		, ,	P09.02=0 and the motor drive	main circuit, or wire in 90 degree for effective anti-interference								
			Reset method	keeps running. The drive resets automatically when receiving the correct data address.	performance. 3) Check if the setting for P09.04 is the same as the setting for the upper								
			Reset condition	Immediately reset	unit. 4) Check the cable and replace it if								
			Record	N/A	necessary.								
			Action Level	When the length of communication data is too long	Check if the communication command is correct.								
			Action Time	Immediately act	2) Verify the wiring and grounding of								
			Warning setting	N/A	the communication circuit. Separate								
		Communication error	parameter	"Warning" occurs when	the communication circuit from the								
CE3	3	3 (CE3)		P09.02=0 and the motor drive	main circuit, or wire in 90 degree for effective anti-interference								
		RS-485 Modbus illegal data value	Reset method	keeps running. The drive resets automatically when receiving the correct communication data value.	The second secon								
			Reset condition	Immediately reset	unit. 4) Check the cable and replace it if								
			Record	N/A	necessary.								
				nued next page)									



	Warning Codes (continued)								
Display on GS30 Keypad	ID No.	Warning Name and Description	Action and Res	et	Corrective Action				
			Action Level	When the data is written to read-only address	Check if the communication command is correct				
			Action Time	Immediately act	2) Verify the wiring and grounding of				
		Communication error	Warning setting parameter	N/A	the communication circuit. Separate the communication circuit from the				
СЕЧ	4	4 (CE4) RS-485 Modbus data is written to read-only address	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.	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.				
			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 timeout	 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.	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				
			Reset condition	Immediately reset	unit.				
			Record	N/A	4) Check the cable and replace it if necessary.				
5E I	7	Save error 1 (SE1) Keypad 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,				
		Keypad copy time-out	Action Time	10 ms	or only occurs when copying certain				
			Warning setting parameter	N/A	parameters (the error displays on the upper right corner of the copy page).				
			Reset method	Manual reset (or cycle power)	If you cannot clear the error, please contact AutomationDirect Technical				
			Reset condition	Immediately reset	Support.				
		Save error 2 (SE2)	Record Action Level	N/A "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	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)				
5E2	8	Keypad COPY error 2:		old firmware version.	may occur, or the data cannot be saved to EEPROM. At this time, the warning				
		parameter writing error	Action Time	N/A	occurs.				
		parameter withing entit	Warning setting		Check the status of Data ROM and				
			parameter	N/A	remove the error causes first.				
			Reset method	Manual reset (or cycle power)	If you cannot clear the error, please				
			Reset condition	Immediately reset	contact AutomationDirect Technical				
			Record	N/A	Support.				
			(conti	nued next page)					



			vvarning	Codes (continued)			
Display on GS30 Keypad	ID No.	Warning Name and Description	Action and Res	et	Со	orrective Action	
			Action Level	P06.15	1)	Check the ambient temperature.	
		IGBT over-heating warning (oH1) The AC motor	Action Time	"oH1" warning occurs when IGBT temperature is higher than P06.15 setting value.	2)		
		drive detects IGBT overheating and	Warning setting parameter	N/A	4)	are heating objects, such as braking resistors, in the surroundings. Install/add cooling fan or air	
οHI	9	exceeds the protection level of oH1 warning. (When P06.15 is	Reset method	Auto-reset	5)	conditioner to lower the temperatur inside the cabinet. Check for and remove obstructions	
		higher than the IGBT overheating protection level, the drive shows oH1 error without displaying oH1 warning.)	Reset condition	The drive auto-resets when IGBT temperature is lower than oH1 warning level minus (–) 5°C	6) 7) 8) 9)	or replace the cooling fan. Increase ventilation space of the drive. Decrease loading. Decrease the carrier wave. Replace the drive with higher	
		3,	Record	N/A	1	capacity model.	
			Action Level Action Time	When the analog input is lower than 4 mA (only detects analog input 4–20 mA) P08.08			
		PID feedback error	Warning setting parameter	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	
PI d 11	11	(PID) 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. 	2) 3) 4)	tighten the terminals. Replace the cable. Replace the feedback device. If the PID error still occurs after checking all the wiring, contact AutomationDirect Technical Suppor	
			Reset condition	Immediately reset			
			Record	Records when P08.09=1 or 2 ("Error"). Does not record when P08.09=3 ("Warning").	=		



	Warning Codes (continued)								
Display on GS30 Keypad	ID No.	Warning Name and Description	Action and Res		Со	rrective Action			
			Action Level	When the analog input is lower than 4 mA (only detects analog input 4–20 mA)					
Anl	12	Al2 analog signal loss (AnL) Analog input current	Action Time Warning setting parameter	Immediately act 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"	2)	Check the AI2 wiring and tighten the terminals. Replace the cable. Replace the external device.			
, , , , ,	Analog input currer loss (including all analog 4–20 mA signals)	loss (including all analog 4–20 mA	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.			
			Reset condition Record	Immediately reset Does not record when P03.19=1 or 2 ("Warning").					
		Under current (uC) 13 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 3: Warn and continue operation		Check for a broken motor cable, ther			
ШΕ	13		Reset method	1) Auto: "Warning" occurs when P06.73=3. The "Warning" automatically clears when the output current is larger than (P06.71+0.1 A). 2) Manual: "Error" occurs when P06.73=1 or 2. You must reset manually.		exclude the connection issue of the motor and its load. Verify low current protection settings. If needed, set the proper settings for P06.71, P06.72 and P06.73. 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 Action Time	The encoder feedback speed > P10.10 P10.11	-	Verify setting of P10.25. Decrease value if needed. Verify bandwidth setting for ASR			
o5Pd	17	Over speed warning (oSPd)	Warning setting parameter	P10.12=0 0: Warn and continue operation "Warning" automatically clears	3)	speed control and increase the bandwidth setting if needed. Reset motor parameter and run			
_		Over speed warning	Reset method Reset condition	when the drive stops "Warning" automatically clears when the drive stops	4)	parameter tuning.) Verify the wiring of the control circuit, and the wiring/grounding			
			Record	N/A		of the main circuit to prevent interference.			
			(conti	nued next page)					

Warning Codes (continued)									
Display on GS30 Keypad	ID No.	Warning Name and Description	Action and Res	et		prrective Action			
dЯuE	18	Deviation Warning (dAvE) Over speed deviation warning	Action Level Action Time Warning setting parameter Reset method	P10.13 P10.14 P10.15 Encoder Stall and Slip Error Action =0 0: Warn and continue operation "Warning" automatically clears when the drive stops	2) 3) 4)	Verify parameter setting for slip error and reset value for P10.13 and P10.14 if needed. Reset ASR parameters and set prope accel./ decel. time. Verify motor status and remove any causes if the motor is locked. Check status of the mechanical brak and verify the action timing of the system if the brake is not released. Verify torque limit and adjust parameters P06.12 and			
			Reset condition	After the drive stops	6)	P11.17-P11.20 as needed. Verify the wiring of the control circuit, and the wiring/grounding of the main circuit to prevent interference.			
			Action Level Action Time	One of the phases outputs less than P06.47 P06.46	1)	Verify the wiring of the main circuit. Verify a single-phase power input is not being used on a three-phase model. Use the model with voltage			
		Phase loss (PHL) 19 Input phase loss warning	Warning setting parameter	P06.45 Output Phase Loss Detection Action (OPHL) =0 0: Warn and continue operation	3)	that matches the power. If the power of main circuit works well, check if the MC of the main circuit is broken. Cycle the			
PHL	19		Reset method	"Warning" automatically clears when the drive stops	4)	power after verifying the power is normal. If PHL still occurs, contact AutomationDirect Technical Support. Tighten the terminal screws with the			
		_	Reset condition	After the drive stops	5)	torque listed in the user manual. Verify the input cable is not broken. Make sure the wiring is correct. Replace the broken part of the cable			
			Record	N/A	6)	if needed. Verify the three-phase power is not unbalanced.			



Warning Codes (continued)									
Display on GS30 Keypad	ID No.	Warning Name and Description	Action and Reset		me and Action and Reset		Corrective Action		
ot 1	20	Over-torque 1 (ot1) Over-torque 1 warning	Action Level Action Time Warning setting parameter	P06.07 P06.08 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	 Configure the settings for P06.07 and P06.08 again. 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 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	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 < P06.07, the ot1 warning automatically clears	adjust P07.26 torque compensation 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 nued next page)	tracking function. Adjust the maximum current for P07.09 speed tracking.				



			Warning	Codes (continued)	
Display on GS30 Keypad	ID No.	Warning Name and Description	Action and Res	et	Corrective Action
	21	Over-torque (ot2) Over-torque 2 warning	Action Level Action Time Warning setting parameter Reset method Reset condition	P06.10 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 When the output current < P06.10, the ot2 warning automatically clears When the output current < P06.10, the ot2 warning automatically clears	Configure the settings for P06.10 a P06.11 again. Check for mechanical error and remove the causes of malfunction.
			Record	N/A	speed tracking. Start the speed tracking function. Adjust the maximum current for P07.09 speed tracking.



Warning Codes (continued)									
Display on GS30 Keypad	ID No.	Warning Name and Description	Action and Res	et	Corrective Action				
			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				
οН∃	22_1	Motor over-heating (oH3) PTC Motor overheating warning. The AC motor	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 ≤ P06.30 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.				
	t	drive detects the temperature inside the motor is too high	temperature inside the	temperature inside the motor is too high Reset method Reset method When P06.29=0, oH3 as "Warning". When t temperature is ≤ P06 the oH3 warning autoclears. When the temperature	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 nameplate and			
						Reset condition	When the temperature is ≤ P06.30 level, the oH3 warning automatically clears.	configure the motor if anteplate and 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.				
		Over slip warning (oSL)	Action Level	When the drive outputs at constant speed, and F>H or F <h exceeds="" level<="" p07.29="" td="" the=""><td></td></h>					
.E!	24	Over slip warning (oSL) Over slip warning. By using the maximum slip (P10.29) as the base, when the drive	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.				
o5L	24	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>	Reset method Reset condition	3: No warning When P07.31=0 and when the drive outputs at constant speed, and F>H or F <h a<="" automatically="" clears.="" exceeds="" level,="" longer="" n="" no="" osl="" p07.29="" td="" the="" warning=""><td>3) Verify the parameter settings for oSL protection (P07.29, P07.30, and P10.29) are correctly set.</td></h>	3) Verify the parameter settings for oSL protection (P07.29, P07.30, and P10.29) are correctly set.				
			Record	N/A					

Warning Codes (continued)										
Display on GS30 Keypad	ID No.	Warning Name and Description	Action and Res	-	Corrective Action					
		Auto tuning (tl.ln)	Action Level	When running P05.00 motor parameter auto-tuning, the keypad displays "tUn".						
		Auto tuning (tUn)	Action Time	N/A						
ŁUn	25	Parameter auto-tuning is processing.	Warning setting parameter	N/A	When the auto-tuning is finished, the					
LUII	23	When running auto- tuning, the keypad displays "tUn".	Reset method	When auto-tuning is finished and no error occurs, the warning automatically clears.	warning automatically clears.					
		displays ton .	Reset condition	When auto-tuning is finished and no error occurs.						
			Record	N/A						
			Action Level	P06.47	Check for unbalanced three-phase motor impedance and replace the					
		Output phase loss (oPHL) Output phase loss of the drive	Action Time	N/A	motor if needed. 2) Check the cable and replace if					
oPHI	28		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	If the current is balanced and the oPHL error still shows on the display, contact AutomationDirect Technical					
			Record	N/A	Support. 6) 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 between different HP/models.					
		Keypad COPY error 3: copy model error	Warning setting parameter	N/A	between different rir/fillodels.					
			Reset method	Manual reset						
			Reset condition	N/A						
			Record	N/A						
			(conti	nued next page)						



	Warning Codes (continued)							
Display on GS30 Keypad	ID No.	Warning Name and Description	Action and Res	eet	Corrective Action			
			Action Level	P14.75	1) Configure the settings for P14.75 and P14.76 again.			
			Action Time	P14.76	Check for mechanical error and remove the causes of malfunction. Verify load and decrease the loading			
oŁ3	31	Over-torque (ot3) Over-torque 3 warning	Warning setting parameter	P14.74 Over-torque Detection Selection (Motor 3) =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	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 3, P01.54–P01.61), 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 motor. 7) Check for overload during low-speed operation and decrease the loading during low-speed operation or increase the motor capacity.			
		- F	Reset method	When the output current < P14.75, the ot3 warning automatically clears	8) Verify torque compensation and adjust P07.73 torque compensation gain until the output current decreases and the motor does not			
			Reset condition	When the output current < P14.75, the ot3 warning automatically clears	stall. 9) Correct the parameter settings for speed tracking. Start the speed tracking function. Adjust the			
			Record	N/A	maximum current for P07.09 speed tracking.			
			(conti	nued next page)				

D: /	Warning Codes (continued)							
Display on GS30 Keypad	ID No.	Warning Name and Description	Action and Res	et	Corrective Action			
			Action Level	P14.78	1) Configure the settings for P14.78 and P14.79 again.			
			Action Time	P14.79	2) Check for mechanical error and remove the causes of malfunction.3) Verify load and decrease the loading			
0E4 32	32	Over-torque (ot4) Over-torque 4 warning	Warning setting parameter	P14.77 Over-torque Detection Selection (Motor 4) =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	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 3, P01.63–P01.70), especially the setting value for the mid-point voltage is set too small, the load capacity decreases at low-speed). 6) Replace motor with a larger capacity motor. 7) Check for overload during low-speed operation and decrease the loading			
			Reset method	When the output current < P14.78, the ot4 warning automatically clears	during low-speed operation or increase the motor capacity. 8) Verify torque compensation and adjust P07.75 torque compensation gain until the output current			
			Reset condition	When the output current < P14.79, the ot4 warning automatically clears	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.			
			Action Level	During PLC downloading, the program source code detects incorrect address (e.g. the address exceeds the range), then the PLod warning occurs.				
		PLC opposite defect (PLod) PLC download error warning	Action Time	Immediately act when the fault is detected				
PLod	50		Warning setting parameter	N/A	Verify the data number used when downloading the PLC program and use			
			Reset method	Check if the program is correct and download the program again. If the fault does not exist, the warning automatically clears.	the correct data number.			
			Reset condition	N/A				
			Action Level	N/A The program detects incorrect written address (e.g. the address exceeds the range) during PLC operation, then the PLSv warning occurs.				
		PLC save memory error	Action Time	Immediately act when the fault is detected				
PLSu	51	(PLSv)	Warning setting parameter	N/A	Make sure the written address is correct and download the program again.			
		Data error during PLC operation	Reset method	Check if the program is correct and download the program again. If the fault does not exist, the warning automatically clears.	gana download the program again.			
			Reset condition Record	N/A N/A				
	1	1		nued next page)	ı			



	Warning Codes (continued)						
Display on GS30 Keypad	ID No.	Warning Name and Description	Action and Res	et	Corrective Action		
•			Action Level	The program detects incorrect written address when translating the program source code (e.g. the address exceeds the range) during PLC downloading, then PLdA warning occurs.			
םו ום	F.2	Data defect (PLdA)	Action Time	Immediately act when the fault is detected	Check if the upper unit transmits the		
PLdA	52	Data error during PLC operation	Warning setting parameter	N/A	correct command.		
			Reset method	Check if the program is correct and download the program again. If the fault does not exist, the warning automatically clears.			
			Reset condition	N/A			
			Record	N/A			
	53	Function defect (PLFn) PLC download function code error	Action Level	The program detects incorrect command (unsupported command) during PLC downloading, then PLFn warning occurs.	Check the drive firmware and if not the latest version, download and install the latest version from the ADC support website		
			Action Time	Immediately act when the fault is detected			
PLFn			Warning setting parameter	N/A			
			Reset method	Check if the program is correct and download the program again. If the fault does not exist, the warning automatically clears.			
			Reset condition	N/A			
			Record	N/A			
			Action Level	When PLC runs the last command and the command exceeds the maximum capacity of the program, then PLor warning occurs.			
PLor		PLC buffer overflow	Action Time	Immediately act when the fault is detected	Follow the steps below to reset the PLC software:		
	54	(PLor)	Warning setting	N/A	1) Disable PLC		
		PLC register overflow	Reset method	Check if the program is correct and download the program again. If the fault does not exist, the warning automatically clears.	 2) Reset the PLC program (P00.02=6) 3) Enable PLC 4) Re-download the PLC program 		
			Reset condition	N/A			
			Record	N/A			
	(continued next page)						

	Warning Codes (continued)						
Display on GS30 Keypad	ID No.	Warning Name and Description	Action and Res	et	Corrective Action		
			Action Level	The program detects incorrect command (unsupported command) during PLC operation, then PLFF warning occurs.			
		Function defect (PLFF)	Action Time	Immediately act when the fault is detected	When starting the PLC function and		
PLFF	55	Function code error	Warning setting parameter	NA	there is no program in the PLC, the PLFF warning occurs. This is a normal warning,		
		during PLC operation	Reset method	Check if the program is correct and download the program again. If the fault does not exist, the warning automatically clears.	please download the program.		
			Reset condition	N/A N/A			
			Record Action Level	PLC checksum error is detected after the drive is powered on, then PLSn warning occurs.			
			Action Time	Immediately act when the fault is detected	Follow the steps below to reset the PLC		
0.5		Checksum error (PLSn)	Warning setting parameter	NA	software: 1) Disable PLC		
PL5n	56	PLC checksum error	Reset method	Check if the program is correct and download the program again. If the fault does not exist, the warning automatically clears.	2) Reset the PLC program (P00.02=6) 3) Enable PLC 4) Re-download the PLC program		
			Reset condition Record	N/A N/A			
			Action Level	The "End" command is missing. Until the last command is executed, the PLEd warning occurs.			
		No end command	Action Time	Immediately act when the fault is detected	Follow the steps below to reset the PLC		
PLEd	57	PLC end command is missing	Warning setting parameter	NA	software: 1) Disable PLC		
, , , ,	31		Reset method	Check if the program is correct and download the program again. If the fault does not exist, the warning automatically clears.	 Reset the PLC program (P00.02=6) Enable PLC Re-download the PLC program 		
			Reset condition	N/A N/A			
			Action Level	The MC command is detected during PLC operation, but there is no corresponding MCR command, then the PLCr warning occurs.			
		PLC MCR error (PLCr)	Action Time	Immediately act when the fault is detected	The MC command cannot be used		
PL[r	58	PLC MCR command	Warning setting parameter	NA	continuously for 9 times. Check and reset the program, then re-download the		
		error	Reset method	Check if the program is correct and download the program again. If the fault does not exist, the warning automatically clears.	program.		
			Reset condition Record	N/A N/A			
		1		nued next page)			



Display on GS30 Keypad ID No. Description Action and Reset PLC download failure due to momentary power loss during download. After the power is again present, the PLdF warning occurs. PLC download fail Check for programming errors,							
Action Level momentary power loss during download. After the power is again present, the PLdF warning occurs. PLC download fail Action Time Immediately act when the fault is detected Check for programming errors,							
PLC download fail is detected Check for programming errors,							
(D) dE) (Marning catting)	if thev						
PLdF 59 (PLdF) Warning setting parameter NA exist, correct and download the							
PLC download failure Check for programming errors, if they exist, correct and download the program again. If the fault does not exist, the warning automatically clears.							
Reset condition N/A							
Record N/A							
Action Level When the PLC scan time exceeds the maximum allowable time (400 ms), the PLSF warning occurs.							
PLC scan time fail Action Time Immediately act when the fault is detected							
Warning setting NA Check for Source Code errors, in parameter NA exist correct and download the							
PLC scan time exceeds the maximum allowable time PLC scan time exceeds the maximum allowable time Check for programming errors, if they exist, correct and download the program again. If the fault does not exist, the warning automatically clears.							
Reset condition N/A Record N/A							
Action Level Duplicate setting of MAC ID, Node address setting error Node address setting error (0–63), check the address setting error							
ExCOM ID fail (ECid) Action Time N/A Warning setting N/A 2) If the speed setting exceeds	909.70).						
70 Duplicate MAC ID error parameter range, standard: 0–2, non-s	range, standard: 0–2, non-standard: 0–7. If the address is duplicated with						
Reset method							
Reset condition N/A other nodes on the bus, res							
Record N/A address. The 5V power that the drive 1) Make sure the communicat	tion card !-						
Action Level Action Level provides to the communication card is too low 1) Make sure the communication well inserted and not loose.	<u>)</u> .						
ExCom power loss Action Time Immediately act with another GS30 drive to							
(ECLv) Warning setting N/A the ECLv warning still occur	rs. If yes,						
parameter replace with a new commun							
Low voltage of the communication card Reset method Cycle the power card; if not, replace the driv 3) Use another communication							
Record N/A on the same drive. If not, re card; if yes, replace the driv	ll occurs eplace the						
Action Level The communication card is in the test mode							
ExCom test mode (ECtt) Action Time Immediately act							
F. L. 72 Warning Setting N/A Cycle the power							
card is in the test mode Reset method Cycle the power and enter the normal mode							
Reset condition N/A							
Record N/A (continued next page)							

Warning Codes (continued)						
Display on GS30 Keypad	ID No.	Warning Name and Description	Action and Res		Corrective Action	
		ExCom Bus off (ECbF)	Action Level	When the drive detects bus-off (for DeviceNet)		
		The communication	Action Time	Immediately acts	1) Chack for poor cable connection and	
		card detects too many	Warning setting	N/A	1) Check for poor cable connection and re-connec the cable	
ЕСЬР	73	errors in the BUS,	parameter	·	2) Cable may be bad, replace entire	
		then enters the bus-	Reset method	Cycle the power	cable.	
		off status and stops communicationg.	Reset condition	N/A		
		communicationg.	Record	N/A There is no power supply on		
		ExCom no power	Action Level	the DeviceNet		
		(ECnP)	Action Time	Immediately acts		
EEnP	74	There is no power	Warning setting parameter	N/A	Check if the cable and power is normal. If yes, return device to AutomationDirect.	
		supply on the	Reset method	Re-power		
		DeviceNet	Reset condition	N/A		
			Record	N/A		
		For Carrie Carrier	Action Level	Factory default setting error	_	
		ExCom factory defect	Action Time Warning setting	Immediately act	_	
EEFF	75	(ECFF)	parameter	N/A	Use GSoft2 to download a new	
	'3	Factory default setting error	Reset method	Cycle the power	parameter set into the drive.	
			Reset condition		-	
			Record	N/A		
			Action Level	Internal memory saving error	1) Verify the wiring of the control	
			Action Time	Immediately act	circuit, and the wiring/grounding	
EC iF	76	ExCom inner error (ECiF)	Warning setting parameter	N/A	of the main circuit to prevent interference.	
	/6		Reset method	Cycle the power	2) Cycle the power.	
		Serious internal error	Reset condition	N/A	3) Reset to the default value and check	
			Record	N/A	if the error still exists. If yes, replace the communication card.	
			Action Level	N/A	the communication card.	
		ExCom parameter data error (ECPP) Profibus parameter data error	Action Time	N/A	-	
			Warning setting	N/A	The GSD file is incorrect - get the correct	
ECPP	78		parameter		-GSD file from the software.	
			Reset method	Manual reset	dob me nom the software.	
			Reset condition Record	Immediately reset N/A	-	
			Action Level	N/A		
		ExCom configuration data error (ECPi)	Action Time	N/A	-	
			Warning setting		The CSD file is inserrest, get the correct	
ECP ,	79		parameter	IN/A	The GSD file is incorrect - get the correct - GSD file from the software.	
		Profibus configuration	Reset method	Manual reset	-	
	I	data error	Reset condition Record	Immediately reset N/A	-	
				LIN/C	I .	
		Table and a big 1 C 1 (TOTT)	Action Level	Hardware detection Immediately act		
		Ethernet link fail (ECEF)		Hardware detection Immediately act	1) Po connect the cable	
ECEF	80	` ,	Action Level Action Time Warning setting parameter	Hardware detection Immediately act N/A	Re-connect the cable Replace the cable	
ECEF	80	Ethernet link fail (ECEF) The Ethernet cable is not connected	Action Level Action Time Warning setting parameter Reset method	Hardware detection Immediately act N/A Manual reset	Re-connect the cable Replace the cable	
ECEF	80	The Ethernet cable is	Action Level Action Time Warning setting parameter Reset method Reset condition	Hardware detection Immediately act N/A Manual reset N/A	1 1	
ECEF	80	The Ethernet cable is	Action Level Action Time Warning setting parameter Reset method Reset condition Record	Hardware detection Immediately act N/A Manual reset N/A N/A	I '	
ECEF	80	The Ethernet cable is not connected	Action Level Action Time Warning setting parameter Reset method Reset condition Record Action Level	Hardware detection Immediately act N/A Manual reset N/A N/A N/A	I '	
ECEF	80	The Ethernet cable is	Action Level Action Time Warning setting parameter Reset method Reset condition Record Action Level Action Time	Hardware detection Immediately act N/A Manual reset N/A N/A N/A N/A	2) Replace the cable	
	80	The Ethernet cable is not connected Communication time-	Action Level Action Time Warning setting parameter Reset method Reset condition Record Action Level	Hardware detection Immediately act N/A Manual reset N/A N/A N/A N/A N/A	Replace the cable 1) Check the connection of the	
ECEF ECEo	80	The Ethernet cable is not connected Communication timeout (ECto) Communication time-	Action Level Action Time Warning setting parameter Reset method Reset condition Record Action Level Action Time Warning setting	Hardware detection Immediately act N/A Manual reset N/A N/A N/A N/A N/A N/A N/A	Replace the cable 1) Check the connection of the communication cable and re-connect	
		The Ethernet cable is not connected Communication timeout (ECto) Communication timeout for communication	Action Level Action Time Warning setting parameter Reset method Reset condition Record Action Level Action Time Warning setting parameter Reset method	Hardware detection Immediately act N/A Manual reset N/A N/A N/A N/A N/A N/A N/A CMC-EC01: auto resets when	Replace the cable 1) Check the connection of the communication cable and re-connect if needed.	
		The Ethernet cable is not connected Communication timeout (ECto) Communication timeout for communication card and the upper	Action Level Action Time Warning setting parameter Reset method Reset condition Record Action Level Action Time Warning setting parameter	Hardware detection Immediately act N/A Manual reset N/A N/A N/A N/A N/A N/A CMC-EC01: auto resets when the communication with the	Replace the cable 1) Check the connection of the communication cable and re-connect	
		The Ethernet cable is not connected Communication timeout (ECto) Communication timeout for communication	Action Level Action Time Warning setting parameter Reset method Reset condition Record Action Level Action Time Warning setting parameter Reset method	Hardware detection Immediately act N/A Manual reset N/A N/A N/A N/A N/A N/A N/A CMC-EC01: auto resets when	Replace the cable 1) Check the connection of the communication cable and re-connect if needed.	



	Warning Codes (continued)							
Display on GS30 Keypad	ID No.	Warning Name and Description	Action and Res	et	Corrective Action			
		Charles and (ECCC)	Action Level	Software detection				
		Checksum error (ECCS)	Action Time Warning setting	N/A	Verify the wiring of the control circuit,			
ECC5	82	Checksum error for the	parameter	N/A	and the wiring/grounding of the main			
		communication card	Reset method	Manual reset	circuit to prevent interference.			
		and the drive	Reset condition Record	Immediately reset N/A				
		Return defect (ECrF)	Action Level	Communication card returns to the default setting				
		Thetain defect (Een)	Action Time Warning setting	N/A				
EErF	83	Communication card	parameter	N/A	No actions required.			
		returns to the default setting	Reset method	Manual reset				
		Setting	Reset condition	Immediately reset				
			Record	N/A	Verify the Master communication			
			Action Level	Hardware detection	value does not exceed the allowable number of communication cards.			
			Action Time	Immediately act	If it does, decrease the Master communication value. 2) Check if the connection is occupied			
		Modbus TCP over (ECo0) Modbus TCP exceeds the maximum communication value	Warning setting parameter	N/A	due to not disconnecting the Modbus TCP while the upper unit is connected without communicating. If it is, revise the program of the upper			
EC-0	84		Reset method	Manual reset	unit to disconnect the connection while the communication is not used for a long time. 3) Check if a new Modbus TCP			
			Reset condition	Immediately reset	connection is built whenever the upper unit is connected to the communication card. If so, revise the program of the upper unit to use			
			Record	N/A	the same Modbus TCP connection when connecting to the same communication card.			
			Action Level	Hardware detection	Verify the Master communication value does not exceed the allowable number of communication cards.			
			Action Time	Immediately act	If it does, decrease the Master communication value. 2) Check if the connection is occupied due to not disconnection the			
ECo 1	85	EtherNet/IP over (ECo1) EtherNet/IP exceeds	Warning setting parameter	N/A	due to not disconnecting the Modbus TCP while the upper unit is connected without communicating. If it is, revise the program of the upper unit to disconnect the connection			
		the maximum communication value	Reset method	Manual reset	while the communication is not used for a long time. 3) Check if a new Modbus TCP connection is built whenever the			
			Reset condition	Immediately reset	upper unit is connected to the communication card. If so, revise the program of the upper unit to use the same Modbus TCP connection			
			Record	N/A	when connecting to the same communication card.			
			Action Level	Software detection				
		IP fail (ECiP)	Action Time Warning setting	Immediately act	1) Reset IP			
EC iP	86	iii idii (ECII)	parameter	N/A	2) Contact MIS to check if DHCP Server			
		IP setting error	Reset method	Manual reset	works normally			
			Reset condition	Immediately reset	-			
			Record	N/A				
(continued next page)								

Warning Codes (continued)						
Display on GS30 Keypad	ID No.	Warning Name and Description	Action and Res		Corrective Action	
		Mail fail (EC3F)	Action Level	Communication card establishes alarm conditions		
		Mail warning. Alarm	Action Time	Immediately acts		
EC3F	87	mail will be sent when	Warning setting	N/A	No action.	
		the communication	parameter Reset method	Manual reset		
		card establishes alarm	Reset condition	Immediately resets		
		conditions	Record	N/A		
		F. C. J. (FCL)	Action Level	Software detection	-	
		ExCom busy (ECbY)	Action Time Warning setting	N/A		
ЕСЬУ	88	Communication card	parameter	N/A	Decrease communication packets	
		busy: too many packets	Reset method	Manual reset	'	
		are received	Reset condition	N/A		
			Record Action Level	N/A Communication card break off		
			Action Time	N/A		
		ExCom card break	Warning setting	N/A		
ccc.		(ECCb)	parameter	<u> </u>		
ЕССЬ	89	Communication card	Reset method	Auto-resets after the communication card is re-	Re-install the communication card	
		break off warning	Reset method	installed		
		orean en manning	Reset condition	Immediately reset		
			Record	N/A		
		Copy PLC: password	Action Level	PLC password is incorrect		
		error (CPLP) Copy PLC password	Action Time Warning setting	Immediately act		
			parameter	N/A	D	
[PLP	90	error. When PLC copy is	Reset method	Manual reset	Reset and enter the correct PLC password	
		processing and the PLC password is incorrect,	Reset condition	Directly reset		
		the CPLP warning occurs.	Record	N/A		
		occurs.	A .: 1 1	Incorrect process when copying		
		Copy PLC: Read mode	Action Level	the PLC read mode		
		error (CPL0)	Action Time	Immediately act	Cycle the newer and convitte DLC read	
[PLO	91		Warning setting parameter	N/A	Cycle the power and copy the PLC read mode again	
			Reset method	Manual reset	mode again	
			Reset condition	Directly reset		
			Record	N/A		
			Action Level	Incorrect process when copying the PLC write mode		
		Copy PLC: Write mode (CPL1)	Action Time	Immediately act		
CPL I	92	(Cr L1)	Warning setting	N/A	Cycle the power and copy the PLC write	
		Copy PLC write mode	parameter Reset method	Manual reset	mode again	
		error	Reset condition	Directly reset	-	
			Record	N/A		
			Action Level	Software detection		
		(CPLv)	Action Time	Immediately act	-	
[PLu	93	Copy PLC version error.	Warning setting parameter	N/A	Check if the copied PLC program is for GS30. If not, use the correct GS30 PLC	
2, 23		When a non-GS30 built-in PLC is copied	Reset method	Manual reset	program.	
		to the GS30 drive, the	Reset condition	Directly reset		
		CPLv warning occurs.	Record	N/A		
			Action Level	Software detection		
		Copy PLC: size error	Action Time Warning setting	Immediately act	Check if the copied PLC program is for	
CPL5	94	(CPLS)	parameter	N/A	GS30. Use the correct capacity for the	
		Copy PLC capacity error	Reset method	Manual reset	GS30 PLC program.	
		copy i to cupacity cirol	Reset condition	Directly reset N/A		
			Record (conti		I	
(continued next page)						



			Warning	Codes (continued)		
Display on GS30 Keypad	ID No.	Warning Name and Description	Action and Res		Col	rrective Action
[PLF	95	Copy PLC: PLC function (CPLF) Copy PLC function must be executed when PLC	Action Level Action Time Warning setting parameter Reset method	Software detection Immediately act N/A Manual reset	Disable the PLC function first, and the run the PLC copy function again.	
		is disabled.	Reset condition Record Action Level	Directly reset N/A Software detection		
CPLE	96	Copy PLC: time-out (CPLt)	Action Time Warning setting parameter	Immediately act N/A	1	e GS30-KPD cannot be removed ring the PLC copy process
		Copy PLC time-out	Reset method Reset condition Record	Manual reset Directly reset N/A	- Gui	ing the rec copy process
		InrCOM time-out (ictn)	Action Level	When P09.31= (-1) – (-10) (no -9) and the internal communication between Master and Slave is abnormal, the ictn warning occurs.	1)	Verify the wiring and grounding of the communication circuit. Separate the communication circuit from the main circuit, or wire in 90 degree
icEn	101	101 Internal communication time-out	Action Time Warning setting parameter	Immediately act N/A	2)	for effective anti-interference performance. Check if the setting for P09.04 is the
			Reset method Reset condition Record	Auto-reset The warning automatically clears when the communication is back to normal condition N/A	3)	same as the setting for the upper unit



FAULT CODES

The GS30 drive has a comprehensive fault diagnostic system that include a variety of fault messages. When a fault is detected, the GS30 drive will shut down in order to protect internal components. The following faults are displayed as shown on the GS30 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 GS30 drive <u>repeatedly</u> display a reserved fault, please note the fault ID number and contact AutomationDirect technical support.

				Fault Codes	
Display on GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, and Corrective Action		
осЯ	1	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 Level Action Time Fault setting parameter Reset method Reset condition Record Corrective Actions	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 b) Increase the acceleration time b) 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. 2) 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 the insulation is poor. 4) Check if the output current during the whole working process exceeds the AC motor drive's rated current. If yes, replace the AC motor drive with a larger capacity model. 5) Reduce the load or increase the capacity of AC motor drive. 6) Check the motor capacity (the rated current on the motor's nameplate should ≤ the rated current of the drive). 7) Check the action timing of the contactor and make sure it is not turned ON/OFF when the drive outputs the voltage. 8) Adjust the V/F curve setting and frequency/voltage. When the fault occurs, and the frequency voltage is too high, reduce the voltage. 9) Adjust the torque compensation (refer to P07.26 torque compensation gain) until the output current reduces and the motor does not stall. 10) Verify the wiring of the control circuit and the wiring/grounding of the main circuit to prevent interference. 11) Enable speed tracking during start-up of P07.12. 12) Correct the parameter settings for speed tracking. a) Start the speed tracking function. b) Adjust the maximum current for P07.09 speed tracking. a) Start the speed tracking function. b) Adjust the maximum current for P07.09 speed tracking. a) For IM, P00.11=0, 1, 2, 5 b) For PM, P00.11=2 14) Increase the AC motor drive's capacity.	
			(conti	15) Install AC reactor(s) on the output side (U/V/W). nued next page)	



Action, Reset, and Corrective Action Reypad 1				Fault C	Codes (continued)
ocA (continued) Corrective Actions (cont'd) Action Level Action I Level Action		ID No.		Action, Reset, o	and Corrective Action
Action Time Fault setting M/A Parameter Reset condition Reset in five seconds after the fault is cleared Ves 1 Check if the deceleration time is too short. If so: a) Increase the deceleration time of S-curve c) Set auto-acceleration time of S-curve 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, or replace the cable abefore turning on the power. 4 Check the motor cable and remove causes of any short circuits, or replace the cable abefore turning on the power. 5 Check if the output current during the whole working process excet the AC motor drive's rated current. If yes, replace the AC motor drive's rated current. If yes, replace the AC motor drive as needed. 7 Verify the motor capacity, the rated current on the motor's namepl should s the rated current on the motor's namepl should s the rated current on the motor's namepl should s the rated current on the motor's namepl should s the rated current on the motor's namepl should s the rated current on the motor's namepl should s the rated current on the motor's namepl should s the rated current of the drive. 8 If using an ON/OFF controller at the (UV/NW) drive output, check that continuing of the contactor and make sure it is not turned ON/c when the drive outputs the voltage. 9 Adjust the VF curve settings and frequency/voltage. When the fause occurs, and the frequency voltage is too high, reduce the voltage. 10 Adjust the VF curve settings and frequency/voltage. When the fause occurs, and the frequency voltage is too high, reduce the voltage. 10 Adjust the VF curve settings and frequency/voltage. When the fause occurs, and the frequency voltage is too high, reduce the voltage. 10 Adjust the VF curve settings and frequency/voltage. When the fause occurs, and the frequency voltage is t	осЯ	1	ocA (continued)		 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
Reset condition Reset in five seconds after the fault is cleared Reset in five seconds after the fault is cleared Reset in five seconds after the fault is cleared Reset in five seconds after the fault is cleared Reset in five seconds after the fault is cleared Yes 10 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 (P01.4 d) Set over-current stall prevention function (P06.03) e) Replace the drive with a larger capacity model Check if the methanical brake of the motor activates too early. 3) Check the motor cable and remove causes of any short circuits, or replace the cable before turning on the power. 4) Check the motor insulation value with megger. Replace the motor the insulation is poor. 5) Check if the output current during the whole working process exce the AC motor drive's rated current. If yes, replace the AC motor drive is a needed. 6) Check the impulsive change of the load and reduce the load on increase the capacity of AC motor drive as needed. 7) Verify the motor capacity, the rated current on the motor's namepl should s- the rated current of the drive. 8) If using an ON/OFF controller at the (U/V/M) drive output, check the action timing of the contactor and make sure it is not turned ON/OW when the drive outputs the voltage. 9) Adjust the V/F curve settings and frequency/voltage. When the fau occurs, and the motor does not stall. 11) Verify the wiring of the contractor and make sure it is not turned only when the drive outputs the voltage is too high, reduce the voltage. 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 side (U/V/W). 13) In th					300% of the rated current
Parameter Reset method Reset condition Record Yes 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 (P01.4 d) Set over-current stall prevention function (P06.03) e) Replace the drive with a larger capacity model 2) Check the wortor cable and remove causes of any short circuits, or replace the cable before turning on the power. 4) Check the motor cable and remove causes of any short circuits, or replace the cable before turning on the power. 5) Check the motor insulation value with megger. Replace the motor the insulation is poor. 6) Check the insulation is poor. 7) Check the insulation value with megger. Replace the motor the insulation is poor. 8) Check the insulation value with megger. Replace the AC motor drive's rated current. If yes, replace the AC motor of with a larger capacity model. 9) Check the insulation value with megger. Replace the motor the insulation is poor. 9) Check the insulation value with megger. Replace the motor the insulation is poor. 9) Check the insulation value with megger. Replace the motor with a larger capacity model. 9) Check the insulation value with megger. Replace the motor with a larger capacity model. 9) Check the insulation value with megger. Replace the motor with a larger capacity model. 9) Check the motor insulation value with megger. Replace the motor with a larger capacity model. 9) Check the motor capacity, the rated current of the drive. 9) Verify the motor capacity, the rated current on the motor's nameple should s' the rated current of the drive. 9) Adjust the VPT curve settings and frequency/voltage. When the fau occurs, and the frequency voltage is too high, reduce the voltage. 10) Adjust the VPT curve settings and frequency/voltage. When the fau occurs, and the frequency voltage is too high, reduce the voltage. 10) Adjust the VPT curve settings and frequency/voltage. When the fau occurs, and the motor does not stall. 11) Verify the wiring of the					Immediately act
Reset method Reset condition Record Reset in five seconds after the fault is cleared Record Reset in five seconds after the fault is cleared Record Record Record Reset in five seconds after the fault is cleared Record Ves 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 (P01.4 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. 3) Check the motor cable and remove causes of any short circuits, or replace the cable before turning on the power. 4) Check the motor insulation value with megger. Replace the motor the insulation is poor. 5) Check if the output current during the whole working process excee the AC motor drive's rated current. If yes, replace the AC motor drive with a larger capacity model. 6) Check the impulsive change of the load and reduce the load or increase the capacity of AC motor drive as needed. 7) Verify the motor capacity, the rated current on the motor's namepl should s the rated current of the drive. 8) If using an ONO/OFF controller at the (U/V/MV) drive output, check if action timing of the contactor and make sure it is not turned ON/C when the drive outputs the voltage. 9) Adjust the VPT-26 torque compassion gain until the output curre reduces and the motor does not stall. 11) Verify the wining of the control circuit and the wiring/grounding of 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 sid (U/V/W). 13) In the case of a hardware error, the ocd occurs due to the short circuit and the wiring/grounding of 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 sid (U/V/W). 13) In the case of a hardware error, the				_	N/A
Reset condition Record Recor				-	Manual reset
Record 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 (P01.4 d) Set over-current and 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, or replace the cable before turning on the power. 4) Check the motor insulation value with megger. Replace the motor the insulation is poor. 5) Check if the output current during the whole working process exe the AC motor drive's rated current. If yes, replace the AC motor drive's rated current of the AC motor drive's rated current on the motor's namepl should s the rated current of the drive. 8) 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/C when the drive outputs the voltage. 9) Adjust the V/F curve settings and frequency/voltage. When the fave outputs the voltage is too high, reduce the voltage. 10) Adjust the P07.26 torque compensation gain until the output curre reduces and the motor does not stall. 11) Verify the wiring of the control circuit and the wiring/grounding of 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 side (U/V/W). 13) 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. a) Check for possible short circuits between terminals with the electric meter. b) B1 corresponds to U, V and W, CC - corresponds to U, V and W, C) If short circuits occurs, contact AutomationDirect Technical					
	ocd	2	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		 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 2) Check if the mechanical brake of the motor activates too early. 3) Check the motor cable and remove causes of any short circuits, or replace the cable before turning on the power. 4) Check the motor insulation value with megger. Replace the motor if the insulation is poor. 5) Check if the output current during the whole working process exceeds the AC motor drive's rated current. If yes, replace the AC motor drive with a larger capacity model. 6) Check the impulsive change of the load and reduce the load or increase the capacity of AC motor drive as needed. 7) Verify the motor capacity, the rated current on the motor's nameplate should ≤ the rated current of the drive. 8) 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. 9) Adjust the V/F curve settings and frequency/voltage. When the fault occurs, and the frequency voltage is too high, reduce the voltage. 10) Adjust the P07.26 torque compensation gain until the output current reduces and the motor does not stall. 11) Verify the wiring of the control circuit and the wiring/grounding of 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 side (U/V/W). 13) 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. a) Check for possible short circuits between terminals with the electric meter: b) B1 corresponds to U, V and W; CC- correspon
					Support. 14) Verify the stall prevention setting and set the stall prevention to the
proper value. (continued next page)				(contin	proper value.

			Fault C	Codes (continued)
Display on GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, o	and Corrective Action
осп	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 Corrective Actions	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; CC- corresponds to U, V, and W; corresponds to U, V, and W. 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 Corrective Actions	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 ocd. 8) Refer to the corrective actions for ocd.



Fault Codes (continued)					
on GS30 ID No. Keypad	Fault Name and Description	Action, Reset, o	and Corrective Action		
occ 5	IGBT short circuit between upper bridge and lower bridge (occ) Short-circuit is detected between upper bridge and lower bridge of the IGBT module	Action Level Action Time Fault setting parameter Reset method Reset condition Record Corrective Actions	Hardware protection Act immediately N/A Manual reset Rest in 5 seconds after the fault is cleared Yes 1) Check the motor wiring. 2) Cycle the power. If occ still occurs, return to AutomationDirect.		
oc5 6	Over-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.	Action Level Action Time Fault setting parameter Reset method Reset condition Record Corrective Actions	2) Cycle the power. If occ still occurs, retain to Automation Direct. 300% of the rated current Immediately act N/A Manual reset Reset in five seconds after the fault is cleared Yes 1) Verify the wiring of the control circuit and the wiring/grounding of the main circuit to prevent interference. 2) Check if other error codes such as cd1–cd3 occur after cycling the power. If yes, return to the factory for repair.		
оцЯ 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.	Action Level Action Time Fault setting parameter Reset method Reset condition Record Corrective Actions	230V series: 820VDC Immediately act when the DC bus voltage is higher than the level N/A Manual reset Reset only when the DC bus voltage is lower than 90% of the overvoltage level Yes 1) Check acceleration. If too slow:		

<i>'</i>	1	I	Fault C	Codes (continued)			
Display on GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, o	and Corrective Action			
Поурии			Action Level	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-			
				voltage level			
			Record	Yes 1) Deceleration time may be too short, resulting in too much			
oud	8	Over-voltage during deceleration (ovd) DC bus over-voltage during deceleration. When ovd occurs, the drive closes the gate of the output immediately,		regenerative energy. a) Increase the setting value of P01.13, P01.15, P01.17 and P01.19 (deceleration time) b) Connect a braking resistor, braking unit or DC bus on the drive. c) Reduce the braking frequency. d) Replace the drive with a larger capacity model. e) Use S-curve acceleration/deceleration. f) Use over-voltage stall prevention (P06.01). g) Use auto-acceleration and auto-deceleration (P01.44). h) Adjust the braking level (P07.01 or the bolt position of the			
		the motor runs freely, and the display shows	Corrective	braking unit).			
		an ovd error.	Actions	2) Verify that the setting for stall prevention level is larger 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) 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.			
				6) If using a braking resistor or braking unit, check the wiring.			
				7) Verify the wiring of the control circuit and the wiring/grounding of the main circuit to prevent interference.			
			Action Level	230V series: 410VDC			
			Action Time	460V series: 820VDC Immediately act when the DC bus voltage is higher than the level			
			Fault setting				
		Over-voltage during constant speed (ovn) DC bus over-voltage at constant speed. When ovn occurs, the drive closes the gate of the output immediately, the motor runs freely, and the display shows	parameter	N/A			
			Reset method	Manual reset Reset only when the DC bus voltage is lower than 90% of the over-			
			Reset condition	voltage level			
			Record	Yes			
	9			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.			
				c) Replace the drive with a larger capacity model. d) Adjust the braking level (P07.01 or bolt position of the brake			
٥٥٦				unit).			
				2) Verify the stall prevention level setting is higher than no-load current.			
				3) Check for regenerative voltage, then enable over-voltage stall prevention function (P06.01) or use a braking unit or DC bus			
			Corrective	4) Check if the input voltage is within the rated AC motor drive input			
			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.			
				6) 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.			
				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.			
	(continued next page)						



	Fault Codes (continued)					
Display on GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, and Corrective Action			
			Action Level	230V series: 410VDC		
			Action Time	460V series: 820VDC 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-		
			Record	voltage level Yes		
		Over-voltage at stop		1) Check if the input voltage is within the rated AC motor drive input		
ou5	10	(ovS)		voltage range, and check for possible voltage spikes.		
000		Over veltere et eten		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		
ĺ			Actions	circuit through the power. Check if there is ground fault on the motor		
			7.00.01.5	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.		
			Action Level	P06.00 230V series = 180VDC		
		Laurus kasa during	Action Level	460V series = 360VDC		
			Action Time	Immediately act when the DC bus voltage is lower than P06.00		
			Fault setting	N/A		
			parameter Reset method	Manual reset		
			Reset condition	Reset when the DC bus voltage is higher than P06.00 + 30 V		
		Low-voltage during acceleration (LvA)	Record	Yes		
		(277.)		Improve power supply condition. Adjust voltage to the power range of the drive		
LuA	11	DC bus voltage is		Check the power system and increase the capacity of power		
		lower than P06.00		equipment if needed.		
		setting value during acceleration		4) The load may be too heavy. If so:		
		acceleration	Corrective	a) Reduce the load. b) Increase the drive capacity.		
			Actions	c) Increase the drive capacity.		
				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 terminal +1 and +2.		
				7) If the error still exists, contact AutomationDirect Technical Support.		
				P06.00		
ı			Action Level	230V series = 180VDC		
			Action Time	460V series = 360VDC Immediately act when the DC bus voltage is lower than P06.00		
			Fault setting			
		Low-voltage during	parameter	N/A		
		deceleration (Lvd)	Reset method	Manual reset		
Lud	12	DC bus voltage is	Reset condition Record	Reset when the DC bus voltage is higher than P06.00 + 30 V Yes		
L 0 0	12	lower than P06.00	record	Improve power supply condition.		
		setting value during		2) Adjust voltage to the power range of the drive		
		deceleration	C + .	3) Check the power system and increase the capacity of power		
			Corrective Actions	equipment if needed. 4) The fault may be triggered by sudden load. If so:		
			7.0013	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 GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, o	and Corrective Action		
			Action Level	P06.00 230V series = 180VDC 460V series = 360VDC		
			Action Time	Immediately act when the DC bus voltage is lower than P06.00		
			Fault setting parameter	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		
		DC bus voltage is lower 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	230V series = 180VDC		
			A .: T'	460V series = 360VDC		
			Action Time Fault setting	Immediately act when the DC bus voltage is lower than P06.00		
		Low-voltage at stop	parameter	N/A		
		(LvS)		Manual / Auto:		
		DC bus voltage is	Reset method	230V series: Lv level + 30VDC + 500ms		
ı E	14		Reset condition	460V series: Lv level + 60VDC + 500ms 500 ms		
Lu5	14	lower than P06.00 setting value at stop or	Record	Yes		
		a hardware failure in voltage detection had occurred.	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). 		
		Phase loss protection (orP)	Action Level	When DC bus ripple is higher than the protection level, and the output		
				current exceeds 50% of the rated current, the drive starts counting. When the counting value reaches the upper limit, an orP error occurs.		
			Action Time	The action time varies with different output current.		
			Fault setting parameter	P06.53		
			Reset method Reset condition	Manual reset Immediately reset when DC bus is higher than P07.00		
			Record	Yes		
_				1) Verify the wiring of the main circuit power is installed correctly.		
orP	15	Dhasa lass of		2) Check that a single-phase power supply is not being used with a		
		Phase loss of power input		three-phase model. Choose the model whose power matches the voltage.		
			Corrective	3) 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		
				to the torque described in the user manual.		
				5) Verify the input cable is undamaged and replace if needed.		
			,	6) Check for unbalanced three-phase input power.		
(continued next page)						



5: /	Fault Codes (continued)				
Display on GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, o	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 Fault setting	Immediately when limit is reached. N/A	
		IGBT overheating (oH1)	Reset method	Manual reset	
		IGBT temperature	Reset condition	Reset only when IGBT temperature is lower than oH1 error level minus (-)	
		exceeds the protection		10°C	
oH I	16	exceeds the protection level. Protection level is model default of P06.15 + 5°C	Corrective Actions	 Yes 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. 	
			A .: 1 1	9) Replace the drive with higher capacity model.	
		Over-heat key components (oH2) The drive has detected the key components are overheating	Action Level Action Time	Refer to the overheat setpoint for each model. The oH2 fault occurs when the temperature sensor of key components detects the temperature is higher than the protection level for 100ms.	
			Fault setting	N/A	
			Parameter Reset method	Manual reset	
			Reset condition	The drive auto-resets when the temperature sensor of key components	
			Record	detects the temperature is lower than oH2 error level by 10°C Yes	
oH2	oH2 17 The the		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. Install reactor(s). Reduce load changes. 	
		IGBT temperature detection failure (tH1o)	Action Level	NTC broken or wiring failure When the IGBT temperature is higher than the protection level, and	
EH lo	18		Action Time Fault setting parameter	detection time exceeds 100 ms, the tH1o protection activates. N/A	
21110		IGBT hardware failure in	Reset method Reset condition	Manual reset Immediately reset	
		temperature detection	Record Corrective	Yes Wait for 10 minutes, and then cycle the power. Check if tH1o protection	
			Actions	still exists. If yes, contact AutomationDirect Technical Support.	
		Capacitor hardware fault (tH2o) Hardware failure in capacitor temperature detection	Action Level Action Time	NTC broken or wiring failure When the IGBT temperature is higher than the protection level, and detection time exceeds 100 ms, the tH2o protection activates.	
ŁH2o	19		Fault setting parameter	N/A	
			Reset method Reset condition	Manual reset Immediately reset	
			Record	Yes	
			Corrective Actions	Wait for 10 minutes, and then cycle the power. Check if tH2o protection still exists. If yes, contact AutomationDirect Technical Support.	
		1		nued next page)	

Fault Codes (continued)					
Display on GS30 IE Keypad	D N A	Fault Name and Description	Action, Reset, o	and Corrective Action	
		Over load (oL)	Action Level	Based on overload curve and derating curve.	
		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.	Fault setting parameter	N/A	
		Overload capacity:	Reset method	Manual reset Reset in five seconds after the fault is cleared	
		 Variable Torque (VT): Sustains for one 	Reset condition Record	Yes	
οL	21	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.	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. Replace the drive with a larger capacity model. 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. Adjust P07.26 Torque Compensation Gain until the output current reduces and the motor does not stall. Verify stall prevention is set to the proper value. Check the status of three-phase motor and verify the cable is not broken or screws are loose. Verify the parameter settings for speed tracking. a) Start the speed tracking function. b) Adjust the maximum current for P07.09 speed tracking. 	
EoL I	22	Electronics thermal relay 1 protection (EoL1) Electronics thermal relay 1 protection. The drive coasts to stop once it activates.	Action Level Action Time Fault setting parameter Reset method Reset condition Record Corrective Actions	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 current again within 60 sec., the counting time reduces and is less than P06.14) N/A Manual reset Reset in five seconds after the fault is cleared 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) If the EoL1 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 P06.13=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 P06.13=2: Disable, and install thermal relay on each motor. 9) Set stall prevention to the proper value. 10) Adjust P07.26 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 GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, and Corrective Action		
			Action Level	Start counting when the output current > 150% of the motor 2 rated current	
			Action Time	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)	
			Fault setting parameter	N/A	
			Reset method	Manual reset	
			Reset condition	Reset in five seconds after the fault is cleared	
			Record	Yes	
EoL2	23	Electronic thermal relay 2 protection (EoL2) Electronic thermal relay 2 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 P01.35–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. If the EoL2 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 P06.27=1: Standard motor (motor with fan on the shaft). Verify motor rated current and reset if needed. Verify motor rated frequency and reset if needed. If using one drive to run multiple motors, set P06.27=2: Disable, and install thermal relay on each motor. Set stall prevention to the proper value. Adjust P07.71 torque compensation gain until the current reduces and the motor does not stall. Check the status of the fan, or replace the fan. Replace the motor. 	



Fault Codes (continued)					
Display on GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, and Corrective Action		
7,			Action Level	PTC input value > P06.30 setting (Default = 50%)	
			Action Time	Immediately act	
			Fault setting parameter	P06.29 setting is: 0: Warn and continue operation 1: Fault and ramp to stop 2: Fault and coast to stop 3: No warning	
			Reset method	When P06.29=0, oH3 is a "Warning". The "Warning" is automatically cleared. When P06.29=1 or 2, oH3 is a "Fault". You must reset manually.	
				Immediately reset	
			Record	When P06.29=1 or 2, oH3 is a "Fault", and the fault is recorded.	
οΗЭ	24_1	Motor overheating (oH3) PTC Motor overheating (PTC) (P03.00–P03.01=6 PTC), when PTC input > P06.30, the fault treatment acts according to P06.29.	Corrective Actions	 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. Decrease low-speed operation time. Change to dedicated motor for the drive. Increase the motor capacity. Verify accel/decel time and increase setting values for P01.12–P01.19 (accel./ decel. time) if working cycle is too short. 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). Verify the motor rated current matches the motor nameplate and configure the correct rated current value of the motor if needed. Check the connection between PTC thermistor and the heat protection. Verify stall prevention is set correctly and adjust the value if needed. Check for unbalanced three-phase motor impedance. Replace the motor if needed. Verify harmonics and reduce harmonics if too high. 	
			(contin	113) Verify harmonics and reduce harmonics if too high. nued next page)	



D: /	Fault Codes (continued)				
Display on GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, o	and Corrective Action	
псурии			Action Level Action Time	PT100 RTD input value > P06.57 setting (default = 7V) Immediately act	
			Fault setting parameter	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. Immediately reset	
			Reset condition		
οΗ∃	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.	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 accel/decel time and increase setting values for P01.12–P01.19 (accel./ decel. time) if working cycle is too short. 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). 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. Verify harmonics and reduce harmonics if too high. 	
			Action Level	P06.07	
			Action Time	P06.08	
			Fault setting parameter	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	
		Over torque 1 (ot1) When the output	Reset method	When P06.06=1 or 3, ot1 is a "Warning". The warning is automatically cleared when the output current < (Pr.06-07 – 5%) When P06.06=2 or 4, ot1 is a "Fault". You must reset manually.	
	26	current exceeds the	Reset condition	Immediately reset	
ot I		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, the ot1 error displays.	Record	 When P06.06=2 or 4, ot1 is a "Fault", and the fault is recorded. Verify the settings for P06.07 and P06.08. 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, P01.01–P01.08), 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: 	
			Actions	a) Decrease low-speed operation. 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.	

D: /	Fault Codes (continued)					
Display on GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, o	and Corrective Action		
			Action Level	P06.10		
			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) When the output	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.		
ot2	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: Decrease low-speed operation time. 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. Start the speed tracking function. Adjust the maximum current for P07.09 speed tracking. 			
		Under current (uC) Low current detection	Action Level	P06.71		
			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		
ШΕ	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 Record	Immediately reset When P06.71=1 or 2, uC is a "Fault", and the fault is recorded.		
			Corrective Actions	 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. 		
		Limit error (LiT)	Action Level	When under the speed mode (not FOCPG), negative running limit or positive running limit is enabled.		
		This code occurs when the motor drive is running under speed	Fault setting parameter Reset method	Immediately acts. N/A Move the motor away from the limit position and press the STOP/RESET		
LiE	29	mode (not IMFOCPG/ PMFOCPG) and the	Reset condition	button on the keypad (manual reset). Immediately resets.		
		negative running limit or the positive running limit of the DIx terminals is enabled.	Corrective Actions	 Set the limit ON/OFF switch to the correct position. Set P00.04=16 (digital input status ON/OFF) to verify if the DIx terminals work properly. Reduce deceleration time. Adjust setting value of DC brake to current level (P07.01 or the insert position on the brake unit). 		
	(continued next page)					



Display on GS30 Keypad ID No. Fault Name and Description Action, Reset, and Corrective Action Action Level Firmware internal detection Action Time CF2 acts immediately when the drive detects the Fault setting parameter (cF2) Internal EEPROM cannot be read Action, Reset, and Corrective Action Action Level Firmware internal detection Action Time CF2 acts immediately when the drive detects the Fault setting parameter Reset method Manual reset Reset condition Immediately reset Torrective Actions 1) Press "RESET" key or reset the parameter to still occurs, contact AutomationDirect Tech 2) Cycle the power, if cF2 error still occurs, contact Support.	ie fault
EEPROM read error (cF2) 31 Action Time Fault setting parameter N/A	ne fault
EEPROM read error (cF2) 31 Internal EEPROM cannot be read Corrective Actions Fault setting parameter Reset method Manual reset Reset condition Immediately reset Record Yes 1) Press "RESET" key or reset the parameter to still occurs, contact AutomationDirect Tech 2) Cycle the power, if cF2 error still occurs, con Technical Support.	ne fault
EEPROM read error (cF2) Reset method Manual reset Reset condition Immediately reset Record Yes Corrective Actions EEPROM read error (cF2) Reset method Manual reset Reset condition Immediately reset Record Yes 1) Press "RESET" key or reset the parameter to still occurs, contact AutomationDirect Tech 2) Cycle the power, if cF2 error still occurs, contact Support.	
Reset method Manual reset Reset condition Immediately reset Record Yes Corrective Actions 2) Cycle the power, if cF2 error still occurs, contact Support. EEPROM read error (cF2) Reset method Manual reset Reset condition Immediately reset Reset condition Immediately reset Reset method Manual reset Reset method Manual reset Reset method Manual reset Reset condition Immediately reset Still occurs, contact AutomationDirect Tech Actions 2) Cycle the power, if cF2 error still occurs, contact Support.	
Reset condition Immediately reset Record Yes	
Internal EEPROM cannot be read Corrective Actions Internal EEPROM cannot be read Corrective Actions Record Yes 1) Press "RESET" key or reset the parameter to still occurs, contact AutomationDirect Tech 2) Cycle the power, if cF2 error still occurs, contact Support.	
cannot be read Corrective Actions 1) Press "RESET" key or reset the parameter to still occurs, contact AutomationDirect Tech 2) Cycle the power, if cF2 error still occurs, co Technical Support.	
	nical Support.
Action Level Hardware detection	
Action Time cd1 acts immediately when the drive detects the	<u>ne fault</u>
U-phase error (cd1) Fault setting N/A	
parameter	
U-phase current detection error when Reset method Power-off Reset condition N/A	
power is ON Record Yes	
Corrective Cycle the power, if cd1 error still occurs, contact	ct AutomationDirect
Actions Technical Support.	
Action Level Hardware detection	
Action Time cd2 acts immediately when the drive detects the	ne fault
V phase error (cd2) Warning setting	
parameter	
Reset method Power-off	
detection error when Reset condition N/A	
power ON Record Yes	
Corrective Cycle the power, if cd2 error still occurs, contact	ct AutomationDirect
Actions Technical Support.	
Action Level Hardware detection	
Action Time cd3 acts immediately when the drive detects the	ne fault
W-phase error (cd3) Warning setting N/A	
parameter	
W-phase current detection error when Reset method Power-off Reset condition N/A	
neset condition 14/74	
1 1ccord 1cs	et Automotion Direct
Corrective Cycle the power, if cd3 error still occurs, contact Actions Technical Support.	.t AutomationDirect
Actions Technical Support. Action Level Hardware detection	
Action Time Hd0 acts immediately when the drive detects t	he fault
CC liardware error	no rauti
(Hd0) Parameter N/A	
H-IT 36 Reset method Power-off	
Poset condition N/A	
nardware protection Record Yes	
error when power is ON Corrective Cycle the power, if Hd0 error still occurs, containing	ct AutomationDirect
Actions Technical Support.	
Action Level Hardware detection	
Action Time Hd1 acts immediately when the drive detects t	he fault
oc hardware error (Hd1) Fault setting parameter N/A	
Hd 37 ac hardware protection Reset method Power-off	
Reset condition N/A	
Record fes	
Corrective Cycle the power, if Hd1 error still occurs, conta Actions Technical Support.	ct AutomationDirect
(continued next page)	

### PID loss Alz (AFE) PID loss Alz (AFE) PID loss Alz (AFE) PID loss Alz (AFE) PID redback loss (analog feedback signal so only valid when the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Action in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function is enabled. PID feedback corrective Actions in the PID function i		Fault Codes (continued)				
### Auto-tuning error (AUE) Auto-tuning error (AUE) Auto-tuning error (AUE) Motor auto-tuning error (AUE) Auto-tuning error (AUE) Motor auto-tuning error (AUE) Motor auto-tuning error (AUE) Motor auto-tuning error (AUE) Auto-tuning error (AUE) Motor auto-tuning error (AUE) Auto-tuning erro		ID No.		Action, Reset, o	and Corrective Action	
### PID loss AI2 (AFE) PID loss AI2 (AFE) PID loss AI2 (AFE) PID feedback loss (analog feedback signal is only valid when the PID function is enabled at its						
### Auto-tuning error (AUE) Auto-tuning error (AUE) Motor auto-tuning error (AUE) Auto-tuning error (AUE) Motor auto-tuning error (AUE) Auto-tuning error (AUE) Motor auto-tuning error (AUE) Motor auto-tuning error (AUE) Motor auto-tuning error (AUE) Auto-tuning error (AUE) Motor auto-tuning error (AUE) Auto-tuning error (AUE) Motor auto-tuning error (AUE) Auto					Immediately act	
Reset method Manual reset Record Yes Auto-tuning error (AUE) Auto-tuning error (AUE) Auto-tuning error (AUE) Motor auto-tuning error Corrective Actions Action Level PD Ious AIZ (AFE) PID loss AIZ (AFE) PID loss AIZ (AFE) PID loss AIZ (AFE) PID loss AIZ (AFE) PID feedback loss (analog feedback signal is only valid when the PID function is enabled) PG feedback error (PGF1) PG feedback error (PGF1) PG feedback loss (analog feedback error (PGF1) PG feedback loss (PGF2) PG feedbac				_	N/A	
RESEX CONDITION Record Yes 1 This error can occur if you press the STOP key during auto-tuning. Re-execute auto-tuning. Per Re-execute auto-tuning. Check motor capacity and related parameters. 3 Set the correct parameters P01.01–P01.02. b) Set P01.00 larger than the motor rated frequency. Check the motor wiring. Check the file of the motor wiring. Check the motor wiring and the post of					Manual reset	
Auto-tuning error (AUE) Action Level Action Level Action Level Action Ime PDB 1						
Auto-tuning error (AUE) Motor auto-tuning error (AUE) Motor auto-tuning error (AUE) Motor auto-tuning error (AUE) Actions Corrective Actions Corrective Actions Action Level Action IIII PB PB I				Record		
### Auto-tuning error (AUE) Motor auto-tuning error Motor auto-tuning error Motor auto-tuning error Autor tuning error Corrective Actions Auton Level Action Level (analog feedback signal is only valid when the PID function is enabled) PID feedback loss (analog feedback signal is only valid when the PID function is enabled) PID feedback loss (analog feedback signal is only valid when the PID function is enabled) PID feedback loss (analog feedback signal is only valid when the PID function is enabled) PID feedback loss (analog feedback signal is only valid when the PID function is enabled) PID feedback loss (analog feedback signal is only valid when the PID function is enabled) PID feedback loss (analog feedback signal is only valid when the PID function is enabled) PID feedback loss (analog feedback signal is only valid when the PID function is enabled) PID feedback loss (PGF1) PG feedback loss (PGF1) PG feedback loss (PGF1) PG feedback loss (PGF1) PG feedback loss (PGF2) PID 142 PG feedback loss (PGF2) PID 143 PG feedback loss (PGF2) PID 144 Action Level Action Set under the feedback signal is only valid when the feedback signal is only valid when the PID function is enabled) PG feedback loss (PGF2) PG feedback loss (PGF2) PG feedback loss (PGF2) PID 145 PG feedback loss (PGF2) PID 146 PG feedback loss (PGF2) PID 147 PG feedback loss (PGF2) PID 148 PG feedback loss (PGF2) PID 149 PG feedback loss (PGF2) PID 149 PG feedback loss (PGF2) PD 149 PG feedback loss (PGF2) PG feedback lo						
### Action Level Action Time PD8.09 = 1 or 2, AFE is a "Naming"; when the feedback signal is only valid when the PID function is enabled) ### PGF 1 ### PG feedback error (PGFT) PGF 1 ### PGF 6 ### PG feedback cross (PGF2) PG feedback loss (Auto-tuning error (AUE)			
### PSF 1 42 PSF 1 42 PSF 1 42 PSF 6 feedback error (PGF1) The motor runs in a reverse direction to be frequency command direction PSF 6 feedback error (PGF1) The motor runs in a reverse direction to the frequency command direction PSF 6 feedback loss (Action Sun PGF2) Action Level Action Sun PGF3 feedback cable and tighten the terminal. Replace the feed one. Action Level Action Sun PGF3 feedback cable and tighten the terminal Replace the cable with a new one if needed. Action Sun PGF3 feedback cable and tighten the terminal Replace the cable with a new one if needed. Action Sun PGF3 feedback cable and tighten the terminal Replace the cable with a new one if needed. Action Sun PGF3 feedback cable and tighten the terminal Replace the cable with a new one if needed. Action Sun PGF4 feedback cable and tighten the terminal Replace the cable with a new one if needed. Action Sun PGF4 feedback cable and tighten the terminal Replace the cable with a new one if needed. Action Sun PGF4 feedback cable and tighten the terminal Replace the cable with a new one if needed. Action Sun PGF4 feedback cable and tighten the terminal Replace the cable with a new one if needed. Action Sun PGF4 feedback cable and tighten the terminal Replace the cable with a new one if needed. Corrective Action Sun PGF4 feedback cable and tighten the terminal Replace the cable with a new one if needed. Corrective Action Sun PGF4 feedback cable and tighten the terminal Replace the cable with a new one if needed. Corrective Action Sun PGF4 feedback cable and tighten the terminal Replace the cable with a new one if needed. Corrective Action Sun PGF4 feedback cable and tighten the terminal Replace the device with a new one if needed. Corrective Action Sun PGF4 feedback cable and tighten the terminal Replace the device with a new one if needed. Corrective Action Sun PGF4 feedback device failure and replace the device with a new new feeded. Corrective Action Sun PGF4 feedback and tighten the terminal Replace the cable with a new one	BUE	40			a) Set the correct parameters P01.01–P01.02.	
### Action Level Action Signal is only valid when the PID function is enabled (analog feedback signal is only valid when the Action is enabled) ### PFF I 42 ### PG feedback error (PGF1) ### PFF I 42 ### PG feedback coss (RGF2) ### PG feedback loss (RGF2) ### PID 0.00 and p10.02 list on set in the PG control mode. When press* TRUN* key, PGF2 fault cocurs. ### PG feedback loss (RGF2) ### PID 0.00 and p10.02 list on set in the PG control mode. When Poses* RUN* key, PGF2 fault cocurs. ### PG feedback loss (RGF2) ### PID 0.00 and p10.02 list on set in the PG control mode. When Poses* RUN* key, PGF2 fault cocurs. ### PG feedback loss (RGF2) ### PID 0.00 and p10.02 list on set in the PG control mode. When Poses* RUN* key, PGF2 fault cocurs. ### PG feedback loss (RGF2) ### PID 0.00 and p10.02 list on set in the PG control mode. When Poses* RUN* key, PGF2 fault cocurs. ### PG feedback loss (RGF2) ### PID 0.00 and p10.02 list on set in the PG control mode. When Poses* RUN* key, PGF2 fault cocurs. ### PG feedback loss (RGF2) ### PID 0.00 and p10.02 list on set in the PG control mode with long parameter (RGPC2) ### PG feedback loss (RGF2) ### PID 0.00 and p10.02 list on set in the PG control mode. When Poses* RUN* key, PGF2 fault cocurs. ### PG feedback loss (RGPC2) ### PG feedback loss (RGPC2) ### PG feedback loss (R	,,,,,	.0				
Actions Signature electromagnetic contactor at output (U/V/W) and make sure the electromagnetic valve is OFF. (b) Verify load. If too heavy: a) Reduce the load. b) Replace the motor with a larger capacity model. 7) Check if accel/decel time is too short, then increase the setting values for P0.112-P0.119 (accel/decel time) in needed. Action Level Action Time Fault setting parameter? PID loss Al2 (AFE) PID feedback loss (analog feedback signal is only valid when the PID function is enabled) PID feedback signal is only valid when the PID function is enabled place in the PID function is enabled. PG feedback reror (PGF1) Action Level Action Time PG feedback cerror (PGF1) Action Level Action Time Fault setting parameter (PGF1) Action Level Action Interest (PGF2) PG feedback loss (analog feedback device failure and replace the device with a new one: a Corrective Actions Action Level Action Time Fault setting parameter (PGF2) PG feedback loss (PGF2) Fault occurs. Action Level Action Time Fault and ramp to stop 2: Fault and ramp to stop 2: Fault and coast to stop PG feedback cerror (PGF1) Action Time PID.09 PID.08 PESENDER (PGF2) PG feedback loss (PGF2) Fault setting parameter (PID.02) if incorrect. 2: Corrective Actions PG feedback loss (PGF2) Fault setting parameter (PID.02) if incorrect. 2: Check encoder wining and rewire if necessary. 3: Check he PG card or encoder, replace if failed. 4: Verify wiring of the control circuit and wiring/grounding of the main circuit to prevent interference. Corrective Action Time Fault setting parameter (PID.00 and PID.02) Fault and coacts to stop PG feedback device failure and replace the device with a new one: 3: Check encoder wiring and rewire if necessary. 3: Check he PG card or encoder, replace if failed. 4: Verify wiring of the control circuit and wiring/grounding of the main circuit to prevent interference. 3: Check he PG card or encoder, replace if failed. 4: Verify correct control mode is selected (P00.11=1).			error		3) Check the motor wiring.	
### Sure the electromagnetic valve is OFF. Verify load. If too heavy. a) Reduce the load. b) Replace the motor with a larger capacity model. 7) Check if accel/decel time is too short, then increase the setting values for P01.12-P01.19 (accel/decel, time) if needed. 7) Check if accel/decel time is too short, then increase the setting values for P01.12-P01.19 (accel/decel, time) if needed. 8) Replace the motor with a larger capacity model. 7) Check if accel/decel time is too short, then increase the setting values for P01.12-P01.19 (accel/decel, time) if needed. 8) Replace the motor with a larger capacity model. 8) Replace the motor with a larger capacity model. 90 Rob Replace the motor with a larger capacity model. 1) Folloss Al2 (AFE) P10 Ioss Al2 (AFE) P20 Ioss Al2 (AFE) P30 Ioss Al2 (AFE) P30 Ioss Al2 (AFE) P30 Ioss Al2 (AFE) P30 Ioss Al2 (AFE) P41 Ioss Al2 (AFE) P42 Ioss Al2 (AFE) P43 Ioss Al2 (AFE) P44 Ioss Al2 (AFE) P45 Ioss Al2 (AFE) P45 Ioss Al2 (AFE) P46 Ioss Al2 (AFE) P46 Ioss Al2 (AFE) P46 Ioss Al2 (AFE) P46 Ioss Al2 (AFE) P47 Ioss Al2 (AFE) P48 Ioss Al2 (AFE) P49 Ioss Al2 (AFE) P40 Ioss Al2 (AF					'	
PSF 43 PSF PSF Action Level Action September PSF Action Level Action September PSF PSF Action Level Action September PSF PSF Action Level Action September PSF				Actions		
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### Action Time P08.09 setting is: PID loss Al2 (AFE)						
### Action Time P08.08 P08.09 setting is: 0. Warn and continue operation Fault setting parameter 1: Fault and coast to stop 2: Fault and coast to stop 3: Warn and operate at last frequency When P08.09=3 or 4, AFE is a "Warning". When the fell function is enabled P1D function is enabled P1D function is enabled P2G P3 or 4, AFE is a "Fault". You must reset manually. Immediately reset P1D function is enabled P2G P3 or 4, AFE is a "Fault". You must reset manually. Immediately reset P1D function is enabled P2D function is enabl				Action Lovel		
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fault occurs. Actions 2) Verify correct control mode is selected (P00.11=1).						
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	Fault Codes (continued)						
Display on GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, o	and Corrective Action			
-77		PG feedback stall (PGF3)	Action Level Action Time	P10.10 P10.11 P10.12 setting is:			
		Under PG mode, when the motor frequency exceeds the encoder	Fault setting parameter	0: Warn and continue operation 1: Fault and ramp to stop 2: Fault and coast to stop			
P9F3	44	observer stall level	Reset method Reset condition	Manual reset			
		(P10.10) and starts to count, the fault	Record	Immediately reset Yes			
		time is longer than the detection time of encoder observer stall (P10.11), then PGF3 fault occurs.	Corrective Actions	1) Reset encoder parameter (P10.01) 2) Value for P01.00 may be too low, set a higher value. 3) Reset ASR parameters. Verify accel/decel times and reset if needed. 4) Reset PG feedback stall values, P10.10 and P10.11.			
			Action Level	P10.13			
		PG slip error (PGF4)	Action Time Fault setting parameter	P10.14 P10.15 setting is: 0: Warn and continue operation 1: Fault and ramp to stop 2: Fault and coast to stop			
P9F4	45	Under PG mode, when the motor frequency exceeds encoder observer slip range (P10.13) and starts to count, the fault time is longer than the detection time of encoder observer slip (P10.14), PGF4 fault occurs.	Reset method	Auto: When P10.15=0, PGF4 is a "Warning". When the deviation between the output frequency and motor frequency is smaller than the encoder observer slip range, the warning is automatically cleared. Manual: When P10.15=1 or 2, PGF4 is a "Fault" and you must reset manaully.			
			Reset condition				
			Record Corrective Actions	 When P10.15=1 or 2, PGF4 is a "Fault" and the fault is recorded. Reset PG feedback parameters (P10.13 and P10.14) Reset ASR parameters. Verify accel/decel times and reset if needed. Reset encoder parameters (P0.01). Verify torque limit and set new values if needed (P06.12, P11.17-P11.20) Check for and resolve any causes of motor shaft lock. Check the mechanical brake has released correctly and verify the timing of the system. 			
			Action Level	When the analog input is < 4 mA (only detects 4–20 mA analog input)			
ЯСЕ	48	Al2 loss (ACE) Analog input loss (including all the 4–20 mA analog signal)	Action Time Fault setting parameter Reset method Reset condition Record Corrective	Immediately act P03.19 setting is: 0: Disable 1: Continue operation at the last frequency (warning, ANL is displayed on the keypad) 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 mA, the warning is automatically cleared. When P03.19=3, ACE is a "Fault". You must reset manually. Immediately reset When P03.19=3, ACE is a "Fault", and the fault is recorded. 1) Check the Al2 feedback cable and tighten the terminal. Replace the cable with a new one if needed. 2) Check for external device failure and replace the device with a new			
			Actions	one. 3) Check all the wiring. If ACE fault still exists, contact AutomationDirect Technical Support.			
	(continued next page)						

Fault Codes (continued)					
Display on GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, o	and Corrective Action	
.,,			Action Level	DIx=10: External fault (EF) and the DI terminal is ON	
			Action Time	Immediately act P07.20 setting is:	
				0: Coast to stop	
		[t		1: Stop by the 1st deceleration time	
		External fault (EF)	Fault setting	2: Stop by the 2nd deceleration time	
		External fault. When	parameter	3: Stop by the 3rd deceleration time	
EF	49	the drive decelerates		4: Stop by the 4th deceleration time 5: System deceleration	
		based on the setting		6: Automatic deceleration (P01.46)	
		of P07.20, the EF fault displays on the keypad.	Reset method	Manual reset	
		displays on the keypad.	Reset condition	Manual reset only after the external fault is cleared (terminal status is	
			Record	recovered) Yes	
			Corrective		
			Actions	Press RESET key after the fault is cleared.	
		Emergency stop (EF1)	Action Level Action Time	DIx=28: Emergency Stop (EF1) and the DI terminal is ON	
		NATI II .	Fault setting	Immediately act	
		When the contact of DIx=EF1 is ON,	parameter	N/A	
EF I	50	the output stops	Reset method	Manual reset	
		immediately and	Reset condition	Manual reset only after the external fault is cleared (terminal status is recovered)	
		displays EF1 on the	Record	Yes	
		keypad. The motor is in free running.	Corrective	Verify if the system is back to normal condition, and then press "RESET"	
		External base block (bb)	Actions	key to go back to the default. DIx=11: Base Block (BB) and the DI terminal is ON	
		LYIGITIAI DASE DIOCK (DD)	Action Time	Immediately act	
		When the contact of Dlx=bb is ON, the output stops immediately and displays bb on the keypad. The motor is in	Fault setting	N/A	
1.1	F4		parameter		
66	51		Reset method Reset condition	The display "bb" is automatically cleared after the fault is cleared. N/A	
			Record	No	
			Corrective	Verify if the system is back to normal condition, and then press "RESET"	
		free running.	Actions Action Level	key to go back to the default. Entering the wrong password three consecutive times	
			Action Time	Immediately act	
			Fault setting	N/A	
		Password is locked	parameter Reset method	Manual reset	
		(Pcod)		Power-off	
			Record	Yes	
Pcod	52	Entering the wrong		1) Input the correct password after rebooting the motor drive.	
		password three consecutive times		2) If you forget the password, do the following steps: 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"	
				process is finished.	
			Action Level	When the function code is not 03, 06, 10, or 63.	
			Action Time	Immediately act	
			Fault setting parameter	N/A	
			Reset method	Manual reset	
		Illegal command (CE1)	Reset condition	Immediately reset	
CEI	54		Record	No 1) Check if the communication command is correct.	
) -	Communication		2) Verify the wiring and grounding of the communication circuit. It	
		command is illegal		is recommended to separate the communication circuit from the	
			Corrective Actions	main circuit, or wire in 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.	
			(conti-	4) Check the cable and replace it if necessary.	
(continued next page)					



Action Level Action Level Action strine Data is written to read-only address (CE4) Data is written to read-only address Data is written to read-only address Corrective Action Seest condition Record No Data is written to read-only address Corrective Action Level Action Level Action Seest method Action Level Action Seest method Action Immediately reset Record No Data is written to read-only address (CE4) Data is written to read-only address (CE4) Data is written to read-only address Corrective Action Seest method Data is written to read-only address Action Level Action Level Action Level Action Immediately act Action Immediately reset Action Immediately reset Action Immediately reset Action Immediately act Data is written to read-only address. Action Level Action Immediately reset Action Immediately				Fault C	Codes (continued)
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Fault setting Parameter Reset method Record Manual reset Reset condition Record No Corrective Actions Corrective Action Corrective Corrective Action Corrective Corrective Action Corrective Correct					
Reset method Manual reset				Fault setting	
CE2 Data address is illegal				Reset method	
Data address is illegal Corrective Actions					
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Reset method Record Reco					N/A
Illegal data value (CE3) Data value is illegal					Manual reset
Data value is illegal Data value is illegal Data value is illegal					
Data value is illegal Corrective Actions			lilegal data value (CE3)		
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time-out (CE10) Reset method Manual reset Reset condition Immediately reset Record Yes 1) Check if the upper unit transmits the communication command within the setting time for P09.03. 2) 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. 4) Check the cable and replace it if necessary.			NA-2U · · · ·	Fault setting	P09.02 0: Warn and continue operation 1: Fault and ramp to stop 2: Fault and coast to stop
Modbus transmission time-out occurs Reset condition Immediately reset Record Yes 1) Check if the upper unit transmits the communication command within the setting time for P09.03. 2) 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. 4) Check the cable and replace it if necessary.	CE 10 51			Reset method	
Modbus transmission time-out occurs Record Yes		58	, ´ ´		
			Modbus transmission time-out occurs	Record Corrective	Check if the upper unit transmits the communication command within the setting time for P09.03. 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. Check if the setting for P09.04 is the same as the setting for the upper unit.
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Diamland			ruuti C	Codes (continued)
Display on GS30 I Keypad	ID No.	Fault Name and Description	Action, Reset, o	and Corrective Action
			Action Level	 ydc occurs when the confirmation signals of Y-connection and Δ-connection are conducted at the same time. If any of confirmation signals is not conducted within P05.25, ydc occurs.
		Y-connection /	Action Time Fault setting	P05.25
		Δ-connection switch	parameter	N/A
11.1 _	C1	error (ydc)	Reset method	Manual reset
Уdc	61	An error occurs when Y-Δ switches	Reset condition	Can be reset only when the confirmation signal of Y-connection is conducted if it is Y-connection, or when the confirmation signal of Δ -connection is conducted if it is Δ -connection.
			Record	Yes
			Corrective Actions	 Check if the electromagnetic valve works normally during switch. If not, replace it. Check if related parameters are all set up and set correctly. Check the wiring of the Y-Δ switch function.
			Action Level	When P07.13 is not 0, and the DC bus voltage is lower than the level of dEb.
			Action Time	Immediately act
		Deceleration energy	Fault setting	N/A
dEb	When P07.13 is not 0, and the power is suddenly off, causing	parameter Reset method	When P07.13=2 (dEb with auto-acceleration / auto-deceleration, the drive outputs the frequency after the power is restored): dEb is automatically cleared. When P07.13=1 (dEb with auto-acceleration / auto-deceleration, the drive does not output the frequency after the power is restored): The drive stops when dEb acts and the rotation speed becomes 0 Hz, then the drive can be reset manually.	
		function acts and the motor ramps to stop. Then dEb displays on the keypad. Over slip error (oSL)	Reset condition	Auto: The fault is automatically cleared.
				Manual: When the drive decelerates to 0 Hz.
			Record Corrective Actions	Check that the power system is not unstable or off. If another large load operates in the same power system: a) Replace power system with a larger capacity model. b) Ensure the large load system is on a different power system.
			Action Level	P07.29 100% of P07.29 = the maximum limit of the slip frequency (P10.29)
		On the basis of the maximum slip limit set via P10.29, the speed deviation is abnormal.	Action Time Fault setting parameter	P07.30 P07.31 setting is: 0: Warn and continue operation 1: Fault and ramp to stop 2: Fault and coast to stop 3: No warning
o5L	63	When the motor drive outputs at constant speed, F>H or F <h exceeds the level set via</h 	Reset method	P07.31=0 is a warning. When the motor drive outputs at constant speed, and F>H or F <h 2,="" an="" and="" anymore,="" automatically.="" be="" cleared="" does="" error,="" exceed="" is="" it="" level="" manually.<="" needs="" not="" or="" osl="" p07.29="" p07.31="1" reset="" set="" td="" the="" to="" via="" warning="" when="" will=""></h>
		P07.29, and it exceeds the time set via P07.30,	Reset condition	Immediately reset
		oSL shows. oSL occurs	Record	P07.31=1 or 2, oSL is "Fault", and the fault is recorded.
		in induction motors only.	Corrective Actions	 Verify the group 5 motor parameters. Decrease the load Check the setting of oSL protection function related parameters P07.29, P07.30, and P10.29
5rL 1 72		Action Level	Hardware detection	
			Action Time	Immediately act
			Fault setting parameter	N/A
		STO Loss 1 (STL1)	Reset method	Hardware failure, and cannot reset. Cycle the power.
	72	STO1–SCM1 internal	Reset condition	N/A
		loop detection error	Record	Yes
		Toop detection end	Corrective Actions	 Verify the STO1 and SCM1 short circuit lines are connected. Reconnect the short circuit line if needed. Ensure all wiring is correct. Verify the connections at the drive control terminals. If issue still persists, contact AutomationDirect Technical Support.
			(contir	nued next page)



on GS30 ID No. Keypad	Fault Name and Description		
	Description		and Corrective Action
5 76	STO (STo) Safety Torque Off function active	Action Level Action Time Fault setting parameter Reset method Reset condition Record Corrective Actions	Hardware detection Immediately act N/A When P06.44=1 and after STo error is cleared, it automatically resets. When P06.44=0 and after STo error is cleared, reset it manually. Reset only after STo error is cleared. Yes 1) Reset the STO1/SCM1 and STO2/SCM2 switch (ON) and cycle the power. 2) Verify the connections at the drive control terminals. 3) If issue still persists, contact AutomationDirect Technical Support.
5rL2 77	STO Loss 2 (STL2) STO2–SCM2 internal loop detection error	Action Level Action Time Fault setting parameter Reset method Reset condition Record Corrective Actions	Hardware detection Immediately act N/A Hardware failure, and cannot reset. Cycle the power. N/A Yes 1) Verify the STO2 and SCM2 short circuit lines are connected. Reconnect the short circuit line if needed. Ensure all wiring is correct. 2) Verify the connections at the drive control terminals. 3) If the issue persists, contact AutomationDirect Technical Support.
	STO Loss 3 (STL3) STO1–SCM1 and STO2– SCM2 internal loop detection error	Action Level Action Time Fault setting parameter Reset method Reset condition Record Corrective Actions	Hardware detection Immediately act N/A Hardware failure, and cannot reset. Cycle the power. N/A Yes 1) Verify the STO1 and SCM1 or STO2 and SCM2 short circuit lines are connected. Re-connect the short circuit line if needed. Ensure all wiring is correct. 2) Verify the connections at the drive control terminals. 3) If the issue persists, contact AutomationDirect Technical Support.
A oc 79	U-phase over-current before run (Aoc) U-phase short circuit detected when the output wiring detection is performed before the drive runs.	Action Level Action Time Fault setting parameter Reset method Reset condition Record Corrective Actions	300% of the rated current Immediately act N/A Manual reset Reset in five seconds after the fault clears Yes 1) Check if the motor's internal wiring and the UVW wiring of the drive output terminal are correct. 2) 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 the insulation is poor. 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.



	T	7 datt C	Codes (continued)
ID No.	Fault Name and Description	Action, Reset, o	and Corrective Action
		Action Level	300% of the rated current
			Immediately act
		_	N/A
			Manual reset Reset in five seconds after the fault clears
			Yes
80	V-phase over-current before run (boc) V-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.
		Action Level	300% of the rated current
		Action Time	Immediately act
		Fault setting	N/A
		parameter	, and the second
			Manual reset
			Reset in five seconds after the fault clears
		Record	Yes
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: Increase the AC motor drive's capacity. 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: B1 corresponds to U, V and W; DC- corresponds to U, V and W; corresponds to U, V and W. If short circuit occurs, contact AutomationDirect Technical Support.
	80	V-phase over-current before run (boc) V-phase short circuit detected when the output wiring detection is performed before the drive runs. W-phase over-current before run (coc) W-phase short circuit detected when the output wiring detection is performed before run to before run (coc)	Action Level Action Time Fault setting parameter Reset method Record V-phase over-current before run (boc) V-phase short circuit detected when the output wiring detection is performed before the drive runs. Action Level Action Time Fault setting parameter Reset method Reset condition Record W-phase over-current before run (coc) W-phase short circuit detected when the output wiring detection is performed before the drive runs Corrective Corrective Corrective



	Fault Codes (continued)				
Display on GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, o	and Corrective Action	
oPL I	82	Output phase loss U phase (oPL1) U phase output phase loss	Action Level Action Time Fault setting parameter Reset method Reset condition Record Corrective Actions	P06.47 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: 0: Warn and continue operation 1: Fault and ramp to stop 2: Fault and coast to stop 3: No warning Manual reset Immediately reset P06.45=1 or 2 is "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 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.	
oPL2	83	Output phase loss V phase (oPL2) V phase output phase loss	Action Level Action Time Fault setting parameter Reset method Reset condition Record Corrective Actions	P06.47 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: 0: Warn and keep operation 1: Fault and ramp to stop 2: Fault and coast to stop 3: No warning Manual reset Immediately reset When P06.45=1 or 2, oPL2 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 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	
			(conti	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. mued next page)	



Fault Codes (continued)				
Display on GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, o	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.	
		Output phase loss	Fault setting parameter Reset method Reset condition	P06.45 setting is: 0: Warn and continue operation 1: Fault and ramp to stop 2: Fault and coast to stop 3: No warning Manual reset Immediately reset
		W phase (oPL3)	Record	When P06.45=1 or 2, oPL3 is a "Fault", and the fault is recorded.
oPL3	W 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 oPL3 fault still exists, contact 	
l		Low frequency overload protection (oL3) Low frequency and high current protection		AutomationDirect Technical Support.
			A =+:= -= 1 == 1	6) Make sure the capacity of the drive and motor match each other.
			Action Level Action Time	Software detection Immediately act
l			Fault setting	
			parameter	N/A
l				Manual reset
oL3	87		Reset condition Record	Immediately reset Yes
0.3	87		Corrective Actions	 Enhance the heat dissipation capacity for the cabinet. Lower the carrier frequency (P00.17). 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). Replace the drive with a higher power model.
			Action Level	Reset the software
			Action Time Fault setting	Immediately act
			parameter	N/A
		Rotor position	Reset method	Manual reset
	00	Rotor position detection error protection	Reset condition	Immediately reset
roPd	89		Record Corrective Actions	Yes Check the motor cable for damage and replace if needed. Check the motor coil, if damaged replace the motor. IGBT may be broken. If so, contact AutomationDirect Technical Support. Cycle the power. If roPd still occurs during operation, contact AutomationDirect Technical Support.
Ed 10 97		Ethernet Card Timeout	Action Level	Software detection
		(CD10)	Action Time Fault setting	Immediately act
		Ethernet	parameter	N/A
	97	communication has	Reset method	Manual reset
	31	not been received from	Reset condition	Immediate reset
		the external controller	Record Corrective	Yes 1) Initiate Ethernet communications from the master controller again
		(within the Ethernet Timeout window).	Actions	 Initiate Ethernet communications from the master controller again. Disable checking for Ethernet Timeout in P9.94.
		······································		nued next page)



Fault Codes (continued)				
Display on GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, and Corrective Action	
			Action Level	P09.31=-1 – -10 (there is no -9), when the internal communication between Slave and Master is abnormal, ictE fault occurs.
			Action Time	Immediately act
			Fault setting	N/A
		InrCOM time-out error (ictE)	parameter Reset method	Automatically reset after the internal communication is normal
, –	111		Reset condition	N/A
icEE	111	Internal communication	Record	Yes
		Internal communication overtime error	Corrective Actions	 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. Verify the setting for P09.04 is the same as the setting for the upper unit.
			A 1	3) Check the cable and replace it if necessary.
			Action Level Action Time	Software detection Immediately act
		Internal communication		
		error (CP20)	parameter	N/A
CP20	121		Reset method	N/A
		Internal communication		N/A
		time-out	Record	Yes
			Corrective Actions	Contact AutomationDirect Technical Support.
			Action Level	Software detection
		Internal communication	Action Time	Immediately act
		error (CP22)	parameter	N/A
CP22	123	Abnormal internal communication	Reset method	N/A
				N/A
			Record	Yes
			Corrective Actions	Contact AutomationDirect Technical Support.
			Action Level	Software detection
			Action Time	Immediately act
		Internal communication	-	N/A
гоэл	124	error (CP30) Abnormal internal communication	parameter	
CP30			Reset method Reset condition	N/A N/A
			Record	Yes
			Corrective Actions	Contact AutomationDirect Technical Support.
	126	Internal communication error (CP32) Abnormal internal communication Internal communication error (CP33) Abnormal internal communication	Action Level	Software detection
			Action Time	Immediately act
				N/A
CP32			parameter Reset method	N/A
בי שב			Reset condition	N/A
			Record	Yes
			Corrective	Contact AutomationDirect Technical Support.
			Actions	
			Action Level Action Time	Software detection Immediately act
СРЭЭ				N/A
			Reset method	N/A
			Reset condition	N/A
			Record	Yes
			Corrective Actions	Contact AutomationDirect Technical Support.
			(contir	nued next page)

Fault Codes (continued)				
Display on GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, and Corrective Action	
			Action Level Action Time	P14.75 P14.76
		Over-torque 3 (ot3)	Fault setting parameter	P14.74 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
			Reset method	When P14.74=1 or 3, ot3 is a "Warning". The warning is automatically cleared when the output current < P14.75. When P14.74=2 or 4, ot3 is a "Fault". You must reset manually.
		When the output	Reset condition	Immediately reset
		current exceeds the	Record	P14.74=2 or 4, ot3 is a "Fault", and the fault is recorded.
oE3	128	over-torque detection level (P14.75) and exceeds over-torque detection time (P14.76), and when P14.74 is set to 2 or 4, the ot3 error displays.	Corrective Actions	 Configure the settings for P14.75 and P14.76 again. 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 3, P01.54–P01.61), 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. 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 P07.73 torque compensation gain until the output current decreases and the motor does not stall. Correct the parameter settings for speed tracking. Start the speed tracking function. Adjust the maximum current for P07.09 speed tracking.
			Action Level	P14.78
			Action Time	P14.79
	129	Over-torque 4 (ot4) When the output current exceeds the over-torque detection level (P14.78) and exceeds over-torque detection time (P14.77), and when P14.77 is set to 2 or 4, the ot4 error displays.	Fault setting parameter	P14.77 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
			Reset method	When P14.77=1 or 3, ot3 is a "Warning". The warning is automatically cleared when the output current < P14.75.
			Reset condition	When P14.77=2 or 4, ot3 is a "Fault". You must reset manually. Immediately reset
oE4			Record	P14.77=2 or 4, ot3 is a "Fault", and the fault is recorded.
			Corrective Actions	 Configure the settings for P14.78 and P14.79 again. 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 3, P01.63–P01.70), 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. 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 P07.75 torque compensation gain until the output current decreases and the motor does not stall. Correct the parameter settings for speed tracking. Start the speed tracking function. Adjust the maximum current for P07.09 speed



Fault Codes (continued)				
Display on GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, and Corrective Action	
ксурии			Action Level Action Time	Start counting when output current > 150% of the motor 3 rated current. P14.81 (If the output current is larger than 105% of the motor 3 rated current again within 60 sec., the counting time reduces and is less than P14.81)
			Fault setting parameter	N/A
			Reset method	Manual reset
			Reset condition	Reset in five seconds after the fault is cleared
			Record	Yes
EoL3	134	Internal communication error (EoL3) Electronic thermal relay 3 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 P01.54–P01.61 (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 EoL3 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 P14.80=1: Standard motor (motor with fan on the shaft). Verify motor rated current and reset if needed. Verify motor rated frequency and reset if needed. If using one drive to run multiple motors, set P14.80=2: Disable, and install thermal relay on each motor. Set stall prevention to the proper value. Adjust P07.73 torque compensation gain until the current reduces and the motor does not stall. Check the status of the fan, or replace the fan. Replace the motor.
EoL4	135	Internal communication error (EoL4) Electronic thermal relay 4 protection. The drive coasts to stop once it activates.	Action Level Action Time Fault setting parameter Reset method Reset condition Record Corrective Actions	Start counting when the output current > 150% of the motor 4 rated current. P14.83 (If the output current is larger than 105% of motor 4 rated current again within 60 sec., the counting time reduces and is less than P14.83) N/A Manual reset Reset in five seconds after the fault is cleared Yes 1) Reduce the load. 2) Increase the setting value for P01.12–P01.19 (accel./decel. time) 3) Adjust the settings for P01.62–P01.70 (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 EoL4 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 P14.82=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 P14.82=2: Disable, and install thermal relay on each motor. 9) Set stall prevention to the proper value. 10) Adjust P07.75 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 GS30 Keypad	ID No.	Fault Name and Description	Action, Reset, o	and Corrective Action
			Action Level	Hardware detection
		4116	Action Time	Immediately act when the fault is detected
		oc hardware error (Hd6)	_	N/A
U.J.C	140	GFF hardware	parameter Reset method	Power-off
Hd5	140	protection error when power is ON.	Reset condition	N/A
			Record	Yes
		power is or a	Corrective	Cycle the power.
			Actions	If Hd6 still exists, contact AutomationDirect Technical Support.
			Action Level	250% of the rated current
			Action Time	Immediately act
		GFF occurs before run	Fault setting	N/A
		(b4GFF)	parameter Reset method	Manual reset
			Reset condition	Reset in five seconds after the fault is cleared
649FF	141	The ground short	Record	Yes
0 13, 7	141	circuit detected when the output wiring detection is performed		 Check if the motor's internal wiring and the UVW wiring of the drive output terminal are correct.
		before the drive runs.	Corrective Actions	2) 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
				the insulation is poor.
			Action Level	Software detection
		Auto-tune error 1	Action Time	Immediately act
		(AuE1)	Fault setting	N/A
			parameter Reset method	Manual reset
AUE I	142	No feedback current	Reset condition	Immediately reset
		error when the	Record	Yes
		motor parameter automatically detects	Corrective Actions	 Verify the motor is wired correctly. If a contactor is used as an open state on the output side of the drive (U/V/W), check if the contactor coil is closed.
			Action Level	Software detection
			Action Time	Immediately act
		Auto-tune error 2	Fault setting	N/A
		(AuE2)	parameter	<u>'</u>
		Motor phase loss error when the motor parameter automatically detects	Reset method Reset condition	Manual reset Immediately reset
RUE2	143		Record	Yes
			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.
	144	Auto-tune error 3 (AuE3) No load current I ₀ measurement error when the motor parameter automatically detects	Action Level	Software detection
			Action Time	Immediately act
			Fault setting parameter	N/A
AUE3			Reset method	Manual reset
,,,,,,,			Reset condition	Immediately reset
			Record	Yes
			Corrective	1) Check the settings for P05.01 / P05.13 / P05.34.
	149	,	Actions Action Level	Confirm that the motor works normally outside of auto-tuning. Software detection
AUE5		Auto-tune error 5	Action Time	Immediately act
			Fault setting parameter	N/A
		The rotor resistance measuring error when the motor parameter automatically detects	Reset method	Manual reset
			Reset condition	Immediately reset
			Record	Yes 1) Verify that the motor is wired correctly and no wires are broken
			Corrective Actions	 Verify that the motor is wired correctly and no wires are broken. Confirm that the motor works normally outside of auto-tuning. Possibly test with standard across-the-line starter.



TYPICAL AC DRIVE PROBLEMS AND SOLUTIONS

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 GS30 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 GS30 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 GS30 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 GS30 drive failure or damage as a result of wet fiber dust adhering to components within the drive.

Solution:

Install the GS30 drive in a suitable enclosure to protect it from fiber dust. Clean and remove fiber dust regularly to prevent damage to the drive.









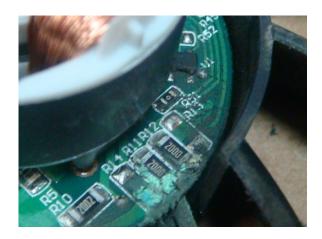
CORROSION PROBLEM

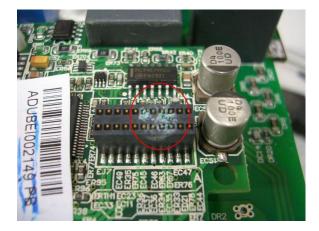
Corrosion problems may occur if any fluids or liquid in vapor form flows into the GS30 drive. Please be aware of the damage that corrosion may cause to your drive.

• Corrosion of internal components may cause the GS30 drive to malfunction and possibly explode.

Solution:

Install the GS30 drive in a suitable enclosure to protect it from fluids. Clean the drive regularly to prevent corrosion.









INDUSTRIAL DUST PROBLEM

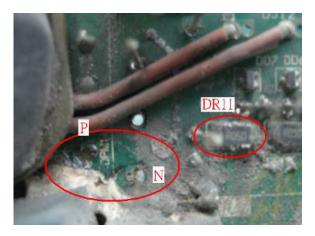
Serious industrial dust pollution frequently occurs in stone processing plants, flour mills, cement plants, and so on. Please be particularly aware of any metal dust, filings or if metalized vapor is present as these may cause damage to your drives:

- 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 GS30 drive in a suitable enclosure and protect it from dust. Clean the cabinet and ventilation filter regularly for good ventilation.







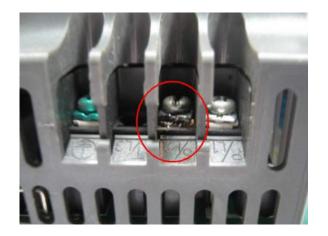
WIRING AND INSTALLATION PROBLEM

When wiring the GS30 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 GS30 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 GS30 drive have been modified, components on the affected boards may have been damaged.

Solution:

Inspect all power and control terminal connections in the GS30 drive to ensure adequate wire insertion. Do not attempt to disassemble or repair control boards in the GS30 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.

