

HEAVY DUTY 22.5 mm PUSHBUTTONS

EM22 Series



EM22 Operators

- Heavy-Duty Zinc Diecast Construction
- Metal Mounting Nut Doubles as Grounding and Anti-Rotation Device
- Chrome Plated Metal Bezel (Matte Black Not Available)

Features

- Reliability Nibs on Contact Blocks
- Plain or Notched Hole Mounting
- Direct Opening Action Normally Closed Contacts
- Fingerproof Terminals

The 22.5 mm industrial heavy-duty pushbutton line offers a wide array of functional, smartly styled illuminated and non-illuminated pushbuttons, selector switches, push pulls, alternate action and twist-to-release operators. The complete line also includes transformer, full voltage, resistor, LED or neon light units. The EM22 Metal Series is a rugged line of metal construction 22.5 mm (0.88") pushbutton devices. The devices are an extension of the industrially proven E22 Series heavy-duty double insulated 22.5 mm pushbutton family. EM22 Series operators are heavy-duty zinc die-cast construction plated with a corrosion-resistant chromate finish. Operators are complete with a very durable chrome plated metal bezel. Indicating light units in the EM22 Series feature smartly styled round lenses that enhance their appearance and brightness. All EM22 Series operators are compatible with existing E22 Series contact blocks, light units, accessories and enclosures. EM22 Series metal operators and indicating lights are grounded when mounted to metal panels through the toothed mounting nut. They are not grounded when mounted to plastic panels.



EM22E2



EM22J2N8



EM22T2

All models shown larger than actual size.



EM22P3

SPECIFICATIONS

Standards and Certifications:

CE EN 60947-5-1

UL 508: File No. E131568

CSA: File No. LR68551

Additional Certifications for Trigger Action E-Stop Devices:

UL Listed E-Stop Device:

File No. E217948

Machinery Safety Directive: EN418 Semiconductor Manufacturing

Equipment : SEMI S2-0200

DEMKO Third Party Certification:

Certificate No. 129648-01

and 129648-02

Ingress Protection: UL (NEMA)

Type 1, 2, 3, 3R, 4, 4X, 12

and 13 IEC IP65

Note: Ratings apply when mounted in enclosures with the same ratings.

MECHANICAL ENDURANCE RATINGS

Frequency of Operation:

Pushbuttons: 6000 operations per hr
Push-Pulls: 3000 operations per hr
Push-Push: 1800 cycles per hr
Selector Switches: 3000 operations per hr
Trigger-Action E-Stop: 360 cycles per hr
Twist-to-Release: 1200 cycles per hr

MECHANICAL LIFE

Contact Blocks: 3M operations
Pushbuttons: 5M operations
Push-Pulls: 300,000 operations
Push-Push: 300,000 operations
Selector Switches: 500,000 operations
Trigger-Action E-Stop: 100,000 operations
Twist-to-Release: 300,000 operations
Joysticks: 500,000 operations;
vibration IEC 68-2 (BS 2011)
Vibration: 5 g/0.7 mm peak to peak,
10 sweeps, 10 to 500 Hz
Shock: 30 g, 18 ms
Bump: 25 g, 6 ms for 1000 cycle

ENVIRONMENTAL CONDITIONS

Operating Temperature: -20 to 60°C (-4 to 140°F)
Storage Temperature: -40 to 80°C (-40 to 176°F)
Altitude: Up to 2000 m (6562')
Pollution Degree (IEC 947-1): 3
Humidity: Maximum 95% RH @ 60°C (140°F)

CONTACT BLOCK TERMINAL CLAMPS

Clamp Type: Self-lifting
Screw Type: Plus/minus, captive
Wire Range: 18 to 12 AWG (0.75 to 4.0 mm²)
Fingerproof Protection: IP2X
Tightening Torque: 7 lb in (0.8 Nm)

ELECTRICAL RATINGS

Meet or exceed NEMA contact rating designations A600 and Q600

A600: Q600 per UL 508

AC15: DC13 per IEC 60947-5-1

Logic Level Contact Blocks: UL A600,
Q600 and IEC AC15, DC13 rated and also
have a minimum rating of 1 mA @ 5 Vdc

Impulse Withstand Voltage (Uimp): 4 kV

Short Circuit Coordination to IEC/EN 60947-5-1:

Rated Conditional Short Circuit Current: 1 kA
Fuse Type: GE power controls TIA 10, red spot type gG,
10 A, 660 Vac, 460 Vdc, BS88-2, IEC 60269-2-1

ELECTRICAL RATINGS FOR CONTACT BLOCKS

| Description | A600 Vac | | | | Q600 Vdc | | | |
|--|----------|-----|-----|-----|----------|------|-----|-----|
| | 120 | 240 | 480 | 600 | 125 | 250 | 440 | 600 |
| Make and emergency interrupting capacity (A) | 60 | 30 | 15 | 12 | 0.55 | 0.27 | 0.1 | 0.1 |
| Normal load break (A) | 6 | 3 | 1.5 | 1.2 | 0.55 | 0.27 | 0.1 | 0.1 |
| Thermal current (A) | 10 | 10 | 10 | 10 | 2.5 | 2.5 | 2.5 | 2.5 |

¹Ratings do not apply to rotary cam switches.

ELECTRICAL LIFE

AC15 Durability:

120V: 6 A – 1 x 106 operations

DC13 Durability:

24V: 4 A – 0.15 x 106 operations

660V: 0.1 A – 0.5 x 106 operations

MATERIAL

Housing, Bezel, Mounting Rings: Glass filled nylon

Metal Bezels: Chrome plated brass

Internal Seal: Nitrile rubber

Panel Gasket: Nitrile rubber

Illuminated Lenses: Polycarbonate

Buttons: Polyester or polycarbonate

Contacts: Silver

Terminals: Brass

TERMINAL MARKINGS

All rear of panel devices are marked with the circuit configuration per CENELLEC 500013 standards.

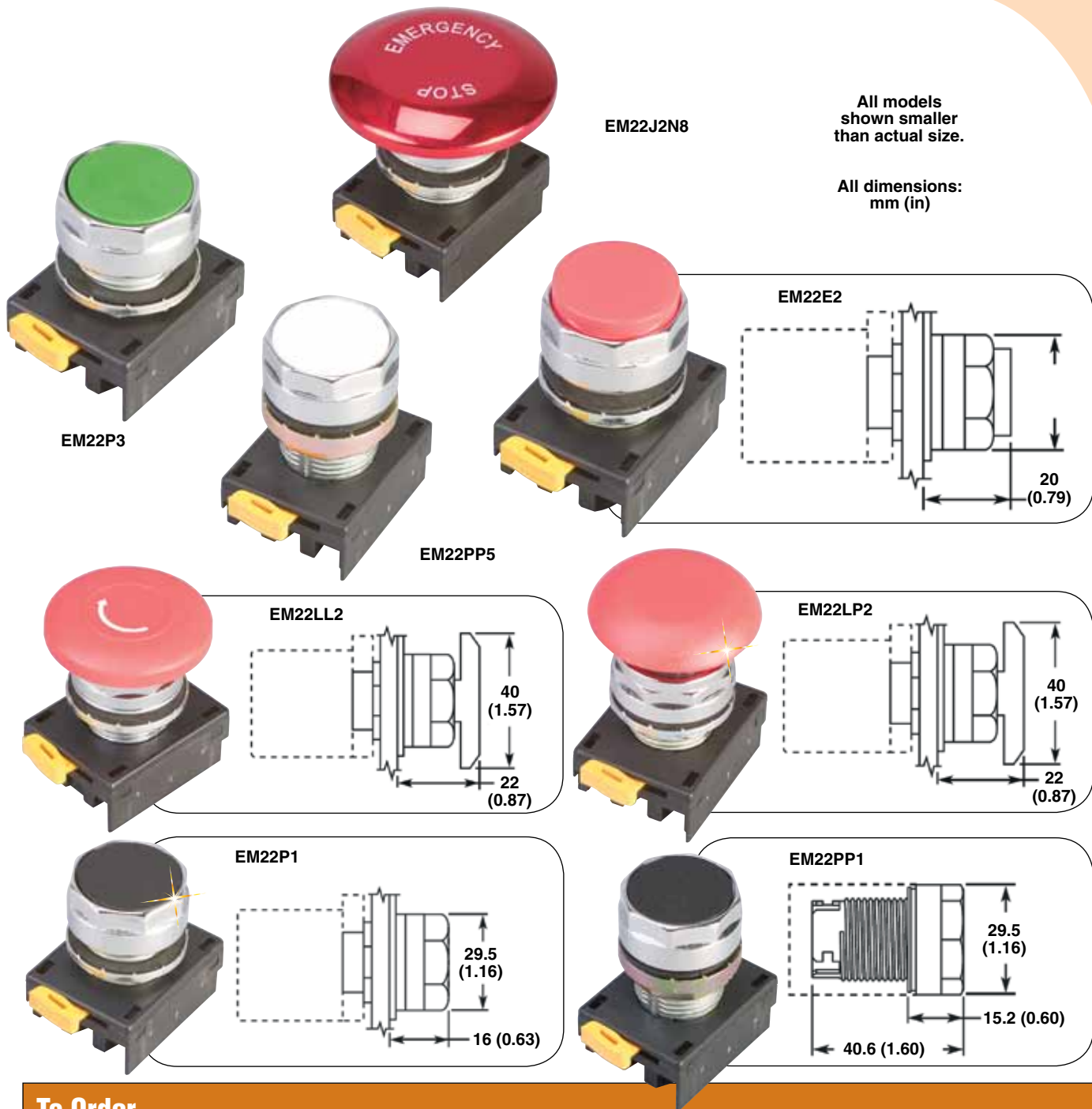
CONTACT BLOCKS

| Circuit Configuration | Description | Plunger Color |
|-----------------------|--------------------|---------------|
| | 1 NC | Red |
| | 1 NO | Green |
| | 1 NO-1 NC | White |
| | 2 NO | Green |
| | 1 NO Early Make | Black |
| | 1 NC Late Break | Gray |

LIGHTED UNITS

| Circuit Configuration | Description |
|-----------------------|--------------|
| | Full Voltage |
| | Resistor |
| | Transformer |

- E22CB1, E22CB11, E22CB1E, E22B1, and E22B11 contact blocks are marked with Direct Opening Action (DOA) symbol per IEC 60947-5-1, Annex K and NEMA ICS 5, Part 6. For mechanical operating parameters.
- E22CB1, E22CB11 and E22CB1E contact blocks will be marked as suitable for isolation per IEC 60947-5-1.



To Order

MODEL NO.

DESCRIPTION

22 mm METAL

PUSHBUTTONS OPERATORS ONLY

| | |
|-----------------|---|
| EM22E2 | Red extended pushbutton operator, chrome bezel |
| EM22J2N8 | Red (alum) 50 mm MRH operator engraved EMERGENCY STOP |
| EM22LL2 | Red 40 mm MRH twist-to-release operator |
| EM22LP2 | Red 40 mm MRH push-pull (maint) operator |
| EM22P1 | Black flush pushbutton operator, chrome bezel |
| EM22P3 | Green flush pushbutton operator, chrome bezel |
| EM22PP1 | Black flush push-push (alternate action) pushbutton |
| EM22PP5 | White flush push-push (alternate action) pushbutton |

Comes with instruction sheet

Ordering Example: EM22E2, red extended pushbutton operator.



EM22T0



EM22T2

All models
shown smaller
than actual size.



EM22T3

To Order

| MODEL NO. | DESCRIPTION |
|---|--|
| 22 mm METAL | |
| E22 INDICATING LIGHT AND ILLUMINATED PUSHBUTTON OPERATORS | |
| EM22T0 | Clear Pres-Test or illuminated PB operator, chrome bezel |
| EM22T2 | Red Pres-Test or illuminated PB operator, chrome bezel |
| EM22T3 | Green Pres-Test or illuminated PB operator, chrome bezel |

Comes with instruction sheet

Ordering Example: EM22T0, clear pres-test or illuminated pushbutton operator.

All dimensions: mm (in)

EM22V561



EM22VE61



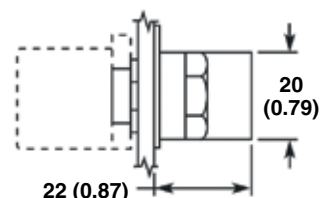
EM22VM61



EM22X661



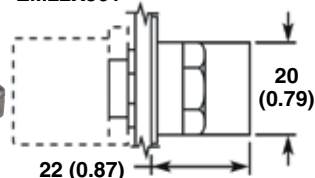
EM22XG61



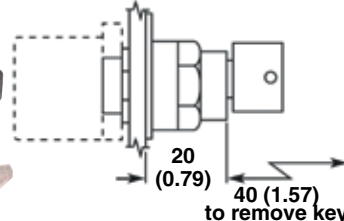
Dimensions: mm (in)

All models shown
smaller than actual size.

EM22X561



EM22KF5



EM22XM61



To Order

| MODEL NO. | DESCRIPTION |
|--------------------------------------|--|
| E22 SELECTOR SWITCHES OPERATORS ONLY | |
| EM22V561 | 2-position maintained selector switch, lever |
| EM22VE61 | 2-position momentary selector switch, lever |
| EM22VH61 | 3-position maintained selector switch, lever |
| EM22VM61 | 3-position momentary selector switch, lever |
| EM22X561 | 2-position maintained selector switch, knob |
| EM22X661 | 2-position momentary selector switch, knob |
| EM22XG61 | 3-position maintained selector switch, knob, 60° |
| EM22XM61 | 3-position momentary selector switch, knob |
| EM22KF5 | 2-position maintained selector switch, key, 45° |
| EM22KH7 | 3-position maintained selector switch, key, 45° |

Comes with instruction sheet

Ordering Example: EM22V561, lever 2 position switch.

Build Your Own System



EM22J2N8

+



E22NS13

+



E22B20

Note: To order complete system add a contact block and legend plate to operator.



EM22H0



EM22H2



EM22H3



EM22H5



EM22H9

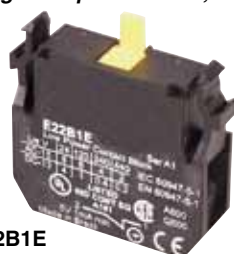
All models shown smaller than actual size.

To Order

| MODEL NO. | DESCRIPTION |
|--|-----------------|
| E22 INDICATING LIGHT AND ILLUMINATED PUSHBUTTON OPERATORS | |
| EM22H0 | Clear lens unit |
| EM22H2 | Red lens unit |
| EM22H3 | Green lens unit |
| EM22H5 | White lens unit |
| EM22H9 | Amber lens unit |

Comes with instruction sheet.

Ordering Example: EM22H2, red lens unit.



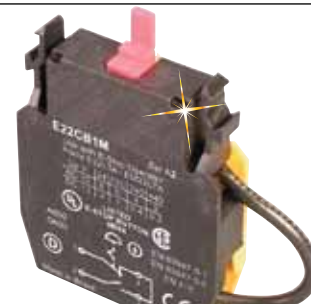
E22B1E



E22B2E



E22B20



E22CB1M

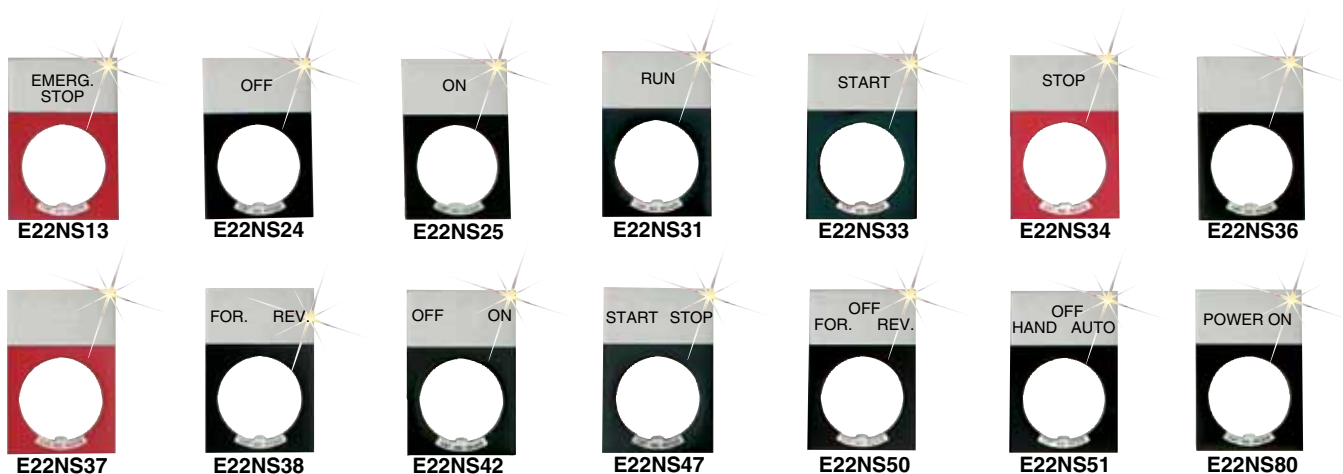
All models shown smaller than actual size.

To Order

| MODEL NO. | DESCRIPTION |
|---------------------------------|-------------------------------------|
| 22 mm HEAVY DUTY PLASTIC | |
| E22 CONTACT BLOCKS | |
| E22B20 | Contact Block, 2 NO |
| E22B1E | Contact Block, 1 NC, Logic |
| E22B2E | Contact Block, 1 NO, Logic |
| E22CB1M | Self monitoring contact block, 1 NC |

Comes with instruction sheet

Ordering Example: E22B20, 2 normally open contacts.



All models shown
smaller than actual size.

| To Order | |
|--------------------------|----------------|
| MODEL NO. | DESCRIPTION |
| E22 LEGEND PLATES | |
| E22NS13 | Emergency Stop |
| E22NS24 | Off |
| E22NS25 | On |
| E22NS31 | Run |
| E22NS33 | Start |
| E22NS34 | Stop |
| E22NS36 | Blank, Black |
| E22NS37 | Blank, Red |
| E22NS38 | For Rev |
| E22NS42 | Off On |
| E22NS47 | Start Stop |
| E22NS50 | F - O - R |
| E22NS51 | H - O - A |
| E22NS80 | Power On |

Comes with instruction sheet

Ordering Example: **E22NS13**, emergency stop legend plate.



E22VA5



E22MGTA

Both models shown
smaller than actual size.

| To Order | |
|------------------------------------|----------------------------|
| MODEL NO. | DESCRIPTION |
| E22 PUSHBUTTONS ACCESSORIES | |
| E22MGTA | Rectangular guard |
| E22VA5 | EMO round yellow nameplate |

Comes with instruction sheet

Ordering Example: **E22MGTA**, rectangular guard.