

## Vehicle controls and sensors



# For agriculture and construction applications

Because agriculture and construction vehicles demand durable and rugged products, Eaton offers a wide range of vehicle controls and sensor products that are reliable in the harshest environments and meet the needs of almost any application.

### Sealing

The severe environments of agriculture and construction require versatile and dependable switch enclosures and connector designs to protect electrical conductors against harmful dust and moisture both inside and outside the cab. Eaton's solutions include:

- Sealed Vehicle Rocker (SVR)
- Euro SR
- E506P+ mechanical limit switches
- E57 Premium Plus sensors

### Flexibility

Agriculture and construction vehicles demand various termination options, and actuator features. Eaton offers industry standard terminals to customizable harnesses and sealed connectors for ease of installation and added protection.

In addition, to offer a complete line of total flexible solutions a broad array of industry standard graphics, customizable graphics, a wide variety of circuit capabilities and extensive lighting functions, as well as numerous actuator styles with various color options are all available to create a unique ergonomic operator friendly panel. Eaton's solutions include:

- SVR
- Electronic multiplex switch module (eSM)
- New generation rockers (NGR)
- Euro SR
- Full-size Euro

- Full line of connectivity products
- Industry-standard tubular and NEMA®-style sensor products
- Inductive proximity sensors with auto-configure outputs

### Innovation

Did you know that the harness is one of the most complex and costly assemblies in a vehicle? Eaton's multiplexing solution eases configuration, decreases costly harness wires and the number of connection points by using digital communications, thus reducing the weight of the vehicle, the complexity of assembly, and simplifying debugging. Less wiring means more space in the cab, as well as increased cost savings for installation.

With the increased demand of multiplexing, there is an increased need for low current electromechanical switches that communicate to vehicle body controllers. Eaton offers efficient electromechanical switches complementary in style to the multiplex switch module designs.

- eSM
- Electronic vehicle display (eVu)
- SVR
- AccuProx® analog inductive sensor
- iProx sensing technology

### Reliability and durability



In harsh environments, it's of the utmost necessity for controls and sensors to be reliable and withstand the elements.

Thus, Eaton's offerings are made to maximize machine uptime, increasing productivity and reducing warranty costs, while surviving the harshest applications in any operating environment on-board a vehicle. In addition, sensors are designed with long operating ranges to increase the survivability of the product.

- eSM
- SVR
- NGR
- Mechanical limit switches and inductive proximity sensors
- Inductive and optical sensors



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| Product Name   | Product Application   |
|--|---|
| <b>Sealed Vehicle Rockers (SVR)</b><br>             | Sealed to IP68 above and below the panel with optional sealed harness or connector  |
|  | Complementary in style to the above panel eSM design  |
|  | Accessories include indicators, gang mounting systems and palm guards   |
|  | Ten available terminals with actuator styles including above and below panel rockers and a paddle design  |
|  | Mechanical and electrical life of 250,000 operations for low current applications as low as 2 mA with an operating temperature range of -40°F to 185°F (-40°C to 85°C)  |
| <b>Euro SR</b><br>                                  | Sleek, compact European switch style with up to six available terminals   |
|  | Customizable frame and rocker colors, or choose from standard white, black or red actuator options  |
|  | Actuators include decorative pad-printed rockers and snap-in lens rockers with optional palm guard protection feature   |
|  | Accessories include customizable harnesses, standard connectors, dead back covers, panel plugs and external straps  |
|  | Easy snap-in mounting design with optional seal prevents moisture and dust resistance rated to IP67 (above panel only)  |
| <b>Full-Size Euro</b><br>                           | Durable full-size European switch style with up to six available terminals  |
|  | Customizable frame and rocker colors, or choose from standard white, black, red or grey frame and rocker options  |
|  | Easy snap-in mounting design with seal option sealed to IP54 (above panel only)   |
|  | Accessories include customizable harnesses, standard connectors, matching indicators, gang mounting systems, dead back covers, panel plugs and external straps  |
|  | Actuators include decorative pad-printed rockers and snap-in lens rockers   |
| <b>Electronic Multiplex Switch Module (eSM)</b><br> | Available in above or below panel rocker styles with accessories including matching indicator caps and dummy plugs  |
|  | Modules are J1939 standard with a master module and up to seven expansion modules per CANbus Node   |
|  | Can be reprogrammed in the field  |
|  | Requires only one panel cutout instead of three, saving panel space and installation time   |
|  | Top, center and bottom LED lighting with software that offers unlimited circuit and lighting flexibility via J1939 CANbus communication   |
| <b>E506P+</b><br>                                   | Mechanical and electrical life of 200,000 operations minimum  |
|  | Fully encapsulated, rated to survive long-term submergence in water and resistance to chemicals with Viton® gasket seals  |
| <b>E57 Premium Plus Sensor Family</b><br>         | Fully sealed stainless-steel enclosure with high electrical noise immunity and a short-body enclosure option for space-restricted applications  |
| <b>New Generation Rockers (NGR)</b><br>           | Versatile electromechanical switch with up to 12 terminals available complementary to eSM below panel design with options available for low current switching   |
|  | Offers inventory savings and field assembly flexibility   |
|  | LED and incandescent bulb lighting available, with replaceable bulbs  |
|  | Mechanical life of 250,000 operations and an electrical life of 200,000 operations with an operating temperature range of -40°F to 185°F (-40°C to 85°C)  |
|  | Standard sealing rated to IP42; Optional added protective seal rates switch to IP67 (above panel only)  |
| <b>Electronic Vehicle Display (eVu)</b><br>       | Available accessories include matching indicators, gang mounting systems, palm guard frames, panel plugs, and connectors  |
|  | Dashpanel display that simplifies viewing, selecting, inputting of equipment/status, such as temperature, pressure, speed, distance and capacity  |
|  | Standard internal warning alert buzzer, backlit legend display, sunlight-readable LCD characters  |
| <b>AccuProx</b><br>                               | Designed to meet SAE-1455   |
|  | Analog inductive sensor has a unique design that ensures absolute linearity from one end of the sensing band to the other   |
| <b>iProx</b><br>                                  | Available in a wide variety of industry-standard product enclosures, including tubular, cube style, and long-range pancake housings that allow a controls engineer to program logic directly into the sensor itself |
|  | Can be programmed as a speed sensor   |
|  | Can be programmed to ignore metal objects in the background that would normally interfere with the proper operation of an inductive sensor  |

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