SPECTRUM TECHNOLOGIES

Nova™ 50-100i Series

Nova 50-103i
A CAPRIS® PRODUCT

Bench-top UV Laser wire mark, measure & cut systems

SIMPLIFY MANUFACTURING - INCREASE PRODUCTIVITY - REDUCE COSTS

Nova 50-100i Series

6th generation UV laser wire marking systems

Designed to meet the growing demands and challenges across industry these machines incorporate a range of leading edge technologies to create a state-of-the-art family of laser wire processing systems. Providing mark, measure and cut capabilities for applications ranging from low volume manufacturing and maintenance to full scale production.

The predecessor mask based *CAPRIS* 50-100, introduced in 2003, was the world's first bench top UV laser wire marker. Over 375 of these units have been sold making it the most widely used laser wire marker in the world. The new Nova 50-100i, which replaces it, builds on this legacy with a completely reengineered and fully updated and expanded product range. Three new models provide increased throughput and productivity along with new capabilities in a cost efficient package offering the lowest cost of ownership without compromising on quality.

The new range comprises the Nova 50-101i, 50-102i and the 50-103i models with marking speeds of 12, 18 and 28 metres per minute (40, 60 and 90 ft/minute).

A key benefit of the Nova 50-100i series is the range of new and enhanced features available either as standard or as options depending on the model. In addition systems may be upgraded in the field to higher specification models, providing flexibility to respond to future changes in demand.
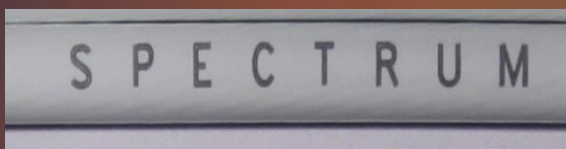
Above: UV Laser marked wire

At its heart the Nova 50-100i incorporates a new laser marking module. This employs a high pulse rate, air-cooled, diode pumped UV solid state laser, coupled with a two axis galvanometric scanning system that directly writes the required characters onto the surface of the wire.

This system offers completely flexible marking, with unlimited character sets, variable font sizes and the ability to mark upper and lower case characters, as well as linear bar code, e.g. BC39, and 2D data matrix machine readable codes.

Above: Linear barcode and 2D data Matrix machine readable codes

Optimised fonts ensure maximum mark quality and legibility, delivering "The Mark of Excellence".

Nova 50-100i wire markers comply with all key OEM aerospace specifications and international standards, including SAE AS5649 and ASD EN4650, "Wire and cable marking process, UV laser". Qualified to Boeing standards: BAC 5152, D6-36911. Meets Airbus and other key OEM requirements.

Nova 50-100i BENEFITS

- **Mark flexibility and quality** – Nova 50-100i systems offer the ultimate in print flexibility with unlimited character sets, upper and lower case marking, variable font sizes, logos and linear and 2D machine readable code marking.

- **Capabilities & upgradability –** the modular design of the Nova 50-100i series coupled with a choice of wire handling options, enables systems to be configured to meet customers' precise requirements. The modular design ensures that systems can be easily upgraded in the field to ensure that as your business grows, so can your Nova system.

- **Cost of ownership** – the enhanced cost performance ratios of the Nova 50-100i, resulting from the new high efficiency laser system, combined with the extended maintenance intervals and minimal consumables required, deliver significantly improved total cost of ownership.

- **Reliability and ease of maintenance** – the Nova 50-100i has been designed for both ease of use and maintenance. Hinged doors and easy access panels provide quick access to all parts of the machine. Alignment of the laser beam to the wire for set up and maintenance is undertaken simply via the PC in Class 1 laser mode. No flash lamps or water filters to change - the new long life diode packs are rated for 20,000 hours operation.

	Nova 50-101i	Nova 50-102i	Nova 50-103i
STANDARD FEATURES AND OPTIONS			
Wire loading system - select either:	Single table-top unpowered dereeler	Single table-top unpowered dereeler	Single floor standing unpowered dereeler
	Or: Multi-station dereelers as required. (See Nova Automation Brochure for details)		
Coiling pan – 12 inch / 30cm diameter	✓ Unpowered	✓ Powered	✓ Powered
Coiling pan motion sensor actuator	Optional	Optional	Optional
KSD knot & splice detection (digital optical)	Optional	✓	✓
In-line real time wire tension monitor	Optional	Optional	Optional
Traffic light tower	Optional	Optional	Optional
Upper/lower case marking	✓	✓	✓
Linear Bar-Code & 2D matrix marking on wire	Optional	Optional	Optional
Available Field Upgrades			
Nova system upgrade	N50-101i to N50-102i or N50-103i	N50-102i to N50-103i	n/a
Nova Wire Marker Performance			
Nearest CAPRIS predecessor model	CAPRIS® 50-100PCS	Nova 800	Nova 820

Nova 50-100i SERIES ACCESSORIES

Printers and Machine readable coding: Linear barcodes, 2D data matrix codes & readers

Our 6th Generation wire markers can mark both linear bar code and 2D data matrix codes to help speed harness manufacturing. To complement this capability we have also developed two high performance readers dedicated to wire harness applications. Our Linear and 2D Data Matrix readers are optimised for reading codes on small gauge wires. Both can be used in a handheld or hands-free configuration and are portable so can be used anywhere on the shop floor. Get in touch for more information.
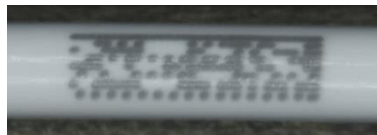
Above: Linear barcode and 2D Matrix machine readable codes

Above: Stingray Linear barcode reader

Label printers: To further aid manufacturing of wire harnesses, label printers may be integrated with the Nova systems to automatically generate self adhesive labels with printed data, e.g. for tracking and routing purposes, etc. Printed data is selected from customers' down loaded job files as required and may include alphanumeric data as well as machine readable code. Please contact Spectrum Technologies for full information.

Nova Pegasus downstream automation system

Nova PEGASUS is a ground-breaking high performance downstream automation unit that will revolutionise the way you run your electrical wire harnessing production.

The Nova Pegasus downstream automation (DSA) system is a modular unit designed to integrate with the Nova series laser wire markers including the Nova 50-100i and replaces the coil pan system generally used to collect the wires as they exit the marker. Integrating Nova Pegasus fully automates the wire marker allowing unattended operation for extended periods.

The system is modular and configurable with various options providing different levels of automation to enable it to be customised to meet individual customer requirements. Get in touch to find out more.

Nova 50-100i Series
Mark-Measure-Cut

Summary specification

LASER MARKER
- High efficiency, air cooled, long life diode pumped solid state (dpss) UV laser
- Fully flexible scanning marking system
- Sealed lasers – no need for specialised laser maintenance engineers / training
- Simplified maintenance; minimal consumables
- Reduced total cost of ownership
- Three models to choose from:
  Nova 50-101i, Nova 50-102i, Nova 50-103i

PRINT SPECIFICATION
- Up to 200 characters per identification mark as standard
- Full upper and lower case ASCII alphanumeric character set available as standard
- Machine readable codes
- Custom characters available on request

WIRE PROCESSING SPECIFICATION
- Wire size range: 26 AWG to 6 AWG (0.8 mm to 6.4 mm OD)
- Min/max cable length: 150mm (6") / 999m (39,300") (nominal)
- Accuracy of processed wire and cable lengths: -0/+0.25% (typical) +0.5% (max)
- Measure & cut capability for non-markable wires
- Speeds up to 28 m/minute (90 ft/minute)

WIRE HANDLING
- Single and multi-station dereeler options
- Manual wire loading
- Automatic detection of knots, splices and wire ends with optical KSD (Knot and Splice Detector) Optional on Nova 50-101i **
- Single coil pan as standard
- Coil pan motion sensor **
- Other downstream wire collection options available, including rereeler option for continuous filament processing **

WIRE TYPES
- Marks all types of UV laser markable wires and shielded and unshielded multi-conductor cables. Full list available on request

CONTROL
- Windows based control software
- New, intuitive, easy to use interface
- 25.6 cm / 10 inch touchscreen operation standard on all models
- Smart wire and cable wastage minimisation routine

OPERATING CONDITIONS
- Ambient temperature 15°C to 35°C (60°F to 95°F)
- Relative humidity 20% to 80% (non-condensing)

SITE REQUIREMENTS
- Electrical power: Universal input 110/230V 50/60Hz 5kVA single phase

DIMENSIONS
- 1096 (L) x 762 (W) x 827 (H) mm (43.1 x 24.5 x 32.5 inch)

WEIGHT
- 91 kg / 200 lbs

STANDARDS & QUALIFICATIONS
- Nova 50-100i wire markers comply with the requirements of SAE AS5649 and ASD EN4650 "Wire and Cable Marking Process, UV Laser".
- Qualified to Boeing BAC 5152, D6-36911
- Meets requirements of Airbus AIPS
- The laser marking process has been verified not to cause any impairment to the wire surface or to vary the electrical or mechanical properties of the wire insulation when carried out in accordance with the operating instructions.

** Optional items subject to charge.

SPECTRUM TECHNOLOGIES

![Spectrum Technologies logo] SPECTRUM TECHNOLOGIES

Nova™ 800i SERIES

series 800i **Nova**
A *CAPRIS*® PRODUCT

HIGH PERFORMANCE UV LASER WIRE MARKING AND PROCESSING SYSTEMS

For complex wire harness
manufacturing applications

Nova 800i SERIES

THE FASTEST, HIGHEST PERFORMANCE, SOLID STATE UV LASER WIRE MARKERS IN THE WORLD

Introducing a new laser wire marking superstar…

The Nova 800i series is Spectrum's 6th Generation UV laser wire marker, incorporating a range of leading edge technologies to create a state-of-the-art family of laser wire processing systems. Designed to meet the growing demands and challenges across industry by providing innovative solutions to complex wire harness manufacturing applications.

MARK QUALITY AND LEGIBILITY

"The Mark of Excellence"

The heart of the Nova 800i is a new laser marking module, comprising a high pulse rate, air-cooled, diode pumped UV solid state laser, coupled with a two axis galvanometer scanning system that directly writes the required characters onto the surface of the wire. Optimised fonts ensure maximum mark quality and legibility.

Nova wire markers comply with all key OEM aerospace specifications and international standards, including SAE AS 5649 and ASD EN4650, "Wire and cable marking process, UV laser". Qualified to Boeing Standard D6-36911.

RIGHT: The Nova 800i series range of UV laser wire markers - Nova 880i shown

Nova 800i BENEFITS

· **Mark flexibility and quality** – Nova 800i systems offer the ultimate in print flexibility with unlimited character sets, upper and lower case marking, variable font sizes, logos and linear and 2D machine readable code marking.

· **Performance and productivity** – the Nova 880i is the fastest laser wire marker on the market; with three models to choose from the Nova 800i systems are the highest performing, solid state UV laser wire markers available. The high speed marking capabilities of the 800i series combined with other innovations ensure that they deliver market leading wire processing throughput and productivity.

· **Capabilities & upgradability** – the modular design of the 800i coupled with a choice of wire handling options, enables systems to be configured to meet customers' precise requirements. This includes a range of automation solutions enabling up to 32 different wires to be set up and processed under computer control. The modular design ensures that systems can be easily upgraded in the field to ensure that as your business grows, so can your Nova system.

· **Reliability and ease of maintenance** – the 800i has been designed for both ease of use and maintenance. Hinged doors and easy access panels provide quick access to all parts of the machine. The large front door provides improved access to the cable handler for easier loading and unloading of wires, while the up and over side panels provide quick access to the sealed IP4X laser & optical enclosure for maintenance. Alignment of the laser beam to the wire for set up and maintenance is undertaken simply via the PC in Class 1 laser mode. No flash lamps or water filters to change - the new long life diode packs are specified to last tens of months before requiring changing.

· **Cost of ownership** – the enhanced cost performance ratios of the new 800i, resulting from the new high efficiency laser system, combined with the extended maintenance intervals and minimal consumables required, deliver significantly improved total cost of ownership.

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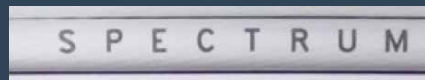
ABOVE: Example of laser scanned Nova 800i text

CAPRIS® Nova	840i	860i	880i
STANDARD FEATURES AND OPTIONS			
Wire loading system - select either:	**MANUAL** - includes single powered dereeler, or		
	AUTOMATED - includes wire auto select & load (ASL). Multi-station dereelers available as required (See Nova Automation Brochure for details)		
In-line real time wire tension monitor	Optional	Optional	Optional
Coiling pan - 12 inch / 30 cm diameter	✓	✓	✓
Coiling pan - 7 inch / 18 cm diameter	Optional	Optional	Optional
Coiling pan - 15 inch / 38 cm diameter	Optional	Optional	Optional
Coiling pan motion sensor actuator	Optional	✓	✓
KSD knot & splice detection (digital & optical)	✓	✓	✓
Built-in Laser Power Meter	Optional	✓	✓
Touch Screen - 17 inch / 43 cm	Optional	✓	✓
8kVA Transformer (208/480V to 230V)	Optional	Optional	Optional
Linear Bar-Code marking on wire (BC39)	✓	✓	✓
Upper/lower case marking	✓	✓	✓
AVAILABLE FIELD UPGRADES			
Nova system upgrade	N840i to N860i/880i	N860i to N880i	n/a
Manual to automated wire handling upgrade	✓	✓	✓
Nova WIRE MARKER PERFORMANCE			
Throughput and Marking Speeds	Nova 800i systems offer the highest performance and marking speeds available at any level up to the Nova 880i		
	Please contact Spectrum Technologies for full details and like for like product comparisons.		
Nearest CAPRIS® predecessor model	Nova 840	Nova 860	Nova 880

Nova 800i SYSTEM THROUGHPUT AND PRODUCTIVITY
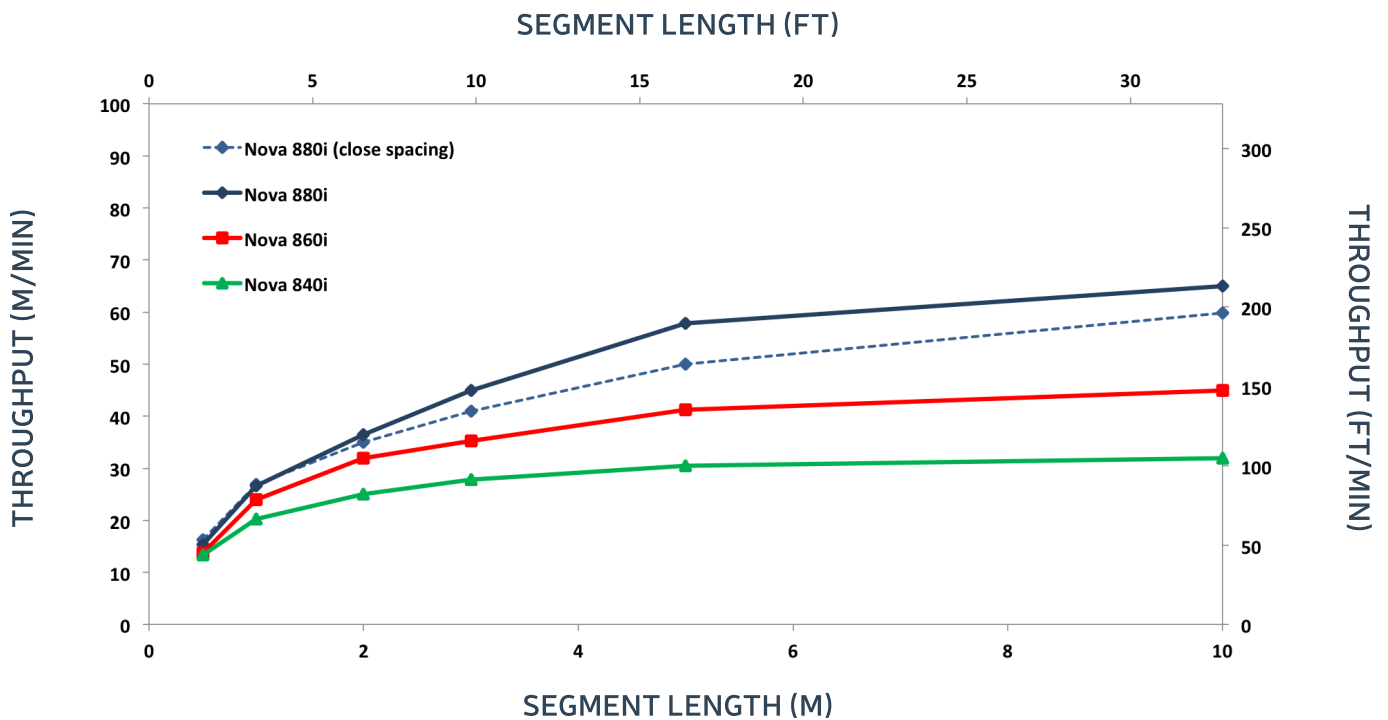
Note: the 840i and 860i have the identical throughputs for both commercial wide spacing and military close coded spacings, whereas the 880i performs at a slightly higher speed for commercial spacings.

SUMMARY SPECIFICATION

CAPRIS® Nova 800i series UV Laser Wire Marker Systems. Applicable to all models:

LASER MARKER

- High efficiency, long life diode pumped solid state (dpss) UV laser
- Fully flexible galvanometer scanning character marking
- Lowest cost of ownership – efficient high performance systems; minimal consumables

PRINT SPECIFICATION

- Up to 200 characters per identification mark as standard, can be optionally extended.**
- Full upper and lowercase ASCII alphanumeric character set available as standard in addition to some legacy characters:

  ABCDEFGHIJKLMNOPQRSTUVWXYZ
  abcdefghijklmnopqrstuvwxyz
  0123456789
  -=`[];'#/\ !"£$%^&*()_+¬{}@~<>?|
  ✷ (asterisk) ■ (target square) ● (circle) and a blank space
  Custom characters are available on request: e.g. α Δ

FONT	Metric (mm)	Imperial (inch)	H/W Ratio	Suitable for wire AWG (typical)
Large horizontal	1.60 x 1.20	0.063 x 0.047	4:3	16 and larger
Medium horizontal	1.12 x 0.84	0.044 x 0.033	4:3	18, 20, some 22
Medium vertical	1.20 x 0.90	0.047 x 0.035	4:3	22, some 24
Small vertical	1.20 x 0.60	0.047 x 0.024	2:1	24, 26, 28, some 30

WIRE PROCESSING SPECIFICATION

- Wire size range: 26 AWG to 6 AWG (0.8 mm to 6.4 mm OD).
- Min/max cable length: 150 mm (6") / 999 m (39,300") (nominal).
- Accuracy of processed wire and cable lengths: -0%/+0.25% (typical) +0.5% (maximum).
- Measure and cut capability for non-markable wires.

WIRE HANDLING

- Unpowered and powered dereelers with controlled pay off and wire tension.
- Automatic detection of knots, splices and wire ends with a custom optical, digital KSD (Knot and Splice Detector).
- Single motorised coiling pan as standard, other downstream wire collection options available.
- Rereeler option for continuous filament processing.**

WIRE TYPES

- Marks all UV-markable shielded and unshielded, single and multi-core cables - full list available on request.

CONTROL

- PC, Windows based control software with Yaskawa PLC.
- Touchscreen operation standard on 860i and 880i, optional on 840i.
- Smart wire and cable wastage minimisation routine

OPERATING CONDITIONS

- Ambient temperature 15°C to 35°C (60°F to 95°F) as standard.
- Relative humidity 20% to 80% (non-condensing)

SITE REQUIREMENTS

- Electrical power: 5kVA single phase, e.g. 230VAC, 50/60Hz; Spectrum can provide a transformer where necessary.
- Compressed air: 6 bar (88 psi)
- Extraction: 50m³/hr (30cfm peak) (25ft³/min) or connect to optional ACS4 Air Cleaning System **

DIMENSIONS

- 1755mm (L) x 1430mm (W) x 1845mm (H) (69.1" x 56.3" x 72.6")

STANDARDS & QUALIFICATIONS

- Nova 800i wire markers comply with the requirements of SAE AS5649 and ASD EN4650 Wire and Cable Marking Process, UV Laser.
- Qualified to Boeing Standard D6-36911.
- The laser marking process has been verified not to cause any impairment to the wire surface or to vary the electrical or mechanical properties of the wire insulation when carried out in accordance with the operating instructions.

** Optional items subject to charge.

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SPECTRUM TECHNOLOGIES

Nova™ 1000

High performance UV laser wire marking module for integration into production lines or existing wire handling equipment

marking

ILWMEN-161013

Nova 1000

High performance in-line laser wire marking system

The Nova 1000 in-line unit is a high speed UV laser marker designed for the printing of manufacturer identifications onto wire and cable with laser-markable insulations.

The characteristics of this mark is such that it should be distinct from any subsequent laser marking that may be applied by end users in the process of wire harness manufacture.

Designed for integration into the extrusion line, the material to be marked does not require any treatment (flame / heat / plasma / irradiated) prior to marking. Additionally the system can be incorporated into an external re-wind line with suitable Pay-off and Take-up units.

The Nova 1000 system comprises the laser marking module, a floor standing laser cooling system and an industrial PC with bespoke Windows-based software for simple programming.

The software allows for marking of numbers, letters and symbols to create a repetitive mark along the length of the wire or cable. A software option** can allow incremental marking as well as the ability to mark logos and images*.

UV laser is the accepted international standard for wire marking within the aerospace industry. It allows marking on a wide range of high performance "non-stick" fluoropolymer wires as well as multi core jacketed cable and some coaxial cables. It can also mark fibre optics.

For information on marking specific wire and cable types please contact Spectrum Technologies.

Benefits of UV laser marking:

- High legibility mark
- No pre- or post-treatment of wire
- Permanent under all known operating conditions, including hot hydraulic fluid, fuel, abrasion
- Non-aggressive process - does not affect the integrity of the wire
- Non-contact high-speed marking 'on-the-fly'
- Marks single core wires and jacketed multi core cables, screened and unscreened
- Marks white and some coloured insulations including PTFE (Teflon), ETFE (Tefzel), XLETFE & FEP
- Variable font sizes matched to wire gauge
- No day to day consumables & low direct operating costs

To comply with health and safety requirements, air exhaust must be provided when using this laser processing system. If this is not available in your factory, Spectrum's ACS-5 systems remove all odours, particles and fumes from the laser processing area and return clean air to the room.

To discuss any of your requirements please contact us at **sales@spectrumtech.com** or on **+44 (0)1656 655 437**.

* Please note that marking speeds and throughput are dependent on a number of factors such as font size, font type, number of characters per ident, spacing between idents, type of character / image.
** Optional items subject to charge

Summary Specification

Model	Nova 1000 In-Line Wire Marking Module	
	Metric/EU	Imperial/US
Print Specification — Character set:	Full ASCii alpha numeric capability includes Spectrum speed optimised fonts. (Other fonts and tape measure mode upon request)	
Mark orientation:	Vertical or Horizontal	
Marking type:	Repetitive marking only	
Maximum characters per mark:	Up to 150 characters **Note: increasing the number of characters will result in reduced maximum speed**	
Minimum character size for vertical print:	0.6 x 0.6mm (0.02" x 0.02")	
Length of individual mark:	Up to 150mm (6")	
Mark spacing:	Up to 1000mm (40")	
Wire Processing Specification — Circular Profile: (Min / Max diameter)	0.8 – 10mm (0.03 – 0.4")	
Flat Profile:	Not possible	
Mark Spacing Accuracy:	+/- 0.5% of measured length	
Marking Speed* (Alpha-numeric only) — Single line quality:	105m/min (344 ft/min)	
Standard print quality:	60m/min (200 ft/min)	
Bold print quality:	45m/min (150 ft/min)	
Wire Handling	Passive, unpowered wire guiding system. Spectrum can supply powered wire drive mechanism and encoder for accurate mark spacing and length measurement at additional charge **Note: the wire handling system runs from left to right**	
Wire Types	All UV laser-markable shielded and unshielded, single and multi-core, jacketed cables.	
Control	Industrial standard PC with Windows-based software	
	Unlimited job file saving	
Integration	Suitable for integration into extrusion or rewind line, pay-off and take-up units	
Fume Extraction	~100m^3 / Hour (~60ft^3 / min) required. Can be provided by Spectrum ACS-5 system	
Power Requirements	220~240V-50Hz 5 Amp, single phase 110~120V-60Hz 10 Amp, single phase	
Operating Conditions	Ambient temperature 15°C to 30°C (60°F to 86°F) as standard Relative humidity 20% to 80% (non condensing)	
Dimensions L x W x H	1240 x 924 x 2147mm (49 x 36 x 85")	
Weight	Approx. 420 kgs (1256 lbs)	
Options**	• Software upgrades for incremental marking; full font capability and/or images and logos • Powered wire drive mechanism and encoder • Spectrum Single Station De-reeler (up to 25kg reels) • Spectrum Single Station Re-reeler (up to 25kg reels) • ACS-5 Air Cleaning System	

- All Nova systems are Class 1 laser products for use on open shop floor, unless otherwise stated
- Complies to CAT 3 electrical safety category and all CE marking and FDA regulations
- In-depth technical training courses available from a dedicated training department, on site at customers location or at our in house training facility
- All equipment supported for at least 10 years, guaranteed
- Spare parts stocked in the UK, US & China for same day dispatch
- Round the clock global support network with rapid response to any issues and 24 hour telephone hotline support
- 15 dedicated field service engineers based in 3 continents, and sales and service representatives in over 26 countries
- Optional diagnostic software for remote assistance via internet.
- Maintenance contracts available to keep systems operating at optimum performance

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