

# Vehicle Network Seminar Series

## Year 2012



**New Class:**

**FlexRay !**  
See Page 4



If you need to know about CAN  
...this is the course for you!



### CAN and Higher Layer Protocols

One of our most popular seminars, this course is relevant for passenger cars and light duty trucks.

CAN (Controller Area Network) is the worldwide standard for automotive and many vehicle networks. We cover the entire theory and practice of CAN and those protocols associated with it. These include DiagnosticsOnCAN, J2284, GMLAN, OBDII and others. Also included will be overview discussions on other protocols: FlexRay, LIN and J1850.

A summary of several CAN controllers' hardware, software and differences, along with the availability of commercial software CAN driver(s) will be discussed.

A hands-on laboratory session designed to familiarize you with creating CAN messages and transmitting and receiving them will be provided. Time allowing, an in-vehicle session using a real vehicle demonstrating periodic messages, polled messages and diagnostics, using both proprietary and OBDII messages, will also be shown. Note: We have a similar course for heavy duty vehicles using J1708, J1587 and J1939. See our "Heavy Duty Truck and Bus" course.

### Course Outline: (2 - days)

- In-vehicle network overview & general network topology
- CAN protocol - physical and data link layers
- CAN controllers and programming
- Overview of J2411, J2284, OBDII
- DiagnosticsOnCAN (ISO 15765), J2534, J1699
- GMLAN review
- Lab session/In-Vehicle Demonstration

\$ 895; includes materials

### Dates Offered in 2012:

February 21-22 (FH)  
September 18-19 (FH)



### Diagnostics On CAN with GMLAN

Legislated diagnostics in countries around the world has become an important area of interest. It is critical to have knowledge of the various standards,

where they are derived from, how they relate to each other and where future regulations are headed. This course will prepare you to develop and work with these diagnostic protocols.

Beginning in 2007, CARB and EPA required ISO 15765 DiagnosticsOnCAN for passenger cars and light trucks.

This course examines ISO 15765 DiagnosticsOnCAN with in-depth discussions on GMLAN on CAN including 500Kbps, 95.2Kbps and 33.33 Kbps (Single Wire). GM periodic CAN traffic and diagnostic services will be discussed.

Laboratories on GMLAN services and/or a diagnostics in-vehicle session with a GMLAN-equipped vehicle are explored. It is also possible to offer courses to OEMs using their specific network data with suitable time for course preparation.

### Course Outline: (2 - days)

- In-vehicle market and protocol overview
- Overview of the CAN protocol
- Overview of J2411, J2284, OBDII
- DiagnosticsOnCAN (ISO 15765), UDS overview
- DPS Tools, J2534, J1699
- Live In-Vehicle Network demonstration
- GMLAN and how it works
- GMLAN Lab session

\$ 895; includes materials

### Dates Offered in 2012:

For these specialty courses and/or emerging protocols, please contact us to schedule training.

# Vehicle Network Seminar Series

## Year 2012



### Heavy Duty Truck and Bus

#### SAE J1708/J1587 and J1939 (CAN)

If you need to know the protocols of Heavy-Duty vehicles, including CAN/J1939, J1708/J1587, and TMC RP1210, this class is for you! The focus is on protocols used in heavy vehicles, including agriculture, construction, and military vehicles, in addition to truck and bus. The wide range of vehicle component options drives the market for the development of these protocols. Previous knowledge of vehicle network protocols is not necessary, as it is fully covered.

You will gain: A good familiarity of the J1939 Heavy Duty vehicle network protocol, how J1708/J1587 work, RP1210 and associated tools. Understand how J1939 messages are formed, and decoded, diagnostic & troubleshooting solutions and techniques. A one day class is offered by special request.

#### Course Outline: (2 days)

- Introduction to Heavy Duty Vehicle Network Protocols
- Legacy Protocols & Hands-on Lab: J1708, J1587 PLC-4TRUCKS
- Introduction to CAN Protocol
- J1939 & Hands-on Lab: Includes:
  - J1939 Part A: Data Link: PDU and PGN mapping
  - J1939 Part B: Message types, multi-packets
  - J1939 Part C: Diagnostics (J1939)
  - J1939 Part D: Naming & Addressing
- RP1210 Overview, Functionality, and Hands-on Labs
  - RP1210 Sample Source Code
  - Adapter Validation Tool (AVT) & Troubleshooting \$ 895; includes materials

#### Dates Offered in 2012

Indianapolis: January 26-27, March 15-16, May 31- June 1, July 12-13, October 4-5, November 15-16

Farmington Hills: April 19-20, August 23-24



### Diagnostics On CAN

Beginning in 2007, CARB and EPA required ISO 15765 DiagnosticsOnCAN for light vehicles. This course will prepare you to design, develop, test and work with this protocol.

This course examines ISO 15765 DiagnosticsOnCAN with a brief introduction to its predecessor, KWP2000 plus OBDII, J1979, J2012, J2190 and J2284. This information will also be useful for J1939 users who choose to use ISO 15765 for the upcoming legislated heavy duty vehicle emissions requirements.

You will learn how parts of these protocols are used to create DiagnosticsOnCAN with a live vehicle demonstration.

A CAN hands-on lab is included.

Note: This course is similar to “Diagnostics On CAN with GMLAN”, however the content covered applies generically across all vehicle platforms. See Page 1 for the description of the GMLAN course.

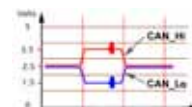
#### Course Outline: (1 day)

- In-vehicle network overview
- CAN protocol - physical and data link layers
- CAN controllers and programming
- Overview of J2411, J2284, OBDII, UDS
- DiagnosticsOnCAN (ISO 15765), J2534
- In-Vehicle diagnostic demonstration
- CAN hands-on Lab session

\$ 595; includes materials

#### Dates Offered in 2012:

For these specialty courses and/or emerging protocols, please contact us to schedule training.



# Vehicle Network Seminar Series

Year 2012



## LIN (Local Interconnect Network)

LIN is a leading edge and relatively low cost network often used to augment a CAN network for body and chassis electronics. It is replacing older protocols such as J1850 and K line (ISO 9141), where the bandwidth and flexibility of CAN is not required.

You will learn the LIN protocol, configuration language and the API. The differences between the various versions of LIN and the SAE standard are also discussed.

A demonstration illustrating how LIN frames are constructed and their architecture is given.

### Course Outline: (1 day)

- Introduction: General LIN overview
- Where LIN is used; hardware requirements
- LIN Protocol - 1.2, 1.3, 2.0 and SAE J2602
- LDF - LIN Descriptor Files - Demystifying the LDF
- Schedule Tables: What is a Schedule Table?

\$ 595; includes materials

### Dates Offered in 2012:

Farmington Hills: June 13, December 5



## Gryphon & Gryphon S-3 with Hercules

Free !

This is our hands-on seminar designed to introduce you to DG's CAN, SW-CAN and GMLAN high end development analyzers. It also supports other protocols such as LIN and J1850.

Our hardware devices are LINUX based, and in the several generations of product development have undergone significant product feature upgrades. While Hercules is our optional software GUI for these products, you can also write your own application programs using Linux or other protocol-specific solutions such as J2534 calls.

This course will show how you use our high end tools to effectively design and validate automotive networks, including CAN, LIN, J1850 and specific GMLAN alternatives.

These seminars are held on a regular basis at DG's Farmington Hills facilities. Snacks and refreshments are provided.

Call Mike Bartkowiak for additional dates or to arrange for on-site demonstrations (mikeb@dgtech.com or 248.888.2000 ext 324).

### Course Outline: (1 day)

- Introduction to CAN, including SWCAN, GMLAN, LIN
- Overview of the DG's hardware and Hercules software
- Setup and configuration
- Information/Statistics Views
- Database configuration
- Buffering and Filtering configuration
- Transmit Frame Table (TFT)
- Message Responder/Transponder
- User-configured scheduler and Program Blocks
- Playback mode and Diagnostics
- Hands-on lab session.

A Complimentary Seminar

### Dates Offered in 2012:

Available on demand at our company or yours, please contact us to schedule this free seminar.

# Vehicle Network *Seminar Series*



**Year 2012**



## **Flex-Ray**

FlexTraining has been created especially for engineers working in development. The high level of learning success is accomplished by competent training instructors who are very experienced in this field. An essential component of the training is the hands-on experience.

The course consists of three days of training. The third day is optional, and can be booked separately by participants with FlexRay experience.

## **DAY 1 - FlexRay Fundamentals Classroom**

- FlexTraining deals with the most important aspects of FlexRay, which are necessary for daily work with this bus system
- FlexRay in comparison to other bus systems
- FlexRay Protocol: static part, dynamic part, time synchronization, etc.
- Application of the FlexRay Protocol: Cycle-, Multiplexing, etc.
- Building up a FlexRay node
- Building up a network
- Introduction of FlexRay to AUTOSAR
- Fibex, build-up and features
- Explanation of the build-up of a real FlexRay application in vehicles
- FlexRay tools for all stages of development and testing

## **DAY 2 - Hands-On Lab Exercises**

You can only use FlexRay meaningfully after a lot of practical exercises. That is why this part of the course will receive most of our attention. Hands-on session:

- Building up a FlexRay cluster
- Network configuration with FlexConfig
- Modification of network parameters
- FlexRay monitoring of a cluster
- Measurement of FlexRay bus signals

## **Optional DAY 3 - FlexRay Applications**

A third day of the course deals mainly with practical applications. This day can be booked individually, assuming existing FlexRay skills. Hands-on session:

- Signal manipulation
- Remaining bus simulation
- Analysis of different FlexRay error patterns
- Different FlexRay analysis methods and their applications
- Advantages and disadvantages of analysis methods

2 day - \$995; includes materials

3 day - \$1490; includes materials

## **Dates Offered in 2012:**

For these specialty courses and/or emerging protocols, please contact us to schedule training.

# Vehicle Network *Seminar Series*



**TECHNOLOGIES**  
Vehicle Network Solutions

**Year 2012**

## **Seminar Locations**

Unless otherwise indicated, our seminars are held at DG's facilities in Farmington Hills, Michigan or Indianapolis, Indiana. Seminars also are often held at various locations around the USA, Canada, Europe and Asia. Call us for information regarding these seminars. Lunch and refreshments are provided. Most classes are limited to 15 people.

CEU credits are given for DG classes. See [www.iacet.org](http://www.iacet.org). One day equals 0.8 CEU, a 2-day course is 1.6 CEUs, and 3-days 2.4 CEUs.

## **Custom On-Site Seminars**

No matter where you are located, any DG seminar can be economically held at your facility. Since most DG seminars are in a modular format, they can be customized to your specific needs. DG on-site seminars are very useful to train your technical, sales, marketing and management personnel on the latest in vehicle network protocols.

DG participates on many SAE, ISO and other standards committees and has the "inside scoop" on the latest developments at these organizations, as well as the status of many standards

We have found that discussions frequently "break out" at these special seminars, and often times actual problems are solved in this way. The instructor is able to customize the presentation "on-the-fly" by responding to questions from the students that indicate areas of interest or difficulty.

## **Dynamic Class Scheduling**

Send an email to [sales@dgtech.com](mailto:sales@dgtech.com) indicating your preferences for our consideration to develop a special class time.

## **Consulting**

DG Technologies provides expert consulting services at any level to help you with your networking needs. DG has engineering offices in Michigan, Indiana and India to provide prompt service no matter where you are located.

DG can assist you in locating other vendors' expertise, software, or tools to complete your project on time and on budget.

## **Development Tools**

DG Technologies provides high quality yet economical design, development, diagnostic and end-of-line testing tools and software. Visit our website or call for more information.

**Register online at: [www.dgtech.com/services/registration.php](http://www.dgtech.com/services/registration.php) Or  
fax this page to 248.888.9977**

Name: \_\_\_\_\_  
Company: \_\_\_\_\_  
Address: \_\_\_\_\_  
City, State, Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_ Ext: \_\_\_\_\_ Cell: \_\_\_\_\_ Email: \_\_\_\_\_

**Important:**

Please make sure you receive a confirmation from us. Call if you do not receive one to be certain you are properly registered.

*Via Mail*

**Credit Card** (please circle one)    VISA   MC   AMEX   DISC

**OR:**     My check is enclosed

Credit Card Number: \_\_\_\_\_ Expires: \_\_\_\_\_

My purchase order is enclosed

Customer Card ID Number (CCID), last 3 digits, back of card: \_\_\_\_\_

(Note: AMEX may have CCID on front of card, 4 digits)



Signature: \_\_\_\_\_

**CAN and Higher Layer Protocols**

**Year 2012**

**LIN (Local Interconnect Bus)**

**2 days (\$895)**

Feb 21-22 (FH)

Sept 18-19 (FH)

**Heavy Duty Truck & Bus**

**2 days (\$895)**

Jan 26-27 (Indianapolis)

March 15-16 (Indianapolis)

April 19-20 (FH)

May 31- June 1 (Indianapolis)

July 12-13 (Indianapolis)

Aug 23-24 (FH)

Oct 4-5 (Indianapolis)

Nov 15-16 (Indianapolis)

**1 day (\$595)**

June 13 (FH)

Dec 5 (FH)

**Diagnostics On CAN with GMLAN**

**2 days (\$895)**

Contact DG, Specialized Course

**Diagnostics On CAN**

**1 day (\$595)**

Contact DG, Specialized Course

**Gryphon 2 & S-3 + Hercules**

**1 Day (No charge)**

Contact DG, Specialized Course

**FlexRay**

**2 Day (\$995)**

**3 Day (\$1490)**

Contact DG, Specialized Course

*Call for special 1 Day session availability*

Please contact us to have this seminar at your facility...or ours!

Please email [sales@dgtech.com](mailto:sales@dgtech.com) to hold any seminar at your company's facilities. This is also relevant to our free product seminar!

**Venue: Unless otherwise indicated, our seminars are held at DG's facilities in Farmington Hills, Michigan or Indianapolis, Indiana. Please contact us at [sales@dgtech.com](mailto:sales@dgtech.com) for effective, economical on-site seminars.**

## *Registration and Class Information*

- 1) Please register early. Space is limited to ensure personal attention.
- 2) Confirmation, hotel information and directions to DG Technologies' office will be provided.
- 3) Make sure you receive confirmation from DG Technologies! If you do not, please contact us to ensure your reservation is made.
- 4) Seminars run from 9:00 AM to 4:30 PM. Lunch, snacks and beverages are included.
- 5) A 10% discount is offered for booking three or more attendees from the same company for the same class.
- 6) Cancellations or transfers must be made 14 days or more prior to the start of the seminar. No refunds will be granted for cancellations made after this time period.
- 7) Classes not meeting minimum enrollment requirements are subject to cancellation. Attendees will be notified at least one week in advance of a cancellation.
- 8) Unless otherwise indicated, our seminars are held at DG's facilities, either in Farmington Hills, MI or Indianapolis, IN.
- 9) Contact DG Technologies for further information.