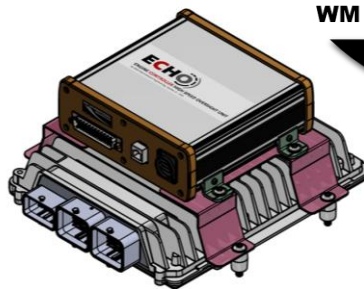




**ENGINE CONTROLLER HIGH SPEED OVERSIGHT UNIT**

By WM International Engineering, Darien, IL - USA

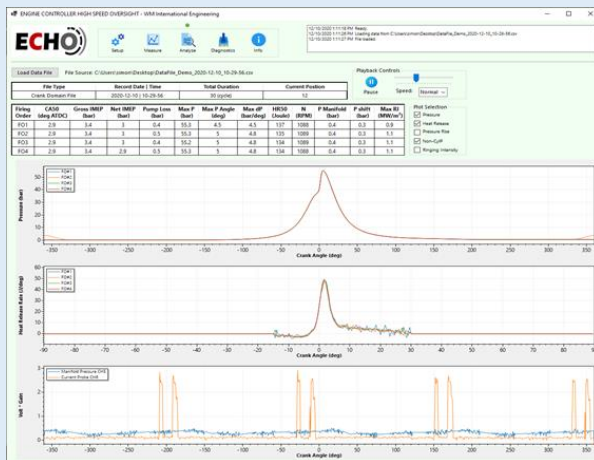
**WM INTERNATIONAL Engineering**



**ECHO HIGHLIGHTS:**

- 1 Data acquisition system that operates on either or both:
  - Time domain** with fast sample rates of 50-200kHz
  - Crank angle resolved** data over 10,000rpm
- 2 Powerful and versatile CPU platform featuring:
  - Fast processor** at 1.5GHz for rapid data processing
  - Data analysis scripts** that are easy to use and modify
- 3 Powerful communication and GUI interface includes:
  - CAN bus** for fast data communication to other systems
  - Real time and playback** data representation

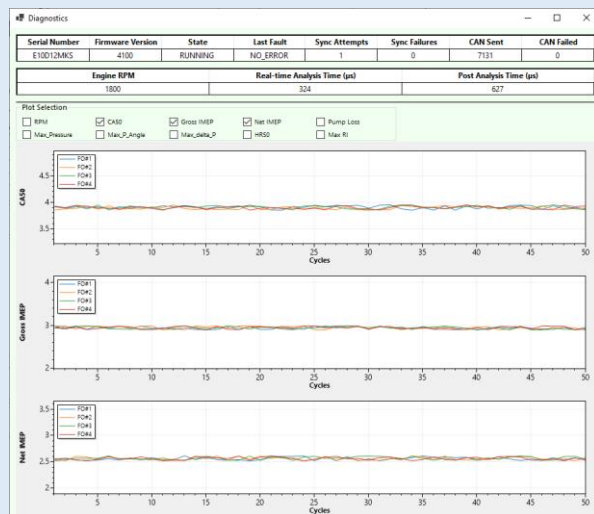
*Data playback*



**ECHO Jan 2021 Release 3 upgrades include:**

- ✓ Flexible engine and channel settings: engine constants (e.g., bore, stroke, # cyl) and channels settings can be adjusted; channels can be assigned to desired cylinders or sensors with individually adjustable gain and offset.
- ✓ A pre-made file can be loaded to quickly populate the settings.
- ✓ Data recording with playback feature
- ✓ Running plot of cycle based parameters: Visualize CA50, IMEP, or ringing intensity estimates helps see the variability of the combustion cycle.
- ✓ Non-cylinder pressure recording: signals such as injection current, manifold pressure can be synced with respected to chosen cylinder's crank angle.

*Cycle parameters running plot*



**HIGHLIGHT STORY**

HYUNDAI-KIA America uses the **ECHO** to assist in the company's advanced engine platform development. The program, sponsored by the Department of Energy's Vehicle Technology office, and in coordination with major Tier I suppliers, demonstrates the significant engine efficiency and clean burning advantages of GCI. WM International's **ECHO** unit samples cylinder pressure and provides real time combustion phasing to the engine ECU to optimize and increase the stability of the combustion system. More information on this program may be found at the link below.

<https://www.energy.gov/eere/vehicles/downloads/multimode-co-optimized-light-duty-vehicle-engine>

