

OttoView™-CD User Manual and Instruction Guide



PERSENTech

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1 Overview and Features

The OttoView™-CD device is an in-vehicle data acquisition system used to monitor and record driving behaviour and vehicle diagnostic information associated with a particular driver. The system includes a vehicle performance monitoring module based on SAEJ1979 On-Board Diagnostic (OBD) technical standards, a GPS receiver-antenna module, a 125 kHz Radio Frequency Identification (RFID) antenna and transceiver module used in combination with a unique key fob for driver identification, and the provision for a Secure Digital (SD) memory card to store all data. The device topology is illustrated below.

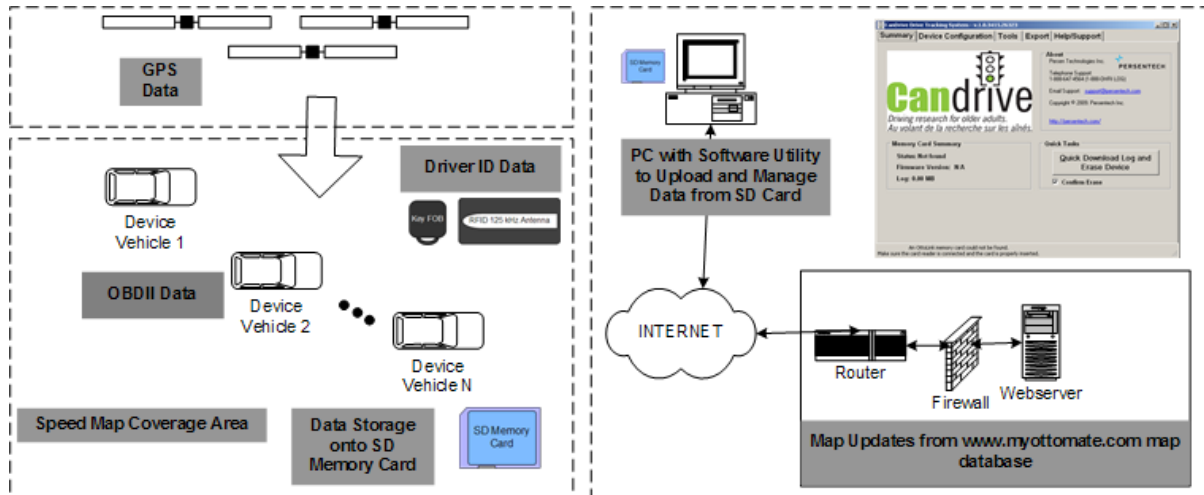


Figure 1: OttoView™ - CD device topology

The system consists of six (6) major elements:

- GPS Network reception providing GMT time and date information; latitude and longitude; and vehicle speed.
- OBDII vehicle information providing driving time, vehicle speed, distance, and other vehicle engine data.
- A Radio Frequency IDentification (RFID) key FOB-based device for driver identification purposes.
- Access to all municipal coverage map data, including Posted Speed Limit (PSL).
- An easy-to-use software application for installation on a Microsoft Windows® PC that manages the data stored on the SD memory card and the exports the data to various file formats for the desired information extraction.
- Access to the PERSENTech website that provides updates and new coverage map data for use in data analysis.

1.1 Device Features

- Vehicle diagnostic technology
 - OttoView-CD device connects to the vehicle's OBDII port using a single cable.

- The Device is powered through the OBDII Diagnostic Link Connector (DLC).
 - The OBDII port allows the device to communicate to the vehicle's Engine Control Module (ECM), which provides access to the engine data.
- **GPS Position & Velocity technology**
 - The device utilizes a 20-channel GPS receiver and active GPS antenna.
 - The device incorporates the Otto-driving companion® road safety device features using the municipal coverage area maps.
 - The device incorporates the OttoLog® data recording and trip report summary features through an export data utility function.
- **RFID (Radio Frequency IDentification) Driver ID**
 - RFID transceiver integrated within the OttoView-CD device.
 - The device utilizes a 125 kHz RFID antenna that is connected to the OttoView-CD device
 - The device uses a passive key fob with a unique 64 bit identifier.
- **Data Management and Export Software Utility**
 - Used to retrieve the desired driver tracking system data from a memory card.
 - Used to convert the data to a number of file formats including: Comma-Separated-Value (CSV), OttoLog® IPL format and GoogleEarth/GoogleMaps KML format.
 - Indexes all data files (OTL format) for file management by date for each device serial number.
- **Hardware**
 - Dimensions: 8.7 cm by 7 cm x 1.8 cm, 150 grams
 - Includes an SD Memory card slot for trip information recording.
 - Includes 5 LED indicators that illuminate when the associated device functionality is operational.
 - Includes a 6-pin mini-DIN connector for interfacing with the external GPS antenna-receiver.
 - Includes an RCA connector for connection to an external 125 kHz RFID antenna.
 - Includes an RJ45 socket for connection to a cable harness with an RJ45 plug and an SAEJ1962M plug for connection to the vehicle's DLC.

- **Mounting**

- A mounting pad and tie wraps are provided that will allow the installer to mount the device under the vehicle dash, within 1.5 m of the vehicle's DLC.
- The RFID antenna is mounted using the supplied double-sided tape.

1.2 OttoView™-CD Kit

The standard package contains the following items:

- One OttoView™-CD device.
- One cable with SAEJ1962M plug and RJ45 8P8C connector.
- One SD Card (2 GByte).
- One GPS antenna-receiver including a small windshield suction cup for routing the GPS antenna cable.
- One RFID antenna.
- One RCA M -to- RCA F extender cable for the RFID antenna.
- One RFID key fob.
- One device mounting kit (tie wrap mounts and tie wraps).



Figure 2: OttoView™-CD kit



Figure 3: Mounting pad attached to unit (sample installation)

1.3 General Device Installation, Operation and Data Management Notes

The general process to be followed to configure, install, manage and export the data is summarized as follows:

- Using the utility software application, configure the SD memory card for initial deployment.
- Insert memory card into device.
- Install GPS antenna-receiver on dash and route cable to area under dash.
- Locate OBDII SAEJ1962F Diagnostic Link Connector (DLC) and plug in OttoView-CD OBDII cable connector.
- Insert vehicle ignition key and locate and place RFID antenna in best location that will allow it to register the key fob tag.
- Turn on vehicle ignition.
- Attach each cable and observe that all LEDs are “ON”.
- Complete installation of cables neatly using tie wraps.
- Retrieve memory card and upload data to PC.
- Export data to desired file format and review information collected.

1.4 OBDII Vehicle Interface Connection-Installation

Install the device in the vehicle within 1.5 m of the OBDII connector using the supplied installation kit. The device comes complete with a cable that plugs into the vehicle’s OBDII socket.

The OBDII port is located within 1 meter of the steering wheel, usually within the area indicated by the dotted line in the illustration above. The connector can be easily accessed

by a person sitting in the driver's seat without the use of tools. Look in the follow areas if you have trouble finding the OBDII diagnostic port:

- Under the dash
- In front of the passenger seat
- Behind the ash tray
- Behind a small access panel in the dash
- In or around the center console

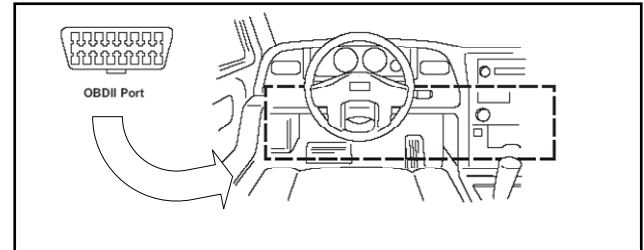


Figure 4: Location of the OBDII DLC (SAEJ1962F Type A)



Figure 5: Plugging in the OBDII Plug into the socket



Figure 6: Plugging in the RJ45 Plug into the device socket

Once cables are connected, the operation of the vehicle diagnostic interface and functionality can be validated as follows:

- Turn vehicle ignition "ON".
- Check to see if the OBDII GREEN LED light comes on and remains solidly lit.
- If the LED remains lit, the vehicle is OBDII compliant and operation is validated.
- If the LED continues to flash, the vehicle may not be OBDII compliant.
 - Log the make, model and year of the vehicle and send the information to PERSENTech by email at: support@persentech.com.

1.5 GPS Antenna-Receiver Connection-Installation

Mount the GPS antenna on the vehicle's dash, applying the small suction cup to the windshield to facilitate routing the GPS cable under the dash area. The GPS antenna-receiver must have a clear view of the sky in order to capture and process the GPS satellite signals. Ensure that the GPS antenna location is within 1.5 m of the OttoView-CD device location.



Figure 7: Mounting the GPS antenna on the vehicle dash



Figure 8: Plugging in the 6-pin min-DIN plug into the device socket

Once the cable is connected, the operation of the GPS receiver interface and functionality can be validated as follows:

- Wait for 1 minute or until the GPS “Blue” LED light comes on and remains solidly lit.
- If the LED remains lit, the GPS receiver is locked.
- If the LED remains flashing, the GPS receiver is not locked. Check to see if the vehicle has passivated glass or re-position the GPS antenna to another location on the dash.
- If the LED continues to flash, contact PERSENTech by email at: support@persentech.com for customer support.

WARNING: Do not mount the GPS antenna-receiver in a location that will interfere with the vehicle's operating controls or cause damage or personal injury in case of an accident. Also, do not mount the GPS antenna-receiver over air bag panels or in the field of air bag deployment. Air bags expand with a rapid force that can propel objects in their path toward the driver or passenger.

1.6 RFID Antenna and key fob Connection-Installation

As noted earlier, the Driver-ID components include:

- An RFID Antenna with double-sided foam tape.
 - Peel away tape cover before mounting on steering column.

- One key fob tags with unique serial numbers.
 - Attach the key fob tag to the driver's keychain.
- A 3 foot RFID antenna extension cable.
 - Use cable in case RFID antenna cable is too short in the installation.

Mount the RFID antenna near the vehicle's ignition switch within 6-8 cm of where the key fob will be located when hanging down from the keychain. Plug the RCA Male connector to the RFID device. Use the RCA extension cable if the antenna cable length is insufficient to connect to the RCA Female connector on the device.

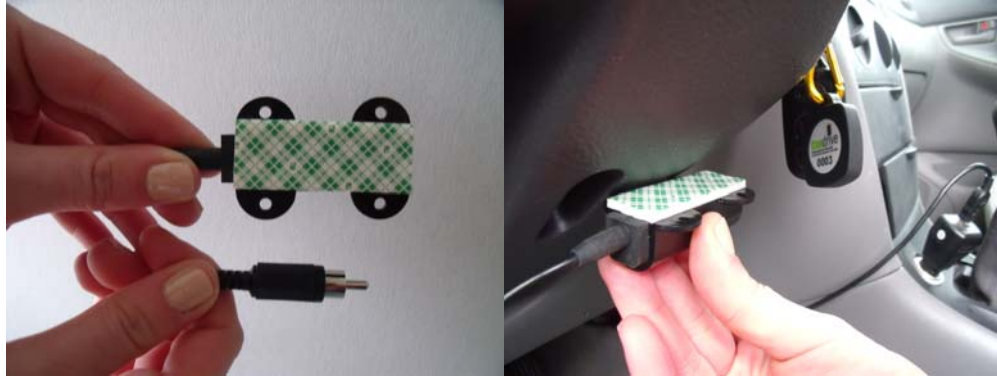


Figure 9: Mounting the RFID antenna near the vehicle ignition switch

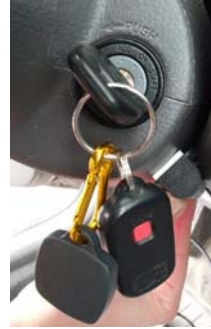


Figure 10: Connecting the RCA extension cable and connecting the RCA-M to the device

Once the cable is connected, the operation of the RFID antenna interface and functionality can be validated as follows:

- Check to see if the RFID Yellow LED light comes on and remains solidly lit.
- If the LED remains lit, the RFID circuit is operational.
- If the LED is off, check the connections to ensure that the cable is properly seated on the RCA connector on the OttoView device.
 - If the connector is properly seated and the RFID light is still off, contact PERSENTECH by email at: support@persentech.com for customer support.

With the RFID antenna mounted and installed, place a keychain with the attached key fob into the ignition.



- Check to see if the Key FOB AMBER LED light comes on and remains solidly lit.
- If the LED remains lit, the Key FOB is being recorded properly.
- If the LED light is not on, adjust the RFID antenna until it is positioned closer to the ignition switch with the keychain and Key FOB, and when the LED remains lit, the RFID antenna position is now optimal for operation with the vehicle.

1.7 Memory Card Insertion and Operation

The device has a spring-loaded memory card slot on the right hand side with the unit facing the installer. A memory card should be inserted in this slot with the “cut-corner” facing down. The memory card’s gold contacts should be visible when the card is oriented in the correct manner, as shown in the next figure. When the card is inserted and pushed in, there will be a click in the spring mechanism that locks the card in the slot. The card is removed by pushing the card in. This results in the spring mechanism unlocking the card and allowing the card to be pulled out of the slot.



Figure 11: OttoView™-CVS41device with Memory Card

The card slot is recessed so that it does not eject unexpectedly. Use a small screwdriver or the tip of a pen to insert and retrieve the memory card. To verify that the SD memory card is recording data turn the vehicle ignition “ON” and check to see if the SD memory card RED LED comes on and remains solidly lit.

- If the LED remains solidly lit, the SD memory card is recording data.
- If the LED light is not on, check to see if the memory card is seated correctly in the card slot.
 - If the LED light does not come on at all, contact PERSENTECH by email at: support@persentech.com for customer support.

1.8 Device Overview-Operational Check

The OttoView-CD system is operational when all LEDs are solidly lit.



Figure 12: OttoView™-CD device with all LEDs illuminated when the device is fully operational

1.9 Device Mounting Location

Identify the area under the dash where the OttoView-CD device will be located. The left hand side with the SD card slot should be clear of any cables and accessible to insert and remove the memory card.

Using the tie wraps, slide one end through the slot on the tie wrap mount located on the back of the device. After securing the device, use a second tie wrap to secure the cables. Ensure that there is no tension that would allow the connectors to disengage.



Figure 13: OttoView™-CD device installation with all cabling

1.10 OttoView™-CD Device Compliance Notes

The device complies with Part 15 of the FCC Rules and operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

The limits for a Class B digital device, pursuant to Part 15 of the FCC Rules, are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. There is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the device.
- Increase the separation between the equipment and receiver.
- Consult PERSENTECH or an experienced technician for help.

This device has been designed for in-vehicle and fixed operation.

WARNING: "Changes or modifications not expressly approved by the party responsible for compliance could void the User's authority to operate the equipment".

2 OttoView™- CD Specifications

2.1 General Specifications

The physical dimensions of the OttoView device are 87 mm x 72 mm x 18 mm). The device will connect to 1996 and newer vehicle model years, as defined in a technical standard developed by the Society of Automotive Engineering (SAE)¹, using a standard OBDII SAEJ1962 cable. The device is mounted under the console-dash of the vehicle within 1.5 m of the DLC. The device will communicate with most standard OBDII data using the following protocols:

- SAE J1850 - VPW - Variable Pulse Width- Describes the interface for GM vehicles.
- SAE J1850 - PWM- Pulse Width Modulation- Describes the interface for Ford vehicles.
- ISO 9141-2 - Describes the interface for Chrysler and some Asian vehicles.
- ISO 14230-2 - Describes the interface for some European vehicles.
- ISO 15765-4 CAN- Controller Area Network - Describes the CAN-based interface in a 4-part series that is mandatory for all 2008 and newer vehicles.

The GPS antenna-receiver is 50 mm in diameter and approximately 20 mm thick. This small form factor allows for ease of installation above the vehicle console dash area, a requirement for the reception of the GPS satellite signals. If the vehicle has a passivated windshield, an alternate location is recommended, either externally to the vehicle or nearer the back windshield.

The RFID antenna is 20 mm in diameter and 50 mm long. The RFID transceiver operates at 125 kHz to read back a unique 64-bit transponder key that is embedded in the key fob. The RFID antenna must be mounted near the vehicle ignition switch and the key FOB must be attached to the driver's keychain.



Figure 14: OttoView™-CD interfaces- RFID antenna, GPS antenna, OBDII vehicle connection

¹ http://www.sae.org/technical/standards/J1979_200705

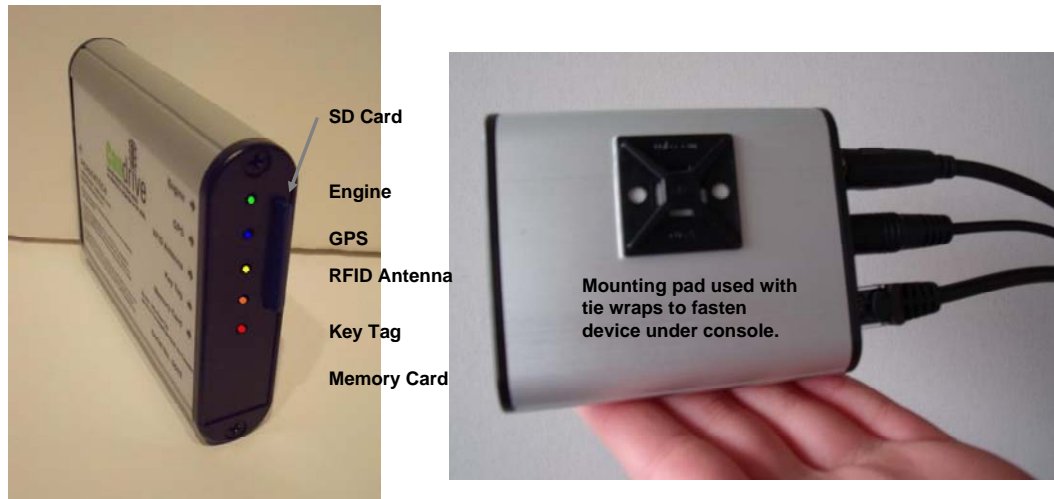


Figure 15: OttoView™-CD interfaces- SD memory Card and LEDs

The device is powered entirely through the vehicle's OBDII connector and will operate over a voltage range of +9VDC to +12 VDC. The device will turn-off (sleep mode) approximately 60 seconds after the vehicle is turned off, thereby not imposing any load on the vehicle's battery and electrical system. The device interrogates the ECM for data and does not modify/change any vehicle parameters.

The device is configured using the memory card that contains the various system configuration parameters. The memory card will store real-time vehicle performance data that can be later retrieved using a PC and the accompanying software application utility.

The device typically becomes active within 7 seconds after the vehicle engine is turned on. OttoView™-CD will power down 60 seconds after the vehicle engine is stopped, or after a set time duration that is defined through the device configuration setting using the software application utility.

NOTE: During the last 3 seconds of a trip, and for three (3) seconds immediately after the device powers down, the OttoView™-CD device will not respond to the engine ECM. If the vehicle's ignition is turned back on during this six (6) second period, the OttoView™-CD device will not power on until after the next trip.

2.2 Cable Specifications

2.2.1 OBDII Cable

A single cable is used to connect the OttoView™-CVS41 device to the vehicle diagnostic link connector. The cable has the following specifications:

- An SAE J1962M connector that connects to an OBDII compliant vehicle,
- An RJ45 8P8C plug connector.
- UL2919 cable (rated at 30V and 80C), 24 AWG 8C; length = 1525 mm.



Figure 16: OttoView™-CD OBDII Cable

2.2.2 GPS Antenna Cable

The GPS antenna-receiver is connected to the OttoView-CD device through a 1520 mm cable that includes 6 conductors, and that terminates in a PS/2 mini DIN 6-pin male connector.



Figure 17: OttoView™-CD GPS Cable

2.2.3 RFID Antenna Cable

The RFID antenna includes a 300 mm cable with RCA Male connector. An extender cable, length = 970 mm, with RCA Female to RCA Male is also supplied for use with the installation of the RFID antenna. The cable specifications are noted below.

- UL Coax/22# OD 5.0 mm with 50 Ohm impedance
- 300 V rating at 60 C



Figure 18: OttoView™-CD RFID Antenna Cable

2.3 OBDII Specifications

The OttoView™-CD device connects to 1996 and newer vehicles, as defined by the Society of Automotive Engineering (SAE), and that is accessed via the SAE J1962 diagnostic console connection. The OBDII specifications are listed in the following table.

Model OttoView™- CD	Technical Specifications
Dimensions	87 mm x 72 mm x 18 mm
Weight	150 grams
Operating Temperature	-30 C to +60°C
Vehicle Power Source	12V DC
Connector and cable	SAE J1962M with 4 foot cable to RJ45 plug on device
OBDII Protocol Support	SAE J1850 – VPW – Variable Pulse Width- Describes the interface for GM vehicles, SAE J1850 – PWM- Pulse Width Modulation- Describes the interface for Ford vehicles, ISO 9141-2 - Describes the interface for Chrysler and some Asian vehicles, ISO 14230-2 - Describes the interface for some European vehicles, and ISO 15765-4 CAN- Controller Area Network - Describes the CAN-based interface in a 4-part series that is mandatory for all 2008 and newer vehicles. ISO 15765-4 500 kbps/11 bit ID ISO 15765-4 500 kbps/29 bit ID ISO 15765-4 250 kbps/11 bit ID ISO 15765-4 250 kbps/29 bit ID
SD memory card specification	The OttoView™ CD device captures and records data at up to 300 bytes per second. The total memory storage estimate: Total Data Storage capacity (hours) = [Memory storage capacity/300]/3600 ~ 1850 hours for a 2 GByte card.

Table 1: OttoView™-CVS41 OBDII Specifications

NOTE: If you are experiencing and problems with OttoView™ and observe any anomalies in operation with the device and your vehicle's normal operation, disconnect the SAE J1962 plug from the diagnostic connector immediately and contact PERSENTech technical support for further instructions.

Technical Support Line: +1.204.480.8809 or support@persentech.com by email.

2.4 GPS Receiver Specifications

The GPS antenna-receiver has the following specifications:

Model- BR-355 with Otto-driving companion®	Technical Specifications
Dimensions	55 mm x 19 mm
Weight	62.4 grams
Operating Temperature	-40 C to +85°C
Vehicle Power Source	4.5 - 6.5V DC (internal to OttoView™- CD device) with 42 mA current draw typical
Data Interface	6-pin PS/2 connector
GPS Receiver	20-channel, 1575 MHz SiRF Star III e/LP with built-in patch antenna
Map Source	Proprietary Municipal Database and Map Format
GPS Position Accuracy	10 meters, updated once per second
GPS Speed Accuracy	1.0 km/hr, updated once per second

Table 2: OttoView™-CD GPS Specifications

2.5 RFID Specifications

The external RFID antenna, key FOB and transceiver specifications are noted in the following table.

Model- Driver-ID	Technical Specifications
RFID Antenna dimensions	55 mm x 25 mm
RFID Antenna Weight	75 grams
Operating Temperature	-40 C to +85°C
Vehicle Power Source	12V DC (internal to OttoView™- CD device)
Read range	Up to 7.5 cm
RFID frequency	125 kHz
Key FOB dimensions	35.5 mm square, waterproof and crunch resistant
Key FOB Weight	25 grams
RFID Transceiver	Integrated within OttoView™ CD device

Table 3: Otto RFID Technical Specifications

2.6 Memory Card Specifications

The memory card is a non-volatile memory card for use in portable devices.

- Dimensions: 24 mm x 32 mm x 2.1 mm.
- Number of pins 9 pins.
- Write-protect Switch.
- Capacity Up to 2 GB.

2.7 Primary Data Log Specifications (OTL log file format)

Data is stored on the SD memory card. This data is the primary log file that stores the following information fields:

- Device serial number.
- Date and time (GMT), Latitude, Longitude, Speed, Posted Speed Limit.
- Selected engine parameter information.
- RFID key fob number.

This data is stored in binary format and is not recognizable by the operating system. The CanDrive Driver Tracking System application utility must be used to export the data into the desired file format. Currently, three file formats are supported:

- CSV - Comma Separated Value
- IPL - Incremental Position Logic (OttoLog® file format)
- KML - For use with GoogleEarth or GoogleMaps to render the trip traces onto a map.

2.8 CSV Data Log Overview (CSV exported file)

The exported CSV data is provided in two files: (1) The data log file summary, and (2) the detailed data log information.

2.8.1 CSV Data Log Summary File

The summary file includes the following summary fields:

- Total Duration (HH:MM:SS)
- Total Distance (km)
- Data Log Start (GMT)
- Data Log Eng (GMT)
- Number of Trips

The summary fields are followed by the trip by trip information summary in the following format:

- Trip Number
- Trip Start
- Trip End
- Trip Duration
- Trip Distance
- Device Serial Number
- RFID Tag number

A sample CSV trip summary output is shown in the following table.

Total Duration	13:25:21	hrs				
Total Distance	775.3	km				
Log Start	2009-05-15 23:35:33	GMT				
Log End	2009-05-17 19:29:49	GMT				
Number of Trips	15					
Trip Number	Trip start (GMT)	Trip end (GMT)	Trip duration (HH:MM:SS)	Distance (km)	Ottoview serial number	RFID
45	5/15/2009 23:35	5/16/2009 1:13	1:37:54	99.2	0	0x01006BB7F2
46	5/16/2009 1:30	5/16/2009 1:45	0:15:33	13.74	0	0x01006BB7F2
47	5/16/2009 12:22	5/16/2009 15:09	2:47:10	194.25	0	0x01006BB7F2
48	5/16/2009 15:10	5/16/2009 15:10	0:00:02	0	0	0x0000000000
49	5/16/2009 15:16	5/16/2009 16:05	0:49:02	42.83	0	0x01006BB7F2
50	5/16/2009 16:25	5/16/2009 16:59	0:33:46	14.57	0	0x01006BB031
51	5/17/2009 10:43	5/17/2009 11:43	1:00:42	47.28	0	0x01006BB7F2
52	5/17/2009 11:44	5/17/2009 11:45	0:00:02	0	0	0x0000000000
53	5/17/2009 11:48	5/17/2009 12:56	1:07:53	55.72	0	0x01006BB7F2
54	5/17/2009 12:57	5/17/2009 12:57	0:00:02	0	0	0x0000000000
55	5/17/2009 12:58	5/17/2009 14:24	1:25:27	42.88	0	0x01006BB7F2
56	5/17/2009 15:03	5/17/2009 17:05	2:02:08	96.91	0	0x01006BB7F2
57	5/17/2009 17:10	5/17/2009 17:12	0:02:06	0.3	0	0x01006BB7F2
58	5/17/2009 17:44	5/17/2009 17:44	0:00:02	0	0	0x01006BB7F2
59	5/17/2009 17:46	5/17/2009 19:29	1:43:32	167.59	0	0x01006BB7F2
Total			13:25:21	775.3		

Table 4: CSV Summary File Sample Data

2.8.2 CSV Detailed Data Log File

The detailed data file includes the following fields:

- Data record number/index
- Device Serial number
- Date and Time (GMT)
- Latitude
- Longitude
- GPS Fix Status
- DOP
- Speed (GPS)
- Speed Limit

- Alert List
- Trip number
- Key Tag fob number
- SAE Service Code 01 PID Parameters (based on selection)

Record	Serial	Date & Time	Latitude	Longitude	Fix Status	DOP	Speed	Limit	Alerts	Trip	KeyTag	SAE J1939 Series 1 Parameter 0C	SAE J1939 Series 1 Parameter 0D	SAE J1939 Series 1 Parameter 11	SAE J1939 Series 1 Parameter 44	SAE J1939 Series 1 Parameter 45	SAE J1939 Series 1 Parameter 47	SAE J1939 Series 1 Parameter 49	SAE J1939 Series 1 Parameter 4A	SAE J1939 Series 1 Parameter 4C
Number	Number	GMT	Degrees	Degrees	List	DOP	km/h	km/h	List	Number	Number	Engine RPM	Vehicle speed sensor	Absolute throttle position	Command equivalence ratio	Absolute throttle position	Absolute throttle position	Accelerator pedal position D	Accelerator pedal position E	Commanded throttle actuator control
47358	0	5/17/2009 19:12	45.336453	-75.348332	3D Fix	0.4	103	100	Door Crossing	59	0x01006BBF2	1671	102	38.416	0.393	24.304	38.800	13.6	13.208	35.20
47359	0	5/17/2009 19:12	45.336443	-75.348670	3D Fix	0.4	103	100	Door Crossing	59	0x01006BBF2	1730.75	102	39.2	0.393	25.088	39.384	13.6	13.208	37.632
47360	0	5/17/2009 19:12	45.336432	-75.348943	3D Fix	0.4	102.2	100	Door Crossing	59	0x01006BBF2	1672.75	102	41.944	0.393	27.048	41.552	13.6	13.208	39.384
47361	0	5/17/2009 19:12	45.33642	-75.349408	3D Fix	0.4	102.2	100	Door Crossing	59	0x01006BBF2	1715.25	102	45.648	0.393	29.516	43.12	13.6	13.208	43.12
47362	0	5/17/2009 19:12	45.336408	-75.349773	3D Fix	0.4	102.2	100	Door Crossing	59	0x01006BBF2	1774.25	102	50.568	0.393	35.672	48.216	13.6	13.208	51.144
47363	0	5/17/2009 19:12	45.336398	-75.350108	3D Fix	0.4	103	100	Door Crossing	59	0x01006BBF2	1674	102	47.432	0.393	32.144	46.648	13.6	13.208	50.568
47364	0	5/17/2009 19:12	45.33638	-75.350505	3D Fix	0.4	103	100	Door Crossing	59	0x01006BBF2	1702.75	102	42.728	0.393	28.616	41.944	13.6	13.208	40.376
47365	0	5/17/2009 19:12	45.336382	-75.350812	3D Fix	0.4	103	100	Door Crossing	59	0x01006BBF2	1766.75	103	40.376	0.393	25.872	40.376	13.6	13.208	37.24
47366	0	5/17/2009 19:12	45.336375	-75.351238	3D Fix	0.4	103	100	Door Crossing	59	0x01006BBF2	1722.25	102	39.2	0.393	25.088	38.2	13.6	13.208	36.064
47367	0	5/17/2009 19:12	45.336368	-75.351605	3D Fix	0.4	103	100	Door Crossing	59	0x01006BBF2	1680.75	103	38.416	0.393	23.312	38.416	13.6	13.208	34.536
47368	0	5/17/2009 19:12	45.336363	-75.351973	3D Fix	0.4	103	100	Door Crossing	59	0x01006BBF2	1630.5	102	37.24	0.393	23.128	37.632	13.6	13.208	33.32
47369	0	5/17/2009 19:12	45.33636	-75.35234	3D Fix	0.4	103	100	Door Crossing	59	0x01006BBF2	1706.5	102	36.648	0.393	22.736	37.24	13.6	13.208	32.928
47370	0	5/17/2009 19:12	45.33636	-75.352707	3D Fix	0.4	103	100	Door Crossing	59	0x01006BBF2	1716.25	102	37.24	0.393	23.128	37.632	13.6	13.208	33.32
47371	0	5/17/2009 19:12	45.33636	-75.353073	3D Fix	0.4	103	100	Door Crossing	59	0x01006BBF2	1700.25	102	38.024	0.393	23.312	38.416	13.6	13.208	34.104
47372	0	5/17/2009 19:12	45.336363	-75.35344	3D Fix	0.4	103	100	Door Crossing	59	0x01006BBF2	1713.75	102	38.416	0.393	24.304	38.800	13.6	13.208	34.888

Table 5: CSV Detailed Trip File Sample Data

2.9 IPL Data Log Overview (IPL exported file)

This data log contains GPS data only and is the equivalent of the OttoLog® data log used in combination with the www.myottomate.com website.

OttoLog® Trip data Specifications	
Data logged	Date, Time, Location (Latitude, Longitude), Speed, Posted Speed Limit
Overall Trip Summary Report	Includes total distance driven, total driving duration, total idling, total unlocked duration, trip time classification for peak commute, off-peak, nighttime and weekend driving
Individual Trip Reports	Individual Trip Start, End, Duration, Idling/Stop time, Unlocked time, Maximum Speed, Average Speed
Speed Reports	Speeding Exceptions noted by Date, Time, Speed Limit, Maximum Speed and Speeding Duration
Aggressive Driving	Aggressive acceleration and deceleration noted by Date, Time, Start and End Speed, g-force equivalent, and acceleration equivalent (km/hr/s)
Detailed Trip Report	Trip details with Latitude and Longitude positions are provided that allow reverse Geocoding the position to the nearest postal code using software freely available on the Internet
Map Rendered Vehicle Traces	Vehicle trip traces are saved as KVM files that can be rendered using the Google Earth™ mapping application, a version of which is available free of charge (PERSENTECH provides no warranty with respect to the free service currently provided by Google®).
Data Export Utilities	Trip reports can be exported to an Adobe PDF file, a GPX file, or in a text file format that is compatible with Microsoft® Streets and Trips™ Mapping Application Software

Table 6: GPS-related data and reporting summary available from the OttoView™- CD system IPL data file

2.10 KML Data Log Overview (KML exported file)

This data log contains data that is used with web-based mapping applications such as Google Earth or Google Maps. The Keyhole Markup Language (KML) is an XML-based language schema for expressing geographic annotation and visualization on existing two-dimensional maps and three-dimensional earth browsers. KML was developed for use with Google Earth. The file is opened within a Google Earth application and provides a color-coding for the vehicle speed as well as a notation of the alerts traversed during the trip. The following table summarizes the coloring scheme, and the figure a sample of the representation of the data on a Google Earth map.










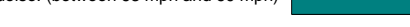

Under 30 km/hr, color medium brown. (under 20 mph)	
Between 30 and 39 km/hr, color yellow. (between 20 mph and 24 mph)	
Between 40 km/hr and 49 km/hr, color olive green. (between 25 mph and 30 mph)	
Between 50 km/hr and 59 km/hr, color light purple. (between 31 mph and 37 mph)	
Between 60 km/hr and 69 km/hr, color dark blue. (between 38 mph and 43 mph)	
Between 70 km/hr and 79 km/hr, color dark pink. (between 44 mph and 49 mph)	
Between 80 km/hr and 89 km/hr, color lime green. (between 50 mph and 55 mph)	
Between 90 km/hr and 99 km/hr, color dark green. (between 56 mph and 62 mph)	
Between 100 km/hr and 109 km/hr, color turquoise. (between 63 mph and 69 mph)	
Over 110 km/hr, color purple. (over 70 mph)	
Speed Limit Exceeded	

Table 7: GoogleEarth KML/KMZ vehicle speed colors

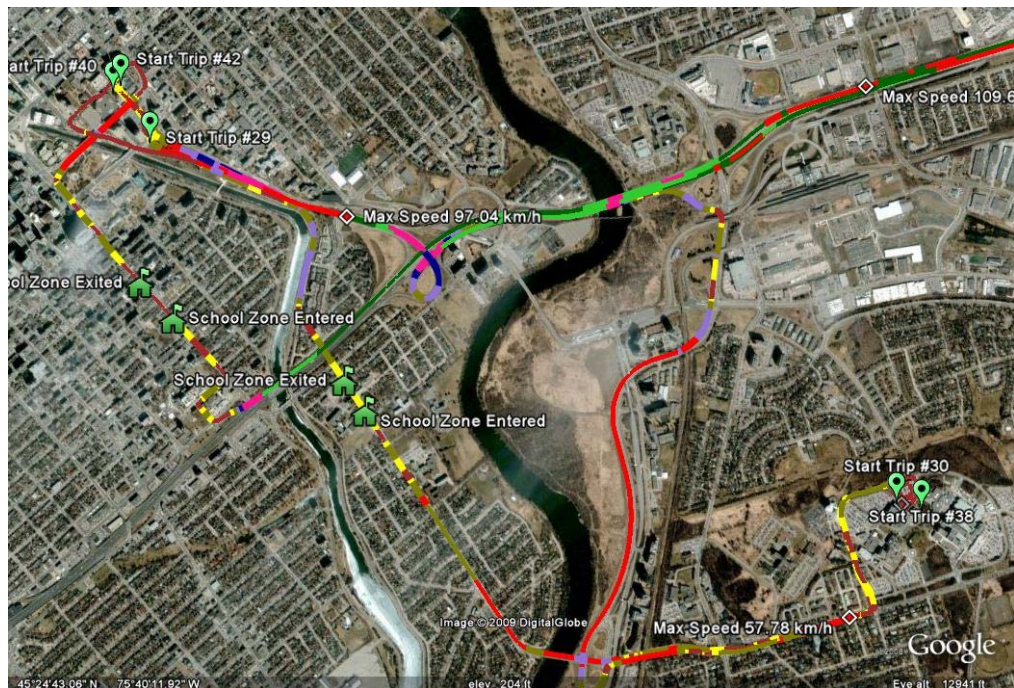


Figure 19: OttoView™-CD GoogleEarth Trip Trace based on KML File

3 Software Application Utility Operation

This section describes the software configuration utility and the functionality.



Figure 20: OttoView™-CD Driver Tracking System Software Application Utility Main Screen

3.1 Configuration Utility

The application software utility has been laid out with 5 main heading tabs and various sub-heading tabs.

- Summary Screen.
 - SD memory card summary information.
 - One-button quick task: quick download of data log file from SD memory card and quick SD card erase.
- Device Configuration
 - OBDII device diagnostic parameter configuration under 5 sub headings
 - SD memory Card configuration and data manipulation.
- Tools
 - Utilities for data, maps, device firmware and SD memory car formatting for use with OttoView-CD.
- Export
 - Data log and trip information management: export of information in either metric or imperial formats and export to one of three file formats:
 - Comma Space Value (CSV) “raw” information.
 - Incremental Position Logic (IPL) information for use with the www.myottomate.com website and the form reports.
 - Keyhole Markup Language (KML) file format for use with GoogleEarth or Google Maps.

- Help/Support

The minimum system requirements for OttoView-CD data management include a Microsoft® Windows® operating system, Windows 2000® or later versions with the following hardware configuration:

- CPU: Pentium or Pentium Class Processor and motherboard running at 200 MHz or higher,
- System Memory (RAM): 64 MB,
- Disk Space: 50 MB or higher,
- VGA monitor,
- Mouse or compatible pointing device
- Keyboard, and
- Internet connection.

3.2 OttoView Configuration Utility Software Installation and Operation

The application software utility will be provided with a one-click installer program that installs and configures the PC with the required components.

- The CanDrive Driver Tracking System Utility Software.
- The required Microsoft Windows utility modules.
- The configuration to link to the remote www.myottomate.com website to download municipal map data.

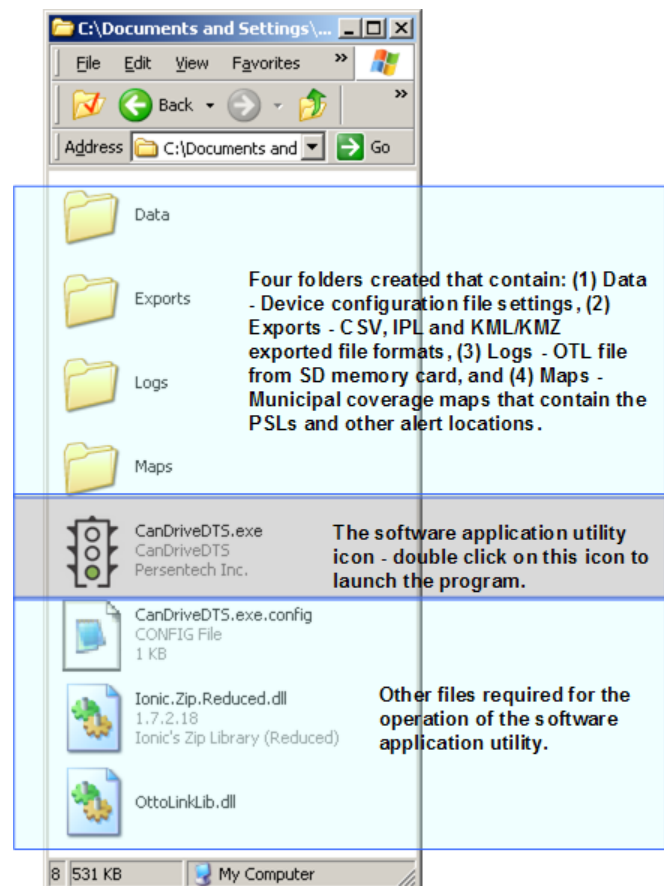
Figure 21: OttoView™ Driver Tracking System Software Application files and data folders

The following screens provide general instructions on the main functions of the program.

3.2.1 Main Summary Screen

When the program is launched, the main summary screen is displayed. The key functions on this screen include:

- Memory Card summary
 - Identifies if a properly formatted memory card is recognized by the PC and the application software utility.
 - If found, the log file size is indicated.
 - If not found, "Status not found" will be displayed.



Memory Card Summary
 Status: Not found
 Firmware Version: N/A
 Log: 0.00 MB

Memory Card Summary
 Status: Ready
 Firmware Version: 0.0
 Log: 0 Bytes (0.00 MB)

Figure 22: OttoView™ Driver Tracking System Memory Card Summary Screen

- Quick Tasks
 - One button click to download data from the SD memory card and to erase the memory card of all the data.

Quick Tasks

Quick Download Log and Erase Memory Card

☒ Confirm Erase

Figure 23: OttoView™ Driver Tracking System Quick Task Screen

3.2.2 Device Configuration Screen

CanDrive Driver Tracking System - v.1.0.3429.20346

Summary
 Device Configuration
 Tools
 Export
 Help/Support

Global
 Driving Conditions
 Air/Fuel Mixture
 Emmission Control
 Diagnostics

Parameters
 Engine Startup Delay 5 seconds
 Trip Finish Timeout 60 seconds

Summary
 Total Configured PIDs 9

Last Config File <No device configuration file specified or saved>

Device Configuration Settings

Save as
 Load from file
 Write to Memory Card
 Read from Memory Card
 Reset to Defaults

An OttoView memory card could not be found.
 Make sure the card reader is connected and the card is properly inserted.

Figure 24: OttoView™ Driver Tracking System Device Configuration Screen

The device configuration screen includes three major sections and several sub-sections that are used to configure the device for operation with a vehicle and to extract the desired engine parameters.

- Device configuration sub- headings in tabs: click on a tab to move to the heading topic.
- Global parameters (device specific):
 - Engine start up - delay time before device begins interrogating ECM
 - Trip Finish Timeout - delay time before device turns off after ignition is turned off.
- SAEJ1979 Service Code 01 PID parameters categorized under Driving Conditions, Air/Fuel Mixture, Emission Control, and Diagnostics.
- Quick one-button device configuration tasks that are stored on the SD memory card.
 - Save the configuration file (*.CFG) on your local PC that defines this device configuration.
 - Write the configuration file (*.CFG) to the SD memory card so that when it is inserted into the CanDrive-CD device, the device reads the card and configures the device according to the configuration file parameters.
 - Other functions:
 - Load from file: Load a previously saved *.CFG file on the PC and view the PID configuration.
 - Read from memory card: With a valid memory card in the PC, read back the *.CFG file from the card to view the PID configuration.
 - Reset to Defaults: Reset the *.CFG file to the default number of PIDs (9).

3.2.3 Tools Screen

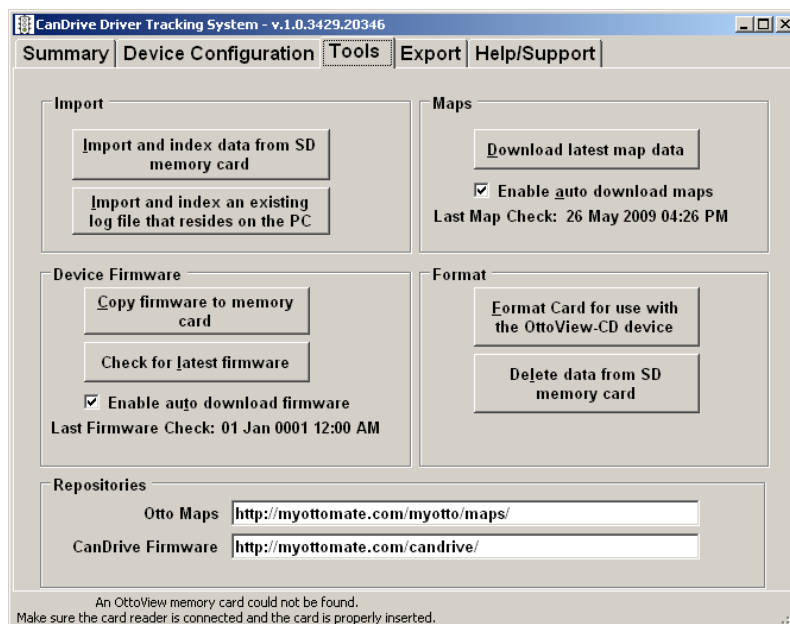


Figure 25: OttoView™ Driver Tracking System Tools Screen

There are five major sections within the Tools screen:

- Import
 - Importing and indexing the data (indexing based on serial number and date of trips within OTL log file).
- Maps
 - Downloading the latest map data coverage area, which requires that an Internet connection be available for the application program to seek out and download the files according to the repository settings.
- Repositories
 - The URL links to the map data and the firmware updates for the device.
- Device Firmware
 - When new device firmware is released, the firmware will be placed within the firmware repository and this firmware should then be copied onto the SD memory card so that the device will boot up with the new firmware.
- Format
 - Click on “Format Card for use with the OttoView-CD device” to format an unused SD memory card into the special OttoView-CD binary format. A Window will pop up and will display the status of the format. Upon completion, “Format Success” will be displayed.
 - Click on “Delete data from SD memory card” to clear the SD memory card.
 - Click on “Unformat SD memory card” to revert back to a standard SD memory card.

3.2.4 Export Screen

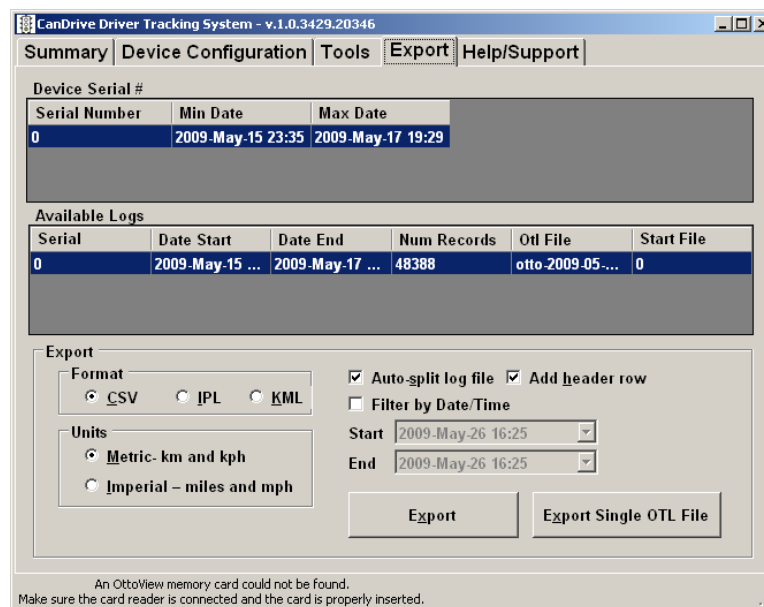


Figure 26: OttoView™ Driver Tracking System Export Screen

There are three main functions/interfaces on the Export screen:

- Index of OTL data files uploaded, indexed by Device Serial Number with log start date and log end date.

- Index of available OTL data log files, indexed by Device Serial Number, with additional attributes including number of data records, the OTL file name and if there is an offset in the data records.
- Export file format selection:
 - CSV, IPL or KML/KMZ file formats can be selected according to the filtering criteria:
 - Units: Metric or Imperial
 - Log file splitting (CSV format)
 - Header Row with titles (CSV format)
 - Date/Time filtering
 - Selection of either single OTL file exporting, individual files outside of the indexed OTL files, or by selecting the desired OTL files from the indexed files shown.

3.2.5 Help/Support Screen

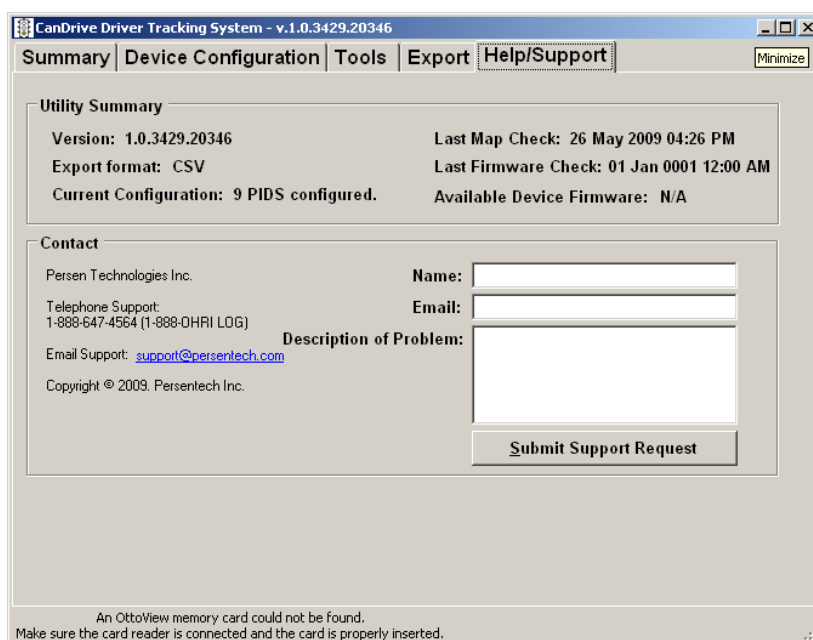


Figure 27: OttoView™ Driver Tracking System Help/Support Screen

This screen provides for a direct email support request and also provides utility and device summary information that can be used in trouble shooting any problems.

3.3 Memory Card Specifications

An SD or MMC memory card must first be formatted to store the data before it can be used in the OttoView™ device. The format utility is included in the OttoView™ Configuration Utility. This is described in the next section.

The OttoView™ -CD device records data at up to 300 bytes per second. The total storage time on a memory card can be calculated as follows:

$$\text{Total Data Storage capacity (hours)} = [\text{Memory storage capacity}/300]/3600$$

For a 1 GB card, the total storage time is approximately 925 hours.

3.3.1 Memory Card Operation

A standard SD memory card must first be formatted for use with the OttoView-CD device. Data can not be recorded on a memory that has not been formatted. If an unformatted memory card is put into the device, the SD memory card LED will flash.

3.3.2 New Memory Card Formatting

The memory card that came with the OttoView-CD device was formatted and includes a Readme.txt file. The following steps describe how to format a memory card that has not been previously formatted.

Note: A Microsoft Windows® XP operating system with service pack 2 (Windows XP Service Pack 2 Buld 2600.xpsp_sp2_gdr.070227-2254) has been used in the steps described below. Administrator privileges are required to format the memory card.

1. Use a standard SD or MMC memory card (up to 2 GB) such as the one shown in the figure.
2. Insert the memory card into a memory slot on the PC or into an external card reader.
3. When the card is inserted, Windows® will recognize the memory card and will assign a drive letter. Right clicking on the drive will show the properties of the memory card in terms of the type of formatting and available space. An example for a 1 GB Memory card is shown in the following figure.

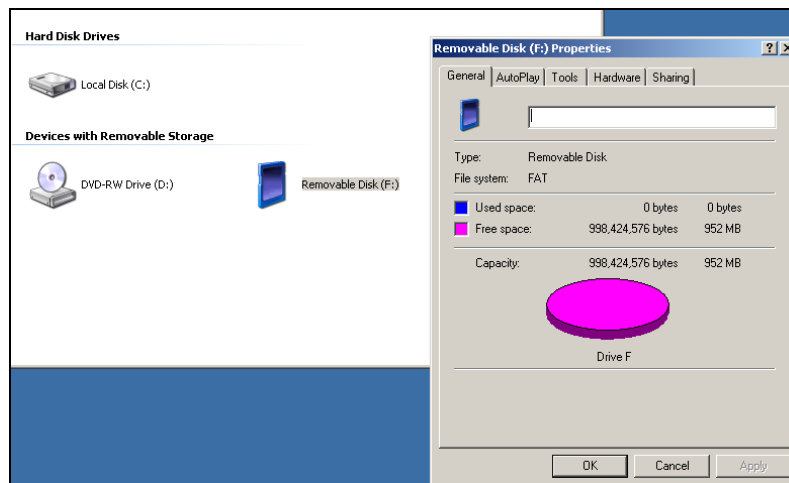


Figure 28: OttoView™ Driver Tracking System Memory Card Representation

4. Hit OK to dismiss the properties window and open the OttoView-CD application software utility and click on the “Tools” menu and select “Format Card for use with the OttoView-CD device”. A new window will open and the disk formatting will complete automatically.

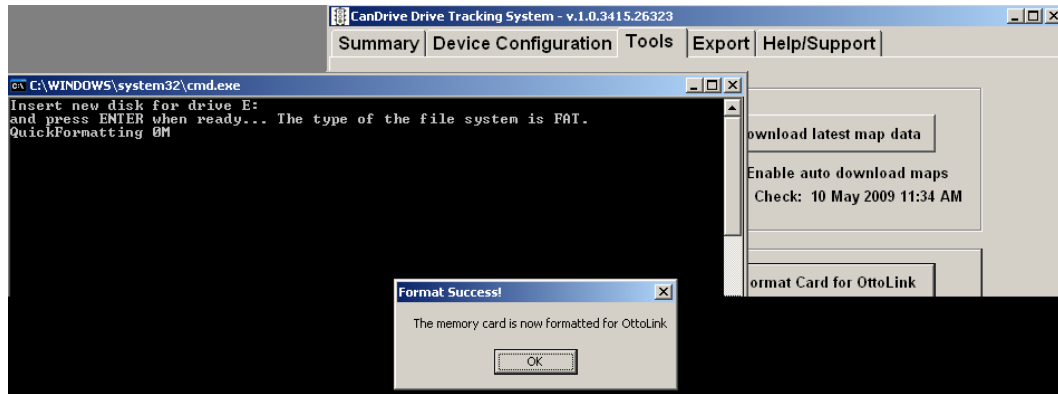


Figure 29: OttoView™ Driver Tracking System Memory Card Format Display Information

5. When the window closes, a formatting acknowledgement will be provided.

The memory card will be divided in two parts: (1) A FAT formatted portion that will be recognized by Windows® and contains a “Readme.txt” file, and a partition that will not be recognized by Windows and that is formatted for use with OttoView-CD. The following figure illustrates the properties of a 1 GB memory card after it has been configured for use with OttoView-CD. Note that the FAT formatted portion is 975 kB and that 512 bytes have been used for the text file. The remainder of the memory card space is not recognized by the operating system.

3.3.3 Using OttoView-CD with a Microsoft Vista® operating system

The Vista operating system incorporates security features to protect program access, so you will need to use the OttoLink Companion in the following manner.

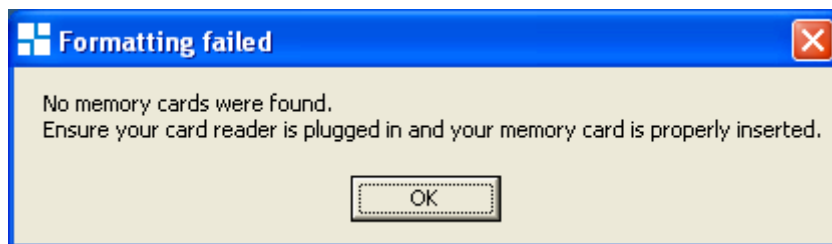
1. Insert the memory card into the memory card reader slot.
2. Make sure that you can view the README.TXT file that is on the card. If this file is not visible, do not proceed to the next step.
3. Make sure that the application configuration utility is NOT currently open; and if it is, close it by clicking on the exit (X) location in the top right hand corner of the window.
4. Right click on application configuration utility and select “run as administrator”.
5. If you have the Vista “User Account Control” turned on, then you will see a message that says “An unidentified program wants to access your computer”. Here you have to click “Allow”.

6. If your domain is configured to ask for an administrator password, you will need to enter it here as well.
7. In the application configuration utility under the Tools menu, select “Download from memory card” and then type in the name of the file that you want to save.

3.4 Troubleshooting Tips

Error “Formatting Failed”

Window pops up indicating that “No Memory Cards were found”.

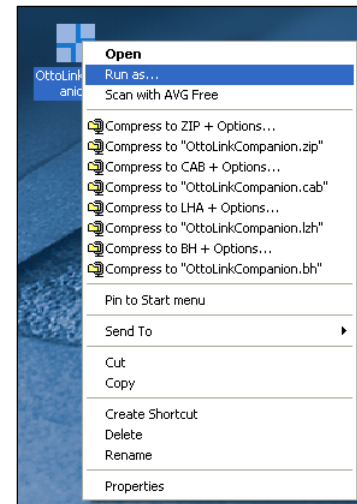


Solution: Administrator privileges required.

One must have Operating System Administrator privileges to format/unformat the memory card, and to have the Operation system recognize the memory card. If you do not have administrative privileges, you will not be able to format/unformat or retrieve data from the card.

To run the program from a user account without administrator privileges, follow these steps:

1. Mouse over the application configuration utility icon and right-click on the icon.
2. Select “Run as...”
3. A window will pop up with the available alternatives. Select “Administrator” and enter the administrator password.



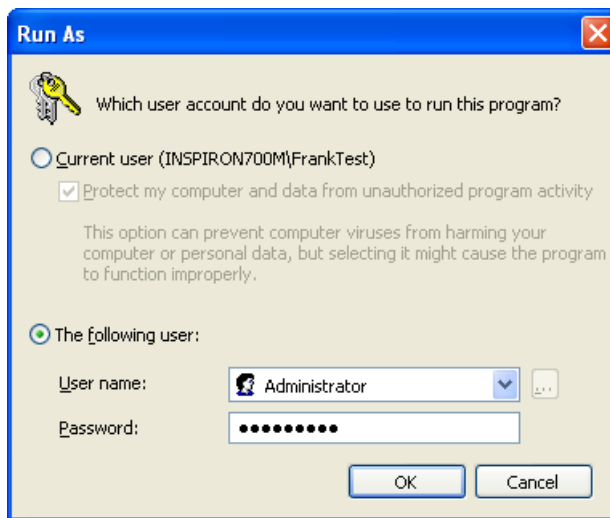


Figure 30: OttoView™ Driver Tracking System Windows Vista Administrator Privileges

4. The application configuration utility can now be used to manage the memory card.

Error “Insert Disk or Stage 2: Error 1”

Disk is recognized by the OS but the PC and operating system is not able to read the disk.

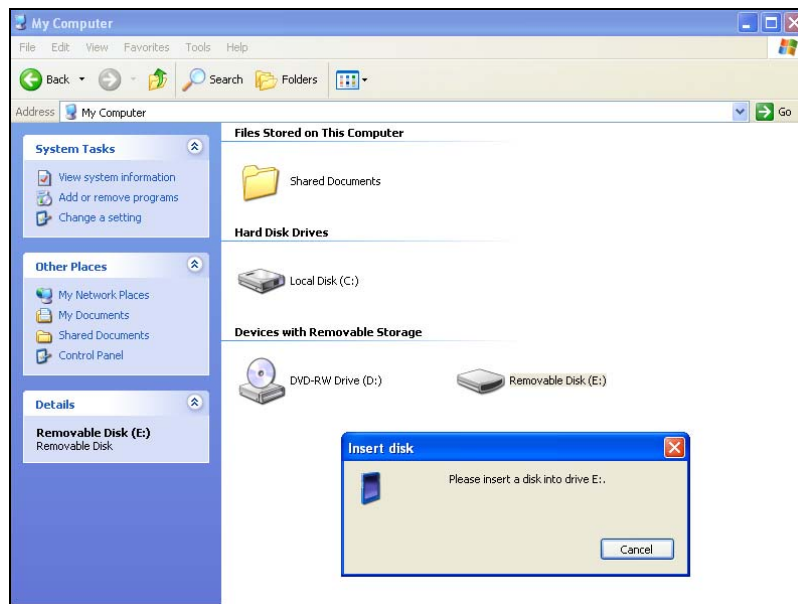


Figure 31: OttoView™ Driver Tracking System Windows SD disk recognition Exception

Solution: Administrator privileges required.

The card reader on the PC may be incompatible with the memory card. Another memory card reader will be required.