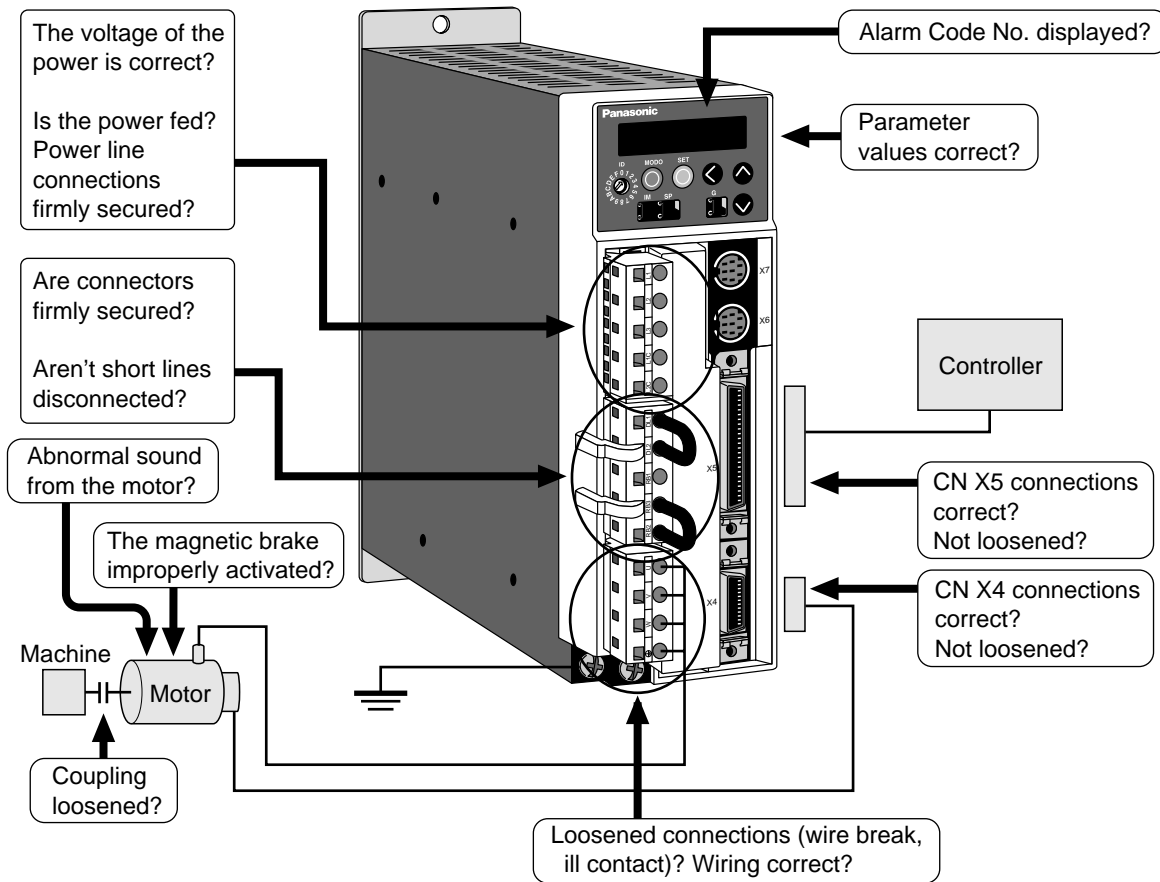


Identifying Problem

Check Points



Protective Functions (What are Alarm codes?)

The driver has various protective functions. When one of the protections is activated, the motor trips according to the timing chart shown in page 41, and the Servo Alarm Output (ALM) is turned off.

Actions to be taken after trip events

- After a trip event, the LED touch panel displays an alarm code no., and no Servo-ON occurs.
- Any trip status is cleared by keeping A-CLR (Alarm Clear Input) on for at least 120 ms after A-CLR off.
- The overload protective (protection against overload) function is activated based on the time limit characteristic when effective current reaches or exceeds 115% of rated current. Ensure that effective current does not exceed rated current of the servo driver. You can clear alarm with an alarm clear signal (A-CLR) 10 seconds or longer after the alarm has occurred, when the overload protective (protection against overload) function has been activated. When control current of the driver between L1C and L2C or r and t is turned off, the time limit characteristic is cleared.
- The alarms mentioned above can also be cleared with the LED touch panel. See page 66 "Alarm Clear".
- The alarms mentioned above can also be cleared by using PANATERM®.

<Notes>

- Protections marked with * cannot be cleared with A-CLR (Alarm Clear Input). They should be cleared by turning the power off, removing the causes, and then turning the power on again.
- these alarm will not be recorded.

Control power undervoltage	(Alarm code No.11)
Main power undervoltage	(Alarm code No.13)
EEPROM parameter error	(Alarm code No.36)
EEPROM check code error	(Alarm code No.37)
Overtravel inhibit input error	(Alarm code No.38)
Motor automatic recognition error protection	(Alarm code No.95)
Motor auto recognition error	(Alarm code No.97)

Protective Functions (Details of Alarm Codes)

Protection	Alarm Code No.	Cause	Countermeasures
Control power undervoltage	11	The P-N voltage of the control power converter is lower than the specified value. Or the control voltage is too low due to an instantaneous outage or shortage of power capacity.	Measure the P-N voltage to check whether the voltage is correct or not. Modify the control voltage to an acceptable value, and/or increase the power capacity.
Overvoltage	12	The line voltage is larger than the specified acceptable range, so that the P-N voltage of the converter is larger than the specified value, or the line voltage was raised by a condensive load or UPS (Uninterruptible Power Supply). 1) The internal regenerative discharge resistor is disconnected. 2) The external regenerative discharge resistor is not suitable so that regenerative energy cannot be absorbed. 3) The driver (circuit) failed.	Measure the terminal-to-terminal voltages (between L1, L2 and L3). Remove the causes, and input the correct voltage. 1) Measure the P-B1 resistance of the driver using a circuit tester. If it read ∞ , the connection is broken. Replace the driver. Insert an external regenerative discharge resistor between the P and B2 terminals. 2) Use a resistor having the specified resistance for specified Watt. 3) Replace with a new driver (that is working correctly for another axis).
Main power undervoltage	13	The P-N voltage of the main power converter is lower than the specified value during Servo-ON. 1) The main power line voltage is too low, an instantaneous outage occurred, the power source is too small, the main power is turned off, or the main power is not fed. 2) Shortage of power source: the line voltage dropped due to the inrush current at power on. 3) Lack of phase Power source has been operated at single phase. 4) Servo-on at main power source off. 5) driver damage (circuit damage) 6) With the short line (short bar) between the connector X2 or DL1 – DL2 (B1-B2) disconnected, a user turned the servo ON.	Measure the terminal-to-terminal voltages (between L1, L2 and L3). 1) Increase the capacity supply voltage. Change power source. Remove the source that caused the electromagnetic contractor to drop, and turn the power on again. 2) Increase the capacity of the main power. For the required capacity, see page 30 "List of drivers and Compatible Peripheral Equipment". 3) Correct the phase (L1, L2 and L3) connections of the main power. If the main power is single-phase 100V, use L1 and L3. 4) Check the timing of power-on (for both the main power and control power). After the servo ready signal is output, activates servo-on. See page 40 the "Timing Chart". 5) Replace to a new driver (which is operated at another axis) 6) Ensure that the short line (short bar) between the connector CN X2 or DL-DL2 is not disconnected.
* Overcurrent and ground fault	14	The current flowing in the converter is larger than the specified value. 1) The driver failed (due to defective circuits or IGBT parts). 2) Motor wires (U, V and W) are shorted. 3) Motor wires (U, V and W) are grounded. 4) Motor burned 5) Poor connection of Motor wires 6) The relay for the dynamic brake is melted and stuck due to the frequent Servo-ON/OFF. 7) The motor is not compatible with the driver. 8) The timing of the pulse input and servo-on is the same, or the pulse is faster.	1) Disconnect the motor wires, and enter Servo-ON. If this trouble happens immediately, replace the driver with a new one (that is working correctly). 2) Check if the U, V and W wires are shorted at the connections. Reconnect them, if necessary. 3) Measure the insulation resistance between U/V/W and earth wire. If the resistance is not correct, replace the motor with a new one. 4) Measure the resistance between U, V and W. If they are unbalanced, replace the motor with a new one. 5) Check if the U/V/W connector pins are firmly secured with screws. Loosened pins should be fixed firmly. 6) Replace the driver with a new one. Do not start or stop the motor by entering Servo-ON or OFF. 7) Check the capacity of the motor and driver on the nameplate. If the motor is not compatible with the driver, replace it with a correct one. 8) Input the pulse at least 50 ms after servo-on. See page 41 the "Timing Chart".

Encountering Difficulties?

Identifying Problem

Protection	Alarm Code No.	Cause	Countermeasures
* Motor and/ or Drive Overtemp.	15	The radiator is heated up to exceed the limit temperature. The power elements of the driver is overheated. Overload.	Check the ambient temperature and cooling conditions. Check the load rate. Make the environment under which the driver operates. Reduce the load.
Overload (Discharge)	16	Overload protection is activated based on the specified time limiting operation when the integration of a torque command exceeds the specified overload level. Caused by a long operation with a torque that exceeds the specified torque limit. (table of characteristics) 1) Long operation with more load and torque than the rating. 2) Vibration or hunting due to incorrect gains. Cause vibration and/or abnormal sound. 3) Motor wires connected wrong or broken 4) The machine is hit against a heavy thing, or suddenly becomes heavy in operation. The machine is entangled. 5) The electromagnetic brake is ON. 6) In a system of multiple drivers, some motors are wired incorrectly to other axis.	Monitor the torque (current wave) using an oscilloscope to check whether the torque is surging or not. Check the load factor and overload alarm messages. 1) Increase the capacity of the driver and motor. Lengthen the ramp time of acceleration/deceleration. Reduce the motor load. 2) Readjust the gains. 3) Correct the motor wiring per the wiring diagrams. Replace cables. 4) Free the machine of any tangle. Reduce the motor load. 5) Measure the voltage at the brake wiring connections. Turn off the brake. 6) Correct the motor and encoder wiring to eliminate the mismatching between the motors and axis.
<p>Overload Protection: Time Limiting Characteristic</p> <p>The graph plots Time (sec) on a logarithmic y-axis (1 to 100) against Torque (%) on a linear x-axis (100 to 550). A vertical dashed line is drawn at 115% torque. The legend includes:</p> <ul style="list-style-type: none"> — MAMA 100W — MSMA 30W – 100W — MAMA 200W – 750W — MSMA 200W – 5kW - - - MDMA 750W – 5kW - - - MHMA 500W – 5kW - - - MFMA 400W – 4.5kW - - - MGMA 300W – 4.5kW 			
* Regenerative resistor overload	18	The regenerative energy is larger than the capacity of the regenerative discharge resistor. 1) When the load inertia is too large, the converter voltage increases due to the large energy regenerated during deceleration, and increases more due to the shortage of energy consumption by the regenerative discharge resistor. 2) When the speed of the motor is too high, the regenerative energy cannot be consumed within the specified deceleration time.	Check the load rate of the regenerative resistor in the Monitor mode. The driver should not be used with continuous regenerative braking. 1) Check the operation pattern (using the velocity monitor). Check the load rate of the regenerative resistor and the over-regeneration alarm on display. Increase the capacity of the driver and motor. Increase the deceleration time. Use an external regenerative resistor. Check the connection wire between DL1 – DL2 (B1 and B2) terminals. 2) Check the operation pattern (using the speed monitor). Check the load rate of the regenerative resistor and the over-regeneration alarm on display. Increase the capacity of the driver and motor. Increase the deceleration time. Reduce the motor speed. Use an external regenerative resistor.

Protection	Alarm Code No.	Cause	Countermeasures
* Encoder communication error	21	Due to communication breakdown between the encoder and driver, the detective function for broken encoder wires is activated. <Caution> If the above has occurred before power-on, be careful as the motor automatic recognition of and protection against abnormality (alarm code No.95) will be activated.	Correct the encoder wiring per the wiring diagram. Correct the connection of the pins.
* Encoder communication data error	23	The encoder sends an erroneous data mainly due to noises. The encoder is connected correctly, though the data is not correct. <Caution> If the above has occurred before power-on, be careful as the motor automatic recognition of and protection against abnormality (alarm code No.95) will be activated.	Make sure that the power of the encoder is 5VDC \pm 5% (4.75 to 5.25V). Especially when the wire length is long, it is important to meet this requirement. You should not bundle the encoder wires and motor wires together. Connect the shield to FG. See the encoder wiring diagram.
Position deviation error	24	The position error pulse is larger than Pr63 (position error limit). The motor operation does not respond to the commands.	Check whether the motor operates per the position command pulse or not. See the torque monitor to check if the output torque is saturated. Readjust the gains. Maximize the value of Pr5E (torque limit set-up). Correct the encoder wiring per the wiring diagram. Increase the acceleration and deceleration time. Reduce the load and speed.
* Hybrid deviation error	25	When the driver of the full-closed version is under the full-closed and hybrid control with an external encoder, the load position detected by the external encoder and the motor position detected by the motor encoder are beyond the limit specified by Pr73 (hybrid error limit).	Check the connection between the motor and load. Check the connection between the external encoder and driver. Correct the values of the external scale numerator and denominator regarding parameters Pr74, Pr75, Pr 76 and Pr77. Increase the value of Pr73 Increase the value of Pr71 (hybrid switching time).
Overspeed	26	The motor speed exceeds the specified limit.	Decrease the target speed (command values). Decrease the value of Pr50 (speed command input gain). Adjust the scale ratio so that the frequency of the command pulse is 500 kpps or less. If an overshoot occurs, readjust the gains. Correct the encoder wiring per the wiring diagram.
* Command scaling error	27	The command pulse is larger than 500 kpps at the entrance of the position error counter. The scale ratios set by Pr46 through Pr4B (numerator of 1st to 4th command scale) are not correct.	Reduce the multiplication factor by adjusting the values of Pr46 through Pr4B, and then adjust the scale ratios so that the command pulse frequency is 500 kpps or less.
External scale communication data error	28	When Pr76 (scale error invalidation) = 0, and the driver is operated under the full-closed and hybrid control with an external encoder, the scale error input is OFF.	Check the reason why the CN X5 Pin 33 is OFF.
Deviation counter overflow	29	The value of the position error counter is over 2 ²⁷ (134217728).	Check that the motor operates per the position command pulse. See the torque monitor to check that the output torque does not get saturated. Readjust the gains. Maximize the value of Pr5E (torque limit set-up). Correct the encoder wiring per the wiring diagram.
* External scale communication error	35	The external scale is disconnected, or the scale fails.	Check the power supply for the external scale. Properly connect the external scale cable and the CN X4 cable according to the wiring diagram.
* EEPROM parameter error	36	The data contained in the parameter storage area of the EEPROM is broken, so erroneous data is retrieved.	Set all the parameters again. If this error occurs frequently, the driver may have been broken. Replace the driver with a new one. Return the old driver to the sales agent for repair.
* EEPROM check code error	37	The check code of the EEPROM is broken, so erroneous data is retrieved.	The driver may have been broken. Replace the driver with a new one. Return the old driver to the sales agent for repair.
Overtravel inhibit input error	38	Both the CW and CCW over-travel limits are not active.	Check if the switch, cable and power supply for the CW/CCW overtravel inhibit input are normal. Check that the control power (12 to 24VDC) can be established without delay. Check the value of Pr04. Correct the wiring, if necessary.

Identifying Problem

Protection	Alarm Code No.	Cause	Countermeasures
Absolute encoder system down error	40	Voltage of the battery for the absolute encoder has dropped below a specified value.	Check the voltage of the battery. Connect to the battery, and then clear the encoder using the absolute encoder clear mode contained in the auxiliary function (see page 231 "Setup of the absolute encoder (initialization)" in Appendix).
* Absolute encoder counter overflow	41	The data of the multi-turn counter of the encoder exceeds the specified limit.	Limit the movable range to ± 32767 revolutions (15 bits) from the initial position. Adjust the value of Pr0B.
Absolute encoder overspeed	42	The encoder rotates faster than the specified rate when it is battery-powered.	Connect the power to the encoder and then make sure that the encoder voltage is $5V \pm 5\%$. Correct CN X4 connections, if necessary.
* Absolute encoder single-rotation counter error	44	The encoder detects an error of the single-turn counter.	Turn off the power and turn it on again. If the error cannot be eliminated, the motor and/or driver may be broken. Disconnect the power supply of these equipment, and replace them with new ones. Return the old equipment to the sales agent for repair.
* Absolute encoder multi-rotation counter error	45	2500P/r	The encoder has detected abnormality of the single rotation counter.
		17 bit	The encoder has detected abnormality of the multi-rotation counter.
Absolute encoder status error	47	The encoder detects an internal status error. After the control power on, the encoder rotates faster than the specified rate.	Prevent the motor from rotating before output of servo ready (S-RDY) since control power supply of the driver turned on.
* Encoder Z-phase error	48	Pulse dropouts in phase Z of 2500 [P/r] 5 serial encoders have been detected. The encoder is defective.	Turn off the power and turn it on again. If the error cannot be eliminated, the motor and/or driver may be broken. Disconnect the power supply of these equipment, and replace them with new ones. Return the old equipment to the sales agent for repair.
* Encoder commutation signal error	49	Abnormal logic of CS signal of 2500 [P/r] 5 serial encoders have been detected. The encoder is defective.	Turn off the power and turn it on again. If the error cannot be eliminated, the motor and/or driver may be broken. Disconnect the power supply of these equipment, and replace them with new ones. Return the old equipment to the sales agent for repair.
* Motor auto recognition error	95	(1) The motor is not compatible with the servo driver. (2) When power is turned on, the encoder has not been connected. <Cautions> Before power-on, if (1) the encoder line has been disconnected, or (2) data from the encoder has caused abnormal communications, be careful as the motor automatic recognition of and protection against abnormality (alarm code No.95) will be activated, after power is turned on. In the case of (1) or (2) above, execute processing of alarm codes No.21 and 23.	(1) Replace the motor with one that matches the servo driver. (2) Check connection of the encoder.
* Control mode setting error	97	The selected control mode cannot be used in combination with the encoder. The control mode does not support use of the encoder.	Set up Pr02 (Control mode setup) properly.
* Other errors	EEEEEE 333333 FFFFF 777777	The control circuit operates incorrectly due to large noises or any other reasons.	Turn off the power and turn it on again. If the error cannot be eliminated, the motor and/or driver may be broken. Disconnect the power supply of these equipment, and replace them with new ones.
* Other errors	Numbers other than the above	The driver's self-diagnosing function is activated, because an error happens in the driver.	Return the old equipment to the sales agent for repair.

The motor does not rotate.

Category	Causes	Countermeasures
Parameters	The control mode selected is not correct.	Check the value of Pr02 (control mode set-up). 0: position control, 1: speed control, 2: torque control
	The internal speed command (switching between internal and external commands) does not work.	Check the value of Pr05 (Internal speed switching). 0: At analogue speed command set-up, Change the value to 1 or 2.
	The torque limit inhibition setting is not correct.	Check the value of Pr03 (Analog torque limit inhibit). 0: torque cannot be produced, so the motor does not rotate. Change the value to 1.
	The torque limit has been set to 0.	Check the value of Pr5E (torque limit set-up). Change the value to 300 (default).
	The zero speed clamp is ON, so the motor does not operate.	Check the value of Pr06 (ZERPSPD input selection). Change the value to 0. If the value is 1, the zero clamp function is valid. If you desire to set the parameter to 1, enable the zero speed clamp input, and adjust the wiring so that the zero speed clamp input can be turned on correctly.
	The internal speed setting parameter is not input.	Check the Pr53 ~ 56. Set to the speed desired.
Wiring	CW/CCW overtravel inhibit input of CN X5 is open.	Check the value of Pr04. If the value is 0, connect between CN X5 pins 9 and 41, and 8 and 41.
	CN X5 Servo-ON signal is not received.	Connect (short circuit) between CN IX5 pins 29 and 41.
	CN X5 Counter clear is ON (shorted).	Disconnect between CN IX5 pins 30 and 41.
	CN X5 command pulse input inhibit is active, so the motor does not operate.	Check the value of Pr43. If the value is 0, connect between CN X5 pins 33 and 41. If the value is 1, the command pulse input inhibition is disregarded, so the motor will rotate according to command pulses.
Installation	Bearing lock	Turn off the power. Disconnect the motor. Rotate the motor shaft by hand to make sure that the motor rotates freely. If the motor is fitted with an electromagnetic brake, rotate the shaft by hand while applying a voltage (24VDC) to the brake. If the motor does not rotate, consult the sales agent to repair it.

The rotation is not smooth.

The motor rotates slowly even if the target speed is zero in the speed control mode.

Category	Causes	Countermeasures
Parameters	The control mode selection is not correct.	With the position control mode selected, if Pr02 is set to other than 0, the motor will rotate slowly because speed command offset governs the operation of the motor. Change the value of Pr02 to 0.
Adjustment	The gains are not appropriate.	Increase the value of Pr11 (1st speed loop gain). Insert a torque filter (Pr14) and then further increase the value of Pr11.
	Speed and position commands are not stable.	Check the condition of the motor using the check pin on the LED touch panel and the wave form graphics function of PANATERM®. Check the wiring and its connections. Check the controller.
Wiring	CN X5 signals are chattering. 1) Servo-ON signal	1) Check the wiring and connections between CN X5 pins 29 and 41 by monitoring the display of input and output signals status. Modify the wiring so that Servo-ON signals can be made active correctly. Check the controller.
	2) CW/CCW torque limit input signal	2) Check the wiring and connections between CN X5 pins 17 and 18, and 16 and 17 using a circuit tester and/or oscilloscope. Modify the wiring so that CW/CCW torque limit input can be made active correctly. Check the controller.
	3) Counter clear input signal	3) Check the wiring and connections between CN X5 pins 30 and 41 by monitoring the display of input and output signals status. Modify the wiring so that Position Error Counter input can be made active correctly. Check the controller.

Troubleshooting

Category	Causes	Countermeasures
Wiring	4) Speed zero clamp signal	4) Check the wiring and connections between CN X5 pins 26 and 41 by monitoring the display of input and output signals status. Modify the wiring so that Zero Speed Clamp input can be made active correctly. Check the controller.
	5) Command pulse input inhibit signal	5) Check the wiring and connections between CN X5 pins 33 and 41 by monitoring the display of input and output signals status. Modify the wiring so that Command Pulse Input Inhibit can be made active correctly. Check the controller.
	Speed commands contain noises.	Use shielded cables for connection to CN X5. Power and signal cables should be separated by at least 30 cm and put in duct.
	Improper offset	Measure the voltage between CN X5 pins 14 and 15 (speed command inputs) using a circuit tester and/or oscilloscope. Adjust the value of Pr52 so that the motor can stop.
	Speed commands contain noises.	Use shielded cables for connection to CN X5. Power and signal cables should be separated by at least 30 cm and put in duct.

Positioning accuracy is bad.

Category	Causes	Countermeasures
System	Position commands (amount of command pulses) are not correct.	Count the number of feedback pulses while repeating to travel back and forth within a fixed distance. If the number of feedback pulses varies, adjust the controller. Take measures to reduce the noise on the command pulse.
	Reading of in-position signals occurs at the edge.	Use the check pin (IM), to monitor the position error when the in-position signals are received. Read the in-position signals at a mid point on the time span, not at the edge.
	The form and width of the command pulses deviate from the specified values.	If the command pulses are deformed or narrowed, adjust the pulse generation circuit. Take measures to reduce the noise on the command pulse.
Adjustment	The position loop gain is too small.	Check the amount of position error in the monitor mode. Increase the value of Pr10 to the extent that no oscillation occurs.
Parameter	The setting of in-position detection range is too large.	Decrease the value of Pr60 (in-position range) to the extent that the in-position signals do not chatter.
	The command pulse frequency exceeds 500 kpps.	Decrease the command pulse frequency. Change the values of Pr46 through Pr4B (numerator of 1st to 4th command scale).
	The scale is not appropriate.	Check the repetition accuracy. If repeated without fluctuation, increase the capacity of the motor and driver.
Wiring	CN X5 signals are chattering: 1) Servo-ON signals	1) Check the wiring and connections between CN X5 pins 29 and 41 by monitoring the display of input and output signals status. Modify the wiring so that Servo-ON signals can be made active correctly. Check the controller.
	2) Counter clear input signal	2) Check the wiring and connections between CN X5 pins 30 and 41 by monitoring the display of input and output signals status. Modify the wiring so that Position Error Counter input can be made active correctly. Check the controller.
	3) CW/CCW torque limit input signal	3) Check the wiring and connections between CN X5 pins 17 and 18, and 16 and 17 using a circuit tester and/or oscilloscope. Modify the wiring so that CW/CCW torque limit input can be made active correctly. Check the controller.
	4) Command pulse input inhibit signal	4) Check the wiring and connections between CN X5 pins 33 and 41 by monitoring the display of input and output signals status. Modify the wiring so that Command Pulse Input Inhibit can be made active correctly. Check the controller.
Installation	Load inertia is large.	Check the overshoot at stop using the wave form graphics function of PANATERM®. Adjust the gains. If this is not effective, increase the capacity of the driver and motor.

The initial (home) position varies.

Category	Causes	Countermeasures
System	When calculating the initial (home) position, the Z-phase output is not detected.	Check that the Z-phase accords to the center of the proximity dog. Perform initialization correctly according to the controller.
	Creep speed to initial position is too high.	Decrease the return speed near the initial (home) position, or lengthen the initialization sensor.
Wiring	The output of the initial (home) position proximity sensor (Proximity dog sensor) is chattering.	Check the input to the sensor using an oscilloscope. Modify the wiring around the sensor. Take measures to reduce the noise.
	Noise on encoder wires	Take measures to reduce the noise (noise filters, ferrite cores, etc.). Properly connect the shield wires of I/F cables. Use twist-paired wires. Separate the signal and power wires.
	Z-phase signal is not output.	Monitor the Z-phase signal using an oscilloscope. Check that CN X5 Pin 13 is connected to the ground terminal of the controller. Connect the open collector to the ground of the driver. Replace the driver and controller, or repair them.
	The circuit for Z-phase signal is not correct.	Check that the line driver is connected at the both sides. If the controller does not have a differential input, use CZ output (open collector). Check that the line driver is connectdt at the both sides.

The motor produces an abnormal sound and/or vibration.

Category	Causes	Countermeasures
Wiring	Speed commands contain noises.	Check the wiring between CN X5 Pins 14 and 15 (speed command inputs) using an oscilloscope. Take measures to reduce the noise (noise filters, ferrite cores, etc.). Properly connect the shield wires of I/F cables. Use twist-paired wires. Separate the signal and power wires.
Adjustment	The gains are too large.	Decrease the values of Pr10 (speed loop gain) and Pr11 (position loop gain).
	The speed detection filter is not correct.	Increase the value of Pr13 (speed detection filter) until the sound decreases to an acceptable level, or return the value to 4 (default).
Installation	Resonance between the machine and motor occurs.	Adjust the value of Pr14 (torque filter). Check the mechanical resonance using the frequency characteristics analysis program in PANATERM®. If a resonance occurs, set Pr10(notch frequency).
	Motor bearing	Operate the motor without load in order to check the sound and vibration near the bearing. Replace the motor and operate it to do the same checks. Repair the motor, if necessary.
	Electromagnetic sound, gear sound, braking sound, hub sound, rubbing sound from the encoder, etc.	Operate the motor without load in order to check the sound. Repair the motor, if necessary.

Troubleshooting

Overshoot or undershoot

The motor overheats (burnt)

Category	Causes	Countermeasures
Adjustment	Gains are not correct.	Check the gains using the wave form graphics monitoring function of PANATERM®, speed monitor (SP) and/or torque monitor (IM). Adjust the gains. See "Adjustments" chapter.
Installation	Load inertia is too large.	Check the load inertia using the wave form graphics monitoring function of PANATERM®, speed monitor. Adjust the gains correctly. Increase the wattage of the motor and the driver. Reduce the inertia ratio. Use gears.
	Rattling or slip of the machine	Check the coupling between the motor and machine.
	Environment (ambient temperature, etc.)	If the ambient temperature is higher than the specified value, install a cooling fan.
	The cooling fan does not work. The air intake is dirty.	Check the cooling fans of the driver and machine. The cooling fan of the driver should be replaced at regular cycles. This replacement should be done by a service engineer of the sales agent.
	Mismatch between the driver and motor	Check the nameplates of the driver and motor. For available combinations between driver and motor, see the instruction manuals or catalogues.
	Motor bearings fail.	Turn off the power. Rotate the motor shaft by hand to check whether abnormal sound (rumbling) occurs or not. If it rumbles, replace it with a new one, or repair it.
	The electromagnetic brake is ON (failure to release the brake).	Check the voltage at the brake terminal. Apply 24VDC to release the brake.
	The motor fails (due to oil, water, etc.).	Avoid high temperature/humidity, oil, dust and iron powders.
	The motor is operated by external forces while the dynamic brake is activated.	Check the operation pattern, use and working status. This kind of operation should be avoided.

The motor speed does not increase up to the specified value.

The speed (movement) is too large or small.

Category	Causes	Countermeasures
Parameter	The speed command input gain is not correct.	Check that the value of Pr50 (speed command input gain) is 500 (i.e. 3000r/min/6V).
Adjustment	The position loop gain is too small.	Adjust the value of Pr10 (position loop gain) to approximately 100.
	The scale is not appropriate.	Correct the values of Pr46 (numerator of 1st command pulse ratio), Pr4A (Multiplier of numerator of command pulse ratio) and Pr4B (denominator of pulse command scale). See "Parameter settings" for the mode in topic.

Parameter values change to the former value.

Category	Causes	Countermeasures
Parameter	Parameter values are not downloaded into EEPROM before power off.	See page 63 "Writing parameter into EEPROM" in Preparations.

PANATERM®, a message "communication port or driver cannot be detected" appears.

Category	Causes	Countermeasures
Wiring	The communication cable (RS232C) is connected to CN X7.	The communication cable (RS232C) must be connected to CN X6.