SURELOCKS

EXPANDING PCB RETAINERS

The SureLock is a multi-segment, extruded aluminum retaining device that secures printed circuit boards in place when mounted directly to the board and slid into a channel in the cold plate.

A simple turn of a screw enables the SureLock to expand and securely hold the card assembly in place. The design facilitates conduction cooling by conducting heat from a circuit card to a cold plate or the extruded side walls of an enclosure.

SURELOCKS

BENEFITS

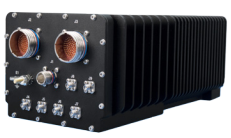
- Design flexibility without tooling costs
- Ideal solution for holding boards in place in mobile applications
- Multiple size options for all Small Form Factor enclosures
- Proven and tested solution for all environments
- Provides thermal solutions for conduction cooled systems
- Economical solution from small prototype needs to production quantities

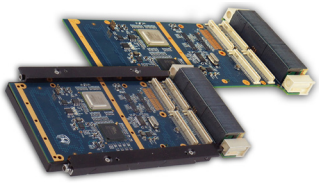
FEATURES

- Dimensions (nominal cross section)
  - 290 Series: 5.7mm x 5.7mm [0.225" x 0.225"]
  - 325 Series: 6.4mm x 6.6mm [0.251" x 0.260"]
  - 460 Series: 9.3mm x 9.5mm [0.365" x 0.375"]
- Uniform retention force across entire length protects cards under extreme shock and vibration
- Light weight design with superior thermal transfer
- Body and wedge alignment maintained for easy insertion
- Captive rear wedge
- Locking feature included on all SureLocks
- Options include choice of hex drive sizes, finishes and mounting hole sizes
- DFARS versions available on request

RELATED APPLICATIONS AND PRODUCTS

- In flight aerospace electronics (commercial and military)
- Mobile communication systems and networks
- Railway electronic systems (train controls)
- Electronic monitoring, control and guidance equipment
- Conduction cooled Small Form Factor Systems
- Police and fire networks





- Convection- and conduction-cooled ATR boxes
- Rugged rackmount enclosures
- Shock-isolated chassis and racks
- COTS, MIL compliant products
- Embedded computing boards, integration & testing

CLAMPING FORCE PERFORMANCE DATA AND THERMAL TESTING

Elma SureLock card retainers (length 4.8") were tested by applying a controlled torque to their locking screw and measuring the resulting clamping force using a specially designed test fixture.

The stated value is the result of averaged data taken over a large sample population of SureLocks being load-tested. Each SureLock was tested 4 times. All tests were performed at sea level.

MEASUREMENT RESULTS
retainer length 4.8" (122mm)

Elma Series	Torque	Average Measured Load		
		Yellow Alodine Finish	Black Anodize Finish	Nickel Finish
290	6in-lb	650lbs	550lbs	530lbs
325	6in-lb	550lbs	425lbs	425lbs
460	20in-lb	1000lbs	850lbs	700lbs

Note: Clamping force is highly dependent on the SureLock finish.

THERMAL RESISTANCE TESTS OF SURELOCK RETAINERS SET UP DETAILS

A conduction cooled 3U VPX board was used for thermal testing, representing a 90W load
Ambient temperature: 0 °C (32 °F)
Length of Surelock retainers: 4.8" (122 mm)
Using a test fixture, the thermal resistance of pairs of SureLock retainers was measured across three different models and two finish types.

DUAL 4.8" LENGTH RETAINERS - THERMAL RESISTANCE

290 Series, yellow alodine finish =
0.42°C/W at 4.8" (.21°C/W at 9.6")

290 Series, black anodize finish =
0.96°C/W at 4.8" (.48°C/W at 9.6")

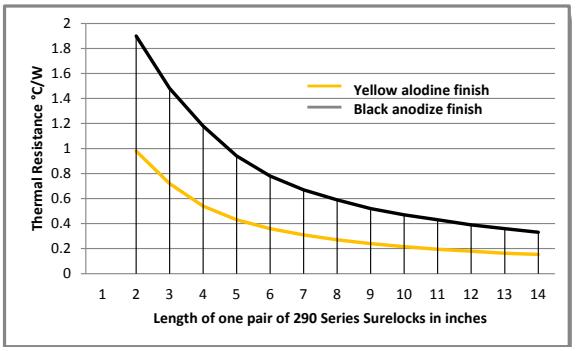
325 Series, yellow alodine finish =
0.40°C/W at 4.8" (.2°C/W at 9.6")

325 Series, black anodize finish =
0.72°C/W at 4.8" (.36°C/W at 9.6")

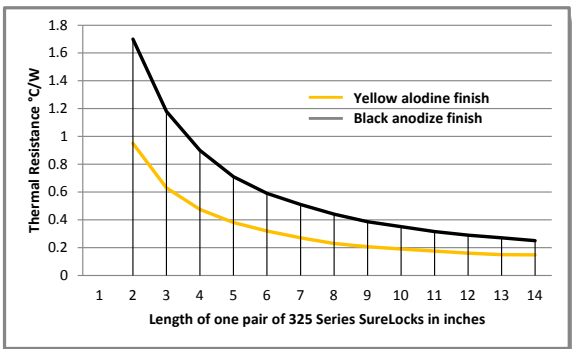
460 Series, yellow alodine finish =
0.38°C/W at 4.8" (.19°C/W at 9.6")

460 Series, black anodize finish =
0.70°C/W at 4.8" (.35°C/W at 9.6")

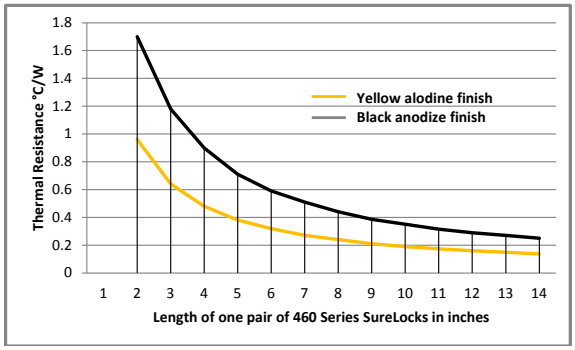
290 SERIES – THERMAL RESISTANCE



325 SERIES – THERMAL RESISTANCE

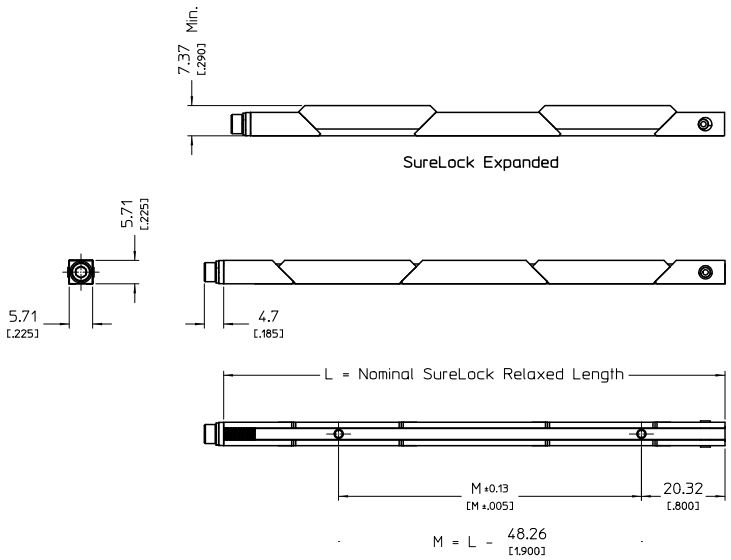


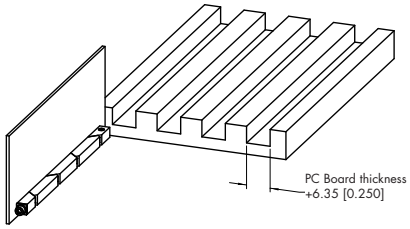
460 SERIES – THERMAL RESISTANCE



LINE DRAWINGS

› 290

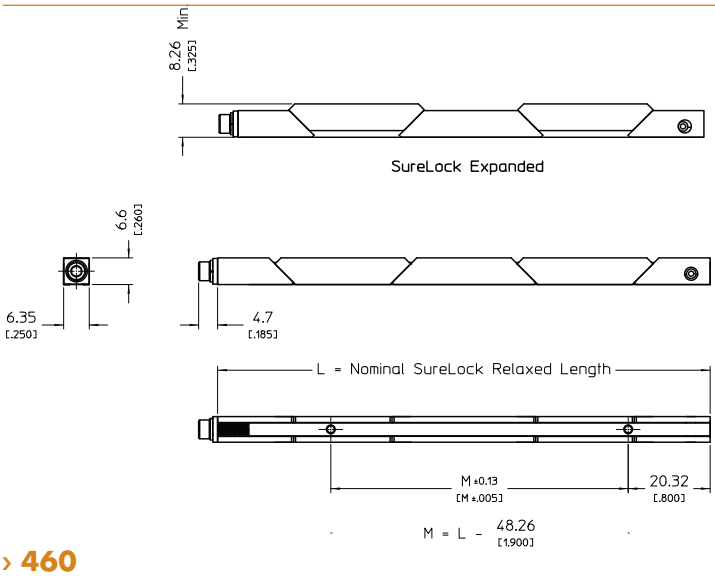


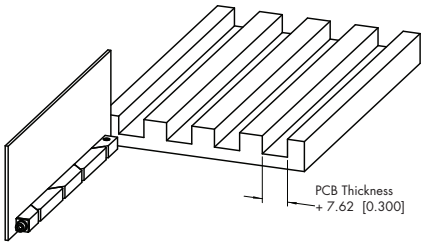


Recommended Drive Screw Torque:
0.85 Nm [7.5 in-lb]

SureLock Weight:
2.27g [0.080 oz.] per inch of Assembly Length (L)

› 325

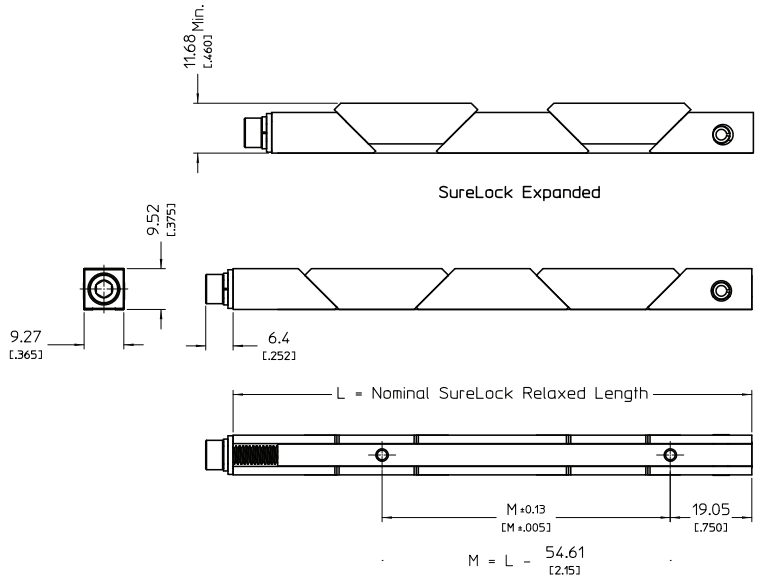


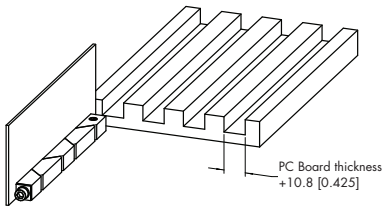


Recommended Drive Screw Torque:
0.85 Nm [7.5 in-lb]

SureLock Weight:
2.41g [0.085 oz] per inch of Assembly Length (L)

› 460





Recommended Drive Screw Torque:
2.6 Nm [23 in-lb]

SureLock Weight:
5.52 g [0.195 oz] per inch of Assembly Length

STANDARD PRODUCT ORDER INFORMATION

PART NUMBER	DESCRIPTION
290-Y0480T21LNNN	.225" square assembly, 4.8" long, yellow alodine finish, 2x 2-56 tapped holes
290-B0480T21LNNN	.225" square assembly, 4.8" long, black anodize finish, 2x 2-56 tapped holes
290-B0480T21LNKN	.225" square assembly, 4.8" long, black anodize finish, 2x 2-56 tapped holes, captive
290-B0480T21LVKN	.225" square assembly, 4.8" long, black anodize finish, 2x 2-56 tapped holes, captive, visual
290-B0480M24LNNN	.225" square assembly, 4.8" long, black anodize finish, 2x M2 tapped holes

PART NUMBER	DESCRIPTION
325-Y0480T21LNNN	.250" x .260" assembly, 4.8" long, yellow alodine, 2 x 2-56 tapped holes
325-B0480T21LNNN	.250" x .260" assembly, 4.8" long, black anodize finish, 2x 2-56 tapped holes
325-B0480T21LNKN	.250" x .260" assembly, 4.8" long, black anodize finish, 2x 2-56 tapped holes, captive
325-B0480T21LVKN	.250" x .260" assembly, 4.8" long, black anodize finish, 2x 2-56 tapped holes, captive, visual
325-B0480M22LNNN	.250" x .260" assembly, 4.8" long, black anodize finish, 2x M2.5 tapped holes
325-B0480M22LNKN	.250" x .260" assembly, 4.8" long, black anodize finish, 2x M2.5 tapped holes, captive
325-B0480M22LVKN	.250" x .260" assembly, 4.8" long, black anodize finish, 2x M2.5 tapped holes, captive, visual

PART NUMBER	DESCRIPTION
460-Y0480T26LNNN	.365" x .375" assembly, 4.8" long, yellow alodine, 2x 4-40 tapped holes
460-B0480M27LNNN	.365" x .375" assembly, 4.8" long, black anodize finish, 2x M3 tapped holes

- No setup charges for standard products
- Lead time is stock to 6 weeks for most standard configurations

PRODUCT CONFIGURATOR

SERIES		FINISH	LENGTH	DRIVE TYPE	MTG HOLES	HOLE STYLE	LOCKING	VISUAL INDICATOR / CAPTIVE HARDWARE	DFARS
290 325 460	-	_	_	_	_	_	_	_	_

FINISH

Y = Yellow Alodine film
R = RoHS compliant clear alodine film
B = Black Anodized
H = Black Hard Anodized (on request)
N = Electroless Nickel (on request)

NO. OF MOUNTING HOLES

2 = two holes (standard)
3 - 5 holes

VISUAL INDICATOR / CAPTIVE HARDWARE

NN = Not required
NK = Captive required
VK = Visual and Captive required

LENGTH (IN INCHES)

0280 = 2.8" long (standard)
0380 = 3.8" long (standard)
0480 = 4.8" long (standard),
used for 160mm boards
xxxx = xx.xx inches long, increments of 0.50" starting at 2.30" for the 290 and 325 and 2.8" for the 460

HOLE STYLE

1 = 2-56 tapped (standard)
2 = M2.5 tapped (standard)
3 = 0-80 tapped
4 = M2 tapped
5 = thru hole Ø 1.8mm (.071")
6 = 4-40 tapped (standard 460 series)
7 = M3 tapped (standard 460 series)

DFARS

D = DFARS compliant
N = Non DFARS

DRIVE TYPE

M = 2.5mm hex drive (M3) – 290 and 325 Series
T = 3/32" hex drive (4-40) – 290 and 325 Series
M = 3mm hex drive (M4) – 460 Series
T = 9/64" hex drive (8-32) – 460 Series

LOCKING

L = Included