



OPERATOR MANUAL

NSV-80

Clip-on Night Vision Sight



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**OPERATOR
MANUAL
for**

NSV-80
Clip-on Night Vision Sight

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ADVISORY OVERVIEW

The following description categorizes the level of risk associated with each cautionary statement displayed throughout the manual.

WARNING

HIGHLIGHTS AN OPERATION OR PROCEDURE WHICH, IF NOT STRICTLY OBSERVED, COULD RESULT IN INJURY TO OR DEATH OF PERSONNEL.

CAUTION

HIGHLIGHTS AN OPERATION OR PROCEDURE WHICH, IF NOT STRICTLY OBSERVED, COULD RESULT IN DAMAGE TO OR DESTRUCTION OF EQUIPMENT OR LOSS OF MISSION EFFECTIVENESS.

NOTE

HIGHLIGHTS AN ESSENTIAL OPERATION, PROCEDURE, CONDITION OR STATEMENT.

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TABLE OF CONTENTS

| | |
|--|------------|
| Advisory Overview | iii |
| Table of Contents | v |
| List of Figures | vii |
| List of Tables | ix |
| | |
| CHAPTER 1: GENERAL INFORMATION | 1-1 |
| 1.1 Introduction | 1-1 |
| 1.2 Equipment Description | 1-1 |
| 1.3 Standard Kit Parts List | 1-2 |
| 1.4 Standard Kit Parts Illustration | 1-3 |
| 1.5 System Performance and Data | 1-4 |
| | |
| CHAPTER 2: PREPARATION FOR USE | 2-1 |
| 2.1 Introduction | 2-1 |
| 2.2 Battery Precautions | 2-1 |
| 2.3 Battery Installation | 2-3 |
| 2.4 Attaching to a Weapon | 2-4 |
| | |
| CHAPTER 3: OPERATING INSTRUCTIONS | 3-1 |
| 3.1 Introduction | 3-1 |
| 3.2 Operational Precautions | 3-1 |
| 3.3 Controls and Indicators | 3-2 |
| 3.4 Powering ON the NSV-80 | 3-3 |
| 3.5 Securing the Objective Lens Cover | 3-4 |
| 3.6 Focusing the NSV-80 | 3-4 |
| 3.7 Powering OFF the NSV-80 | 3-6 |
| 3.8 Preparation for Storage | 3-6 |

TABLE OF CONTENTS

| | |
|--|------------|
| CHAPTER 4: MAINTENANCE INSTRUCTIONS | 4-1 |
| 4.1 Introduction | 4-1 |
| 4.2 Preparing for Maintenance | 4-1 |
| 4.3 Cleaning the NSV-80 | 4-1 |
| 4.4 Cleaning the Optics | 4-2 |
| 4.5 Checking for Damage and Corrosion | 4-2 |
| | |
| CHAPTER 5: TROUBLESHOOTING | 5-1 |
| 5.1 Troubleshooting Procedures | 5-1 |
| | |
| APPENDIX A: SPARE AND REPAIR PARTS LIST | A-1 |
| A.1 Introduction | A-1 |
| A.2 Contact Information | A-1 |
| A.3 Spare Parts List | A-1 |
| | |
| APPENDIX B: WARRANTY INFORMATION | B-1 |

LIST OF FIGURES

| | | |
|-----|-----------------------------------|-----|
| 1-1 | Standard Kit Parts Illustration | 1-3 |
| 2-1 | Battery Installation | 2-3 |
| 2-2 | Clamping Lever | 2-4 |
| 3-1 | Controls and Indicators | 3-2 |
| 3-2 | ON/OFF Switch Knob | 3-3 |
| 3-3 | Securing the Objective Lens Cover | 3-4 |
| 3-4 | Range Focus Knob | 3-4 |

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LIST OF TABLES

| | | |
|-----|-----------------------------|-----|
| 1-1 | Standard Kit Parts List | 1-2 |
| 1-1 | System Performance and Data | 1-4 |
| 3-1 | Controls and Indicators | 3-2 |
| 5-1 | Troubleshooting | 5-1 |
| A-1 | Spare and Repair Parts List | A-1 |

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CHAPTER 1:

GENERAL INFORMATION

1.1 Introduction:

This manual provides operation and maintenance instructions for the NSV-80. It also provides specifications and data on the performance of the NSV-80. To ensure the safety of the operator and the correct operation of the NSV-80 it is recommended that this manual is read carefully in its entirety before any deployment or field application.

1.2 Equipment Description:

The NSV-80 is a clip-on image intensifying night vision sight for rifles. It is mounted in front of the telescopic sight and can be focused manually. It enables observation and aiming during the night and at dawn or dusk using natural illumination.

The NSV-80 comprises an objective lens, image intensifier and collimating lens. The objective lens collects light reflected from the night scene by the moon, stars, or night sky, inverts the image and focuses that image on the image intensifier. The image intensifier is an MX-10160 type inverting tube which converts the captured light into a visible image and reinverts the image which can then be viewed through the collimating lens.

The NSV-80 can be ordered with an image intensifier tube meeting the performance requirement of the customer. The system part number will be configured such that the last five digits of the part number indicate the image intensifier generation and figure of merit (FOM).

1.3 Standard Kit Parts List:

The standard NSV-80 kit comes with the items listed in the following table.

| Item | Part No. | Description | Qty. |
|------|--|-----------------------------------|------|
| 1* | NSV-31250 NSV-31400 NSV-31600 NSV-31601 NSV-21250 NSV-21600 | NSV-80 Clip-on Night Vision Sight | 1 |
| 2 | 830-0039-0 | Operator Manual | 1 |
| 3 | 830-0040-0 | Quick Reference Guide (QRG) | 1 |
| 4 | 580-0001-0 | AA Alkaline Battery | 4 |
| 5 | 170-12 | Cleaning Kit | 1 |
| 6 | A3187392 | Soft Carrying Case | 1 |

* When ordering, item 1 includes items 2 through 6.

Table 1-1 Standard Kit Parts List

1.4 Standard Kit Parts Illustration:

The illustration below is provided for quick identification of the standard parts of the NSV-80 kit.

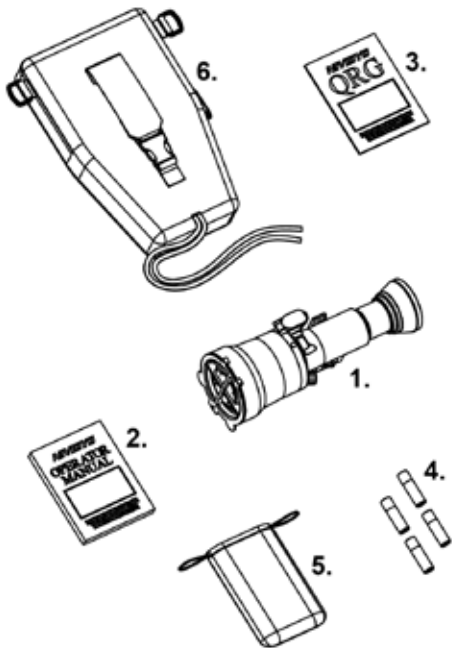


Figure 1-1 Standard Kit Parts Illustration

1.5 System Performance and Data:

The table below lists the technical specifications and data of the NSV-80 system. The data contained herein is subject to change without notice.

| Electrical Data | |
|-------------------------------|--|
| ITEM | LIMITS |
| Power Source | Battery (1.5V DC max.) |
| Supply Voltage | 2.4 V to 3V DC |
| Battery Requirements | 2 AA Alkaline 1.5V |
| Battery Life (AA Alkaline) | 80 hrs @ 20°C (68°F) |
| Physical Data | |
| ITEM | LIMITS |
| Soft Carrying Case Dimensions | 35cm x 20cm (14" x 8") |
| NSV-80 Dimensions | 26.8cm x 9.8cm x 11.5cm (10.5" x 3.9" x 4.5") |
| NSV-80 Weight | 1290g (45.5 oz) |
| Optical Data | |
| ITEM | LIMITS |
| Magnification | 1X |
| Field of View | Max 8° |
| Objective Lens | 125.5mm |
| System Resolution | 5.0 lp/mR |

Table 1-1 System Performance and Data

| Environmental Data | |
|---------------------------|--------------------------------|
| ITEM | LIMITS |
| Operating Temperature | -40°C to 50°C (-40°F to 122°F) |
| Storage Temperature | -55°C to 50°C (-57°F to 122°F) |
| Immersion | 1m for 30 minutes |

Table 1-1 System Performance and Data, cont.

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CHAPTER 2: PREPARATION FOR USE

2.1 Introduction:

This section contains instructions for installing and attaching various components and accessories to the NSV-80 for operation under normal conditions.

2.2 Battery Precautions:

WARNING

DO NOT MIX ALKALINE AND LITHIUM BATTERIES. DO NOT MIX OLD AND NEW BATTERIES. DO NOT MIX BRANDS OF BATTERIES. DO NOT MIX DISPOSABLE AND RECHARGEABLE BATTERIES. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN DEATH, INJURY OR IMPOSITION OF LONG-TERM HEALTH HAZARDS.

WARNING

INSPECT BATTERIES FOR BULGING PRIOR TO USE. IF THE BATTERY SHOWS SIGNS OF BULGING, DO NOT USE.

CAUTION

OBEY THE BATTERY MANUFACTURER'S DIRECTIONS FOR BATTERY DISPOSAL.

WARNING

DO NOT HEAT, PUNCTURE, DISASSEMBLE, SHORT CIRCUIT, INCINERATE, ATTEMPT TO RECHARGE OR OTHERWISE TAMPER WITH THE BATTERIES. TURN OFF THE NSV-80 IF THE BATTERY COMPARTMENT BECOMES UNDULY HOT.

IF POSSIBLE, WAIT UNTIL THE BATTERIES HAVE COOLED BEFORE REMOVING THEM.

WARNING

DO NOT REPLACE BATTERIES IN A POTENTIALLY EXPLOSIVE ATMOSPHERE. CONTACT SPARKING MAY OCCUR WHILE INSTALLING OR REMOVING BATTERIES AND CAUSE AN EXPLOSION. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN DEATH, INJURY OR IMPOSITION OF LONG-TERM HEALTH HAZARDS.

2.3 Battery Installation:

Install two (2) AA batteries as follows:

1. Press catch and open lid of battery compartment.
2. Install the batteries following the polarity symbols embossed on the outside of the battery compartment.
3. Close lid of battery compartment.
4. Ensure that the battery catch is engaged before use.

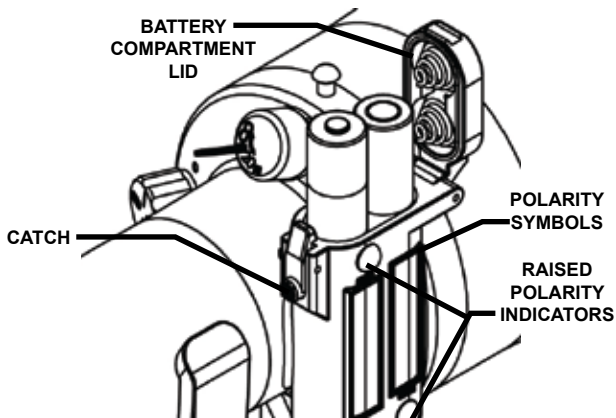


Figure 2-1 Battery Installation

NOTE

THE NSV-80 BATTERY COMPARTMENT FEATURES RAISED POSITIVE POLARITY INDICATORS TO ASSIST WITH BATTERY INSTALLATION IN THE DARK.

2.4 Attaching to a Weapon:

Perform the following procedure to install the NSV-80 onto a MIL-STD-1913 rail system:

1. The clamping lever should be down and away from the NSV-80.
2. Retract the light shield.
3. Mount the NSV-80 on the MIL-STD-1913 rail of weapon as close to the day sight as possible.
4. Ensure that the clip-on sight is seated squarely on the rail with the recoil stop engaged.
5. Close the clamping lever by pushing towards the NSV-80.
6. Extend the light shield.

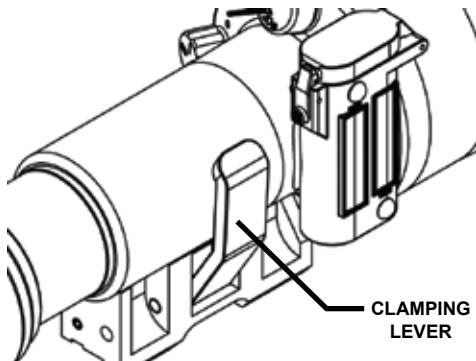


Figure 2-2 Clamping Lever

CHAPTER 3: OPERATING INSTRUCTIONS

3.1 Introduction:

This chapter contains instructions for the safe operation of the NSV-80 under normal circumstances and environments.

3.2 Operational Precautions:

CAUTION

THE NSV-80 REQUIRES SOME AMBIENT LIGHT (MOONLIGHT, STARLIGHT, OR ARTIFICIAL LIGHT, ETC.) TO OPERATE. THE LEVEL OF PERFORMANCE DEPENDS ON THE LEVEL OF LIGHT.

NIGHT LIGHT IS REDUCED BY PASSING CLOUD COVER, WHILE OPERATING UNDER TREES, IN BUILDING SHADOWS, ETC. THE NSV-80 IS LESS EFFECTIVE THROUGH RAIN, FOG, SLEET, SNOW, SMOKE, AND OTHER REFLECTIVE MATERIAL.

CAUTION

UNDER NO CIRCUMSTANCES USE THE NSV-80 DURING DAYTIME WITHOUT CLOSING THE OBJECTIVE LENS CAP, SINCE THIS WOULD CAUSE DAMAGE TO THE IMAGE INTENSIFIER TUBE.

3.3 Controls and Indicators:

The controls and indicators for the NSV-80 are shown in Figure 3-1 and are described in Table 3-1.

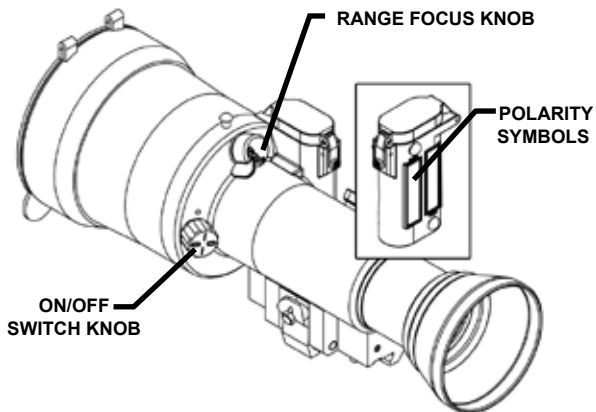


Figure 3-1 Controls and Indicators

| Control and Indicators | Functions |
|------------------------|---|
| ON/OFF Switch Knob | Turns the unit ON and OFF. |
| Range Focus Knob | Adjusts for sharpest image. |
| Polarity Symbols | Indicate correct orientation of AA batteries upon installation. |

Table 3-1 Controls and Indicators

3.4 Powering ON the NSV-80:

CAUTION

THE IMAGE INTENSIFIER TUBE OF THE NSV-80 IS SENSITIVE TO BRIGHT LIGHT. INTENSE LIGHT CAN LEAD TO REDUCTION IN PERFORMANCE OR SEVERE DAMAGE OF THE IMAGE INTENSIFIER TUBE.

CAUTION

OPERATE THE NSV-80 ONLY UNDER DARKENED CONDITIONS OR USE THE LENS CAP TO COVER THE OBJECTIVE LENS FOR DAYLIGHT CONDITIONS.

1. Turn the ON/OFF switch knob to either setting “I”.

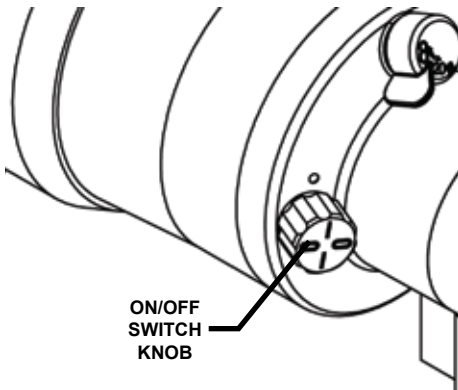


Figure 3-2 ON/OFF Switch Knob

3.5 Securing the Objective Lens Cover:

During dawn, dusk or night, open the objective protection cap and fasten it to the retaining pin located on the top of the NSV-80 housing.

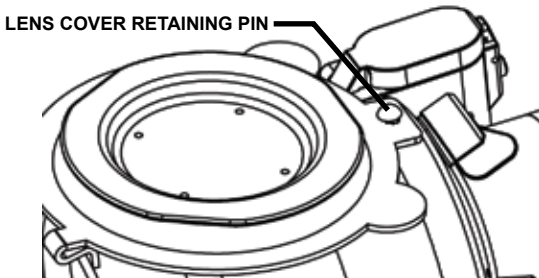


Figure 3-3 Securing the Objective Lens Cover

3.6 Focusing the NSV-80:

The focusing range is between 20m and infinity “∞”. Perform the following procedure to focus the NSV-80.

1. While viewing target, adjust range focus knob for clearest image.

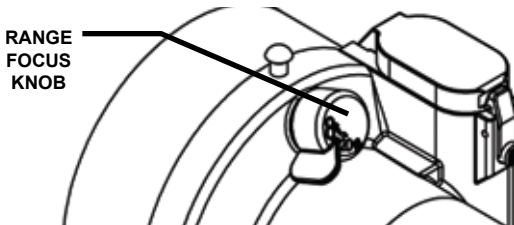


Figure 3-4 Range Focus Knob

3.7 Powering OFF the NSV-80:

1. Turn the ON/OFF switch knob to either “0” position.
2. Close objective lens cover.

3.8 Preparation for Storage:

1. Detach NSV-80 from weapon.
2. Remove batteries from the NSV-80.
3. Inspect the battery housing for corrosion or moisture. Clean and dry if necessary.
4. Close the battery cap.

NOTE

PRIOR TO PLACING NSV-80 INTO CARRYING CASE, ENSURE NSV-80 AND CASE ARE FREE OF DIRT, DUST AND MOISTURE.

5. Place the sight and any accessories in the soft carrying case. It is best to place the items in their original locations to prevent any possible damage to the unit and/or accessories.
6. Return to storage area.

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CHAPTER 4:

MAINTENANCE INSTRUCTIONS

4.1 Introduction:

The NSV-80 is designed to be used in diverse environments and rugged conditions. It is recommended that regular maintenance is performed for optimal system performance.

CAUTION

**THE NSV-80 IS A PRECISION ELECTRO-
OPTICAL INSTRUMENT AND MUST BE
HANDLED CAREFULLY.**

**DO NOT SCRATCH OR TOUCH THE
EXTERNAL LENS SURFACES.**

4.2 Preparing for Maintenance:

Before performing any maintenance or cleaning of the system remove the batteries and store in carrying case. Close the battery compartment before cleaning.

4.3 Cleaning the NSV-80:

When necessary, use a moistened clean cloth to wipe the outside of the unit, EXCEPT FOR THE OPTICAL SURFACES. Wipe away excess dirt and dust that may restrict the performance or damage moving and mating parts. If needed, the use of a very diluted detergent solution is permissible. Dry with a soft clean cloth, or allow unit to air-dry before storing it.

4.4 Cleaning the Optics:

With the supplied air-pump brush, blow any loose dirt or grit away from the surface of the lens. Use the brush to break up any debris possible and blow it away. If more cleaning is required, use the supplied lens tissue lightly moistened with water or lens cleaning fluid to lightly wipe the optical surfaces, using a circular motion. Discard each lens tissue after one use to avoid transferring grit or foreign matter onto the lens surfaces. If the lens remains dirty use a cotton swab lightly moistened with lens cleaning fluid to remove the foreign matter from the lens. Dry with a clean unused lens tissue.

4.5 Checking for Damage and Corrosion:

As a general guideline, conduct an inspection of the NSV-80, accessories, and the case after every use. Look for heavy wear and cracks in rubber. Inspect for moisture or corrosion in the battery compartment. Check for scratches, condensation and foreign matter on optical surfaces. Report missing or damaged items, for replacement.

CHAPTER 5: TROUBLESHOOTING

5.1 Troubleshooting Procedures:

Table 5-1 lists common malfunctions that may occur with the NSV-80. Perform the tests, inspections and corrective actions in the order they appear in the table.

This table cannot list all the malfunctions that may occur, all the tests and inspections needed to find the fault, or all the corrective actions needed to correct the fault. If the equipment malfunction is not listed or actions listed do not correct the fault, notify your maintainer.

| Malfunction | Test for Inspection | Corrective Action |
|------------------------------|----------------------------|----------------------------------|
| No image | Device not switched on. | Switch device on. |
| | Batteries Missing. | Install Batteries. |
| | Batteries discharged. | Replace batteries. |
| Image too dark, but uniform. | Lens cover closed. | Open lens cover. |
| | Ambient light too low. | Will not work in total darkness. |
| | Low tube performance. | Return device for repair. |
| Image flickers | Electric Malfunction. | Return device for repair. |

Table 5-1 Troubleshooting

| | | |
|----------------------|--|---|
| <p>Image blurred</p> | <p>Device not focused.</p> <p>Collimating lens or objective lens dirty or fogged.</p> <p>Day scope eyepiece or objective lens dirty or fogged.</p> <p>Collimating lens or objective lens fogged inside.</p> <p>Image intensifier tube damaged.</p> | <p>Adjust range focus knob.</p> <p>Clean collimating and objective lenses.</p> <p>Clean eyepiece and objective lens of day scope.</p> <p>Return device for repair.</p> <p>Return device for repair.</p> |
|----------------------|--|---|

Table 5-1 Troubleshooting, cont.

APPENDIX A: SPARE AND REPAIR PARTS LIST

A.1 Introduction:

This section provides information needed to identify, contact and order spare and/or repair parts for the NSV-80.

A.2 Contact Information:

To order spare or repair parts for the NSV-80 or any of your night vision products contact:

Nivisys Industries, LLC
400 S. Clark Drive, Suite #105
Tempe, Arizona 85281 USA
Phone: 1-480-970-3222
Fax: 1-480-970-3555
Nivisys Industries GSA #: GS-07F-6054P

A.3 Spare Parts List:

The following is a list of parts that may be ordered for spare parts for the NSV-80.

| Part No. | Description | Qty. |
|------------|-------------------------------|------|
| 580-0001-0 | AA Alkaline Battery | 1 |
| 170-12 | Cleaning Kit | 1 |
| 830-0039-0 | Operator Manual, NSV-80 | 1 |
| 830-0040-0 | Quick Reference Guide, NSV-80 | 1 |
| A3187392 | Soft Carrying Case | 1 |

Table A-1 Spare and Repair Parts List

| | | |
|------------|-------------------------------------|---|
| 220-0008-0 | Light Shield, NSV-80 | 1 |
| 220-0009-0 | Objective Lens Cover, NSV-80 | 1 |
| 7B257-2 | Shipping Storage Case (Optional) | 1 |
| 310-0044-0 | ON/OFF Switch Knob w/ Set Screw (1) | 1 |
| 310-0043-0 | Range Focus Knob w/ Set Screw (2) | 1 |

Table A-1 Spare and Repair Parts List, cont.

APPENDIX B: WARRANTY INFORMATION

Equipment Warranties And Remedy:

Seller warrants that each newly manufactured item sold hereunder and such portion of a repaired/refurbished item as has been repaired or replaced by Seller under this warranty, shall be free from defects in material or workmanship at the time of shipment and shall perform during the warranty period in accordance with the specifications incorporated herein. Should any failure to conform to these warranties be discovered and brought to Seller's attention during the warranty period and be substantiated by examination at Seller's factory or by authorized field personnel, then at its own cost, Seller shall correct such failure by, at Seller's option, repair or replacement of the non-conforming item or portion thereof, or return the unit purchase price of the non-conforming item or component. Buyer agrees that this remedy shall be its sole and exclusive remedy against Seller and that no other remedy shall be available or pursued by Buyer against Seller. In no event shall the Seller be liable for any cost or expense in excess of those described in this paragraph and expressly excluding any liability or damages for special, incidental or consequential damages.

The warranty period for newly-manufactured items shall extend 12 months from the date of shipment by Seller unless a different warranty period is agreed in writing to by Seller. The warranty period for repaired/refurbished electronic components shall extend for the unexpired warranty period or 90 days, whichever is longer, of the item repaired or replaced.

This warranty shall not extend to any item that upon examination by Seller is found to have been subject to:

- A. Mishandling, misuse, negligence or accident.

- B. Installation, operation or maintenance that either was not in accordance with Seller's specifications and instructions, or otherwise improper.
- C. Tampering, as evidenced, for example, by broken seals, damaged packaging containers, etc.
- D. Repair or alteration by anyone other than Seller without Seller's express advance written approval.

Failure to promptly notify Seller in writing upon discovery of any non-conforming item during the warranty period shall void the warranty as to such item. Buyer shall describe any such non-conformity in detail, expressing its position as to return of any article under the remedy provided herein. No returns shall be accepted without prior approval by Seller, who shall arrange for transportation. The cost of transportation for articles returned to Seller and/or redelivered to Buyer shall be paid by Seller only if Seller is responsible for repair or replacement under this warranty. In the event the item is found to conform to the specifications and requirements of this order, the transportation charges related to the return and re-delivery thereof are for the account of Buyer.

Return Material Authorization Number (RMA#):

Warranty and non-warranty items returned to Nivisys for repair or replacement require a RMA#. Email support@nivisys.com, call 1-480-970-3222 or fax 1-480-970-3555 with a serial number and detailed information to obtain a RMA#.

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