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ADT View software

Software version 4.0.0.0

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Contents

1. General information

1.1 Overview

The ADT View software provides information to aid readhead set-up and system diagnosis.

NOTES: This user guide describes how to use the ADT View software only. For instructions on how to install and set up the encoder system and to connect the Advanced Diagnostic Tool, refer to the relevant system installation guide. These can be found at **www.renishaw.com/encoderinstallationguides**.
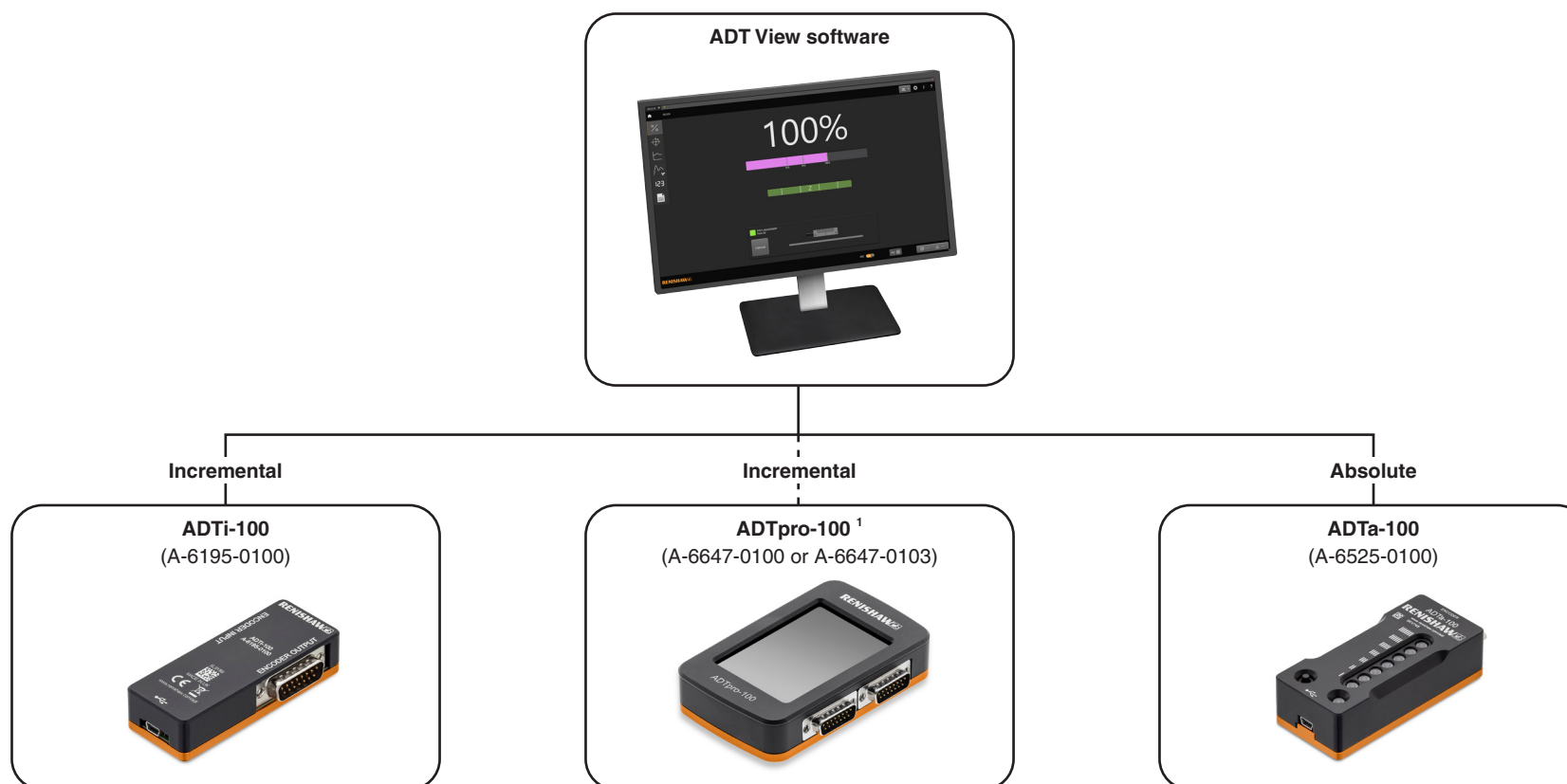
[1]   ADTpro-100 features an integral touch screen so the use of the ADT View software is optional.

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ADTi-100 (A-6195-0100)	ADTpro-100 [1] (A-6647-0100 or A-6647-0103)	ADTa-100 (A-6525-0100)

ADTi-100

QUANTiC™ series

ATOM DX™ series

VIONiC™ series

ADTpro-100 [1]

QUANTiC™ series

TONiC™ series

ATOM DX™ series

ATOM™ series

VIONiC™ series

ADTa-100

RESOLUTE™ series [2]

EVOLUTE™ series [2]

FORTiS™ series

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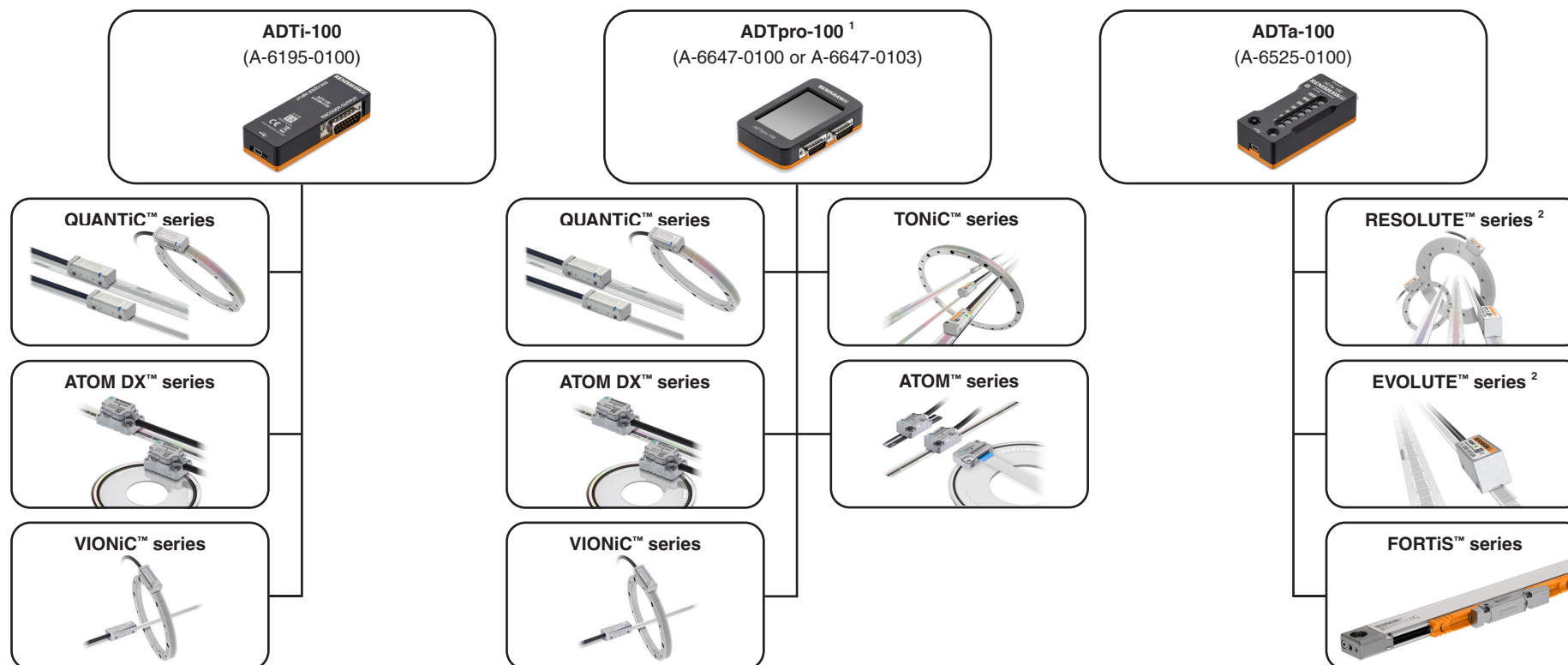
[1] Not all systems are compatible with ADTpro-100. see Appendix A.1 for details of system compatibility.

[2] Compatible RESOLUTE and EVOLUTE readheads are marked with the symbol **ADT**.

1.2   Legal notices

Terms and conditions and warranty

Unless you and Renishaw have agreed and signed a separate written agreement, the equipment and/or software are sold subject to the Renishaw Standard Terms and Conditions supplied with such equipment and/or software, or available on request from your local Renishaw office.

Renishaw warrants its equipment and software for a limited period (as set out in the Standard Terms and Conditions), provided that they are installed and used exactly as defined in associated Renishaw documentation. You should consult these Standard Terms and Conditions to find out the full details of your warranty.

Equipment and/or software purchased by you from a third-party supplier is subject to separate terms and conditions supplied with such equipment and/or software. You should contact your third-party supplier for details.

Intended use

The ADT View software is designed to assist installation and fault diagnosis. It must be used as specified in Renishaw documentation and in accordance with the Standard Terms and Conditions of the Warranty and all other relevant legal requirements.

Further information

Further information relating to the encoder range and the installation of the encoder can be found in the relevant data sheets and installation guides. These can be downloaded from our website at **www.renishaw.com/opticalencoders** and are also available from your local Renishaw representative.

1.3 PC requirements

Minimum system requirements

- Windows® 10 (x86 or x64) or Windows 11 (x64)

- 500 MB disk space (this includes space for .NET if it is not already installed)

Recommended minimum system specification

The following specification (or higher) is recommended for satisfactory performance:

- Quad-core 2 GHz processor

- 4 GB RAM

- 500 MHz GPU capable of 1024 × 600 resolution or higher

2.   Connecting the ADT

2.1   ADT overview

The ADTs can be used in a variety of different ways. This user guide covers the use of the ADT View software for USB operation.

- **Standalone:** No PC, laptop, or tablet is required

- **USB operation:** Requires a PC, laptop, or tablet with the ADT View software. The diagnostic information is displayed via the ADT View software.

	ADTa-100	ADTi-100	ADTpro-100
Standalone	✓ Signal strength display via built-in LED array	✗	✓ Integral colour screen
USB operation [1]	✓	✓	✓
In-line [2]	✗	✓	✓
Power supply	Mini USB	Mini USB	12 V mains or battery pack [3]

Refer to the relevant ADT data sheet or system installation guide for more information on using the ADTs in standalone mode.

NOTE: The ADTa-100 has a standard 9-way D-type connector, the ADTi-100 and ADTpro-100 have standard pin-out 15-way D-type connectors. For readheads with alternative pin-outs or connectors, adaptor cables are required. Refer to the ADT data sheets for more information on available adaptor cables.

[1]   ADTa-100 and ADTi-100 are connected and powered via a mini USB. ADTpro-100 is connected via a USB C. The USB C does not power the ADTpro-100.

[2]   The ADT is connected between the encoder and the controller as part of the control loop.

[3]   Battery pack or mains supply are supplied with the ADTpro-100. For more information see the *ADTpro-100 Advanced Diagnostic Tool* user guide (Renishaw part number M-6647-9138).

3. Installing and connecting the ADT View software

3.1 Installing the software

IMPORTANT: Full administration rights are necessary to install and uninstall the ADT View software.

The software is free to download from **www.renishaw.com/adt**. Follow the on-screen instructions to install and run the software.

3.2 Connecting to an ADT

When the ADT View software is opened it will automatically detect any connected systems.

	Connected	Default screen	Applicable section
ADTi-100	No encoder system	ADT selection screen	Section 3.2.1
	Encoder system	Signal screen	Section 5.3
	QUANTiC analogue readhead	Termination screen	Appendix A.2
ADTa-100	No encoder system	ADT selection screen	Section 3.2.1
	Encoder system	Position display (Digital readout) and signal screen	Section 4.2
ADTpro-100	No encoder system	ADT selection screen	Section 3.2.1
	Encoder system (excluding those used with Ti digital interfaces)	Signal screen	Section 5.3
	TONiC or ATOM with Ti digital interface	Readhead selection	Section 5.2

NOTE: If multiple ADTs are connected then a selection screen will appear allowing the user to select the ADT that is to be displayed (section 3.2.1).

If the ADT View software is opened and no ADTs are connected then the following screen will be displayed until an ADT is connected:
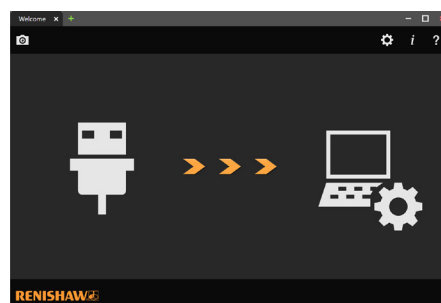
3.2.1 ADT selection
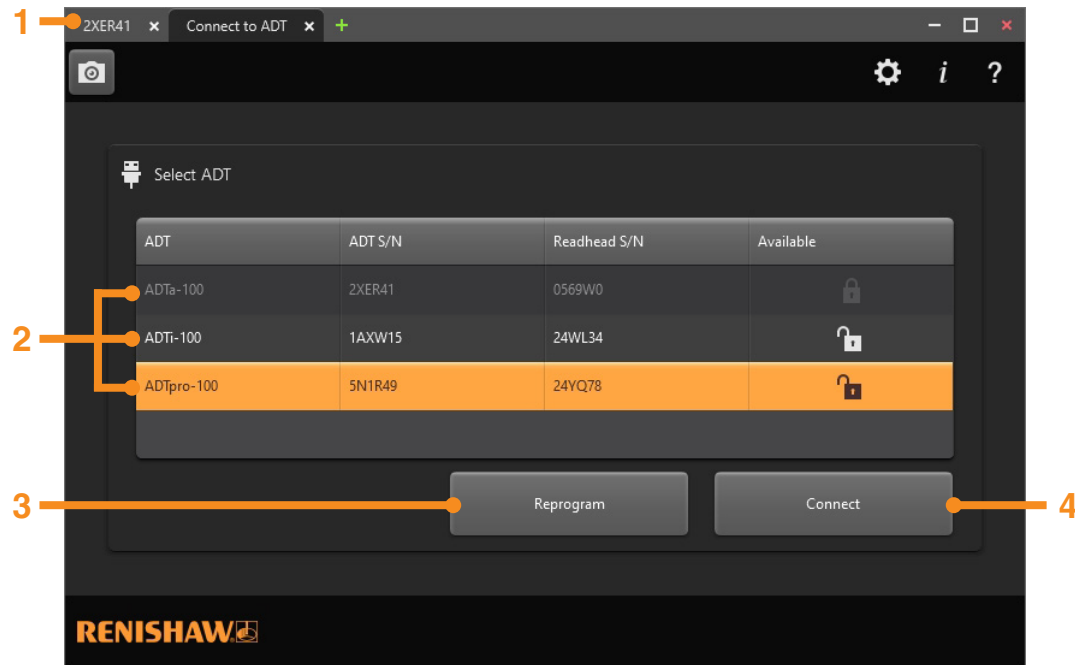
1. Tab page for connected ADT. Select to view ADT information

   NOTE: Multiple ADTs can be connected to the ADT View software.

2. ADT status

   - A closed padlock shows the ADT is connected. Connected ADTs will be greyed out.

   - An open padlock shows the ADT is available for connection. Click on the ADT to select it, then click Connect.

   - A red cross shows the ADT is not compatible and may need reprogramming (ADTpro-100 only)

3. **ADTpro-100 only**. Select the ADTpro-100 and press Reprogram to open the reprogramming screen (section 6)

4. Connect to selected ADT. The selected ADT will be highlighted orange.

3.2.2 General functions

1. Disconnect ADT and return to ADT selection screen (section 3.2.1)

2. Take a screenshot

3. Save data from current screen as a .csv file

4. Settings including language selection, units, adding/editing rings and discs. See section 7 for more information.

5. Software information

6. User guide

3.2.3 Readhead connection (ADTpro-100 only)

If no encoder system is connected when the ADTpro-100 is selected on ADT View the following message will be displayed.
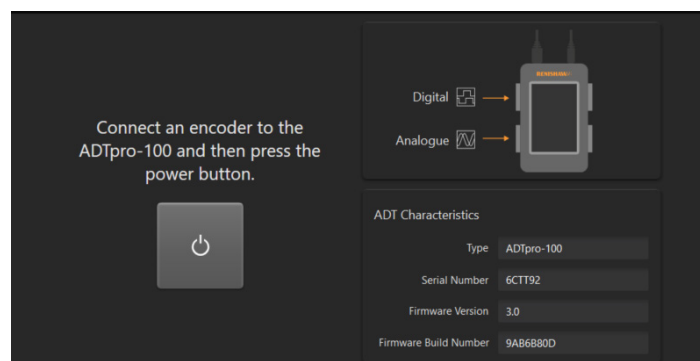
Connect the encoder and click the power symbol to cycle the power to readhead and connect. The signal screen, section 5.3, or readhead selection screen for Ti digital systems, section 5.2, will then be displayed.

3.2.4 ADT connection errors

If connection is lost to the selected ADT or readhead then a Connection Lost screen will be displayed. The data from the currently displayed screen can be saved where applicable.

ADT disconnected

Readhead disconnected
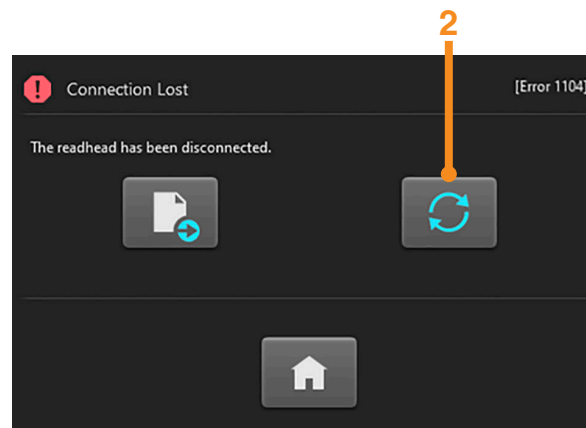
1. Save data (section 3.2.2)

   NOTE: This is only available if the disconnect happens when data has been captured whilst on the Signal vs position or velocity screens.

2. Refresh the connection to the readhead

3. ADT selection screen

4. ADTa-100 with ADT View

4.1 Overview

The following screen is automatically displayed when the ADTa, with an encoder system connected, is selected.
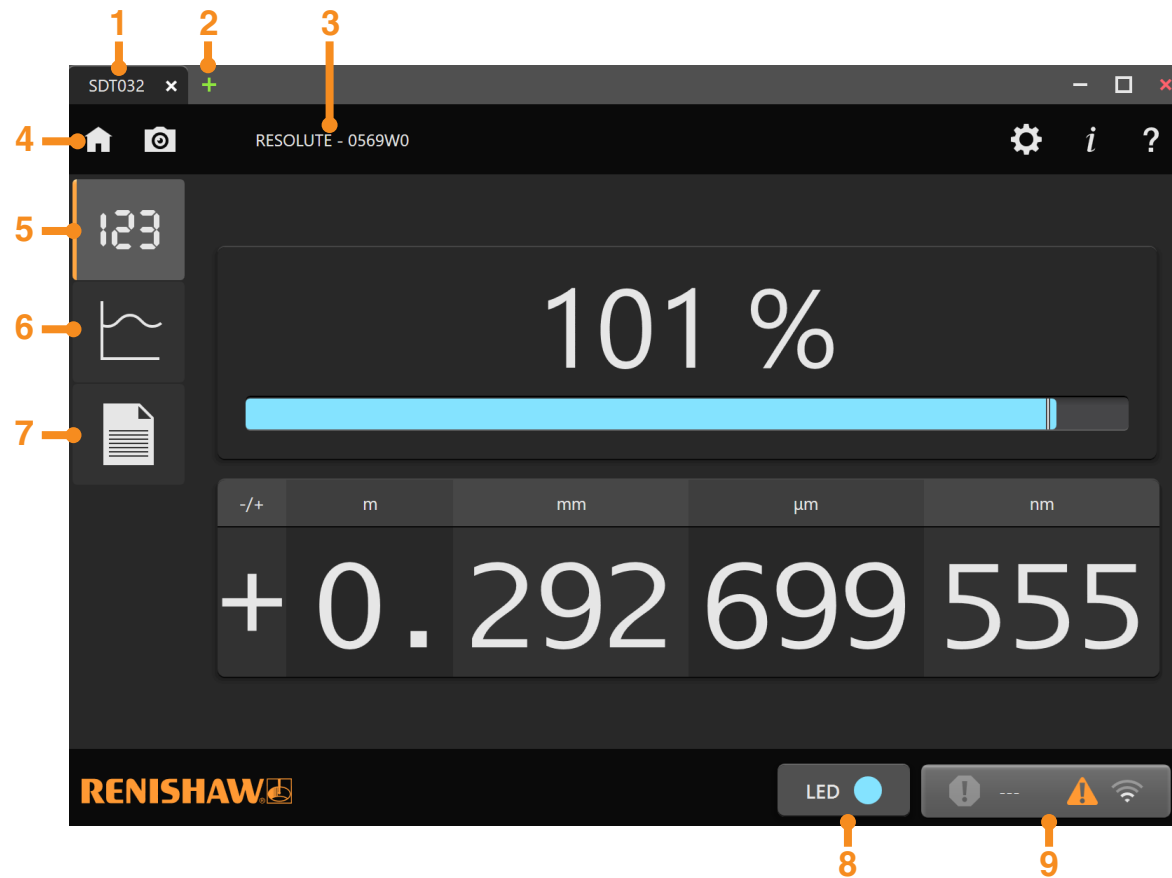
1. ADTa-100 serial number

2. Connect to another ADT. Opens ADT selection screen in a new tab (section 3.2.1).

3. Readhead type and serial number

4. Disconnect ADT and return to ADT selection screen (section 3.2.1)

5. Digital readout (DRO) and signal screen (section 4.2)

6. Signal strength vs position screen (section 4.3)

7. Configuration screen (section 4.4)

8. Readhead LED indicator. Repeats the colour displayed by the connected readhead's LED.

9. Alarm and warning log (section 4.2.4.2)

4.2   Digital readout (DRO) and signal screen

This screen is automatically displayed when the ADTa is selected on the ADT View software. It provides information to assist with readhead set-up. The software will automatically detect the readhead type connected and display the linear or rotary signal screen accordingly.

Linear DRO and signal screen
(section 4.2.2.1)

Rotary DRO and signal screen
(section 4.2.2.2)
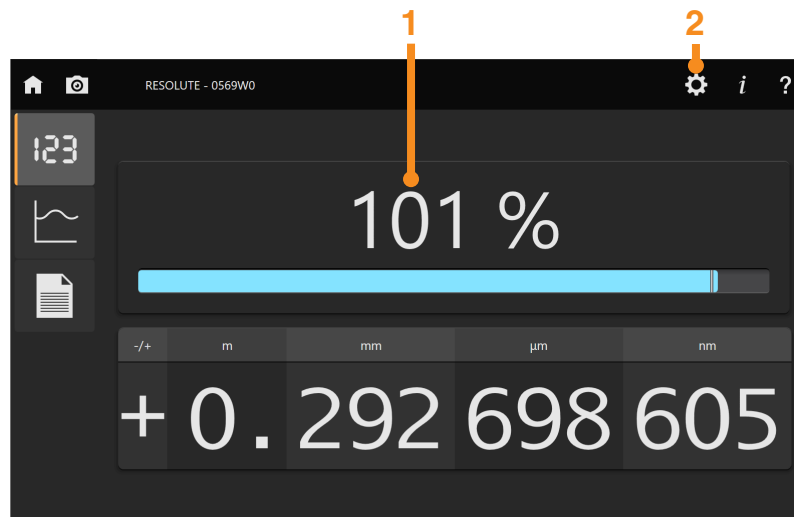
1. Signal strength indicator (section 4.2.1)

2. Settings (section 7)

    • Select DRO units

    • Enable set zero function

3. Digital readout (DRO) of the encoder position (section 4.2.2)

When an alarm or warning occurs, a pop-up describing the alarm or warning condition will be displayed.

See section 4.2.4 for more information on alarms and warnings.

NOTE: For more information on system installation and set-up refer to the relevant installation guide. These can be found at **www.renishaw.com/encoderinstallationguides**.

4.2.1 Signal strength

The signal strength is displayed as a percentage and on a signal bar. The signal bar colour matches the colour of the connected readhead's LED.

4.2.2 Digital readout of the encoder position

4.2.2.1 Linear position display

When a linear system is connected, the position can be displayed in either metric or encoder units.

The units can be selected in the settings window (section 7).

Metric display

Encoder units display
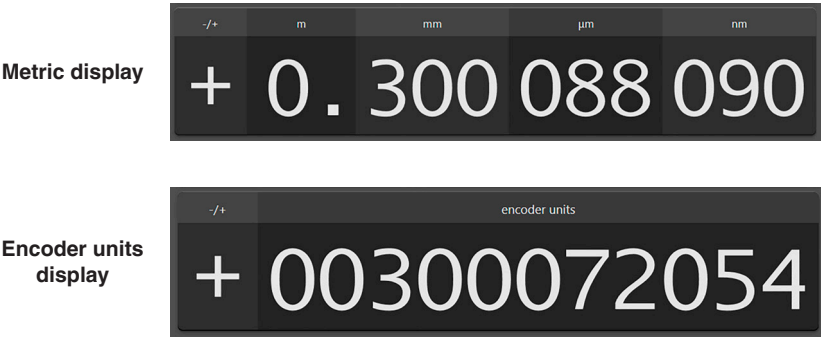
NOTE: When encoder units display is selected, each count represents one unit of encoder resolution.

When 'Display Negative Numbers' is selected the digital readout will display a negative count when the readhead passes the zero position interpreting the encoder output as a signed value. See section 4.2.3 for details on setting the zero position.

If 'Display Negative Numbers' is not selected the digital readout will wrap to the maximum value (word length x resolution) when it passes the zero position interpreting the encoder output as an unsigned value.

NOTE: Negative numbers are only available with BiSS, Panasonic and Yaskawa protocols.

4.2.2.2 Rotary position display

When a rotary system is connected, the position can be displayed in decimal degrees, degrees/minutes/seconds or as encoder units.

The units can be selected in the settings window (section 7).

Decimal degrees display

Degrees/minutes/ seconds display

Encoder units display
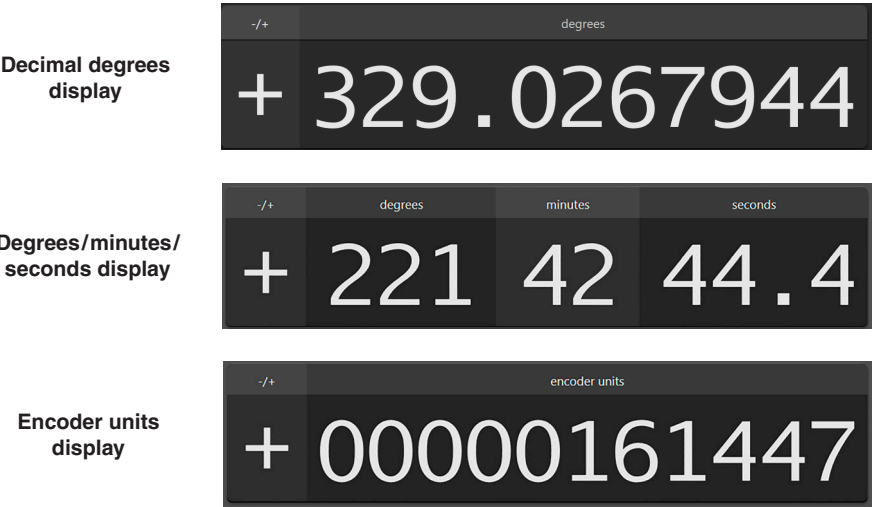
4.2.3 Set zero position function
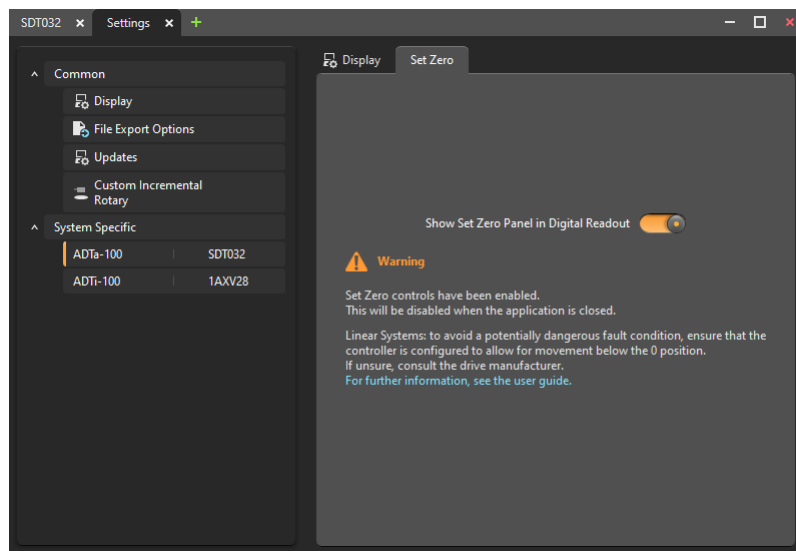
BiSS linear readheads only
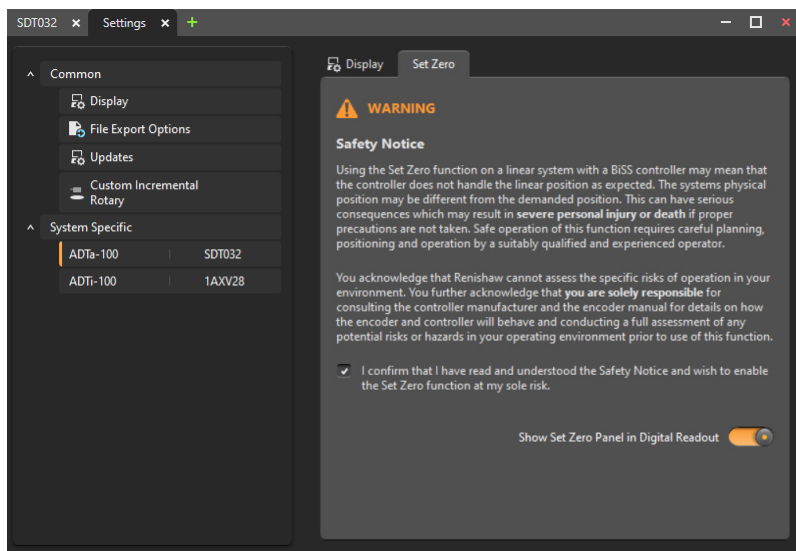
The 'Set Zero' function is enabled from the settings page (section 7). Once 'Show Set Zero Panel in Digital Readout' has been enabled new options will appear on the DRO screen. These will allow the user to zero the count at the current position (section 4.2.3.1), or zero the count at a defined position (section 4.2.3.2).

NOTE: For BiSS linear readheads the additional safety notice must be read and confirmed before set zero is possible.

- For safety reasons the set zero functionality will be disabled each time the software is closed. The zero offset position will be retained in the readhead.

- The set zero selection option will only be available for readheads that support this functionality.

- When a zero offset is applied a warning message will be displayed in the bottom bar and, for BiSS linear systems only, a link to the safety notice.
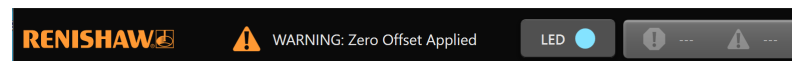
NOTE: Currently only readheads with BiSS, Panasonic or Yaskawa protocols have set zero functionality.

WARNINGS:

- Make sure the power to the readhead is not disconnected during the 'Write Zero Offset' and 'Clear Zero Offset' procedures. Failure to do this might result in readhead firmware corruption.

- For linear systems ensure your controller is configured to allow for movement below the zero position when the set zero function is used. When traversing zero in the negative direction the encoder output will wrap to its maximum value (word length x resolution). If the controller is not expecting this behaviour it could result in a potentially dangerous fault condition. If you are unsure of this consult your drive manufacturer before continuing.

4.2.3.1 Set zero at current position

Linear system

Rotary system
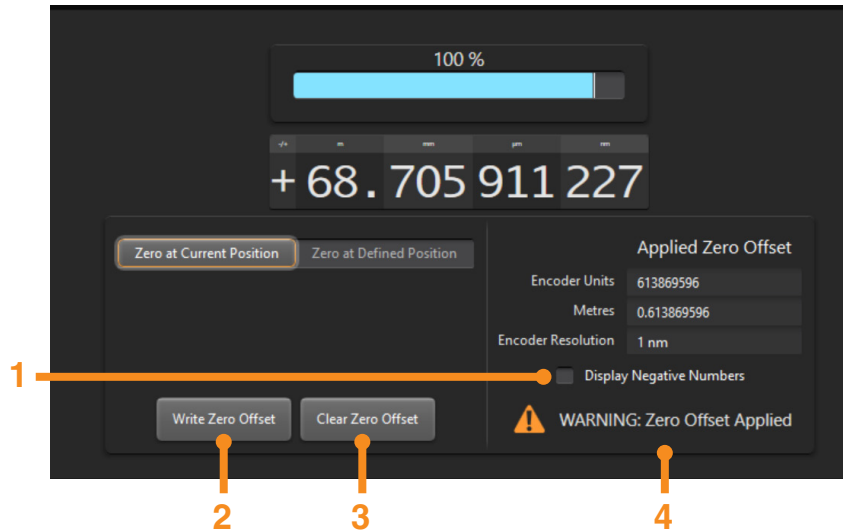
1. Display negative count when readhead passes zero position (section 4.2.2.1)

2. Rewrite the current position to be zero

3. Clear the applied zero – the zero position will be reset back to the factory zero position

4. Warning displayed when a zero offset has been applied
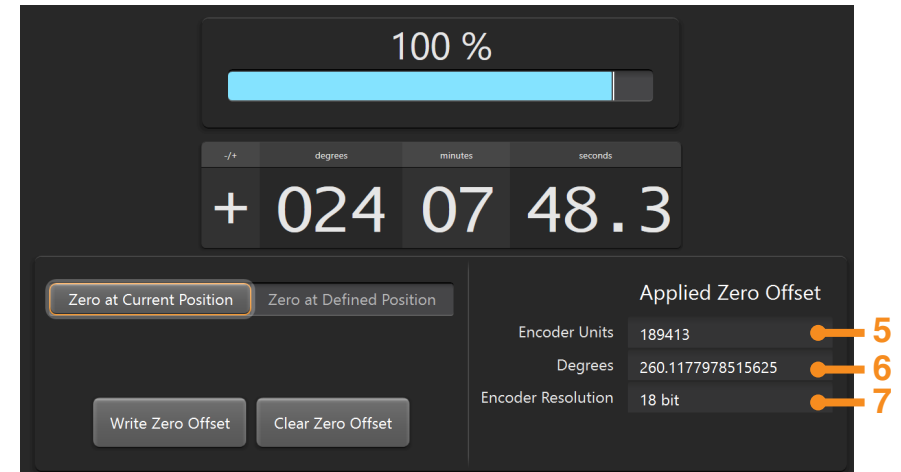
5. The applied offset from the factory zero in encoder units

6. The applied offset from the factory zero in metres (linear systems) or in degrees (rotary systems)

7. The resolution of the connected readhead

4.2.3.2 Set zero at defined position

Linear system

Rotary system
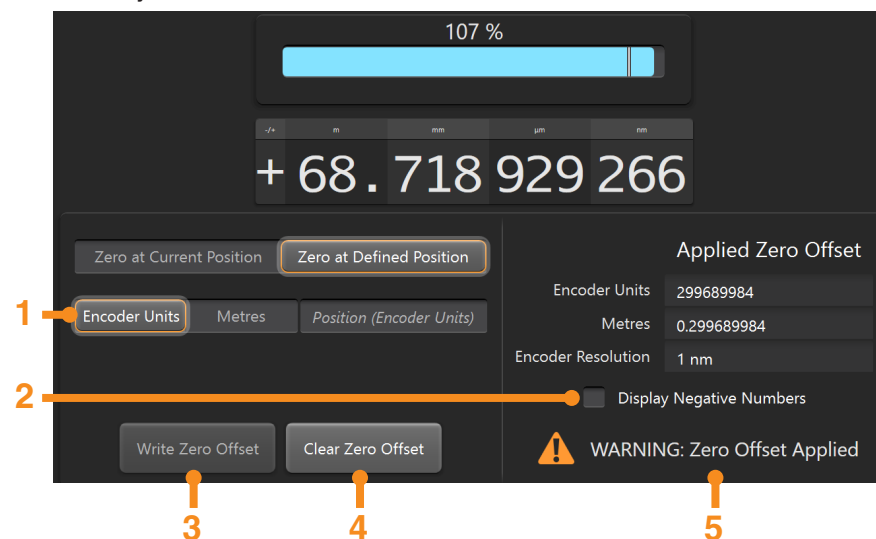
1. Select units (linear systems only) and input the value required for the new zero position

2. Linear systems only: Display negative count when readhead passes zero position (section 4.2.2.1)

3. Write the new zero position to the readhead. A confirmation message will be displayed before set zero is applied. This is the Applied Zero Offset

4. Clear the applied zero – the zero position will be reset back to the factory zero position

5. Warning displayed when a zero offset has been applied
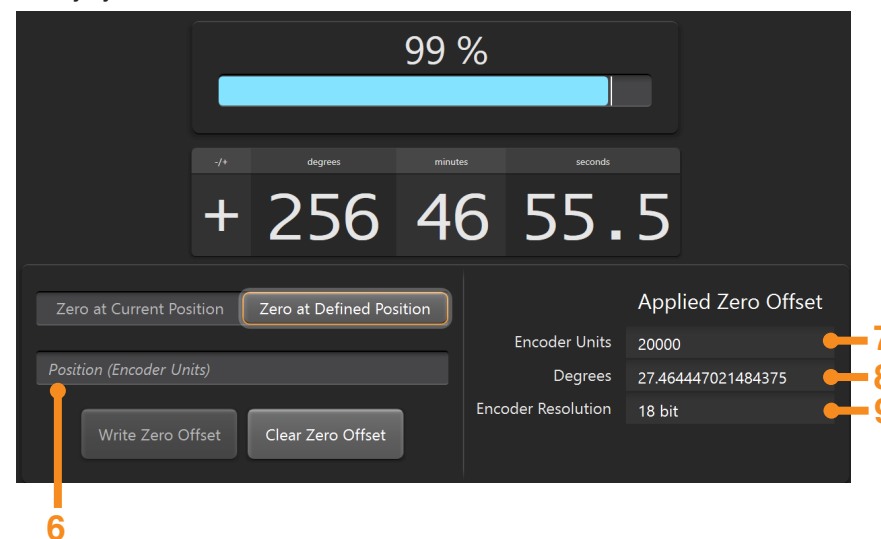
6. Input the value required for the new zero position

7. The applied offset from the factory zero position in encoder units

8. The applied offset from the factory zero position in metres (linear systems) or in degrees (rotary systems)

9. The resolution of the connected readhead

4.2.4   Alarms and warnings

4.2.4.1 Alarm and warning indication
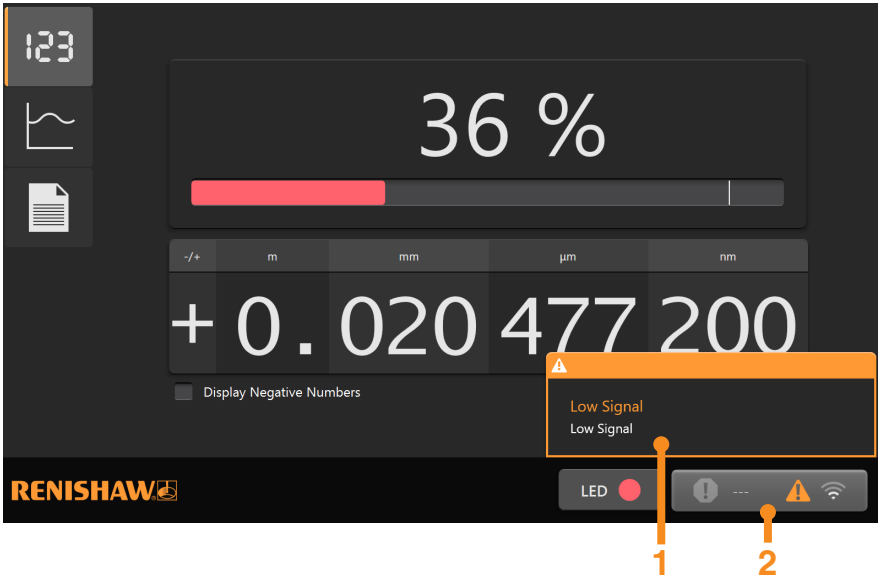
1. An alarm or warning will be displayed on each screen via a pop-up describing the alarm or warning condition. This will be displayed for 3 seconds when an alarm or warning condition occurs.

2. The last alarm or warning that occurred will be indicated until the alarm and warning log is cleared. Click the button to open the alarm and warning log (section 4.2.4.2).

Possible alarms and warnings

Symbol	Warning/Alarm
	Position alarm
	Overspeed warning/alarm
	Low signal warning
	Temperature warning/alarm

4.2.4.2 Alarm and warning log

The log contains information about all alarms and warnings that have occurred since the system was switched on.

1. Alarm and warning log

2. Clear the alarms and warnings in the log

3. ADT selection

   NOTE: Only the alarms and warnings of the selected ADT are displayed

4. Error icons light up if error is currently active in the system

4.3 Signal strength vs position screen

 The signal strength vs position screen plots the signal size vs position as either a rotary or linear plot depending upon the connected readhead.

4.3.1 Linear systems
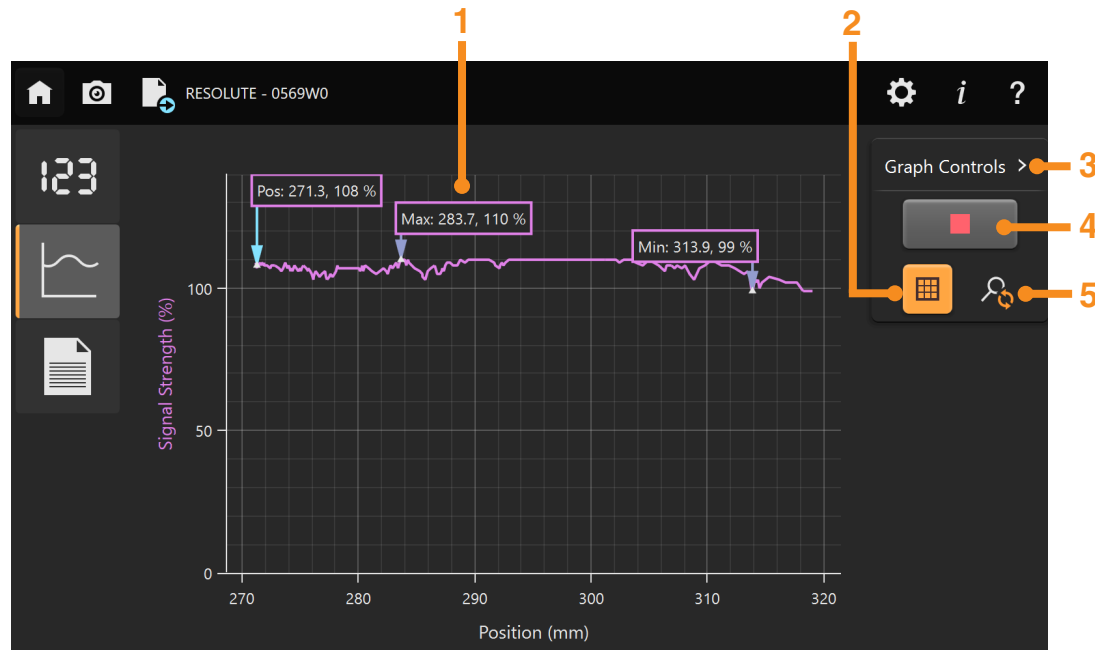
1. Plot of signal strength vs position. The maximum and minimum signal strengths and the signal strength at the current position are shown in purple boxes.

   NOTE: The plot can be zoomed and panned. See section 4.3.3.2 for more information.

2. Enable/disable grid lines

3. Select to show/hide Graph Controls

4. Start/stop a plot (section 4.3.3.1)

5. Reset zoom

When an alarm or warning occurs, a pop-up describing the error condition will be displayed. See section 4.2.4 for more information on alarms and warnings.

NOTES:

- The signal plot will always be displayed in mm.

- The maximum speed of travel for a useful signal strength vs position plot is 0.5 m/s.

- An improved plot resolution is possible at slower speeds.

4.3.2 Rotary systems
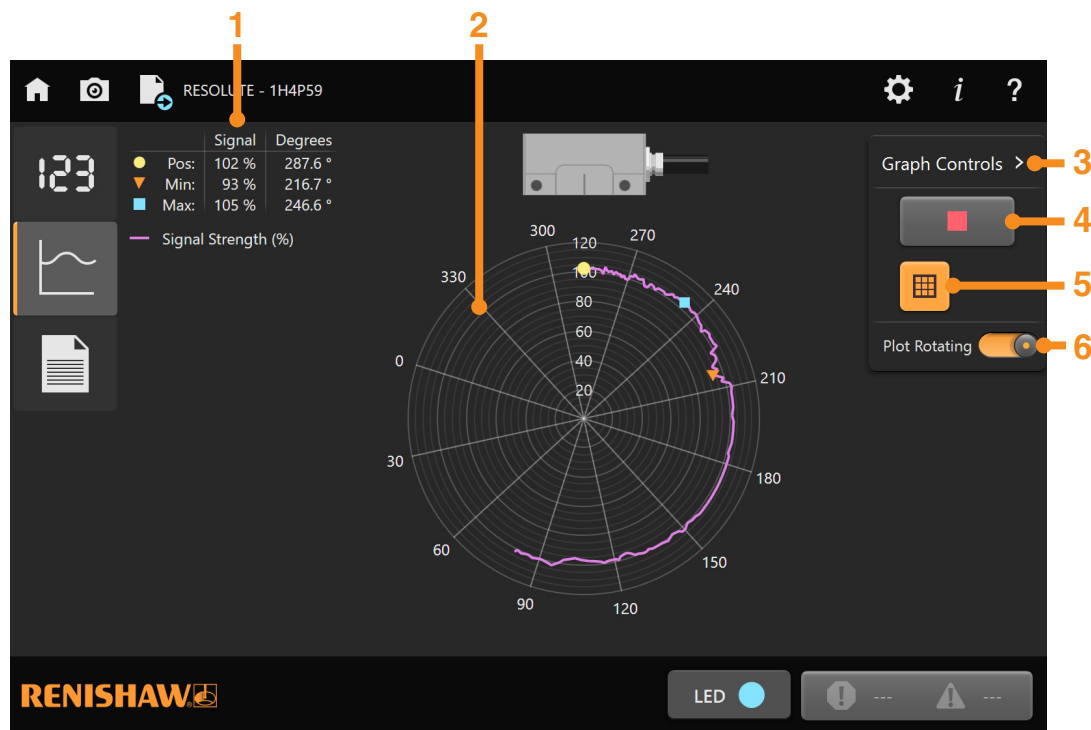
1. Signal strength at the current position and maximum and minimum signal strength positions

2. Plot of signal strength vs position

3. Select to show/hide Graph Controls

4. Start/stop a plot (section 4.3.3.1)

5. Enable/disable grid lines

6. Switch plot rotation on/off (section 4.3.3.3)

When an alarm or warning occurs, a pop-up describing the error condition will be displayed. See section 4.2.4 for more information on alarms and warnings.

NOTES:

- The signal plot will always be displayed in degrees.

- The maximum speed that the readhead can travel over the ring to display a useful signal strength vs position plot is 0.5 m/s. This is approximately equivalent to 50 rpm with a 200 mm diameter ring.

- An improved plot resolution is possible at slower speeds.

4.3.3 Graph controls

4.3.3.1 Starting/stopping a plot
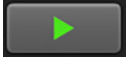
Click the green arrow to start a plot. The arrow will change to a red square whilst data is being recorded. To stop a plot, click on the red square.

NOTES:

- When the readhead direction is reversed, the trace direction will reverse and previous data will be overwritten.

- Changing screens during data plotting will clear the data and a new plot will restart automatically when the signal strength vs position screen is reselected. Stop the plot before switching screens to retain the data.

4.3.3.2 Zooming and panning the plot (linear only)

The plot can be zoomed and panned using a mouse, trackpad, touchscreen or similar.

To pan using a mouse:

- Point the mouse at the trace, click and hold the right mouse button and drag the trace left, right, up or down.

To zoom using a mouse/trackpad:

- Click with the left mouse button then drag the mouse to draw a box around the section of interest

  Or

- Move the mouse wheel to zoom the whole plot in or out.

To zoom and pan using a touch screen device.

- Pan by swiping finger along the screen in the direction you want to move the plot.

- Zoom using a thumb and finger. Move them away from each other to zoom in and 'pinch' them together to zoom out.

NOTE: When zooming or panning during a 'live' plot the data will continue to be plotted but only the selected area will be displayed and the plot will no longer scroll. To display the whole plot, select 'Reset zoom' (section 4.3.1).

4.3.3.3 Plot rotation (rotary only)
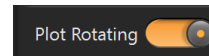
When 'Plot Rotating' is selected the graph rotates and the current position of the readhead remains at the top of the plot.

When 'Plot Rotating' is deselected the plot axes remain stationary with 90 degrees displayed at the top and the current position rotates around the graph.

NOTE: It is recommended that 'Plot Rotating' is disabled when using the rotary display at higher speeds.

4.4 Configuration screen

The configuration screen provides information about the readhead and ADTa-100 connected.
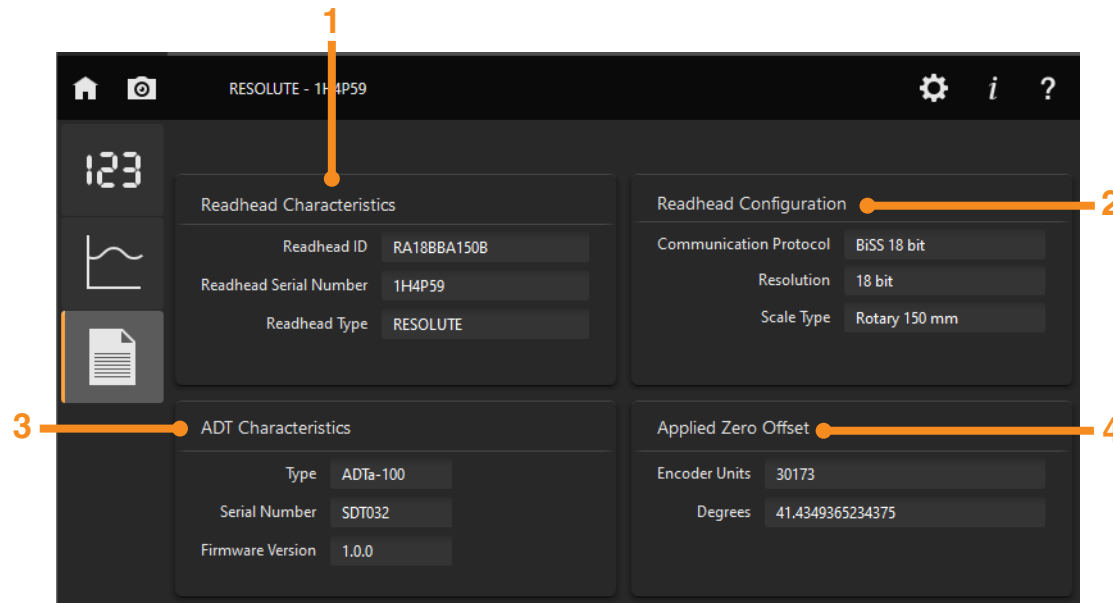
1. Readhead Characteristics

   • Read from the data stored in the connected readhead

2. Readhead Configuration

   • Read from the data stored in the connected readhead

3. ADTa-100 Characteristics

4. Applied Zero Offset

   • Displays the zero offset from DRO screen (section 4.2.3)

5.   ADTi-100 and ADTpro-100 with ADT View

5.1   Overview

The signal screen is automatically displayed when the ADT, with an encoder system connected, is selected. The screen options and the functionality of the signal screen will vary depending upon the readhead and interface connected. See Appendix A.1 for the available screens.

NOTES:

- Not all screens are available for all types of readheads and interfaces see Appendix A.1 for the available screens and functionality.

- When using a Ti digital interface ADT View will ask you to select the readhead type before the signal screen is displayed, see section 5.2.

- When using an ADTi-100 with an analogue variant of QUANTiC a screen showing you to check the correct termination will be displayed, see Appendix A.2 for details on connecting a QUANTiC analogue with an ADTi-100 to ADT View.

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1. ADT serial number

2. Connect to another ADT. Opens ADT selection screen in a new tab (section 3.2.1).

3. Readhead or interface type and serial number

4. Select linear or rotary scale from the drop down menu.
The software will, where possible, automatically detect the readhead type connected. When the readhead type cannot be automatically detected the display will default to linear selection.

5. Disconnect ADT and return to ADT selection window (section 3.2.1)

6. Signal screen (section 5.3)

7. Lissajous (X-Y) screen (section 5.4)

8. Signal strength vs position screen (section 5.5)

9. Velocity screen (section 5.6)

10. Digital readout (DRO) screen (section 5.7)

11. Configuration screen (section 5.8)

12. Readhead mode (section 5.3.3)

13. Automatic Gain Control (AGC) switching. In Installation and Calibration modes the AGC is disabled and cannot be switched on. AGC is enabled as default during normal operation.

NOTE: For Ti digital interfaces AGC can only be toggled, AGC status is not available.

14. Limit indication where applicable

15. Alarm and warning log where applicable (section 5.3.7)

NOTE: QUANTiC screen shown. Not all screens and functions are available for all types of readheads and interfaces. See Appendix A.1 for the available screens and functionality.

5.2   Selecting readhead type (ADTpro-100 with Ti digital interfaces only)
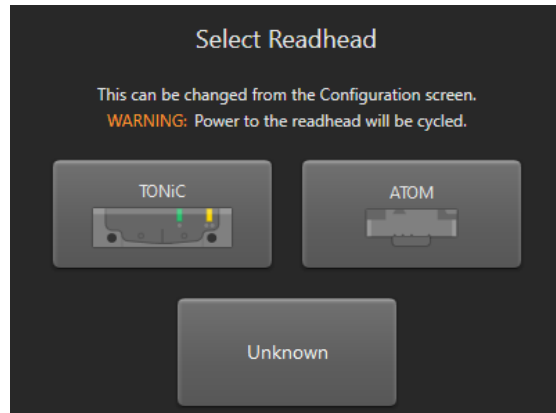
The ADTpro-100 cannot automatically detect the readhead type when a Ti digital is connected.

Manually select the connected readhead. If the readhead type is not known then 'Unknown' should be selected. If 'Unknown' is selected the ADT will only be able to toggle the calibration status of the readhead and won't display any calibration information (section 5.3.6.2).

The readhead type can also be changed from the configuration screen. See section 5.8.

NOTE: The power to the readhead will be cycled when the readhead selection is changed.

5.3   Signal screen

The signal screen provides information to assist with readhead set-up and calibration. The functionality of the signal screen will depend upon the type of readhead and interface connected.

TONiC and ATOM (analogue shown)   **QUANTiC, VIONiC and ATOM DX**
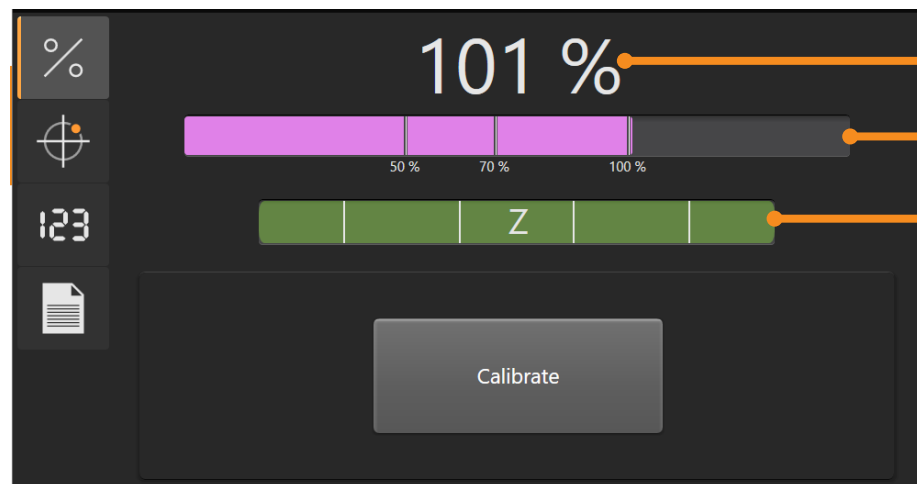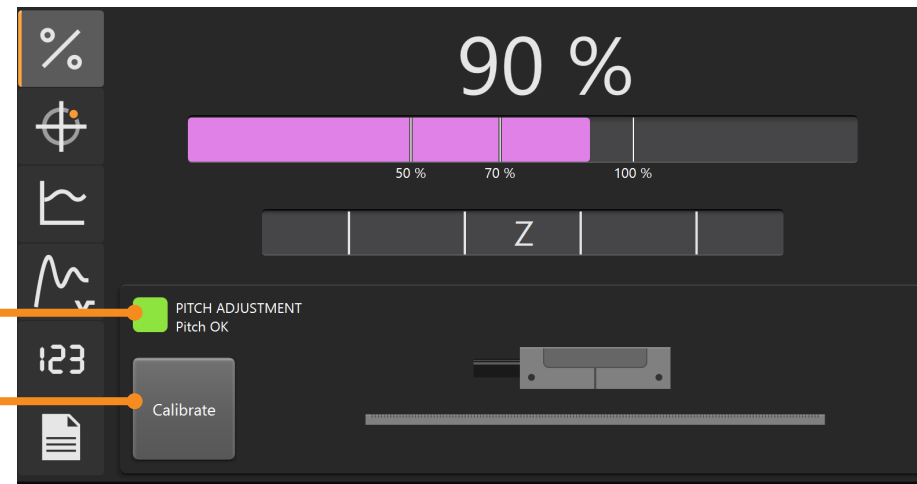
1. Signal strength indication (section 5.3.1)

2. Reference mark phasing indication (section 5.3.2)

3. Pitch indication where applicable (section 5.3.4) or calibration instructions (section 5.3.6)

4. Calibration initiation (section 5.3.6)

When an alarm or warning occurs, a pop-up describing the error condition will be displayed. See (section 5.3.7) for more information on alarms and warnings.

NOTE: For more information on system installation and set-up refer to the relevant installation guide. These can be found at **www.renishaw.com/encoderinstallationguides**.

5.3.1   Signal strength
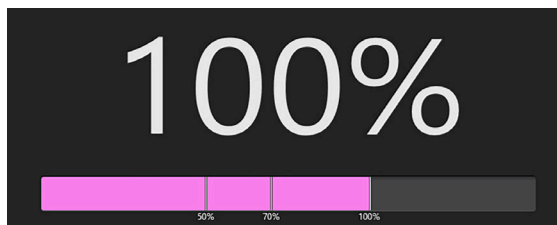
The signal strength is displayed as a percentage and on a signal bar. The signal bar remains purple at all signal amplitudes regardless of AGC status.

5.3.2   Reference mark phasing

The reference mark phasing is displayed as a coloured bar; the length and colour of the bar indicate the phasing of the last reference mark passed. The bar flashes brightly for a few seconds as the reference mark is passed then fades, retaining the colour of the last reference mark.

Well phased reference mark; no action required

Poorly phased reference mark; recalibration recommended (section 5.3.6).

Incorrectly phased reference mark, recalibrate the system (section 5.3.6).
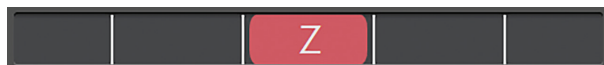
5.3.3   Readhead mode

Installation mode

(QUANTiC, VIONiC and ATOM DX readheads only)

When the readhead is first switched on (out of the box), or after factory defaults have been restored (section 5.8.4) the readhead is in installation mode. 'Readhead is in Installation Mode' will be displayed in the bottom bar.

Readhead is in Installation Mode

NOTE: AGC is disabled in installation mode and cannot be switched on. Set the readhead up as detailed in the relevant installation guide, these can be found at **www.renishaw.com/encoderinstallationguides**.

Calibration mode

Once the readhead has been set up the system must be calibrated (section 5.3.6), 'Readhead is in Calibration Mode' is displayed in the bottom bar during calibration.

Readhead is in Calibration Mode

NOTE: AGC is disabled in calibration mode and cannot be switched on.

Normal mode

Once the readhead has been calibrated the incremental and reference mark values are stored in the readhead and 'Calibration Sequence Complete' will be displayed briefly in the bottom bar. The readhead will automatically return to normal running mode and no text will displayed in the bottom bar.

NOTE: For QUANTiC, VIONiC and ATOM DX systems, AGC is automatically enabled once the calibration sequence is completed, unless it had been switched off prior to calibration.

5.3.4   Pitch indication

(QUANTiC and VIONiC readheads only)

During installation mode and normal operation the pitch of the readhead is displayed. The colour of the indicator and arrows will change depending on the pitch of the readhead. The arrows show the direction the readhead should be adjusted.
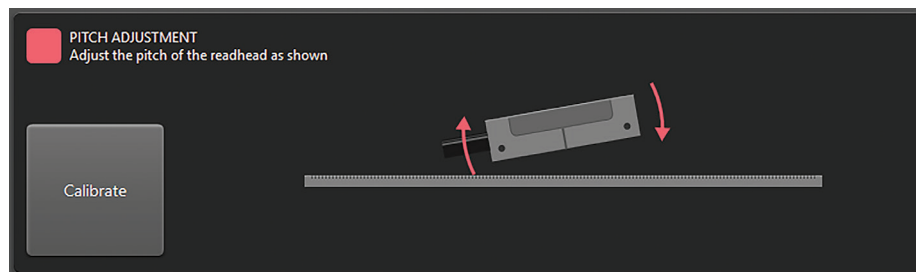
Green	The pitch of the readhead is optimum, no adjustment is required.
Orange	The pitch of the readhead is within tolerance but adjustment is recommended to optimise performance. Adjust pitch of the readhead as indicated.
Red	The pitch of the readhead is out of tolerance. Adjust pitch of the readhead as indicated.

NOTE: The pitch is not displayed when the signal size is less than 10% or when the system is in calibration mode.

5.3.5 Automatic Gain Control (AGC)

AGC adjusts the gain of the readhead to help maintain optimum signal size, it can be switched on or off using the toggle switch.

The AGC switch allows the user to enable or disable the AGC and view the current state of AGC. Ensure the system has been calibrated before switching on AGC.

AGC on

AGC off

QUANTiC, VIONiC and ATOM DX systems:

AGC is switched off when the readhead is in 'Installation Mode' and during calibration and the AGC switch is disabled. AGC will automatically be enabled after calibration. [1]

TONiC and ATOM analogue systems:

AGC must be switched off prior to calibration and the AGC switch is disabled during calibration. AGC will remain switched off after calibration is complete.

Encoders using a Ti digital interface:

For Ti digital interfaces the AGC can only be toggled, AGC status is not available.
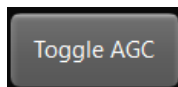
The LED on the readhead, can be used to confirm the AGC status. The system can be calibrated regardless of the AGC status. The AGC status will be maintained after calibration.

NOTE: **DO NOT** use the button on the interface to toggle the AGC.

---

[1]   If AGC has been switched off prior to calibration it will remain disabled.

5.3.6   System calibration

5.3.6.1 QUANTiC, VIONiC and ATOM DX systems

IMPORTANT: Ensure the signal size is greater than 70% before initiating calibration. If the signal level is less than 70% a pop-up box, 'Unable to Start Calibration', will open. Restore factory defaults (section 5.8.4) and refer to the relevant installation guide for more information on system set-up. These can be found at **www.renishaw.com/encoderinstallationguides**.

To initiate calibration, click the Calibrate button. 'Readhead is in Calibration Mode' will be displayed in the bottom bar (section 5.3.3). Follow the instructions on the screen to calibrate the incremental signals and reference mark.

Incremental calibration:
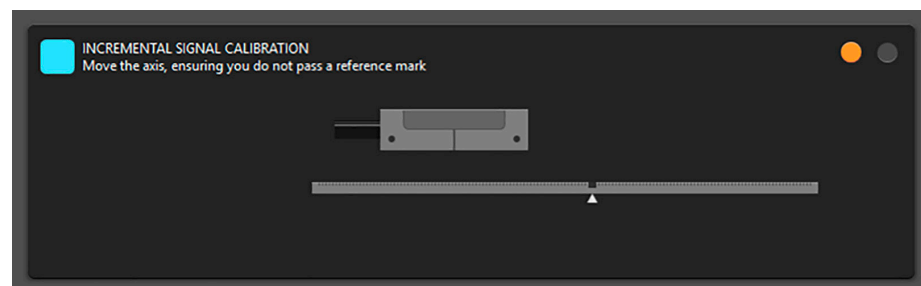
The blue indicator will single flash and 'INCREMENTAL SIGNAL CALIBRATION' will be displayed and the first of two circular indicators will be orange.

Follow the instructions on the screen to calibrate the system. The system will automatically enter reference mark calibration once the incremental signals have been calibrated.

Reference mark calibration:

Once incremental calibration is complete the blue indicator will double flash and 'REFERENCE MARK CALIBRATION' will be displayed. The second of the circular indicators will be orange indicating the readhead is in reference mark calibration mode.

Follow the instructions on the screen to calibrate the selected reference mark, if the system does not have a reference mark click the Exit Calibration button.

Once reference mark calibration is complete the flashing blue indicator will automatically change to display a green indicator and 'Calibration Sequence Complete' for approximately 3 seconds before reverting to display readhead pitch information (section 5.3.4). Automatic Gain Control (AGC) will automatically be enabled when calibration is complete unless it was disabled prior to calibration.

5.3.6.2 TONiC systems

IMPORTANT: Ensure the signal size is greater than 70% before initiating calibration. If the signal level is less than 70% 'Signal Too Low to Calibrate' will be displayed. Restore factory defaults (section 5.8.4) and refer to the relevant installation guide for more information on system set-up. These can be found at **www.renishaw.com/encoderinstallationguides**.

To initiate calibration, click the Calibrate button. 'Readhead is in Calibration Mode' will be displayed in the bottom bar (section 5.4.3). Follow the instructions on the screen to calibrate the incremental signals and reference mark.
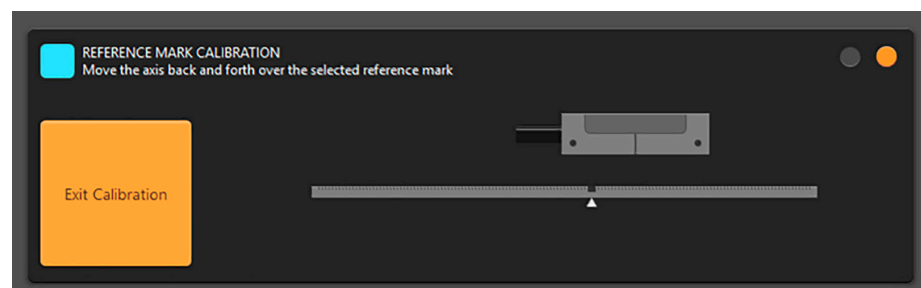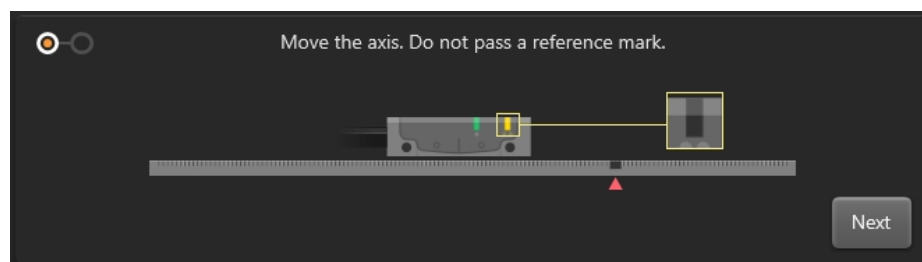
Incremental calibration:

The first of the two indicators will have an orange spot indicating the system is in incremental calibration.

Follow the instructions on the screen and press 'Next' to move to reference mark calibration

NOTES:

• ADT View does not automatically move to reference mark calibration once incremental calibration is complete. Click 'Next' to move to reference mark calibration.

• If the readhead is moved back and forth past the reference mark whilst the ADT is in incremental calibration mode, calibration will automatically be completed and the calibration status will be displayed.

Reference mark calibration:

The first of the two indicators will have a green tick, indicating incremental calibration is complete. The second indicator will have an orange dot, indicating the system is in reference mark calibration.

Follow the instructions on the screen to calibrate the selected reference mark. If the system does not have a reference mark click the 'No Reference Mark' button.

Once reference mark calibration is complete the calibration status is displayed. Click 'Finish' to return to the Signal size screen.

If the system remains in calibration mode after moving the axis back and forth past the reference mark press [?].

A 'Calibration help' window will appear. Follow the instructions and, if required, exit calibration to repeat system installation.

5.3.6.3 ATOM systems

IMPORTANT: ATOM with Ti Digital interface. The ADT will only toggle calibration, it cannot display the calibration status. Ensure the signal size is greater than 70% before initiating calibration. If the signal level is less than 70% 'Signal Too Low to Calibrate' will be displayed. Restore factory defaults (section 5.8.4) The calibration LED on the readhead, along with the relevant system installation guide, should be used to assist calibration. The installation guides can be found at **www.renishaw.com/atomdownloads**. If 'Unknown' readhead is selected when the Ti digital is connected (see section 5.2) the ADT will behave as if an ATOM readhead is connected and only toggle the calibration status.

Incremental calibration:

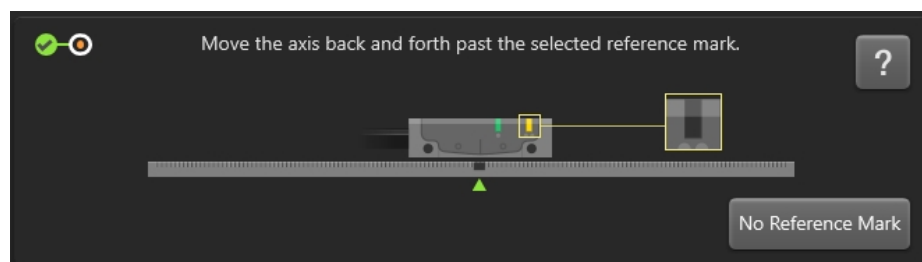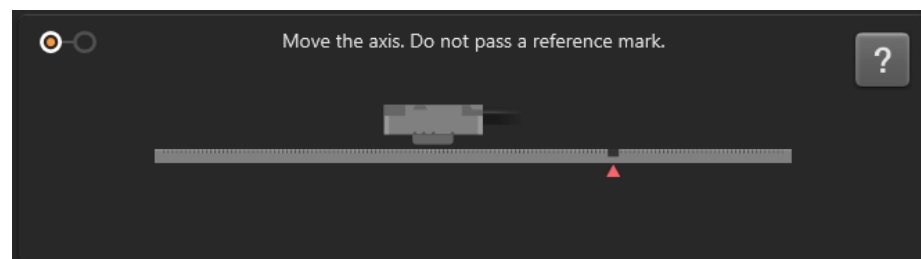The first of the two indicators will have an orange spot indicating the system is in incremental calibration.

Follow the instructions on the screen to calibrate the system. The system will automatically enter reference mark calibration once the incremental signals have been calibrated.

If the system does not move into reference mark calibration press [?].

A 'Calibration help' window will appear. Follow the instructions and, if required, exit calibration to repeat system installation.

NOTE: If calibration is exited the system will not be calibrated and the calibration process will need to be repeated.

Reference mark calibration:
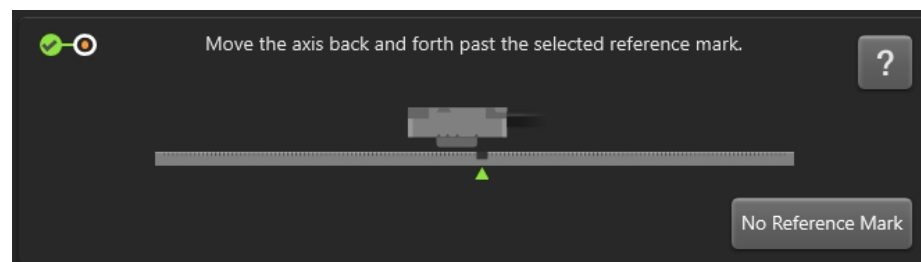
The first of the two indicators will have a green tick, indicating incremental calibration is complete. The second indicator will have an orange dot, indicating the system is in reference mark calibration.

Follow the instructions on the screen to calibrate the selected reference mark., if the system does not have a reference mark click the 'No reference mark' button.

Once reference mark calibration is complete 'Toggling calibration' will be displayed for approximately 3 seconds before the calibration status is displayed. Click 'Finish' to return to the Signal size screen.

If the system remains in calibration mode after moving the axis back and forth past the reference mark press [?].

A 'Calibration help' window will appear. Follow the instructions and, if required, exit calibration to repeat system installation.

NOTE: If calibration is exited the system will not be calibrated and the calibration process will need to be repeated.

5.3.7 Alarms and warnings

5.3.7.1 Alarm and warning indication
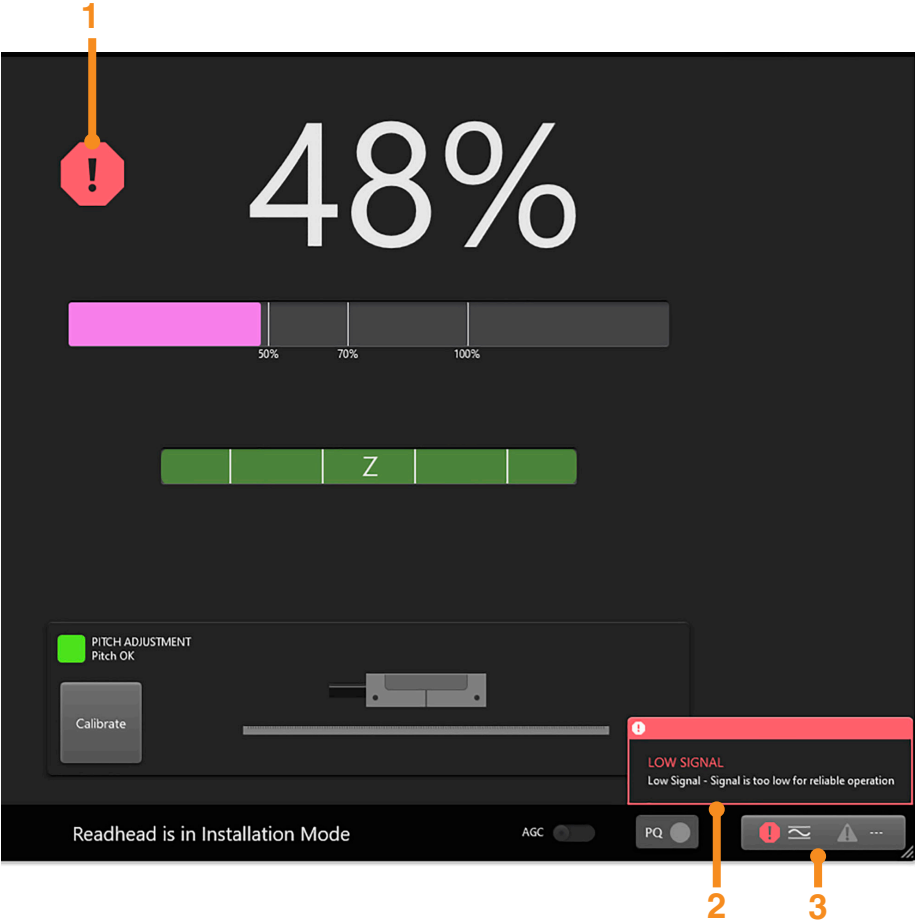
NOTE: Alarms and warnings are not output for Ti or Ri analogue interfaces.

[1] Calibration and normal running mode only

An alarm or warning will be displayed on the signal screen in several ways.

1. Whilst an alarm or warning is asserted, a red alarm symbol or an orange warning triangle will be displayed next to the signal size. Click the indication to open the alarm and warning log (section 5.3.7.2). The indication will remain until the system is no longer in error.

2. A pop-up notification describing the alarm or warning condition will be displayed when an error occurs. The pop-up is visible on all screens.

3. The last alarm or warning that occurred will be displayed in the bottom bar until the log is cleared. Click the button to open the alarm and warning log (section 5.3.7.2).

Possible alarms and warnings (dependent on readhead; see section 5.8 for information on readhead configuration):
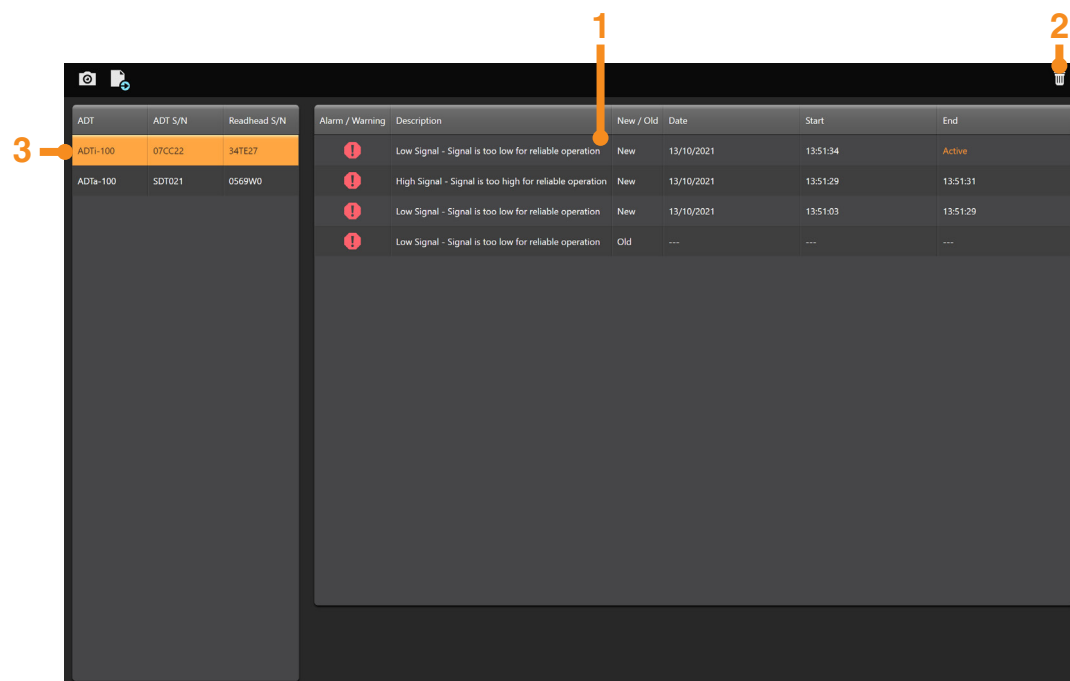
Symbol	Alarm	Warning
AOC	Automatic Offset Compensation out of range	Automatic Offset Compensation
ABC	Automatic Balance Control out of range	Automatic Balance Control
Z	Reference mark error	Reference mark
(signal small)	Signal size too small	-
(signal large)	Signal size too large	-
(overspeed)	Overspeed	-
Ω	Incorrect termination [1] (analogue only)	-

5.3.7.2 Alarm and warnings log

The log contains information about the last error that occurred before the system was switched off and all alarms and warnings that have occurred since the system was switched on.

NOTE: Alarms and warnings are not output for ATOM or TONiC analogue systems.

1. Alarm and warnings log

   • Old errors occurred before the last time the system was switched off

     NOTE: Some readhead variants will only display the time the alarm was triggered, not the end time or if they are still active.

2. Clear all alarms and warnings in the log and the readhead

3. ADT selection

   NOTE: Only the alarms and warnings of the selected ADT are displayed.

5.4   Lissajous (X-Y) screen

The Lissajous screen shows a plot of the readhead's internal cosine (X) and sine (Y) signals.

NOTE: The Lissajous screen is not available for systems using a Ti digital interface.

1.   Lissajous plot. The defined circles on the plot will vary depending on the encoder system connected.

2.   High Signal strength alarm threshold [1]

3.   Low Signal strength alarm threshold [1]

4.   Select to show / hide Graph Controls

5.   Slide bar to vary Lissajous persistence

When an alarm or warning occurs, a pop-up describing the error condition will be displayed. See section 5.3.7 for more information on alarms and warnings.

---

[1]   VIONiC, QUANTiC and ATOM DX readheads only.

5.5 Signal strength vs position screen

(QUANTiC, VIONiC and ATOM DX readheads only)

The signal strength vs position screen plots the signal size vs position in either a rotary or linear plot. The software will, where possible, automatically detect the readhead type connected and display a linear or rotary plot accordingly. When the readhead type cannot be automatically detected the display will default to linear selection. Use the drop down menu at the top of the screen to select a rotary system.

5.5.1 Linear system
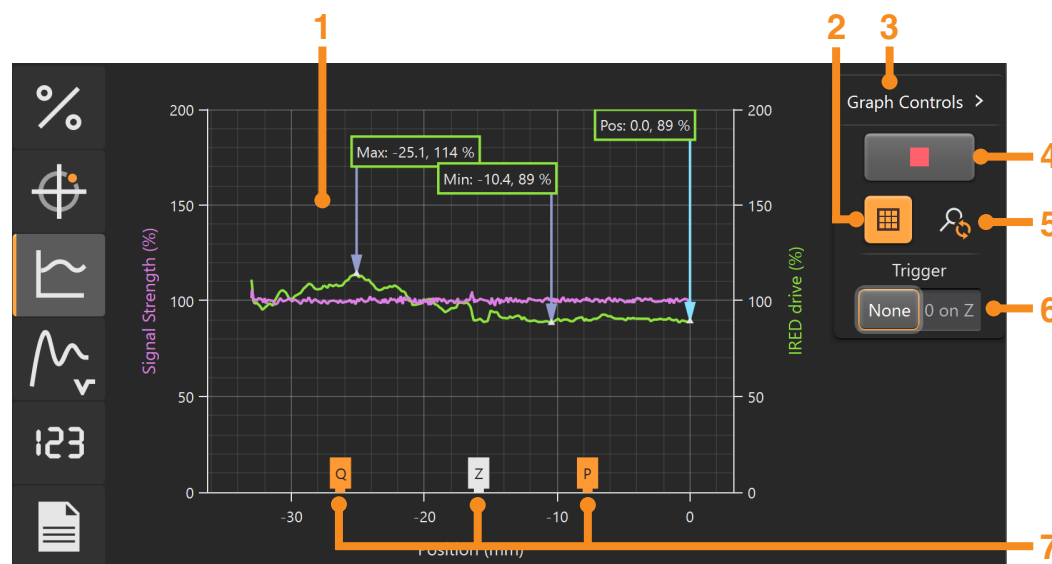
1. Plot of the signal size and IRED drive along the axis (section 5.5.3)

   NOTE: The plot can be zoomed and panned. See section 5.5.4.2 for more information.

2. Enable/disable grid lines

3. Select to show/hide Graph Controls

4. Start/stop a plot (section 5.5.4.1)

5. Reset zoom

6. Trigger mode selection (section 5.5.4.4)

7. Reference mark (Z) and limit (P & Q) positions along the axis where applicable

When an alarm or warning occurs, a pop-up describing the error condition will be displayed. See section 5.3.7 for more information on alarms and warnings.

NOTE: The signal plot will always be displayed in mm.

5.5.2 Rotary system

On first selection of the rotary signal strength vs position a menu containing all relevant rotary scale options for the connected readhead variant will be displayed. Select the relevant rotary scale and click 'OK'. Special ring/discs can be added in the 'Custom Incremental Rotary' section of the settings window (section 7.3).

NOTES:

- Only the rotary scales compatible with the readhead connected will be displayed. 'Show All' displays all rotary scales with the relevant scale pitch.

- For discs the optical diameter is calculated from the line count and scale period.

---
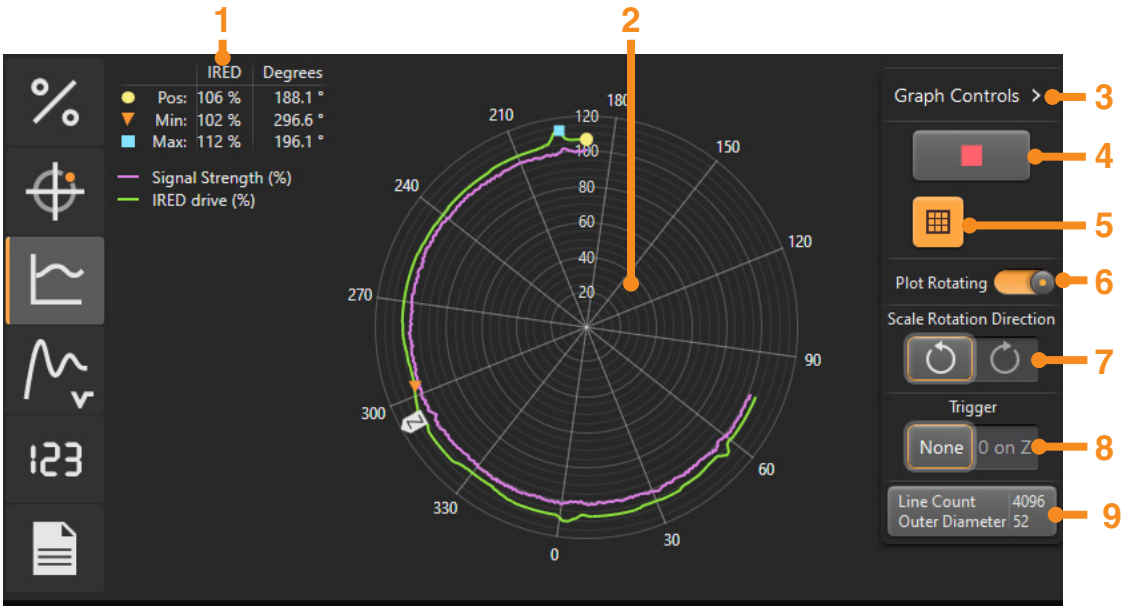
1. Signal strength (AGC off) or IRED drive (AGC on) at the current position and maximum and minimum positions

2. Plot of the signal size and IRED drive around the axis (section 5.5.3)

3. Select to show/hide Graph Controls

4. Start/stop a plot (section 5.5.4.1)

5. Enable/disable grid lines

6. Switch plot rotation on/off (section 5.5.4.3)

7. Switch scale rotation direction (section 5.5.4.3)

8. Trigger mode selection (section 5.5.4.4)

9. Display current ring/disc selection. Click to select a new ring/disc type.

When an alarm or warning occurs, a pop-up describing the error condition will be displayed. See section 5.3.7 for more information on alarms and warnings.


NOTE: The signal plot will always be displayed in degrees.

5.5.3   Signal strength and IRED drive plots

The graph displays 2 plots which automatically rescale as the readhead is moved along the axis:

• Signal strength vs position (purple plot).

• IRED drive vs position (green plot). The IRED drive is the relative current through the infrared emitter (IRED) in the readhead.

The limit and reference mark positions are displayed along the bottom of the linear plot where applicable.

NOTES:

• Maximum speed of travel for a useful signal strength vs position plot is 1 m/s. An improved plot resolution is possible at slower speeds.

• During installation mode changing direction of the readhead at speed may result in multiple reference marks or limits being plotted on the graph; this is due to the speed of movement being faster than the data plot rate.

• The plot will automatically stop if the signal size becomes too low for reliable data to be plotted. Click the green triangle to restart the plot. The data will be cleared when the plot is restarted (section 5.5.4.1).

Linear plot (AGC enabled)

Rotary system (AGC disabled)
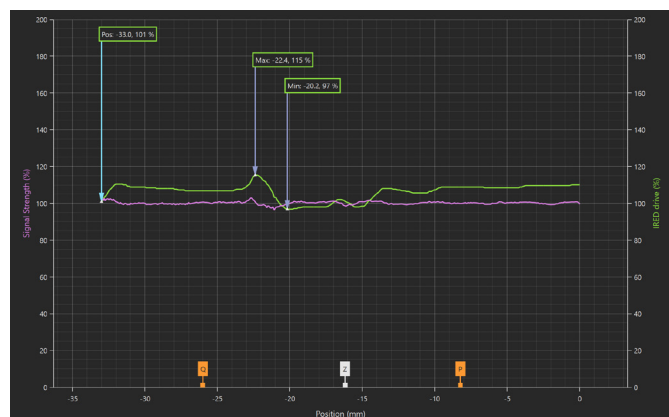
Auto Gain Control (AGC) enabled (default):

• The maximum, minimum and current IRED drive are displayed

• For a good set-up, the IRED drive will vary whilst the signal strength plot should remain constant at approximately 100%
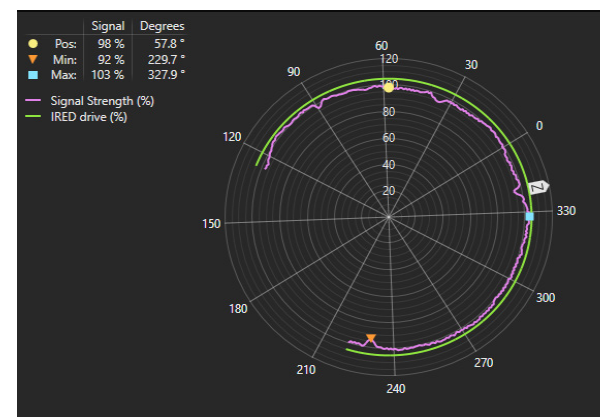
Auto Gain Control (AGC) disabled:

• The maximum, minimum and current signal size are displayed

• The signal strength will vary along the plot whilst the IRED drive plot remains constant

5.5.4   Graph controls

5.5.4.1 Starting/stopping a plot

Click the green arrow to start a plot, the plot will automatically rescale as the readhead is moved along/around the axis. The arrow will change to a red square whilst data is being recorded.
To stop the plot, click on the red square.

NOTES:

• If the readhead goes into low signal alarm the plot will automatically stop and 'Graph stopped' will display in the bottom right of the graph. When the green arrow is pressed to restart the plot the current data will be cleared and a new plot started. The arrow will be greyed out if the readhead is in low signal alarm.

• When the readhead direction is reversed, the trace direction will reverse and previous data will be overwritten.

• Changing screens during data plotting will clear the data and a new plot will restart automatically when the signal strength vs position screen is reselected. Stop the plot before switching screens to retain the data.

5.5.4.2 Zooming and panning the plot (linear only)

The plot can be zoomed and panned using a mouse, trackpad, touchscreen or similar.

To pan using a mouse:

• Point the mouse at the trace, click and hold the right mouse button and drag the trace left, right, up or down.

To zoom using a mouse/trackpad:

• Click with the left mouse button then drag the mouse to draw a box around the section of interest

  Or

• Move the mouse wheel to zoom the whole plot in or out.

To zoom and pan using a touch screen device.

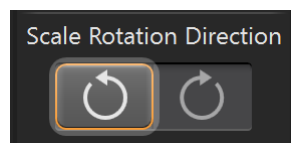• Pan by swiping finger along the screen in the direction you want to move the plot.

• Zoom using a thumb and finger. Move them away from each other to zoom in and 'pinch' them together to zoom out.
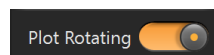
NOTE: When zooming or panning during a 'live' plot the data will continue to be plotted but only the selected area will be displayed and the plot will no longer scroll. To display the whole plot, select 'Reset zoom'.

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5.5.4.3 Plot rotation (rotary only)

Select plot direction to match shaft count direction.

When 'Plot Rotating' is selected the graph rotates and the current position of the readhead remains at the top of the plot.

When 'Plot Rotating' is deselected the plot axes remain stationary with 90 degrees displayed at the top and the current position rotates around the graph.

NOTE: It is recommended that 'Plot Rotating' is disabled when using the rotary display at higher speeds.

5.5.4.4 Trigger selection
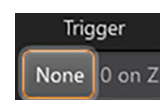
None	Default trigger mode. The plot starts automatically when the signal strength vs position screen is selected or the green arrow is pressed (section 5.5.4.1).
0 on Z	Zeroes the position of the trace relative to the reference mark. The plot starts automatically when the signal strength vs position screen is selected or the green arrow is pressed (section 5.5.4.1). When the reference mark is passed the 'Position (mm)' will be set to 0.

NOTE: When the trigger is changed, any previous data will be cleared.

5.6   Velocity plot

(QUANTiC, VIONiC and ATOM DX readheads only)

The velocity screen plots the readhead velocity against time.
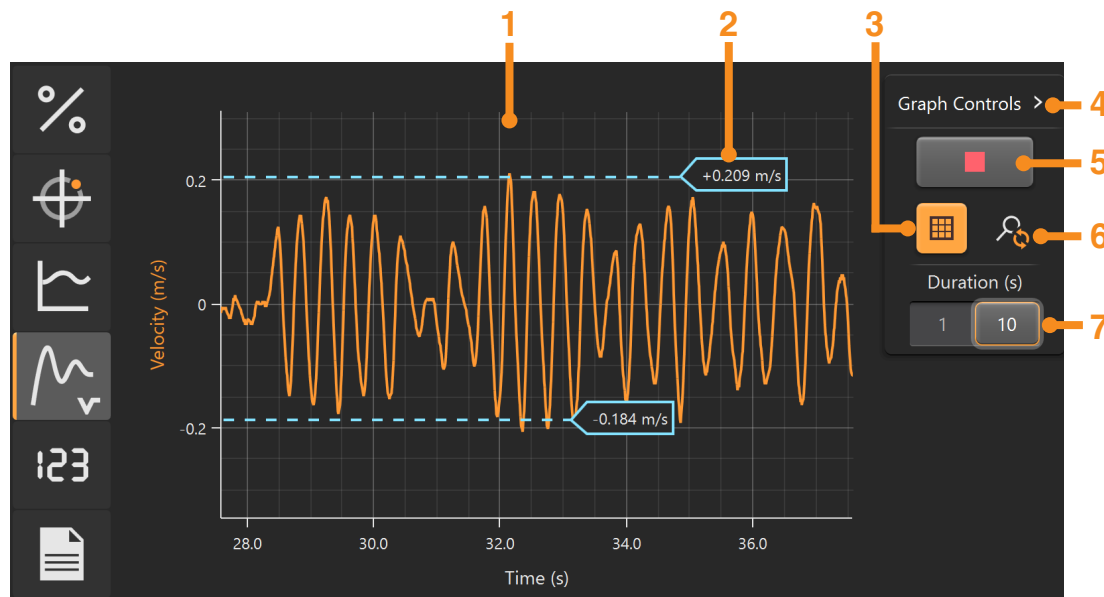
1. Plot of the readhead velocity against time

    NOTE: The plot can be zoomed and panned. See section 5.5.4.2 for more information.

2. Cursors to measure peak velocity (section 5.6.1.3)

3. Enable/disable grid lines

4. Select to show/hide Graph Controls

5. Start/stop a plot (section 5.6.1.1)

6. Reset zoom

7. Select the X-axis scale and rate of data sampling

When an alarm or warning occurs, a pop-up describing the error condition will be displayed. See section 5.3.7 for more information on alarms and warnings.

NOTE: The velocity plot is only valid at speeds up to 5 m/s. At faster speeds the speed of movements may be faster than the data plot rate. At slow speed, the velocity plot may not be accurate due to quantisation in the encoder speed measurement.

5.6.1   Graph controls

5.6.1.1 Starting/stopping a plot

Click the green arrow to start a plot; the plot will automatically rescale as the readhead is moved along/around the axis. The arrow will change to a red square whilst data is being recorded. To stop the plot,click on the red square.

NOTE: Changing screens will clear the data and a new plot will restart automatically when the velocity screen is reselected.

5.6.1.2 Zooming and panning the plot

The plot can be zoomed and panned using a mouse, trackpad, touchscreen or similar.

To pan using a mouse:

*   Point the mouse at the trace, click and hold the right mouse button and drag the trace left, right, up or down.

To zoom using a mouse/trackpad:

*   Click with the left mouse button then drag the mouse to draw a box around the section of interest

    Or

*   Move the mouse wheel to zoom the whole plot in or out.

To zoom and pan using a touchscreen device:

*   Pan by swiping finger along the screen in the direction you want to move the plot.

*   Zoom using a thumb and finger. Move them away from each other to zoom in and 'pinch' them together to zoom out.

NOTES:

*   When zooming or panning during a 'live' plot the data will continue to be plotted but only the selected area will be displayed and the plot will no longer scroll. To display the whole plot, select 'Reset zoom'.

*   Changing screens during data plotting will clear the data and a new plot will restart automatically when the signal velocity screen is reselected. Stop the plot before switching screens to retain the data.

5.6.1.3 Moving the cursors
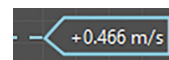
Click the cursors with the left mouse button and drag them to the chosen position to measure the velocity.
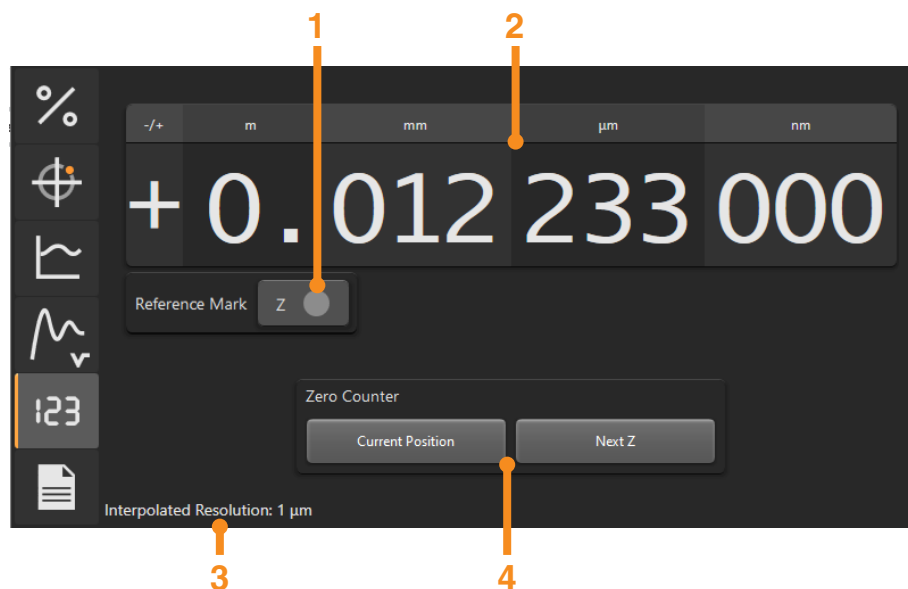
5.7 Digital readout (DRO)

This screen displays a linear or rotary digital readout (DRO) of the encoder position. The software will, where possible, automatically detect the readhead type connected and display a linear or rotary DRO accordingly. When the readhead type cannot be automatically detected the display will default to linear selection. Use the drop down menu at the top of the screen to select a rotary system.

NOTE:

- The DRO count may not agree exactly with the count registered by the controller. The DRO counter is based on calculated position rather than actual count.

- The DRO is not available for systems using a Ti digital interface.

- **ATOM systems only:** 'Select Scale Period' will be shown when the DRO is selected. Selection of the wrong scale period will result in incorrect count on the DRO. The scale period can also be changed from the configuration screen, see section 5.8.3.

5.7.1 Linear system

1. Indication that a reference mark has been detected

   NOTE: A yellow flash indicates the presence of a reference mark, not the phasing.
   For reference mark phasing refer to section 5.3.2.

2. Digital readout of the encoder position

3. Resolution of readhead

   NOTE: For analogue systems the resolution will be interpolated and displayed as 1 µm for systems with a 40 µm pitch, and 0.5 µm for systems with a 20 µm pitch.

4. Zero the DRO at the current position or at the next reference mark

When an alarm or warning occurs, a pop-up describing the error condition will be displayed. See section 5.3.7 for more information on alarms and warnings.

The DRO will display the position in metres (m), millimetres (mm), microns (µm) and nanometres (nm). The digits displayed depends upon the resolution of the connected readhead, for example if a 1 µm head is connected then the 'nm' section of the display will be all zeros.
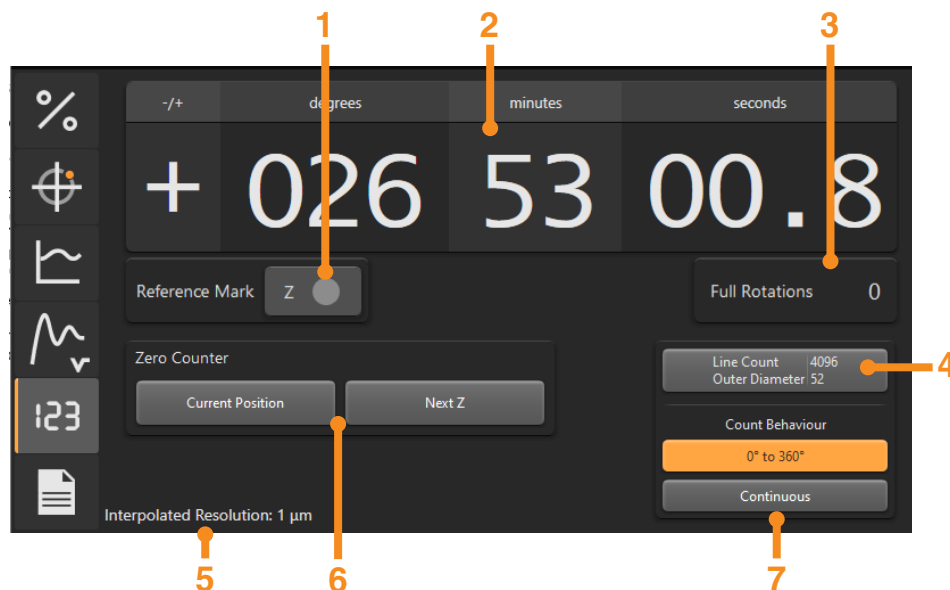
5.7.2 Rotary system

On first selection of the rotary DRO a drop-down menu containing all relevant rotary scale options for the connected readhead variant will be displayed.

Select the relevant rotary scale and click 'OK'. Special ring/discs can be added in the 'Custom Incremental Rotary' section of the settings window (section 7.3).

NOTES:

- Only the rotary scales compatible with the readhead connected will be displayed. 'Show All' displays all rotary scales with the relevant scale pitch.

- For discs the optical diameter is calculated from the line count and scale period.

1. Indication that a reference mark has been detected

   NOTE: A yellow flash indicates the presence of a reference mark, not the phasing. For reference mark phasing refer to section 5.3.2.

2. Digital readout of the encoder position

3. Rotation count. The count will increment or decrement when the system has rotated 360 degrees. Rotation count is not available when 'Continuous' is selected as count behaviour.

4. Line count and outer diameter / part number of the chosen rotary scale. Click to display the change the selected rotary scale.

5. Resolution of readhead

   NOTE: For analogue systems the resolution will be interpolated and displayed as 1 µm for systems with a 40 µm pitch, and 0.5 µm for systems with a 20 µm pitch.

6. Zero the DRO at the current position or at the next reference mark

7. Set the DRO to count from zero to 360 or continuously

When an alarm or warning occurs, a pop-up describing the error condition will be displayed. See section 5.3.7 for more information on alarms and warnings.

5.8   Configuration screen

The configuration screen provides information about the readhead/interface and ADT connected, and allows factory default calibration values to be restored (section 5.8.4). The information available will depend upon the readhead or interface connected.

5.8.1   QUANTiC, VIONiC and ATOM DX
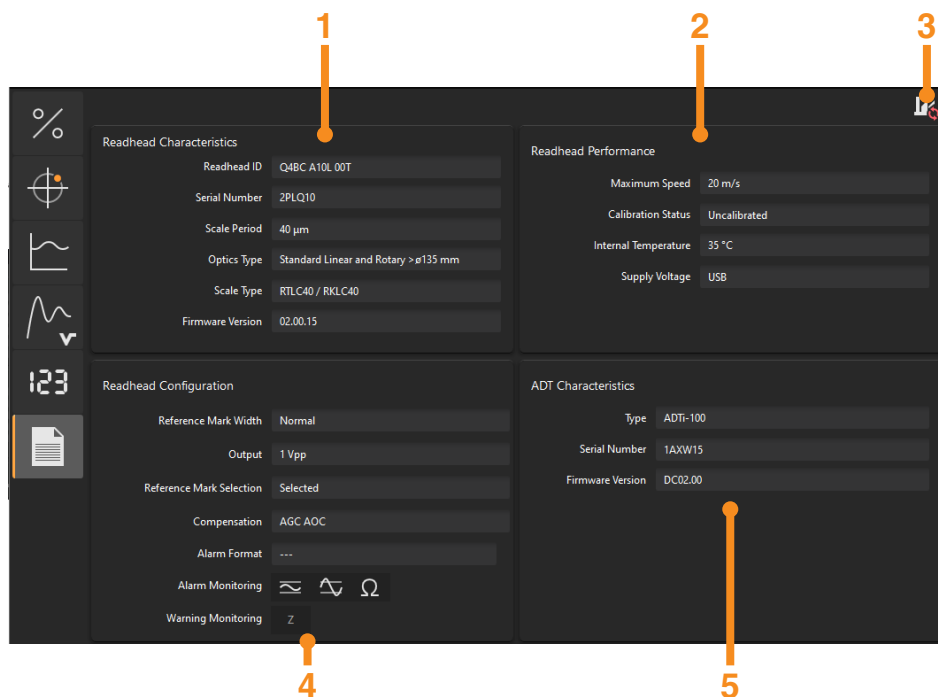
1. Readhead or interface characteristics

    NOTE: Ti digital systems can only display information about the interface.

2. Readhead performance

    -   Theoretical maximum speed, minimum edge separation (based on a 1 m cable) and recommended clock speed based on the part number stored in the readhead

    -   Calibration status of the readhead

    -   Temperature of the microcontroller in the readhead (Temperature is not displayed when the readhead is in 'Calibration Mode')

    -   Supply voltage at the 'Encoder Output' of the ADT. If the ADT is used in-line, the voltage at the encoder output connector will be displayed.

3. Restore factory defaults (section 5.8.4)

4. Readhead configuration
    (QUANTiC, VIONiC and ATOM DX readheads only)
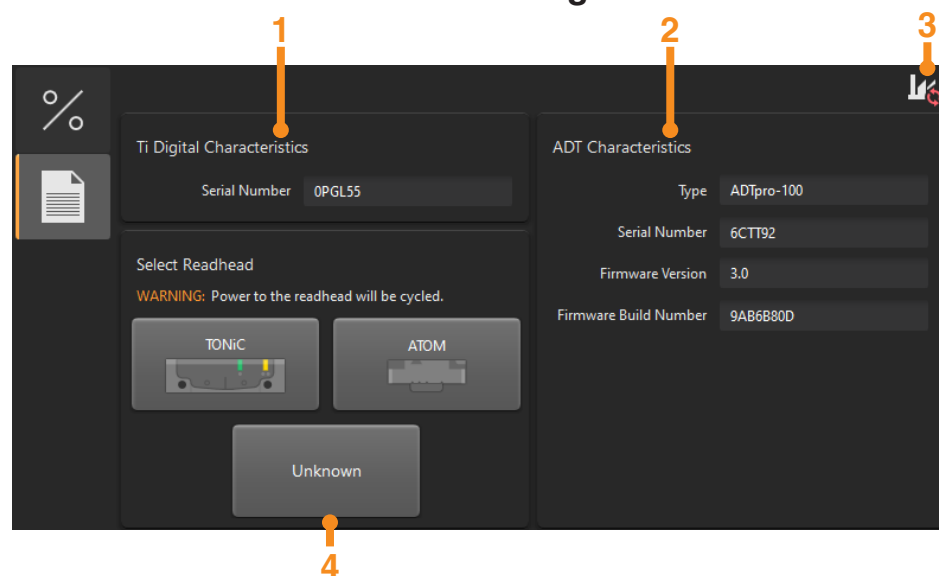
    -   Read from the part number stored in the readhead

    -   Readhead internal clock frequency (Digital readheads only)

    -   The alarms and warnings that are enabled in the readhead

5. ADT characteristics

NOTE: On smaller window sizes the configuration information will be displayed in tabs.

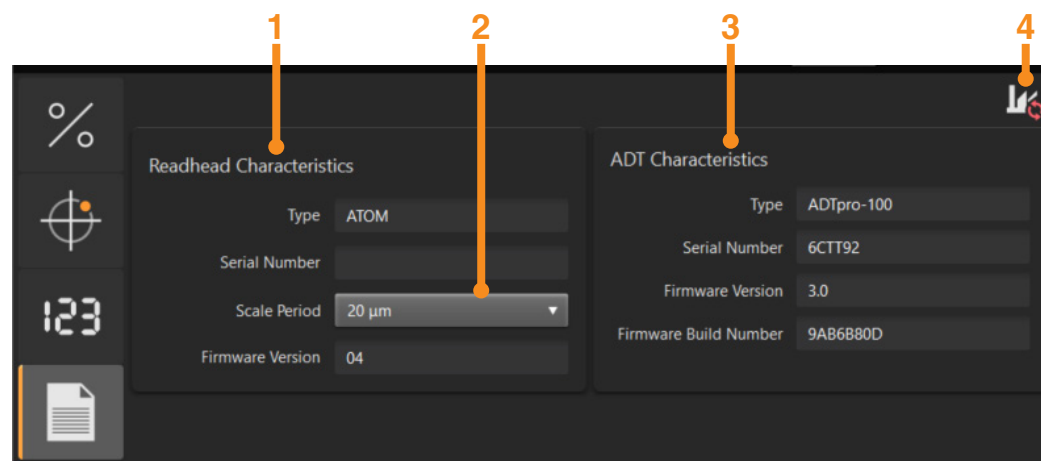### 5.8.2   TONiC and ATOM with Ti digital interface

1. Ti interface characteristics

    NOTE: No information is available about the readhead

2. ADT characteristics

3. Restore factory defaults (section 5.8.4)

4. Readhead selection

5.8.3   TONiC and ATOM with Ti or Ri analogue interface

1. Readhead characteristics.

    NOTE: No information is available about the interface

2. ATOM readheads only: The scale period can be switched between 20 µm and 40 µm using the drop down selection.

3. ADT characteristics

4. Restore factory defaults (section 5.8.4)

5.8.4   Restore factory defaults

NOTE: Restore factory defauts is not available for ATOM or unknown readheads with Ti digital interfaces (see section 5.2). For instructions on restoring factory defaults refer to the relevant system installation guide.

When reinstalling the system, or in the case of calibration failure, the readhead should be restored to factory default settings to ensure correct system set-up. To restore factory defaults, click on the factory symbol and follow the instructions on the screen.

Once factory defaults have been restored repeat the readhead set-up and calibration procedure (section 5.3.6) as detailed in the relevant installation guide.


NOTES:

• QUANTiC, VIONiC and ATOM DX readheads will enter installation mode (section 5.3.3) when factory defaults are restored.

• ATOM and TONiC systems only: Power to the readhead will be cycled when restoring factory defaults.

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6. Reprogramming the ADTpro-100

When an ADTpro-100 is connected to ADT View a 'reprogram' option will be available on the ADT selection screen. Select 'Reprogram' to change the firmware version of the ADTpro-100.
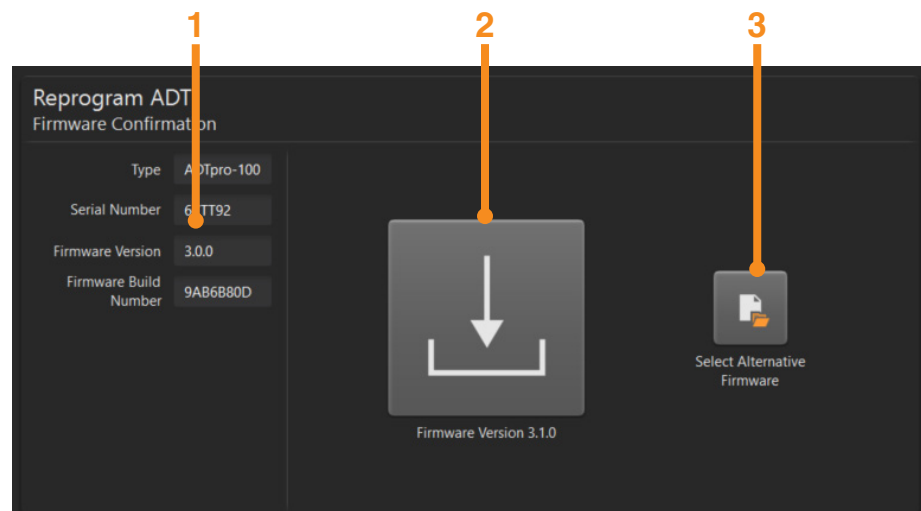
1. Current firmware level of ADTpro-100

2. Load ADTpro-100 version from ADT View (Recommended)

3. Opens File Explorer to allow an alternative version of the firmware to be selected for reprogramming

   **NOTE:** Firmware files will have a .adtpro file extension. Files can be downloaded from **www.renishaw.com/adt**.

ADT View contains a compatible version of ADTpro-100 firmware.

NOTES:

- It is recommended that the latest version of ADT View software is used to ensure all the latest features are available on the ADTpro-100. The ADT View software can be found at **www.renishaw.com/adt**.

- For compatibility reasons it is possible to downgrade the firmware of the ADTpro-100. However, it is recommended that the latest version of the ADT View software is used.

Select the chosen ADTpro-100 firmware and 'Begin Programming'.
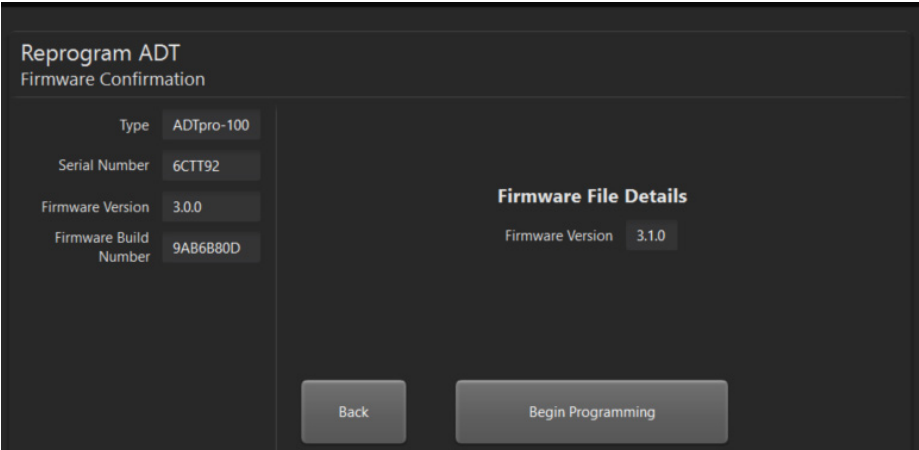
The ADTpro-100 will display the following screen when it is being reprogrammed.
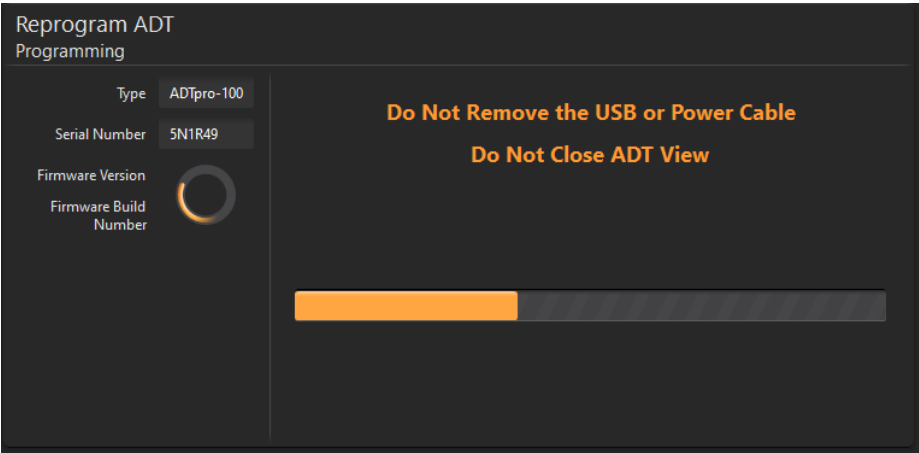
IMPORTANT: Do not close ADT View or disconnect the power or USB cable when the ADT is being reprogrammed.

Once the programming is complete 'Complete' will be displayed on the ADT View. Click the home button [🏠] to return to the 'Connect to ADT' screen.

---

7. Settings

⚙ The settings icon opens a new tab to allow the selection of user display preferences. The common settings can be accessed without an encoder system connected. System specific settings are displayed once an encoder system is connected.

## 7.1 Common settings

- Display

  - Select dark or light display

  - Change language

- File export options

  - Select csv delimiter and separator

- Updates

  - Allow automatic check for new versions of ADT View

- Custom Incremental Rotary (section 7.3)

  - Add and delete rings/discs

  - Import and export the custom ring/disc file

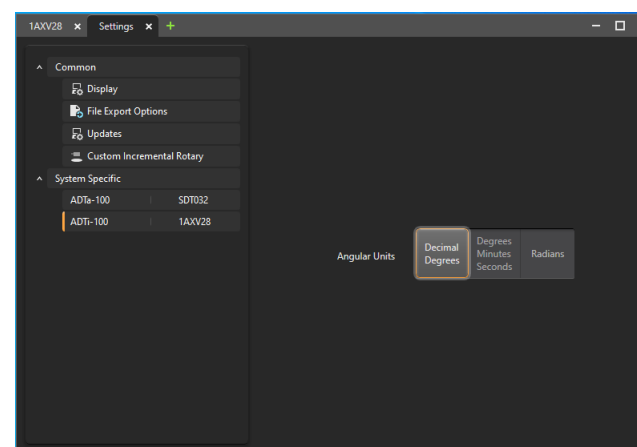## 7.2 System specific settings

ADTa-100

- Select angular/linear units

- Enable Set Zero function (section 4.2.3)

  NOTE: Currently only readheads with BiSS, Panasonic or Yaskawa protocols have set zero functionality.
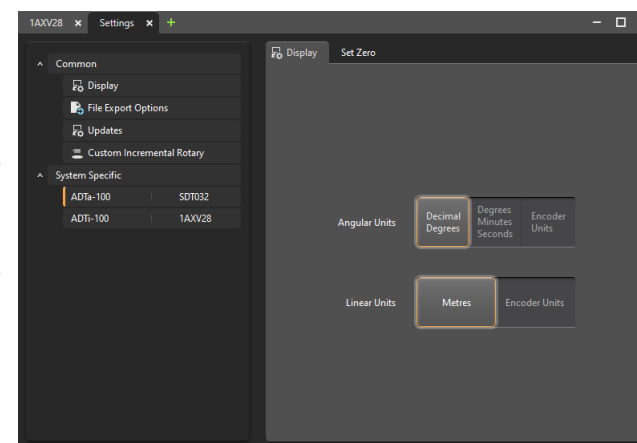
ADTpro-100 and ADTi-100

- Select angular units

7.3   Adding, naming, and editing rings and discs (incremental only)

Custom incremental rings and discs can be added, named, and the information saved to a file or imported.

NOTE: The standard rotary scales are already included in the rotary selection menus displayed on the Signal vs position and Digital readout screens.

1. Import custom rings/discs from a file

2. Export custom rings/discs to a file

3. Delete ring or disc

4. Add a new ring or disc (section 7.3.1)

7.3.1   Adding a ring or disc

To add a new custom rotary scale:

- Enter the line count of the ring or disc

- Select the scale period (20 µm or 40 µm) from the drop-down list. The '+' will go green when all the relevant information is entered.

- An optional description can be added to aid identification of the axis.

- Click '+' to add the new ring or disc. The new ring/disc will appear in the rotary selection menus displayed on the Signal vs position and Digital readout screens.

IMPORTANT: If the line count or pitch are entered incorrectly the signal strength vs position plot and DRO count will be incorrect.

NOTES: Only incremental rings or discs can be added as the absolute rings are determined by the readhead connected.

7.3.2   Editing a ring or disc

To edit a ring or disc:

- Double click on the chosen field

- Edit as required.

- Click on '✔' to accept and save the changes, or '✘' to return to the previous values.

8. Troubleshooting

8.1 Software installation

Fault	Possible cause	Possible solutions
'Unspecified error' occurs during installation	.NET framework is not up to date	Install the latest .NET framework from **https://www.microsoft.com/net/download**

8.2 System connection

Fault	Possible cause	Possible solutions
ADT is connected but selection screen is not displayed	-	Check appropriate adaptor cables for the system
Readhead connected but not displayed on selection screen	-	Check appropriate adaptor cables for the system
ADT does not connect to software	Windows® has not detected the ADT	Disconnect and reconnect the USB cable
ADT disconnects from the software when the PC goes into power saving (sleep) mode	Power-save mode disconnects all USB devices	• Switch power save mode off on the PC • Disconnect and reconnect the USB cable
ADTpro-100 is not available, but is connected to ADT View	ADT View can detect the ADTpro-100, but has failed to communicate over USB	• Ensure only one readhead is connected • Ensure The ADT is not open in another tab • Switch ADTpro-100 off/on

8.3 General

Fault	Possible cause	Possible solutions
Text is not displayed correctly	Changing the size of text and resolution in 'Display' can affect the quality of the display	Restore PC to default Windows® theme
Unable to switch AGC on	Readhead is in installation mode or calibration mode. AGC is disabled in these modes.	Check readhead is in normal running mode (section 5.3.3)
Limit indication not displayed on the software	Readhead does not have limit outputs	Check connected readhead has limit outputs

8.4 Reprogramming

Fault	Possible cause	Possible solutions
The ADTpro-100 shows on the connection screen, but cannot be used	ADT View and ADTpro-100 are not on compatible versions	Select 'Reprogram ADT' when ADT pro-100 is selected. Follow on-screen instructions to download a new version of ADT View or reprogram the ADT.
Reprogramming has failed		Close ADT View and disconnect the power from the ADT. Repeat reprogramming of ADT. **NOTE:** that if reprogramming has failed, the ADT may show nothing on its display until it is successfully programmed.
I have updated the ADT, and now ADT View does not work with the ADT	The new firmware may not be compatible with the version of ADT View being used.	Ensure both ADT View and ADTpro-100 firmware are the latest available versions. Reprogram the ADTpro-100 with the firmware version included in ADT View.
Error when loading a firmware file from File Explorer	Incorrect file type selected	Ensure that the selected file is a valid .adtpro file. Redownload the .adtpro file and try again.

8.5   Calibration

Fault	Possible cause	Possible solutions
Readhead appears to jump from 'installation' mode to 'normal' mode without going through calibration	Readhead is actually in overspeed or low/high signal alarm condition in 'Normal' mode (4 red flashes) **NOTE:** Installation mode (constant red flashing)	• Check readhead is in Installation mode and not in alarm. 'Installation mode' is displayed at the bottom of the screen (section 5.3.3). • Low/high signal: Clean scale and/or re-align readhead and recalibrate system (section 5.3.6) • Overspeed: Reduce operating speed to be within the specified specification
Cannot exit Calibration mode	Incremental signal calibration is not complete	• Complete incremental signal calibration (section 5.3.6) • Restore factory default and repeat calibration routine • Analogue variant of QUANTiC only - Ensure correct termination is fitted to the output of the ADT (Appendix A.2)
Unit entered Calibration mode as soon as readhead was connected to ADT	The readhead was powered up when in low signal alarm	• Ensure readhead is not in low signal alarm when powered up • Disconnect power to the ADT before connecting the readhead • Analogue variant of QUANTiC only - Ensure correct termination is fitted to the output of the ADT (Appendix A.2)

8.6   Signal screen

Fault	Possible cause	Possible solutions
The phasing of the reference mark on the signal screen keeps changing	The reference mark is not phased until the readhead has been calibrated	Calibrate readhead (section 5.3.6)
	Readheads with all reference marks selected will display all reference marks on the software but only the calibrated reference mark is guaranteed to remain phased	Ensure the calibration sequence is carried out on the required reference mark
Pitch indication is not displayed	Readhead connected does not display pitch	-
Signal size is fluctuating from high signal to low signal (analogue variant of QUANTiC only)	Incorrect termination	Ensure correct termination is fitted to the output of the ADT (Appendix A.2)
The signal size is low but no alarm is displayed	A pop-up appears on all screens for 3 seconds when an alarm or warning occurs but the current alarms and warnings are only permanently shown on the signal strength vs position screen (section 5.3.7)	Display signal strength vs position screen to see current alarms and warnings

8.7   Signal strength vs position screen

Fault	Possible cause	Possible solutions
Rotary readhead connected but plot displayed is linear	The ADT cannot determine if the readhead is linear or rotary, the default display is linear	Select rotary scale from the linear/rotary selection button from the top of the screen
The plot is running but there are no units displayed on the position axis (linear ADTi-100 only)	0 on Z trigger mode is selected and a reference mark has not been passed. The X axis units are not displayed until a reference mark is passed. The current position will then be set to zero.	Move the readhead past a reference mark or change the trigger to 'None'
The position is moving but the plot is not being displayed (rotary ADTi-100 only)	0 on Z trigger mode is selected but a reference mark has not been passed. The plot is not displayed until a reference mark is passed. The plot will then start and the current position will be set to zero. **NOTE:** The limits will not be displayed until the readhead has passed the reference mark	Move the readhead past a reference mark or change the trigger to 'None'
The reference mark position moves position	The reference mark is not phased until the readhead has been calibrated	Calibrate readhead (section 5.3.6)
Multiple reference marks are displayed	The readhead has all reference mark outputs enabled so a reference mark is output at every reference mark on the scale	Order a readhead with customer selectable reference marks
	Readhead is pitched well in excess of the system tolerances **NOTE:** Pitch indicator may not show a pitch misalignment for grossly pitched readheads	Realign readhead and recalibrate system
The plot is still running but is not visible/changing	When zooming or panning during 'live' plot the data is still being captured but only the selected area will be displayed	Reset zoom (section 5.5.1) or stop the plot (section 5.5.4.1) to display the complete trace
The plot has stopped	The signal strength vs position plot stops when the signal strength is too low for reliable data to be plotted (ADTi-100 only)	• Check signal size • Press the green arrow to restart the plot **NOTE:** Ensure screen is saved before restarting plot (section 5.5.4.1) as all plot data will be lost

8.8   Velocity screen

Fault	Possible cause	Possible solutions
The plot is still running but is not changing	When zooming or panning during 'live' plot the data is still being captured but only the selected area will be displayed	Reset zoom (section 5.6) or stop the plot (section 5.6.1.1) to display the complete trace

8.9   DRO screen

Fault	Possible cause	Possible solutions
The DRO display is not counting and displays dashes	No ring diameter has been selected	Select ring diameter (section 5.7.2)

8.10   Configuration screen

Fault	Possible cause	Possible solutions
The readhead characteristics and configuration sections are empty	For custom readheads this information may not decoded from the readhead	Contact Renishaw with the serial number of the unit for more information on the configuration

Appendix A

A.1　Incremental screens and functionality

The available screens and functionality depend upon the readhead and interface connected. Not all screens are currently available with all readhead and interface combinations.

NOTES:

- TONiC and ATOM systems are only compatible with the ADTpro-100.

- Ri digital, ACi, TD, DOP, Ti10KD, Ti20KD, and DSi interfaces are not compatible with Advanced Diagnostic Tools.

- Other analogue 1 Vpp readheads with the standard 15 way pin-out can be connected via the ADTpro-100 to ADT View. Only the signal strength and an indication of the reference mark will be shown.

	QUANTiC	VIONiC	ATOM DX	TONiC [1]		ATOM [1]		
				Ti analogue	Ti digital	Ri analogue	Ti analogue	Ti digital
Signal screen	✓	✓	✓	✓	✓	✓	✓	✓
Lissajous screen	✓	✓	✓	✓	✗	✓	✓	✗
Signal strength vs position	✓	✓	✓	✗	✗	✗	✗	✗
Velocity	✓	✓	✓	✗	✗	✗	✗	✗
Digital readout (DRO)	✓	✓	✓	✓	✗	✓	✓	✗
Configuration	✓	✓	✓	✓	✓	✓	✓	✓
Alarm and warning	✓	✓	✓	✗	✓	✗	✗	✓
AGC	✓	✓	✓	✓	Toggle only	✓	✓	Toggle only
Calibrate	✓	✓	✓	✓	✓	✓	✓	✓
Limits	✓	✓	✗	✓	✗	✗	✗	✗
Restore factory defaults	✓	✓	✓	✓	✓	✓	✓	✗

[1]　TONiC and ATOM systems with a 15 way D-type connector and no interface or an Ri analogue interface will have the same functionality as Ti analogue systems.

A.2   ADTi-100 with analogue QUANTiC analogue

The analogue variant of QUANTiC, with a standard pin-out 15-way D-type connector, has a different pin-out to the digital readheads with the same connector type, so an adaptor cable is required to connect the readhead to the ADT.
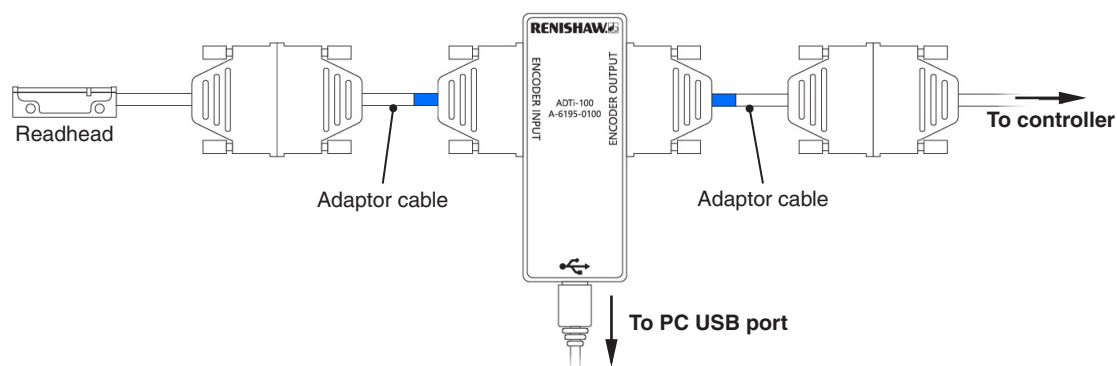
An adaptor cable kit (A-6637-1540) consisting of two 0.1 m adaptor cables, allows the readhead to be connected in either tethered or in-line mode.

NOTE: When using an ADTpro-100 the adaptor cable and termination are not required when connecting QUANTiC analogue.

Tethered
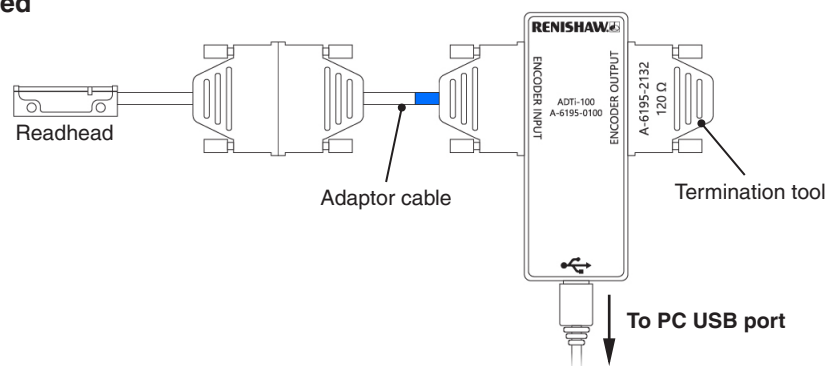
Readhead

Adaptor cable

Termination tool

To PC USB port

In-line

Readhead

Adaptor cable

Adaptor cable

To controller

To PC USB port

For readheads with alternative pin-outs or connectors, adaptor cables are required. For available adaptor cables contact your local Renishaw representative.

NOTE: The output of the ADTi-100 must be terminated with 120 ohms, either within the controller when in-line, or with the termination tool (A-6195-2132) when in tethered mode, for correct system function.

When connecting an analogue variant of QUANTiC the following will be displayed when the readhead and ADT are connected.
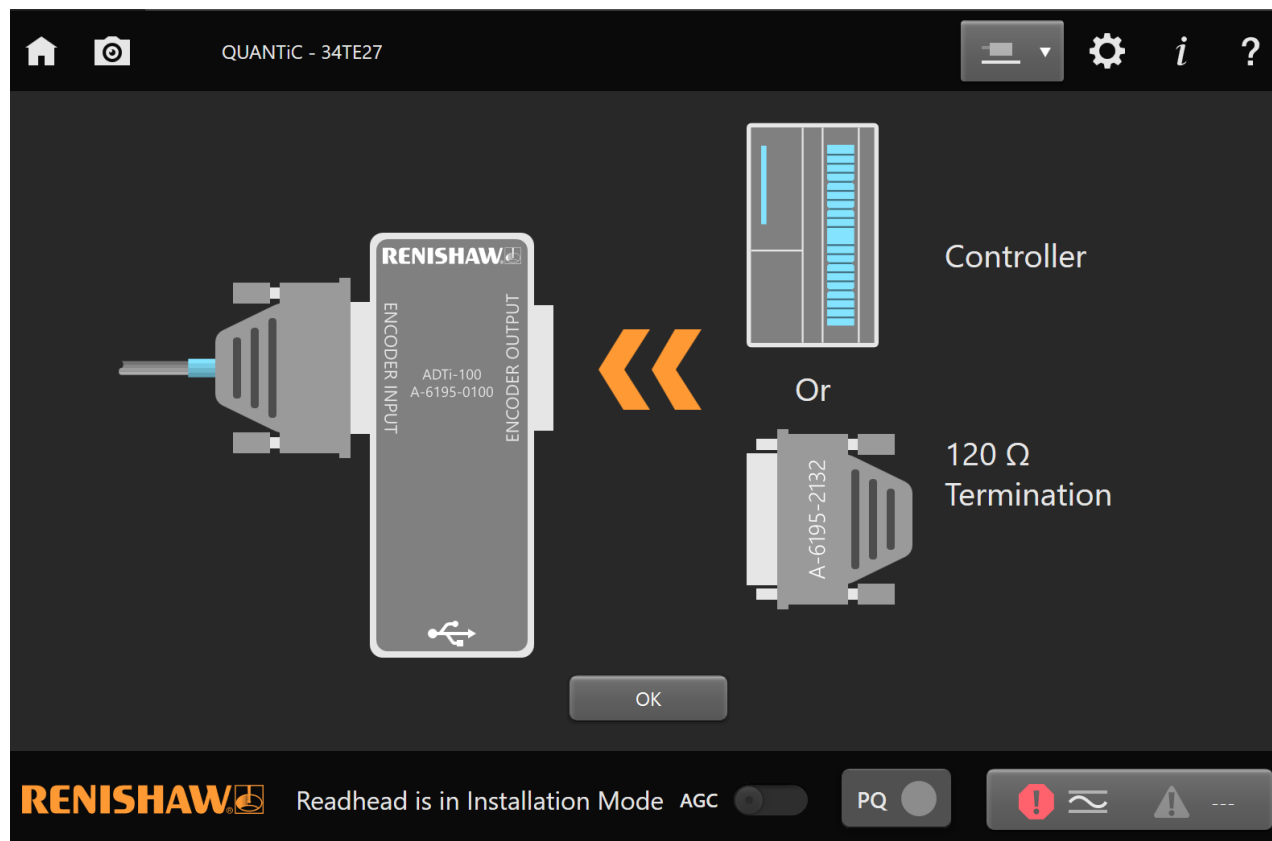
Ensure that the ADTi-100 is connected to the controller or the termination tool before pressing OK.

NOTE: If the termination is not corrected the readhead will not output the correct signal size and may display high signal and low signal alarms.

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