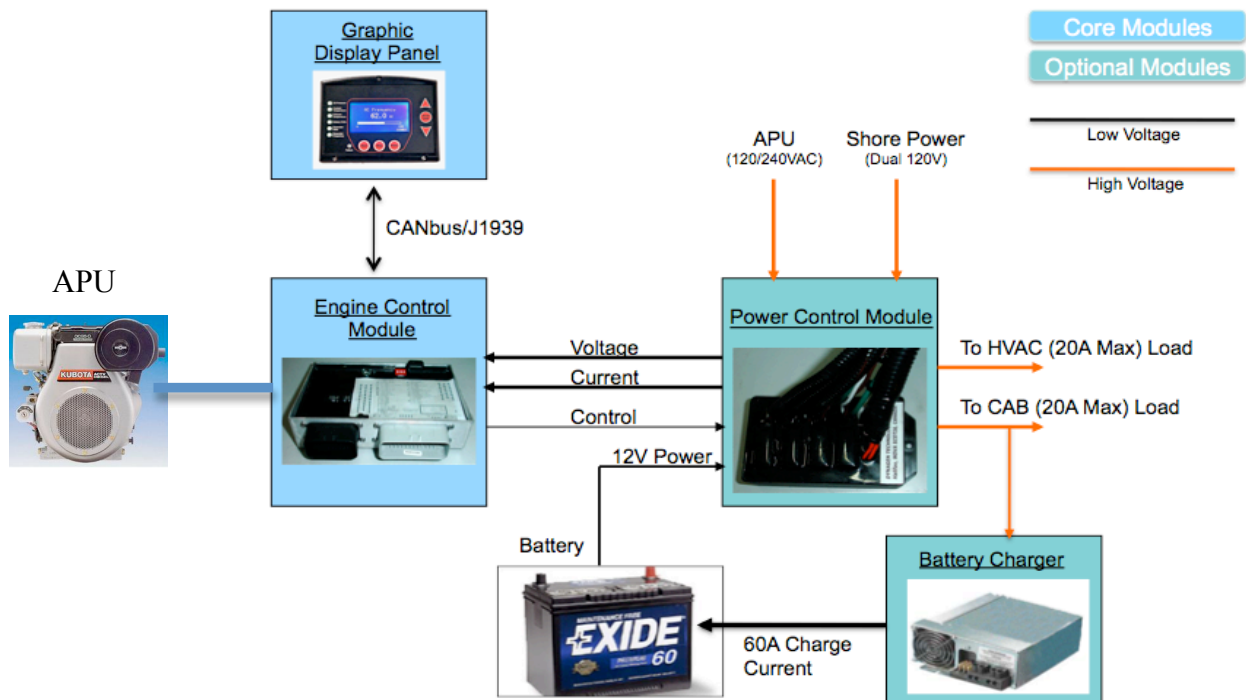




Vehicle Genset Controls

DynaGen’s modular Vehicle Genset control system is hardened for the severe environment of the commercial and recreational vehicle industry. The system architecture utilizes 2 core components: the Engine Control Unit and the Graphic Display Panel. A Power Control module and Battery Charger can be optionally integrated with the system to match OEM requirements.

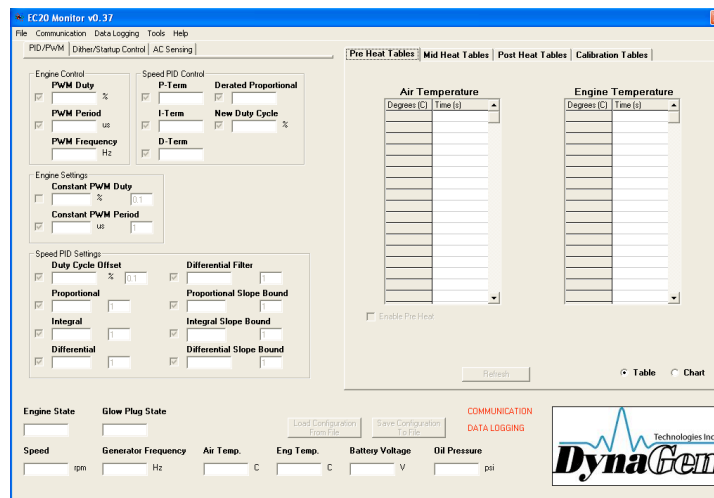


APU-ECU (Vehicle Genset Engine Control Module) – The APU-ECU is an environmentally hardened engine control unit intended for severe “under the hood” vibration and temperature extremes. The APU-ECU monitors and controls the engine for unattended starting/stopping and reads oil pressure, engine temperature, voltages, currents and highly accurate, isochronous engine speed regulation.



- Key parameters are transmitted via CANbus J1939 to the remote display panel
- Optional CAN/J1939-based interlock - APU starting is inhibited based on vehicle main engine speed
- Outputs J1939 Diagnostic Trouble Codes (DTC)
- Optional, fixed speed electronic governor for precise RPM control
- Full control functionality for remote automatic transfer switch (APU-PCM)
- Variable glow plug control based on air and engine temperature
- Fuel Prime Functionality

- Contained within a fully encapsulated aluminum housing
- Sealed automotive-style connectors
- The APU-ECU consumes near-zero current when in standby mode
- Monitors and displays the following via the remote Graphic Display Panel:
 - AC voltages, currents, and frequency
 - Oil Pressure
 - Engine Temperature
 - Engine RPM
 - Engine Hours
- Protective shutdowns and warnings:
 - Low Oil Pressure
 - High Engine Temperature
 - High Exhaust Temperature
 - Overspeed and Underspeed
 - Overvoltage and Undervoltage
 - Overcurrent
 - Loss of CANbus
 - Overcrank (failure to start)
 - Low Battery Voltage
 - Shorted/Open sensors
- Current and voltage sensing is provided via DynaGen's APU-SM current/voltage sensor module:
 - Can be provided separately or within the APU-PCM module
 - No current or voltage transformers required
 - Compact and low cost
- Designed to meet the demanding requirements of SAE J1455 and J1113 environmental and EMC specifications
- Programmability and calibration via PC interface and real-time PC monitoring via RS-232. Setup and configuration of: AC voltage/current diagnostics; Glow Plug; Sensor Calibration; PID Governor Calibration; Real-time display and data logging.



Engine Control Unit PC Configuration Tool

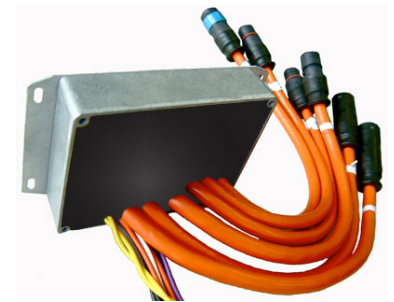
APU-GDP (Graphic Display Panel) – The APU-GDP reads the data on the J1939 CANbus for display on the graphic LCD.

- Push button control of APU starting and stopping
- Displays crisp bar graphs of oil pressure, temperature, battery voltage, RPM, generator voltages, frequency and AC current, as well as displaying customized parameters for the transfer switch, including APU and CAB voltages and currents, ATS status and APU status.
- Fully gasketed enclosure meets IPX4 water ingress protection
- Optional upgradability for HVAC control functions eliminating external HVAC module (for future release)
- Integrated molded CANbus connector
- Contrast adjustment and scroll lock
- High contrast ratio and high luminosity screen (white on blue 128X64))
- 6 bi-color indicator LEDs (optionally up to 10)
- UV resistant housing and front graphics for extreme environments
- Impact resistant ABS plastic
- Front or rear mountable



APU-PCM (Vehicle Genset Power Control Module) – Intended for applications requiring interconnection with an external AC source (“shore power”). This functionality allows the vehicle operator to utilize vehicle stop electrification pedestals or other sources of AC mains to further reduce fuel consumption. The APU-PCM module functions as a transfer switch as well as a power sensor module by integrating the APU-SM sensor module into a single package.

- Dual 20A Load Connections – can be fed from two single-phase Shore power connections, and one 120/240 APU connection.
- Switched neutral configuration
- Mechanically Latching Switches - zero power consumption to retain position unlike conventional relays
- Ability to route power to the CAB or HVAC loads.
- Fully mechanically interlocked – ensuring no possibility of two sources being connected at the same time.
- Generates no heat in a static position for high temperature environments
- Fully encapsulated to provide both thermal conduction and environmental protection from moisture and vibration.
- Tested for Short circuit, Overload, High voltage, Endurance, and High temperature normal operation
- APU-PCM and the APU-ECU work in unison to ensure that the switch never transfers between two live AC sources for improved reliability
- Weatherproof molded AC cables for rapid installation (made to customer specifications).
- Weatherproof control cable (Deutsch)



- Designed to meet the requirements of UL508 (Industrial Controls)
- Designed to meet the demanding requirements of SAE J1455 and J1113 environmental and EMC specifications

PC-60 APU Battery Charger – The PC-60 APU Battery Charger provides charging capability up to 60A output for the vehicle main batteries while the APU is running.

- In-cab version:
 - Input: 105-130 VAC, 1,000 Watts
 - Output: 13.6 VDC, 60 Amps
 - Dimensions: 3.6" x 8" x 9"
 - Weight: 5.8 lbs.
 - Built-in Smart Charging
 - Reverse Battery Protection.
 - Delivers filtered DC power to all 12 Volt lighting and appliance circuits, providing safe and reliable service.
 - Electronic Current Limiting.
 - Low line Voltage Protection.
 - Variable speed intelligent Cooling Fan.
 - High Voltage Protection.
 - Automatic thermal shutdown.

