

# 2350 Sonic Lumber Grader

- Evaluate lumber in the planer mill for MSR potential
- Sort material in the sawmill for resource allocation before drying
- Measure sonic velocity and density to accurately and reliably sort by average E
- Speeds up to 250 lugs per minute.
- Random dimension and length capabilities
- Quick and simple installation in a transverse lug chain
- Innovative striker design to initiate sound waves in each piece
- Easy to operate and maintain



## Description

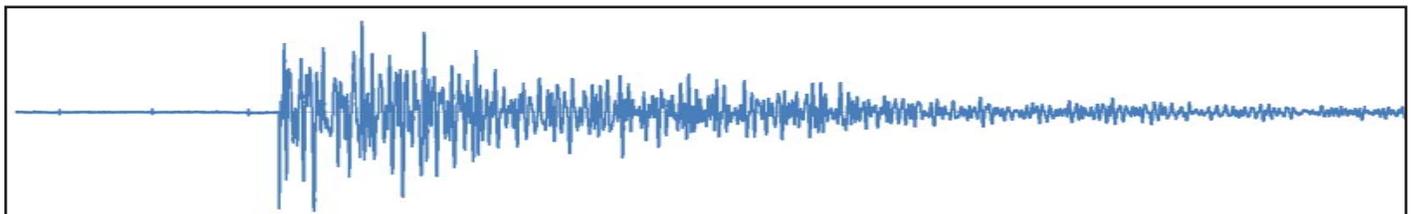
The newest Metriguard machine grading system, Model 2350, will sort lumber for stiffness using density and sonic velocity. This system is designed for a planer mill to machine grade lumber and for a sawmill to sort material for resource allocation before drying.

Lumber length and width are determined by sensors included with the 2350 or they can be automatically input from upstream measurement devices. Using sonic velocity, piece size and piece weight, the Metriguard Model 2350 accurately determines the average E (modulus of elasticity) of each piece while the material flows past. E and operator-set criteria are then used to assign a machine grade. The Metriguard Model 2350 Sonic Lumber Grader is compatible with other visual grading and scanning systems.

Metriguard's Model 2350 is installed in a transverse lug chain making it ideal for mills with limited space. Innovative design allows for internet based remote access, serial or ethernet output communication to existing PLC and/or a tally system.

The Model 2350 design is the result of over four decades of experience in the design, manufacture and servicing of lumber testing equipment. Metriguard built the first acoustic resonance-based lumber grading equipment in 1975. Other equipment using this same basic technology includes the Model 239A Stress Wave Timer for laboratory use and the Models 2600 and 2800 series veneer testers used in veneer mills around the world.

- Grades lumber for structural applications including trusses, joists, purlins, and E-rated laminate stock
- Installs in standard lugged processing chain requiring no additional floor space
- Proprietary spring suspension weigh system
- Stable and reliable calibration
- Touch screen for quick, easy user interface
- Data system networks with other computers and PLCs in the plant to share data and control functions
- Information for each piece passed to optimizing-systems downstream
- Spray marking capabilities
- Automatically records shift production and calibration data
- Modular design simplifies maintenance and repairs



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Preliminary Specifications V1.0

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## Specifications\*

### Grading method

As the specimen travels through the grading zone it is lifted and weighed. The size is measured and the weight and volume of the piece are used to compute density. An acoustic resonance is measured and combined with the piece length and density to calculate the average E (modulus of elasticity). Average E and operator-set thresholds are used to determine a piece grade. Grade information is communicated to downstream graders by spray marks and/or electronic means.

### Lumber:

Width .....	2.5 to 11.4 in [63.5 to 290 mm] (random)
Thickness .....	Operator set from 0.75 to 4.00 in [19 to 100 mm] random thickness available.
Length .....	4 to 24 ft [1.2 to 7.3 m] (random)

### Environmental conditions:

Temperature .....	32 to 120 °F [0 to 50 °C]. Low temperature option available
Operating humidity .....	<95% relative humidity non-condensing

### Calibration:

Weight .....	By test mass for calibration of load cells
Length, width & thickness .....	Rectangular bar of known dimension used to verify sensor devices
Acoustic resonance .....	Proper function of the acoustic system is confirmed by an external tone that verifies sonic detection and signal processing.
Tools .....	A set of tools for operation, calibration and maintenance is included

### Power requirements:

Data system .....	95 to 130, 175 to 235 or 380 to 520 Vac 1 kVA, 60 Hz single phase (50 Hz available). Electric power is conditioned by a constant-voltage power conditioning transformer for the computer. An uninterruptible power supply (UPS) is also provided. The optional computer air conditioner requires 50/60Hz single phase 230Vac at 1800W. Other voltages available.
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Wiring .....	Incoming power by customer
Air .....	Not required

### Data system:

Software system .....	The data system is structured around an embedded processor for measurement and processing and Windows computer for graphical user interface. The computer can be housed in an industrial enclosure with air conditioning on the mill floor or in the mill control room
Monitor .....	LCD with touchscreen
Operator interface .....	Keyboard, mouse and touchscreen
Units .....	Readout of average E in millions of pounds per square inch (Mpsi), GigaPascals (GPa) or a user defined system of units
Grading .....	Thresholds are set and stored in grade configuration files (unlimited) to be selected for each production run.
Piece tally .....	Tally by grade for piece count, lineal footage, percentage and total
Outputs and spray marking .....	Eight channels for ink spray drive and eight externally referenced PLC channels are standard. Four color 120 Vac spray system is standard; additional sprays available.
Run-time displays .....	Included
Network connection .....	Gigabit ethernet
Serial communication .....	Included
Report generation .....	Included
Installation design assistance .....	Machine installation recommendations provided.
Installation .....	By customer. Commissioning service available under separate agreement
Software updates .....	Provided for one year from date of purchase
Telephone consultation .....	Provided on all subjects regarding sellers equipment