A complete ELECTRONIC LOGGING DEVICE system in compliance with FMCSA

Version 1.0.8

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Introduction to Orion eLog

Orion eLog provides a standardized single-step compilation for the driver’s ELD records and initiation of the data transfer to authorized safety officials when requested during a roadside inspection. The official accesses Inspect Daily Logs and taps on INSPECT ON-SCREEN. The data is displayed on the screen for the one or more vehicles that comprise the Hours of Service for the individual driver. Alternatively, the Driver data can be emailed to the official by entering an email address. Orion eLog offers a unique capability in that the data from the ECU is extracted from the J1939 CANBUS and transmitted to a central transceiver located within or on the dashboard of the vehicle. This transceiver then communicates via Bluetooth with the Orion eLog mobile app installed on a smart phone, tablet or computer. If Bluetooth is not turned-on or available, a warning message is presented to the Driver. Initialization consists of the Driver either entering an eLog transceiver code in the mobile app or using the mobile app to scan a QR code placard inside the vehicle. This procedure automatically pairs the transceiver, the CANBUS device, and the mobile app that is unique to the vehicle-driver combination. Orion eLog also sends data to the Orion Cloud for reporting and data history using server-side tools within the Orion Portal. This arrangement allows for fully-duplex communications whereby the Orion Portal can send additional instructions to the CANBUS in the event of a malfunction indicator.

Installing Orion eLog

Orion eLog has two primary components: 1) CANBUS, and 2) transceiver. Before you install these devices, make sure you note their serial numbers affixed to the enclosures. You will also need Bluetooth and cellular service for either a mobile smartphone, tablet, or computer to display and manage your information. The CANBUS device plugs into the vehicles J1939 port using either a standard Deutsche round-cable connector or a DB16 pin connector. Plug the CANBUS cable into the vehicle’s J1939 plug and insert the other end into the CANBUS device. The cable is long enough to allow positioning the CANBUS device up inside the dashboard out of view. Data pulled from the vehicle’s ECU is wirelessly transmitted to the Orion eLog transceiver.

The Orion eLog transceiver has a 12v DC power cable that can be plugged into any full-time 12v DC power source in the vehicle fuse box or tapped into any appropriate wire. Ideally, the transceiver should be located on the vehicle dashboard, but it can be positioned up inside the dash out of view.

That completes the installation. The specific configuration of your Orion eLog system is done through the mobile app and/or the associated Orion eLog cloud-based portal. Your system comes with a QR code that can be used by your mobile app to automatically pair and configure the majority of your Orion eLog systems.
Quick Start Instructions

Getting started with the Orion eLog system is fast and easy! After Orion eLog is installed, the mobile app is used to add device registration numbers. This can be done via a manual input or by scanning the supplied QR code. Since Orion eLog can be utilized with multiple drivers and vehicle installations, each installation requires a unique name. When entering the mobile app, the user can select a previously stored configuration.

Orion eLog Menu

After login and selecting the configuration, the Dashboard appears as depicted in the screen capture below. In the upper right-hand corner, tap the 3 horizontal lines to access additional menu options for Settings; Switch Truck, and Sign Out.

Tap the circle to select any of the following status options:

- Off duty
- Sleeper
- On Duty (driving)
- On Duty (not driving)
• Duty status with a note
• Cancel

Tap Daily Logs to view driver activity, rules, and other information. Also, from the Daily Logs screen, options are available to Inspect Logs and View Logs.

Inspect & View Logs

After tapping Daily Logs button on the Dashboard screen, scroll down to view button options for Inspect Logs and View Logs. The Inspect Logs screen provides instructions and offers two options for the enforcement official (inspector) to visualize the eLog data. This includes INSPECT ON-SCREEN and SEND/PRINT LOGS. The later option also enables sending the log file via email which is input by the inspector.
Time Zone: EST
Availability
Drive: No Record Found Shift: 14:00
Cycle: 70
Until rest break: 8:00
Minimum break: 0:30
(Off duty or Sleeper)
Shift Reset: 3:44 AM
Cycle Reset: 2019-03-16 01:44:47

No vehicle inspections today. Go to a specific log day to add a vehi...
Introduction to eLog

Compliance Safety Accountability (CSA) is a Federal Motor Carrier Safety Administration (FMCSA) safety program. The goal of the program is to reduce crashes, injuries, and fatalities on the nation's highways. CSA focuses on both motor carriers and drivers. A great deal of compliance data for the CSA Safety Measurement System is collected during roadside inspections. The data collected (both good and bad) during roadside inspections goes into the CSA Safety Measurement System (SMS). The data is then organized into seven Behavioral Analysis and Safety Improvement Categories (BASICs). One of the seven BASICs is fatigued driving. The fatigued driving BASIC includes violations of the hours-of-service regulations. A poor score in the fatigued driving BASIC can lead to an Intervention.

Interventions are actions FMCSA can take against a motor carrier and driver. Interventions range from mild to severe — from a warning letter to a fine or out-of-service order (unfit suspension). Because of this, it is even more important than ever to understand and comply with the hours-of-service regulations. Historically, hours-of-service is the most frequently cited violation during
roadside inspections. Receiving citations for hours-of-service violations can have an impact on a motor carrier's and a driver's fatigued driving BASIC score and potentially have an impact on continued operation.

Compliance with the hours-of-service regulations includes following the limits and maintaining a current and legal record of duty status (log book).

The limits

The hours-of-service regulations, located in Part 395 of the Federal Motor Carrier Safety Regulations (FMCSRs), include three maximum limits:

- 11-hour driving rule,
- 14-consecutive hour duty rule, and
- 60-hour/7-day and 70-hour/8-day rules.

The following table of rules are published by FMCSA on-line as of 12 Mar 2019 at: https://www.fmcsa.dot.gov/regulations/hours-service/summary-hours-service-regulations

<table>
<thead>
<tr>
<th>PROPERTY-CARRYING DRIVERS</th>
<th>PASSENGER-CARRYING DRIVERS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>11-Hour Driving Limit</strong></td>
<td><strong>10-Hour Driving Limit</strong></td>
</tr>
<tr>
<td>May drive a maximum of 11 hours after 10 consecutive hours off duty.</td>
<td>May drive a maximum of 10 hours after 8 consecutive hours off duty.</td>
</tr>
<tr>
<td><strong>14-Hour Limit</strong></td>
<td><strong>15-Hour Limit</strong></td>
</tr>
<tr>
<td>May not drive beyond the 14th consecutive hour after coming on duty, following 10 consecutive hours off duty. Off-duty time does not extend the 14-hour period.</td>
<td>May not drive after having been on duty for 15 hours, following 8 consecutive hours off duty. Off-duty time is not included in the 15-hour period.</td>
</tr>
<tr>
<td><strong>Rest Breaks</strong></td>
<td><strong>60/70-Hour Limit</strong></td>
</tr>
<tr>
<td>May drive only if 8 hours or less have passed since end of driver’s last off-duty or sleeper berth period of at least 30 minutes. Does not apply to drivers using either of the short-haul exceptions in 395.1(e). [49 CFR 397.5 mandatory “in attendance” time may be included in break if no other duties performed]</td>
<td>May not drive after 60/70 hours on duty in 7/8 consecutive days.</td>
</tr>
<tr>
<td><strong>60/70-Hour Limit</strong></td>
<td><strong>Sleeper Berth Provision</strong></td>
</tr>
</tbody>
</table>

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May not drive after 60/70 hours on duty in 7/8 consecutive days. A driver may restart a 7/8 consecutive day period after taking 34 or more consecutive hours off duty.

Must include two periods from 1 a.m. to 5 a.m. home terminal time, and must be used once per week or 12 hours, measured from the beginning of the previous restart.

NOTICE: The Consolidated and Further Continuing Appropriations Act of 2015 was enacted on December 16, 2014, suspending enforcement of new requirements for use of the 34-hour restart, pending a study. Based on the findings from the study, the 34-hour restart rule in operational effect on June 30, 2013, is restored to full force and effect. The requirement for two off-duty periods of 1:00 a.m. to 5:00 a.m. in section 395.3(c) of the Agency's hours-of-service rules will not be enforced, nor will the once-per-week limit on use of the restart in 395.3(d).

Sleeper Berth Provision

Drivers using the sleeper berth provision must take at least 8 consecutive hours in the sleeper berth, plus a separate 2 consecutive hours either in the sleeper berth, off duty, or any combination of the two.

This rule is based on the amount of on-duty time you have in a "rolling" 7-day or 8-day period. The oldest of the 7 or 8 day's hours drop off at the end of each day when you calculate the total on-duty time for the past 7 or 8 days.

If your company does not operate vehicles every day of the week, you must follow the 60-hour/7-day limit. If your company operates vehicles every day of the week, you may follow either of the two limits.

Under the 60-hour/7-day limit, you may not drive a CMV after having been on duty for 60 hours in any period of 7 -consecutive days.

Under the 70-hour/8-day limit, you may not drive a CMV after having been on duty for 70 hours in any period of 8 -consecutive days.
Keep in mind, that under either limit you may do non-driving work after reaching the 60-hour or 70-hour maximum, but these hours must be added into your total.

The regulations include an optional "restart" provision. Drivers may not drive after 60/70 hours on duty in 7/8 consecutive days. A driver may restart a 7/8 consecutive day period after taking 34 or more consecutive hours off duty as per 2013 FMCSA hours of service HOS rules.

Commercial Motor Vehicle (CMV) drivers using a sleeper berth must take 10 hours off duty, but may split sleeper-berth time into two periods provided neither is less than 2 hours.

On-duty time is all time from the time you begin work or are required to be ready for work until you are relieved from all work and responsibility for work. On-duty time includes time spent:

- Waiting to be dispatched
- Inspecting, servicing, or conditioning a CMV
- Driving in or on your vehicle (except sleeper-berth time)
- Loading or unloading your vehicle
- Repairing, obtaining assistance, or attending a disabled vehicle
- Performing any other work for a motor carrier
- Complying with drug or alcohol requirements, and
- Performing compensated work for any other employer.
APPENDIX – GENERAL ELOG INFORMATION

Basic understanding of eLog

1. Data input: At the start of each driving cycle, drivers must provide (input) the following data: provide the following:
   a. Select your driving schedule:
   b. 7 day 60 hours
   c. 8 day 70 hours
   d. Vehicle Number: XXXXXXXXXX
   e. Odometer: XXXXXXXXXX
   f. Signature
      i. The initial digital signature is created on the first time the driver signs into Orion eLog. That digital signature is stored and is used when when generating reports.

2. All data is stored on the mobile device (local) and also uploaded to the portal
3. In the event a data connection is not available, data can be uploaded to portal when the data connection is available
4. All local data is stored for a minimum of 17 days
5. Every time a status change is made (on duty-driving, sleeper, on duty-not driving, duty status-with note), record the date, time, and GPS location such that a cumulative summation of the various statuses for 24-hr and 7 or 8 day clock (and also the 34-hr clock for Off Duty)

ELog Rules (generalization)

During a 24 hour period, the driver must adhere to the following:

1. Driving and Not Driving are considered On Duty. The technical descriptions are really:
   a. On Duty Driving
   b. On Duty Not Driving
   c. Driver is limited to a maximum of 11 hours On Duty Driving and 3 hours On Duty Not Driving. This is a total of 14 hours On Duty per 24 hours
2. During the 24 hours, 8 consecutive hours minimum must be Sleeper
3. During the 24 hours, 2 consecutive hours minimum (separate from the 8 hr sleeper time) MUST be either Off Duty or Sleeper
   a. The driver must rest a total of 10 hours in a day. This must be broken-up in 2 blocks of time: one is 8 hrs and the other is 2 hrs. The 8 hr block MUST be Sleeper. The 2 hr block can be sleeper or off-duty... However, you cannot have a 10 hr consecutive block of Sleeper.
   b. Important times
      i. 11 hours total driving
      ii. 3 hours total on duty not driving
      iii. 8 hour block must be sleeper
      iv. 2 hour block can be either sleeper or off duty
4. Notifications to Driver should occur when:
   a. Driver hits 10 Hours On Duty Driving
i. WARNING: Only 1 hour of On Duty remaining in your 24 hour period
ii. On Duty Driving icon changes to Amber / Yellow at 10 hours
iii. Change On Duty Driving icon to Red at 11 hours AND pop-up Seek Safe Haven if they are currently operating under this icon
iv. If they are operating under another duty cycle, and the On Duty Driving icon is Red and the driver clicks on it, the following should display:
   1. You have reached your 11 hr maximum limit for your 24-hr period. Do you want to Seek Safe Haven? YES NO
      a. If YES, go to Seek Safe Haven screen for On Duty Driving
      b. If NO, just cancel

b. Driver hits 2 hours On Duty Not Driving
   i. WARNING: Only 1 hour of On Duty Not Driving remaining in your 24 hour period
   ii. On Duty Not Driving icon changes to Amber / Yellow at 2 hours
   iii. On Duty Not Driving icon changes to Red at 3 hours AND pop-up Seek Safe Haven if they are currently operating under this icon
   iv. If operating under another icon, and the On Duty Not Driving icon is Red and the driver clicks on it, the following should display:
      1. Do you want to Seek Safe Haven? YES NO
         a. If YES, go to Seek Safe Haven screen for On Duty Not Driving
         b. If NO, just cancel

5. When On Duty Driving and On Duty Not Driving limits are reached, the following notifications will appear:
   a. STOP DRIVING! You have reached 11 hours On Duty in your 24 hour period.
      i. The response choices should be OK and Seek Safe Haven
   b. LIMIT REACHED! You have reached 3 hours On Duty Not Driving in your 24 hour period
      i. The response choices should be OK and Seek Safe Haven

6. On Duty Exception (called Seek Safe Haven)
   a. If the Driver has more than 11 hours On Duty Driving, he has to use what is called Seek Safe Haven. This means he can exceed 11 hours, but it requires a note description.
   b. Common reasons can be selected from the included list, or Other can be selected for the driver to input the unlisted reason for exceeding 11 hrs On Duty Driving. So, once 11 hours On Duty Driving is reached, the driver must click Seek Safe Haven, and then select a DDL:
      i. In traffic, not moving, unable to exit or pull-over
      ii. In traffic, moving slowly, unable to exit or pull-over
      iii. Moving, no available exits or places to pull-over
      iv. Moving, but too dangerous to stop at this time
      v. Other (driver to enter reason)
   c. If exceeding 3 hours On Duty Not Driving, DDL options:
      i. With vehicle during road-side assistance
      ii. Vehicle in yard, awaiting open dock to load / unload
iii. Awaiting vehicle transfer
iv. Other (driver to enter reason)

7. RESTART
   a. This option is a button which is available ONLY after the 34-hr Off Duty requirement is met
      i. RESTART puts the 24-hr and 7/8 day clock back to 0
   b. When RESTART is selected, provide the option to change driving schedule:
      i. You are about to RESTART your eLog clock.
      ii. Select an option:
          1. RESTART with 7-day 60-hr schedule
          2. RESTART with 8-day 70-hr schedule
      iii. OK CANCEL
   c. If select OK, the program would then begin totaling hours starting from 0

Notes:
1. The eLog clock gets reset when a period of 34 hours of Off Duty is reached.
2. Sleeper Berth and Off Duty are separate
3. Off duty has to be off 10 hours in 24 hours, but has to be 8 consecutive hours as Sleeper and then an additional 2 hours consecutive Off Duty (or Sleeper) segment that is NOT contiguous with the original 8-hr Off Duty segment.
4. Sleeper berth hours don’t count toward the 34 hours… necessary…
5. RESTART – keeps them off the clock…. Driver could make a mistake and restarts.. then has to rescind and note that he made a mistake
6. Seek Safe Haven…This is when the Driver is going to bust a segment limit such as Driving past 11 hours in a 24-hour period because he is stuck in traffic and can’t get to an exit off ramp.
7. Breakdowns count as on duty
8. Remember Off Duty requires NO / ZERO responsibility

*** CONTINUED NEXT PAGE ***
**eLog Examples**

ELD eLog system provides a more accurate and semi-automated approach to monitoring HOS.

If a driver operates on the period of 70 hours in 8 days, use the summary sheet on the left; if operating on the period of 60 hours in 7 days, use the summary sheet on the right. Entries should be made for each day - even when driver does not work. If no work is performed, enter zero (0) in first column and compute other columns as explained below.

**70 HOURS - 8 DAYS**

Enter the number of working hours (on duty & driving) for each of the last seven days of the preceding month in the first seven spaces under the column headed "Hours Worked Today". Enter in the first space under Column A the Total of the number of hours worked during the last 7 days. Subtract the figure entered in Column A from 70 hours and enter this figure - hours available for tomorrow - in Column B.

At the end of each day, complete the first three columns adjacent to the days of month in the same manner as explained above. Total the number of hours worked during the last 8 days and enter in Column C. If any number in Column C exceeds 70, no driving should have been done. Any driving that was done is a violation and should be circled for easy identification.

34-hour restart: If you meet the 34-hour restart requirements in §395.3, you have 70 hours available again. You would then begin your totaling on the day of the restart and not go back the full 7 or 8 days.

**60 HOURS - 7 DAYS**
Follow the same instructions provided for completing the summary sheet for 8 days - 70 hours, except substitute last six days for last seven days and 60 hours for 70 hours.

34-hour restart: If the driver meets the 34-hour restart requirements in §395.3, you have 60 hours available again. You would then begin your totaling on the day of the restart and not go back the full 6 or 7 days.

A completed paper eLog may look like the following:

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**eLog Daily automated reporting and driver input**

1. Date
2. Truck
   a. Number - input
   b. License plate - input
3. Trailer Number
   a. Number - input
   b. License plate - input
4. Location (daily)
   a. Starting address, date & time - input

---
b. Ending address, date & time - input

5. Driver
   a. Name - input
   b. Employee number - input

6. Co-Driver
   a. Name - input
   b. Employee number - input

7. Shipping Documents
   a. Manifest number - input
   b. Bill of Laden number - input
   c. Shipper - input
   d. Commodity - input

8. Total Miles Driving Today

9. Total Miles Today

10. Certification signature

11. Mark Time (driver selects buttons for ON and OFF)
   a. when a start time for any option is selected, then it automatically sets the stop
time of any previously set condition
   b. Each Day is between the time of 12:00:00 AM to 11:59:59 PM
   c. At each “mark time” point the following data are required:
      i. Auto stamp date
      ii. Auto stamp time
      iii. Auto stamp GPS location
      iv. Option: input location address
      v. Option: associate camera / gallery pictures
      vi. Option: driver notes
   vii. Option: load
      1. Pro
      2. Manifest
      3. Other
   viii. Option: unload
      1. Pro
      2. Manifest
      3. Other
   ix. Display auto-accumulated times for each of the 4 marking options
      1. Daily
      2. Last 7 days
      3. Weekly (must previously input start date or repeat weekly from a
given day of the week)
   x. Identify if a change in any of the vehicles happen
      1. Input new vehicle(s) ID
      2. GPS location auto-stamp
      3. Date/Time auto-stamp
      4. Notes - input

d. Mark Time options
i. Off Duty
   1. Not working, no responsibility - input
   2. Start time - input
   3. Stop time - input

ii. Sleeper Berth
   1. 10 hour break every day
      a. At least 8 hours in the sleeper both - input
      b. 2 hour can sit in the driver seat / walk around, but not sleeping - input
   2. Start time - input
   3. Stop time - input

iii. Driving
   1. As soon as you start the engine and start moving
   2. Can only drive for 11 hours, but can be On Duty for 14 hours
   3. Start time - input
   4. Stop time - input

iv. On Duty (not driving)
   1. E.g., backs to loading dock. Maximum of 3 hours - input
   2. Truck cannot be moving
   3. Once driver pasts 3 hours of waiting time, it eats into driver’s actually drive time
   4. Start time - input
   5. Stop time - input

e. Report running hours
   i. For each of the 4 conditions
   ii. Summary of all 4 conditions - input
      1. Daily
      2. Last 7 days
      3. Week-to-date
      4. Last 30 days
      5. Monthly
   iii. On duty driving for 11 hours / day - input
      1. Need half-hour break within 8 hrs on duty
   iv. On-Duty NOT driving for 3 hrs / day - input

**On Duty Time Variables**

When On Duty Not Driving is selected, it needs to be associated with a reason. The reason could be a pre-selected reason (see list below) or could be a field input.

Pre-selected reasons: - input
   1. Waiting to be dispatched
   2. Inspecting, servicing, or conditioning vehicle
   3. In or on vehicle (except sleeper-berth time)
   4. Loading vehicle
5. Unloading vehicle
6. Repairing, obtaining assistance, or attending a disabled vehicle
7. Performing other work for the motor carrier
8. Complying with drug or alcohol requirements
9. Performing compensated work for hire (not driving)

These fields need to be displayed and filled in by the driver. At the end of each day, a report has to be generated.

1. Date (automatic)
2. DRIVER’S VEHICLE INSPECTION REPORT (completed by the driver)
3. Claimers
   a. I detect no defect or deficiency in this motor vehicle as would be likely to affect the safety of its operation or result in mechanical breakdown - input
   b. I detect the following defects or deficiencies in this motor vehicle as would be likely to affect the safety of its operation or result in its mechanical breakdown (list below):
      i. Tractor/Truck: (describe in detail) - input
      ii. Trailer: (describe in detail) - input
4. Total Miles Driving Today
5. Total Mileage Today
6. Vehicle 1 info
7. Vehicle 2 info
8. Driver adds online written signature in response to this certification statement
9. Co-Driver needs to add his online written signature in response to this certification statement
10. Shipping documents
    a. BOL or Manifest Number
    b. Shipper and Commodity
11. Enter the name of place driver reported and where released from work and when and where each change of duty occurred: NOTE: this may be automatic as every time a driver phase change is clicked, the app is automatically recording date, time and GPS address location
12. If defects checked:
    a. For Mechanic:
       i. Defects corrected - input
       ii. Defects need not be corrected for safe operation of vehicle - input
       iii. Mechanic’s name - input
       iv. Mechanic’s signature - input
13. Driver’s signature

Vehicle Inspection Report
1. Date - input
2. Truck
   b. Number - input
c. License plate - input

3. Trailer Number
   d. Number - input
   e. License plate - input

4. Claimers (radio buttons)
   f. I detect no defect or deficiency in this motor vehicle as would be likely to affect the safety of its operation or result in mechanical breakdown - input
   g. I detect the following defects or deficiencies in this motor vehicle as would be likely to affect the safety of its operation or result in its mechanical breakdown (list below):
      v. Tractor/Truck: (describe in detail) - input
      vi. Trailer: (describe in detail) - input

5. If defects checked:
   h. For Mechanic: (radio buttons)
      vii. Defects corrected - input
      viii. Defects need not be corrected for safe operation of vehicle - input
      ix. Mechanic's name - input
      x. Mechanic's signature - input

6. Driver's signature