18 March 2014

Attn: Mr. Nate Richard
Saint Louis University

Subject: Request for Quotation

Dear Mr. Richard,

Per your request, please find attached our quotation for the E250 ERMs requested. This includes:

1) Overview of our Company and Product: Provides a background to TiNi Aerospace and demonstrates the significant flight history and pedigree which these Actuators have.

2) Quotation # Q-61640: This provides firm fixed pricing for the items requested.

3) Interface Control Drawing (ICD): WI-2420 E250 ERM.

4) TiNi Aerospace's FAR Certifications and Representations: TiNi Aerospace DUNS number is 002357791. You can find the current SAM certification for TiNi Aerospace online from the link "//sam.gov/". TiNi Aerospace is registered with the Department of State and fully compliant with the requirements of ITAR.

5) TiNi Aerospace's General Terms & Conditions: This stipulates the standard terms which, we believe, apply to contracts of this type.

6) ISO & AS Certification: Copies of TiNi Aerospace's Quality Certifications per AS-9100 that certify our quality system meets the mandatory standards for this program.

Please, feel free to contact me if you have any questions regarding this quote or Mr. Michael Bokaie for technical questions.

Sincerely,

Kurt J Wiggin

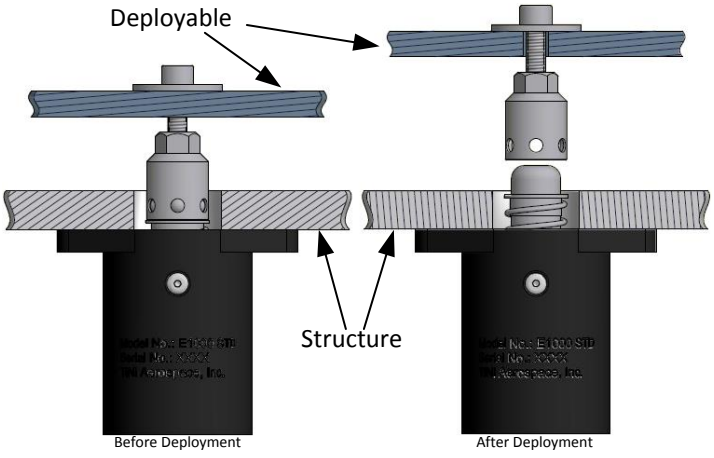
Digitally signed by Kurt J Wiggin
DN: c=US, o=IdenTrust ACES Business Representative, ou=TINI AEROSPACE INC, cn=Kurt J Wiggin, 0.9.2342.19200300.100.1.1=A01096900000134C42756 4400600858
Date: 2014.03.18 14:45:43 -07'00'

Kurt Wiggin
Business Project Manager
TiNi Aerospace, Inc.
(415) 524-2153

TiNi Aerospace

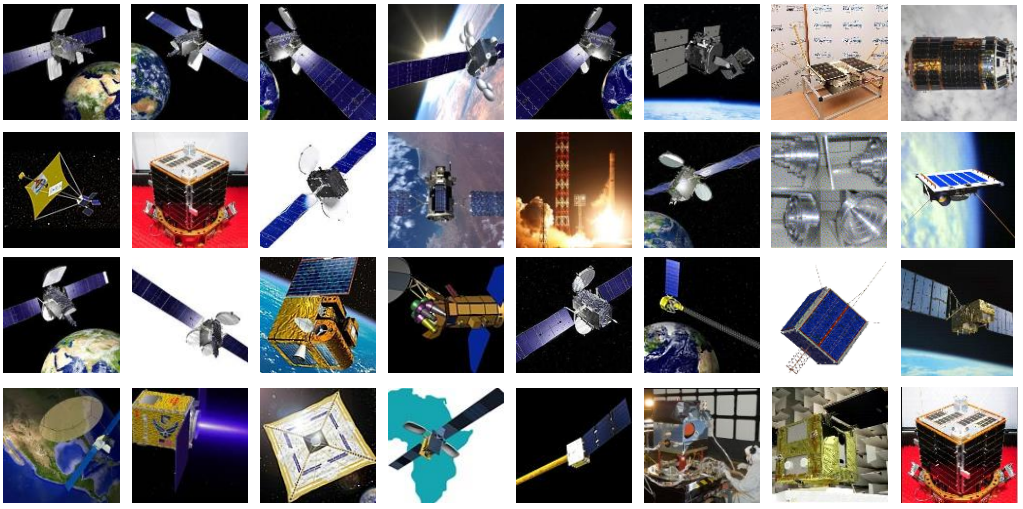
Ejector Release Mechanism (ERM)

- The ERM is a derivative of TiNi's Pinpuller product line and was first flight qualified in March of 2001.
- Currently, 5 standard sizes are available ranging in load capability from 250-4000 lbf.
- Numerous other custom embodiments have been developed and used in Space, Military and Commercial applications.
- Other Advantages include:
  - Fast Acting
  - Re-Usable
  - Easy to Reset
  - 50 Cycle Life
  - Non-pyrotechnic
  - Low Shock



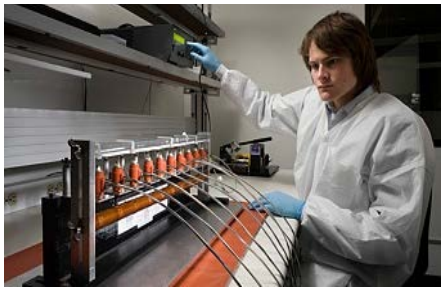
Hold Down and Release Mechanism (HDRM) uses Shape Memory Alloy (SMA) trigger to release simple ball-lock mechanism

- **Aquarius**
- **Glory**
- **OG2**
- **New Dawn**
- **NUSTAR**
- **PICARD**
- **MaxValier**
- **Venta-1**
- **GOSAT**
- **AlmaSAT-1**
- **IntelSat 18**
- **IntelSat 23**
- **HYLAS 2**
- **Star One C3**
- **Azerspace**
- **SBSS**
- **IKAROS**
- **SES-1**
- **SES-2**
- **SES-3**
- **SES-8**
- **KoreaSat-6**
- **HTV KITE**
- **SPAISE2**
- **VERTA-1**
- **TSCCM**
- **Angels**
- **SorunSat-1**
- **AlmaSat-1**
- **ThaiCom 6**
- **MexSat-3**
- **STP-SIV**



2505 Kerner Boulevard, San Rafael, CA 94901 USA Tel: 415.524.2124 Fax: 415.524.2121 info@tiniaerospace.com www.tiniaerospace.com

TiNi Introduction



- TiNi Aerospace, Inc. is privately incorporated company in the state of California
- Employer Identification No: 943238593 (Cage Code 1SPX4)
- Facility located at 2505 Kerner Blvd. in San Rafael CA 94901,
  Approximately 15 minutes North of the Golden Gate Bridge

Services

Engineering

All projects are staffed with senior Engineers with years of experience designing and developing quality products using our core SMA (Shape Memory Alloy) technology. Development of all new or modified products goes through a rigorous review cycle including the following key milestones: Preliminary Design Review (PDR), Critical Design Review (CDR), and Manufacturing Readiness Review (MRR). We are proud to have developed products used by such international organizations as NASA, ESA and JAXA, as well as industry leaders such as Lockheed Martin, Boeing, EADS Astrium, and Mitsubishi Space.

Production

TiNi products are manufactured with the highest regard to quality assurance, as well as a commitment to maintaining the highest workmanship standard possible. To do this, all parts manufactured or procured are subject to inspection to ensure that they meet stringent requirements. Skilled technicians take extreme care in assembling our products and their work is controlled through the use of detailed build instructions. In addition, Acceptance Testing is performed on 100% of Actuator's manufactured prior to shipment. The data is provided to our customers as part of a comprehensive EIDP (End Item Data Package).

Research and Development

Research and development is an enjoyable part of Engineering and we welcome the opportunity to work closely with our customers to develop, or to help develop, other SMA actuators for various applications. We find that our many 100s of man years experience working with this unique material helps us to quickly evaluate various concepts, suggest time saving solutions, and help lead the way into production. Our facilities include the necessary machining, inspection, assembly and test equipment needed to expedite this process with minimum dependence on outside vendors.

Quality Assurance

- As an AS and ISO certified company, TiNi Aerospace is committed to providing products and services that meet or exceed customer requirements.
- TiNi uses a vast number of work instructions (drawings, procedures) and forms which serve to control, monitor, and continuously improve all aspects of the company.
- All facets of design, manufacturing, inspection, assembly, test and qualification as well as every other product or service related activity performed at TiNi are specified and controlled under a comprehensive Quality System.
- The current revision of TiNi's Quality Manual is available upon request.

CERTIFIED
ISO 9001:2008
AS9100 C
TiNi Aerospace, Inc.
CERT. 11-2016
AEROSPACE REGISTRATION MANAGEMENT PROGRAM

Quotation

DATE: March 18, 2014

Reference: Request for Quotation by Mr. Nate Richard on 3/17/2014.

To:	**From:**
Attn: Mr. Nate Richard Saint Louis University Ph : (608) 732-7147 nrichar8@slu.edu	Kurt Wiggin TiNi Aerospace, Inc. 2505 Kerner Blvd San Rafael, CA 94901 Ph : (415) 524-2153 kwiggin@tiniaerospace.com

APPROVED BY	QUOTATION NO.	EFFECTIVE	SHIP VIA	F.O.B. POINT	TERMS
M. B.	Q-61640	30 days	Fed Ex	Origin**	Net 30

ITEM	QTY	UNIT	DESCRIPTION	LEAD TIME ARO*	UNIT PRICE US $
1	2	Each	E250 Standard Ejector Release Mechanism (ERM) per TiNi dwg WI-2420	14 Weeks	$8,450
2	1-4	Each	E250 Reset Tool		$650

* Expedited Delivery may be possible if necessary. Please contact the undersigned.

** Total price shown does not include shipping costs. This will be added to each invoice as applicable. Alternatively, the customer can provide its preferred shipping method and account number for direct charge to customer.

Prepared By: Kurt J Wiggin

Digitally signed by Kurt J Wiggin
DN: c=US, o=IdenTrust ACES Business Representative, ou=TINI AEROSPACE INC, cn=Kurt J Wiggin, 0.9.2342.19200300.100.1.1=A01096900000134C427564400000858
Date: 2014.03.18 14:46:00 -07'00'

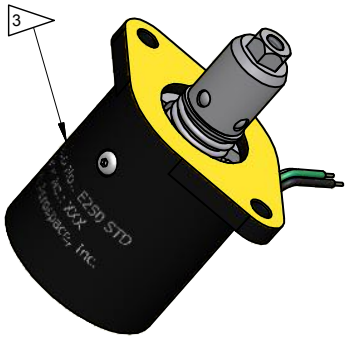
Kurt Wiggin

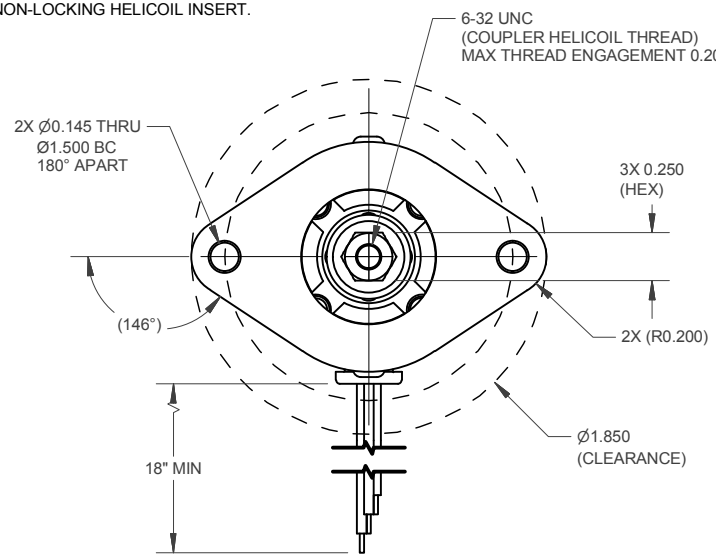
Member of TÜV NORD Group
ISO 9001:2000 AS9100 Rev B certified
Registration Number: 05-1027b

NOTES: UNLESS OTHERWISE SPECIFIED

1. MOUNTING FACE: GOLD ALODINE AS SHOWN PER MIL-C-5541 CLASS 1A.
   ALL OTHER SURFACES: HARD BLACK ANODIZE PER MIL-A-8625 TYPE III, CLASS II, AND TEFLON COAT.
2. SURFACE PLATING: TIOLON X-40.
3. IDENTIFICATION BLOCK ETCHED ONTO ENCLOSURE.
4. RESET ERM PER TiNi PROCEDURE F-1324 USING TiNi RESET TOOL.
5. TORQUE DEPLOYABLE (STUD, BOLT) INTO COUPLER WITH NO MORE THAN 100 IN-OZ.
6. MAY BE PROCURED WITH LOCKING OR NON-LOCKING HELICOIL INSERT.

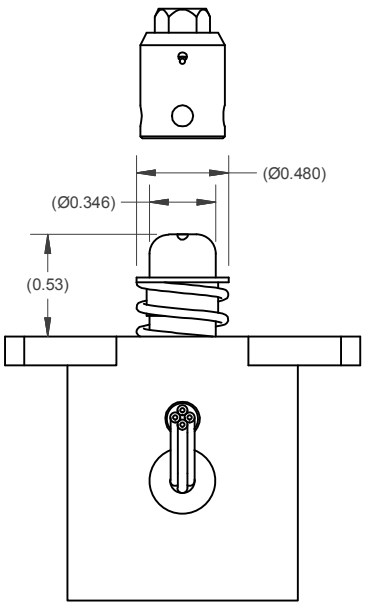
REVISION HISTORY		
REV	DESCRIPTION	DATE
INITIAL	PER DCO-3826	8/20/2012

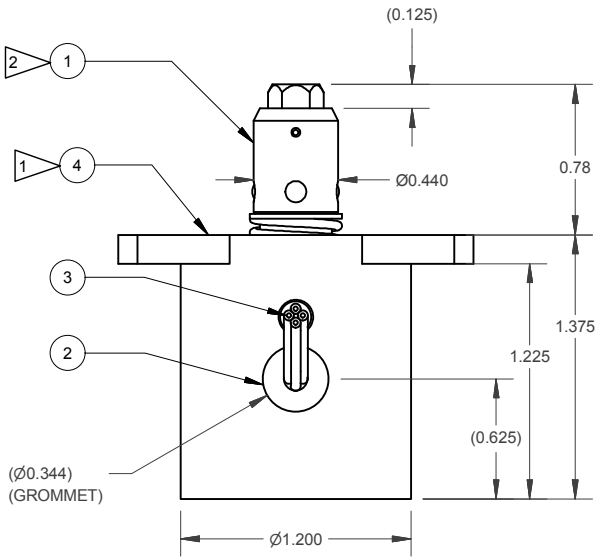


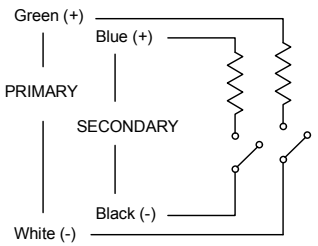


ACTUATOR CHARACTERISTIC	SPECIFICATION
MASS	2.7 oz [75 g]
NUMBER OF WIRE LEADS	4 TOTAL (2 PRIMARY + 2 SECONDARY)
CABLE LENGTH	18 in [457 mm] MIN
ELECTRICAL:	
POWER	6.25 W @ 1.25 A
OPERATIONAL CURRENT	1.25 to 5.0 A
RESISTANCE	4.0 ± 0.3 Ω @ 23 °C
PERFORMANCE:	
MAX RELEASE LOAD	250 lbf [1112 N]
PROOF LOAD (NON-RELEASE)	350 lbf [1557 N]
MAX TORQUE	100 in-oz
MAX MISALIGNMENT CAPABILITY	± 5°
FUNCTION TIME	25 ± 5 ms. @ 4.0 A (23 °C)
RE-USABLE	BY MANUALLY RESETTING ACTUATOR
LIFE	50 CYCLES MIN
TEMPERATURE:	
NON-OPERATIONAL PRE-ACTUATION	-150 °C TO +70 °C
OPERATIONAL	-65 °C TO +70 °C
NON-OPERATIONAL POST ACTUATION	-150 °C TO +150 °C
OTHER ENVIRONMENTS:	
RANDOM VIBRATION (3 AXIS)	20.0 GRMS FOR 180s AS FOLLOWS:

FREQUENCY (Hz)	PSD
20	0.052 g²/Hz
20-50	+6 dB/oct
50-800	0.32 g²/Hz
800-2000	-6 dB/oct
2000	0.052 g²/Hz







WIRING SCHEMATIC

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	MTRL. SPEC.
4	1	WI-2334	ENCLOSURE	Al 6061-T6	AMS-QQ-A-200/8
3	1	WI-1925	24 AWG WIRE HARNESS	Ag/Cu TEFZEL	MIL-W-22759/43
2	1	WI-1602	GROMMET	VITON	AMS 3216F
1	1	WI-2333	COUPLER	CUSTOM 455 SS	AMS 5617

Parts List

TiNi Aerospace, Inc
Innovative Mechanism Solutions
2505 KERNER BLVD.
SAN RAFAEL, CA. 94901
Tel 415-524-2124 Fax 415-524-2121

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES
.XX .XXX ∠
±.03 ±.010 ±.5°
63

INTERPRET DRAWING PER ASME Y14.5M
THIRD ANGLE PROJECTION

REMOVE ALL BURRS

SCALE: NOT TO SCALE

REV: INITIAL

SHEET 1 OF 1

DESIGNER: npastor

DRAWN:

APPROVED:

PROJECT:

CREATED: 8/20/2012

TITLE:

ERM ACTUATOR ICD
MODEL: E250 STD

DWG# WI-2420

1. ORDER ACKNOWLEDGEMENT

Contracts and / or purchase orders issued with TiNi Aerospace require a written Order Acknowledgement. This document serves as a confirmation to the Buyer that the terms and conditions of said contract or purchase order have been reviewed and accepted by TiNi Aerospace.

2. ORDER CHANGES

Buyer must notify TiNi Aerospace in writing of requested changes in drawings, designs, specifications or quantity for Products, which are ordered but not yet in process of being manufactured. After receipt of such notice, TiNi Aerospace seeks Buyer's approval of any necessary adjustments in price, delivery schedules, etc. resulting from Buyer's requested changes prior to incorporating the requested changes into the manufactured Products.

3. DOCUMENTATION

In the event that TiNi Aerospace provides a set of drawings, they will be in the form of non-controlled copies of the original. Ideas, concepts and information contained on these drawings are the property of TiNi Aerospace, Inc. The use of these ideas; concepts or information, without prior written permission from TiNi Aerospace, Inc. is strictly prohibited.

4. PROTOTYPES

If the Buyer orders and/or TiNi Aerospace delivers a Product designated as "Prototype", no guarantees, warranties or representations as to the fitness for a particular purpose or merchantability are made with respect to such Prototype. Buyer shall have the duty and sole responsibility to test a Prototype prior to acceptance and/or incorporation into end-use applications. Furthermore, a production Product based on a Prototype design may differ in assembly methods and materials from the Prototype. Therefore, unless otherwise specified, the Buyer shall have the duty and sole responsibility for testing and acceptance of production Products that are based on Prototype designs.

5. DELIVERY

TiNi Aerospace accepts no liability in the event that the delivery of any or all parts of the merchandise is prevented or delayed by strikes, natural disasters, terrorist attacks, lockouts, embargos, lack of shipping facilities or any other nature beyond TiNi Aerospace's control.

6. WARRENTY AND LIABILITY

TiNi Aerospace warrants that the delivered Products are of the type ordered and conform to TiNi Aerospace quality standards. TiNi Aerospace makes no other warranties, expressed or implied, including warranties of merchantability and fitness for a particular purpose. TiNi Aerospace's liability shall not exceed the cost of correcting any defects or replacing the products delivered, or at TiNi Aerospace's sole discretion, to refund the purchased price of such products. In no event shall TiNi Aerospace's obligation and liability under this contract extend to direct, indirect, punitive, special, incidental or consequential damages or losses a Buyer may suffer or incur in connection therewith. Nor shall it extend to damages or losses a Buyer may suffer or incur as a result of claims, suits or other proceedings made or instituted against the Buyer by third parties, whether public or of private nature.

7. TAXES

Prices do not include any manufacturer's tax, use tax, or other tax or duty of any nature whatsoever. Transportation, charges and cost of insurance which may be assessed against an order shall be added to the price quoted or invoiced and shall be paid by the Buyer. In the event that TiNi Aerospace is required to pay any such tax or duty, Buyer shall reimburse TiNi Aerospace therefore, or in lieu of such payment, shall, at the time the order is submitted, provide TiNi Aerospace with exemption certification or other document acceptable to taxing or customs authorities. In addition, if any TiNi Aerospace products are to be delivered to points outside the United States, all export duties, licenses, and fees that TiNi Aerospace is required to pay will be reimbursed to TiNi Aerospace by the Buyer.

8. TERMS

Unless otherwise specified by TiNi Aerospace, all charges shall be due in full by the Buyer upon tender of delivery of the goods or services. Invoices not paid within thirty (30) days after their last due date will be subject to carrying charges of 1% per day. Buyer shall reimburse TiNi Aerospace for the costs of collection including, without limitation, reasonable attorney's fee of any overdue amount owned by the Buyer to TiNi Aerospace, and such collection costs shall also be subject to carrying charges of not less than 1% per day. Buyer may not retain or set off any amounts owned to TiNi Aerospace in satisfaction of any claims assessed by the Buyer against TiNi Aerospace.

9. INDEMNIFICATION

The Buyer shall indemnify TiNi Aerospace its officers and employees against all claims, costs, damages or liability expenses by reason of any alleged or actual property damages or personal injury (including all reasonable legal costs) caused by or resulting from any act or omission of TiNi Aerospace employees, agents, subcontractors or suppliers in the performance of the order.

10. TERMINATION OF POLICY

In the event that the Buyer chooses to cancel its Purchase Order for any reason, TiNi Aerospace reserves the right to recover (via invoice) its full costs up to the termination date. Applicable cost shall be determent per DCAA (Defense Contract Audit Agency) guidelines if not otherwise specified.

TÜV USA
Member of TÜV NORD Group

CERTIFICATE

TUV USA Inc.

Accredited under the Aerospace Registration Management Program

hereby certifies that

TiNi Aerospace Inc.

2505 Kerner Blvd.
San Rafael, CA 94901 USA

has established and applies
a quality system for the

The Design and Manufacture of Aerospace Mechanisms employing Shape Memory Alloy (SMA) materials.

Proof has been furnished that the requirements according to

ISO 9001:2008/AS9100C

are fulfilled.

"The assessment was performed in accordance with AS9104A"

Certificate Registration No.

11-2016

Effective: June 5, 2012

Expires: June 22, 2014

ANAB ACCREDITED

Jodi Espinal
Quality Systems Division
Salem, New Hampshire

Issued: June 5, 2012

215 Main Street, Suite 3, Salem, NH 03079