Owner's Manual BDX-20 & BDX-30

Contents

1. Introduction

Thank you for purchasing the new BDX-20 or BDX-30, the latest in Delmhorst's legacy "BD-series" pin-type (conductance) moisture meters and the initial offerings from the new Navigator™ family of moisture meters. Delmhorst BD meters are known worldwide for their unmatched reliability and ease of use.

The BDX meters are ideal tools for the building trades, water damage restoration, and inspection applications. These exciting new meters offer the latest in features and functionality. They are packaged in a robust and ergonomically designed ABS case (patent pending) to provide a premium, tactile feel, and intuitive user interface with dashboard-like display.

Together with the new Delmhorst EDGE™ app (BDX-30), users can customize meter settings and share MC data or graphs from any jobsite quickly and accurately.

The BDX meters carry a two-year limited warranty. As with all Delmhorst products, they include our legendary customer support. REGISTER YOUR METER by using the QR code on the back of the meter or at www.delmhorst.com to receive an additional three month's warranty.

We recommend that you read the following pages in detail to take full advantage of all the BDX meters have to offer.

Should you need assistance at any time, please contact us via email at info@delmhorst.com or by calling 877-DELMHORST (335-6467).

2. Safety

Sharp Measurement Pins: The measurement pins are very sharp as they are intended to penetrate through hard woods, drywall, and building materials. Ensure that the pin cap is always covering the pins when not in use to avoid unintentional injury to the user or others.

Meter Calibration: Meters are factory-calibrated prior to shipment. Calibration should be checked before performing a job (using the internal Cal Check feature or external MCS calibration standard) to ensure the meter working correctly and is electrically accurate.

Proper Use: When used properly, the BDX meters can help users make informed decisions on the moisture levels of hygroscopic materials. A moisture meter is a secondary method of determining moisture content, and users should be aware of other potential influences on the accuracy of conductance meter readings.

3. Meter Features

Figure 1: Meter components

1. **Screen** – Easy to read, backlit LCD display.

2. **Read Button** – When in live reading mode, press this button to hold a reading. When in any other mode, press this button to enter live reading mode.

3. **Navigation Buttons** – Use the up/down/left/right buttons to navigate through the meter's display. Use the center button to confirm a selection.

4. **Easy Grip Handle** – The handle is contoured to provide a comfortable grip for right or left-handed users. This shape also allows for
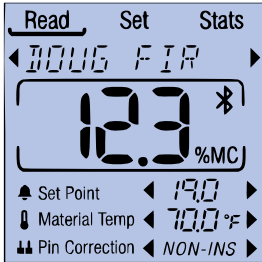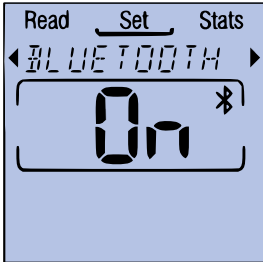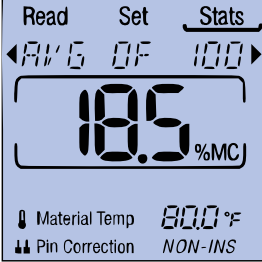
increased leverage when pushing the meter into hard materials. The battery door is located on the rear of the handle.

5. **LEDs** – The GREEN light indicates a sufficiently dry moisture level, the YELLOW light indicates a borderline condition, and the RED light indicates material that is too wet for most applications. The LED values are fixed for the BDX-20. For BDX-30 meters, the LED values can be adjusted for specific wood species and building materials through the Edge™ app.

6. **Ambient Light Sensor** – When the backlight is set to Auto, the ambient light sensor will trigger the backlight to turn on or off (to the brightness level set by the user) according to ambient lighting conditions.

7. **Contact Pins** – Integral contact pins provide penetration up to 5/16 in and are easily removable and replaceable. Be sure to leave the pin cap on the meter when the pins are not in use. To accommodate proper fit of the pin cover, use the 2498/A-100 pins.

8. **Electrode Connector** – Connect any external special application Delmhorst electrode. Be sure to leave the electrode cap on when the electrode connector is not in use to keep the connector clean.

4. Menu Features

The Delmhorst BDX meters have three operating modes: Read, Set, and Stats. The currently selected menu is marked with an underline. To change the menu, press the up button until the menu underline is blinking. Then use the left and right buttons to switch among menus. Use the down or center button to enter the menu.

Table 1: Menu Features

| Read	Set	Stats
• Change species/ material type • Take readings • Change set point • Change material temperature • Change pin type	• Cal check • Bluetooth* • Temperature unit • Off Timer • Backlight ON/OFF/AUTO • Backlight brightness • Screen contrast	• Average value • Highest value • Lowest value • Standard deviation • View last 10 readings • Erase all reading data

*BDX-30 Only

5. Read Menu Details
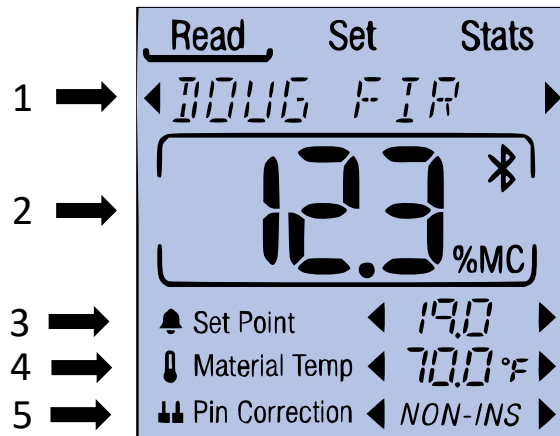
Figure 2: Read screen components

1. Species/Material Selection and Correction

Info: BDX series moisture meters are calibrated based on the USDA standard material, Douglas Fir. Each wood species/material reads differently at the same moisture content. Therefore, best accuracy can be obtained by applying a correction factor to the species/material.

The BDX-30 can save up to 12 material corrections at once. Through the *EDGE™* app, users can select from a list of 36 species/material corrections. Once a species/material correction is loaded and selected within the meter, the BDX-30 will automatically apply a correction to each reading. The BDX-20 has 3 corrections available. To make additional species/material corrections when using a BDX-20, set the meter to the Douglas Fir scale and reference Table 4 in the Appendix.

Use: Select the Read menu. While the underline flashes, press the down button to enter the species/material selection field. Press the left or right buttons to scroll through available species/materials. Any

changes to the species/material selection field will NOT be saved until the center button is pressed to confirm. **When the species or material is changed, all saved readings within the meter will be deleted.** If connected to the EDGE™ app, users will be prompted to export readings before they are deleted from the app. Please see Delmhorst EDGE™ App User Guide for further instructions regarding exporting readings and changing the available species/material corrections in the BDX-30.

2. Live Reading Area

Info: The live reading area displays the corrected moisture value of the material. The reading is corrected using the Material Type (1), Material Temperature (4), and Pin Correction (5) (see Figure 2 above).

Indicated readings with a less than (<) or greater than (>) sign are considered Out of Range (OOR). OOR readings can be saved to memory and exported but will not be used in statistical calculations.

Use: Use the navigation buttons to move to the live reading area (entry will be confirmed when a live reading appears on screen). **Tip: If a live reading is not currently being displayed, pressing the Read button will navigate to the live reading area.**

Take a Reading: Insert the pins into the desired material to their full penetration (if possible). The moisture content of the material will appear in the live reading area.

Hold a Reading: Press the Read button to hold the reading on screen. HOLD will appear in the material selection line and the meter will beep. A held reading can be saved, if desired (see below). Saving a reading or pressing the Read button a second time will return the meter to live reading mode.

Save a Reading: Press the Center button to save a live or held reading. This will store the reading, material temperature, and pin correction type to meter memory. A 'Saved' message will appear followed by the memory slot which the reading occupies (ex. DRYWALL   2/100). This message can be bypassed by pressing the Read button.

Memory: There are 100 memory slots available in the meter. As readings are saved, the memory slots will fill in order from lowest (1) to highest (100). After 100 readings are stored, newly saved readings will replace the oldest stored readings.

3. Set Point

Info: The Set Point is the user-selectable moisture level at which the alarm will sound. This feature allows users to quickly take readings without having to review each one individually, helping to quickly identify high moisture areas.

Use: When active, press the left and right buttons to adjust the Set Point down or up.

The Set Point alarm can be turned off by adjusting the set point value to zero. This will be indicated by dashes rather than a numerical value.

4. Material Temperature

Info: In building trade applications, the material (wood) temperature will typically be equivalent to the ambient temperature of the environment. As the temperature increases, the indicated moisture content will increase above the actual moisture content. Lower material temperatures result in a lower indicated moisture content.

For best accuracy, it is important to use the temperature correction in the meter, especially when working in extreme environments (outside 50-90°F or 10-32°C) and environments subject to temperature variation. Material Temperature correction is only available when a wood material is selected.

Use: When active, press the left and right buttons to adjust the Material Temperature down or up.

5. Pin Correction

Info: The Pin Correction option allows users to obtain a more accurate reading in wood by adjusting the measurement according to the type of pin being used: non-insulated and insulated. The factory default of BDX meters is non-insulated pins. Insulated pins read lower than non-insulated ones.

Non-Insulated Pins are conductive across the entire length of the pin. The integral electrode pins mounted on top of the meter are non-insulated. Select NON-INS when using the meter with its integral electrode pins.

Insulated Pins are only conductive at the tips, with the rest of the pin coated in a non-conductive material. Any reading displayed when using these pins will reflect the moisture content of the material at the location of the pin tips. Insulated pins are very useful when measuring the moisture of a material at different depths and identifying wet pockets and moisture gradients. Select INS when using the meter with insulated pins (26-ES hammer electrode).

Use: When active, use the left and right buttons to switch between Insulated and Non-Insulated Pin Correction.

6. Set
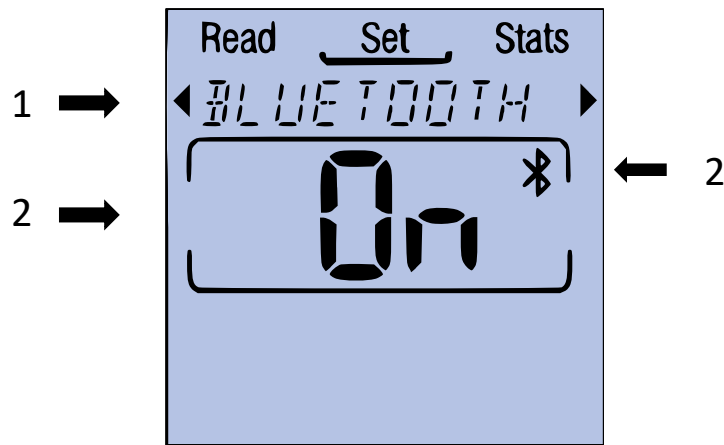
Figure 3: Set screen components

1. Setting Selection

The setting selection area will display all settings in a scrollable list. Each setting is listed and explained in Table 2 below. Press the left and right buttons to view settings. After locating the desired setting, press the down or center button to enter the setting state. Then press the Read button to enter the live reading screen.

2. Bluetooth® Indicator

The BDX-30 is equipped with Bluetooth® technology, allowing users to connect their meter(s) to a mobile device (smartphone or tablet). The Bluetooth® icon is visible on all meter screens when turned on. Please refer to the Delmhorst EDGE™ App User Guide for more information.

Table 2: Settings options

Setting	Description
Cal Check	- Allows users to check the electrical calibration of the meter - A value between 11.8 and 12.2 means the meter is in calibration - A value of <11.8 or >12.2 means the meter is out of calibration – change the batteries (2 x AA)
Bluetooth® (BD-X30 only)	- When Bluetooth is on but not connected, the Bluetooth symbol will be on screen and flashing - When Bluetooth is on and connected, the Bluetooth symbol will be on screen and solid - When Bluetooth is off, no symbol will be visible on screen *Factory default is off*
Temperature Unit	- Changes the temperature unit between Fahrenheit and Celsius *Factory default is Fahrenheit*
Off Timer	- Chose 1, 4, or 10-minute screen off timer *Factory default is 1 minute*
Backlight	- Turn backlight ON enable, and OFF to disable - Turn the backlight ON when in low ambient light, and OFF when in bright ambient light - When set to AUTO, meter will automatically enable and disable backlight according to ambient light *Factory default is off*
Brightness	- Adjust backlight brightness from 1 (low) to 10 (high) - The selected brightness level will be used whenever backlight is enabled (ON or AUTO) *Factory default is brightness level 2*
Contrast	- Adjust the contrast level of the screen from 1 (low) to 10 (high) *Factory default is contrast level 5*

7. Stats
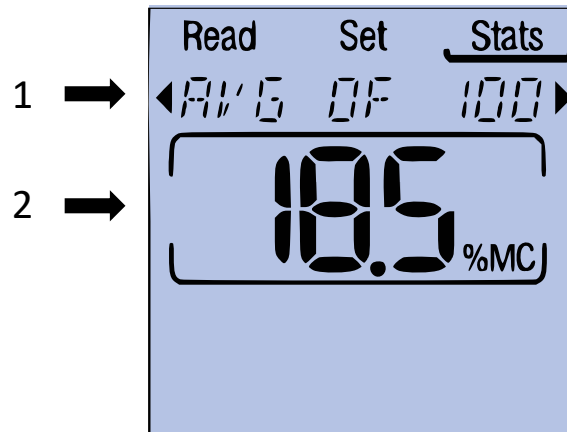
Figure 4: Stats screen components

1. Stats Selection

The stats selection area will display all statistics in a scrollable list (see Table 3 below). Press the left and right buttons to view statistics.

2. Stats Details

Statistics are calculated from the list of saved readings in meter memory, and only readings taken within the valid measurement range of the selected material are used for the calculations. Out of range (OOR) readings will not be included in statistical calculations for average and standard deviation.
The meter provides statistics (average, high, low, standard deviation) for the readings that are currently stored in the meter. Note: The statistics in the meter are calculated without any OOR readings.

The stats details section can only be selected for the 'Last 10' and 'Erase Data' options. For these two cases, press the down or center buttons to enter stats details box from stats selection. Use the left and right buttons to scroll the list of latest readings or select the desired option for clearing

readings. For all other statistics, stats details will simply reflect the details of the above statistic and cannot be selected.

Table 3: Available Stats

Statistic	Description
Average	• Displays the average value of the saved readings.
High	• Displays the highest value of the saved readings.
Low	• Displays the lowest value of the saved readings.
Standard Deviation	• Displays the standard deviation of the saved readings.
Last 10	• Displays a list of the 10 most recent saved readings. The %MC, temperature, and pin type of each reading are displayed.
Erase Data	• Clears all saved readings and statistics from the meter.

8. Delmhorst *EDGE*™ App Features

The Delmhorst EDGE™ app expands upon many features found within the BDX-30. These features include:

1. Export full data sets or selected readings from meter to app to be viewed on a single page and further analyzed.
2. Exclude extraneous readings from Statistics calculations.
3. View a customizable plot of all readings.
4. Export readings from app to spreadsheet for long term storage and analysis.
5. Change the species/materials available in the BDX-30 meter.
6. Adjust the moisture values at which the LEDs change colors.
7. Change meter language.
8. Upgrade meter firmware.

Please refer to the Delmhorst EDGE™ App User Guide for more details on how to connect the meter to the app and a detailed explanation of the features mentioned above.

9. Specifications and Operating Conditions

Temperature Range:
0-255 °F / -18-124 °C

Reading Range:
Wood: 6% MC - 60% MC (nominal range based on Douglas Fir)
Drywall: 0.1% MC - 6% MC
Relative: 1 - 100 REFERENCE SCALE

Power:
2x AA Alkaline Batteries

Battery life while using the meter in reading mode and active LED's is estimated at 125-150 hours. A combination of alarm, backlight and Bluetooth will reduce expected life to minimum 35 hours. A "LOW BATT" warning will appear on screen when the meter is woken up if battery voltage is below 1.75V. At this level the meter has 1-2 hours of life depending on functions being used. The same alert is sounded and displayed every 5 minutes. Continued use with a low battery may cause your meter to go out of calibration. **TIP**: Extend battery life by turning Bluetooth® off in the meter when not in use, setting the backlight brightness low, and using shorter timeout settings.

Size:
8.6 in x 2.9 in x 1.6 in (22 cm x 7.4 cm x 4.1 cm)

Weight:
6.9 oz (0.20 kg) without batteries
8.6 oz (0.24 kg) with batteries

Regulations/Compliance:

10. Meter Care, Service and Warranty

Care for your Meter

To keep your meter in good working order:

- Store your meter in a clean, dry place. The protective carrying case provided is an ideal storage place when the meter is not in use.

- Change the AA batteries as needed. Continued use with a low battery may cause the meter to go out of calibration. Remove the batteries if the meter will not be used for one month or longer.

- Change contact pins as needed. Keep pins' retainers hand tightened.

- Clean the meter and contact pins with any biodegradable cleaner. Use the cleaner sparingly and on external parts only. Keep cleaner out of the external connector.

- Ensure the pin cap is always covering the pins when not in use to avoid unintentional injury. Keep the connector cap in place when not using an external electrode to keep the connector clean. Each meter includes two short pieces of nylon cord to tie into tethers for the pins covers, if desired. See instructions under the Manuals and Training section of the website.

    o **BDX-20** - https://www.delmhorst.com/moisture-meters/bdx-20#manuals
    o **BDX-30** - https://www.delmhorst.com/moisture-meters/bdx-30#manuals

Service Your Meter

If your meter is not working properly, replace the batteries and check the calibration. If this does not resolve the problem, go to www.delmhorst.com and follow the instructions under the Support tab. If you require further assistance, please call 877-DELMHORST (335-6467) or 973-334-2557.

Limited Warranty

Delmhorst Instrument Co. 51 Indian Lane East, Towaco, NJ 07082, referred to hereafter as Delmhorst, guarantees its BDX series moisture meters against defects in material or workmanship for two years from date of purchase. Optional electrodes are guaranteed for 90 days. See the owner's manual or Delmhorst website (www.delmhorst.com) for warranty period on your specific product. If, within the warranty period of the product, you find any defect in material or workmanship, return the meter to Delmhorst or an authorized reseller, using the return form https://www.delmhorst.com/returns-service-warranty. Include proof of purchase. Shipping charges to return the product are customer's responsibility.

This warranty does not cover abuse, misuse, damage during shipment, improper service, unauthorized or unreasonable use of the meter or electrodes. This warranty does not cover normal wear and tear, batteries, or pins. If the meter or electrode have been altered or tampered with, the warranty shall be void. DELMHORST RESERVES THE RIGHT TO REPAIR OR REPLACE THE PRODUCT AT ITS SOLE DISCRETION.

Delmhorst shall not be liable for incidental or consequential damages for the breach of any express or implied warranty with respect to this product or its calibration. The meter should stay in calibration indefinitely with proper care and maintenance. Follow the manufacture's guidelines in the owner's manual.

UNDER NO CIRCUMSTANCES SHALL DELMHORST BE LIABLE FOR ANY INCIDENTAL, INDIRECT, SPECIAL, OR CONSEQUENTIAL DAMAGES OF

ANY TYPE WHATSOEVER, INCLUDING, BUT NOT LIMITED TO, LOST PROFITS OR DOWNTIME ARISING OUT OF OR RELATED IN ANY RESPECT TO ITS METERS OR ELECTRODES AND NO OTHER WARRANTY, WRITTEN, ORAL OR IMPLIED APPLIES. DELMHORST SHALL IN NO EVENT BE LIABLE FOR ANY BREACH OF WARRANTY OR DEFECT IN THIS PRODUCT THAT EXCEEDS THE AMOUNT OF PURCHASE OF THIS PRODUCT.

The express warranty set forth above constitutes the entire warranty with respect to Delmhorst meters and electrodes and no other warranty, written, oral, or implied applies. This warranty is personal to the customer purchasing the product either from Delmhorst directly or through an authorized reseller. Purchases through unauthorized resellers, including but not limited to unauthorized e-commerce resellers, are not covered by this warranty, to the extent permitted by law.

This warranty extends to the original owner only and is not transferable.

Rev May 2021

11. Appendix

Table 4 – SPECIES CORRECTION TABLE – METER READINGS WITH NON-INSULATED PINS – FEB 2018

Meter Readings	7	8	9	10	12	14	16	18	20	22	24
AFRICAN MAHOGANY	8	9.5	10.5	12	15	17	19.5	22	24	26	28
ALDER	8	9	10	11	13	15	17.5	19.5	21.5	24	27
AMERICAN ELM	7	7.5	8	8.5	10	11.5	13	15	16	18	19
APITONG	8	9	10	11	13	15	17	20	22	24	27
ASPEN	7	8	9	10	11.5	13	15	16.5	18	20	21
BASSWOOD	7	8	8	9	10.5	13	15	17	19	20.5	22
BIRCH	8	9	10	11	13	15	17	19	21.5	23.5	25.5
BLACK GUM	7.5	9	10	11	13	15	16	18	19	20.5	22
BLACK WALNUT	7.5	8.5	9.5	10.5	12.5	14.5	16	18	20	22	23.5
CHERRY	8	9	10	11	13.5	15.5	18	20	22	24	26
COTTONWOOD	6	7.5	8.5	9.5	12	14	15	17	19.5	21	23
CYPRESS	7	8	9	10	12	14	16	18	19.5	21.5	23.5
DARK RED MERANTI	8.5	9.5	10.5	11.5	12.5	16	18	20.5	22.5	24.5	26.5
DOUGLAS FIR	7	8	9		12	14	16	18	20	22	24
EASTERN RED CEDAR	8	9.5	10.5	12	14	17	19	21	23	25	26
HACKBERRY	7	8.5	9	9.5	12	13	15	17	18.5	20	22
HARD/SOFT MAPLE	8	9	9.5	10	12	14	16	18	20	22.5	25
HICKORY	8	8.5	9	10	11	12.5	14	15.5	17	19	20.5
HONDURAS MAHOGANY	7	8	9	10.5	12.5	14.5	16	18	19.5	21.5	22.5
INCENSE CEDAR	7	8	9.5	10.5	12.5	15	17	19	21	23	25
KERUING	8	9	10	11	13	15	17	20	22	24	27
LARCH	7.5	9	10	11	13	15	17	19	21	23	25.5
LONGLEAF PINE	8	8.5	10	11	13	15.5	17.5	19.5	21	23	25
MAGNOLIA	7.5	9	10	11.5	14	16	17.5	19	21	22.5	24.5
PECAN	6.5	8	9.5	11	12.5	14	16	17.5	19	22	24
PHIL. MAHOGANY	6	7	7.5	8	9.5	11	13	14	15.5	17	18
PONDEROSA PINE	7.5	8.5	10	11	13.5	15.5	17.5	19.5	21	23	25.5
RADIATA PINE	10	11	11	12	14	16	18	20	23	25	27
RAMIN	7	8	9	10	11	13	15	16	18	20	21
RED FIR	7	8	9	10	12.5	15	17	19	21	23	25
RED GUM	7	8	9	10	12.5	14.5	16.5	19	20.5	22.5	24
RED OAK	7	8	9	10	12	14	16	18	20	22	24
REDWOOD	7	8	9	10	12	13.5	15	17	19	22	24
SHORTLEAF PINE	7.5	9	10	11	13	15.5	17.5	19.5	21.5	23.5	25

SOUTHERN YELLOW PINE*	8	9.5	10.5	12	14.5	16.5	19	21	23	25	28
SPF **	9	10	11.5	13	15.5	18	20.5	23	25	28	30
SPF/COFI	8	9	10	11	13	15	17	19	21	23	25
SITKA SPRUCE	7	8	9	10	12.5	14.5	17	19	21	23.5	26
SUGAR PINE	7	8	9	10	12	15	17	19	21	23	25
TEAK	7	8	8.5	9	11	12	14	15	17	18.5	20
VIROLA	6.5	7	8	9	11	12.5	14	16	18	18.5	20.5
WESTERN HEMLOCK	7	8	9	10.5	13	15	17	19	20.5	22	23.5
WHITE ASH	6.5	7.5	8	9	11	13	14.5	16	18	19.5	21
WHITE FIR	8	9	9.5	10.5	12.5	15	17	19	21	23	25
WHITE OAK	7	8	8.5	9.5	11.5	13.5	15	17	18.5	20	22
WHITE PINE	7	8	9	10	13	15	17	19	21	23	25.5
YELLOW POPLAR	8	8.5	10	11	13	15.5	17.5	19.5	22	24	26
ADVANTECH OSB***											
PINE - Mills # 227,229, 290	7.5	8.5	9.5	10.5	12	14	16	17.5	19.5	21.5	23
ASPEN - Mill #228	7	7.5	8.5	9	11	12.5	14	15.5	17	19	20.5

*SYP - Meter readings taken with 26-ES 2-pin electrode. Do not apply 2-pin correction.

**SPF - Meter readings taken with 26-ES 2-pin electrode. Do not apply 2-pin correction. Correction is based on USDA/Forintek data and can be used for the following species: Lodgepole Pine, Black Spruce, Alpine Fir, Eastern White Spruce, Jack Pine

***Data provided through collaboration between Delmhorst Instrument Co. & Huber Engineered Woods