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Product Description

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 additional switches, 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.

Application Description

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:

Target Market Segments:

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

Features and Benefits

Key Features

- 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 1,000,000 cycles
- 9–32 Vdc operating voltage
- Immunity per SAE J1455/1113
 - Power disturbance
 - Radiated immunity
 - Radiated emissions

Advantages

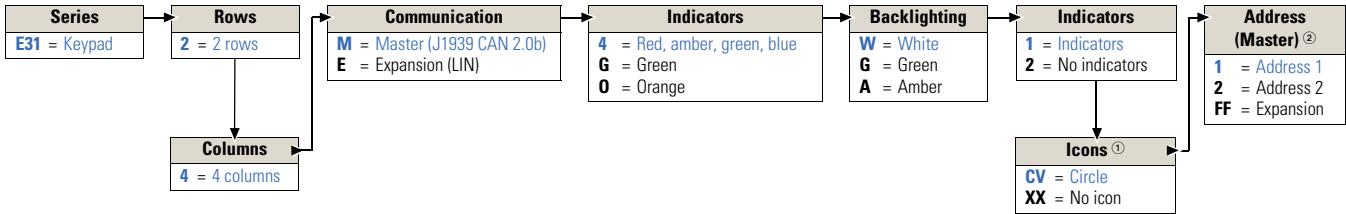
- Reduced assembly labor due to ease of installation, allowing for mounting and connection of eight switches at one time as opposed to individually
- Reduced wire harness complexity; uses one harness to a controller, reducing wiring, connection point, and controller requirements
- Reduced harness size 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

Catalog Number Selection

How To Order—E31 eSM—Keypad Multiplexed Switch Module

To determine complete catalog number, start with the appropriate control type and add the appropriate code letters and/or numbers.

Example: E31 2 4 M 4 W 1 CV 1



Product Selection

Master

E3124M4W1CV1



E31 Keypad eSM Master Module, 2X4

Basic Part	Indicators Colors	Backlighting	Icon Graphic	Address	Catalog Number
E3124M	Red, amber, green, blue	White	Circle	1	E3124M4W1CV1
				2	E3124M4W1CV2
			None	1	E3124M4W1XX1
	Green	Green	Circle	1	E3124MGG1CV1
				2	E3124MGG1CV2
			None	1	E3124MGG1XX1
Orange	Amber	Circle	1	E3124MOA1CV1	
			2	E3124MOA1CV2	
		None	1	E3124MOA1XX1	
			2	E3124MOA1XX2	

Expansion

E3124EGG1XXFF



E31 Keypad eSM Expansion Module, 2X4

Basic Part	Indicators Colors	Backlighting	Icon Graphic	Address	Catalog Number
E3124E	Red, amber, green, blue	White	Circle	FF	E3124E4W1CVFF
			None		E3124E4W1XXFF
	Green	Green	Circle	FF	E3124EGG1CVFF
			None		E3124EGG1XXFF
	Orange	Amber	Circle	FF	E3124EOA1CVFF
			None		E3124EOA1XXFF

Notes

- ① Contact Eaton sales for custom graphics.
- ② For use of multiple masters on 1-system. (Address 3-8 available as special order.)

Technical Data and Specifications

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 with the Deutsch connector shown in the mating connector information.

Master Wiring Harness

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 and expansion.

Expansion Wiring Harness

PIN	Function
1	Vbat
2	Common
3	LIN
4	LIN
5	Common
6	Vbat

Mating Connector Information

Deutsch DT Series connector

6-pin connector: DT06-6S

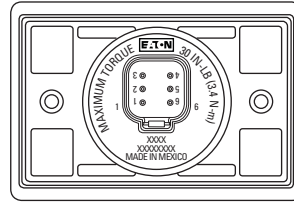
- EP11 (Black–Master)
- E008 (Gray–Expansion)

6-pin wedge lock: W6S

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

Hole plug: 0413-217-1605

Crimper: HDT-48-00



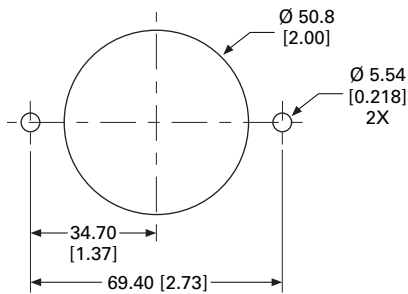
E32 and E33 Rocker Expansion Modules

The Keypad eSM master module is capable of supporting Eaton’s E32 and E33 product line of rocker eSMs. The E32 and E33 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.

Dimensions

Approximate Dimensions in mm [in]

Mounting Dimensions



E31 Keypad Master or Expansion Module

