



Indicating lights

Complete assembly includes:

- Illuminated operator, including optically enhanced lens
- Incandescent or LED light units (Order legend plate separately)



Selector switches

Complete assembly includes:

- Selector operator
- Contact block(s) - one or two normally open or normally closed
- Black bezel (Order legend plate separately)



Pushbuttons

Complete assembly includes:

- Flush or extended momentary operators
- One normally open or normally closed contact
- Push-push models also available
- 120 VAC light (if illuminated) (Order legend plate separately)



40 and 50 mm mushroom pushbuttons

- Push-Pull trigger action
- Illuminated or non-illuminated



Double headed pushbutton

- On/Off control



Control station

- For Start/Stop applications



Illuminated pushbuttons

- Red, green or amber
- 120 VAC or 24 VAC/DC



Push-to-test indicating lights

- Red, green or amber



Tools and Accessories

- Legend plates
- Hole plugs
- Bulb tools
- Replacement bulbs

E22 Series Technical Specifications

Ingress Protection (IP) Rating	
(IP65, IP66 ratings to IEC 529) UL Listed (NEMA) Types 1, 2, 3, 3R, 4, 4X, 12, and 13 when mounted in an enclosure rated for those same applications. See pages 30-9 and 30-10 for descriptions.	
Electrical Specifications	
Electrical Rating	UL508; UL File E131568. CSA certified class 3211 03, LR 68551. NEMA ICS5-2000: A600, Q600 (refer to page 22-26). IEC 60947-5-1: AC15, DC13.
Maximum Frequency of Operation	
22 mm Pushbuttons	6,000 operations/hour IEC 60947-5-1: AC15, DC13.
Key and Lever Selector Switches	3,000 operations/hour
Twist-to-Release Devices	1,200 operations/hour
Push-Pull Operators	3,000 operations/hour
Mechanical Life	
Pushbutton	5 million operations
Selector Switches	500,000 operations
Push-Pull and Twist-to-Release	300,000 operations
Contact Block	3 million operations
Environmental Specifications	
Operating Temperature	Maximum 60° C at 95% RH, -20° to 60° C (-14° to 140° F), altitude 2000 meters
Storage Temperature	Maximum 60° C at 95% RH, -40° to 80° C (-40° to 176° F)
Vibration	
Vibration	5G/0.7mm peak-to-peak 10 sweeps, 10-500 Hz
Shock	18G, 18ms
Bump	25G, 6ms for 1,000 cycles
Construction	
Components	Materials
Housing, Bezel, Mounting Rings	Glass-filled nylon
Internal Seal	Nitrate rubber
Panel Gasket	Nitrate rubber
Illuminated Lenses	Polycarbonate
Buttons	Polyester or polycarbonate
Springs	Stainless steel
Contacts	Silver
Terminal Screws/Terminals	Brass
Panel Thickness - Inches (mm)	
Nominal	0.27 (6.8) ¹
Aluminum Legend Plates	0.05 (1.3)
Large Yellow Round Legend Plates	0.04 (1.0)
Minimum	0.04 (1.0)
¹ Installation of certain accessories will increase the total (overall) panel thickness by the amount shown. The total panel thickness with all accessories installed cannot exceed the maximum allowable nominal dimensions of 0.27 in. (6.8 mm).	
Wire Specifications	
Minimum/Maximum	18AWG (0.75mm ²) / 12AWG (2.5mm ²)
Tightening Torque	7lb./in.

Electrical life

- AC15 durability: 120V, 6A 1 X 10⁶ operations
- DC13 durability: 24V, 8A 0.15 X 10⁶ operations
- 660V, .1A 0.5 X 10⁶

Logic-level operation

5 VDC, 1 mA (minimum recommended)

Contacts feature a pointed surface called "Reliability Nib." The projection penetrates through any oxidation providing unmatched low-level operation without using exotic metals or sealed contacts.

Standards and approvals

- UL listed – UL 508 electrical/environmental; UL 486E terminal secureness, File E131568
- CSA Certified – CSA 22.2 #14
- NEMA ICS-1, ICS-2
- IEC 144, 337, 529, 947
- IP65 when mounted in enclosure
- Lloyds No. 4 and 5
- M.T.T.A.
- CE

IEC utilization categories & ratings

AC15

(Control of AC electromagnetic loads)

- 24 volts AC at 10 amps
- 130 volts AC at 6.5 amps

DC13

(Control of DC electromagnetic loads)

- 24 volts DC at 1.5 amps
- 110 volts DC at .5 amps

PLC Overview

DL05/06 PLC

DL105 PLC

DL205 PLC

DL305 PLC

DL405 PLC

Field I/O

Software

C-more HMIs

Other HMI

AC Drives

Motors

Steppers/Servos

Motor Controls

Proximity Sensors

Photo Sensors

Limit Switches

Encoders

Current Sensors

Pushbuttons/Lights

Process

Relays/Timers

Comm.

TB's & Wiring

Power

Circuit Protection

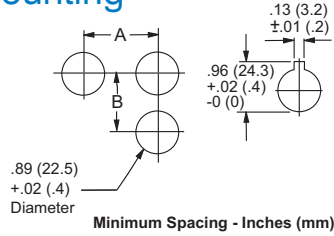
Enclosures

Appendix

Part Index

E22 Mounting / NEMA Aux Contact Ratings

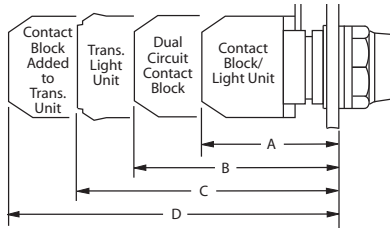
Mounting



Minimum Spacing — Inches (mm)		
Size/Type of Operator	Dimensions	
	A	B
All types up to 1.18 (30) dia. including knob and key operated selector switches — except those listed below	1.18 (30)	1.97 (50)
Three-way adapter		
1.97 (50) dia. operators	2.16 (55)	2.16 (55)
Large yellow round legend plate - 2.76 (70) Dia.	2.95 (75)	1.97 (50)

Back-of-panel extensions

Note: This view is to show dimensions only. Contact blocks are not stackable.



Approximate Dimensions — Inches (mm)			
A	B	C	D
Single circuit block — full voltage and resistor units	Dual circuit contact block	Transformer light unit	Transformer light unit and single circuit contact block
Pushbuttons (All Types and Push-Pull)			
2.0 (51)	2.6 (66)	2.91 (74)	3.7 (94)
Key and Knob Selector Switches			
2.2 (57)	2.83 (72)	3.15 (80)	3.9 (99)

Control Circuit Contact Electrical Ratings

Typical Wiring - See page 22-6
Note drawing

NEMA Mechanical Switching Ratings and Test Values for DC Control Circuit Contacts					
Contact Rating Designation	Thermal Continuous Test Current (A)	Maximum Make or Break DC Current (A)			Volt amperes
		125 Volts	250 Volts	301 to 600 Volts	
P300	5.0	1.1	0.55	---	138
P600	5.0	1.1	0.55	0.20	138
Q300	2.5	0.55	0.27	---	69
Q600	2.5	0.55	0.27	0.10	69
R300	1.0	0.22	0.11	---	28

This chart is provided as a guideline only, and the ratings and values are not guaranteed to be accurate. It is the users' responsibility to properly size their control circuit devices. The chart values are from NEMA Standard ICS 5-2000, Table 1-4-2.

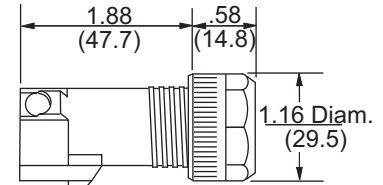
NEMA Mechanical Switching Ratings and Test Values for AC Control Circuit Contacts											
Contact Rating Designation	Thermal Continuous Test Current (A)	Maximum AC Current, 50/60Hz (A)								Volt amperes	
		120 Volts		240 Volts		480 Volts		600 Volts			
		Make	Break	Make	Break	Make	Break	Make	Break	Make	Break
A300	10	60	6.00	30	3.00	---	---	---	---	7200	720
A600	10	60	6.00	30	3.00	15	1.50	12	1.20	7200	720
B300	5	30	3.00	15	1.50	---	---	---	---	3600	360
B600	5	30	3.00	15	1.50	7.5	0.75	6	0.60	3600	360
C600	2.5	15	1.5	7.5	0.75	3.75	0.375	3.00	0.30	1800	180

This chart is provided as a guideline only, and the ratings and values are not guaranteed to be accurate. It is the users' responsibility to properly size their control circuit devices. The chart values are from NEMA Standard ICS 5-2000, Table 1-4-1.

E22 Monoblock Indicating Lights

Monoblock Indicating Lights		
24V AC/DC Full Voltage Incandescent		Price
Red	E22HV2X4	Monoblock indicating light, red optically enhanced lens, 24V full voltage incandescent <--->
Green	E22HV3X4	Monoblock indicating light, green optically enhanced lens, 24V full voltage incandescent <--->
Amber	E22HV9X4	Monoblock indicating light, amber optically enhanced lens, 24V full voltage incandescent <--->
120V AC Full Voltage Incandescent		
Red	E22HV2X8	Monoblock indicating light, red optically enhanced lens, 120V full voltage incandescent <--->
Green	E22HV3X8	Monoblock indicating light, green optically enhanced lens, 120V full voltage incandescent <--->
Amber	E22HV9X8	Monoblock indicating light, amber optically enhanced lens, 120V full voltage incandescent <--->
24V AC/DC Full Voltage LED*		
Red	E22HL2X4	Monoblock indicating light, red optically enhanced lens, 24V full voltage LED <--->
Green	E22HL3X4	Monoblock indicating light, green optically enhanced lens, 24V full voltage LED <--->
Amber	E22HL9X4	Monoblock indicating light, amber optically enhanced lens, 24V full voltage LED <--->
120V AC Full Voltage LED*		
Red	E22HL2X8	Monoblock indicating light, red optically enhanced lens, 120V full voltage LED <--->
Green	E22HL3X8	Monoblock indicating light, green optically enhanced lens, 120V full voltage LED <--->
Amber	E22HL9X8	Monoblock indicating light, amber optically enhanced lens, 120V full voltage LED <--->
120V AC Transformer Incandescent		
Red	E22H2X11	Monoblock Indicating light, red optically enhanced lens, 120V transformer incandescent <--->
Green	E22H3X11	Monoblock indicating light, green optically enhanced lens, 120V transformer incandescent <--->
Amber	E22H9X11	Monoblock indicating light, amber optically enhanced lens, 120V transformer incandescent <--->

See also specifications and mounting data at the beginning of this section.



Approximate dimensions in mm (in). See dimensions for "back-of-panel extensions" at the beginning of this section.

* Note: Cutler-Hammer 22mm LED indicators feature an LED cluster module. The LED clusters are permanently installed and are non-replaceable. See page 22-32 for replacement lamp information.