

EMS Troubleshooting

This chapter includes general guidelines and troubleshooting tables as an aid in isolating and recovering from malfunctions. **ONLY QUALIFIED, AUTHORIZED PERSONNEL SHOULD OPERATE OR MAINTAIN EQUIPMENT.**

Proper troubleshooting is finding the cause of a problem and correcting it in a safe and systematic manner. A change in the system often causes trouble. An understanding of the system, its modes of operation, and how these modes are to work will aid in finding the cause of the trouble.

⚡ ⚠️ WARNING ⚠️ ⚡

- Ensure that all requisite safety precautions are taken while diagnostic procedures are performed.
- Before attempting any maintenance or service operation, make sure that:
 - You do not begin any repair procedure until the proper shutdown procedures and the appropriate power lockout procedures have been applied.
 - The system is de-energized; main electrical switches are open.
- Some maintenance/troubleshooting procedures require the equipment to be running to perform the procedure. In this case only one person should be in command of operating the equipment in maintenance mode only. Constant communication with the person commanding the equipment should be maintained through the procedure.

EMS Carrier Trolley Troubleshooting

Problem	Possible Cause	Remedy
Trolley stopped moving	System not in Auto mode	<ul style="list-style-type: none"> Put system in Auto mode.
	E-Stop pushbutton pushed in	<ul style="list-style-type: none"> Reset system and resume Auto mode.
	Power circuit breaker tripped	<ul style="list-style-type: none"> Investigate and fix the cause of the tripped breaker. Reset breaker and put system in Auto mode.
	Defective integrated drive controller	<ul style="list-style-type: none"> Check that the IDC disconnect is switched to the ON position. Check for faulty wiring or loose connection. Replace defective unit.
	Defective motor	<ul style="list-style-type: none"> Check for loose wiring connection or faulty wiring. Check collector shoe seating in rail. Replace motor.
	Mechanical binding or failure	<ul style="list-style-type: none"> Check for bearing/mechanical failure. Check for rail alignment.
	Communication faults	<ul style="list-style-type: none"> Check for loose wiring connection or faulty wiring. For software troubleshooting, see Siemens appendix item.
	Broken/ missing Collector Shoe	<ul style="list-style-type: none"> Replace the Collector Shoe.
	Rail power buss disconnected	<ul style="list-style-type: none"> Connect cable.
Overload Faults	Defective motor brake	<ul style="list-style-type: none"> Replace brake.
	Defective motor	<ul style="list-style-type: none"> Replace motor.
	Defective ArmorStart	<ul style="list-style-type: none"> Replace ArmorStart. Check for loose wiring connection. Replace faulty wiring.

EMS Carrier Frame Troubleshooting

Problem	Possible Cause	Remedy
System not moving	System not in Auto mode	<ul style="list-style-type: none"> Put system in Auto mode.
	E-Stop pushbutton pushed in	<ul style="list-style-type: none"> Reset system and resume Auto mode.
	Power circuit breaker tripped	<ul style="list-style-type: none"> Investigate and fix the cause of the tripped breaker. Reset breaker and put system in Auto mode.
	Defective VFD	<ul style="list-style-type: none"> Check the power to the VFD. Check for faulty wiring or loose connection. Read fault from HMI and resolve accordingly. Replace defective unit.
	Defective motor	<ul style="list-style-type: none"> Check for loose wiring connection or faulty wiring. Check collector shoe seating in rail. Replace motor.
	Mechanical binding or failure	<ul style="list-style-type: none"> Check for bearing/mechanical failure.
	Communication faults	<ul style="list-style-type: none"> Check for loose wiring connection or faulty Ethernet wiring. For software troubleshooting, see Siemens appendix item.
	Broken/ missing Collector Shoe	<ul style="list-style-type: none"> Replace the Collector Shoe.
	Rail power buss disconnected	<ul style="list-style-type: none"> Connect cable.
Fault Alarm on VFD	Faulty rope encoder	<ul style="list-style-type: none"> Replace rope encoder. Check rope encoder screen on HMI.
	VFD has fault alarm	<ul style="list-style-type: none"> Investigate fault recovery procedure from Rockwell.

Problem	Possible Cause	Remedy
Overload faults	Defective motor brake	<ul style="list-style-type: none"> • Replace brake.
	Increased friction with drive assembly	<ul style="list-style-type: none"> • Perform maintenance procedures.
Over/Under travel faults	Faulty encoder	<ul style="list-style-type: none"> • Check on HMI for encoder count working correctly. • Check encoder mechanical connection. • Replace the encoder.
	Wire rope stretch	<ul style="list-style-type: none"> • Perform maintenance procedures. • Worn end connections.

EMS Shuttle Troubleshooting

Problem	Possible Causes	Remedy
Shuttle not moving	System not in Auto mode	<ul style="list-style-type: none"> Put system in Auto mode.
	E-stop pushbutton pushed in	<ul style="list-style-type: none"> Reset system and resume Auto mode.
	Power circuit breaker tripped	<ul style="list-style-type: none"> Investigate and fix the cause of the tripped breaker. Reset breaker and put system in Auto mode.
	Defective integrated drive controller	<ul style="list-style-type: none"> Check that the IDC disconnect is switched to the ON position. Check for faulty wiring or loose connection. Replace defective unit.
	Defective motor	<ul style="list-style-type: none"> Check for loose wiring connection or faulty wiring. Check collector shoe seating in rail. Replace motor.
	Mechanical binding or failure	<ul style="list-style-type: none"> Check for bearing/mechanical failure. Check for defective air cylinder.
	Communication faults	<ul style="list-style-type: none"> Check for faulty wiring or loose connection. Check for faulty Ethernet port block or Ethernet communication module.
Shuttle over travels in station	Faulty in-position proximity switch	<ul style="list-style-type: none"> Replace switch.
	Faulty cable	<ul style="list-style-type: none"> Replace cable.
	Faulty reader head	<ul style="list-style-type: none"> Replace the reader head. For software troubleshooting, see Pepperl+Fuchs appendix item.
Locking pins do not open/close	Tag reader/tag defective	<ul style="list-style-type: none"> Replace reader/tag. Replace cable.
	Alignment gearmotor defective	<ul style="list-style-type: none"> Replace alignment gearmotor.
	Faulty cable	<ul style="list-style-type: none"> Replace cable.
	Faulty prox switch	<ul style="list-style-type: none"> Check prox cabling. Check prox alignment. Replace prox.