INOVANCE

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MD800 Series
AC Drive (Multidrive System)

Maintenance and Repair Guide

Industrial Automation | Intelligent Elevator | New Energy Vehicle | Industrial Robot | Rail Transit

Data code 19011495A04

Preface

Introduction

The MD800 series is a new generation of standard AC drive (multidrive system) designed for low-power multidrive applications in the traditional original equipment manufacturer (OEM) industry. It is widely applied in industries such as printing and packaging, woodworking machine tools, food and beverage, logistics and storage, textile printing and dyeing, fans, and water pumps.

This guide describes the routine maintenance, component replacement, and troubleshooting of the product.

More Documents

Name	Data Code	Description
MD800 Series AC Drive (Multidrive System) Quick Installation and Commissioning Guide	19011494	This guide describes the installation, wiring, quick commissioning, commissioning parameters, and commissioning troubleshooting of the product.
MD800 Series AC Drive (Multidrive System) Design and Model Selection Guide	19011492	This guide describes the system composition, technical specifications, dimensions, detailed specifications and selection of options (installation accessories, cables, and peripheral electrical components), common EMC problems and solutions, and compliant certifications and standards.
MD800 Series AC Drive (Multidrive System) Maintenance and Repair Guide (this guide)	19011495	This guide describes the routine maintenance, component replacement, and troubleshooting of the product.
MD800 Series AC Drive (Multidrive System) Function Guide	19011493	This guide describes the commissioning tools, system commissioning procedures, parameters, fault codes, and product functions and applications.
MD800 Series AC Drive (Multidrive System) Communication Guide	19011496	This guide describes the communication mode, communication networking, and communication configuration of the product.
MD800 Series AC Drive (Multidrive System) User Guide	PS00009036	This guide describes model selection, installation, wiring, commissioning, function description, fault handling, maintenance, and so on.

Revision History

Date	Version	Description
January 2024	A04	**Modified the following sections:** • *"2.2.1 List of Fault Codes for the Power Supply Unit" on page 33* • *"2.2.2 List of Fault Codes for the Drive Unit" on page 39*
March 2023	A03	• Updated the fault information in section 2.2 Fault List. • Deleted the FVC- and encoder-related content.
September 2022	A02	Updated the fault code, preface, front cover, back cover, safety precaution, and fault list.
April 2022	A01	Updated the fault code and added descriptions about E18.01.
March 2021	A00	First release

Access to the Guide

This guide is not delivered with the product. You can obtain the PDF version in the following ways:

- Visit *http://www.inovance.com*, go to Support > Download, search by keyword, and then download the PDF file.
- Scan the QR code on the product with your smart phone.
- Scan the QR code below to install the app, where you can search for and download manuals.

Warranty Agreement

Inovance provides warranty service within the warranty period (as specified in your order) for any fault or damage that is not caused by improper operation of the user. You will be charged for any repair work after the warranty period expires.

Within the warranty period,maintenance fee will be charged for the following damage:

- Damage caused by operations not following the instructions in the user guide
- Damage caused by fire, flood, or abnormal voltage
- Damage caused by unintended use of the product
- Damage caused by use beyond the specified scope of application of the product

- Damage or secondary damage caused by force majeure (natural disaster, earthquake, and lightning strike)

The maintenance fee is charged according to the latest Price List of Inovance. If otherwise agreed upon, the terms and conditions in the agreement shall prevail.

Table of Contents

Fundamental Safety Instructions

Safety Disclaimer

- This chapter provides essential safety instructions for proper use of the equipment. Before using this product, read the user guide thoroughly and correctly understand the related safety precautions. Failure to comply with the safety instructions may result in death, severe personal injuries, or equipment damage.
- "CAUTION", "WARNING", and "DANGER" items in the guide only indicate some of the precautions that need to be followed; they just supplement the safety precautions.
- Use this equipment according to the designated environment requirements. Damage caused by improper use is not covered by warranty.
- Inovance shall take no responsibility for any personal injuries or property damage caused by improper use.

Safety Levels and Definitions

Indicates that failure to comply with the notice will result in death or severe personal injuries.

Indicates that failure to comply with the notice may result in death or severe personal injuries.

Indicates that failure to comply with the notice may result in minor or moderate personal injuries or equipment damage.

General Safety Instructions

- Drawings in the guide are sometimes shown without covers or protective guards. Remember to install the covers or protective guards as specified first, and then perform operations in accordance with the instructions.
- The drawings in the guide are shown for illustration only and may be different from the product you purchased.
- Users must take mechanical precautions to protect personal safety and wear protective equipment, such as anti-smashing shoes, safety clothing, safety glasses, protective gloves, and protective sleeves.

Unpacking

- Do not install the equipment if you find damage, rust, or signs of use on the equipment or accessories upon unpacking.
- Do not install the equipment if you find water seepage or missing or damaged components upon unpacking.
- Do not install the equipment if you find the packing list does not conform to the equipment you received.

- Check whether the packing is intact and whether there is damage, water seepage, dampness, and deformation before unpacking.
- Unpack the package by following the unpacking sequence. Do not strike the package violently.
- Check whether there is damage, rust, or injuries on the surface of the equipment and equipment accessories before unpacking.
- Check whether the package contents are consistent with the packing list before unpacking.

Storage and Transportation

- Large-scale or heavy equipment must be transported by qualified professionals using specialized hoisting equipment. Failure to comply may result in personal injuries or equipment damage.
- Before hoisting the equipment, ensure the equipment components such as the front cover and terminal blocks are secured firmly with screws. Loosely-connected components may fall off and result in personal injuries or equipment damage.
- Never stand or stay below the equipment when the equipment is being hoisted by the hoisting equipment.
- When hoisting the equipment with a steel rope, ensure the equipment is hoisted at a constant speed without suffering from vibration or shock. Do not turn the equipment over or let the equipment stay hanging in the air. Failure to comply may result in personal injuries or equipment damage.

CAUTION

- Handle the equipment with care during transportation and mind your steps to prevent personal injuries or equipment damage.
- When carrying the equipment with bare hands, hold the equipment casing firmly with care to prevent parts from falling. Failure to comply may result in personal injuries.
- Store and transport the equipment based on the storage and transportation requirements. Failure to comply will result in equipment damage.
- Avoid storing or transporting the drive in the environment with water splash, rain, direct sunlight, strong electric field, strong magnetic field, and strong vibration.
- Avoid storing the equipment for more than three months. Long-term storage requires stricter protection and necessary inspections.
- Pack the equipment strictly before transportation. Use a sealed box for long-distance transportation.
- Never transport the equipment with other equipment or materials that may harm or have negative impacts on this equipment.

Installation

DANGER

- The equipment must be operated only by professionals with electrical knowledge. Non-professionals are not allowed.

WARNING

- Read through the guide and safety instructions before installation.
- Do not install this equipment in places with strong electric or magnetic fields.
- Before installation, check that the mechanical strength of the installation site can bear the weight of the equipment. Failure to comply will result in mechanical hazards.
- Do not wear loose clothes or accessories during installation. Failure to comply may result in an electric shock.
- When installing the equipment in a closed environment (such as a cabinet or casing), use a cooling device (such as a fan or air conditioner) to cool the environment down to the required temperature. Failure to comply may result in equipment over-temperature or a fire.
- Do not retrofit the equipment.
- Do not fiddle with the bolts used to fix equipment components or the bolts marked in red.
- When the equipment is installed in a cabinet or final assembly, a fireproof enclosure providing both electrical and mechanical protections must be provided. The IP rating must meet IEC standards and local laws and regulations.
- Before installing equipments with strong electromagnetic interference, such as a transformer, install a shielding equipment for the equipment to prevent malfunction.
- Install the equipment onto an incombustible object such as a metal. Keep the equipment away from combustible objects. Failure to comply will result in a fire.

- Cover the top of the equipment with a piece of cloth or paper during installation. This is to prevent unwanted objects such as metal chippings, oil, and water from falling into the equipment and causing faults. After installation, remove the cloth or paper on the top of the equipment to prevent over-temperature caused by poor ventilation due to blocked ventilation holes.
- Resonance may occur when the equipment operating at a constant speed executes variable speed operations. In this case, install the vibration-proof rubber under the motor frame or use the vibration suppression function to reduce resonance.

Wiring

- Equipment installation, wiring, maintenance, inspection, or parts replacement must be performed only by professionals.
- Before wiring, cut off all the power supplies of the equipment, and wait for at least the time designated on the equipment warning label before further operations because residual voltage still exists after power-off. After waiting for the designated time, measure the DC voltage in the main circuit to ensure the DC voltage is within the safe voltage range. Failure to comply will result in an electric shock.
- Do not perform wiring, remove the equipment cover, or touch the circuit board with power ON. Failure to comply will result in an electric shock.
- Check that the equipment is grounded properly. Failure to comply will result in an electric shock.

- Do not connect the input power supply to the output end of the equipment. Failure to comply can result in equipment damage or even a fire.
- When connecting a drive to the motor, check that the phase sequences of the drive and motor terminals are consistent to prevent reverse motor rotation.
- Cables used for wiring must meet cross sectional area and shielding requirements. The shield of the cable must be reliably grounded at one end.
- Fix the terminal screws with the tightening torque specified in the user guide. Improper tightening torque may overheat or damage the connecting part, resulting in a fire.
- After wiring is done, check that all cables are connected properly and no screws, washers or exposed cables are left inside the equipment. Failure to comply may result in an electric shock or equipment damage.

- Follow the proper electrostatic discharge (ESD) procedure and wear an anti-static wrist strap to perform wiring. Failure to comply may result in damage to the equipment or to the internal circuit of the product.
- Use shielded twisted pairs for the control circuit. Connect the shield to the grounding terminal of the equipment for grounding purpose. Failure to comply can result in equipment malfunction.

Power-on

- Before power-on, check that the equipment is installed and wired properly and the motor can be restarted.
- Check that the power supply meets equipment requirements before power-on to prevent equipment damage or a fire.
- After power-on, do not open the cabinet door or protective cover of the equipment, touch any terminal, or disassemble any unit or component of the equipment. Failure to comply will result in an electric shock.

- Perform a trial run after wiring and parameter setting to ensure the equipment operates safely. Failure to comply may result in personal injuries or equipment damage.
- Before power-on, check that the rated voltage of the equipment is consistent with that of the power supply. If the power supply voltage is used incorrectly, it will result in a fire.
- Before power-on, check that no one is near the equipment, motor, or other mechanical parts. Failure to comply may result in personal injuries or even death.

Operation

- The equipment must be operated only by professionals. Failure to comply will result in death or personal injuries.
- Do not touch any connecting terminals or disassemble any unit or component of the equipment during operation. Failure to comply will result in an electric shock.

- Do not touch the equipment casing, fan, or resistor with bare hands to feel the temperature. Failure to comply may result in personal injuries.
- Prevent metal or other objects from falling into the equipment during operation. Failure to comply may result in a fire or equipment damage.

Maintenance

- Equipment installation, wiring, maintenance, inspection, or parts replacement must be performed only by professionals.
- Do not maintain the equipment with power ON. Failure to comply will result in an electric shock.
- Before maintenance, cut off all the power supplies of the equipment and wait for at least the time designated on the equipment warning label.
- In case of a permanent magnet motor, do not touch the motor terminals immediately after power-off because the motor terminals will generate induced voltage during rotation even after the equipment power supply is off. Failure to comply will result in an electric shock.

- Perform routine and periodic inspection and maintenance on the equipment according to maintenance requirements and keep a maintenance record.

Repair

- Equipment installation, wiring, maintenance, inspection, or parts replacement must be performed only by professionals.
- Do not repair the equipment with power ON. Failure to comply will result in an electric shock.
- Before inspection and repair, cut off all the power supplies of the equipment and wait for at least the time designated on the equipment warning label.

- Submit the repair request according to the warranty agreement.
- When the fuse is blown or the circuit breaker or earth leakage current breaker (ELCB) trips, wait for at least the time designated on the equipment warning label before power-on or further operations. Failure to comply may result in death, personal injury or equipment damage.
- When the equipment is faulty or damaged, the troubleshooting and repair work must be performed by professionals that follow the repair instructions, with repair records kept properly.
- Replace quick-wear parts of the equipment according to the replacement instructions.
- Do not use damaged equipment. Failure to comply may result in death, personal injury, or severe equipment damage.
- After the equipment is replaced, check the wiring and set parameters again.

Disposal

- Dispose of retired equipment in accordance with local regulations and standards. Failure to comply may result in property damage, personal injury, or even death.
- Recycle retired equipment by observing industry waste disposal standards to avoid environmental pollution.

Safety label

For safe equipment operation and maintenance, comply with the safety labels on the equipment. Do not damage or remove the safety labels. See the following table for descriptions of the safety labels.

Safety Label	Description
	• Read through the safety instructions before operating the equipment. Failure to comply may result in death, personal injuries, or equipment damage. • Do not touch the terminals or remove the cover with power ON or within 10 min after power-off. Failure to comply will result in an electric shock.

1 Routine Maintenance

1.1 Routine Maintenance Items

Table 1–1 Routine maintenance items

Item	Content	Solution	Checked
Motor	Check for unusual vibration or noise.	Check the mechanical connection. Check whether motor phase loss occurs. Check whether motor screws are tightened.	☐
Fan	Check the cooling fans of the AC drive and motor.	Check whether the cooling fan of the AC drive works properly. Check whether the cooling fan of the motor works properly. Check whether the ventilation duct is blocked. Check whether the ambient temperature is within the allowed range.	☐
Installation environment	Check the cabinet and cable trays.	Check for insulation damage of input and output cables. Check the mounting bracket for vibration. Check whether the copper bar and wiring terminals are loose and corroded.	☐
Load	Check whether the running current of the AC drive exceeds the rated current of the AC drive and the motor for a certain period.	Check whether the motor parameters are set correctly. Check for excessive load. Check whether the mechanical vibration is severe (< 0.6 g under normal conditions).	☐
Input voltage	Check whether the power supply voltage of the main and control circuits is within the allowed range.	Check whether the input voltage is within the allowed range. Check whether a heavy load is being started around the drive.	☐

1.2 Periodic Inspection Items

Caution

- To prevent electric shock, cut off the power supplies of all the devices before wiring, inspection, or repair.
- Before wiring or repair, wait for at least the time designated on the warning label after switching off the power supply because residual voltage can be present in the internal capacitor of the device.
- After waiting for the designated time, measure the DC voltage in the main circuit to ensure the DC voltage is within the safe voltage range. Failure to comply can result in the risk of electric shock.

Check the items listed in the following table every one or two years. Determine the actual inspection cycle based on actual application and operating environment.

Table 1–2 Periodic inspection items

Item	Check Content	Solution	Checked
AC drive	Check for wastes, dirt, and dust on the surface of the AC drive, and capacitor leakage.	Check whether the cabinet of the AC drive is powered off. Use a vacuum cleaner to suck up wastes and dust to prevent direct touching. Wipe greasy dirt gently with soft cloth immersed in neutral detergent. Contact Inovance for electrolytic capacitor replacement in case of capacitor leakage.	
Cable	Check whether power cables and the connectors are discolored. Check whether the insulation is aged or cracked.	Replace the cracked cable. Replace the damaged terminal.	

Item	Check Content	Solution	Checked
Peripherals of the electromagnetic contactor	Check whether the contactor closes loosely or generates unexpected noise during closing. Check peripherals for short circuit, water stains, swelling, and cracks.	Replace defective peripherals.	
Air vent	Check whether the air vent and heatsink are clogged. Check whether the fan is damaged.	Clean the air vent. Replace the fan.	
Control circuit	Check for components with poor contact. Check whether terminal screws are connected securely. Check whether the insulation of the control circuit cable is intact without cracking.	Clean up the surface of control circuit cables and terminals. Replace damaged or corroded control cables.	

1.3 Main Circuit Insulation Test

Before measuring the insulation resistance with a megameter (500 VDC megameter recommended), disconnect the AC drive from the main circuit. Do not conduct the insulation test on the control circuit with an insulation resistance meter. See the following figure for details. The high voltage (> 500 V) test has been performed before delivery. Do not perform the high-voltage test.

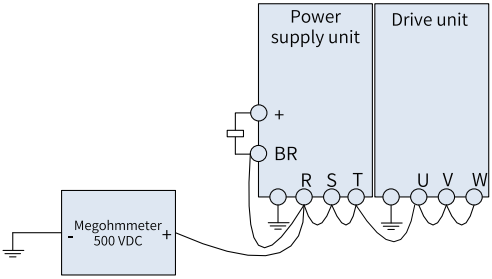


Figure 1-1 Main circuit insulation test

The measured insulation resistance must be larger than 5 MΩ.

1.4 Component Replacement

1.4.1 Maintenance Tools

Table 1–3 Maintenance tools

Tool	Appearance
Phillips and straight (2.5 mm) screwdrivers	
Tape measure	
Gloves	
M4x12 cross recessed pan head SEMS screws (with flat washer and spring washer)	-
Wiring tool (standard for the power supply unit)	

1.4.2 Replaceable Components

The following components are replaceable:

- Power supply unit
- Drive unit
- Filter module
- Expansion card

- Fan
- T-BUS base

Contact the agent or sales representative if components need to be replaced within the warranty. The components will be replaced or repaired according to Inovance policies.

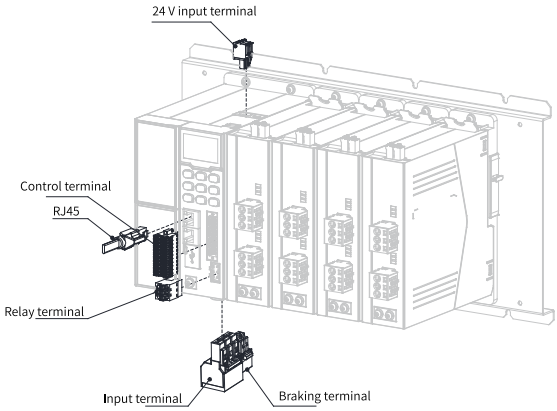
Caution

- To prevent electric shock, cut off the power supplies of all the devices before wiring, inspection, or repair.
- Before wiring or repair, wait for at least the time designated on the warning label after switching off the power supply because residual voltage can be present in the internal capacitor of the device.
- After waiting for the designated time, measure the DC voltage in the main circuit to ensure the DC voltage is within the safe voltage range. Failure to comply can result in the risk of electric shock.

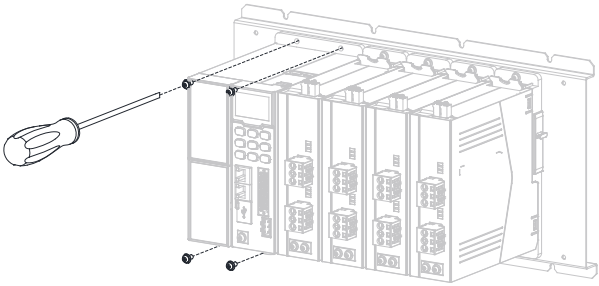
1.4.3 Replacement

1.4.3.1 Replacing the Power Supply Unit

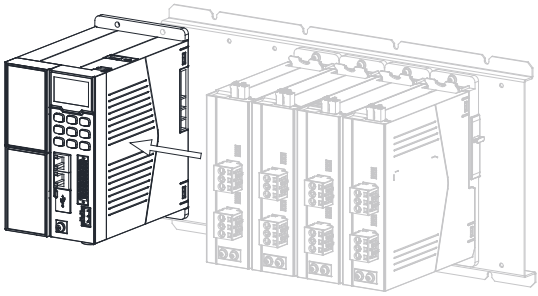
1. Removal
   a. Power off the AC drive and remove all terminals and network cables of the power supply unit.



   b. Use a Phillips screwdriver to remove the four M4X12 screws on the top and bottom of the power supply unit.



c. Pull leftward to remove the power supply unit.



2. Installation

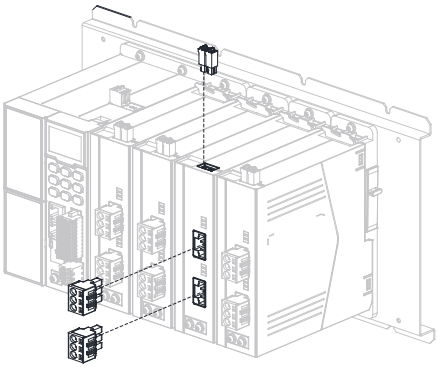
Install the power supply unit in the reverse order of the removal process.

Reserve clearance of 20 mm on the left of the power supply unit.

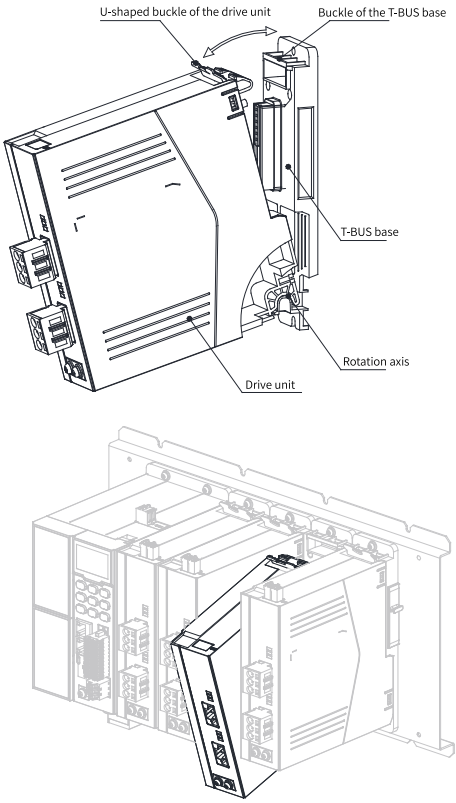
1.4.3.2 Replacing the Drive Unit

1. Removal

a. Power off the AC drive and remove all terminals of the drive unit.



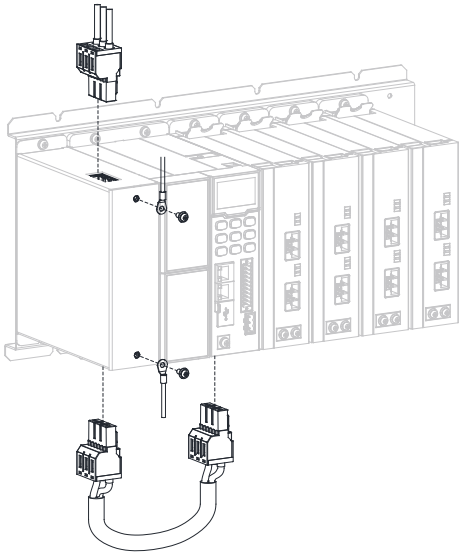
b. Press the snap-fit joint on the top of the drive unit to detach it from the T-BUS base, and remove the drive unit by rotating it around the rotating shaft.



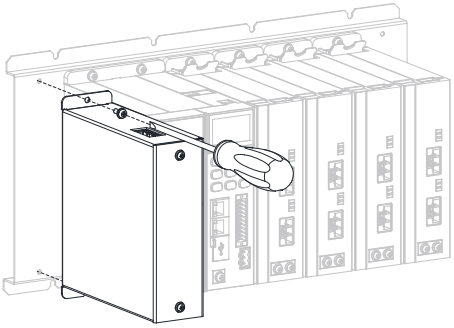
2. Installation
   Install the drive unit in the reverse order of the removal process.

1.4.3.3 Replacing the Filter Module

1. To remove the filter module, do as follows:
   a. Power off the AC drive and remove the input terminal, output terminal, and grounding cable of the filter module.



b. Use a Phillips screwdriver to remove the two M4x12 screws.



2. To install the filter module, do as follows:
   Install the filter module in the reverse order of the removal process.

1.4.3.4 Replacing the Expansion Card

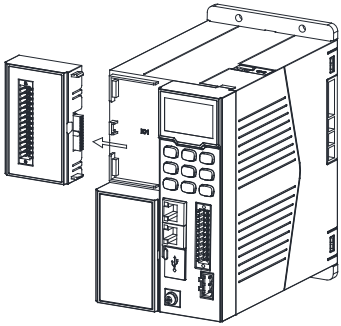
The expansion card is installed on the power supply unit.

Prerequisites

Before replacement, disconnect the I/O signal cable or network cable from the expansion card terminal.

1. To remove the expansion card, do as follows:

a. Insert a straight screwdriver into the recess of the expansion card, and pry out the card to the left with proper force.

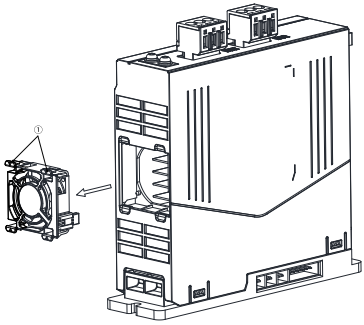


2. To install the expansion card, do as follows:
   Install the expansion card in the reverse order of the removal process.

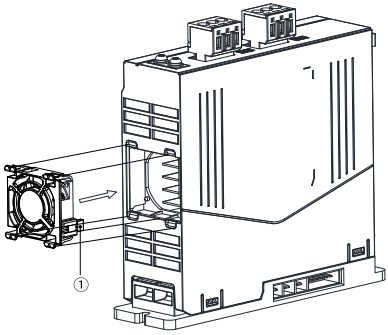
1.4.3.5 Replacing the Fan

Fans of both the power supply unit and the drive unit can be replaced in the same way. The following section takes replacing the fan of the drive unit as an example.

1. To removing the fan, do as follows:
   a. Press the four snap-fit joints around the fan to pull the fan out, as shown by ①.



2. To install the fan, do as follows:
   a. Align the fan terminal with the slot as shown in ① and push the fan toward the drive until the snap-fit joints are in the places.

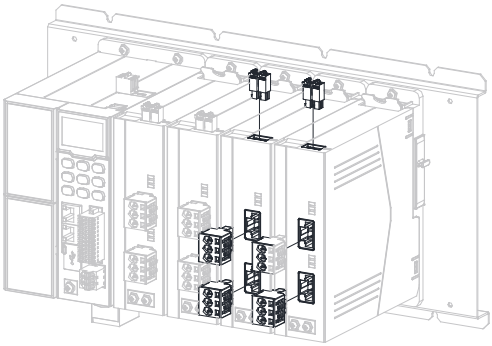


1.4.3.6 Replacing the T-BUS Base

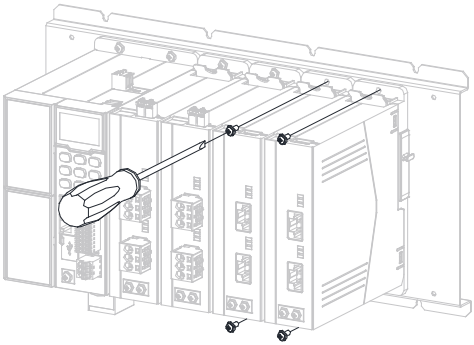
The T-BUS base is used to install the drive unit.

Procedure

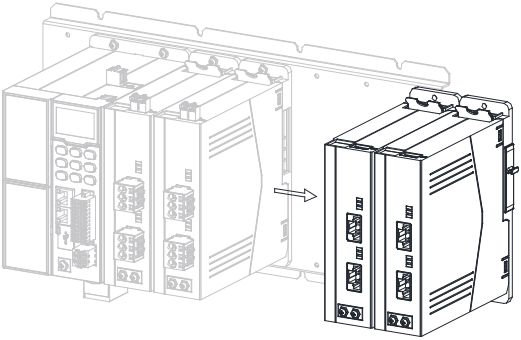
1. Power off the AC drive. Remove the output terminals of the drive unit whose T-BUS base is to be replaced and the drive unit on its right, and the STO terminal (optional) in sequence.



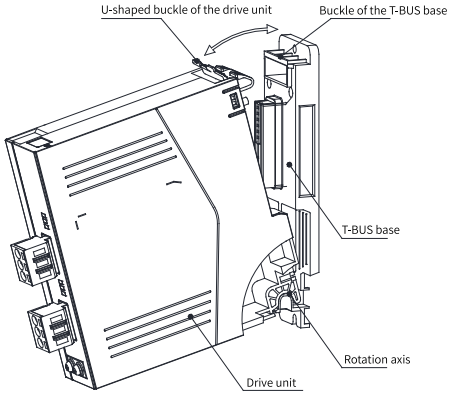
2. Remove the M4X12 screws of the drive unit whose T-BUS base is to be replaced and the drive unit on its right in sequence.



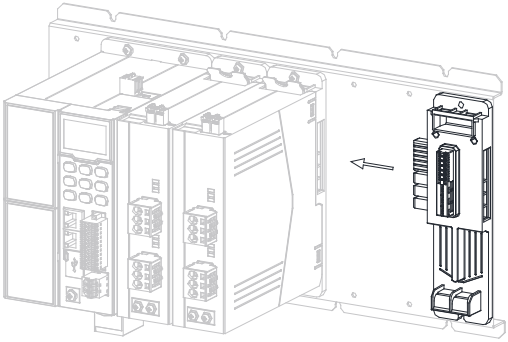
3. Pull rightward to remove the drive unit whose T-BUS base is to be replaced and the drive unit on its right.



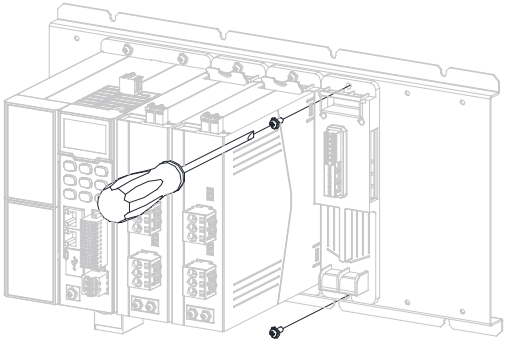
4. Press the U-shaped snap-fit joint of the drive unit to detach it from the snap-fit joint of the T-BUS base, and remove the drive unit by rotating it around the rotating shaft.



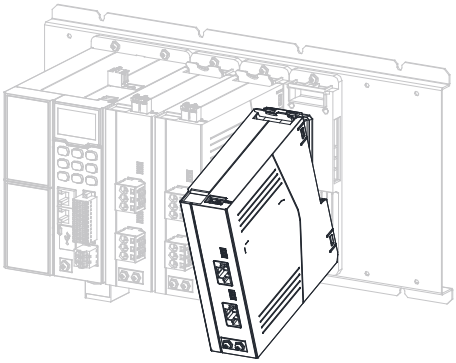
5. Install a new T-BUS base.



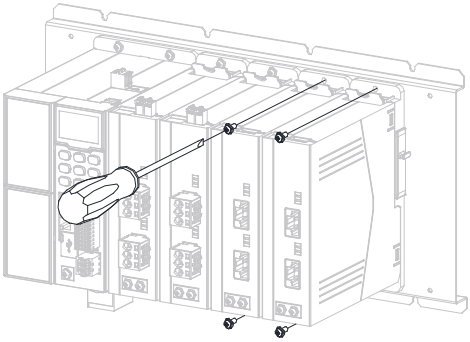
6. Use a Phillips screwdriver to tighten the two M4X12 screws.



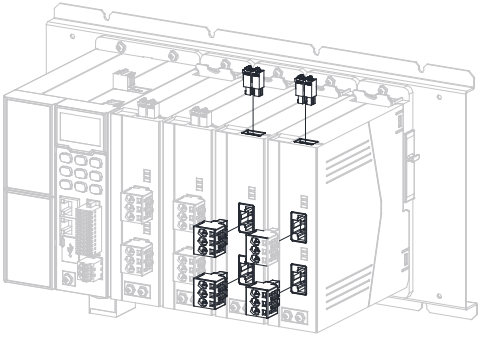
7. Install the removed drive unit to the T-BUS base until the snap-fit joint is in the position.



8. Install the other drive unit on the right and tighten the screws.



9. Install the output terminals and STO terminals (optional) back to the drive unit.



1.4.4 Storage and Warranty

Storage

For storage of the AC drive for a short or long period, observe the following:

- To store the drive, pack the drive with the original packing box provided by Inovance.
- Do not expose the drive to the environment with moisture, high temperature, or direct sunlight for a long time.
- If the drive is not switched on for more than one year, repair the electrolytic capacitor before powering on the drive. Otherwise, the electrolytic capacitor might be damaged. The procedure for recovering the electrolytic capacitor is as follows:

  1. Gradually apply input voltage to the AC drive.

     a. Use an AC regulator to gradually increase the input voltage of the AC drive to the rated voltage by the step value of about 50 V/s.
     b. Connect the AC drive to a DC power supply. If the DC power supply does not support current adjustment, before powering on the AC drive, connect a resistor (470 Ω/500 W) to the output end of the DC power supply in series, and then connect the resistor to any two of the R/S/T three-phase input terminals of the AC drive. If the DC power supply supports current adjustment, the resistor is not required.

  2. Recover the electrolytic capacitor.

     The time for recovery increases with the drive storage time. For storage within one year, the electrolytic capacitor does not need to be recovered. For storage for one year or longer, the electrolytic capacitor needs to be recovered. The following table lists the recovery time required.

Table 1–4 Recovery time required based on storage time

AC Drive Storage Time (T) (in Years)	Recovery Time (in Hours) (AC Drive is in standby state and not running)	Remarks
0 < T ⩽ 1	0	Recovery not required
1 < T ⩽ 2	2	Recovery at room temperature
2 < T ⩽ 3	3	
3 < T ⩽ 4	4	
4 < T ⩽ 5	5	
5 < T ⩽ 6	6	
...	...	

During capacitor recovery, keep the AC drive in the standby state with the power supply connected. Do not run the AC drive with load. Only after the required recovery time expires, the AC drive can run with load or re-packed and stored after power-off.

Warranty

Free warranty only applies to the AC drive itself. Inovance provides an 18-month warranty to the equipment from the date of shipment (subject to the barcode on the drive or contract if there is any) for failure or damage that occurs under normal use. When the warranty period expires, reasonable maintenance fee will be charged.

Within the 18-month warranty period, reasonable maintenance fee will be charged for the following cases:

- Damage caused by operations not following the instructions in the guide
- Damage caused by fire, flood, abnormal voltage, or other disasters
- Damage caused by unintended use of the product
- Damage caused by use beyond the specified scope of application of the product
- Damage caused by force majeure (natural disaster, earthquake, and lightning strike) and second damage caused thereof

The maintenance fee is charged according to the latest Price List of Inovance. If otherwise agreed upon, the terms and conditions in the agreement shall prevail.

2 Troubleshooting

2.1 Common Faults and Diagnosis

2.1.1 Display of Alarms and Faults

When an error occurs, the AC drive stops output, the fault indicator  flashes red, and contact of the fault relay acts. The drive may encounter faults and alarms. The priority of faults is higher than that of alarms.

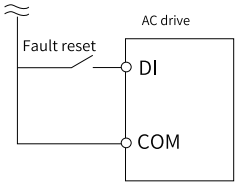
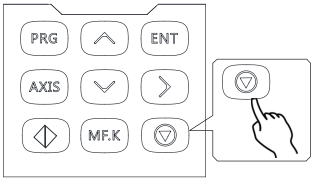
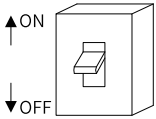
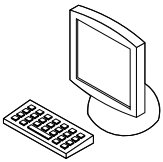
- Example of a fault code: 
- Example of an alarm code: 

Do not repair or modify the drive by yourself. If the fault cannot be eliminated, contact the agent or Inovance.

2.1.2 Restart After Faults

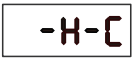
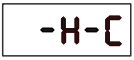
Table 2–1 Restart after faults

Stage	Solution	Description
When a fault occurs	Check the operating panel for detailed information of recent three faults, such as the fault time, fault type, frequency, current, bus voltage, DI/DO state, accumulative power-on time, accumulative running time, IGBT temperature, and fault subcode at the occurrence of the faults.	View the information through F9-14 to F9-46.
Before reset	View the fault cause and rectify the fault according to the fault type displayed on the operating panel.	-

Stage	Solution	Description
Reset mode to clear faults	1. Set the DI hardware source (F4-00, F4-02, F4-04, F4-06, F4-08, F4-10, F4-12, or F4-14) to a hardware I/O. Set any of F4-01, F4-03, F4-05, F4-07, F4-09, F4-11, F4-13, and F4-15 to 9 (fault reset).	
	2. Press  in any operation mode to reset the drive upon a fault.	
	3. Power off and then power on the AC drive for automatic reset. Disconnect the main circuit power supply. Wait until the fault code disappears, and then connect the power supply again.	
	4. Reset the drive through communication. When F0-02 is set to 2 (communication control), write "7" (fault reset) to communication address 2000H through the host controller to reset the drive.	

2.1.3 Solutions to Common Faults

Table 2–2 Symptoms and troubleshooting

No.	Fault	Possible Cause	Solution
1	There is no display upon power-on. 	The drive is not connected to the grid or the grid voltage is too low.	Check the input power supply.
		The switched-mode power supply (SMPS) on the driver board of the AC drive is faulty.	Check the bus voltage.
		The control board or operating panel is faulty.	Contact the agent or Inovance for technical support.
		The rectifier module is damaged.	
2	"-H-C" is displayed after power-on. 	Related components on the control board are damaged.	Contact the agent or Inovance for technical support.
		The motor or the motor cable is short-circuited to the ground.	
		The mains voltage is too low.	
3	"E23.00" is displayed upon power-on. 	The motor or the motor cable is short-circuited to ground.	Check the insulation status of the motor and the output cable with a megger.
		The AC drive is damaged.	Contact the agent or Inovance for technical support.
4	The display is normal upon power-on. However, after the drive starts to run, "-H-C" is displayed and the drive stops immediately. 	The cable of the external control terminal is short-circuited.	Rectify the short circuit fault.

No.	Fault	Possible Cause	Solution
5	E14.00 (module overtemperature) is reported frequently.	The carrier frequency is too high.	Reduce the value of F0-15 (carrier frequency).
		The fan is damaged or the ventilation duct is blocked.	Replace the fan or clean the ventilation duct.
		Components (thermistor or others) inside the drive are damaged.	Contact the agent or Inovance for technical support.
6	The motor does not rotate when the AC drive is running.	The motor or motor cable is abnormal.	Check that the wiring between the AC drive and the motor is proper.
		AC drive parameters (motor parameters) are set improperly.	Restore parameters to default settings and reset related parameters. Check that the rated motor parameters are set properly, including the rated motor frequency and rated motor speed. Check that F0-01 (control mode) and F0-02 (operation mode) are set properly. Modify F3-01 (torque boost) in the V/f control mode during start with heavy load.
		The driver board is faulty.	Contact the agent or Inovance for technical support.
7	The DI is inactive.	The related parameters are set incorrectly.	Check and set the parameters in group F4 again.
		The external signal is incorrect.	Re-connect the external signal cable.
		The jumper between OP and +24V becomes loose.	Secure the jumper between OP and +24V.
		The control board is faulty.	Contact the agent or Inovance for technical support.
8	The AC drive reports overcurrent and overvoltage faults frequently.	Motor parameters are set incorrectly.	Set the motor parameters or perform motor auto-tuning again.
		The acceleration/ deceleration time is improper.	Set proper acceleration/ deceleration time.
		The load fluctuates.	Contact the agent or Inovance for technical support.

No.	Fault	Possible Cause	Solution
9	The motor coasts to stop or the brake fails during deceleration or deceleration to stop.	The overvoltage stall protection takes effect.	If a braking resistor is configured, disable the overvoltage stall protection function by setting F3-23 to 0.

2.1.4 Troubleshooting in Different Control Modes

- SVC (F0-01 = 0)
  In this mode, the drive controls the motor speed and torque without an encoder for speed feedback. Auto-tuning on motor parameters is required to obtain the motor parameters.

Table 2–3 Troubleshooting in the SVC mode

Problem	Solution
Overload or overcurrent during motor start	1. Set motor parameters F1-01 to F1-05 according to the motor nameplate. 2. Set F1-37 to 03 to perform auto-tuning. If possible, set F1-37 to 02 to perform dynamic complete auto-tuning. 3. Reduce the value of F2-10 (torque limit) to keep it within 120% to 150%.
Slow response in torque/speed control mode and great motor speed fluctuation at the frequency below 5 Hz	1. To shorten the response time in the speed control mode (A0-00 = 00), increase the value of F2-00 (speed loop proportional gain) by the step value of 10 or decrease the value of F2-01 (speed loop integral time) by the step value of 0.05. If vibration occurs, decrease the values of F2-00 and F2-01. 2. To shorten the response time in the torque control mode (A0-00 = 01), if the drive cannot be started, the static friction force of the mechanical device may be too large or the torque reference may be too low. In this case, increase the torque reference. 3. To shorten the response time in the torque control mode (A0-00 = 01), if the motor speed of the winding device fluctuates violently, the tension of the winding material may fluctuate during winding. In this case, enable the speed fluctuation suppression function.

Problem	Solution
Slow in torque/speed control mode and great motor speed fluctuation at the frequency above 5 Hz	1. To shorten the response time in the torque/speed control mode, increase the value of F2-03 (speed loop proportional gain) by the step value of 10 or decrease the value of F2-04 (speed loop integral time) by the step value of 0.05. 2. To shorten the response time in the torque control mode (A0-00 = 01), if the drive cannot be started, the static friction force of the mechanical device may be too large or the torque reference may be too low. In this case, increase the torque reference. 3. To shorten the response time in the torque control mode (A0-00 = 01), if the motor speed of the winding device fluctuates violently, the tension of the winding material may fluctuate during winding. In this case, enable the speed fluctuation suppression function.
Low speed accuracy	If the speed offset is large when the motor runs with load, adjust the value of F2-06 (vector control slip compensation gain) by the step value of 10%.
Obvious speed fluctuation	1. If the motor speed fluctuates, increase the value of F2-07 or A9-05 by the step value of 0.001s. 2. Increase the speed loop percentage.
Too loud motor noise	Increase the value of F0-15 (Carrier frequency) by the step value of 1.0 kHz. (Note that increased carrier frequency will result in a higher motor leakage current.)
Insufficient motor torque or force	1. Check whether the torque upper limit is set too low. If yes, increase the value of F2-10 in the speed control mode. 2. Increase the torque reference in the torque control mode.

- V/f control mode (F0-01 = 2)
  This mode applies to the motor without an encoder for speed feedback. You only need to set motor parameters according to the motor nameplate. Auto-tuning can be skipped. The rated motor current impacts the motor overload protection function.

Table 2–4 Troubleshooting in the V/f control mode

Problem	Solution
Motor oscillation during running	Increase the value of F3-11 (oscillation suppression gain) by the step value of 10. The permissible maximum value is 100.
Overcurrent at startup with high power	Decrease the value of F3-01 (torque boost) by the step value of 0.5%, and increase the value of F0-17 (acceleration time).
Large current during running	1. Set F1-02 (rated motor voltage) and F1-04 (rated motor frequency) correctly. 2. Decrease the value of F3-01 (torque boost) by the step value of 0.5%, or set F3-01 to 0.0%.
Too loud motor noise	Increase the value of F0-15 (carrier frequency) by the step value of 1.0 kHz. Note that increasing the carrier frequency will lead to an increase in the motor leakage current.

Problem	Solution
Overvoltage is detected when heavy load is suddenly removed or during deceleration.	1. Set F3-23 to 1 to enable overvoltage stall. 2. Increase the value of F3-24/F3-25 (overvoltage stall gain) by the step value of 10. The maximum and default values of F3-24/F3-25 are 100 and 30, respectively. 3. Decrease the overvoltage stall action voltage (F3-22) by the step value of 10 V. The default and minimum values of F3-22 are 770 V and 700 V, respectively.
Overcurrent is detected when heavy load is suddenly added or during acceleration.	1. Increase the value of F3-20 (overcurrent stall gain) by the step value of 10. The maximum and default values are 100 and 20, respectively. 2. Decrease the value of F3-18 (overcurrent stall action current) by the step value of 10%. The minimum and default values are 50% and 150%, respectively.

2.2 List of Fault Codes

2.2.1 List of Fault Codes for the Power Supply Unit

Fault code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Cause	Solution
E12.01/ A12.01	Input voltage phase loss	0: Cancel 1: Fault 2: Warning	2: Warning	Yes	Input three-phase loss occurs on the power grid.	Check the three-phase power supply. Make sure that it is normal. Check the input cables for breakage. Make sure that they are normal. Check the input terminals. Make sure that they are properly connected. Ensure that the hardware voltage detection circuit is normal.
E12.04/ A12.04	High input three-phase voltage	0: Cancel 1: Fault 2: Warning	2: Warning	Yes	The power grid input voltage exceeds the rated value.	Check whether the input voltage is within the rated value. Three-phase 380 V models: 576 V Single-phase 220 V models: 288 V
E14.00/ A14.00	Drive overtemperature	1: Fault	1: Fault	Yes	The ambient temperature is too high.	Lower down the ambient temperature.
					The ventilation duct is blocked.	Clean the ventilation duct.
					The fan is damaged.	Replace the damaged fan.
					The thermistor is damaged.	Contact Inovance for technical support.
					The module is damaged.	Contact Inovance for technical support.

Fault code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Cause	Solution
E16.01	Modbus communication timeout	1: Fault	1: Fault	Yes	Modbus communication times out.	Ensure that the RS-485 cable is connected properly. Ensure that the RS-485 cable is free from interference. Ensure that the value of Fd-04 for the power supply unit is greater than the PLC communication cycle.
E16.02	Protective cover not installed for three-way terminal	1: Fault	1: Fault	Yes	The protective cover of the three-way terminal is not installed.	Install the protective cover of the three-way terminal for the last drive unit.
E16.03	Station number allocation failure	1: Fault	1: Fault	Yes	Station number allocation fails.	Power off and then power on all equipment. If the fault persists, repeat the operation.
E16.04	Continuous frame loss of the expansion card	1: Fault	1: Fault	Yes	The number of frames that the I/O expansion card has lost continuously exceeds the set value.	Ensure that the expansion cards are connected properly. Check whether the value of F9-67 is too small.
E16.11	CANopen communication timeout	1: Fault	1: Fault	Yes	CANopen communication times out.	Ensure that the CAN communication cable is connected properly. Check parameters FD-15 to FD-17 to confirm the interference and eliminate the interference. Ensure that heartbeat messages are transmitted and the device is normal.
E16.12	Inconsistence between PDO mapping configured by CANopen and actual communication mapping	1: Fault	1: Fault	Yes	The PDO mapping configured by CANopen is inconsistent with the actual communication mapping.	Check whether the PDO mapping of group FE/AF is consistent with the PDO and ensure that the PDO is configured correctly. Check whether the mapping relationship configured on the master station conforms to the EDS file specification of the AC drive.
E16.13	Timeout during receiving of interactive data by drive unit	1: Fault	1: Fault	Yes	An abnormality occurs when the drive unit receives interactive data from the power supply unit.	Check whether the power supply unit works normally. If the power supply unit is faulty, contact the technical support personnel.

Fault code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Cause	Solution
E16.14	Abnormality during receiving of interactive data by drive unit	1: Fault	1: Fault	Yes	An abnormality occurs when the drive unit receives interactive data from the power supply unit.	The power supply unit is faulty. Contact the technical support personnel.
E16.21	CANlink heartbeat message timeout	1: Fault	1: Fault	Yes	The CANlink heartbeat message times out.	Ensure that the CAN communication cable is connected properly. Check parameters FD-15 to FD-17 to confirm the interference and eliminate the interference. Ensure that heartbeat messages are transmitted and the device is normal.
E16.22	CANlink station number conflict	1: Fault	1: Fault	Yes	CANlink station numbers conflict.	Change the same CANlink station number to different ones by using FD-13.
E16.52	EtherCAT communication card EEPROM fault	1: Fault	1: Fault	Yes	The EEPROM of the EtherCAT communication card is faulty.	If the programming or upgrading of the communication card fails, program the communication card again. If this fault occurs during normal use, replace the communication card.
E16.53	Slave control chip of the EtherCAT communication card faulty	1: Fault	1: Fault	Yes	The slave control chip of the EtherCAT communication card is faulty.	If the programming or upgrading of the communication card fails, program the communication card again. If this fault occurs during normal use, replace the communication card.
E16.55	The EtherCAT system parameters are incorrect.	1: Fault	1: Fault	Yes	Incorrect EtherCAT parameter settings	When the master station becomes wrong, check whether it sends synchronous frames (FD-78). If not, make sure that TPDO and RPDO have been configured for the master PDO. If the master PDO is configured correctly, check the network port status (FD-72 to FD-77) and make sure that the communication cable is connected properly.
E16.71	Master station offline during operation of the communication card	1: Fault	1: Fault	Yes	The master station goes offline during operation of the communication card.	Check and ensure that the connection between the communication card and PLC is normal.

Fault code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Cause	Solution
E16.72	Internal slave station offline during operation of the communication card	1: Fault	1: Fault	Yes	The internal slave station goes offline during operation of communication card.	Check and ensure that the connection between the communication card and power supply unit is normal.
E16.74	Communication card configuration fault	1: Fault	1: Fault	Yes	The communication card configuration is faulty.	Check whether the configured slave station exists, and check that start with station lost (FD-50) is disabled.
E16.75	Configurations of drive unit mappings on the communication card faulty	1: Fault	1: Fault	Yes	Configurations of the drive unit mapping on the communication card are faulty.	Check and ensure that the number of pieces of process data configured for the drive unit is consistent with the number of mapping relations.
E16.76	Configurations of power supply unit mappings on the communication card faulty	1: Fault	1: Fault	Yes	Configurations of the power supply unit mapping on the communication card are faulty.	Check and ensure that the number of pieces of process data configured for the power supply unit is consistent with the number of mapping relations.
E16.81	Communication card connection failure	1: Fault	1: Fault	Yes	The communication card connection times out.	Check and ensure that the communication link is normal and the master station is running properly.
E16.82	Ethernet hardware error	1: Fault	1: Fault	Yes	An error occurs on the Ethernet hardware.	Contact the agent or Inovance.
E16.83	MAC address unconfigured	1: Fault	1: Fault	Yes	The MAC address is not programmed.	Contact the agent or Inovance.
E16.84	IP address conflict	1: Fault	1: Fault	Yes	The IP addresses conflict.	Ensure that the IP address of the AC drive is different from that of other devices.
E21.01	Parameter written to the EEPROM timeout	1: Fault	1: Fault	Yes	An error occurs during parameter writing.	The EEPROM chip is damaged. Contact the manufacturer to replace the main control board.

Fault code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Cause	Solution
E21.02	Parameter read from the EEPROM timeout	1: Fault	1: Fault	Yes	An error occurs during parameter reading.	The EEPROM chip is damaged. Contact the manufacturer to replace the main control board.
E21.03	Operation on the EEPROM timeout	1: Fault	1: Fault	Yes	An error occurs during parameter reading and writing.	The EEPROM chip is damaged. Contact the manufacturer to replace the main control board.
E21.04	EEPROM buffer overflow	1: Fault	1: Fault	Yes	The number of parameters to be written exceeds the limit.	Reduce the number of parameters to be written in a short period of time.
E61.01	Braking transistor shoot-through	0: Cancel 1: Fault	1: Fault	Yes	The braking transistor is shoot-through at stop.	Check whether the resistance and power of the braking resistor are too small. Check whether the braking resistor is short-circuited.
E61.02	Braking transistor open circuit	0: Cancel 1: Fault	1: Fault	Yes	The braking transistor is open-circuited.	Check whether the braking resistor is damaged. Check whether the braking resistor is short-circuited.
E61.03	Braking transistor shoot-through during running	1: Fault	1: Fault	Yes	The braking transistor is shoot-through during running.	Check whether the resistance and power of the braking resistor are too small. Check whether the braking resistor is short-circuited.
E80.00/ A80.00	Fan running abnormal	0: Cancel 1: Fault 2: Warning	1: Fault	Yes	The fan is running abnormally.	Check whether the fan on the power supply unit is connected correctly. Check whether the fan on the power supply unit is blocked.
A98.01	Continuous frame loss on drive unit	2: Warning	2: Warning	Yes	The power supply unit detects that the drive unit has lost more frames continuously than the value set by A0-01 of the power supply unit.	Check that the terminals of the power supply unit and drive unit bases are connected properly, and eliminate the interference.
A98.02	Continuous frame loss on expansion card	2: Warning	2: Warning	Yes	The power supply unit detects that the I/O expansion card has lost more frames continuously than the value set by A0-02 of the power supply unit.	Check that the power supply unit and I/O expansion card are connected properly, and eliminate the interference.

Fault code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Cause	Solution
A98.03	Continuous frame loss on drive unit and expansion card	2: Warning	2: Warning	Yes	The power supply unit detects that the drive unit and the I/O expansion card have lost more frames continuously than the set value.	Check the wiring and eliminate the interference.
A99.01	Selected DI hardware resource not exist	2: Warning	2: Warning	Yes	The selected DI hardware resource does not exist.	Check whether the power supply unit and expansion cards are firmly installed. Check whether the DI hardware resource is selected for the power supply unit and ensure that the selected DI hardware resource exists.
A99.02	Selected DO/RO hardware resource not exist	2: Warning	2: Warning	Yes	The selected DO/RO hardware resource does not exist.	Check whether the power supply unit and expansion cards are firmly installed. Check whether the DO/RO hardware resource is selected for the power supply unit and ensure that the selected DO/RO hardware resource exists.
A99.03	Selected AI hardware resource not exist	2: Warning	2: Warning	Yes	The selected AI hardware resource does not exist.	Check whether the power supply unit and expansion cards are firmly installed. Check whether the AI hardware resource is selected for the power supply unit and ensure that the selected AI hardware resource exists.
A99.04	Selected DI and DO/RO hardware resources not exist	2: Warning	2: Warning	Yes	The selected DI and DO/RO hardware resources do not exist.	Check whether the power supply unit and expansion cards are firmly installed. Check the power supply unit according to the solutions of A99.01 and A99.02.
A99.05	Selected DI and AI hardware resources not exist	2: Warning	2: Warning	Yes	The selected DI and AI hardware resources do not exist.	Check whether the power supply unit and expansion cards are firmly installed. Check the power supply unit according to the solutions of A99.01 and A99.03.

Fault code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Cause	Solution
A99.06	Selected DO/RO and AI hardware resources not exist	2: Warning	2: Warning	Yes	The selected DO/RO and AI hardware resources do not exist.	Check whether the power supply unit and expansion cards are firmly installed. Check the power supply unit according to the solutions of A99.02 and A99.03.
A99.07	Selected DI, DO/RO, and AI hardware resources not exist	2: Warning	2: Warning	Yes	The selected DI, DO/RO, and AI hardware resources do not exist.	Check whether the power supply unit and expansion cards are firmly installed. Check the power supply unit according to the solutions of A99.01, A99.02, and A99.03.

2.2.2 List of Fault Codes for the Drive Unit

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Cause	Solution
E01.06	STO type recognition failure	0: Coast to stop	0: Coast to stop	Yes	The driver board is abnormal.	Contact the agent or Inovance.
E01.07	AC drive axis type recognition failure	0: Coast to stop	0: Coast to stop	Yes	The driver board is abnormal.	Contact the agent or Inovance.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Re settable	Cause	Solution
E02.04	Output overcurrent	0: Coast to stop	0: Coast to stop	Yes	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and interruption contactor and make sure that they are not short-circuited.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor auto-tuning.
					The acceleration time is too short under abrupt acceleration conditions.	Increase the acceleration time (F0–17).
					The overcurrent stall suppression parameter is set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Overcurrent stall action current) is too large. Change it to a value between 120% and 160%. The set value of F3-20 (Overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The manual torque boost value or V/f curve is inappropriate.	Adjust the manual torque boost value or V/f curve.
					The motor is started while rotating.	Enable the flying start function or start the motor after it stops.
					The AC drive suffers external interference.	Check if the current upon the fault reaches the overcurrent threshold (F3–18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device may be faulty. Contact the manufacturer to replace them.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Re settable	Cause	Solution
E02.05	Bus overcurrent	0: Coast to stop	0: Coast to stop	Yes	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and interruption contactor and make sure that they are not short-circuited.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor auto-tuning.
					The acceleration time is too short under abrupt acceleration conditions.	Increase the acceleration time (F0–17).
					The overcurrent stall suppression parameter is set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Overcurrent stall action current) is too large. Change it to a value between 120% and 160%. The set value of F3-20 (Overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The manual torque boost value or V/f curve is inappropriate.	Adjust the manual torque boost value or V/f curve.
					The motor is started while rotating.	Enable the flying start function or start the motor after it stops.
					The AC drive suffers external interference.	Check if the current upon the fault reaches the overcurrent threshold (F3–18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device may be faulty. Contact the manufacturer to replace them.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Re settable	Cause	Solution
E02.06	Output and bus overcurrent	0: Coast to stop	0: Coast to stop	Yes	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and interruption contactor and make sure that they are not short-circuited.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor auto-tuning.
					The acceleration time is too short under abrupt acceleration conditions.	Increase the acceleration time (F0–17).
					The overcurrent stall suppression parameter is set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Overcurrent stall action current) is too large. Change it to a value between 120% and 160%. The set value of F3-20 (Overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The manual torque boost value or V/f curve is inappropriate.	Adjust the manual torque boost value or V/f curve.
					The motor is started while rotating.	Enable the flying start function or start the motor after it stops.
					The AC drive suffers external interference.	Check if the current upon the fault reaches the overcurrent threshold (F3–18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device may be faulty. Contact the manufacturer to replace them.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Re settable	Cause	Solution
E03.04	Output overcurrent	0: Coast to stop	0: Coast to stop	Yes	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and make sure that the motor circuit is not short-circuited or disconnected.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor auto-tuning.
					The deceleration time is too short under abrupt deceleration conditions.	Increase the deceleration time (F0–18).
					The overcurrent stall suppression parameter is set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Overcurrent stall action current) is too large. Change it to a value between 120% and 150%. The set value of F3-20 (Overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The braking unit and braking resistor are not installed.	Install the braking unit and braking resistor.
					The AC drive suffers external interference.	Check if the current upon the fault reaches the overcurrent threshold (F3–18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device may be faulty. Contact the manufacturer to replace them.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Re settable	Cause	Solution
E03.05	Bus overcurrent	0: Coast to stop	0: Coast to stop	Yes	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and make sure that the motor circuit is not short-circuited or disconnected.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor auto-tuning.
					The deceleration time is too short under abrupt deceleration conditions.	Increase the deceleration time (F0–18).
					The overcurrent stall suppression parameter is set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Overcurrent stall action current) is too large. Change it to a value between 120% and 150%. The set value of F3-20 (Overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The braking unit and braking resistor are not installed.	Install the braking unit and braking resistor.
					The AC drive suffers external interference.	Check if the current upon the fault reaches the overcurrent threshold (F3–18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device may be faulty. Contact the manufacturer to replace them.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Re settable	Cause	Solution
E03.06	Output and bus overcurrent	0: Coast to stop	0: Coast to stop	Yes	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and make sure that the motor circuit is not short-circuited or disconnected.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor auto-tuning.
					The deceleration time is too short under abrupt deceleration conditions.	Increase the deceleration time (F0–18).
					The overcurrent stall suppression parameter is set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Overcurrent stall action current) is too large. Change it to a value between 120% and 150%. The set value of F3-20 (Overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The braking unit and braking resistor are not installed.	Install the braking unit and braking resistor.
					The AC drive suffers external interference.	Check if the current upon the fault reaches the overcurrent threshold (F3–18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device might be damaged. Contact Inovance for replacement.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Cause	Solution
E04.04	Output overcurrent	0: Coast to stop	0: Coast to stop	Yes	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and make sure that the motor circuit is not short-circuited or disconnected.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor auto-tuning.
					The overcurrent stall suppression parameter is set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Overcurrent stall action current) is too large. Change it to a value between 120% and 150%. The set value of F3-20 (Overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The power rating of the AC drive is too low.	In the stable operation state, if the operating current exceeds the rated current of the motor or the rated output current of the drive, replace with a drive with a higher power rating.
					The AC drive suffers external interference.	Check if the current upon the fault reaches the overcurrent threshold (F3–18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device might be damaged. Contact Inovance for replacement.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Cause	Solution
E04.05	Bus overcurrent	0: Coast to stop	0: Coast to stop	Yes	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and make sure that the motor circuit is not short-circuited or disconnected.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor auto-tuning.
					The overcurrent stall suppression parameter is set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Overcurrent stall action current) is too large. Change it to a value between 120% and 150%. The set value of F3-20 (Overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The power rating of the AC drive is too low.	In the stable operation state, if the operating current exceeds the rated current of the motor or the rated output current of the drive, replace with a drive with a higher power rating.
					The AC drive suffers external interference.	Check if the current upon the fault reaches the overcurrent threshold (F3–18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device might be damaged. Contact Inovance for replacement.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Cause	Solution
E04.06	Output and bus overcurrent	0: Coast to stop	0: Coast to stop	Yes	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and make sure that the motor circuit is not short-circuited or disconnected.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor auto-tuning.
					The overcurrent stall suppression parameter is set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Overcurrent stall action current) is too large. Change it to a value between 120% and 150%. The set value of F3-20 (Overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The power rating of the AC drive is too low.	In the stable operation state, if the operating current exceeds the rated current of the motor or the rated output current of the drive, replace with a drive with a higher power rating.
					The AC drive suffers external interference.	Check if the current upon the fault reaches the overcurrent threshold (F3–18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device might be damaged. Contact Inovance for replacement.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Re settable	Cause	Solution
E05.00	Overvoltage during acceleration	0: Coast to stop	0: Coast to stop	Yes	The input grid voltage is too high.	Adjust the voltage to the normal range.
					External force drives the motor during acceleration.	Remove the external force or install a braking resistor. The maximum rise frequency during overvoltage stall suppression (F3-26) is too low. Adjust it to a value between 5 Hz and 15 Hz when external force is applied.
					The overvoltage stall suppression parameters are set improperly.	Ensure that the overvoltage stall suppression function (F3-23) is enabled. The value of F3-22 (Overvoltage stall action voltage) is too large. Change it to a value ranging from 770 V and 700 V. The value of F3-24 (Overvoltage stall suppression gain) is too small. Change it to a value ranging from 30 and 50.
					The braking unit and braking resistor are not installed.	Install the braking unit and braking resistor.
					The acceleration time is too short.	Increase the acceleration time.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Re settable	Cause	Solution
E06.00	Overvoltage during deceleration	0: Coast to stop	0: Coast to stop	Yes	The overvoltage stall suppression parameters are set improperly.	Ensure that the overvoltage stall suppression function (F3-23) is enabled. The value of F3-22 (Overvoltage stall action voltage) is too large. Change it to a value ranging from 770 V and 700 V. The value of F3-24 (Overvoltage stall suppression gain) is too small. Change it to a value ranging from 30 and 50.
					External force drives the motor during deceleration.	Remove the external force or install a braking resistor. The maximum rise frequency during overvoltage stall suppression (F3-26) is too low. Adjust it to a value between 5 Hz and 15 Hz when external force is applied.
					The deceleration time is too short.	Increase the deceleration time.
					The braking unit and braking resistor are not installed.	Install the braking unit and braking resistor.
E07.00	Overvoltage during operation at constant speed	0: Coast to stop	0: Coast to stop	Yes	The overvoltage stall suppression parameters are set improperly.	Ensure that the overvoltage stall suppression function (F3-23) is enabled. The value of F3-22 (Overvoltage stall action voltage) is too large. Change it to a value ranging from 770 V and 700 V. The value of F3-24 (Overvoltage stall suppression gain) is too small. Change it to a value ranging from 30 and 50.
					External force drives the motor during running.	Remove the external force or install a braking resistor. The maximum rise frequency during overvoltage stall suppression (F3-26) is too low. Adjust it to a value between 5 Hz and 15 Hz when external force is applied.
E07.01	Overvoltage for single-phase models	0: Coast to stop	0: Coast to stop	Yes	The bus voltage of single-phase models exceeds 410 V.	Adjust the input voltage of single-phase models to a value lower than 290 V.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Re settable	Cause	Solution
E09.00	Undervoltage	0: Coast to stop	0: Coast to stop	Yes	An instantaneous power failure occurs.	Enable the power dip ride-through function.
					The input voltage of the AC drive is beyond the specified range.	Adjust the voltage to a value within the normal range.
					The bus voltage is abnormal.	Contact Inovance for technical support.
					The power supply unit, the driver board of the drive unit, or the control board of the drive unit is faulty.	Contact Inovance for technical support.
E10.00	Drive overload	0: Coast to stop	0: Coast to stop	Yes	F9-01 (Motor overload protection gain) is set improperly.	Set F9-01 (Motor overload protection gain) properly. The motor overload time is prolonged if you increase the value of F9-01.
					The load is too heavy or the motor rotor is locked.	Reduce the load or check motor and mechanical conditions.
E11.00/ A11.00	Motor overload	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	F9-01 (Motor overload protection gain) is set improperly.	Set F9-01 (Motor overload protection gain) properly. The motor overload time is prolonged if you increase the value of F9-01.
					The load is too heavy or the motor rotor is locked.	Reduce the load or check motor and mechanical conditions.
E13.00/ A13.00	Output phase loss	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	The motor is faulty.	Check whether open circuit occurs on the motor.
					The cable connecting the drive and the motor is faulty.	Eliminate the external fault.
					The three-phase outputs of the AC drive are unbalanced during motor running.	Check whether the motor three-phase winding is normal and eliminate the fault.
					The driver board or the IGBT module is abnormal.	Contact Inovance for technical support.
E15.01/ A15.01	External device fault (NO)	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	1: Decelerate to stop	Yes	An external fault signal is input through the multi-functional DI (NO).	Eliminate external faults and ensure that restart (F8-21) is allowed under the mechanical condition for reset.
					An external fault signal is input through the virtual I/O (NO).	Confirm that the virtual I/O parameters in group A1 are set correctly and reset the device.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Re setta ble	Cause	Solution
E15.02/ A15.02	External device fault (NC)	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	1: Decelerate to stop	Yes	An external fault signal is input through the multi-functional DI (NC).	Eliminate external faults and ensure that restart (F8-21) is allowed under the mechanical condition for reset.
					An external fault signal is input through the virtual I/O terminal (NC).	Confirm that the virtual I/O parameters in group A1 are set correctly and reset the device.
E16.01/ A16.01	Modbus communi cation timeout	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	Modbus communication times out.	Check whether the RS-485 communication cable is correctly connected. Check whether the value of Fd-04 and the PLC communication cycle are proper.
A16.02	Protec tive cover not installed for the three-way terminal	4: Warning	4: Warning	Yes	The protective cover of the three-way terminal is not installed.	Install the protective cover of the three-way terminal for the last drive unit.
E16.04/ A16.04	Continu ous frame loss of the expan sion card	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	The number of frames that the I/O expansion card has lost continuously exceeds the set value.	Ensure that the expansion cards are connected properly. Check whether the value of F9-67 is too small.
E16.11/ A16.11	CANopen communi cation timeout	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	CANopen communication times out.	Ensure that the CAN communication cable is connected properly. Check parameters FD-15 to FD-17 to confirm the interference and eliminate the interference. Ensure that heartbeat messages are transmitted and the device is normal.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Re settable	Cause	Solution
E16.12/ A16.12	Inconsistence between PDO mapping configured by CANopen and actual communication mapping	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	The PDO mapping configured by CANopen is inconsistent with the actual communication mapping.	Check whether the PDO mapping of group FE/AF is consistent with the PDO and ensure that the PDO is configured correctly. Check whether the mapping relationship configured on the master station conforms to the EDS file specification of the AC drive.
E16.21/ A16.21	CANlink heartbeat message timeout	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	The CANlink heartbeat message times out.	Ensure that the CAN communication cable is connected properly. Check parameters FD-15 to FD-17 to confirm the interference and eliminate the interference. Ensure that heartbeat messages are transmitted and the device is normal.
E16.22/ A16.22	CANlink station number conflict	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	CANlink station numbers conflict.	Change the same CANlink station number to different ones by using FD-13.
E18.01	Current detection circuit fault	0: Coast to stop	0: Coast to stop	Yes	The current sampling of the drive is abnormal.	Check whether the main circuit is powered on. Check whether the Hall sensor or current sampling circuit is damaged. If yes, contact the agent or Inovance for technical support.
E19.02/ A19.02	Error in auto-tuning of the magnetic pole position angle of the synchronous motor	0: Coast to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	An error occurs during auto-tuning of the magnetic pole position angle of the synchronous motor.	Check whether the motor is connected or output phase loss occurs.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Cause	Solution
E19.06/ A19.06	Stator resistance quick auto-tuning fault	0: Coast to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	An error occurs during auto-tuning of the stator resistance.	Check whether the motor is connected. Ensure that rated motor current (F1-03) is set according to the motor nameplate.
E19.07/ A19.07	Stator resistance auto-tuning fault	0: Coast to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	Error in auto-tuning of the stator resistance	Check whether the motor is connected. Ensure that rated motor current (F1-03) is set according to the motor nameplate.
E19.08/ A19.08	Error in ending stator resistance auto-tuning	0: Coast to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	An error occurs during auto-tuning of the stator resistance.	Check whether the motor is connected. Ensure that rated motor current (F1-03) is set according to the motor nameplate.
E19.09/ A19.09	Error in auto-tuning of the transient leakage inductance of the asynchronous motor	0: Coast to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	An error occurs during auto-tuning of the transient leakage inductance of the asynchronous motor.	Check whether the motor is connected or output phase loss occurs. Ensure that the motor is connected or the load is connected to the motor.
E19.10/ A19.10	Error in auto-tuning of the leakage inductance of the asynchronous motor	0: Coast to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	Error in auto-tuning of the transient leakage inductance for the asynchronous motor	Check whether the motor is connected or output phase loss occurs. Ensure that the motor is connected or the load is connected to the motor.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Re settable	Cause	Solution
E19.23/ A19.23	Error in auto-tuning of the magnetic pole position angle of the synchronous motor (pulse-by-pulse current limit)	0: Coast to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	An error occurs during auto-tuning of the magnetic pole position of the synchronous motor.	Set F1-03 (Rated motor current) according to the motor nameplate. Decrease the value of F2-29 (Initial position angle detection current of synchronous motor). Check whether the motor is rotating when the AC drive is started. Check whether the value of F1-17 (Motor D axis inductance Ld) is smaller than 0.1 mH.
E19.24/ A19.24	Error in auto-tuning of the transient leakage inductance of the asynchronous motor (pulse-by-pulse current limit)	0: Coast to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	An error occurs during auto-tuning of the transient leakage inductance of the asynchronous motor.	The AC drive power rating is too low. Select an AC drive with a proper power rating according to the motor power.
E21.01	Parameter written to the EEPROM timeout	0: Coast to stop	0: Coast to stop	Yes	An error occurs during parameter writing.	The EEPROM chip is damaged. Contact the manufacturer to replace the control board.
E21.02	Parameter read from the EEPROM timeout	0: Coast to stop	0: Coast to stop	Yes	An error occurs during parameter reading.	The EEPROM chip is damaged. Contact the manufacturer to replace the control board.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Re settable	Cause	Solution
E21.03	Operation on the EEPROM timeout	0: Coast to stop	0: Coast to stop	Yes	An error occurs during parameter reading and writing.	The EEPROM chip is damaged. Contact the manufacturer to replace the control board.
E21.04	EEPROM buffer overflow	0: Coast to stop	0: Coast to stop	Yes	The number of parameters to be written exceeds the limit.	Reduce the number of parameters to be written in a short period of time.
E22.00	Stator resistance auto-tuning result warning	0: Coast to stop	0: Coast to stop	Yes	The tuned stator resistance exceeds the permissible range.	The rated motor voltage and current are set incorrectly. Set F1-02 (Rated motor voltage) and F1-03 (Rated motor current) correctly according to the motor nameplate. Check that auto-tuning is performed after the motor stops.
E22.01	Rotor resistance auto-tuning result warning	0: Coast to stop	0: Coast to stop	Yes	The tuned rotor resistance of the asynchronous motor exceeds the permissible range.	The rated motor voltage and current are set incorrectly. Set F1-02 (Rated motor voltage) and F1-03 (Rated motor current) correctly according to the motor nameplate. Check that auto-tuning is performed after the motor stops.
E22.02	No-load current and mutual inductance auto-tuning result warning	0: Coast to stop	0: Coast to stop	Yes	The tuned no-load current and mutual inductance of the asynchronous motor exceed the permissible range. If this fault is reported, the AC drive calculates the mutual inductance and no-load current based on known motor parameters. The calculated values may be different from optimal values.	Set the motor parameters in group F1 correctly according to the motor nameplate. Before auto-tuning, check that the motor is not connected to any load.
E22.03	Back EMF auto-tuning result warning	0: Coast to stop	0: Coast to stop	Yes	The tuned back EMF of the synchronous motor exceeds the permissible range.	Set F1-02 (Rated motor current) according to the motor nameplate. Before auto-tuning, check that the motor is not connected to any load.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Cause	Solution
E23.01	Hardware overcurrent detected during short circuit to ground detection upon power-on	0: Coast to stop	0: Coast to stop	No	Hardware overcurrent is detected during short circuit to ground detection upon power-on.	Check whether the cable or motor is short-circuited to ground. Ensure that the motor wiring is correct.
E23.02	Overvoltage detected during short circuit to ground detection upon power-on	0: Coast to stop	0: Coast to stop	No	Hardware overvoltage is detected during short circuit to ground detection upon power-on.	Check whether the cable or motor is short-circuited to ground. Ensure that the motor wiring is correct.
E23.03	Overcurrent detected during short circuit to ground detection upon power-on (hardware overcurrent or current exceeds threshold)	0: Coast to stop	0: Coast to stop	No	A high risk is detected during short circuit to ground detection upon power-on.	Check whether the cable or motor is short-circuited to ground. Ensure that the motor wiring is correct.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Cause	Solution
E23.04	Output overcurrent detected during short circuit to ground detection before power-on	0: Coast to stop	0: Coast to stop	No	Lower bridge overcurrent is detected during short circuit to ground detection before power-on.	Check whether the cable or motor is short-circuited to ground. Ensure that the motor wiring is correct.
E23.05	Bus overcurrent detected during short circuit to ground detection before power-on	0: Coast to stop	0: Coast to stop	No	Bus overcurrent is detected during short circuit to ground detection before power-on.	Check whether the cable or motor is short-circuited to ground. Ensure that the motor wiring is correct.
E23.06	Output overcurrent and bus overcurrent detected during short circuit to ground detection before power-on	0: Coast to stop	0: Coast to stop	No	Bus overcurrent and lower bridge overcurrent are detected during short circuit to ground detection before power-on.	Check whether the cable or motor is short-circuited to ground. Ensure that the motor wiring is correct.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Cause	Solution
E25.00	Power supply unit fault	1: Decelerate to stop 5: Cancel	1: Decelerate to stop	Yes	The power supply unit is faulty.	1. Eliminate the power supply unit faults, such as input phase loss and overtemperature. 2. Check the I/O terminal configuration of the power supply unit. Check the terminal configuration of the power supply unit. If any one of the following functions is selected, a fault is reported when there is no feedback signal: a: Running enable b: Incoming circuit breaker feedback c: Auxiliary circuit breaker feedback d: Residual current device feedback If any one of the following functions is selected, a fault is reported when the terminal is active: a: Drive unit running forbidden b: The drive unit coasts to stop. c: The drive unit stops according to the preset mode.
E26.00/ A26.00	Cumulative operating time reached	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	1: Decelerate to stop	Yes	The cumulative operating time reaches the set value.	Clear the record through parameter initialization.
E27.00/ A27.00	User-defined fault 1	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	1: Decelerate to stop	Yes	The signal of user-defined fault 1 is input through the multi-functional DI. The signal of user-defined fault 1 is input through the virtual I/O terminal.	Reset the device.
E28.00/ A28.00	User-defined fault 2	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	1: Decelerate to stop	Yes	The signal of user-defined fault 2 is input through the multi-functional DI. The signal of user-defined fault 2 is input through the virtual I/O terminal.	Reset the device.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Cause	Solution
E29.00/ A29.00	Cumulative power-on time reached	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	1: Decelerate to stop	Yes	The cumulative power-on time reaches the set value.	Clear the record through parameter initialization.
E30.00/ A30.00	Output load loss	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	5: Cancel	Yes	The operation current of the drive is lower than the value of F9-68.	1. Check whether the load is disconnected. 2. Check whether the values of F9-64 and F9-65 meet actual operating conditions.
E31.00/ A31.00	PID feedback loss during running	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	1: Decelerate to stop	Yes	The PID feedback is lower than the setpoint of FA-26.	Check the PID feedback signal or set FA-26 properly.
E36.00	Torque limit timeout	0: Coast to stop	0: Coast to stop	Yes	F2-10 (Electric torque upper limit) is set improperly or the load is too heavy.	Set the upper limit of electric torque according to the site conditions, reduce the load, or select an AC drive with a higher power rating.
E37.00	Frequency direction fault	0: Coast to stop	0: Coast to stop	Yes	The load is too heavy.	1. Set B7-21 (Frequency abnormality detection cycle) properly according to the field conditions. 2. Reduce the load, or select an AC drive with a higher power rating.
E38.00	Frequency following fault	0: Coast to stop	0: Coast to stop	Yes	The load is too heavy.	1. Set B7-22 and B7-23 according to the site conditions. 2. Reduce the load, or select an AC drive with a higher power rating.
E42.00/ A42.00	Excessive speed deviation	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	Motor auto-tuning is not performed.	Perform motor auto-tuning.
					The speed deviation exceeds the threshold set by F9-73 and F9-74.	Set detection-related parameters properly according to the actual conditions.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Cause	Solution
E45.00/ A45.00	Motor overheat	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Yes	The cable of the temperature sensor becomes loose.	Check the wiring of the temperature sensor.
					Motor overtemperature occurs.	Increase the carrier frequency or take other measures to cool the motor.
					The motor overheat protection threshold is too low.	Increase the motor overheat protection threshold (90°C to 100°C for regular motors).
E47.00	STO blocked	0: Coast to stop	0: Coast to stop	Yes	STO1 and STO2 signals are disconnected simultaneously.	Check the wiring of STO1 and STO2.
E47.02	STO triggering inconsistency fault	0: Coast to stop	0: Coast to stop	Yes	STO1 and STO2 signals are disconnected.	Check the wiring of STO1 and STO2.
E47.03	STO power supply fault	0: Coast to stop	0: Coast to stop	Yes	Undervoltage or overvoltage occurs on the STO circuit.	Contact Inovance for technical support.
E47.04	STO input subsystem fault	0: Coast to stop	0: Coast to stop	Yes	The STO circuit input subsystem is abnormal.	Contact Inovance for technical support.
E47.05	STO buffer chip fault	0: Coast to stop	0: Coast to stop	No	The STO output blocking chip is abnormal.	Contact Inovance for technical support.
E80.00	Fan fault	0: Coast to stop 1: Decelerate to stop 5: Cancel	0: Coast to stop	Yes	The fan is faulty.	Ensure that the fan on the drive unit is connected correctly. Ensure that the fan rotates freely.
E90.01	Brake release feedback fault	0: Coast to stop	0: Coast to stop	Yes	The brake release feedback signal is abnormal.	Ensure that the brake release signal and brake apply signal of the AC drive is correctly transmitted to the brake device. Manually release and apply the brake to confirm that the feedback signal is correctly transmitted to the AC drive. Replace the brake device.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Re settable	Cause	Solution
E90.02	Brake apply feedback fault	0: Coast to stop	0: Coast to stop	Yes	The brake apply feedback signal is abnormal.	Ensure that the brake release signal and brake apply signal of the AC drive is correctly transmitted to the brake device. Manually release and apply the brake to confirm that the feedback signal is correctly transmitted to the AC drive. Replace the brake device.
E90.03	Brake apply signal and brake release signal feedback fault	0: Coast to stop	0: Coast to stop	Yes	The brake apply and release feedback signal is abnormal.	Ensure that the brake release signal and brake apply signal of the AC drive is correctly transmitted to the brake device. Manually release and apply the brake to confirm that the feedback signal is correctly transmitted to the AC drive. Replace the brake device.
E91.00	Frequency reach timeout	0: Coast to stop	0: Coast to stop	Yes	The operating frequency has not reached the value of B7-01 or B7-02.	Ensure that the motoring torque upper limit defined by F2-10 is greater than the value of B7-03 and B7-04. Increase the brake release timeout detection time defined by B7-18.
E91.01	Torque/ Current reach timeout	0: Coast to stop	0: Coast to stop	Yes	The output torque or output current does not reach the value of B7-03 and B7-04.	Ensure that the motoring torque upper limit defined by F2-10 is greater than the value of B7-03 and B7-04. Increase the brake release timeout detection time defined by B7-18.
E91.02	Frequency/ Torque reach timeout	0: Coast to stop	0: Coast to stop	Yes	The operating frequency does not reach the value of B7-01 or B7-02, and the output torque or output current does not reach the value of B7-03 or B7-04.	Ensure that the motoring torque upper limit defined by F2-10 is greater than the value of B7-03 and B7-04. Increase the brake release timeout detection time defined by B7-18.
E93.00	Command direction conflict	1: Decelerate to stop	1: Decelerate to stop	Yes	The forward and reverse running commands of the DI are valid simultaneously.	Ensure that either the forward running command or the reverse running command of the DI is valid.
A99.01	Selected DI hardware resource not exist	4: Warning	4: Warning	Yes	The selected DI hardware resource does not exist.	Check whether the power supply unit and expansion cards are firmly installed. Check whether the DI hardware resource is selected for F4-00 to F4-15 of the drive unit and ensure that the selected DI hardware resource exists.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Cause	Solution
A99.02	Selected DO/RO hardware resource not exist	4: Warning	4: Warning	Yes	The selected DO/RO hardware resource does not exist.	Check whether the power supply unit and expansion cards are firmly installed. Check whether the DO/RO hardware resource is selected for the drive unit and ensure that the selected DO/RO hardware resource exists.
A99.03	Selected AI hardware resource not exist	4: Warning	4: Warning	Yes	The selected AI hardware resource does not exist.	Check whether the power supply unit and expansion cards are firmly installed. Check whether the AI hardware resource is selected for F4-25 to F4-29 of the drive unit and ensure that the selected AI hardware resource exists.
A99.04	Selected DI and DO/RO hardware resources not exist	4: Warning	4: Warning	Yes	The selected DI and DO/RO hardware resources do not exist.	Check whether the power supply unit and expansion cards are firmly installed. Check the drive unit according to the solutions to A99.01 and A99.02.
A99.05	Selected DI and AI hardware resources not exist	4: Warning	4: Warning	Yes	The selected DI and AI hardware resources do not exist.	Check whether the power supply unit and expansion cards are firmly installed. Check the drive unit according to the solutions to A99.01 and A99.03.
A99.06	Selected DO/RO and AI hardware resources not exist	4: Warning	4: Warning	Yes	The selected DO/RO and AI hardware resources do not exist.	Check whether the power supply unit and expansion cards are firmly installed. Check the drive unit according to the solutions to A99.01 and A99.03.
A99.07	Selected DI, DO/RO, and AI hardware resources not exist	4: Warning	4: Warning	Yes	The selected DI, DO/RO, and AI hardware resources do not exist.	Check whether the power supply unit and expansion cards are firmly installed. Check the drive unit according to the solutions to A99.01, A99.02, and A99.03.

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