

Security

NOVO

Digital Radiography

INNOVATIVE • COMPACT • RUGGED

Portable Digital Radiography Systems



EOD & IED



Special Forces



Counter
Surveillance



Border Control



Customs

English



www.NOVO-DR.com

November 2016

NOVO DR offers portable Digital Radiography X-ray systems designed for field operations, whilst providing the highest image quality.

In contrast to film or Computed Radiography, Digital Radiography (DR) uses an X-ray digital image capturing device (Detector). This technology enables us to generate immediate and high quality X-ray images while keeping radiation levels to the minimum. Once generated the X-ray image is displayed on a tablet immediately, then using our User Friendly proprietary Touch Software the

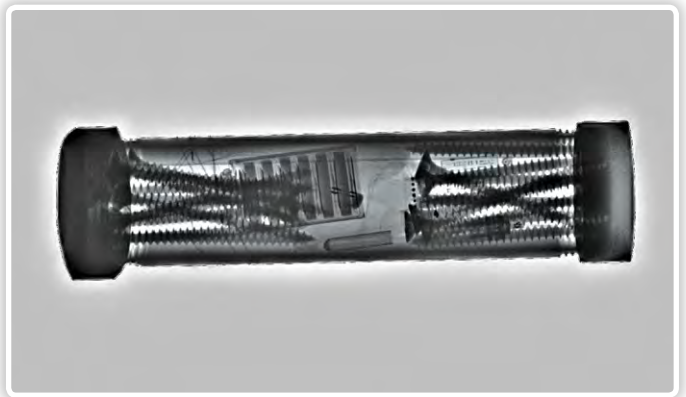
image can be processed, enhanced, shared and digitally stored and accessed on the spot. Having DR as our core technology we've developed and customized a compact, lightweight, rugged, weather proof system with wireless and battery operation capabilities. These features allow the examination of suspicious objects as fast as possible with minimum time & weight on target.

Applications

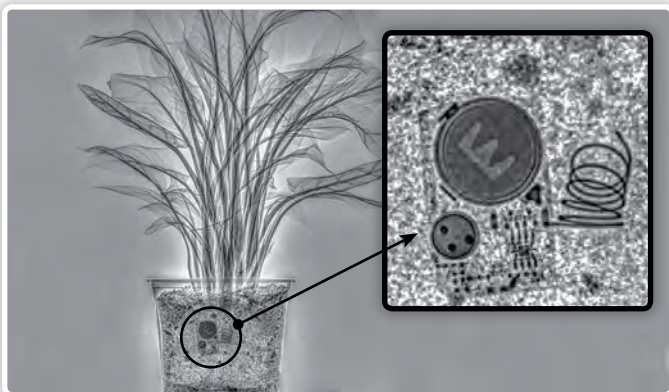
EOD



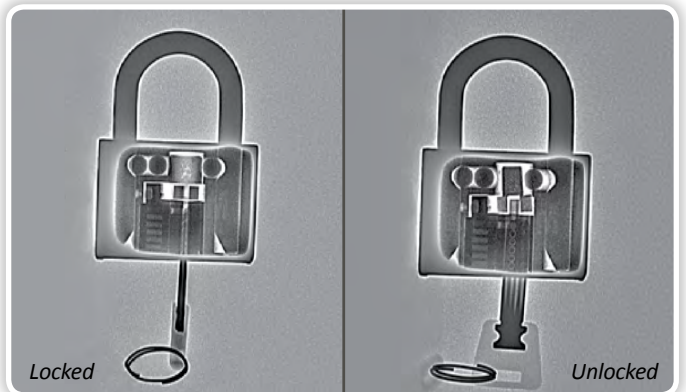
IED



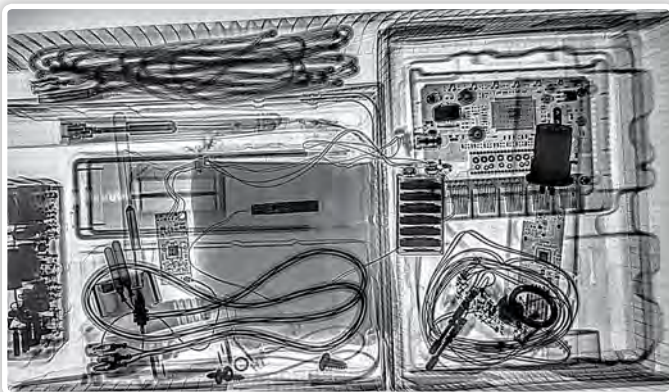
Counter Surveillance / VIP Protection



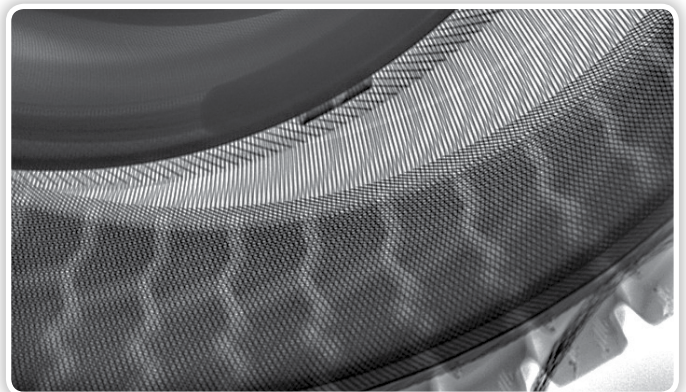
Special Forces



Customs



Border Control



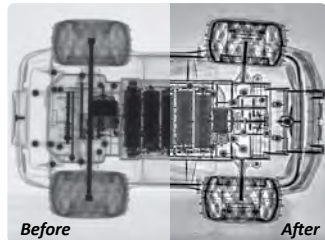
System Highlights



Highest Image Quality:

16-bit Latest Generation

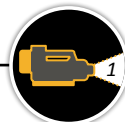
State of the art Digital Radiography detectors that produce, exceptional high quality images with incredible detail and high penetration capabilities.



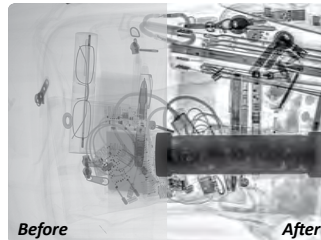
Genie



HDR



One Pulse Image



Cutting Edge Detectors:

Thinnest, Lightest, most Durable

- Unmatched Image Quality!
- Steel Penetration* Over 3.3" (>85mm)
- 16-bit Latest Generation
- Thickness 0.6" (15.6mm)
- Drop Tested 27.6" (70cm)
- Load Proof 330 lbs. (150 kg)

* Tested with Golden XRS-3
at ~10" (25cm)



Most Rugged System:

Suitable for all Terrain and Weather Conditions

- Usage in Extreme Weather Conditions
- MIL-DTL 38999 Connectors
- MIL-STD-810G Tablets
- Drop Tested Detectors
- Rugged Cases



Smallest Foot Print:

Complete System in a Single Case

Each system contains:

- Detector
- Tablet
- X-ray Source
- Control Box/Spark
- Additional Modules & Cables



Touch Software:

Simple User Friendly Touch Interface

- Operating & Controlling the System
- Powerful Automatic Enhancing Algorithms
- Optimal Viewing Experience
- Variety of Tablets; rugged 7" up to a 20" 4K display.
- Windows® 10



Windows 10



Parallel Multi Location Control & Display:

Downrange Wearable Tablet,
or Safe-Zone Extra Large Tablet

Use one tablet closer to the inspected object and a second tablet from a greater distance.

Both tablets can be used to:

- Control the System
- Display X-ray Images
- Image Enhancing, Storage & Sharing.



Longest Battery Life:

Over 16 Hours of Battery Operation

While out in the field battery longevity can be crucial, with over 16 hours of operation with a single full charge, you can focus on what's important.



Products

NOVO Rover Systems

The NOVO Security Rover product family is designed for Security officials working in tough field conditions. Our Rover system is located in a customized 25" iM2750 Pelican™ Case and includes a Detector, Tablet & Software, Control Box, 50m Communication Cable on a Reel, Detector Stand and additional Modules & Cables. In addition, the Rover system is designed to hold a variety of Golden X-ray Sources - XR150, XR200 and XRS3.



- NOVO 15WS Detector (9.1" x 11.2" Imaging Area)
- Panasonic Toughpad™ FZ-G1 Tablet - 10.1" Display
- NOVO Touch Software
- Wired and Wireless Communication



iM2750 Pelican™ Case



- NOVO 15WS Detector (9.1" x 11.2" Imaging Area)
- Panasonic Toughpad™ 4K Tablet - 20" Display
- NOVO Touch Software
- Wired and Wireless Communication



iM2750 Pelican™ Case



- NOVO 22WS Detector (14" x 16.8" Imaging Area)
- Panasonic Toughpad™ FZ-G1 Tablet - 10.1" Display
- NOVO Touch Software
- Wired and Wireless Communication



iM2750 Pelican™ Case



- NOVO 22WS Detector (14" x 16.8" Imaging Area)
- Panasonic Toughpad™ 4K Tablet - 20" Display
- NOVO Touch Software
- Wired and Wireless Communication



iM2750 Pelican™ Case

NOVO Backpack Systems

The NOVO Security Backpack product family is ideal for usage in rough field conditions while carrying a complete system on an Operator's back. Containing both wired and wireless capabilities, NOVO's backpack configurations are located in a Customized Backpack and include a Detector, Tablet & Software, Control Unit - Control Box or Wireless Spark and additional Modules & Cables. In addition, NOVO's systems are designed to hold a variety of Golden X-ray Sources - XR150, XR200 and XRS3.

NOVO 15 PATROL

- NOVO 15WS Detector (9.1" x 11.2" Imaging Area)
- Panasonic Toughpad™ FZ-G1 Tablet - 10.1" / 20" 4K Display
- Control Box
- 50m Communication Cable on a Reel



NOVO's Fully Sized Backpack

NOVO 22 PATROL

- NOVO 22WS Detector (14" x 16.8" Imaging Area)
- Panasonic Toughpad™ FZ-G1 Tablet - 10.1" / 20" 4K Display)
- Control Box
- 50m Communication Cable on a Reel



NOVO's Fully Sized Backpack

NOVO 15 TACTICAL

- NOVO 15WS Detector (9.1" x 11.2" Imaging Area)
- Panasonic Toughpad™ FZ-G1 Tablet - 10.1" Display
- Control Box / Wireless Spark



Customized Pelican™ S115 Backpack

NOVO 15 URBAN

- NOVO 15WS Detector (9.1" x 11.2" Imaging Area)
- Panasonic Toughpad™ FZ-G1 Tablet - 10.1" Display
- Wireless Spark



Customized 5.11 Covrt™ 18 Backpack

*All of NOVO's backpacks can be used as accessories for the Rover systems

Technical Specifications

Detectors

System	NOVO 15 Rover 4K	NOVO 15 Rover	NOVO 15 Patrol	NOVO 15 Tactical	NOVO 15 Urban	NOVO 22 Rover 4K	NOVO 22 Rover	NOVO 22 Patrol
Detector Model	NOVO 15WS					NOVO 22WS		
Detector Imaging Area	9.1" x 11.2" (23.1cm x 28.4cm)					14.0" x 16.8" (35.5cm x 42.6cm)		
Detector Size	10.6" x 13" (26.9cm x 33cm)					15.2" x 18.2" (38.5cm x 46.2cm)		
Active Area (Imaging Area / Detector Size)	74% Active Area					85% Active Area		
Detector Weight	3.5 lbs. (1.6kg)					6.1 lbs. (2.8kg)		
Steel Penetration*	Over 3.3" (>85mm)					Over 3.3" (>85mm)		
Detector Load Proof	330 lbs. (150kg)					330 lbs. (150kg)		
Detector Drop Test	27.6" (70cm)					27.6" (70cm)		
Detector Thickness	0.6" (15.6mm)					0.6" (15.6mm)		
Bit Depth	16 bit latest generation					16 bit latest generation		

*Tested with Golden XRS-3 at ~10" (25cm)

Cases (all cases are customized by NOVO-DR)

Case	Description	Case External Dimensions
NOVO 15 Rover Case	Rugged iM2750 Pelican™ case	24.6" x 19.7" x 14.4" (62.5cm x 50cm x 36.6cm)
NOVO 15 Patrol Case	NOVOs fully sized backpack	28.0" x 19.0" x 13.0" (71.1cm x 48.3cm x 33cm)
NOVO 15 Tactical Case	S115 Pelican™ backpack	18.0" x 13.0" x 10.0" (45.7cm x 33cm x 25.4cm)
NOVO 15 Urban Case	5.11 Covrt™ 18 backpack	19.0" x 12.25" x 6.5" (48.3cm x 31.1cm x 16.5cm)
NOVO 22 Rover Case	Rugged iM2750 Pelican™ case	24.6" x 19.7" x 14.4" (62.5cm x 50cm x 36.6cm)
NOVO 22 Patrol Case	NOVOs fully sized backpack	28.0" x 19.0" x 13.0" (71.1cm x 48.3cm x 33cm)
NOVO Folding Slider Case	Rugged 1740 Pelican™ case	44.2" x 16.1" x 14.0" (112.2cm x 40.9cm x 35.6cm)

Folding Slider*

System	NOVO 15 Rover 4K	NOVO 15 Rover	NOVO 15 Patrol	NOVO 15 Tactical	NOVO 15 Urban	NOVO 22 Rover 4K	NOVO 22 Rover	NOVO 22 Patrol
Folding Slider Size (folded)	38.6" x 11.8" x 10.6" (98cm x 30cm x 27cm)							
Imaging Area	27.3" x 22.4" (69.3cm x 57cm)					33.6" x 28.0" (85.4cm x 71.2cm)		

*The folding Slider is an external module and arrives in a Customized 1740 Pelican™ Case

Tablets

	Panasonic Toughpad™ 4K	Panasonic Toughpad™ FZ-G1	Panasonic Toughpad™ FZ-M1
Screen Size	20"	10.1"	7"
Screen Resolution	3840 x 2560 (4K)	1920 x 1200	1280 x 800
Screen Brightness (NIT)	300	800	500
Multi-Touch	10 point touch	10 point, glove touch	10 point, glove touch
Operating System	Windows® 10	Windows® 10	Windows® 10
Weight	5.27 lbs. (2.4 kg)	2.5 lbs. (1.1 kg)	1.2 lbs. (0.54kg)
Military Standard	N/A	MIL-STD-810G	MIL-STD-810G
Dust & Water Resistance	N/A	IP65	IP65
Drop Rating	1 ft (30cm)	4 ft (1.2m)	5 ft (1.5m)

X-ray sources

	XRS-4	XRS-3	XR200	XR150
KVP	370	270	150	150
Weight	22 lbs. (10 kg)	12.6 lbs. (5.7 kg)	11.8 lbs. (5.4 kg)	5 lbs. (2.2 kg)
Size	17.5" x 5" x 8.5" (44.5cm x 12.7cm x 21.6cm)	14" x 4.5" x 7.5" (35.6cm x 11.5cm x 19cm)	12.5"x4.5"x 7.5" (31.75cm x 11.5cm x 19cm)	10.5" x 3" x 4" (26.5cm x 8cm x 10cm)

• Designs and specifications are subject to change without notice •• Numbers are rounded for convenience purposes ••• E&OE

Comparison Table

System		NOVO 15 Rover 4K	NOVO 15 Rover	NOVO 15 Patrol	NOVO 15 Tactical	NOVO 15 Urban	NOVO 22 Rover 4K	NOVO 22 Rover	NOVO 22 Patrol
Detector	Detector Model	NOVO 15WS					NOVO 22WS		
	Detector Imaging Area	9.1" x 11.2" (23.1cm x 28.4cm)					14" x 16.8" (35.5cm x 42.6cm)		
	Detector Weight	3.5 lbs. (1.6kg)					6.1 lbs. (2.8kg)		
	Steel Penetration*	Over 3.3" (>85mm)					Over 3.3" (>85mm)		
	Detector Load Proof	330 lbs. (150kg)					330 lbs. (150kg)		
	Detector Drop Test	27.6" (70cm)					27.6" (70cm)		
	Detector Thickness	0.6" (15.6mm)					0.6" (15.6mm)		
		15 Rover 4K	15 Rover	15 Patrol	15 Tactical	15 Urban	22 Rover 4K	22 Rover	22 Patrol
Case	Case / Backpack	Rugged Pelican Case w/Wheels	Rugged Pelican™ Case w/Wheels	Full Size Backpack	Rugged Small Backpack	Small Covert Backpack	Rugged Pelican™ Case w/Wheels	Rugged Pelican™ Case w/Wheels	Full Size Backpack
Tablet & Software	Multi Tablet Support	●	●	●	●	○	●	●	●
	NOVO Touch Standard Software	●	●	●	●	●	●	●	●
	MIL-STD-810G FZ-M1 - 7" Tablet	●	●	●	●	●	●	●	●
	MIL-STD-810G FZ-G1 - 10.1" Tablet	●	●	●	●	●	●	●	●
Communication	Panasonic Toughpad™ 4K - 20" Tablet	●	●	●	○	○	●	●	●
	Wire and Wireless Operation	●	●	●	●	●	●	●	●
	Standard cable length	165 ft. (50m)	165 ft. (50m)	165 ft. (50m)	65 ft. (20m)	33 ft. (10m)	165 ft. (50m)	165 ft. (50m)	165 ft. (50m)
	Up to 300m Comm. Extension Cable	●	●	●	** ●	○	●	●	●
Lookout	400m Wireless Range	●	●	●	** ●	○	●	●	●
	Organic Detection	●	●	●	** ●	○	●	●	●
	Live Day / Night Video & Stills Remote Camera	●	●	●	** ●	○	●	●	●
	Live Remote Audio	●	●	●	** ●	○	●	●	●
Misc.	MIL-DTL 38999 Rugged Weatherproof Connectors	●	●	●	●	●	●	●	●
	16 Hours Battery Operational Time	●	●	●	** ●	○	●	●	●
	White / IR LED Flashlight	●	●	●	** ●	○	●	●	●
	Unlimited Operation Time with External Power	●	●	○	○	○	●	●	○
	Robot Integration	●	●	●	** ●	●	●	●	●
X-ray Source	Space for Golden XR150 In Case	●	●	●	●	●	●	●	●
	Space for Golden XR200 In Case	●	●	●	●	●	●	●	●
	Space for Golden XRS-3 In Case	●	●	●	*** ●	●	●	●	●
	Golden XRS-4 Support	●	●	●	●	●	●	●	●

Scale: Standard ● Optional ● N/A ○

* Tested with Golden XRS-3 at ~10" (25cm) ** Not available with Golden XRS-3 Configuration *** Fits without Control Box - requires Wireless Spark

Wireless Set Up Example: Control Box



Wireless Set Up Example: Spark



Components & Features

Detectors

NOVO 15WS

3.5 lbs. (1.6 kg)

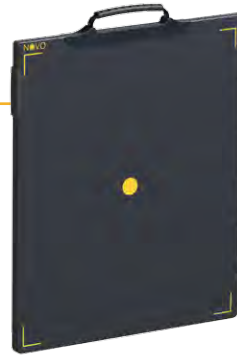
Drop Tested 27.6" (70cm)



NOVO 22WS

6.1 lbs. (2.8 kg)

Drop Tested 27.6" (70cm)



The NOVO 15WS and NOVO 22WS Detectors provide outstanding image quality in a rugged, durable thin design and are the latest in DR imaging technology. These high end detectors allow for over 3.3" (>85mm) steel penetration* capabilities in addition to other unique applications. As part of the robust design of the detectors we've added a dual direction magnetic cable connector

feature which ensures safety and no need to worry when a cable is accidentally "ripped" apart from the detector in addition to quick and reliable cable connections. NOVO's detectors are specifically designed for a variety of fieldwork operations & harsh weather conditions as they are wireless, robust, lightweight, portable and contain a built in battery.

* Tested with Golden XRS-3 at ~10" (25cm)

Tablets



Panasonic Toughpad™
FZ-M1 7"



Panasonic Toughpad™
FZ-G1 10"



Panasonic Toughpad™ 20" 4K

NOVO offers a variety of Windows® 10 tablets, two rugged MIL-STD-810G, IP65 Panasonic Toughpad™ Tablets: The G1 10.1" Tablet and the M1 7" Tablet. In addition, for a larger display we provide the Panasonic Toughpad™ 4K - A revolutionary 20" 4K Display (3840 x 2560 Pixels).

All tablets can be operated from our customized case or quickly removed and used hand-held.

Together with NOVO's Touch software, the tablets are used

to control the system operation, display the X-ray images as well as image enhancing, storage and information sharing. Each system must contain at least one tablet however two tablets are often used – one tablet for control and display down range (near the inspected item) and a second tablet up range (in a vehicle, for example). Providing the option of multiple tablet control allows added safety in the field and increased productivity.

X-ray Sources

NOVO's systems are designed to operate perfectly with the entire range of Golden Engineering X-ray sources (both old and new generations) including the Golden XR150, Golden XR200, Golden XRS-3 and the Golden XRS-4. With NOVO's systems, that range between fully wireless operation to fully wired, operation safety distance is easily obtained.

The Golden X-ray sources are portable, battery operated, light weight and contain no radioactive materials. In



addition, for quick deployment and setup the Golden is connected, with a specially designed connector, to the control box making it easier to extract both modules from the customized case.

* We fully support Constant Potential & Gamma Sources

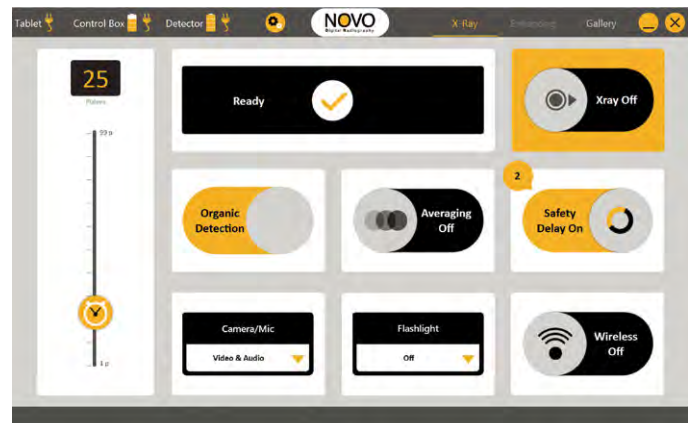
NOVO Touch Software



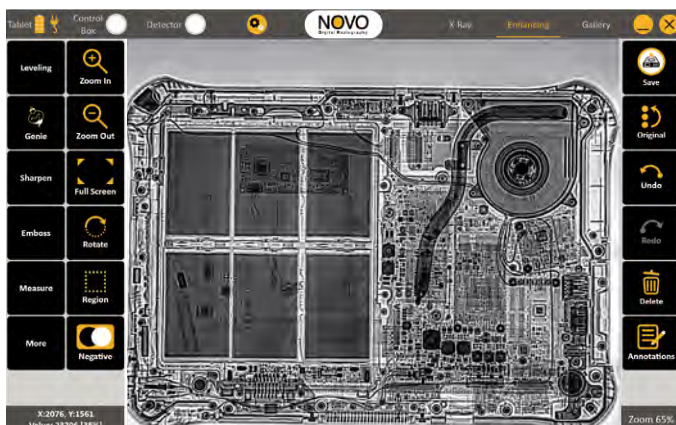
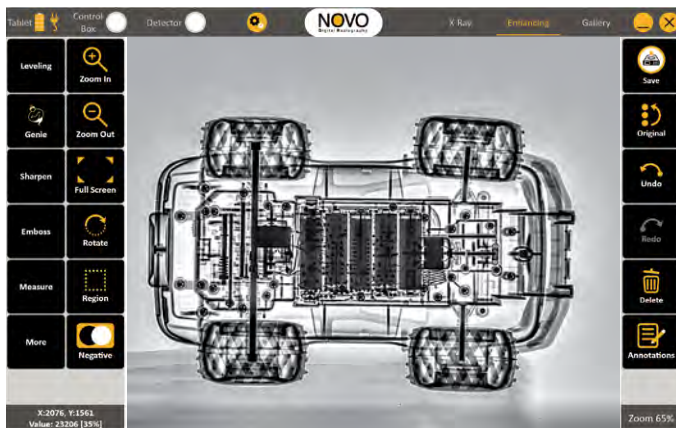
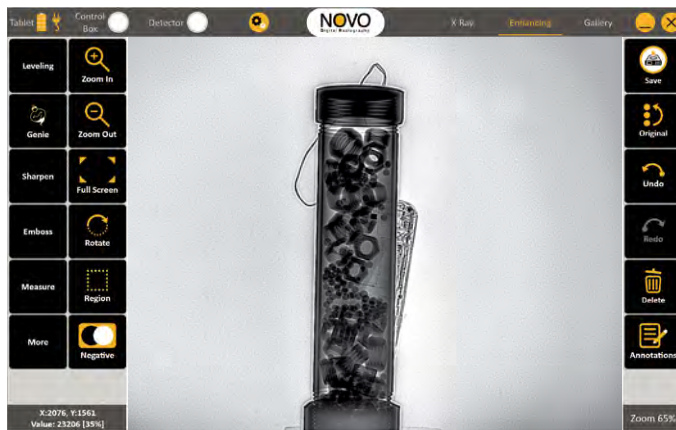
The NOVO Touch Software is NOVO's proprietary software developed from the ground up to provide the best experience and functionality in harsh & extreme field operations. Supporting Windows®

10 and compatible with both standard PC's and the latest touch screen technology NOVO's User Friendly Software offers intuitive operation for grabbing X-ray images, automatic powerful image enhancement, annotating, archiving and sharing information.

In addition, the NOVO Touch Software has built it tools such as the Genie, HDR, summing, subtraction, and stitching. Another important feature of NOVO's Touch Software is the ability to control hardware features such as illumination,



switch from wired to wireless communication, activate a variety of X-ray sources and more.





The Genie Enhancement Feature

Viewing Images with Clearer and Better Details.



Before



After



HDR Feature

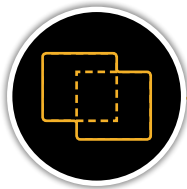
View Easy & Hard to Penetrate Materials with High Dynamic Range Images



Steel Pipe Bomb inside a Backpack

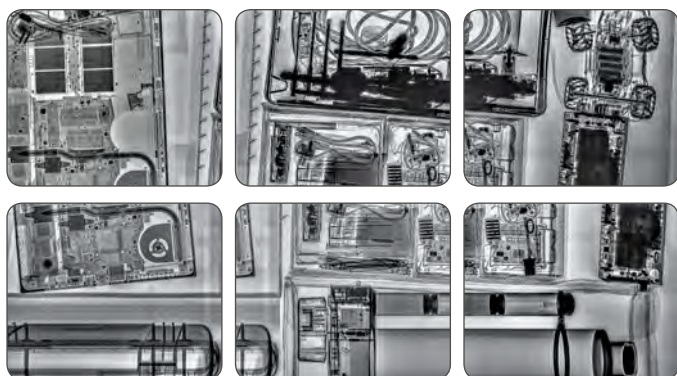


Electronic Device inside a Plant



Stitching Feature

Extremely Fast, Automatic Image Generation



Before - Multiple X-Ray Images



After - One Large X-Ray Image

NOVO's Control Box provides unique power, communication, X-ray control and lighting capabilities for maximum flexibility in field operation:

Power

- Built-in battery
- 16 hours of operation
- Unlimited power when connected to AC
- Built-in quick charger for fast charging
- The auto sense feature allows the control box to switch between AC power and battery power automatically

Communication

- Wireless Communication
- Wired Communication
- Hybrid Mode Communication

X-ray Control

- Controls a variety of X-ray sources
- Supports All Golden Engineering sources
- Supports constant potential sources
- Compatible with working with Isotopes such as Iridium-192 source

Lighting

- White LED Flashlight
- Infra-red Flashlight
- LED is used for lighting the inspection environment and as a safety feature when the X-ray is activated
- Infra-red Flashlight illumination provides a discreet solution when needed

Mounting Points

- D-Rings located on the top
- 1/4" Thread located on the bottom
- Can be mounted on a tripod or straps

Rugged & Weatherproof

- MIL-DTL 38999 connectors
- Special weatherproof design
- Reliable operation in all weather conditions

Direct Connection

- Easy connection to Golden sources
- Minimizes the number of items taken down range – Golden & The Control Box are now connected
- Used as an elevated platform for the Golden source

LED Indicators

- LED Indicators show the CONNECTION, DC IN and BATTERY status at all times
- During Infra-red illumination, the LED indicators are switched off

Audible Siren

- Audible Siren is automatically activated during X-ray operation

Remote On/Off

- Switching the Control Box both On & Off remotely is possible when using wired communication.
- Turning Off the Control Box remotely is possible when using wireless communication.



Lookout

The NOVO Lookout is a 3 in 1 accessory enabling the following capabilities:

Organic Detection

- Assists in identification of the content and nature of an inspected item by providing organic / in-organic detection
- A color X-ray image is automatically displayed
- The Organic Detection Dual Energy Images comply with airport security standards

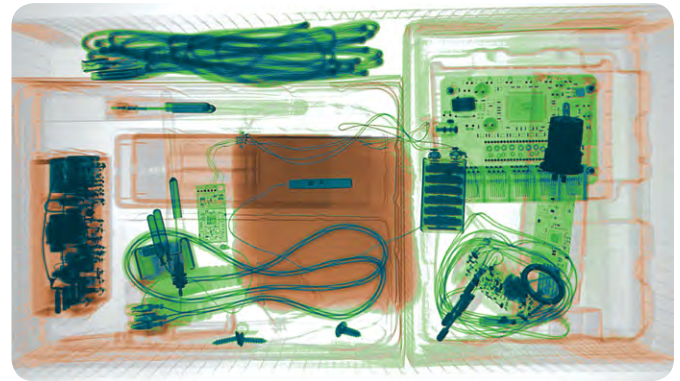
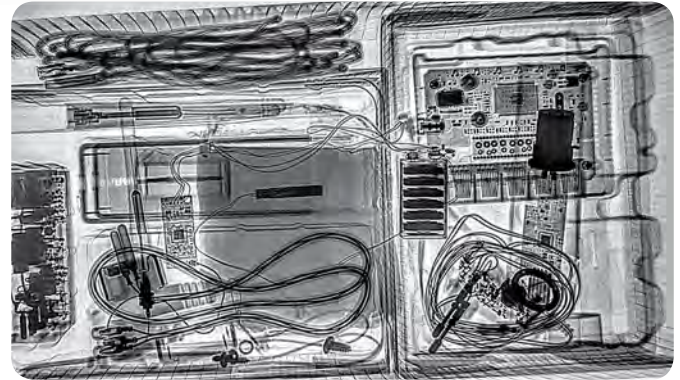
Live Video

- Provides a Live Video stream of the inspected item
- The Camera switches automatically between day / night mode (Infra-red)
- Provides A Still Image that can be grabbed and used for analysis and documentation

Live Audio

- Provides a Live Audio stream of the inspected environment allowing the operator to hear the Golden's "clicks" in addition to monitoring the sounds in the surrounding area

- **Light weight**
- **Controlled completely by the NOVO Touch Software**
- **Compatible with Golden Engineering XR150, XR200 and XRS-3 sources**
- **Tool-free**



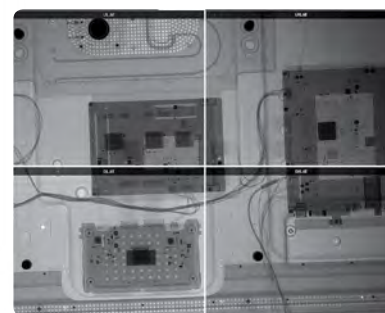
Folding Slider

The NOVO Folding Slider is the ideal solution for large objects screening. This sturdy, portable and easy to handle module provides a screening area of 2X2 when using the NOVO 22 WS and 3X2 when using the NOVO 15 WS.

Controlled by the NOVO Touch Software, the NOVO Folding slider has completely automated movement. The

NOVO Folding Slider will produce multiple X-ray shots (4/6 depending on the Detector) and generate an outstanding high quality mosaic image, all with a touch of a finger.

Once folded the NOVO Folding Slider has a small footprint, making it easy to move around and ideal for storage in an EOD van or any other storage option.



Mosaic Image



Detector Stand

The Detector Stand is a custom made accessory firmly holding the Detector in an upright position (portrait or landscape) when required. The Detector Stand is constructed in a way that allows both a standalone approach (*figure a*) and an approach where the detector is leaning on a wall (*figure b*). The stand's low profile design provides high flexibility in tight places.

Figure a



Figure b



Tripod Mounts

The Tripod Mount is a lightweight accessory that firmly holds the detector and provides two 1/4" standard threads used in order to connect to a tripod, manipulation arm etc. The connection is secured by a safety pin, allowing almost unlimited positioning. The Tripod Mount is typically used for positioning the detector in elevated inspection points.



Soft Protective Cover

The Detector Soft Protective Cover provides additional weather and impact protection as well as a carrying strap, D-Rings and a Tripod Mount opening all contributing too maximum flexibility when positioning the detector. The protective case supports both wireless and wired operation.



Armor

Using the newest shock absorbent technology and providing additional mechanical protection this custom tool free case provides the utmost protection to the Detector.

The Armor's special water resistant design supports both wired and wireless communication, allows multiple positioning options (tripod, straps etc.) and provides a simple battery replacement.



Wireless Accessories

Wireless Ranger

The NOVO Wireless Ranger is a battery-free, lightweight, compact wireless transceiver, which extends the wireless communication range between the tablet and the inspection area up to a staggering 400m line of sight. Using the Wireless Ranger built in magnets and with no need of any tools the Wireless Ranger can be mounted on the tablet, when it is handheld, on the Rugged Case or any other ferromagnetic object such as a vehicle.



Wireless Ranger

Wireless Spark

The NOVO Spark is a small, wireless, battery-free device that is mounted with magnets (no need of any tools) to the Golden Engineering X-ray source and can remotely trigger the source from NOVO's tablet. The NOVO Spark is ideal when the absolute minimum weight on target is required.



Wireless Spark

Communication Cable

Built-in 50m Reel



The communication cable provides reliable and fast data transmission between the tablet and the detector. The cable also delivers Power Over Line for unlimited operation time when an external power source (such as vehicle DC to AC inverter) is available. NOVO's custom made reel is

Extension Reel



lightweight yet robust and can be used connected to the case or as "stand-alone". Additional extension cables of 50m, 100m and 150m are available for a maximum of 300m operation range. For operation ranges the exceed 300m, please see NOVO's wireless solutions.

Robots Integration

As NOVO's detectors are the lightest of their kind, they allow integration even with small robots while providing excellent manipulation, flexibility and reach. NOVO's system can be either controlled independently, or when necessary - communication and power can be channeled through the robot. When "no human approach" is required, NOVO's systems are the robot's ideal partners.





Portable Digital Radiography Systems

About NOVO DR Ltd

NOVO DR Ltd. is the leading developer and manufacturer of Portable Digital Radiography X-ray Inspection Systems. We produce the latest generation flat panel based radiography inspection systems for the Security, NDT and Science and Art sectors.

Combining our decades of experience and intensive in-house R&D, NOVO DR is taking portable digital radiography to the highest level possible while emphasizing the following strong points:

- ***Highest image quality***
- ***Portability & Small footprint***
- ***Ruggedness***
- ***Efficient user experience***
- ***Field work optimization***