



## How to Specify a Flex-Panel® System

### **Article I. SYSTEM REQUIREMENTS**

- System shall be installable in any vehicle make, model, and year.
- System shall be independent of any particular OEM proprietary system.
- System shall be Isolated from the OEM electrical system and engine control and data bus functions, and shall not interfere with nor post data to the J1939 control bus or equivalent.
- System shall not use mechanical relays or circuit breakers or fuses.
- System shall be powered by the vehicle battery directly.
- System shall be capable of driving multiple vehicle appliances up to 30 Amps each.
- Interlocks and timers shall be programmable without requiring additional hardware.
- System shall be programmable at the fleet service location without requiring delivery to a dealer service location.
- The Control System shall include the following principal components, described further in the following sections.
  1. Switch Panel(s)
  2. Power Distribution Module(s)
  3. Control Program
  4. Service module
  5. Interconnecting harness system

### **Article II. SWITCH PANEL REQUIREMENTS**

- The Switch Panel shall contain switch functions and non-switch functions required by the user.
- The Switch Panel should be manufactured to fit as specified – in-dash, overhead, under-dash or other user specified positioning.
- The option for mounting switches vertically or horizontally shall be available.
- The option for defining switches as either latching or momentary shall be available.
- The option for additional non-switch devices shall be available, including indicators, hour meters, buzzers, etc.
- Each switch or non-switch device position shall be labeled with the exact wording requested by the end user on a rear-installed, flush-mounted legend. Legends which are affixed to the panel by any adhesive are not acceptable. The backlit legend plate shall be replaceable to facilitate changing of a switch designation. Legend lighting shall be programmable to be OFF, DIM, BRIGHT, or FLASHING. Red, Amber or Green lighting shall be available.
- The option for inserting the switch legends into the body of the switch shall be available.
- The Switch Panel shall connect to a Power Distribution Module either directly through a multi-wire harness or through a Communications Module and 4-wire harness.

### **Article III. POWER DISTRIBUTION MODULES**

- The system shall include one or more microprocessor-controlled Power Distribution Modules (PDMs).
- At least one Power Distribution will have a terminal strip to connect to the +12V Battery Voltage and the Appliances and will route the Battery Voltage to Appliances when switched according to the control program.
- 20 Amp and 30 Amp outputs shall be available.
- If multiple Power Distribution Modules are used, they shall be interconnected via 4-wire communications cables.

### **Article IV. 3. CONTROL PROGRAM**

- All Power Distribution Module Outputs shall be defined as a logical function of the system inputs, regardless of how the inputs are obtained. The relationship between Outputs and Inputs shall be captured in the Control Program which shall be embedded in the Power Distribution Modules.
- The Control Program will be pre-defined based on the system application as specified by the end user. The Control Program shall be downloadable from a computer to the Service Module.
- The Control Program shall be downloadable from the optional Service Module to any of the system Power Distribution Modules. A computer shall not be required to load the Control Program into the Power Distribution Modules.
- When in operation, all system Outputs shall be updated by the system based on the Inputs, according to the Control Program, at least every 100 milliseconds.

### **Article V. 4. SERVICE MODULE**

- The Service Module shall be available for programming, service, troubleshooting, and maintenance functions and shall be compatible with all Power Distribution Modules.
- The Service Module shall receive the Control Program parameters from the computer through the USB interface.
- The Service Module shall be capable of downloading the stored Control Program to the Control Module without a computer.

### **Article VI. 5. INTERCONNECTING HARNESS**

- The system shall include one or more Interconnecting Harnesses that connect the Switch Panel(s) and the Power Distribution Modules.
- The Interconnecting Harness shall be less than 0.5 inches in diameter and shall have a bending radius of less than 1 inch.
- The Interconnecting Harness shall have a polarized connector for connection to the Module and Fast-On connectors for connection to the components of the switch panel.