



ELD MALFUNCTION MANUAL



Hours of Service

Actions for Malfunctions & Data Diagnostics

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1 Introduction

This document will provide a description of the malfunction and diagnostic events and the actions that should be performed by both the driver and the carrier.

2 Responsibilities

2.1 Carrier Responsibilities Regarding Malfunctions

The carrier must:

- Provide drivers with an instruction sheet describing the various ELD malfunction events and recordkeeping procedures (this document)
- Provide drivers with a supply of 8 days' worth of blank paper driver records
- Repair, replace or service
 - Motor carrier must correct the malfunction of the ELD within 8 days of discovery of the condition
 - or
 - a driver's notification to the motor carrier, whichever occurs first

2.2 Record Keeping Responsibilities by the driver

The driver must:

• Malfunction Events

- Note the ELD malfunction and provide the carrier with written notice within 24hrs
- Reconstruct driving events for the current 24hr period and previous 7 consecutive days using paper logs (unless they can be retrieved from the ELD)
- Continue to manually prepare driving logs until ELD is serviced and brought back into compliance
- During inspections which take place when a malfunction has occurred: provide safety official with manually kept driver logs

• Data Diagnostic Events

- The driver must follow the motor carriers and ELD providers recommendations in resolving the data inconsistency

2.3 Clearing Malfunction and Data Diagnostic Events

- ELD needs to capture when a malfunction or data diagnostic event has been cleared by the driver
- Unidentified driving records data diagnostic
 - Events that drop to 15 minutes or less during the current 24hr period and previous 7 days can be cleared automatically and there is no requirement to record the automatic clear

2.4 Data Diagnostics Button

Data diagnostic events acquired by the driver will be displayed in the application's header which is always visible across all screens.

There will also be a notification in the Android toolbar indicating a data diagnostic event.

Tap the icon to display the **Data Diagnostic Event(s)** dialog. Tap the button located within the **Action** column of the **Data Diagnostics** dialog, the **Clear Data Diagnostics** dialog will then be displayed

Note: ELD Data Diagnostic status affects only the authenticated user; therefore, the ELD only indicates the active data diagnostic event status applicable to the active driver. Data diagnostic event dialog will no longer pop up whenever it occurs, hence, the data diagnostic 'D' icon will be in an orange color when data diagnostic events have occurred.

The 'D' icon will only turn back to white once the dialog for the data diagnostic list is closed and will turn back to orange once there are new active data diagnostic events.

To clear all the Data Diagnostic Events displayed within the dialog, tap the button, the Clear All data diagnostics dialog will then be displayed

At each instance when an ELD malfunction or data diagnostic event is detected or cleared by the ELD, the ELD records the event.

3 Malfunction Events

Malfunction events show up in the application notification bar as a capital M. The M will be yellow if there are new malfunctions not yet reviewed, or white if the current malfunction(s) have been reviewed. Malfunctions should be cleared and any associated action must be done as soon as possible. Because of the severity of a Malfunction over a simple Diagnostic, each individual Malfunction will need to be cleared separately.

FMCSA Requirement No.

Event Name Description

4.6.1.1 Power

Malfunction

(b) An ELD must set a power compliance malfunction if the power data diagnostics event described in paragraph 4.6.1.1(a) of this appendix indicates an aggregated in-motion driving time understatement of 30 minutes or more on the ELD over a 24-hour period across all driver profiles, including the unidentified driver profile.

DRIVER ACTION NEEDED: Ensure that the tablet/phone is receiving power. If not, plug it in and charge the device

4.6.1.2 Engine

Synchronization Malfunction

(c) An ELD must set an engine synchronization compliance malfunction if connectivity to any of the required data sources specified in section 4.3.1 of this appendix is lost for more than 30 minutes during a 24-hour period aggregated across all driver profiles, including the unidentified driver profile.

DRIVER ACTION NEEDED: Ensure that the application is connected to the VBUS device. Ensure that the VBUS device is properly seated in the vehicle socket.

OTHER ACTION: Ensure that the device has up to date firmware from the manufacturer. Ensure that the application is updated to the most current release available.

4.6.1.3 Timing

Malfunction

The ELD must periodically cross-check its compliance with the requirement specified in section 4.3.1.5 of this appendix with respect to an accurate external UTC source and must record a timing compliance malfunction when it can no longer meet the underlying compliance requirement.

DRIVER ACTION NEEDED: Verify that the tablet/phone is set to use Network time and date instead of being set manually.

4.6.1.4 Position

Malfunction

(a) An ELD must continually monitor the availability of valid position measurements meeting the listed accuracy requirements in section 4.3.1.6 of this appendix and must track the distance and elapsed time from the last valid measurement point.

(b) ELD records requiring location information must use the last valid position measurement and include the latitude/longitude coordinates and distance

traveled, in miles, since the last valid position measurement.

(c) An ELD must monitor elapsed time during periods when the ELD fails to acquire a valid position measurement within 5 miles of the CMV's movement. When such elapsed time exceeds a cumulative 60 minutes over a 24 hour period, the ELD must set and record a positioning compliance malfunction.

ACTION NEEDED: This malfunction indicates that location data is not being received consistently, even if location is showing for the individual events. Possible fixes for this include making sure that the VBUS device is updated to the latest firmware version and that the application is updated to the latest released version. There is also a setting on the Portal in the Equipment setup tab to select the 'GPS Receiver'. The settings are VBUS Device, Mobile Device, or Either Device. Not all VBUS Devices provide location services, so changing the setting to Mobile Device (tablet/phone) or Either Device which will pull location data from either source, would be a needed change. We recommend VBUS Device because the precision of that device is more accurate than a mobile device. Other issues may be that the VBUS device is facing upside down, or that the location of the device is preventing it from receiving GPS data.

4.6.1.5 Data Recording

Malfunction

(a) An ELD must monitor its storage capacity and integrity and must detect a data recording compliance malfunction if it can no longer record or retain required events or retrieve recorded logs that are not

otherwise catalogued remotely by the motor carrier.

(b) An ELD must monitor the completeness of the ELD event record information in relation to the required data elements for each event type and must record a missing data elements data diagnostics event for the driver if any required field is missing at the time of recording.

ACTION NEEDED: This malfunction simply means that the tablet/phone is running out of storage space. Either too many apps, or other data are not leaving enough space for the application to continue recording events for the logs. The action here is to free up space on the device.

4.6.1.7 Data Transfer

Malfunction

(a) An ELD must implement in-service monitoring functions to verify that the data transfer mechanism(s) described in section 4.9.1 of this appendix are continuing to function properly. An ELD must verify this functionality at least once every 7 days. These monitoring functions may be automatic or may involve manual steps for a driver.

(b) If the monitoring mechanism fails to confirm proper in-service operation of the data transfer mechanism(s), an ELD must record a data transfer data diagnostic event and enter an unconfirmed data transfer mode.

(c) After an ELD records a data transfer data diagnostic event, the ELD must increase the frequency of the monitoring function to check at least once every 24-hour period. If the ELD stays in the unconfirmed data transfer mode following

the next three consecutive monitoring checks, the ELD must detect a data transfer compliance malfunction.

ACTION NEEDED: This malfunction is usually the result of the tablet/phone being out of coverage, whether that is because of

Cellular coverage, or if the Driver is using a Wifi only device. To solve this malfunction, the driver can perform a manual data transfer when they do have coverage. I suggest a Web Services request with an output file comment of 'Test'.

4 Data Diagnostic Events

Diagnostic events show up in the application notification bar as a capital D. The D will be yellow if there are new diagnostics not yet reviewed, or white if the current diagnostic(s) have been reviewed. Diagnostics are more informational and do not have to be handled with the same importance as malfunctions. We do suggest that all diagnostics are cleared at the end of the day. All diagnostic messages can be cleared at once unlike malfunctions which need to be cleared individually. Generally, diagnostics can be ignored unless the same one is coming up over and over again, which could indicate an issue and that a Malfunction will be thrown.

FMCSA Requirement No.

Event Name Description

4.6.1.1 Power

Diagnostic

(a) An ELD must monitor data it receives from the engine ECM or alternative sources as allowed in sections 4.3.1.1-4.3.1.4 of this appendix, its onboard sensors, and data record history to identify instances when it may not have complied with the power requirements specified in section 4.3.1.1, in which case, the ELD must record a power data diagnostics event for the corresponding driver(s), or under the unidentified driver profile if no drivers were authenticated at the time of detection.

4.6.1.2 Engine

Synchronization Diagnostic

(a) An ELD must monitor the data it receives from the engine ECM or alternative

sources as allowed in sections 4.3.1.1-4.3.1.4 of this appendix, its onboard sensors, and data record history to identify instances and durations of its non-compliance with the ELD engine synchronization requirement specified in section 4.2.

(b) An ELD required to establish a link to the engine ECM as described in section 4.2 must monitor its connectivity to the engine ECM and its ability to retrieve the vehicle parameters described under section 4.3.1 of this appendix and must record an engine-synchronization data diagnostics event when it no longer can acquire updated values for the ELD parameters required for records within 5 seconds of the need.

(d) 4.6.1.4(d) Missing Data

If a new ELD event must be recorded at an instance when the ELD had failed to acquire a valid position measurement within the

Elements Diagnostic most recent elapsed 5 miles of driving, but the ELD has not yet set a positioning compliance malfunction, the ELD must record the character “X” in both the latitude and longitude fields, unless location is entered manually by the driver, in which case it must log the character “M” instead. Under the circumstances listed in this paragraph, if the ELD event is due to a change in duty status for the driver, the ELD must prompt the driver to enter location manually in accordance with section 4.3.2.7 of this appendix. If the driver does not enter the location information and the vehicle is in motion, the ELD must record a missing required data element data diagnostic event for the driver.

4.1.6.7 Data Transfer

Diagnostic

(a) An ELD must implement in-service monitoring functions to verify that the data transfer mechanism(s) described in section 4.9.1 of this appendix are continuing to function properly. An ELD must verify this functionality at least once every 7 days. These monitoring functions may be automatic or may involve manual steps for a driver.

(b) If the monitoring mechanism fails to confirm proper in-service operation of the data transfer mechanism(s), an ELD must record a data transfer data diagnostic event and enter an unconfirmed data transfer mode.

(c) After an ELD records a data transfer data diagnostic event, the ELD must increase the frequency of the monitoring function to check at least once every 24-hour period. If the ELD stays in the unconfirmed data transfer mode following the next three consecutive monitoring

checks, the ELD must detect a data transfer compliance malfunction.

4.6.1.6 Unidentified

Driver Diagnostic

(c) If more than 30 minutes of driving in a 24-hour period show unidentified driver on the ELD, the ELD must detect and record an unidentified driving records data diagnostic event and the data diagnostic indicator must be turned on for all drivers logged in to that ELD for the current 24-hour period and the following 7 days.

(d) An unidentified driving records data diagnostic event can be cleared by the ELD when driving time logged under the unidentified driver profile for the current 24-hour period and the previous 7 consecutive days drops to 15 minutes or less.