

E31 Keypad eSM multiplexed switch module

Total flexible solutions for severe environments

Because your vehicle is continuously exposed to nature's elements, we offer the latest in Eaton's multiplexed line of switch product, the E31 Keypad eSM. Eaton's E31 Keypad eSM multiplex switch module offers a flexible and sealed solution for high-density switch requirements in severe environments. The keypad can be configured with any graphic/switch, as well as with customer-defined illumination. For customers requiring more than one module, expansion modules can be used with no requirement for additional CAN nodes. For additional product flexibility and differentiated operator control, the E31 Keypad eSM is designed to communicate with E32 rocker expansion modules.

Advantages of multiplexed modules

- Reduced assembly labor due to ease of installation, allowing for mounting and connection of eight switches at one time as opposed to individually
- Reduced wire harness complexity; uses one harness to a controller, reducing wiring, connection point, and controller requirements
- Reduced harness size offers an overall reduction in weight, improving operational efficiency of the equipment
- Increase in life-cycle over traditional electromechanical switches
- Front, rear, and panel sealing for harsh environments

Key features and benefits

- Fully compliant with J1939/CAN 2.0B messaging
- IP68 degree of protection from front and rear of module
- Rocker and keypad expansion module capability
- Exceptional illumination characteristics
 - LED backlighting of icons
 - Four color daylight-visible indicators per switch
 - Message-controlled dimming and flash rates
- Large switch surface area and alignment ridges for ease of gloved hand use
- Exceptional tactile and audible feedback of switch actuation
- Electrical/mechanical life to over 800,000 cycles
- 9–32 Vdc operating voltage
- Immunity per SAE J1455/1113
 - Power disturbance
 - Radiated immunity
 - Radiated emissions

Common applications

Great for specialty vehicle, construction, and agricultural equipment markets. The eSM product is especially suitable for severe environmental applications and where there is a desire to move to a multiplexed solution to simplify wiring and control requirements. Typical applications are:

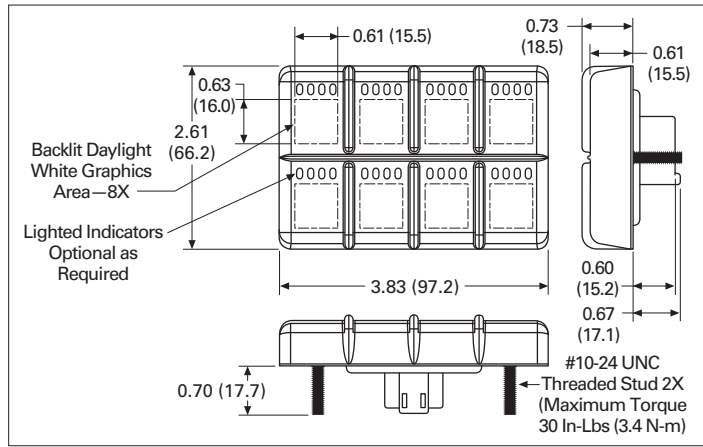
- Tractors
- Wheel loaders
- Refuse vehicles
- Concrete mixers
- Street sweepers
- Mining equipment
- Emergency vehicles
- Transit buses



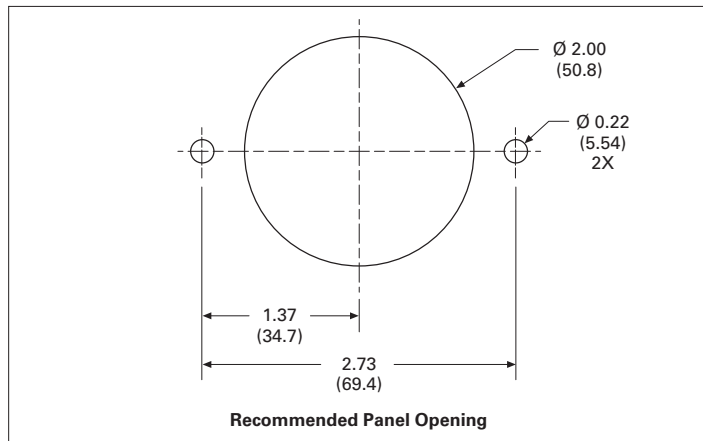
Powering Business Worldwide



Dimensional information



Mounting dimensions



Master module wiring harness

The interconnection between the master module and the controller uses a minimum four-wire harness with an additional two pins associated to expansion module interconnection. Wire sizes of 16–20 AWG can be accommodated via the Deutsch connector shown in the mating connector information.

PIN	Function
1	Vbat
2	Common
3	CAN (+)
4	CAN (-)
5	Common
6	LIN

Message structure

Each CAN message contains 8 bytes of data. The first data byte is used to define the type of data carried in bytes 2 through 8. This difference compared to common J1939 message structure allows a single J1939 PGN address to support all of the data needed for switch status, LED status, system status, wake ON change, dimmer level, and all other data used by a master.

Mating connector information

Deutsch DT Series connector

6-pin connector: DT06-6S

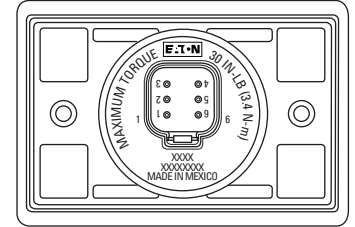
- E008 (Gray)
- EP11 (Black)

6-pin wedge lock: W6S

Female terminal: 0462-201-16141 (16-18-20 AWG)

Sealing plug: 11407

Crimper: HDT-48-00



E32 rocker expansion modules

The Keypad eSM master module is capable of supporting Eaton's E32 product line of rocker eSMs. The E32 product line is an above-panel-style rocker switch module that contains any combination of rocker or indicator functionality with no additional CAN node requirement to the system. Similar to the keypad, the rocker module offers icon graphic illumination with up to four center indicator bar LEDs for status or mode. This product is also fully functional to support dimming and flashing capabilities through software command.



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