

MIZ-21C SOFTWARE 1.4.0

Product Bulletin



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March 1st, 2023

MIZ-21C Software 1.4.0 Product Bulletin

Zetec released *MIZ-21C Software 1.4.0*. This software version can be used on any MIZ-21C instrument that has operating system and drivers Full Flash Update (FFU) 1.1.1 or newer. Please contact Zetec Customer Service at CustomerService@zetec.com if you have FFU 1.0.9 or earlier. This product bulletin presents an overview of the new features and changes in this software version.

MIZ-21C Software 1.4.0 has three application modes depending on the MIZ-21C model:

- **MIZ-21C-SF Models:** Conductivity and Coating Thickness, Sub-Surface, and Surface Cracks.
- **MIZ-21C-DF Models:** Adds Bolt Holes to SF applications.
- **MIZ-21C-ARRAY Models:** Adds Surface Array to SF and DF applications.

Purpose of MIZ-21C Software 1.4.0

MIZ-21C Software 1.4.0 is the standard upgrade for users of previous versions of MIZ-21C software. This software release includes several new features and improvements.

Zetec's hardware and software development process is performed according to a quality system that is certified ISO 9001-2015. With this certified software development process, Zetec guarantees that changes between earlier MIZ-21C Software releases and MIZ-21C Software 1.4.0 have no consequences on the sensitivity and the accuracy of the recorded data or results processed by the software.

New Features in MIZ-21C Software 1.4.0

The following are the new features in *MIZ-21C Software 1.4.0*:

Absolute and Reflection Bolt Hole Inspection

The MIZ-21C can now run absolute and reflection at the same time for bolt hole inspections using the ZM-5 and a custom splitter cable that connects to both the 18-pin and 26-pin connectors. The reflection channel can be used for crack detection and sizing. The absolute channel can be used for layer detection and bolt hole out of roundness.

The software can run both reflection and absolute channels within the same technique. This drive mode is called ReflectionPlusAbsolute and is present only for rotating scanner. There is the choice of one or two frequencies, and in two frequency mode there is a choice of either 2 reflection and 2 absolutes, or 2 reflection and 1 absolute, or 1 reflection and 2 absolutes.

CSV Data Files

The MIZ-21C now has the option to convert a data file to CSV format. A USB drive must be connected to enable this feature. With the USB drive connected, in Tools > File Management/USB Drive, there is now a selection called Export Data as CSV to USB. When this is selected, the user can navigate to a data file to be converted to CSV. On the USB drive, a file path is created which matches the file path of the data file on the MIZ-21C where the CSV file can be found.

Scanner Improvements

Updated tuning parameters gives improved torque output for the ZM-5 rotating scanner.

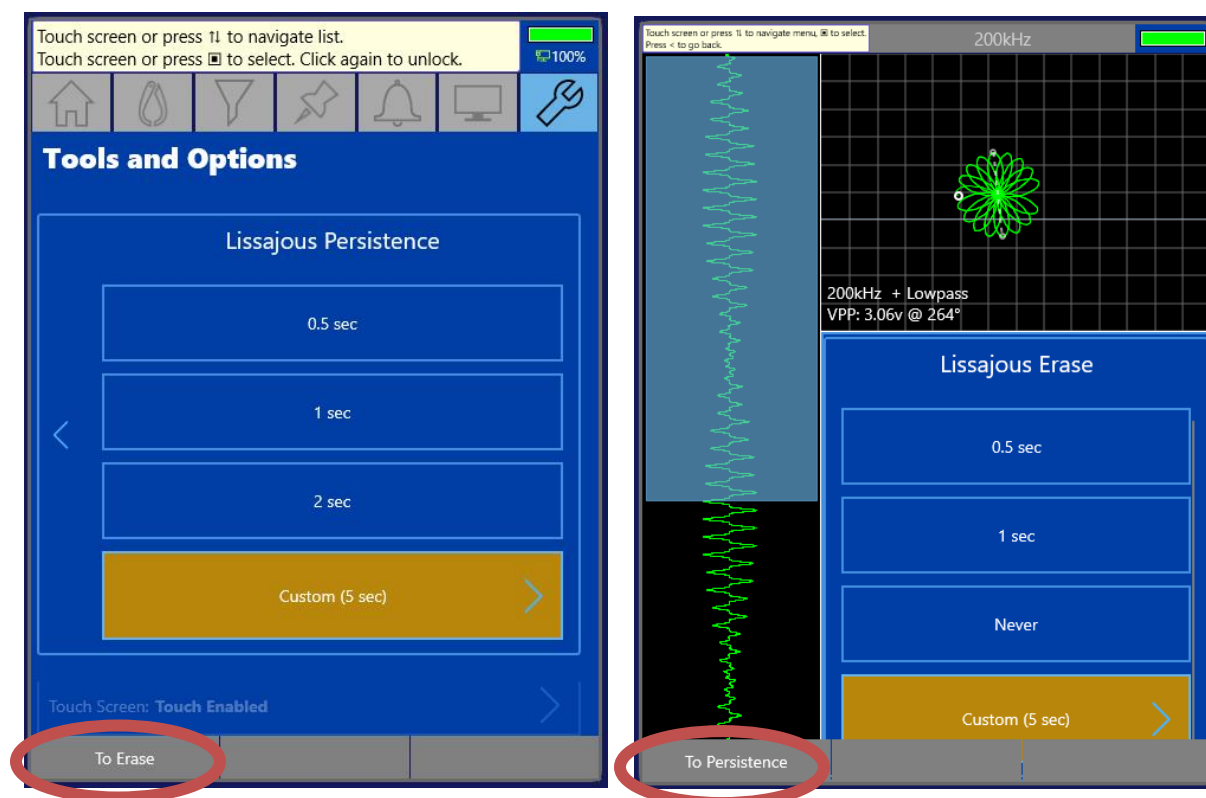
In addition, the legacy blue Zetec probe guns “Rotating Scanner 2000-02-01” and “Indexing Rotating Scanner 2000-02-05” have been added as supported options for the MIZ-21C bolt hole application.

High Pass Filter Range

The high pass filter is now selectable from 0 Hz to 500 Hz, whereas before it was limited to 1 Hz at the lowest.

Persistence and Erase

Lissajous Erase has been added and is adjustable from 0.1 to 30 seconds. Lissajous Erase is not the same as pressing the Clear button, as it only resets the lissajous display, maintaining the data buffer. The Lissajous Persistence is toggleable to Lissajous Erase by the left function button as shown below.



From the Tools menu

After long pressing the clear button
when acquiring data

Start and Stop Acquisition with Rotating Scanner

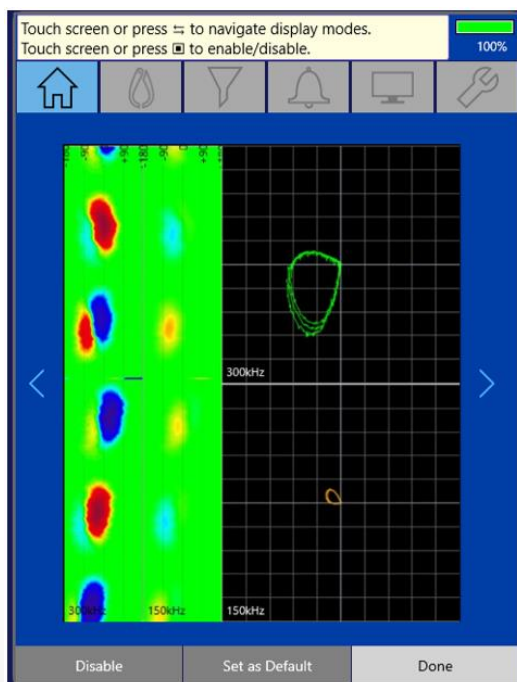
When scanning bolt holes in tight spaces, the operator does not always have access to the instrument and the bolt hole at the same time. In this case, two operators are required. However, if the operator can start and stop acquisition with the rotating scanner, two operators are not required. The start/stop button on the scanner now also controls acquisition start/stop. Certain scanners, such as the Olympus MiniMite, that have the on/off switch inline with the motor power do not support this feature.

Sunlight Display Modes

There are now added displays modes that make it easier to see the MIZ-21C display in sunlight or high glare inspection conditions. The display options are between “Dark” and “Light” modes. The current MIZ-21C is a “Dark” mode. The new “Light” mode predominately has white/light backgrounds and black/dark foregrounds of text and display features. In “Light” mode there are still colors, but the predominately white/light backgrounds make it easier to read text and eddy current signals when in sunlight conditions. Additionally, the maximum limit for brightness has been increased when needed. Exceeding the new default brightness level of 50% is unnecessary in most cases and drains the battery faster.

Customizable Default Display

This extends the existing acquisition screen configuration functionality in the technique to allow an additional option to select any of the displays to be the ‘default’ display. When pressing the start acquire button, the default is used. Only one display can be the default. If a default display is not selected, there is no change in behavior; the last display used during acquisition is the one it starts with next time.



Bolt Hole Default Filter Based on Hole Diameter and RPM

A new setting is provided to configure the probe diameter to be used with the rpm setting to create ideal settings for the high and low pass filters. When 'Auto' is selected, any change to either the hole diameter, configured rpm, or sample rate automatically updates the filter cutoff frequencies. Both the hole diameter configuration and the 'Auto' configuration option is available only for Bolt Hole techniques. The Hole Diameter setting becomes available when 'Auto' is chosen for the filter setting.

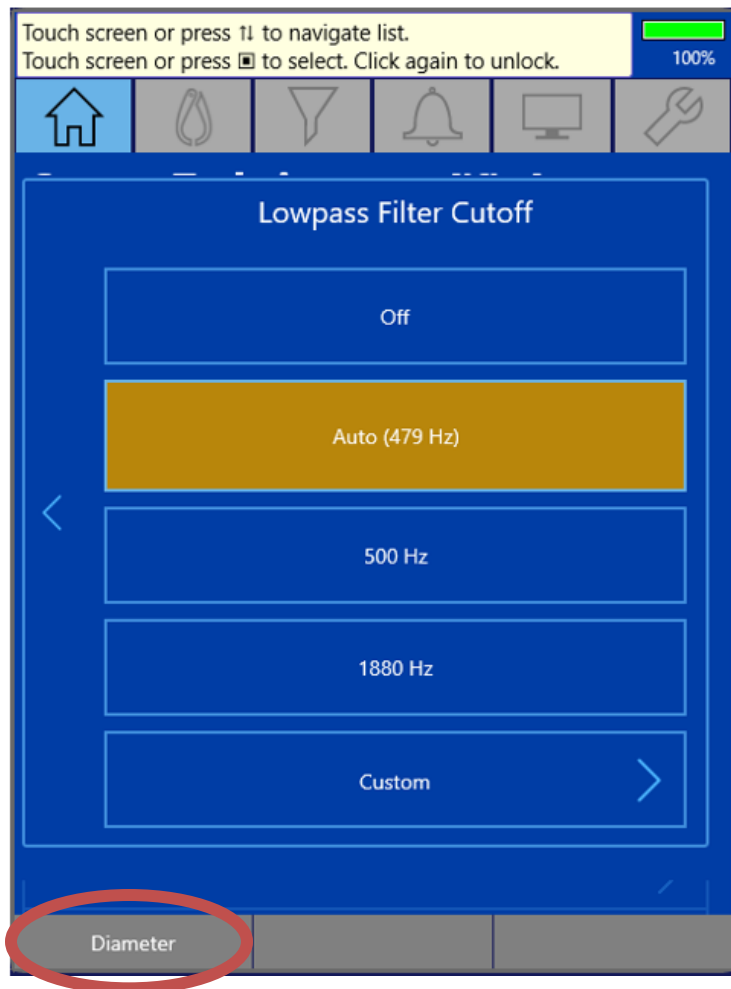


Figure 6 Filter

This is a new name for the Highpass-2 filter in the channel filter settings for Bolt Hole Techniques. It is used to convert the normal differential figure 8 signal to an absolute figure 6 type of a signal. The figure 6 filter can increase the amplitude of the signal, as well as provide the phase information more clearly.

Figure 8

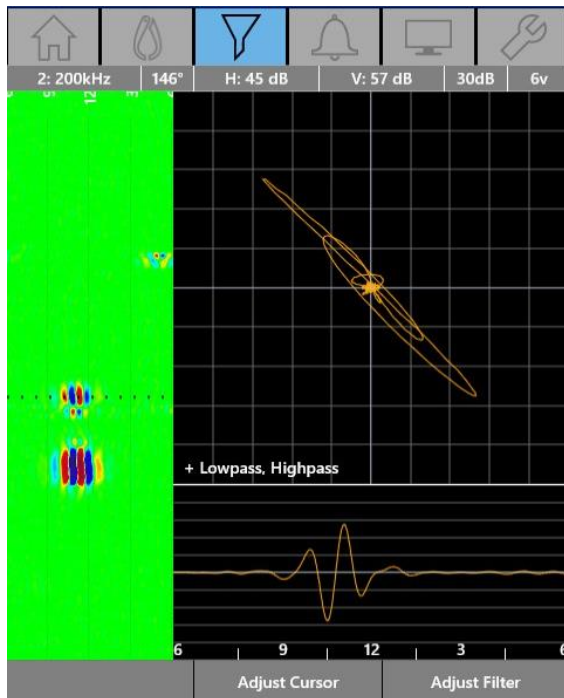
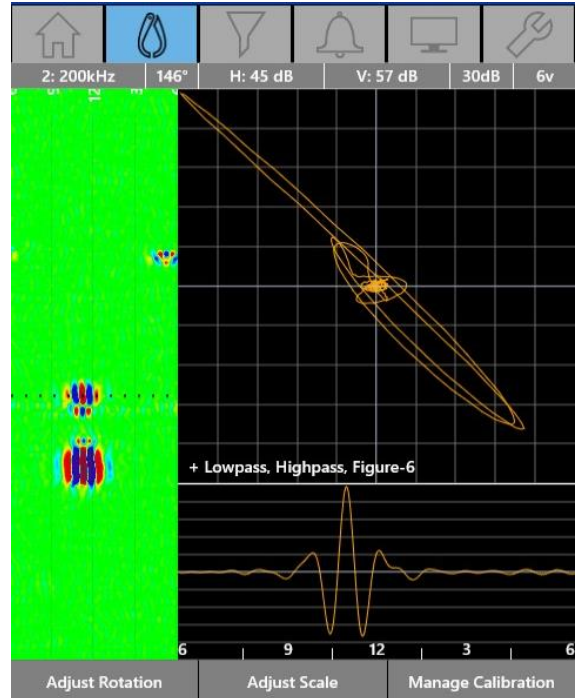


Figure 6



Quick Access Settings

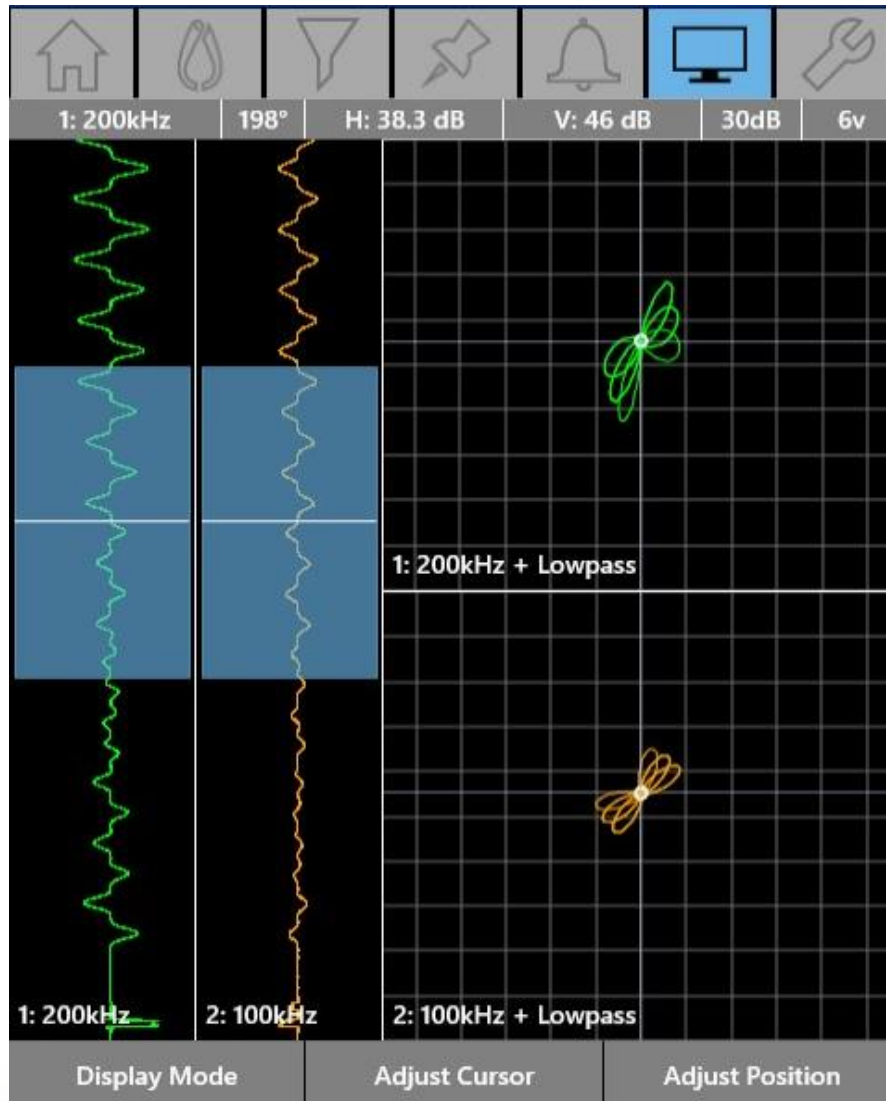
Holding down the center Select button on any review screen brings up a new configuration page as seen below. From this screen, view/configure all relevant settings pertaining to the active view channel (including some shared settings: gain, probe diameter, cscan shading, etc). Buttons allow to toggle through channels. Press the 'Done' button to return to the previous screen. If the parameters have changed, then an asterisk is added to the technique to reflect it has been modified.

NOTE: This is an additional view of settings that remain in their original locations.

Motor Speed: 800 rpm	Gain: 30 dB	
Sample Rate: 12500 per sec	Measurement Type: Cursor Info	
H-Display Offset: 1.0	Display Measurement: Always	
V-Display Offset: -1.0	C-scan Shading: Spectrum	
CH1 Frequency: 300 kHz	Probe Diameter: 6.35 mm	
CH1 Drive: 6 volts	CH1 H-Gain: 62.3 dB	
CH1 Median: Continuous Null	CH1 V-Gain: 62.3 dB	
CH1 SNR: Off	CH1 Rotation: 237°	
CH1 Lowpass: Auto (479 Hz)	CH1 Alarm: On-Inside	
CH1 Highpass-1: Auto (331 Hz)	CH1 Alarm X1: -3.3	
CH1 Highpass-2: Off	CH1 Alarm X2: -0.3	
CH1 Figure 6: Off	CH1 Alarm Y1: 0.2	
CH1 Depth Curve: Volts (Best Fit)	CH1 Alarm Y2: 2.2	
Prev Channel	Next Channel	Done

Two Frequency Review Display

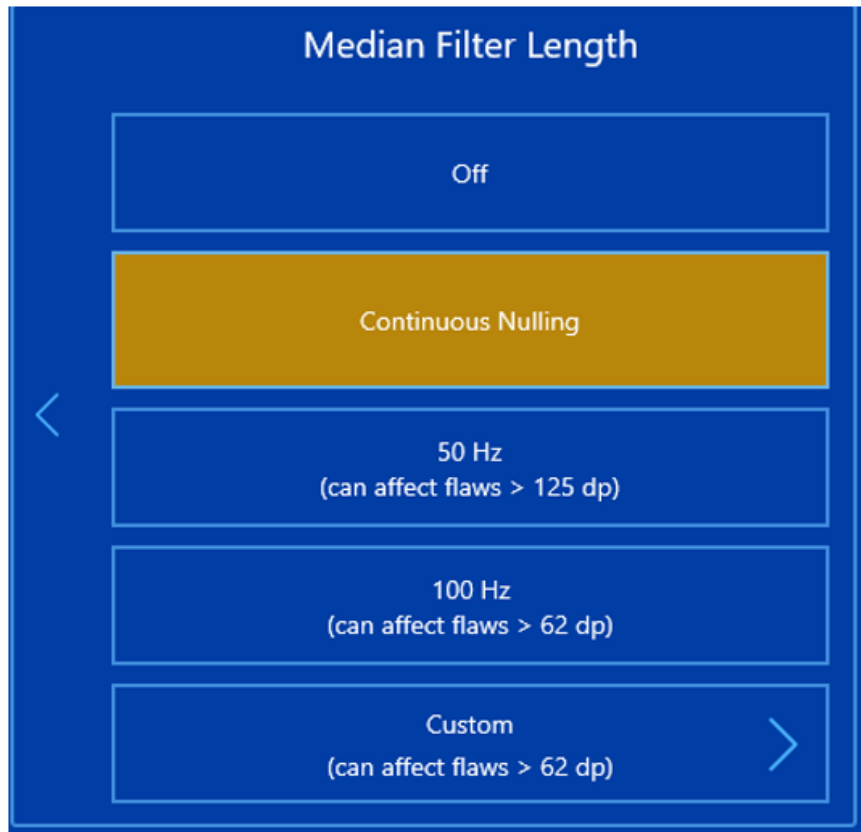
The channel bar displays the 'active interaction' channel for doing calibration or adjusting alarms, filters, etc. The available channels can be cycled through using the Up/Down buttons, like the single channel display. The 'active interaction' channel is always displayed in the upper Lissajous and left hand stripchart, with the other Lissajous/stripchart displaying the next channel in the acquisition order. The channel bar displays the active interaction channel's information.



Continuous Nulling Filter

This is implemented as a very low frequency median, which starts off first as having no effect but immediately begins to update its operating point as collection continues. It causes no delay or impact performance in the displayed signal. This is selected as an option in the Median filter setup as seen below; 'Continuous Nulling'.

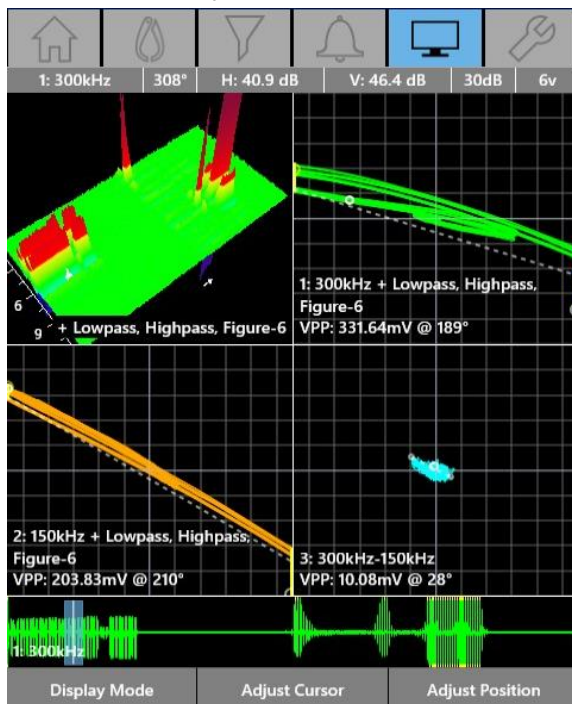
NOTE: This leaves the discrete liftoff signals intact.



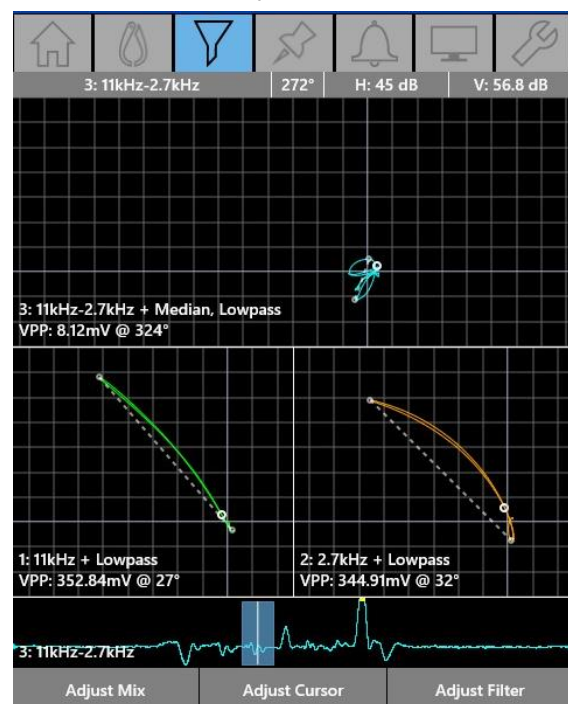
Multi-Channel Review Display

This provides a 3 Lissajous, 1 C-scan, 1 stripchart display for Bolt Hole techniques, and a 3 Lissajous, 1 stripchart display for Pencil Probe techniques. The channel bar displays the 'active' channel's information, which gets updated as changes are made to the active channel. The top row of displays has the C-scan and Lissajous for the active channel. The lower row of displays is the two additional channels of data. To make a different channel the active channel, use the Up/Down arrow buttons. The next channel in the sequence moves to the top C-scan/Lissajous displays and updates the channel bar accordingly. The stripchart display is at the bottom of the screen and provides a reference as to where the intersection of Lissajous data is relative to the rest of the acquisition buffer.

Bolt Hole Technique

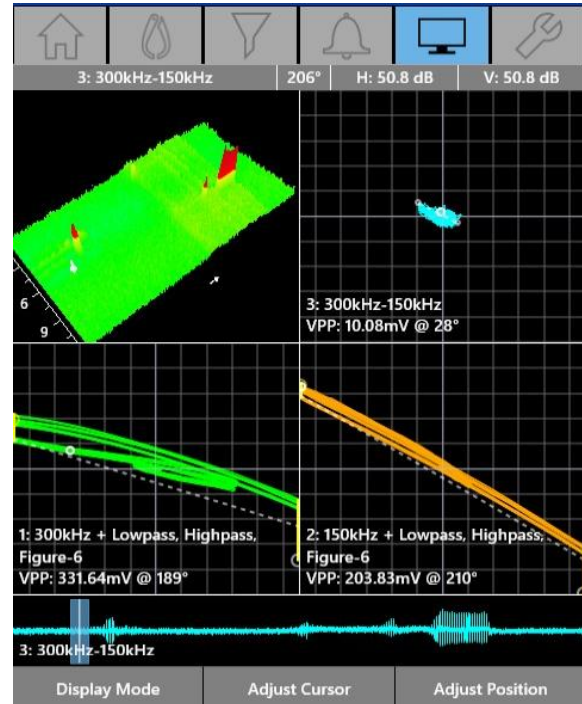
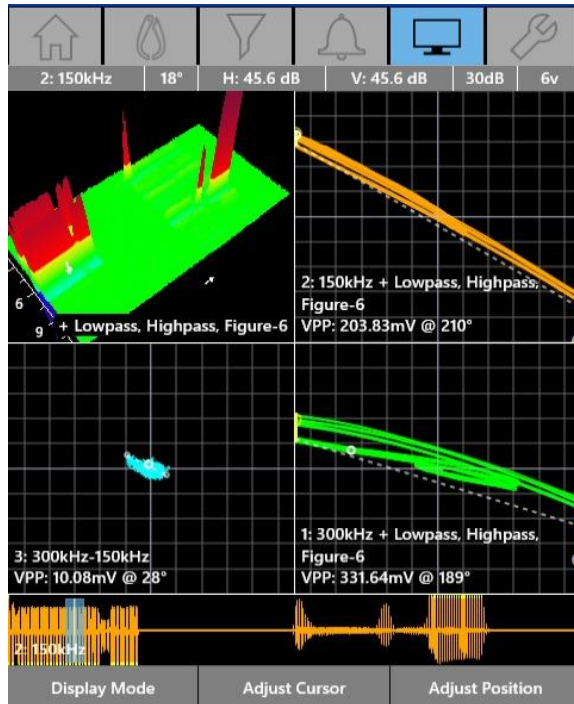


Pencil Probe Technique



Cycle Position of Channel Display

Clicking the up/down arrow buttons make the channels cycle position in the display.



Depth Curve Unit Type

The depth setting now has the new unit option of percent (%). The percent curve will limit to a max of 100%, and it will truncate results at 100% if the voltage inputs were to exceed that set threshold. The conductivity and coating thickness units now have two separate settings since depth can be percent, but coating thickness cannot.

Bandpass Filter Redundancy

The bandpass filter is now removed since it was redundant with setting the high and low pass filters separately. Existing setups that used the bandpass filter will have their settings transferred to high/lowpass filter settings as appropriate.

Downloading and Installing MIZ-21C Software 1.4.0

For this or other MIZ-21C Software versions, please visit MIZ-21C Download at www.zetec.com

To upgrade the MIZ-21C software from **1.0.9 or earlier** to the new 1.4.0 version, the MIZ-21C must be returned to Zetec. Please contact Zetec Customer Service at CustomerService@zetec.com for a return authorization number.

Instructions (choose the option applicable to you):

(OPTION 1) To upgrade the MIZ-21C Gen2 sealed hardware to the new 1.4.0 version:

- On a USB drive create a folder “MIZ-21C” with subfolder “Updates”: \MIZ-21C\Updates\
- Copy the downloaded zip files (MIZ-21C.Application.1.4.0.51.install and MIZ-21C.System.1.4.0.51.install) into the “Updates” folder on the USB drive
- Insert the USB drive into the MIZ-21C and go to Tools > System Updates and click Update Software and Firmware
- If rolling back version, select ‘Uninstall’, and if installing new version, select ‘Install’
- Select from the list: MIZ-21C.System.1.4.0.51.install and click OK, then wait for shutdown
- The ‘Gears’ phase will begin, then wait for shutdown
- From Version Manager, select ‘Install’ and select: MIZ-21C.Application.1.4.0.51.install
- Select ‘Install’ and after 15 seconds it will complete with the ‘Install succeeded’ message
- Select ‘Open MIZ-21C’ and the Applications menu will open (Note: if the black Zetec logo persists for more than 2 minutes, then reboot the instrument)

(OPTION 2) To upgrade the MIZ-21C Gen1 non-sealed hardware to the new 1.4.0 version:

- On a USB drive create a folder “MIZ-21C” with subfolder “Updates”: \MIZ-21C\Updates\
- Copy the downloaded zip files (MIZ-21C.Application.1.4.0.51.install and MIZ-21C.System.1.4.0.51.install) into the “Updates” folder on the USB drive
- Insert the USB drive into the MIZ-21C and go to Tools > System Updates and click Update Software and Firmware
- If rolling back version, select ‘Uninstall’, and if installing new version, select ‘Install’
- Select from the list: MIZ-21C.System.1.4.0.51.install and click OK, then wait for shutdown (verify by noting that the fans are off)
- Press the Power Button to turn the instrument back on
- The ‘Gears’ phase will begin, then wait for shutdown (verify by noting that the fans are off)
- Press the Power Button to turn the instrument back on
- Wait for a few minutes, then one of two things will happen on restart:
 - – The application will boot to the normal Applications menu, WAIT 5 seconds for the screen to change to the Version Manager
 - – OR during the boot cycle the user will have a 5 second window to select between ‘Launch’ or ‘Manage Versions’, click Manage Versions to go to the Version Manager
- From Version Manager, select ‘Install’ and select: MIZ-21C.Application.1.4.0.51.install
- Select ‘Install’ and after 15 seconds it will complete with the ‘Install succeeded’ message
- Select ‘Open MIZ-21C’ and the Applications menu will open (Note: if the black Zetec logo persists for more than 2 minutes, then reboot the instrument)