Model 3112-A1A

8-channel, 12-bit D/A Converter

INSTRUCTION MANUAL

March, 1990

Model 3112-M1A

8-channel, 12-bit D/A Converter

INSTRUCTION MANUAL

March, 1990

Model 3112-S004

8-channel, 12-bit D/A Converter

INSTRUCTION MANUAL

June, 1992

SPECIAL OPTION

Model 3112-S004

8-channel, 12-bit D/A Converter

The Model 3112-S004 is the same as the model 3112-M1A except that the DAC outputs are also available at the 36-pin PC Edge connector as well as the front panel LEMO connectors.

RMF:rem
June, 1992

Model 3112-P1A

8-channel, 12-bit D/A Converter

INSTRUCTION MANUAL

March, 1990

8-channel, 12-bit D/A Converter

Features

- 8 independent analog outputs
- 10 volt output
- 12-bit resolution for each output
- 5 milliampere drive capability
- 4 microsecond settling time

Typical Applications

- Drive panel meters
- Drive strip chart recorders
- Drive x-y recorders
- Provide set point input to servos
- Provide input to programmable power supplies

General Description *(Product specifications and descriptions subject to change without notice.)*

The 3112 is a single-width CAMAC module that generates eight output voltages using eight independent 12-bit D/A converters. The standard output is 0 to 10 volts at 5 milliamperes maximum per channel. However, each channel can be independently changed by the user to: 0 to +5 volts, ±10 volts, ±5 volts, or ±2.5 volts. A 12-bit register is provided for each channel. The data is in two's complementary format and right justified (the LSB is written from Dataway line W1). Settling time of the output to within ½ LSB is less than 4 microseconds. The nonlinearity is less than ±½ LSB. The output impedance is less than 100 milliohms. Adjustments are provided for setting the gain of each channel and for zeroing each output.

The outputs are referenced to module ground potential. In critical applications, these signals should be received by differential input circuits.

On power-up, the data registers are cleared.

Function Codes

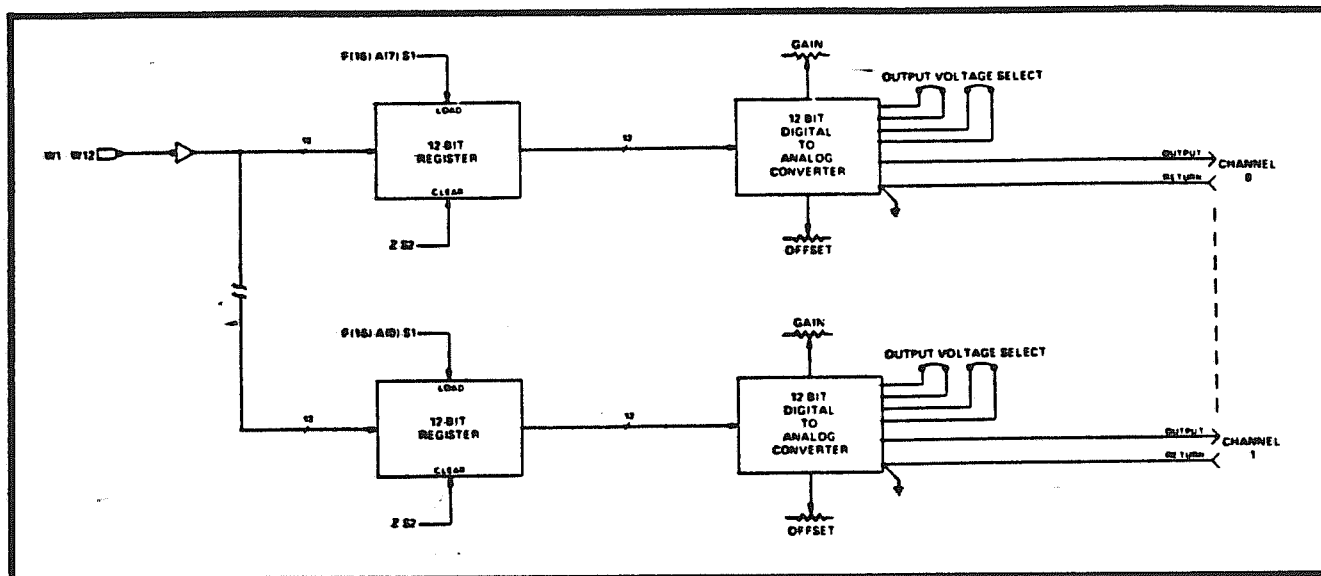| Command		Q	Action
F(16)·A(i)	WT1	1	Writes the Data register i.
Z	CZ	0	Clears the Data registers.
Notes: i can range from 0 to 7. X = 1 for all valid addressed commands.			

Simplified Block Diagram

Power Requirements

+6 volts:	400 mA
+24 volts:	100 mA + load current
-24 volts:	200 mA

Ordering Information

Model 3112-A1A   D/A Converter, 8 channels, 12 bits, 50S Amphenol Ribbon connector

Model 3112-M1A   D/A Converter, 8 channels, 12 bits, eight 2-contact LEMOs

Model 3112-P1A   D/A Converter, 8 channels, 12 bits, PC edge connector

Related Products

For Module	Mating Connector	Termination Panel
3112-A1A	5950-Z1A	1850-A1D
3112-M1A	5911-Z1A	---
3112-P1A	5960-Z1A or -Z1B	1850-P1D

MECHANICAL DATA

FRONT PANEL. A jackscrew is provided, which functions both for insertion and extraction of the module. There is an "N" light which flashes whenever this module is addressed.

LOCATION OF D/A CONVERTERS. Figure 1 shows the relative locations of the eight converters used on the module. The view is of the component side of the module.

OUTPUT CONNECTIONS. The 3112-P1A is the only version of this module to utilize the PC I/O connector. No connections are made to the PC I/O connector on the 3112-A1A or 3112-M1A versions.

On the two-contact LEMO connectors (3112-M1A), the analog signal is on the pin, the return on the socket. Refer to pages 4 and 5 for wiring connections to the 36-position PC edge connector and the 50-contact ribbon connector.

STRAP OPTIONS AND ADJUSTMENTS. The 3112 is strapped and calibrated at the factory for an output range of 0 to +10 volts. Output ranges of 0 to +5 volts, +2.5 volts, +5 volts and +10 volts can be achieved by repositioning the option straps according to the chart shown below. All channels need not be strapped the same.

Output Range	Straps Used
0 to +10 volts	B,E,UN
0 to +5 volts	B,C,E,UN
+10 volts	A,D,BI
+5 volts	A,E,BI
+2.5 volts	A,C,E,BI

Eight additional option straps are shipped with the module to be used in the 0 to +5 and +2.5 volt ranges. Figure 2 shows the location of the option straps relative to the D/A converters.

If field calibration is required, Offset and Gain controls are provided for each D/A converter. The Offset potentiometer adjusts the unit for unipolar Zero or bipolar negative full-scale outputs, and the Gain potentiometer adjusts the unipolar and bipolar positive full-scale outputs.

Model 3112

```
      50 ┌─────┐ 25
         │     │
         │     │
      26 └─────┘ 1
       FACE VIEW
```
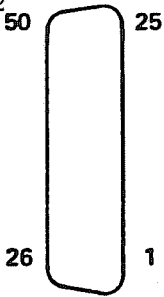
Socket/Wire List

50 SOCKET RIBBON CONN.

SOCKET NO.   **SOCKET NO.**

50 _____ Ground _____   **25** _____ Ground _____

49 _____   **24** _____

48 _____   **23** _____

47 _____   **22** _____

46 _____   **21** _____

45 _____   **20** _____

44 _____   **19** _____

43 _____   **18** _____

42 _____   **17** _____

41 _____   **16** _____

40 _____   **15** _____

39 _____   **14** _____

38 _____   **13** _____

37 _____   **12** _____

36 _____   **11** _____

35 _____   **10** _____

34 _____   **9** _____

33 ___ Channel 7 return ___   **8** ___ Channel 7 signal ___

32 ___ Channel 6 return ___   **7** ___ Channel 6 signal ___

31 ___ Channel 5 return ___   **6** ___ Channel 5 signal ___

30 ___ Channel 4 return ___   **5** ___ Channel 4 signal ___

29 ___ Channel 3 return ___   **4** ___ Channel 3 signal ___

28 ___ Channel 2 return ___   **3** ___ Channel 2 signal ___

27 ___ Channel 1 return ___   **2** ___ Channel 1 signal ___

26 ___ Channel 0 return ___   **1** ___ Channel 0 signal ___

Model 3112

```
1R □ □ 1
   □ □
   □ □
   □ □
   □ □
   □ □
   □ □
   □ □
   □ □
   □ □
   □ □
   □ □
   □ □
   □ □
   □ □
   □ □
18R □ □ 18
```
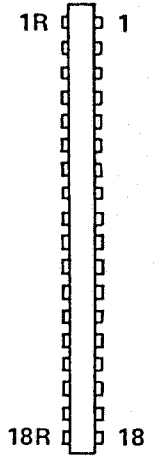
FACE VIEW

Pin/Wire List

18/36 POSTION P.C. EDGE

PIN NO.		PIN NO.	
1R	_____	1	_____
2R	Channel 0 signal	2	Channel 0 return
3R	Channel 1 signal	3	Channel 1 return
4R	Channel 2 signal	4	Channel 2 return
5R	Channel 3 signal	5	Channel 3 return
6R	Channel 4 signal	6	Channel 4 return
7R	Channel 5 signal	7	Channel 5 return
8R	Channel 6 signal	8	Channel 6 return
9R	Channel 7 signal	9	Channel 7 return
10R	_____	10	_____
11R	_____	11	_____
12R	_____	12	_____
13R	_____	13	_____
14R	_____	14	_____
15R	_____	15	_____
16R	_____	16	_____
17R	_____	17	_____
18R	_____	18	_____

FIGURE 1 -- LOCATION OF D/A CONVERTERS

Output Range Selection

0 to +10	B, E, UN
0 to +5	B, C, E, UN
± 10	A, D, BI
± 5	A, E, BI
± 2.5	A, C, E, BI

Offset Control

Offset

Gain Control

Gain

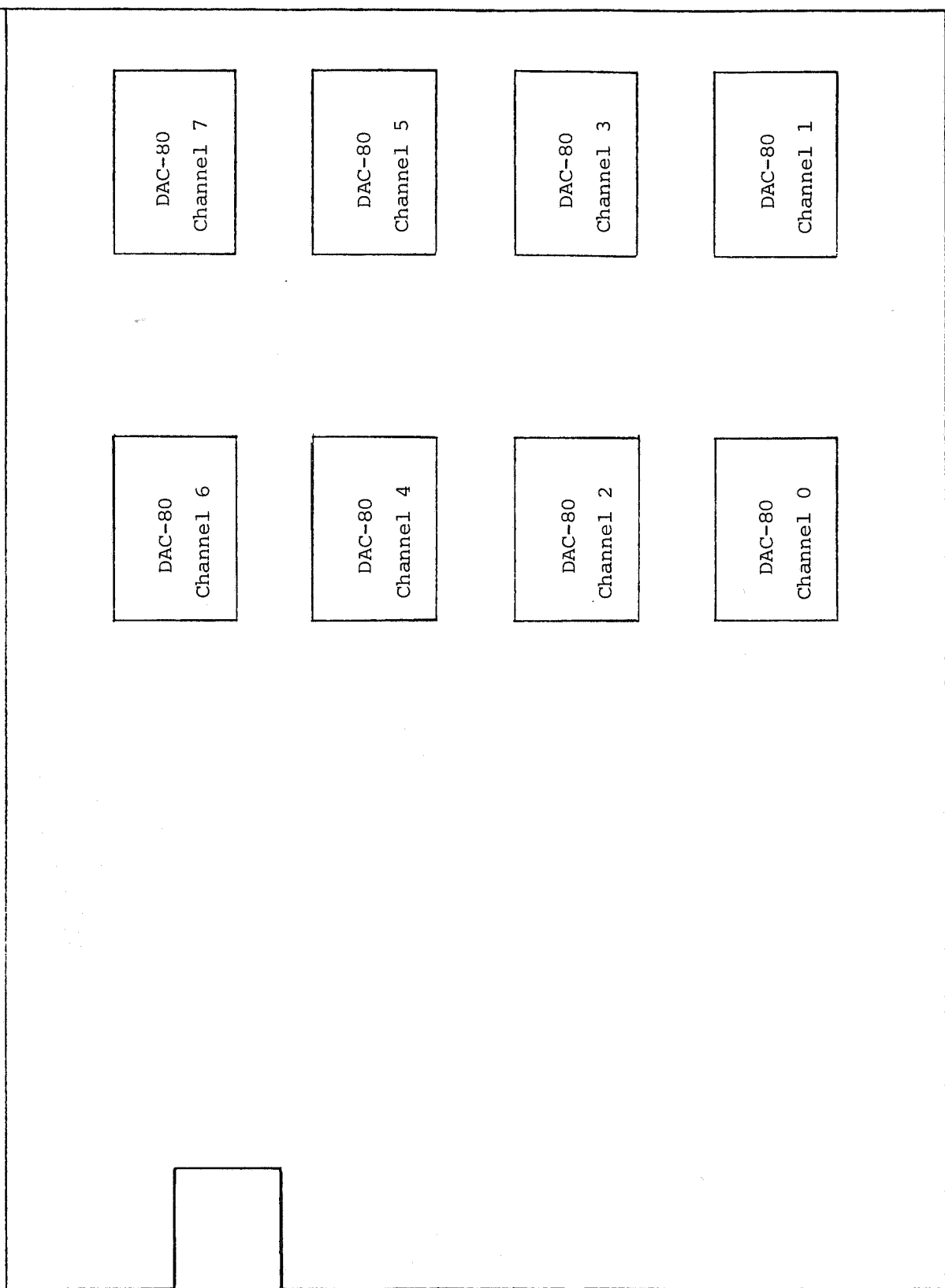Unipolar/Bipolar Selection

A   B

C   D   E
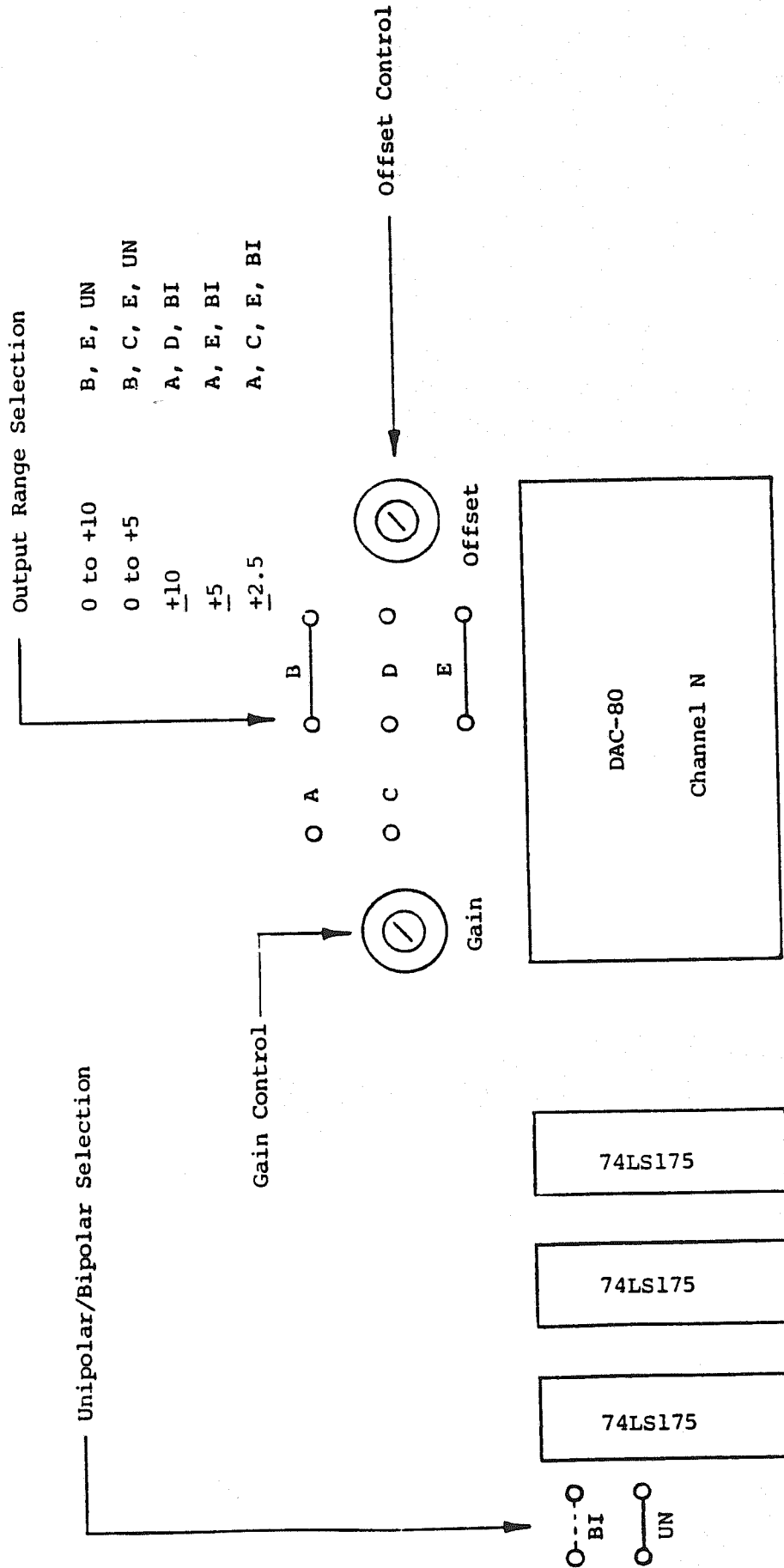
DAC-80

Channel N

BI   UN

74LS175

74LS175

74LS175

FIGURE 2 -- STRAP OPTIONS AND ADJUSTMENTS

WARRANTY

KineticSystems Company, LLC warrants its standard hardware products to be free of defects in workmanship and materials for a period of one year from the date of shipment to the original end user. Software products manufactured by KineticSystems are warranted to conform to the Software Product Description (SPD) applicable at the time of purchase for a period of ninety days from the date of shipment to the original end user. Products purchased for resale by KineticSystems carry the original equipment manufacturer's warranty.

KineticSystems will, at its option, either repair or replace products that prove to be defective in materials or workmanship during the warranty period.

Transportation charges for shipping products to KineticSystems shall be prepaid by the purchaser, while charges for returning the repaired warranty product to the purchaser, if located in the United States, shall be paid by KineticSystems. Return shipment will be made by UPS, where available, unless the purchaser requests a premium method of shipment at their expense. The selected carrier shall not be construed to be the agent of KineticSystems, nor will KineticSystems assume any liability in connection with the services provided by the carrier.

The product warranty may vary outside the United States and does not include shipping, customs clearance, or any other charges. Consult your local authorized representative or reseller for more information regarding specific warranty coverage and shipping details.

PRODUCT SPECIFICATIONS AND DESCRIPTIONS IN THIS DOCUMENT SUBJECT TO CHANGE WITHOUT NOTICE.

KINETICSYSTEMS SPECIFICALLY MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER WARRANTY EITHER EXPRESSED OR IMPLIED, EXCEPT AS IS EXPRESSLY SET FORTH HEREIN. PRODUCT FAILURES CREATED BY UNAUTHORIZED MODIFICATIONS, PRODUCT MISUSE, OR IMPROPER INSTALLATION ARE NOT COVERED BY THIS WARRANTY.

THE WARRANTIES PROVIIDED HEREIN ARE THE PURCHASER'S SOLE AND EXCLUSIVE REMEDIES ON ANY CLAIM OF ANY KIND FOR ANY LOSS OR DAMAGE ARISING OUT OF, CONNECTED WITH, OR RESULTING FROM THE USE, PERFORMANCE OR BREACH THEREOF, OR FROM THE DESIGN, MANUFACTURE, SALE, DELIVERY, RESALE, OR REPAIR OR USE OF ANY PRODUCTS COVERED OR FURNISHED BY KINETICSYSTEMS INCLUDING BUT NOT LIMITED TO ANY CLAIM OF NEGLIGENCE OR OTHER TORTIOUS BREACH, SHALL BE THE REPAIR OR REPLACEMENT, FOB FACTORY, AS KINETICSYSTEMS MAY ELECT, OF THE PRODUCT OR PART THEREOF GIVING RISE TO SUCH CLAIM, EXCEPT THAT KINETICSYSTEMS' LIABILITY FOR SUCH REPAIR OR REPLACEMENT SHALL IN NO EVENT EXCEED THE CONTRACT PRICE ALLOCABLE TO THE PRODUCTS OR PART THEROF WHICH GIVES RISE TO THE CLAIM. IN NO EVENT SHALL KINETICSYSTEMS BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING LOSS OF PROFITS.

Products will not be accepted for credit or exchange without the prior written approval of KineticSystems. If it is necessary to return a product for repair, replacement or exchange, a Return Authorization (RA) Number must first be obtained from the Repair Service Center prior to shipping the product to KineticSystems. The following steps should be taken before returning any product:

1. Contact KineticSystems and discuss the problem with a Technical Service Engineer.
2. Obtain a Return Authorization (RA) Number.
3. Initiate a purchase order for the estimated repair charge if the product is out of warranty.
4. Include a description of the problem and your technical contact person with the product.
5. Ship the product prepaid with the RA Number marked on the outside of the package to:

<div align="center">

KineticSystems Company, LLC
Repair Service Center
900 North State Street
Lockport, IL 60441

Telephone: (815) 838-0005
Facsimile: (815) 838-4424
Email: tech-serv@kscorp.com

</div>