

Islandix Wheel Analytics

Instruction Manual



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Message from the maker

These tools are the product of four years' development. Building Wheel Analytics was a pleasure but the stamina to see it through was sustained by hundreds of wheelbuilds for paying customers across Canada. The results are gratifying, as a toolmaker and as the first customer. We hope you feel the same.

Your feedback is welcome — it shapes future development. Islandix products are software upgradable so your tool has the potential to do more. Comments and criticisms are solicited at support@islandix.com.

Thank you for your purchase.

Specifications and requirements

Wheel Analytics takes raw data from digital indicators and makes it available on the network in the form of visualizations for building wheels.

Wheel Analytics reads data from Mitutoyo and Mitutoyo-compatible digital indicators.

Wheel Analytics is a network device that interconnects via Wifi or USB. It's compatible with 802.11b/g/n wireless networks on the 2.4GHz spectrum, with or without WPA2 encryption. Wheel Analytics supports wired networking via USB where compatible system drivers exist. It supports all common drivers (ECM, NCM and RNDIS interfaces) including those packaged with Mac OS, Windows and Linux.

Visualizations are designed for modern desktop and mobile browsers.



Wheel Analytics **does not** require internet access. In workshops without internet access or in the event of internet outages, Wheel Analytics functions identically. It operates entirely on site — no cloud required.

Kit contents



Quantity	Description
1	Islandix WA-1 controller (includes all software described in this manual)
1	Islandix FP-2 duplex foot pedal with builtin 3m/9ft cable
1	USB cable
2	Quickstart instruction manuals covering USB and wireless setup
2	Mitutoyo or Mitutoyo-compatible digital indicators with Digimatic SPC interface
2	Mitutoyo or Mitutoyo-compatible 1m / 40in Digimatic SPC data cables
1	Indicator roller contact point for lateral inspection
1	Indicator flat contact point with extension for radial inspection

Physical setup

Islandix Wheel Analytics is designed to work with any truing stand with support for mounting dial indicators. Use the existing mounting pattern as a guide for attaching digital indicators. Stands without specific provisions for mounting indicators can often be adapted using magnetic indicator mounts.

Example 1

Alice's Bike Shop has a Park Tool TS-2.2 truing stand with the TS-2Di dial indicator kit. When purchasing Wheel Analytics, Alice added Mitutoyo 543-782 indicators. The available Mitutoyo digital indicators are 1:1 swaps for the Park Tool analog dial indicators. They mount in the same way, re-using the existing M5 mounting hardware. The process takes under five minutes. The Mitutoyo data cables included with Wheel Analytics are used to connect both indicators to the WA-1 controller (see *Figure 1*).

Example 2

Bob's Bike Shop has a Park Tool TS-4.2 truing stand with the TS-2Di dial indicator kit. Bob didn't purchase indicators with Wheel Analytics, preferring to source economy iGaging 35-705-10 digital indicators instead. Unlike indicators bought direct from Islandix, iGaging indicators do not include contact tips suitable for wheel work. Bob needs to transfer the contact tips from his Park Tool indicators first. Then the iGaging indicators are installed in the same way, re-using the existing M5 mounting hardware. The process takes about 15 minutes. The Mitutoyo data cables included with Wheel Analytics are used to connect both iGaging indicators to the WA-1 controller.



The contact tips pre-installed on Park Tool dial indicators use non-metric hardware. The radial tip requires a non-metric hex wrench to remove. iGaging indicators use identical threading so the tips are directly transferrable.

Example 3

Carol's Bike Shop has a Centrimaster truing stand. Carol bought Mitutoyo 543-782 indicators, which fit perfectly. The Centrimaster indicator tips were transferred to Carol's Mitutoyo digital indicators. The process takes under five minutes.

Example 4

David's Bike Shop has a Bonanza Bike truing stand. This fixture is a generic model with no specific support for indicators. The truing stand itself is steel so David purchased magnetic indicator mounts from Amazon and will use these to attach indicators.

Connection options

Wheel Analytics moves the truing stand to the local network. Means of attaching to the network are flexible to meet the needs of most installations. On the network wheelbuilding tools are accessed using a web browser.

There are different options for linking with Wheel Analytics including USB and Wifi. Stress tests in the Islandix lab indicate no performance difference between these options. Wheel Analytics users are split between these options so use whichever makes sense in your environment. All modes may be enabled simultaneously.

Option 1: USB connection

The simplest way to access Wheel Analysis is by connecting to a computer via USB. Doing so creates a single-purpose point-to-point network consisting of your computer and the controller, totally isolated from the rest of your network. Wheel Analytics receives power directly from the computer in this mode. Wired networking using USB is documented in the next section.

Option 2: Hotspot connection

Out of the box Wheel Analytics creates an autonomous hotspot wireless network. Join this network to configure the tool initially or run wheelbuilding applications without the need for an existing wireless network or wireless router (for example at an event or as a mobile mechanic). The hotspot is introduced on the following page.



The hotspot is less performant than other options so most users to prefer USB or standard wireless access where possible. When using the hotspot, one-click software updates are not available. The hotspot system is not suitable for workbenches with multiple WA-1 controllers used at the same time.

Option 3: Wireless connection

A typical configuration is to attach Wheel Analytics to the existing network using Wifi. This allows any wireless device to control the truing stand including laptops or tablets that may be co-located with the truing stand only when in use. Wifi networking is compatible with the widest range of devices. Wireless networking is documented in the section [Linking with an existing wireless network](#).

Connecting with USB

Wireless networking may be impossible in some environments. For operation in areas saturated with radio interference or in areas with poor router signal there is an alternative to wireless networking—wired networking over USB.

To connect using USB:

1. Connect Wheel Analytics to a computer using the USB port per *Figure 1*.
2. Wait 30 seconds for the tool to initialize and create the USB connection.
3. On the computer navigate to *http://192.168.3.1/* using your preferred browser.



Wheel Analytics presents itself as a network adapter connected via USB. This scheme depends on the host computer to provide a device driver, which has shown good results with Mac OS, Windows and Linux. Compatibility depends on the host system and is not guaranteed. See below for troubleshooting tips.



Wheel Analytics supports ECM, NCM and RNDIS variants of USB network adapters in a wide-ranging effort to connect with a compatible system driver. Some platforms may have drivers for more than one of these personalities, which may cause Wheel Analytics to be listed more than once — this is harmless.

The IP addressing method in Step 3 always works over the wired USB connection. The peer-to-peer addressing schemes described earlier also work depending on the client device. Again the address is based on the *Hostname* field in the *Settings* tab.

Standard	Default address	Client compatibility
Zeroconf	http://truingstand.local/	Apple Mac OS, Apple iOS, Linux, other platforms
LLMNR	http://truingstand/	Microsoft Windows, Linux, other platforms



Some browsers may incorrectly interpret a peer-to-peer address as a search query. To avoid this problem enter the complete address starting with *http://...*

Troubleshooting

Most systems will automatically detect and configure inserted USB network devices. If Wheel Analytics does not become available automatically, your system may need manual intervention (some systems may be configured this way by choice). Look for a new device in your list of detected ethernet/network adapters and attempt to enable it. Then repeat the procedure described above.

Connecting for the first time wirelessly

In its factory configuration Wheel Analytics creates a captive hotspot network like those in hotels however the hotspot only serves wheelbuilding tools (no general internet access). The tool may be configured for the first time using the hotspot.

To connect using the hotspot network:

1. Apply power by plugging in the included USB cable per *Figure 1* below.

 If not connecting to a computer, use a good quality USB wall charger (not included) to provide power. Mobile phone chargers are a good option.

2. Wait 60 seconds for the tool to initialize and create the hotspot network.
3. Scan for wireless networks from your wireless device.
4. Connect to the *Truing Stand* network using password *truelove* (eight letters).

 Depending on the client device a hotspot popup browser will typically appear. For best compatibility it's recommended to close this window and invoke your preferred web browser as normal. If you are warned about staying connected to a network that does not provide internet access, dismiss or disregard it and remain connected to *Truing Stand* for now. Then continue the next step below.

5. In your browser visit an arbitrary nonsense site such as *http://abc.example.com/* and you will be redirected to the Wheel Analytics welcome screen. From here you can configure the system, update its software and run wheelbuilding applications.

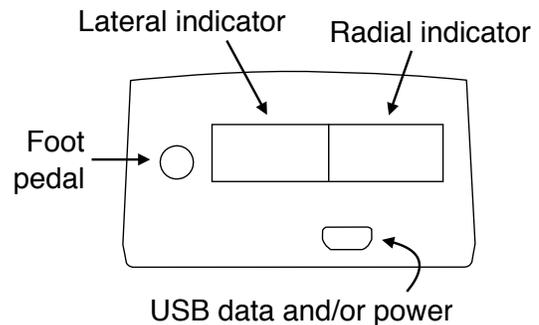


Figure 1: Connection diagram

Figure 2: Settings

The following sections concern the setup of Wheel Analytics. For reference a copy of the single-page settings screen is given here. Factory defaults are shown.

▼ Configuration

Hostname: ⓘ

Radio regulatory jurisdiction: ⓘ

Act as a wireless hotspot: ⓘ

Announce hotspot: ⓘ

Hotspot network name: ⓘ

Hotspot network password: ⓘ

Join existing wireless network: ⓘ

Wireless network name: ⓘ

Wireless network password: ⓘ

Wireless network configuration: DHCP Static ⓘ

Wireless IP address: ⓘ

Wireless subnet mask: ⓘ

Wireless router IP address: ⓘ

USB IP address: ⓘ

Check for updates: ⓘ

Lateral indicator position: Left Right ⓘ

Target tolerance: ⓘ

Hide numerical markers: ⓘ

Tensiometer connection: ⓘ

Spoke tension units: ⓘ

Play audio tones: ⓘ

Linking with an existing wireless network

It's helpful to integrate Wheel Analytics with the existing wireless network in your workshop. Doing so allows clients to access the internet and wheelbuilding tools at the same time without switching networks. For workshops with multiple Wheel Analytics tools, being on a common network makes it easy to switch among them.

To link with an existing wireless network:

1. Connect to the *Truing Stand* network as described in the previous section.
2. Switch to the *Settings* tab on the Wheel Analytics main screen.
3. Select the checkbox to *Join existing wireless network*.
4. Enter the name and, if applicable, password for your wireless network.
5. Commit changes by clicking *Save and restart*.
6. Close the browser and re-join the workshop network on your wireless device.



An incorrect wireless network name or password in Step 4 significantly increases WA-1 initialization times as the tool will retry connecting several times.



If Wheel Analytics is to be taken away from the workshop, uncheck *Join existing wireless network* before leaving to avoid long initialization times.

These steps are sufficient to connect Wheel Analytics to your workshop network but not necessarily sufficient to allocate a known address on your network. See the next section for establishing coordinates to access Wheel Analytics.

Addressing on the network

Wheel Analytics can be located on the network by peer-to-peer means or by conventional IP addressing. The appropriate method(s) depend on the client devices used to access Wheel Analytics.

Peer-to-peer addressing

This style of addressing is most straightforward since it requires no further configuration. The address entered in the client web browser is based on the *Hostname* field in the *Settings* tab—each Wheel Analytics system on the same network should have a unique hostname. The default is *truingstand*.

There are two possible automatic addresses depending on the standard(s) supported by a given client. Because these addressing modes are automatically configured, try them first in preference to conventional IP addressing, described next.

Standard	Default address	Client compatibility
Zeroconf	http://truingstand.local/	Apple Mac OS, Apple iOS, Linux, other platforms
LLMNR	http://truingstand/	Microsoft Windows, Linux, other platforms



Some browsers may incorrectly interpret a peer-to-peer address as a search query. To avoid this problem enter the complete address starting with *http://...*

Conventional IP addressing

Otherwise most wireless networks are configured to assign IP addresses automatically using DHCP. Wheel Analytics supports this scheme, which requires no additional configuration out of the box. While convenient, DHCP comes with the risk that the wireless access point (router) may assign a different address in the future.

To guarantee a constant and predictable IP address, it's helpful to reserve an address for Wheel Analytics in your DHCP configuration. This takes place on your router. Locate the table that maps wireless hardware addresses, also called MAC addresses, to IP addresses. The unique wireless address for each Wheel Analytics tool is given on the *Help* tab under *Hardware*. The address is six pairs of alphanumeric characters separated by colons in a form like *B8:27:EB:0A:07:6E*.

Alternatively you may assign an IP address to Wheel Analytics explicitly. On the *Settings* tab, set the *Wireless network configuration* option to *Static*. This enables the subsequent three fields, which may be configured according to your network.

Deactivating the hotspot

If Wheel Analytics is connected to an existing wireless network or if you access the tool over USB, the hotspot network may be deactivated. Doing so can help the WA-1 initialize faster and reduces radio spectrum pollution.

To deactivate the hotspot:

1. Connect to Wheel Analytics over the existing wireless network.
2. Switch to the *Settings* tab on the main screen.
3. Unselect the checkbox labelled *Act as a wireless hotspot*.
4. Commit changes by clicking *Save and restart*.



Islandix recommends deferring this procedure until you are satisfied Wheel Analytics is working correctly in your workshop. See below for alternatives.



If the hotspot is disabled and access to Wheel Analytics becomes lost, the tool can be booted in rescue mode to re-gain access. See the section [Factory reset procedure](#) for more information.

Restricting the hotspot

As an alternative to deactivating the hotspot entirely, Wheel Analytics can be configured to suppress network announcements by unchecking *Announce hotspot* in the *Settings* tab. Doing so will prevent the hotspot from appearing as an available wireless network. In this case the hotspot network remains functional however its name must be entered manually in order to connect (not chosen from a list). The default hotspot name is *Truing Stand* but can be changed in the *Settings* tab—ensure each Wheel Analytics tool in common radio range has a unique hotspot name.

Securing the hotspot

For security purposes the default hotspot password can be changed on the *Settings* tab—the default password is *truelove*. This is a write-only interface, allowing the password to be updated but not read back. In the Islandix lab the hotspot password is changed to match the password of the main Wifi network as an aid to memory.

Software updates

Applications may be added or improved with downloadable software releases. After configuring Wheel Analytics, updating to the latest release is recommended to take advantage of available features and performance enhancements.

The installed software version is listed at the top of the welcome screen.

To update Wheel Analytics' software:

1. Download the latest software package from <https://www.islandix.com/downloads>.
2. Switch to the *Update* tab on the Wheel Analytics main screen.
3. Click *Select file* and choose the previously downloaded software package.

The tool will indicate its progress and return to the welcome screen on completion. At this point Wheel Analytics will be running updated software.



A client device connected via the hotspot may revert to another wireless network when Wheel Analytics resets. If using multiple wireless networks, reconnecting to the hotspot may be required after a software update. This is **not** a concern if Wheel Analytics is accessed over your primary wireless network or over USB.

Automatically check for updates

If internet access is available, Wheel Analytics can check if a software update is available and facilitate installation without leaving the main screen. If *Check for updates* is selected on the *Settings* tab, a banner will appear when updates are ready to install. Update to version 1.1.1 or later to make this option available on your tool.



Automatic update notifications are not possible if Wheel Analytics is accessed over the hotspot network exclusively. Connect your tool to a wireless network or connect with USB if you wish to receive update notifications.

Factory reset procedure

Wheel Analytics can self-rescue if its configuration is forgotten or out of date. It's impossible to permanently harm Wheel Analytics with bad configuration. In rescue mode configuration can be reviewed, revised or reset to factory defaults.

To boot in rescue mode:

1. Ensure the FP-2 foot pedal is connected to the WA-1 controller per *Figure 1*.
2. With **both** foot pedal buttons depressed, connect USB power to the controller.
3. Keep both pedal buttons depressed for 60 seconds after applying power.
4. Access Wheel Analytics by one of the methods below.



If the foot pedal is unavailable, use the orange input buttons on your indicator data cables instead. Hold both orange buttons pressed at the same time while connecting USB power and continue to hold depressed for a further 60s.

Wireless rescue

In rescue mode the WA-1 will create an autonomous hotspot network with the name *Islandix Rescue* (password: *truelove*). Connecting to this network will allow the user to inspect and correct tool configuration. The welcome screen provides the option to wipe all configuration, resetting to factory defaults.

USB rescue

In rescue mode the WA-1 can also be accessed over USB. If the tool is powered by connecting to a compatible computer, it will be accessible over USB by visiting <http://10.10.10.10/> from a browser on the same computer. Connecting to this address will allow the user to inspect and correct tool configuration. The welcome screen provides the option to wipe all configuration, resetting to factory defaults.

Scaling Wheel Analytics



The WA-1 controller has two shared ports. Additional controllers can be added to enable full-time connections to other tools like digital tensiometers. Islandix offers an expansion kit allowing two WA-1 controllers to share a single FP-2 foot pedal.

Installation of multiple controllers

Ensure the following configuration settings are **unique** to each controller:

Unique settings	When required to be unique	Examples
Hostname	Always	<i>truingstand, tensio</i>
Hotspot network name	Only if <i>Act as a wireless hotspot</i> is checked	<i>Truing Stand, Tensiometer</i>
Wireless IP address	Only if <i>Wireless network configuration</i> is set to <i>Static</i>	
USB IP address	Only if connecting via USB	

Ensure the following configuration settings are **shared** by all controllers:

Shared settings	When required to be shared
Wireless network name	Only if <i>Join existing wireless network</i> is checked

Configure each tool paying attention to the configuration requirements above. If connecting via USB, each controller must have a unique *USB IP address* and be plugged into the same computer. If connecting via wireless, each controller must be joined to common network described by *Wireless network name*.

Operation

Open multiple browser tabs or windows, one for each tool. For example one might navigate to *http://truingstand.local/* and another to *http://tensio.local/*. In each tab or window use the applications corresponding to the controller ports you wish to sample.



Windows can be open side-by-side for simultaneous use. In this setup both windows respond to data input however only the window in focus responds to the foot pedal. Give focus to the window that should receive foot pedal input. Note: some systems offer dual focus, sending pedal input to both windows.

Wheelbuilding applications

Wheel Analytics includes multiple visualizations, which are useful in different circumstances. For ordinary truing the Target Plot tool is recommended. It's suitable for the entire truing process from beginning to end. It's terrific for repair jobs too. The Augmented Indicators is the right tool when only a single indicator is connected, for example checking lateral alignment with a tire installed.

Tensiometer applications have different use cases. They may be used to inspect wheels to determine whether repairs are needed (i.e. book services). Tensiometer applications may also be used to validate repairs or verify a wheelbuild has been completed to shop standards. In all cases PDF artifacts can be generated for your records or sharing with customers.

The remainder of this manual concerns the operation of wheelbuilding tools included with Wheel Analytics.

Tips and tricks

General

1. On small rectangular screens some visualizations may function better by rotating between landscape and portrait orientations.
2. Capture your work for archival purposes or for sharing with customers by saving as PDF. Invoke the browser *File > Print* feature and save as PDF from there. Printouts are condensed versions of each visualization excluding interactive elements. Some visualizations can add metadata to printable reports for traceability purposes. Unwanted headers and footers can typically be suppressed in the print dialog.
3. Where platform support exists, pressing the 'F' key will make wheelbuilding applications run fullscreen. Press again to exit. Fullscreen mode typically does not work on mobile/tablet platforms without making a home screen bookmark first.
4. Some browsers suppress audio until the first mouse or touchscreen interaction. A dummy interaction may be required if using an application with its default settings.

Quantitative truing

1. Adjusting hubs to achieve zero play is standard preparation for wheelbuilding but is especially important for precision work. Re-adjust for riding at completion.
2. On rims with a pronounced joint or a decal that straddles the entire profile across the joint, it can be helpful to orient the build from there instead of from the valve hole. Scan the wheel beginning immediately after the joint and take a snapshot of the wheel immediately before returning to the joint. If this proves counter-intuitive, install a small piece of masking tape at the joint as a reminder.
3. Some rims may present defects (e.g. seam, decals, etc.) on one side of the wheel only. Relocating the indicator or flipping the wheel in the truing stand to indicate alignment from the opposite side is sometimes helpful.

Using digital indicators

1. Better digital indicators produce about 10 readings per second. To generate a representative picture of the wheel, allow 3-4 seconds per rotation in the truing stand when taking measurements. The slower the wheel is turned, the more accurate the result. Indicators are sensitive to inertia so use a gentle touch.
2. If a digital indicator appears to be malfunctioning, it's often the case the battery is no longer supplying adequate current. Replace the battery and retry.

Target Plot



The Target Plot is the primary truing tool. It's a unified view of lateral and radial alignment, a visualization designed to promote improvement of both dimensions at once. A builtin AI tutor is ready to help — [refer to the Islandix blog](#) for discussion.

The interface has two commands: *Snapshot* and *Clear*. The *Snapshot* command suspends the accumulation of readings in order to manipulate the wheel. It also recenters and rescales the display. The *Clear* command discards recorded readings so new ones can be taken and the process repeats. These commands can be signalled in various ways depending on the hardware available:

Preferred input	Snapshot command	Clear command
Foot pedal	Momentarily tap either pedal	Same, hold depressed 0.5s
Keyboard	Momentarily press spacebar	Same, hold depressed 0.5s
Mouse	Momentarily click left mouse button anywhere	Same, hold depressed 0.5s
Touchscreen	Momentarily tap screen anywhere	Same, hold depressed 0.5s

The basic operating procedure is:

1. Load the Target Plot tool from the Wheel Analytics welcome screen.
2. With the digital indicators in position, spin the wheel.
3. Signal the *Snapshot* command using your preferred input method (per chart above).
4. Rotate the wheel, navigating to a location in need of adjustment.
5. Make a correction (early in the process make multiple corrections).
6. Signal the *Clear* command and repeat the process until the wheel is complete.

For advanced users

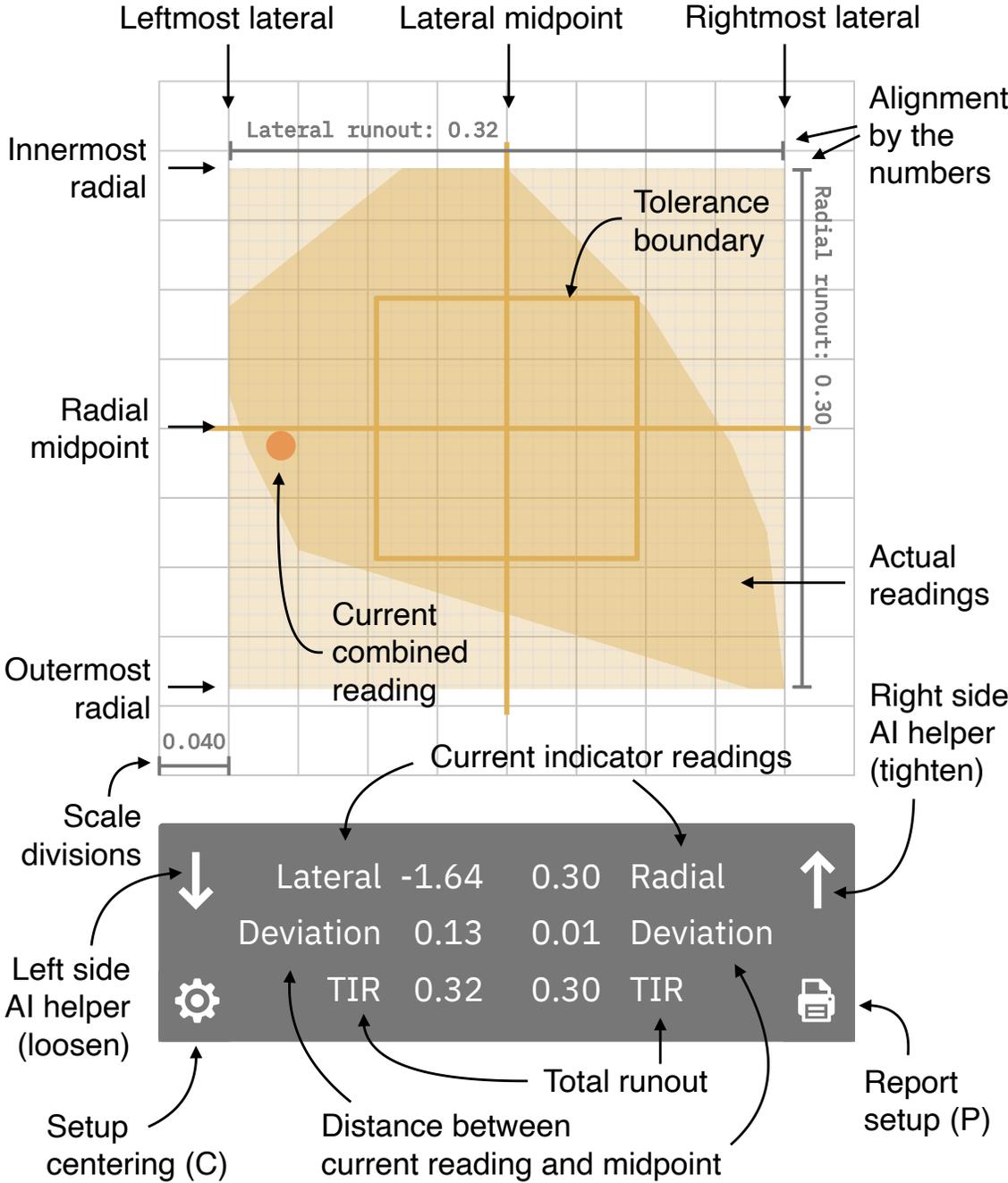


The Target Plot has the ability to track wheel centering (also called dish) in the same view as lateral and radial alignment. Press 'C' to invoke the setup dialog. Clicking the setup icon on the lower left of the display also invokes the setup dialog.

For stands with centering support, such as Centrimaster, the ideal center can be established in one measurement. For most stands the center can be established by averaging measurements on both sides of the wheel at the valve hole. The dialog facilitates setup either way by populating readings directly from the lateral indicator. Press the left foot pedal to advance through the dialog, locking in readings.

For additional information including a video demonstration, [visit the Islandix blog](#).

Figure 3: Target Plot legend



Augmented Indicators

The Augmented Indicators tool is an alternative truing application. It features independent lateral and radial indicators, representationally similar to indicator-equipped truing stands of the past. Wheel Analytics indicators have special features for wheelbuilding such as scales that zoom automatically, scales that zero automatically, history tracking and tolerance verification.



This tool is the right choice when working with the radial indicator disconnected as one might do during an inspection or basic repair. It's also suitable for disc brake rotor truing if a digital indicator can be suitably fixtured.

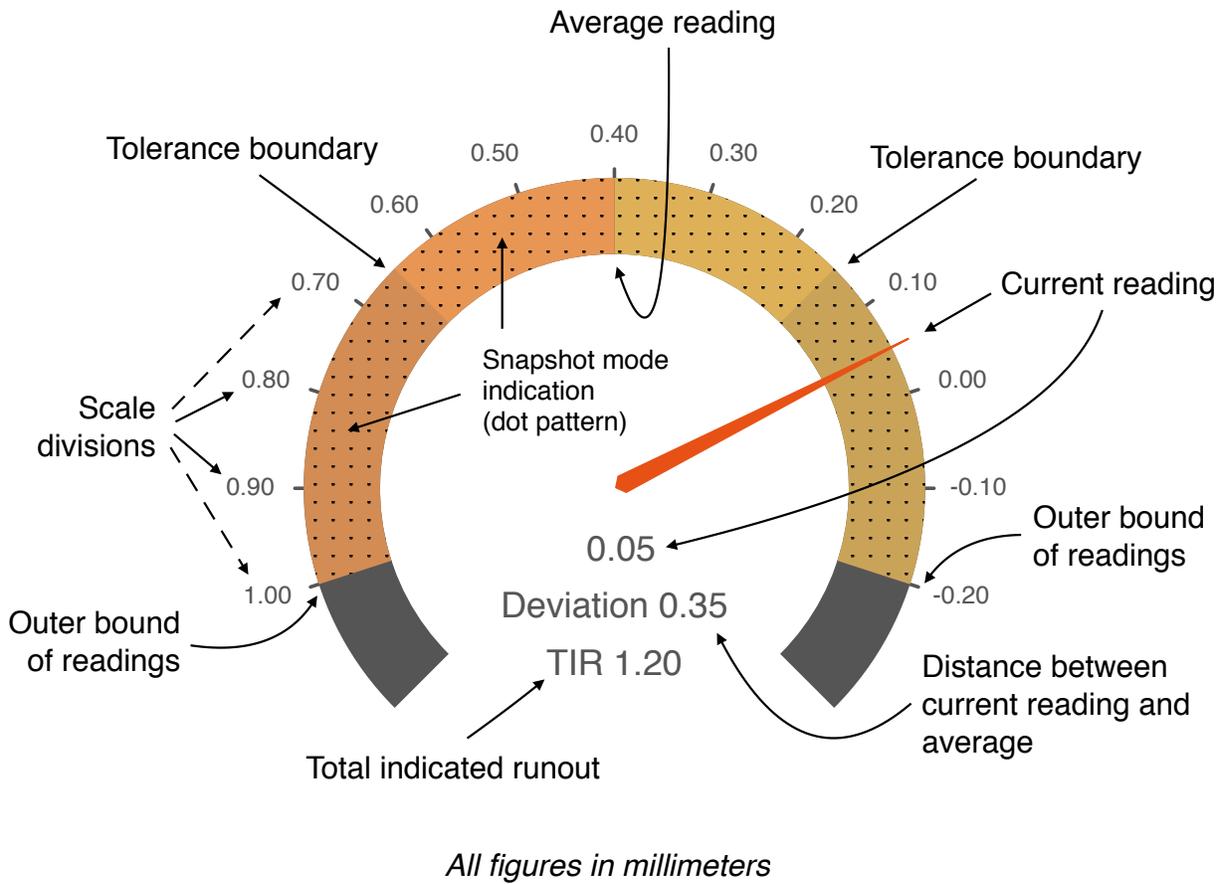
The interface has two commands: *Snapshot* and *Clear*. The *Snapshot* command suspends the accumulation of readings in order to manipulate the wheel. It also recenters and rescales the display. The *Clear* command discards recorded readings so new ones can be taken and the process repeats. These commands can be signalled in various ways depending on the hardware available:

Preferred input	Snapshot command	Clear command
Foot pedal	Momentarily tap either pedal	Same, hold depressed 0.5s
Keyboard	Momentarily press spacebar	Same, hold depressed 0.5s
Mouse	Momentarily click left mouse button anywhere	Same, hold depressed 0.5s
Touchscreen	Momentarily tap screen anywhere	Same, hold depressed 0.5s

The basic operating procedure is:

1. Load the Augmented Indicators tool from the welcome screen.
2. With the digital indicators in position, spin the wheel.
3. Signal the *Snapshot* command using your preferred input method (per chart above).
4. Rotate the wheel, navigating to a location in need of adjustment.
5. Make a correction (early in the process make multiple corrections).
6. Signal the *Clear* command and repeat the process until the wheel is complete.

Figure 4: Augmented Indicators legend



Live Tensio

Live Tensio offers a range of functions for digital tensiometers. Its most visible function is to read deflection measurements from a connected tensiometer and convert those to tension values in real time. Live Tensio does so continuously without the need to explicitly transmit each reading. It's capable of showing conversions for two spoke models at once, useful for wheels built with different spoke models on opposite sides of the wheel.

Connect your tensiometer by borrowing the data cable from either truing stand indicator. After starting Live Tensio press the orange button on the chosen data cable to designate that port for readings.

Live Tensio has two commands: *Record* and *Clear*. The *Record* command assigns the current reading to ongoing tallies of readings. This command has two variants depending on the side of the wheel being sampled. *Clear* discards recorded readings. These commands can be signalled in multiple ways:

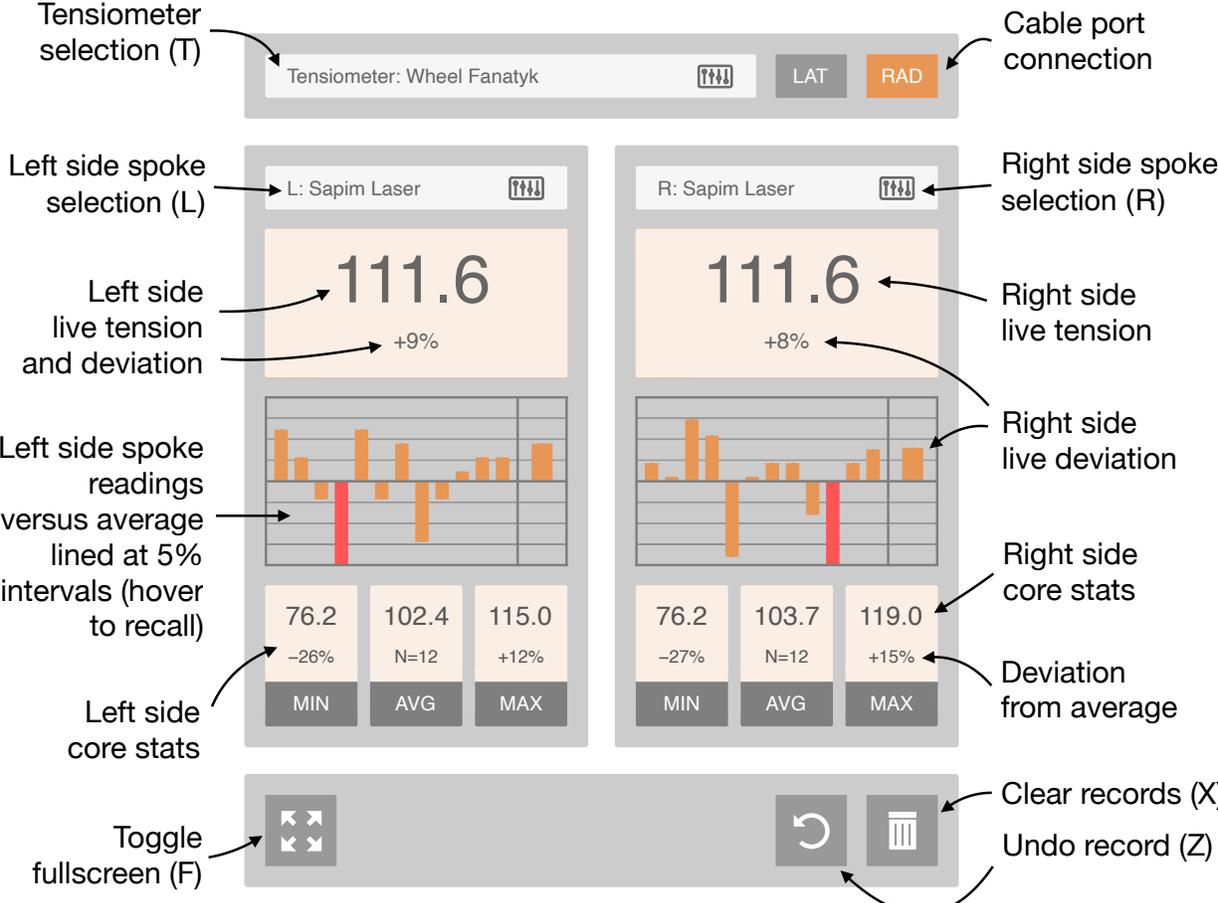
Input	Record left/right reading command	Clear command
Foot pedal	Momentarily tap left/right pedal	Same, hold depressed 0.5s (1.0s to clear both)
Keyboard	Press left/right arrow key	Same, hold depressed 0.5s (1.0s to clear both)
Mouse	Click left/right reading with left mouse button	Click trashcan with left mouse button
Touchscreen	Tap left/right reading	Tap trashcan

The numbers of readings for each side of the wheel are listed with min/max/avg. Min and max are annotated with percentages from their respective averages. See the diagram on the following page for a visual explanation.

Once readings have been recorded for a given side of the wheel, a bar chart illustrates tension deviation for that side. Each horizontal line on the scale represents 5% deviation from the average. Deviations for each spoke are illustrated with vertical bars. Values beyond $\pm 20\%$ are highlighted in red. At the far right of the image, deviation is shown for the live reading in the same manner. Hovering a mouse over any reading (or tapping the same on a touchscreen) recalls its numerical value.

Live Tensio can be configured to *Play audio tones* by checking that label on the *Settings* tab (see *Figure 2*). In this configuration the software will beep when a reading is recorded. Triggering readings by foot pedal and receiving confirmation by audio tone allows the wheelbuilder to focus exclusively on the wheel and tensiometer. Support for playing audio tones is browser dependent.

Figure 5: Live Tensio legend



Figures in Newtons or kilogram-force (shown) by configuration

Tensiometer setup

Live Tensio works with tensiometers featuring Mitutoyo or Mitutoyo-compatible digital indicators. (Additional indicators may be purchased from Islandix for retrofitting tensiometers or the same can be found in most global markets.)

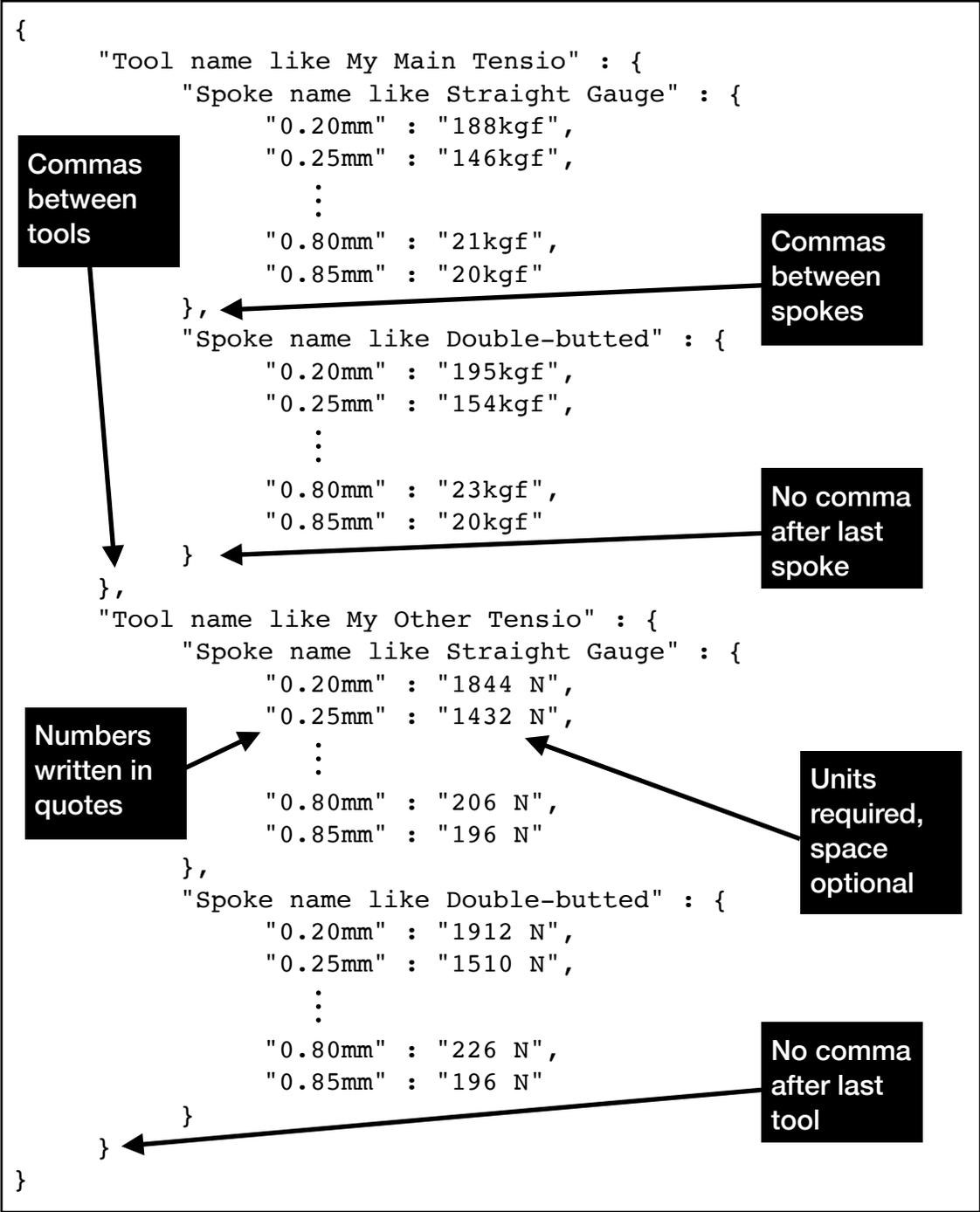
Deflection charts specific to each tool are entered in the *Calibrations* area in the lower pane of the *Settings* tab. Charts for multiple tensiometers can be stored simultaneously with each tool supporting an unlimited number of spokes. Wheel Analytics ships with an example chart for Wheel Fanatyk tensiometers but you may alter, replace or supplement this data.



Wheel Analytics tensio tools default to the first-listed tensiometer and first-listed spoke. Listing your most commonly used spoke first can be a small timesaver.

On the next page find an annotated configuration for descriptive purposes. Adapt it for the tensiometer(s) and spokes in your shop. Don't be intimidated — the editor will check your work and help by pointing out errors. Contact support@islandix.com if you encounter difficulties.

Figure 6: Entering conversion charts



Keyboard Bridge

The Keyboard Bridge tool is designed to support legacy tensiometer applications, namely those that work by entering deflection readings into a spreadsheet or other information system. It delivers the same USB keyboard output function provided by specialist hardware like Mitutoyo part IT-016U and compatibles.



As readings are output as a simulated USB keystrokes, Keyboard Bridge only functions if plugged into a computer by USB. Keystrokes are transmitted over USB and arrive at the computer to which the USB cable is connected.

As an improvement over existing systems, Wheel Analytics allows each transmission to be terminated with a choice of characters. The options are *Return*, *Tab* and *Space*. Typing any of these characters on the display device keyboard will instruct the system to follow readings with that keystroke. Clicking or tapping each of the onscreen options has the same effect.

There is only one operational command and that is to *Send* the current reading:

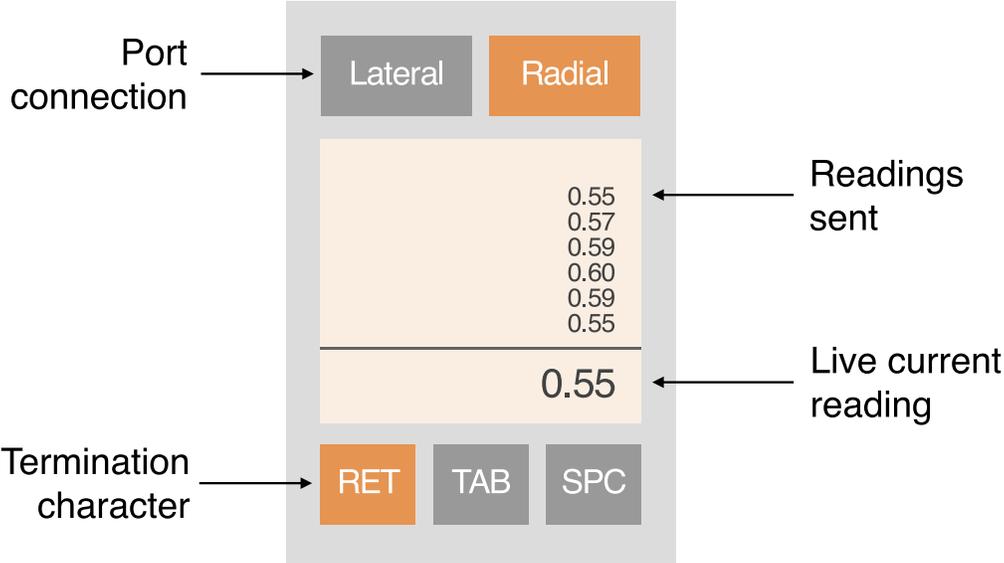
Preferred input	Send command
Foot pedal	Tap either pedal
Data cable	Press orange button on data cable
Keyboard	Press up arrow key
Mouse	Click display output area with left mouse button
Touchscreen	Tap display output area

The basic operating procedure is:

1. Connect to a computer using a USB cable according to the diagram in *Figure 1*.
2. Move the lateral or radial indicator data cable to the tensiometer.
3. Indicate the chosen port by pressing the orange button on the data cable.
4. Signal the *Send* command when ready to transmit the shown reading.

Keyboard Bridge can be configured to *Play audio tones* by checking that label on the *Settings* tab (see *Figure 2*). In this configuration the software will beep when a reading is recorded. Triggering readings by foot pedal and receiving confirmation by audio tone allows the wheelbuilder to focus exclusively on the wheel and tensiometer. Support for playing audio tones is browser dependent.

Figure 7: Keyboard Bridge legend



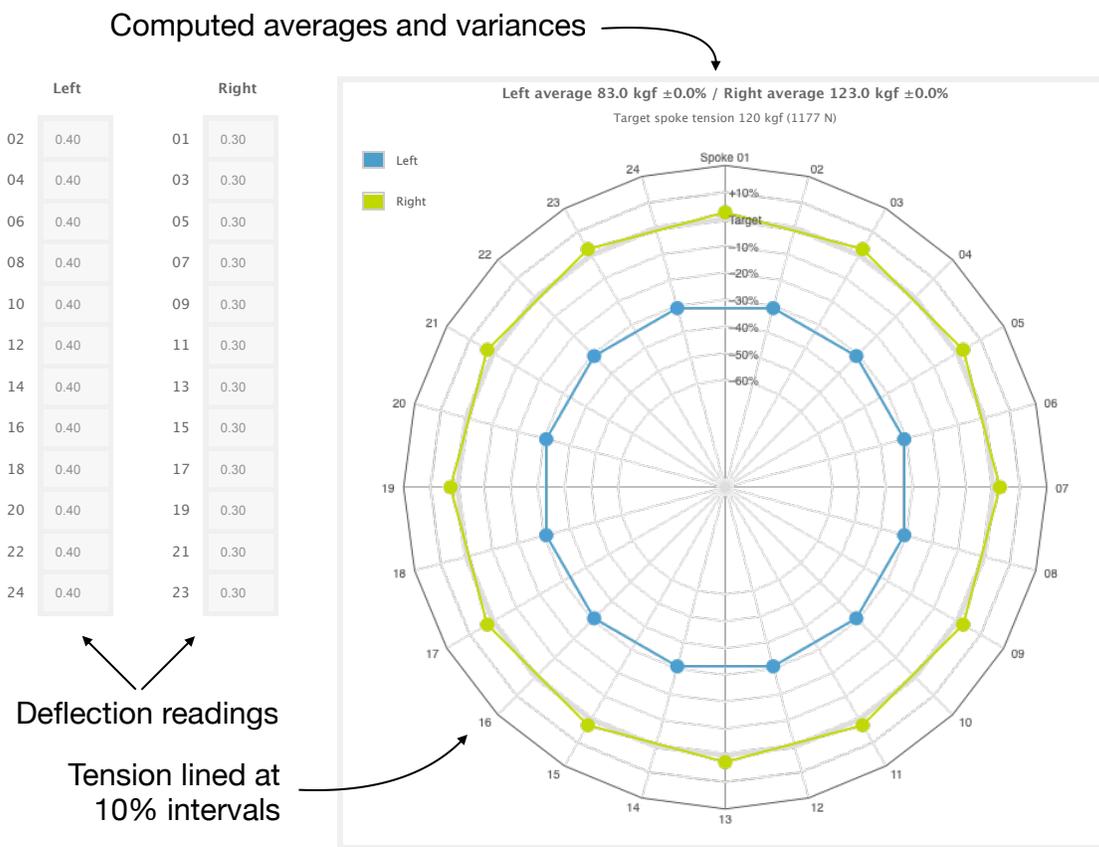
All figures in millimeters

Tension Radar

Tension Radar is an update to the SpokeService spoke tension utility. Builders worldwide have been using this tool since it debuted online in 2013 — it predates Islandix by years but is the same team and part of the Islandix origin story.

This edition is repackaged for the Islandix ecosystem. It works with any Mitutoyo-equipped tensiometer connected via the WA-1 controller. The new *Connection* option on the setup screen selects the port used for tensio readings. The left foot pedal button locks in the current reading and advances to the next spoke.

Figure 8: Tension Radar legend



Reporting issues

If an application appears to be working incorrectly, it's helpful to replicate the problem using other equipment. This includes using a different browser on the same device or connecting from a different device altogether. Reports of browser and system compatibility issues are welcome.

Report issues to support@islandix.com. It's helpful to describe the equipment being used with Wheel Analytics such as platform and browser. Screenshots or photographs of screens are helpful in some cases. Please mention your version of Wheel Analytics software, which is printed on the welcome screen. If you are not running the latest software release, you will be asked to upgrade as the first step in any problem resolution.

Islandix does not use a junk email filter so be assured your message will arrive. Each new support inquiry receives an email auto-acknowledgement confirming receipt. If you don't see an automatic reply within one hour, please check your junk mail folder. If you don't see an automatic reply within one hour, consider the possibility your email provider is blocking our replies. In this case please get in touch again using a less diabolical email provider.

Legal

- I. Limitation of liability. In no event shall Islandix Instruments Corporation, its directors, employees or suppliers be liable for damages whether direct, indirect, consequential, incidental, special, strict tort, owing to negligence, or on any other legal theory, including but not limited to damages arising from physical injury to persons or property in the course of use or mis-use of products sold or serviced.
- II. Jurisdiction. All parties unconditionally and irrevocably agree the sole venue for claims or disputes is the courts of the Province of British Columbia at Victoria, Canada. Without regards to principles of conflicts of law, the laws of the Province of BC shall govern all matters arising from or related to transactions with Islandix.

Warranty

- I. Trial period. Wheel Analytics is warranted for satisfaction and compatibility for 30 days from the date of delivery. Within this period returns are accepted for any reason. Please email support@islandix.com to arrange a return. On receipt of goods in new condition in their original packaging, a refund will be processed for the original purchase amount exclusive of shipping if any.
- II. Guarantee. Islandix-manufactured equipment, including the WA-1 controller and FP-2 foot pedal, is warranted against defects in manufacturing for a period of three years from the date of purchase. Unless otherwise specified, other tools and accessories including but not limited to indicators and cables are warranted free of defects for one year from purchase. At our discretion Islandix Instruments Corporation will repair or replace any components determined to be defective. Warranty terms are extended to the original purchaser and include parts, labor and one-way shipping by postal airmail or a freight subsidy of the same value. This is a return-for-repair warranty with the cost of return freight borne by the purchaser. For enhanced warranty service consider IslandixCare.



IslandixCare

IslandixCare is a premium service plan for manufacturing environments. It adds telephone and videoconference options on top of standard email support; includes warranty upgrades like expedited cross-shipment of replacement parts; and extends the guarantee on all Islandix tools in your workshop to lifetime warranty for the duration of your subscription. Every Islandix tool includes 30 days of complimentary IslandixCare.