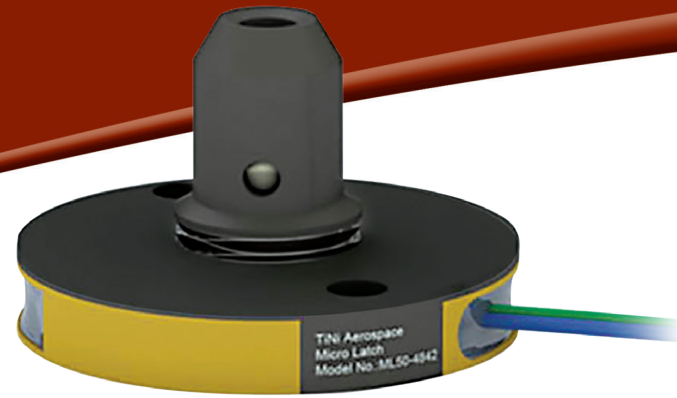


Mission Success

Ensign-Bickford Aerospace & Defense Company (EBAD) is dedicated to supporting our customers in the aerospace and defense industry through on-time delivery of innovative products that exceed expectations and assure mission success.



TiNi™ Microlatch

Developed in the mid 2010's for the "New Space" small satellite market, the EBAD™-TiNi™ Microlatch offers a simple and effective non-pyro field resettable separation system for low preload deployments. Utilizing shape memory alloy, the microlatch offers a reliable alternative solution to other small release solutions utilizing nichrome burn wires or other technologies.

With a 50lbF release load, this device is suitable for small solar array release, optical cover release, cube sat deployers and applications requiring a small device.

Principle of Operation

The EBAD™-TiNi™ Microlatch is a reliable fast operating device that utilizes a shape memory alloy "SMA" wire to release a latch to allow for the external ball locks to disengage and release the coupler.

In the fully reset mode, the internal circuit is closed. When sufficient power is applied, the current raises the temperature of the SMA wire and subsequently contracts at its transition temperature. This movement disengages a latch and opens the circuit.

With power disengaged, the device is simply reset by aligning the coupler and pressing it back on to the device.

Applications

Qualified in 2018, EBAD™-TiNi™ Microlatch offers a small and effective release for small solar array and instrument deployment, optical cover release and other space applications.

Key Features

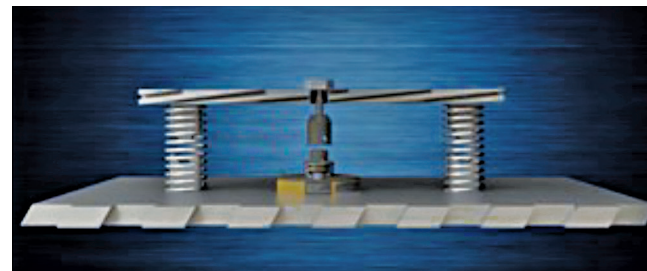
- Nonpyrotechnic
- Easy to field reset with no tooling
- Minimum 50 cycles
- Maximum reliability thru design simplicity

Construction

As a derivative of the EBAD™-TiNi™ products, the microlatch utilizes a shape memory alloy "SMA" wire as the trigger mechanism.

By disengaging the latch, the external ball locks fall into the coupler mount, allowing kick off springs to eject the coupler.

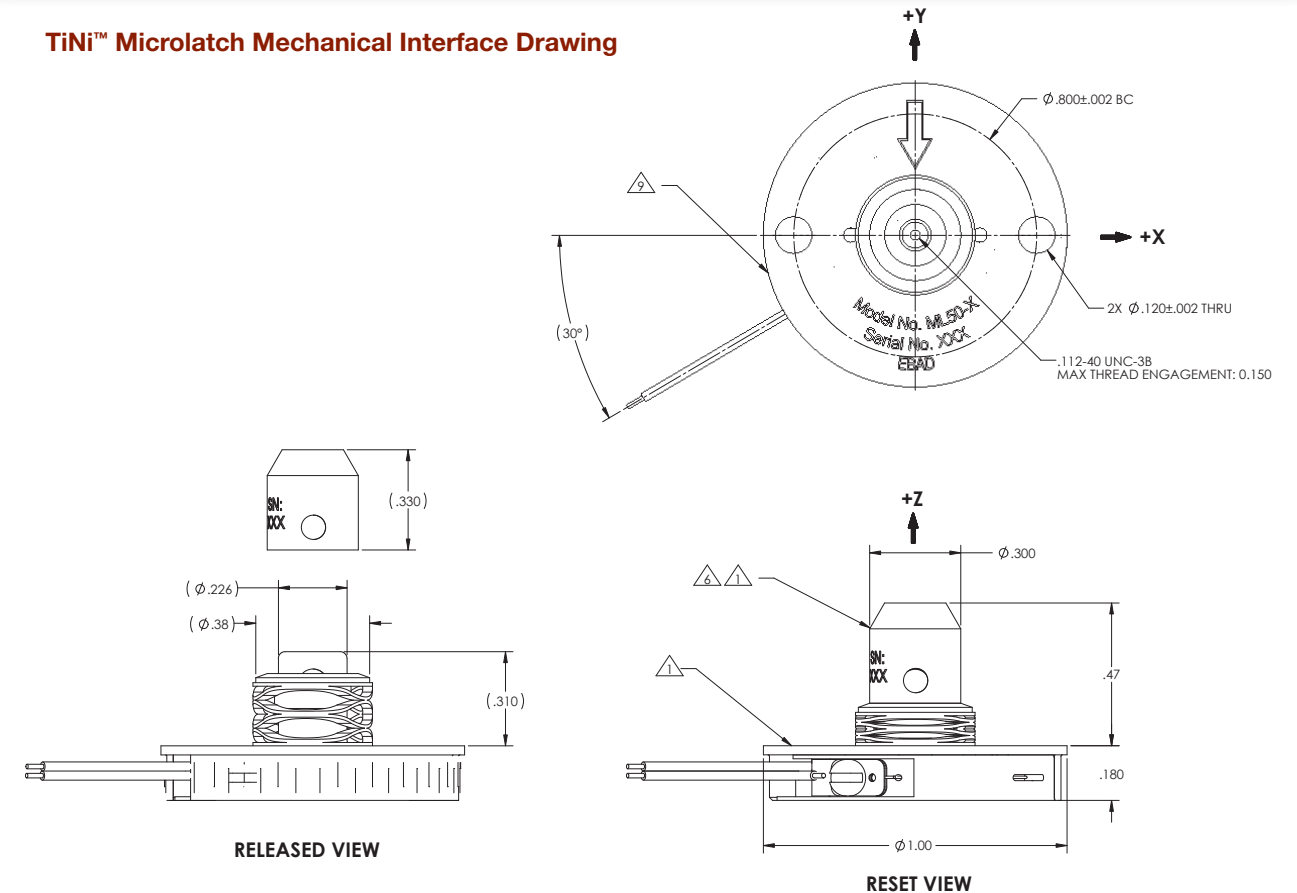
The EBAD™-TiNi™ Microlatch is fully vented with the coupler manufactured from custom 455SS with a tiolon finish and the kick off springs from 17-7PH SS. It comes in two voltage configurations.



TiNi™ Microlatch Technical Specifications

Parameter	ML50-1	ML50-2
Max Release Load		50lbF (222N)
Proof Load		100lbF (445N)
Max Torque		1.5in-oz
Coupler Kick-Off Force		7.5lbF
Mass		.53 (15g)
Voltage Range	3 to 5.5V	10 to 18V
Operating Current		1.5 to 3.75A
Resistance	1.75±.3 Ω	5.75±1Ω
Function Time @ 23°C		120ms max @ 1.75A
Cycle Life (min)		50
Operating Temp		-50°C + 60°C
Height (without coupler)		.5"
Height (with coupler)		.65"
Max Diameter (with flange)		1.00" diam
STD Coupler Engagement Size		.112"-40

TiNi™ Microlatch Mechanical Interface Drawing



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