

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.

BENEFITS

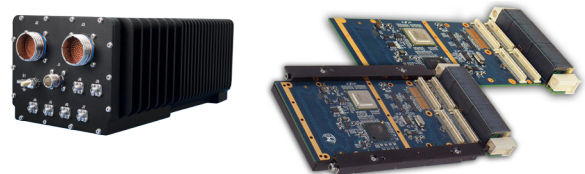
- › Design flexibility without tooling costs
- › Ideal solution for holding boards in place in mobile applications
- › Multiple size options for all Small Form Factor enclosures
- › Proven and tested solution for all environments
- › Provides thermal solutions for conduction cooled systems
- › Economical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

**SURELOCKS****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

ENCLOSURES & COMPONENTS SURELOCKS

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 =
 $0.42^{\circ}\text{C}/\text{W}$ at 4.8" ($.21^{\circ}\text{C}/\text{W}$ at 9.6")

290 Series, black anodize finish =
 $0.96^{\circ}\text{C}/\text{W}$ at 4.8" ($.48^{\circ}\text{C}/\text{W}$ at 9.6")

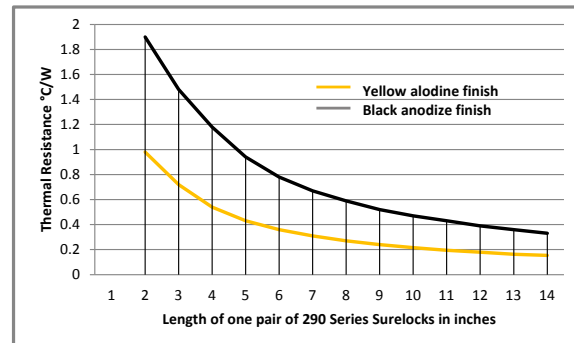
325 Series, yellow alodine finish =
 $0.40^{\circ}\text{C}/\text{W}$ at 4.8" ($.2^{\circ}\text{C}/\text{W}$ at 9.6")

325 Series, black anodize finish =
 $0.72^{\circ}\text{C}/\text{W}$ at 4.8" ($.36^{\circ}\text{C}/\text{W}$ at 9.6")

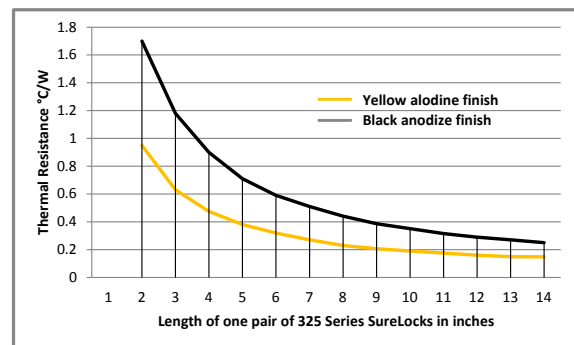
460 Series, yellow alodine finish =
 $0.38^{\circ}\text{C}/\text{W}$ at 4.8" ($.19^{\circ}\text{C}/\text{W}$ at 9.6")

460 Series, black anodize finish =
 $0.70^{\circ}\text{C}/\text{W}$ at 4.8" ($.35^{\circ}\text{C}/\text{W}$ at 9.6")

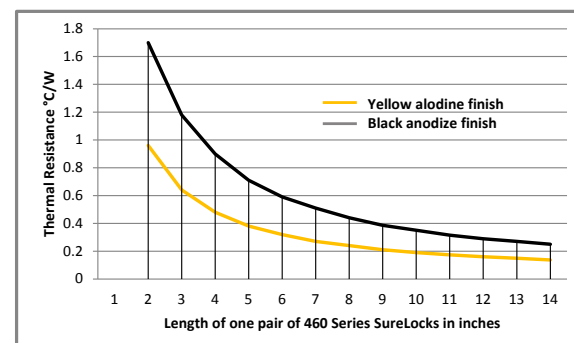
290 SERIES – THERMAL RESISTANCE



325 SERIES – THERMAL RESISTANCE

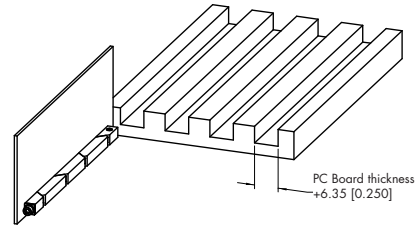
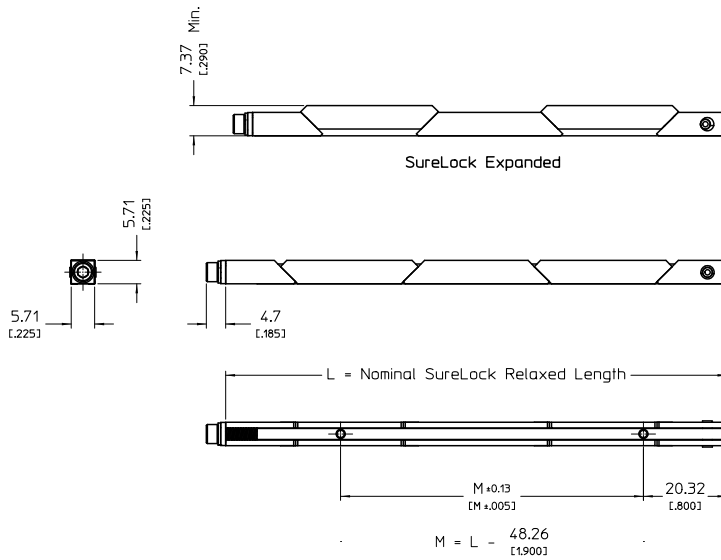


460 SERIES – THERMAL RESISTANCE



LINE DRAWINGS

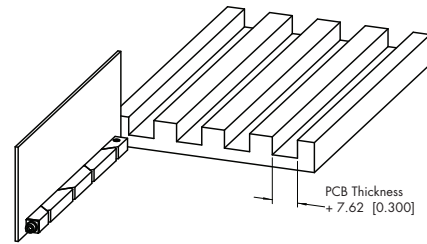
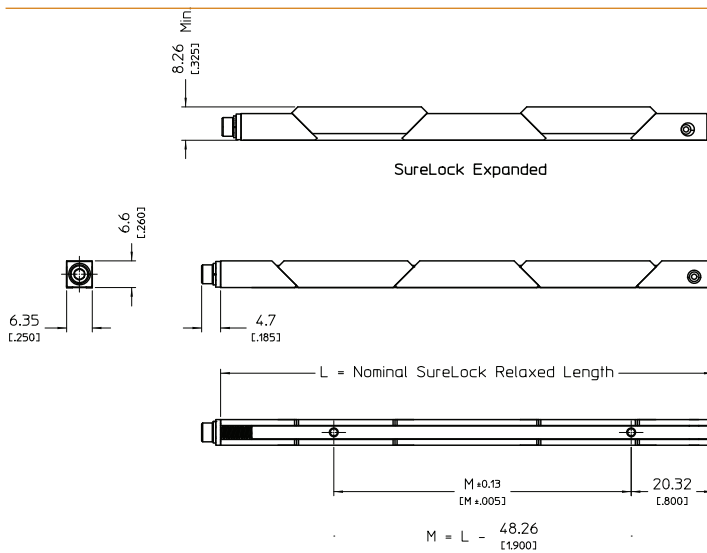
> 290



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

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

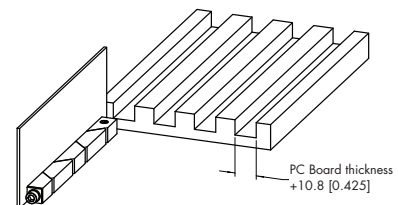
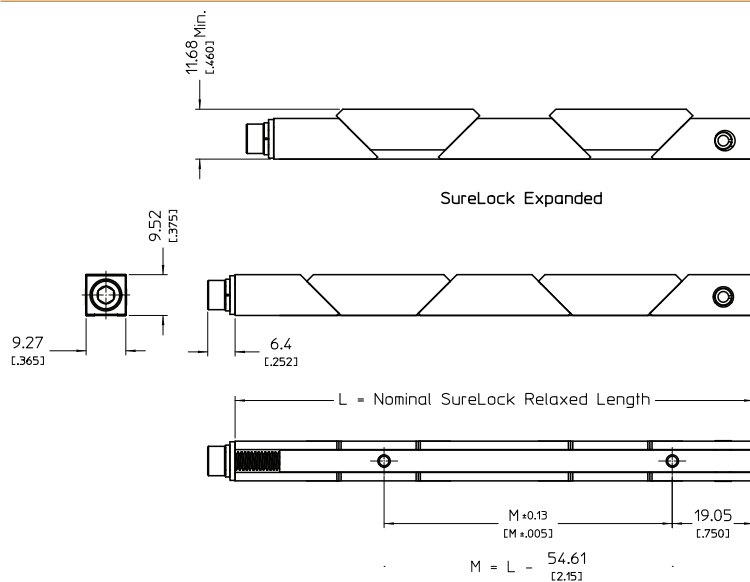
> 325



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-B0480T21LNKN	.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-B0480M24LNKN	.225" square assembly, 4.8" long, black anodize finish, 2x M2 tapped holes

PART NUMBER	DESCRIPTION
325-Y0480T21LNKN	.250" x .260" assembly, 4.8" long, yellow alodine, 2 x 2-56 tapped holes
325-B0480T21LNKN	.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-B0480M22LNKN	.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-Y0480T26LNKN	.365" x .375" assembly, 4.8" long, yellow alodine, 2x 4-40 tapped holes
460-B0480M27LNKN	.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