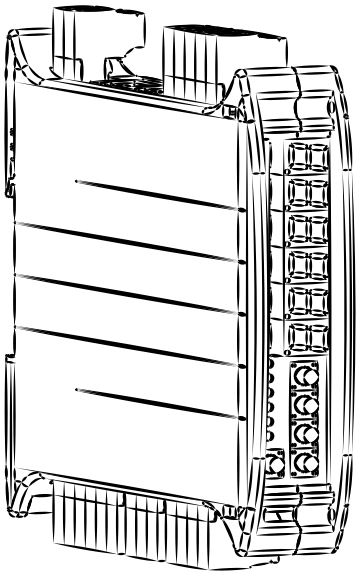
DINI ARGEO
Scales - Weighing systems
A RICE LAKE WEIGHING SYSTEMS COMPANY

CHECK WEIGHING MODE

For DGT1SX Models

USER MANUAL **ENGLISH**



www.diniargeo.com

Copyright

Dini Argeo is a Rice Lake Weighing Systems Company.

Contents

Introduction

Thank you for purchasing a DINI ARGEO product.

This document is intended to be read in conjunction with the DGT1SX User Manual. See DGT1SX User Manual for a list of all warnings, general installation, configuration and operation. This document details the check weighing mode for the DGT1SX.

The XSpeedTool must be used to configure the DGT1SX. This manual briefly discusses in regards to Check Weighing Mode. See XSpeedTool User Manual for information about installation, configuration, and general operation.

It is essential to read and understand this document to operate in the safest way. Carefully follow the instructions for programming the weight transmitter; performing actions not indicated in this manual could compromise the proper functioning of the scale.

The utmost care has been taken in compiling this manual, but reports of any inaccuracies are always welcome. The transmitter is covered by warranty and MUST NOT BE TAMPERED WITH BY THE USER under any circumstances. Any attempt at repair or modification may expose the user to electric shock and voids warranty conditions, relieving the Manufacturer from all liability.

Any problem with the product must be reported to the manufacturer or to the retailer where it was purchased.
Always TURN OFF THE POWER SUPPLY before performing installation, maintenance, or repairs.

Warnings

- The employee training on the use of the system is the purchaser's responsibility.
- Please read this manual and the DGT1SX User Manual carefully before using the system.
- Follow all warnings, requirements, precautions and specifications detailed in the DGT1SX User Manual,
- Maintenance must only be carried out by personnel authorised by Dini Argeo.
- Dini Argeo is not responsible for any weighing errors resulting from improper use of the system.
- Do not allow minors (children) or inexperienced persons to operate this equipment.
- Do not place fingers into possible pinch points.
- Do not use this product if any of the components are damaged.
- Do not make alterations or modifications to the unit.
- Before opening the unit, ensure the power cord is disconnected from the outlet.

Requirements:

- Windows 10 or greater PC with available USB port
- DGT1SX with firmware version D1XR51 1.19.00 or greater
- XSpeed Tool with Software version 1.14.01 or greater
- Access to PLC hardware and packages
- Micro USB Cable (for connecting DGT1SX to computer)

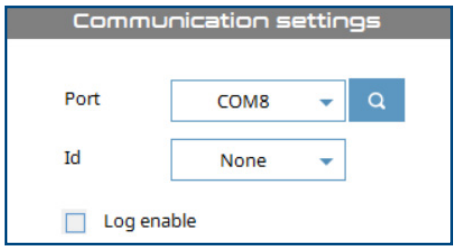
Preliminary tasks

1. Install XSpeedTool Software. For more information see XSpeed Tool Manual.
2. Ensure DGT1SX has correct firmware (see page 48).

Computer Connection

A connection between a Windows 10 (or greater) computer and the DGT1SX is required while configuring the Check Weigh Mode.

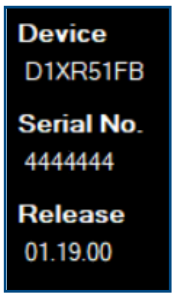
1. Power on the DGT1SX.
2. Connect the DGT1SX to a Windows 10 computer (or greater) with a micro USB cable.
3. Launch the XSpeed Tool.
4. Select **Settings**.
5. Configure the communication port in the Communication settings section



i If needed, use Windows Device Manager to determine which communication port the DGT1SX is connected to.

5. Select **OK**.
6. When the DGT1SX is connecting to the computer, the XSpeed Tool connection indicator in bottom left corner turns green while the status bar fills. When the connection indicator is green and status bar is empty, the DGT1SX is connected to the computer.

7. After the connection is established, the XSpeed Tool displays the device model, serial number, and firmware version.

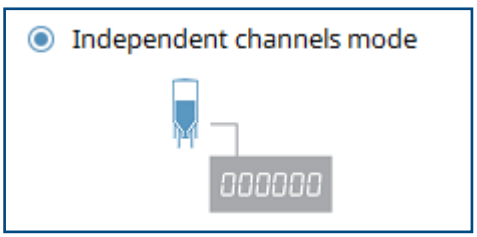


Calibration

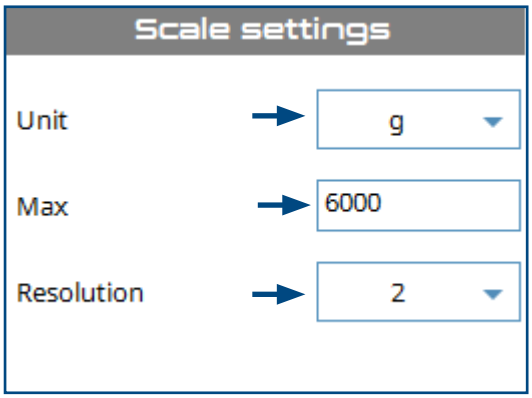
Select the Scale tab to access calibration functions. The Scale menu provides several functions, however, only the Independent channels mode is used during Check Weigh Mode. Scale settings configures units, maximum weight capacity, and resolution (divisions). Adjustment performs zero calibration and point calibration (with up to eight points).

Calibration Procedure:

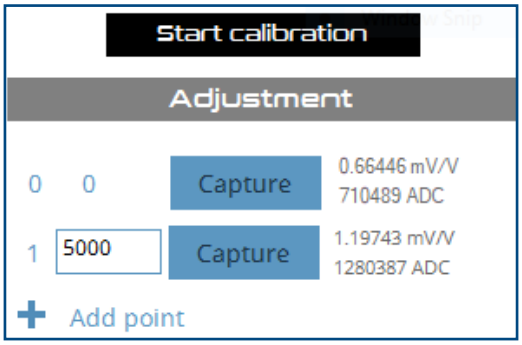
1. Select **Scale**.
2. Enable Independent channels mode.
3. Turn off belt path.



4. Configure scale settings as required:
- Units (g, kg, t, or lb)
- Maximum scale capacity
- Resolution (divisions)

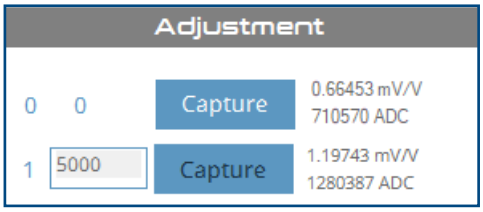


5. Configure the calibration point to match the calibration weight value.
6. If needed, add additional points with weight values.
7. Select **Start Calibration**.

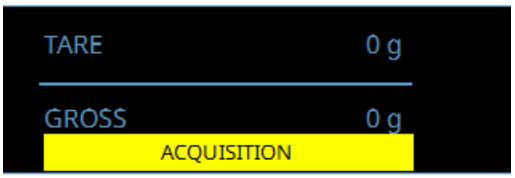


8. The busy indicator briefly displays.

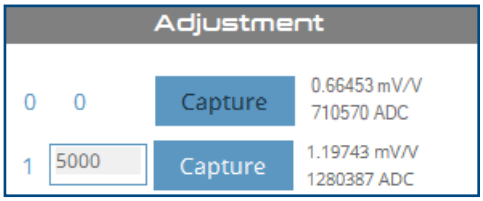
9. The text in the 0 Capture button turns white, indicating it is available.
10. Select the 0 Capture button.



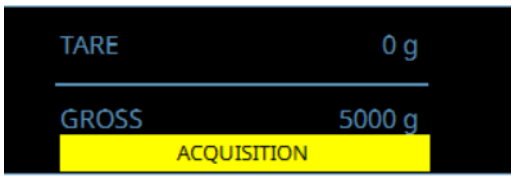
11. The busy indicator displays briefly.
12. PnE .0 displays on the DGT1SX screen and ACQUISITION appears in XSpeed Tool.
13. As 0 calibration completes, PnE0.oK displays on the DGT1SX screen and ACQUISITION OK appears in the XSpeed Tool.



14. The next Capture button turns white.
15. Place the test weight on scale.
16. Select the second Capture button.



17. The Busy indicator briefly appears.
18. PnE . 1 displays on the DGT1SX screen and ACQUISITION appears in XSpeed Tool.
19. As point calibration completes, PnE 1.oK displays on DGT1SX screen and ACQUISITION OK appears in XSpeed Tool.
20. Remove the test weight.



21. Repeat for additional points.
22. Select **End Calibration**.
23. StorE displays on the DGT1SX and the Busy indicator briefly displays.
24. Select the Zero scale button.

Analysis Overview

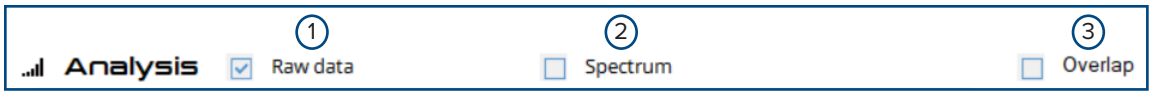
Analysis is used frequently during the Check Weigh Mode configuration. Analysis is used to analyse processed package signals and configure filters to achieved optimal processing results. Signal analysis and filter configuration involves observing data signals and configuring parameters. In general, a signal with filters flat and is noise free as possible is desired. To achieve the best result, often trial and error and must be used.

Element	Description
1	Displays current measured weight while providing zero and tare buttons.
2	Check boxes that determine the type of displayed signal.
3	Displays the processed signal.
4	Buttons that adjust the package measurement.
5	Lists currently loaded weights and filters.
6	Provides data acquisition parameters.
7	Provides filter parameters and buttons.
8	Provides measurement data and functions.
9	Sends parameters to DGT1SX .
10	Retrieves parameters from the DGT1SX.

Weight Display

Element	Description
1	Zeros current weight.
2	Tares current weight
3	Displays current weight.
4	Displays current tare weight.
5	Displays current gross weight.
6	Displays maximum scale weight.
7	Displays scale Resolutions.

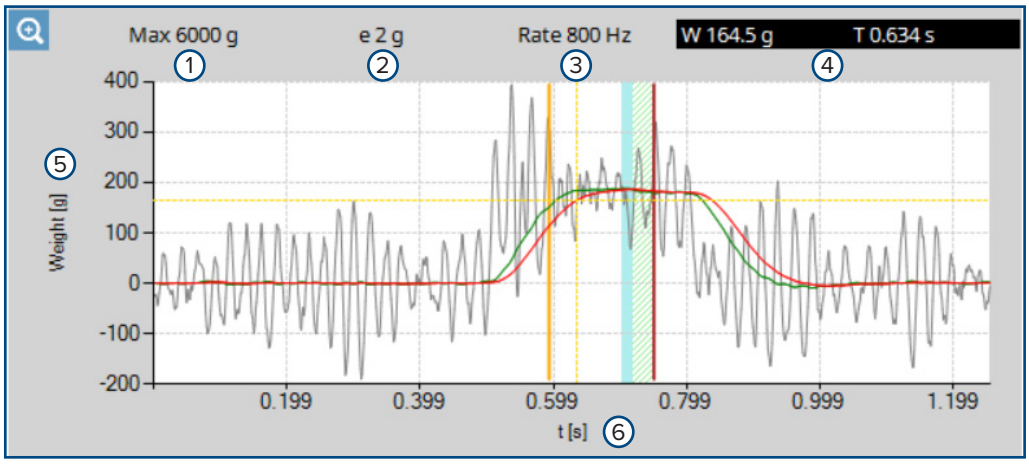
Display mode Check Boxes



Element	Description
1	Displays a raw data signal in relation to weight and time.
2	Displays a data signal in relation to decibels and hertz.
3	Displays all raw data signals in the weigh column overlaid upon one another in relation to weight and time.

Graph Elements

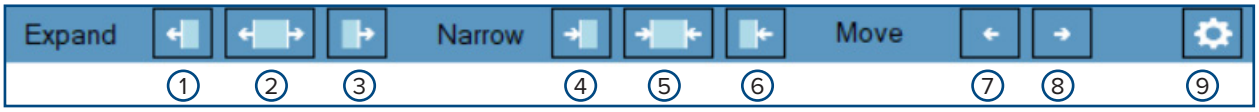
This section discusses the elements around the graph region, subsequent sections discuss graph signals specific to photocell and non-photocell instances. The type of signal varies depending on trigger, mode, and processed packages. For more information about signals with Photocells, see page 15. For more information about signals without Photocells, see page 16.



Element	Description
1	Displays the maxium scale weight.
2	Displays the scale resolutions.
3	Displays the filter rate (in Hertz).
4	Displays weight and time (when Raw data or Overlap is enabled) or decibels and hertz (when Spectrum is enabled) in relation to cursor position.
5	Displays weight (when Raw data or Overlap is enabled) or decibels (when Spectrum is enabled).
6	Displays time in seconds (when Raw data or Overlap is enabled) or hertz (when Spectrum is enabled).

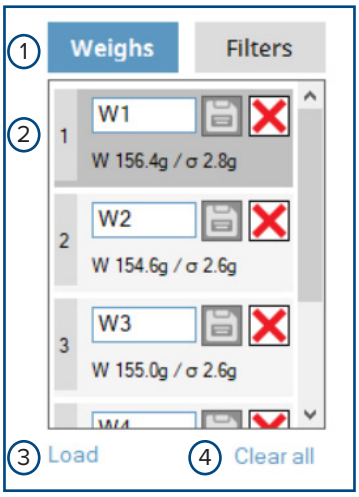
Measurement Adjustment buttons

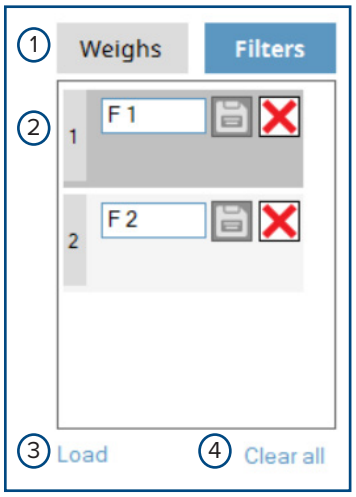
These buttons adjust the size of the measurement (blue shaded area) and open the Check/Settings Menu.



Element	Description
1	Expands measurement size left.
2	Expands measurement size left and right.
3	Expands measurement size right.
4	Decreases measurement size left.
5	Decreases measurement size left and right.
6	Decreases measurement size right.
7	Moves measurement left.
8	Moves measurement right.
9	Opens Check/Settings menu (see page 17).

Weights and Filters Elements

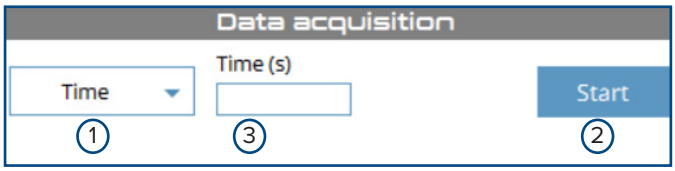


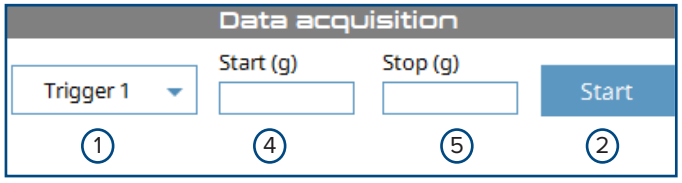


Element	Description
1	Switches between Weighs and Filter lists.
2	Lists current or loaded weights and filters.
3	Loads saved weights or filters.
4	Clears all weights or filters.

Data Acquisition

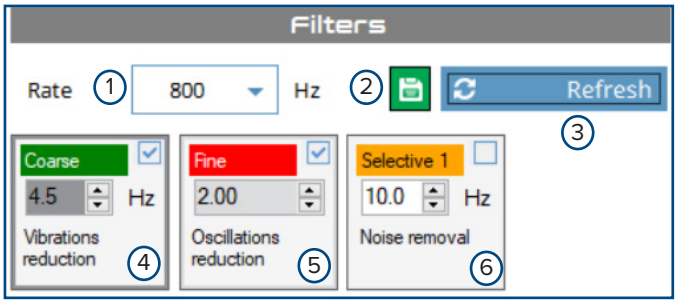
The appearance of Data acquisition varies depending on the selected trigger. This section describes the different Data acquisition parameters. For information about triggers, see page 21.





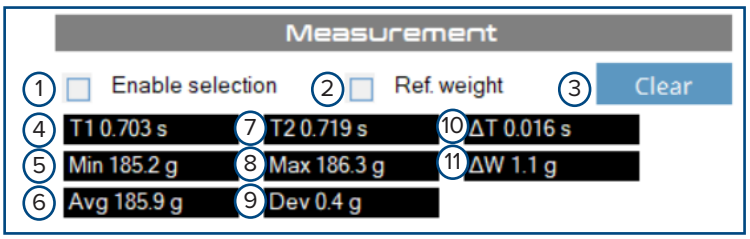
Element	Selected Trigger	Function	Description
1	All	Trigger	Selects trigger type: Start/Stop, Time, or Trigger 1 ÷ 8.
2	All	Start/Stop	Initiates or stops data acquisition.
3	Time, Trigger 7 ÷ 8	Time(s)	Defines acquisition time duration in seconds.
4	Trigger 1 ÷ 4	Start (g)	Defines the package weight in grams required to start acquisition.
5	Trigger 1 ÷ 4	Stop (g)	Defines the package weight in grams to stop acquisition.

Filter Parameters



Element	Description
1	The configured filter (in Hertz).
2	Adds current filter configuration to the filter column. The filter can be saved by selecting the disk icon and following on-screen prompts.
3	Refreshes graph display. Typically used after filters are adjusted.
4	Coarse filter removes signal vibrations and is defined in hertz. Indicates the result after the applying of the Coarse filter with a green line. Recommended value: 2 ÷ 10 Hz (go below 2 only with 2600 Hz rate). This value must be lower than rate / 2. Typically a value of 3 is a good starting point.
5	Fine filter removes signal oscillations and defined as a percentage. Indicates the result after applying the Fine filter (or Coarse and Fine filters if both are enabled) with a red line. Recommended value: 10 ÷ 50 %. Typically a value of 10 is a good starting point.
6	Selective filter removes a fixed frequency (hertz) noise.

Measurement Section



Element	Description
1	Defines a measurement zone (blue shaded area) using the mouse on the signal. For more information, see page 33.
2	Adjusts measurement values with reference weight added. Typically unused for Check Weigh Mode.
3	Clears all measurement parameters (including in settings).
4	Starting time of measurement.
5	Minimum weight during measurement.
6	Average weight during measurement.
7	Ending time of measurement.
8	Maximum weight during measurement.
9	Standard deviation of weights.
10	Difference between start and end measurement times.
11	Difference between maximum and minimum weight.

Signal Overview (Photocells)

The example below displays a sample signal that uses photocells during package processing.

Element	Description
1	A gray line that illustrates the unfiltered signal of the processed package.
2	A green line that illustrates the result after applying the Coarse filter.
3	A red line that illustrates the result after applying the Fine filter (or Coarse and Fine filters if both are enabled).
4	A vertical orange line that illustrates the start of measurement (displays only in photocell modes).
5	A dashed orange line that moves along the Fine filter (red line). This indicates weight and time relative to cursor position.
6	Blue shading that indicates the measured area. The Measure area parameter is configured with the Check/Settings Menu, Measurement Adjustment controls, or Enable selection option.
7	Green shading indicates the area that is skipped during measurement. The Final skipped data parameter is configured in Check/Settings Menu.
8	A vertical red line that indicates the end of measurement.

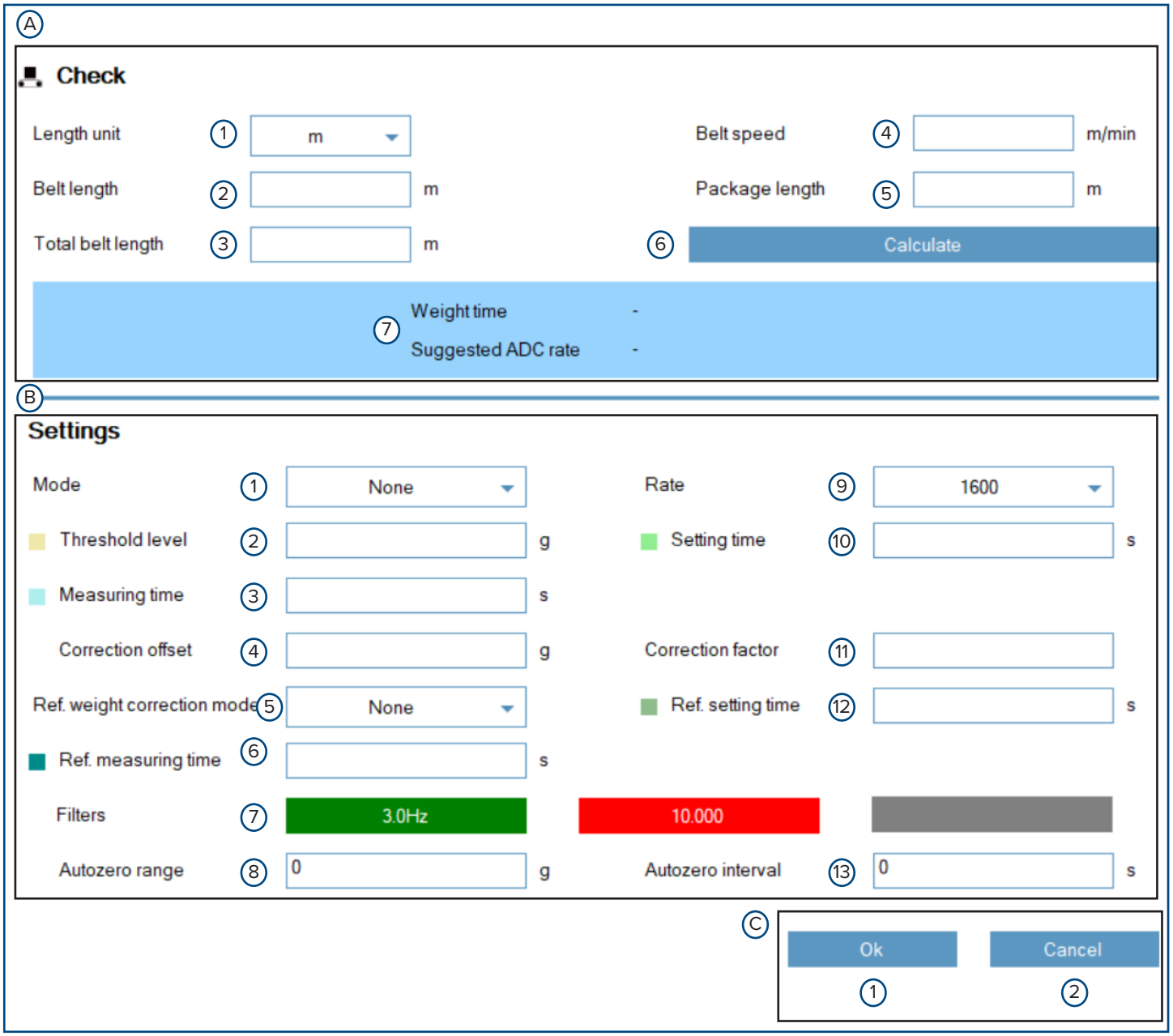
Signal Overview (without Photocells)

The example below displays a sample signal that does not use photocells during package processing.

	Description
1	A gray line that illustrates the unfiltered signal of the processed package.
2	A green line that illustrates the result after the applying the Coarse filter.
3	A red line that illustrates the result after the applying the Fine filter (or Coarse and Fine filters if both are enabled) .
4	Green shading indicates the area that is skipped during measurement. The Setting time parameter is configured in Check/Settings Menu.
5	A dashed orange line that moves along the Fine filter (red line). This indicates weight and time relative to cursor position.
6	Blue shading that indicates the measured area. The Measured time parameter is configured in Check/Settings Menu, shape controls, or Enable selection option.
7	A dashed orange line that moves along the fine filter (red line). This indicates weigh and time relative to cursor position.
8	A solid horizontal orange line that indicates the configured weight threshold.

Check/Settings Menu

The Check/Setting Menu configures analysis parameters that affect how signals are measured. The main sections are identified below and then subsequently defined.



The following section describes the area identified as A in the Check/Setting menu image. When parameters are configured, the Check section displays a calculated ADC rate and estimated weigh time. Check parameters are typically configured after Calibration is completed and the results are applied to the Rate parameter.

Element	Description
1	The type of unit used during calculation (meters, feet, or inches).
2	The belt length for the location with the scale.
3	Not used.
4	The belt speed in m/min.
5	The package length.
6	Submits data for calculations.
7	After data is calculated, suggested ADC rate and estimated weight time.

The following section describes the area identified as B in the Check/Setting menu image. The Settings section, provides parameters that configure the measurement criteria. These parameters are typically configured before and during signal analysis,

Element	Description
1	Defines the Mode. Modes determine the type of parameters available in Settings. The parameters include: None, Pre Trigger, Post Trigger, 2 Photocells High, and 2 Photocells Low. The parameters are used in conjunction with how data is acquired. For configuration with photocells, see page 22. For configuration without photocells, see page 24.
2	Defines the weight threshold level in grams and is available with Pre Trigger and Post Trigger modes.
3	Defines either Measuring time (modes without photocells) or Measure data (for photocell modes) in seconds. For configuration with photocells, see page 22. For configuration without photocells, see page 24.
4	Adjusts the package weight in grams. This parameter is typically set after measurement parameters are configured during the testing phase. A positive value subtracts weight while a negative adds weight during testing. For more information, see page 35.
5	Not used with Check Weigh Mode applications.
6	Not used with Check Weigh Mode applications.
7	Displays current filter settings for Coarse (green), Fine (red), Selected (orange). When a filter is disabled it appears grey in the Settings.
8	Not used with Check Weigh Mode applications.
9	Defines the sample rate of the transmitter speed in hertz (6, 12, 25, 50, 100, 200, 400, 800, 1600, 2400, or 4800 hertz).
10	Defines the Setting Time (in seconds) or Final skipped data (%) parameter. For configuration with photocells, see page 22. For configuration without photocells, see page 24
11	The Correction factor is an algorithm applied to a processed weight. The correction factor is calculated as: Weigh with Correction factor = (calculated weight - correction offset) * correction factor For example: 340 = (180 - 10) * 2 Typically, the Correction offset is used instead of the Correction factor.
12	Not used with Check Weigh Mode applications.
13	Not used with Check Weigh Mode applications.

This section describes the area identified as C in the Check/Setting menu image.

Element	Description
1	Exits the Check/Settings menu while saving changes.
2	Exits Check/Settings menu and aborts changes.

Determine and Set Suggested ADC Rate

After Calibration is completed, the suggested ADC (analogue to digital conversion) rate can be determined and set. The ADC calculation tool is accessed by selecting the Check/Settings menu icon in the Analysis tab.

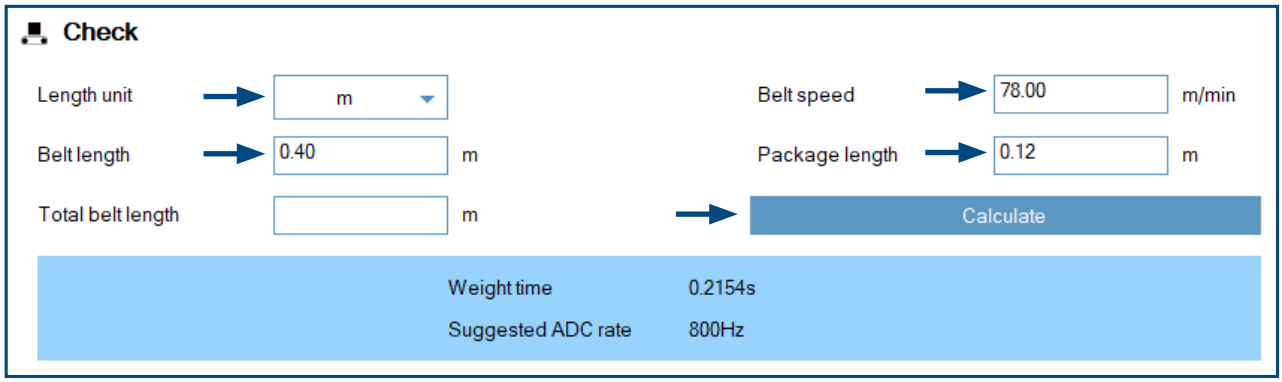
Suggested ADC Procedure

1. Select **Analysis**.
2. Select the Check/Settings menu icon.

3. Set the required unit of measurement (meters, feet, or inches)
4. Enter the entire belt length at the scale section.
5. Enter the belt speed in m/min.

> Note: If belt speed is unknown, briefly turn on belts and use a tachometer to measure speed.

6. Enter package length (how it will be sent on belt path).
7. Select Calculate. The system provides a recommendation for weighing time and ADC rate.
9. The suggested ADC rate displays.
8. Select Ok to close the Check/Settings menu.



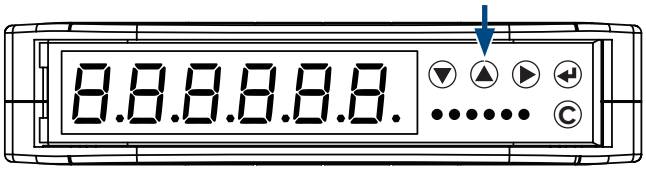
10. Set the Rate parameter to match the suggested ADC rate (6, 12, 25, 50, 100, 200, 400, 800, 1600, 2400, or 4800 hertz).

11. Select **Send**.

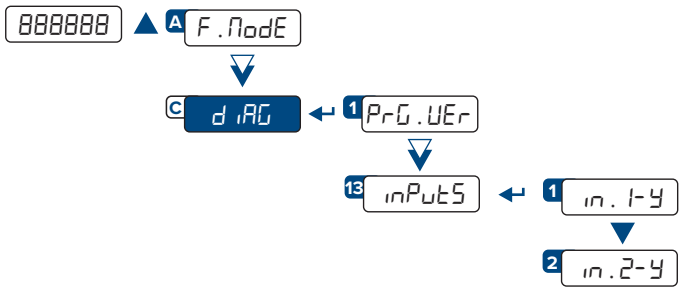
Determine Photocell Type

The following procedure is for use with photocells, advance to next procedure if not using photocells. Determine the photocell type by entering diagnostic mode on the DTG1SX and observe digital input signal changes when the photocell is clear and obstructed.

1. Remove objects from the belt path and near photocells.
2. Restart the DGT1SX.
3. Press and hold ▲ when 888888 displays.



3. Release the ▲ button.
4. Select inPutS from the diAG menu.



5. The status of the digital inputs is reported in the format of in.X-Y. Where:

- in. is an abbreviation for input
- X is the digital input number (1 or 2)
- Y is the current status of the status of the input. The status is reported as either in.1-0 or in.1-1.

6. Block the first photocell and observe the input response:

- If DGT1SX displays in.1-0 when clear and in.1-1 when blocked, it is a PNP type. This photocell type is used with the 2 Photocells High trigger.
- If DGT1SX displays in.1-1 when clear and in.1-0 when blocked, it is a NPN type. This photocell type is used with the 2 Photocells low trigger.

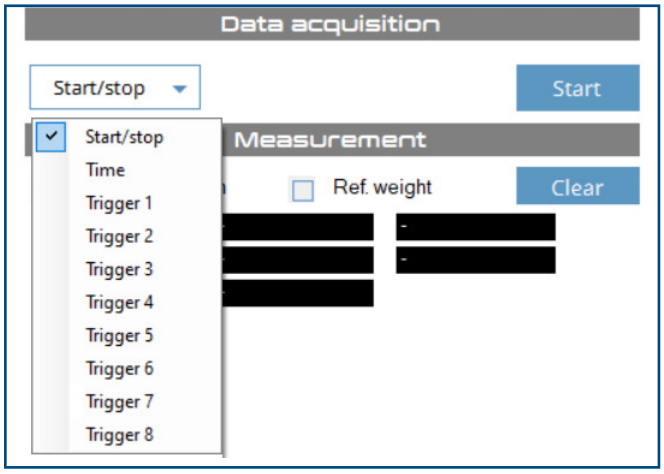
7. Repeat for the second digital input.

Set Data Acquisition Trigger

There are several types of triggers available for data acquisition:

Trigger	#	Description
Start/Stop	-	The acquisition begins when Start is pressed and ends when Stop is pressed. Be aware, this trigger does not function with RS485 communication.
Time	-	The acquisition begins when Start is pressed and ends automatically after the duration in Time (s) elapses.
Load Pulse	1	Start has been pressed, the acquisition begins when the weight exceeds the upper threshold (Start) and ends when the weight falls below the lower threshold (Stop).
Load Step	2	Start has been pressed, the acquisition begins when the weight exceeds the lower threshold (Start) and ends when the weight reaches the upper threshold (Stop).
Unload Step	3	Start has been pressed, the acquisition begins when the weight falls below the upper threshold (Start) and ends when the weight falls below the lower threshold (Stop).
Unload Pulse	4	Start has been pressed, the acquisition begins when the weight falls below the lower threshold (Start) and ends when the weight reaches the upper threshold (Stop).
2 Photocells High	5	Start has been pressed, the acquisition begins when a package obstructs the first photocell and ends when the packages unblocks the second photocell along the belt path. During this trigger, the input signals change from 0 to 1 when packages obscures photocells and 1 to 0 when packages unblock photocells. This trigger is used for PNP type sensors.
2 Photocells Low	6	Start has been pressed, the acquisition begins when a package obstructs the first photocell and ends when the packages unblocks the second photocell along the belt path. During this trigger, the input signals change from 1 to 0 when packages obscures photocells and 0 to 1 when packages unblock photocells. This trigger is used for NPN type sensors.
Time 2 Photocells High	7	Acquisition occurs for the set time n relation to photocells transitions. The relevant transitions are: from clear to obstructed status for the first photocell, from obscured to clear status for the second photocell. When photocell is obstructed the indicator will read a high level on the related digital input.
Time 2 Photocells Low	8	Acquisition occurs for the set time in relation to photocell transitions. The relevant transitions are: from clear to obstructed status for the first photocell, from obscured to clear status for the second photocell. When photocell is obstructed the indicator will read a low level on the related digital input.

1. In the analysis menu, set the Data acquisition trigger.



Systems with photocells can use any trigger, however Triggers 5 or 6 are typically used.

Systems without photocells can use Start/Stop, Time, and Triggers 1 ÷ 4. If uncertain of which trigger to use, Trigger 1 is often a good starting point.

Configure Additional Trigger Parameters

When Time, 1, 2, 3, 4, 7 and 8 triggers are selected, additional parameters must be configured:

Selected Trigger	Additional Parameter	Description
Start/Stop, 5 - 6	-	-
Time, 7 ÷ 8	Time(s)	The acquisition time duration in seconds.
Trigger 1 ÷ 4	Start (g) Stop (g)	The package weight in grams required to start data acquisition. The package weight in grams to stop data acquisition.

1. If needed, configure additional parameters.
2. Select **Send**.

Photocell Data Measurement Settings

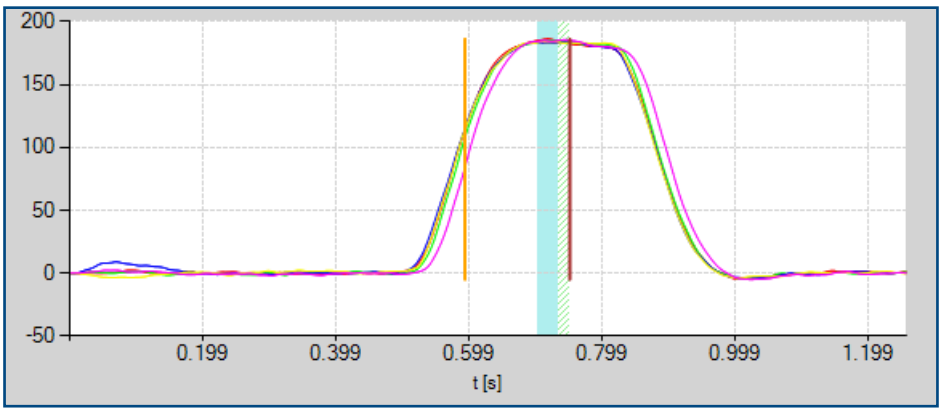
The Mode parameter must match the type of photocells (previously identified) with one of the following parameters:

- 2 Photocells High - for photocells that read a high level (1) when the digital input is obscured.
- 2 Photocells Low - for photocells that read a low level (0) on the digital input is obscured.

The following example is a photocell mode, where:

- The green area represents the Final skipped data parameter. This is the percentage of data that will be skipped at the end of the measurement. A recommended starting parameter value is 10%.
- The blue area represents the Measure data parameter. This is the percentage of data used for measurement. A recommended starting parameter value is 20%.

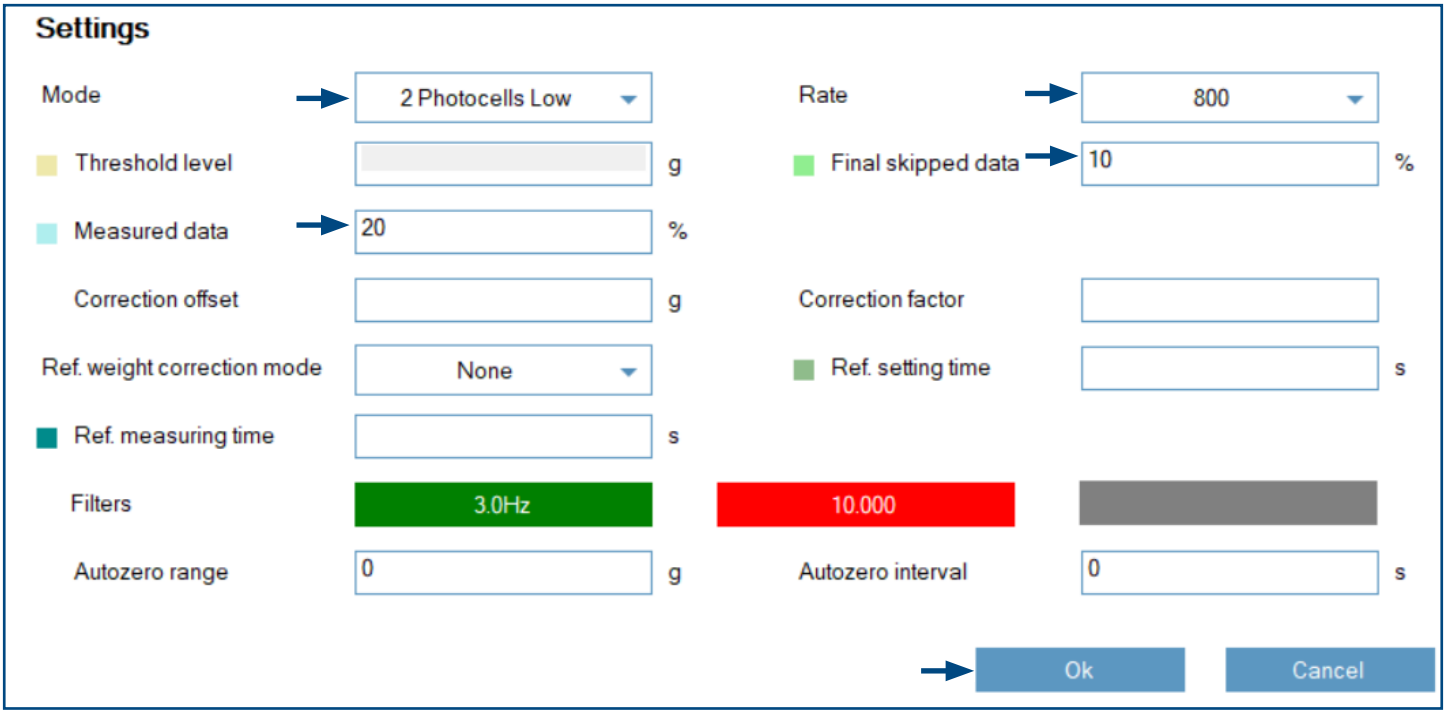
These values may need to change during signal analysis.



The following procedure is for systems with photocells, advance to next the procedure if not using photocells.

1. Select the Check/Settings menu icon.

2. Configure Mode parameter (typically 2 Photocells High or 2 Photocells Low).
3. Configure Final skipped data parameter. The recommended starting value is 10%.
4. Configure Measured data parameter. The recommended starting value is 20%.
5. Select Ok.



7. Select **Send**.

Data Measurement Settings (Excluding Photocells)

When configuring the data measurement for applications excluding photocells there are specific modes and parameters that must be configured. Modes must be configured to set when the trigger occurs, including:

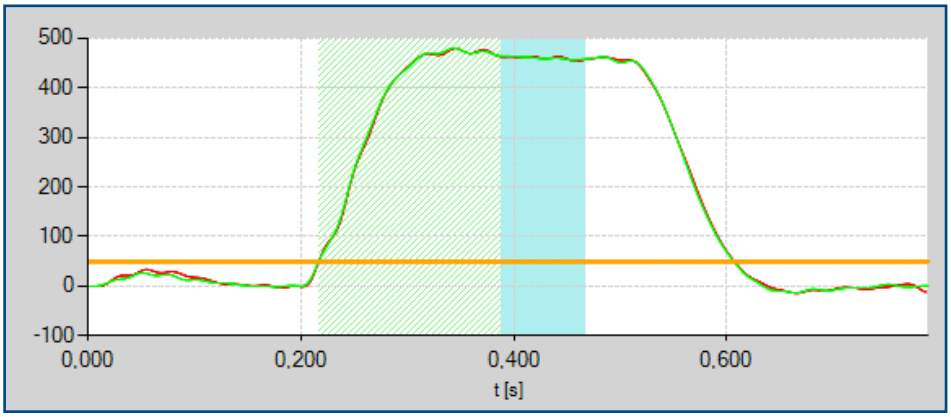
- None - disables the Check Weigh Mode function.
- Pre-trigger - the weight measurement starts once a package weight exceeds the configured weight threshold.
- Post-trigger - the weight measurement starts from the end of measurement once the package weight decreases under the configured weight threshold.

In addition there are three parameters must also must be set:

- Threshold level in grams - The required package weight in order to be processed.
- Setting time in seconds - For Pre-Trigger, the duration before weight computation begins after the package weight threshold is exceeded. For Post-Trigger, the duration before the package weight decreases beneath the threshold.
- Measuring time in seconds - the amount of time used for the measurement.

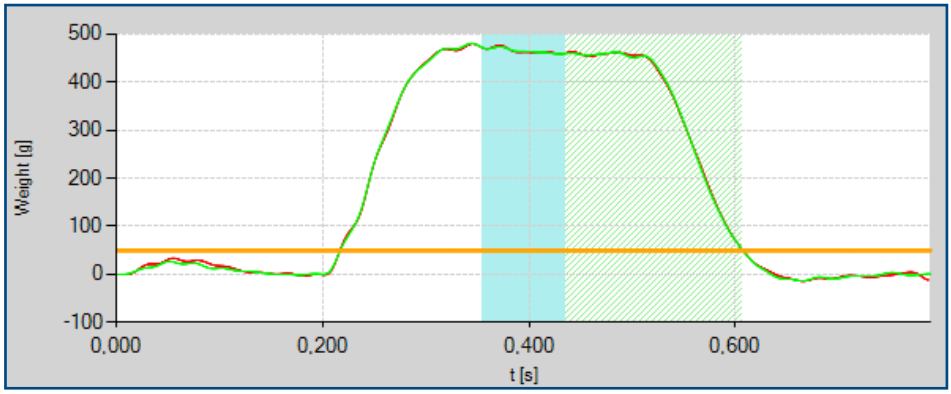
The following example is a Pre-Trigger mode, where:

- The green area represents the Setting time parameter
- The blue area represents the Measuring time parameter
- The orange bar represents the Threshold parameter



The following example is a Post-Trigger mode, where:

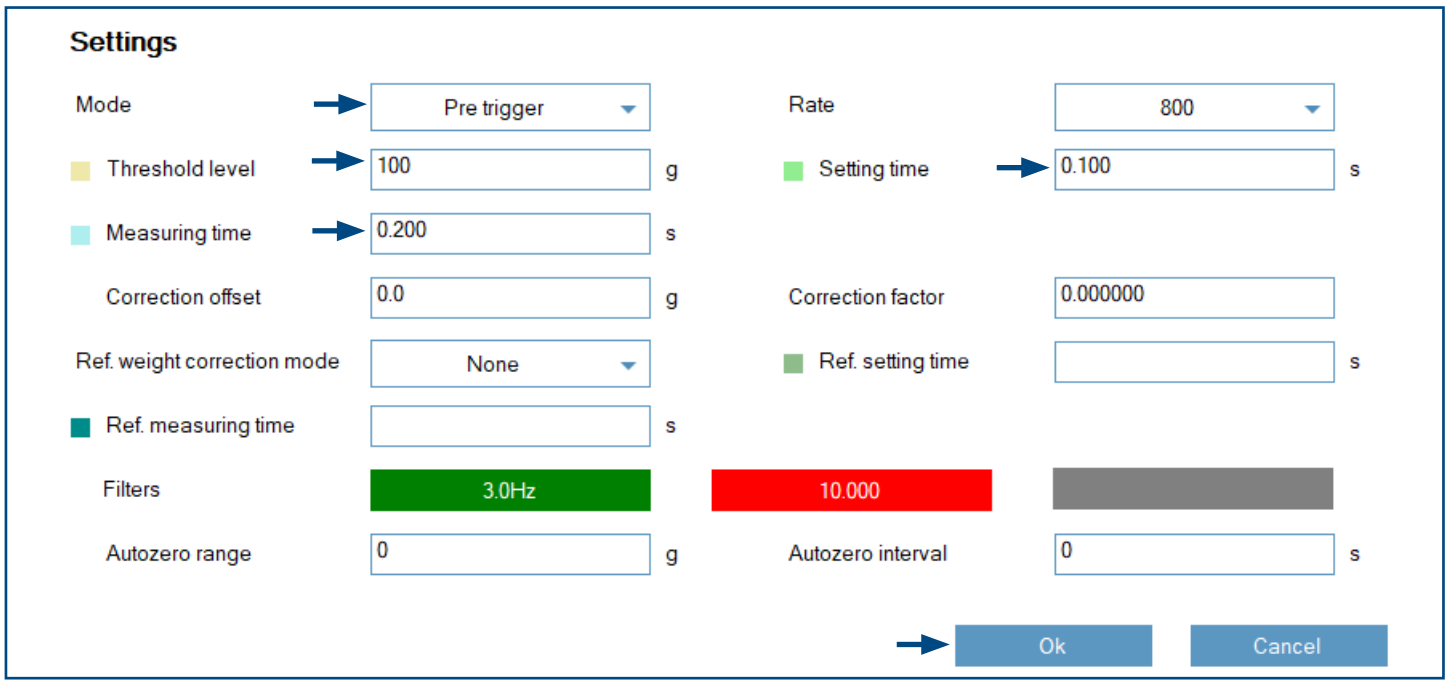
- The blue area represents the Measuring time parameter
- The green area represents the Setting time parameter
- The orange bar represents the Threshold parameter



The following procedure is typically for systems without photocells, return to the previous procedure if using photocells.

1. Select the Check/Settings menu icon.

2. Set the Mode:
3. Configure the weight Threshold parameter in grams.
4. Configure the Setting time in seconds.
5. Configure the Measuring time in seconds.
6. Select Ok.



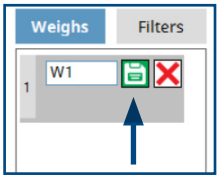
7. Select **Send**.

Weight Data Capture

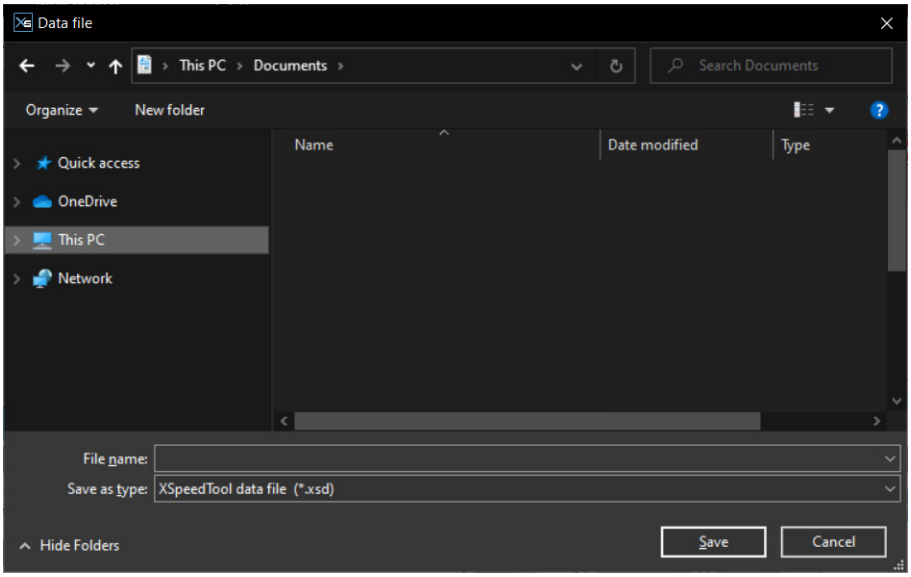
It is recommended to save weight data prior to beginning signal analysis. In most cases five weights are recommended.

1. Select Start.
2. Process one package via the belt path.
3. If required, select Stop after the package is processed.

4. The processed weight appears in the Weighs list.
5. Select the save icon.



6. The Data file prompt appears.
7. In the prompt, navigate to the desired folder, enter the file name, then select Save.



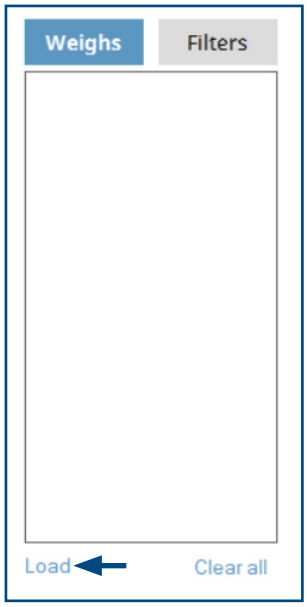
i Note: The weight is saved as an *.xsd file (XSpeed Tool data file).

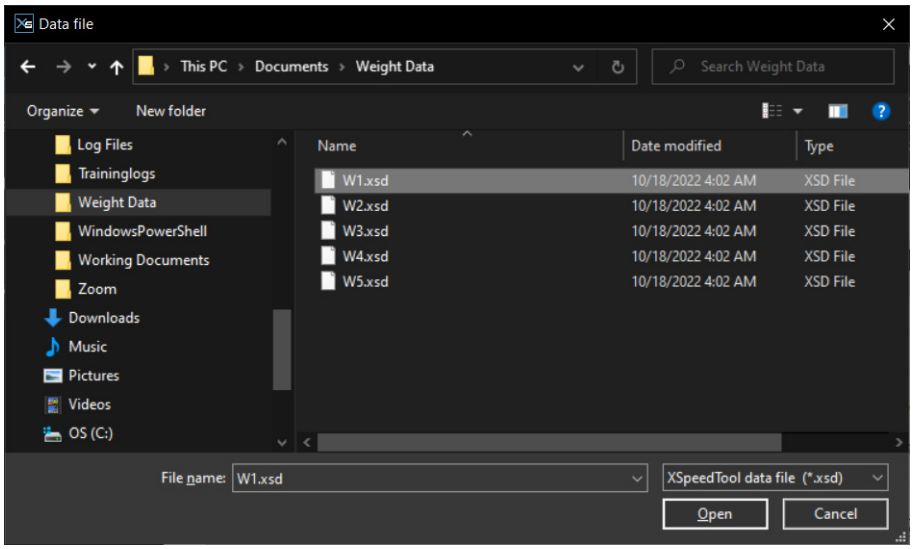
8. Repeat the steps to process at least four additional packages and save their data.

Load Weight Data

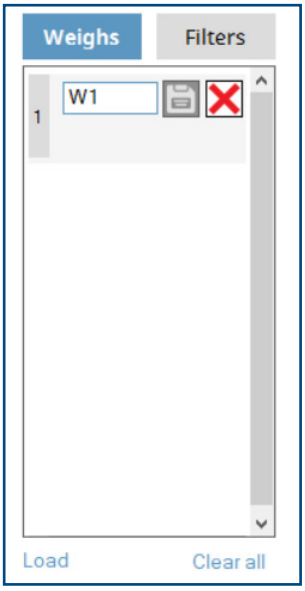
It is recommended to process at least five packages or load weight data for five packages.

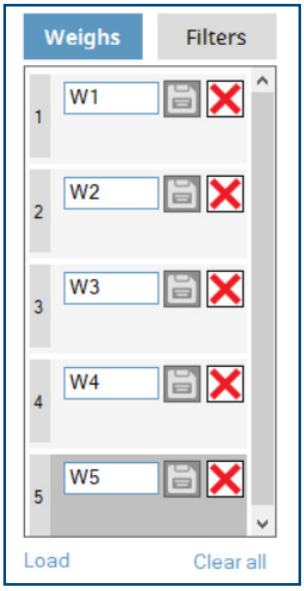
1. Select Load in the Weighs column.
2. The Data File window prompt.
3. Navigate to the file, select the file, and then select Open.





4. Data loads in the XSpeed Tool and the weight displays in the Weighs column.
5. Repeat the procedure for additional data files .





Signal analysis and filter configuration involves observing data signals and configuring parameters. In general, a signal with filters that are flat and noise free as possible is desired. To achieve the best result, often trial and error is used when adjusting parameters.

General Configuration Tips:

- Use the mouse wheel to zoom in and out on the graph.
- When zoomed in, use scroll bars or left-click and hold (when not in enable selection) to navigate the graph.
- When the Overlap check box is enabled, observe the difference in weight measurements.
- Adjusting filters changes green, red, and orange signals.
- After adjusting filters, select Refresh to view the changes.
- Measurement settings may have to be adjusted to achieve desired results.
- Use the Enable selection function to draw the measurement zone on the graph (blue shaded area).
- Send the configuration to the instrument when completed.

Signal Analysis (with Photocell Data)

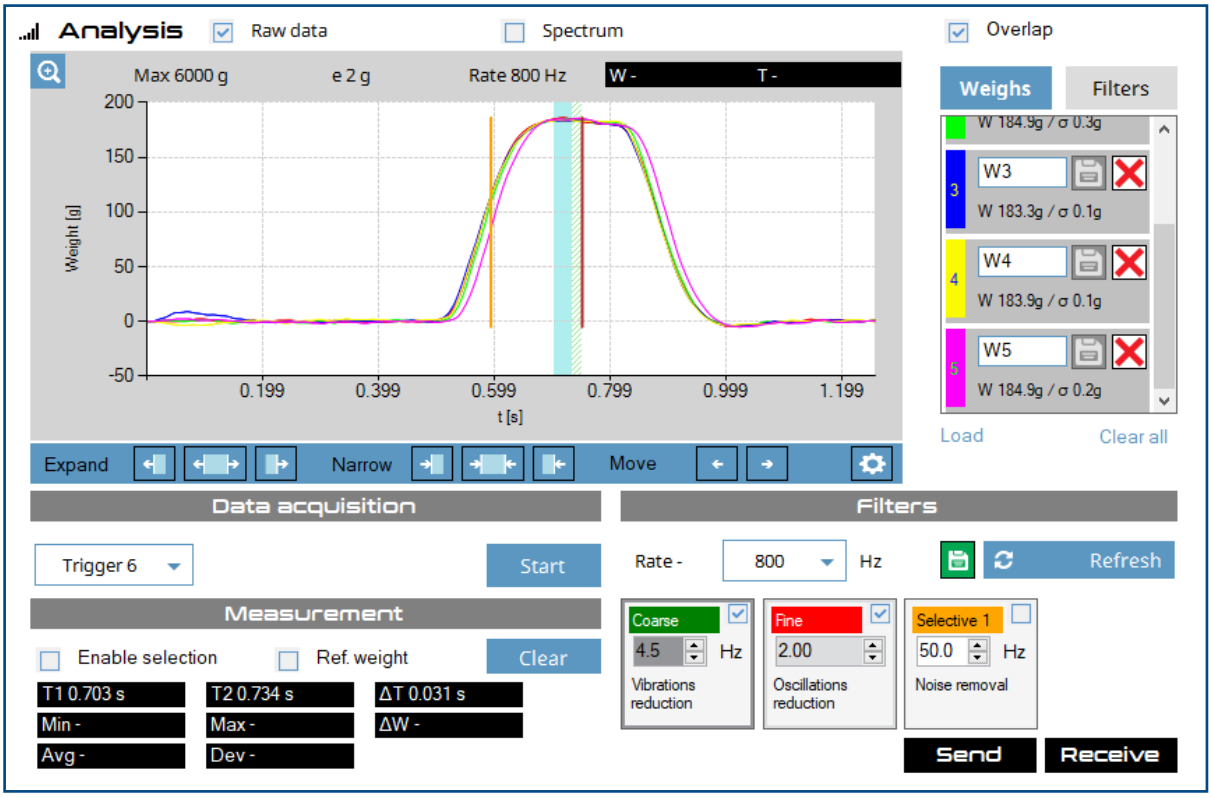
1. Process or load data for at least 5 weights.
2. Adjust Coarse and Fine filters to the suggested starting points:

- Coarse Filter 3 Hz
- Fine Filter 10 %

3. Adjust Coarse filter.
4. Select Refresh button and observe changes to the green line.
5. Repeat until coarse filter (green line) is straight as and noise free as possible.

6. Adjust Fine filter.
7. Select Refresh button and observe changes to the red line.
8. Repeat until Fine filter (red line) is straight as and noise free as possible.

9. Enable the Overlap check box.
10. View weight differences of each measurement in the Weighs column. Ideally, the weights are as close to each other as possible.
11. If required, adjust the Measuring data parameter.
12. Adjust filters until smallest difference between weights is achieved.

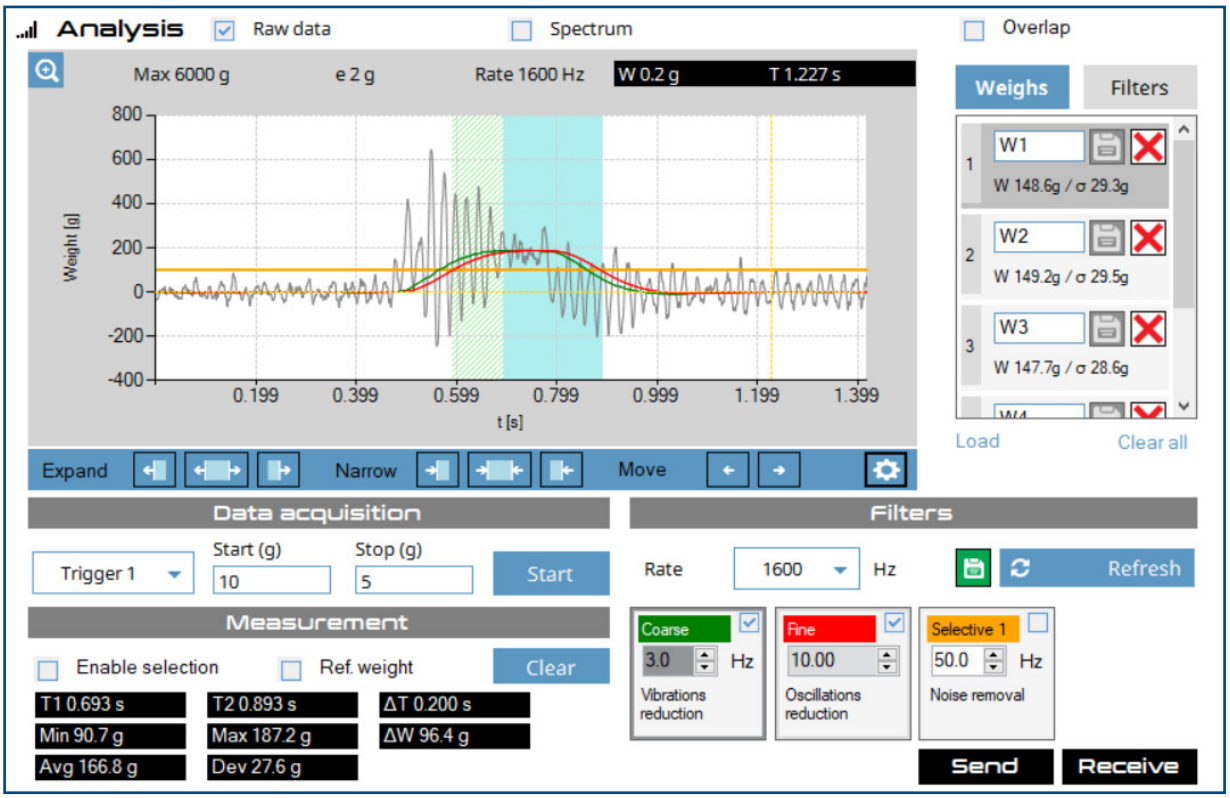


13. Select **Send**.
14. Proceed to testing.

Signal Analysis (without Photocell Data)

1. Process or load data for at least 5 weights.
2. Adjust Coarse and Fine filters to suggested starting points:

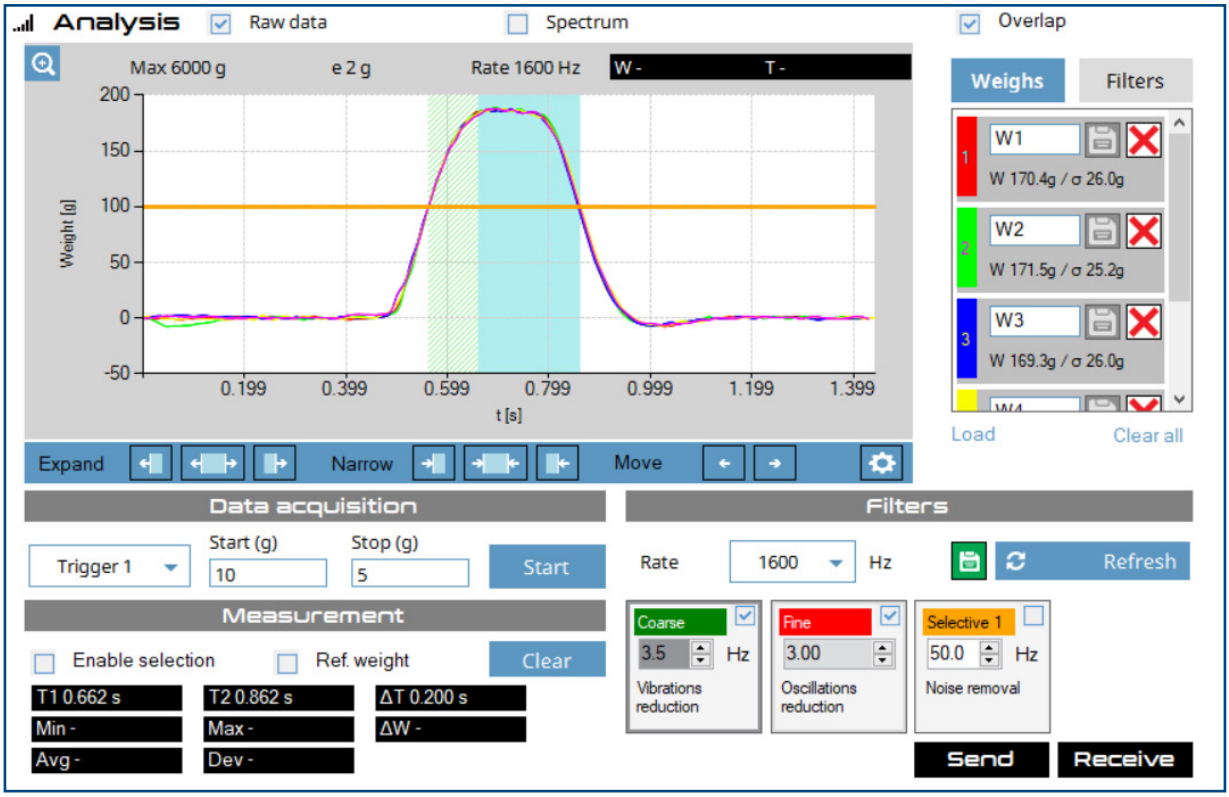
- Coarse Filter 3 Hz
- Fine Filter 10 %



3. Adjust the Coarse filter.
4. Select Refresh button and observe changes to the green line.
5. Repeat until Coarse filter (green line) is straight and noise free as possible.

6. Adjust the Fine filter.
7. Select Refresh button and observe changes to the red line.
8. Repeat until Fine filter (red line) is straight and noise free as possible.

9. Enable the Overlap check box.
10. If required, adjust the Measuring time parameter.
11. View weight differences of each measurement in the Weighs column. Ideally, the weights are as close to each other as possible.
12. Adjust filters until smallest difference between weights is achieved.



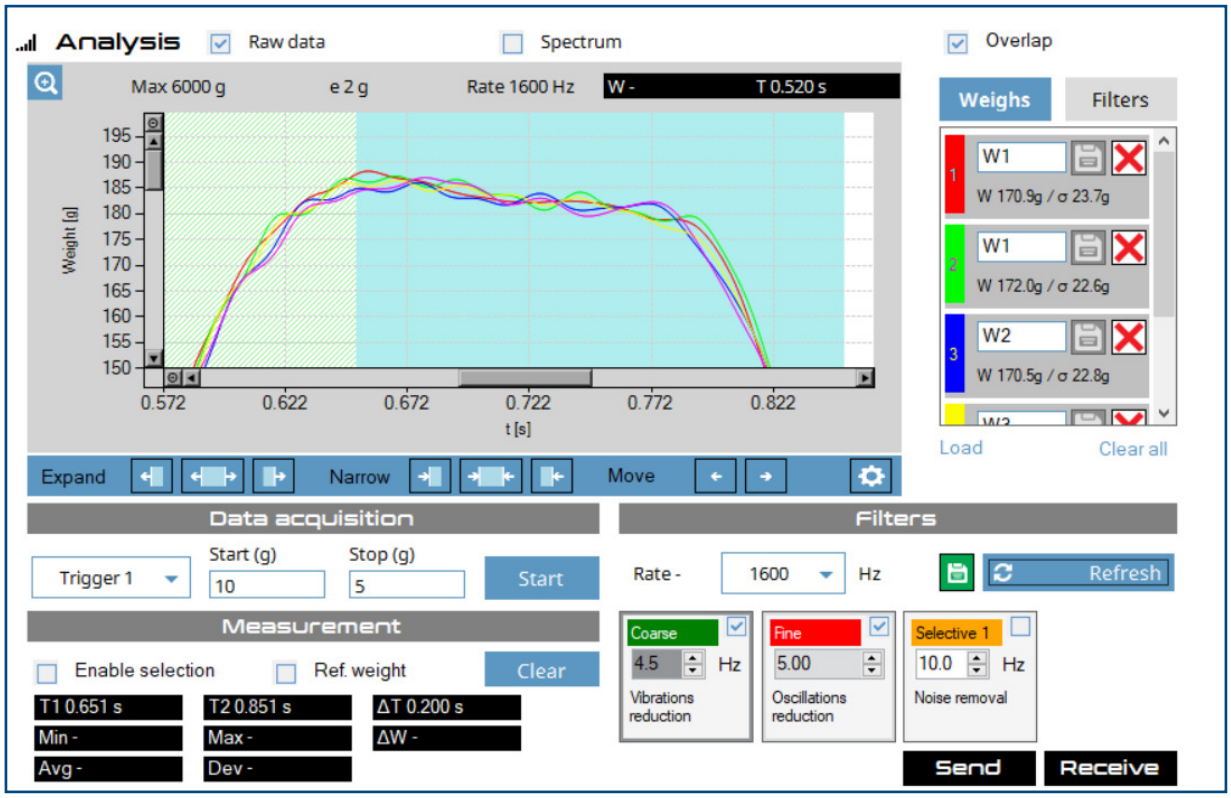
13. Select **Send**.
14. Proceed to testing.

Signal Analysis - Enable Selection

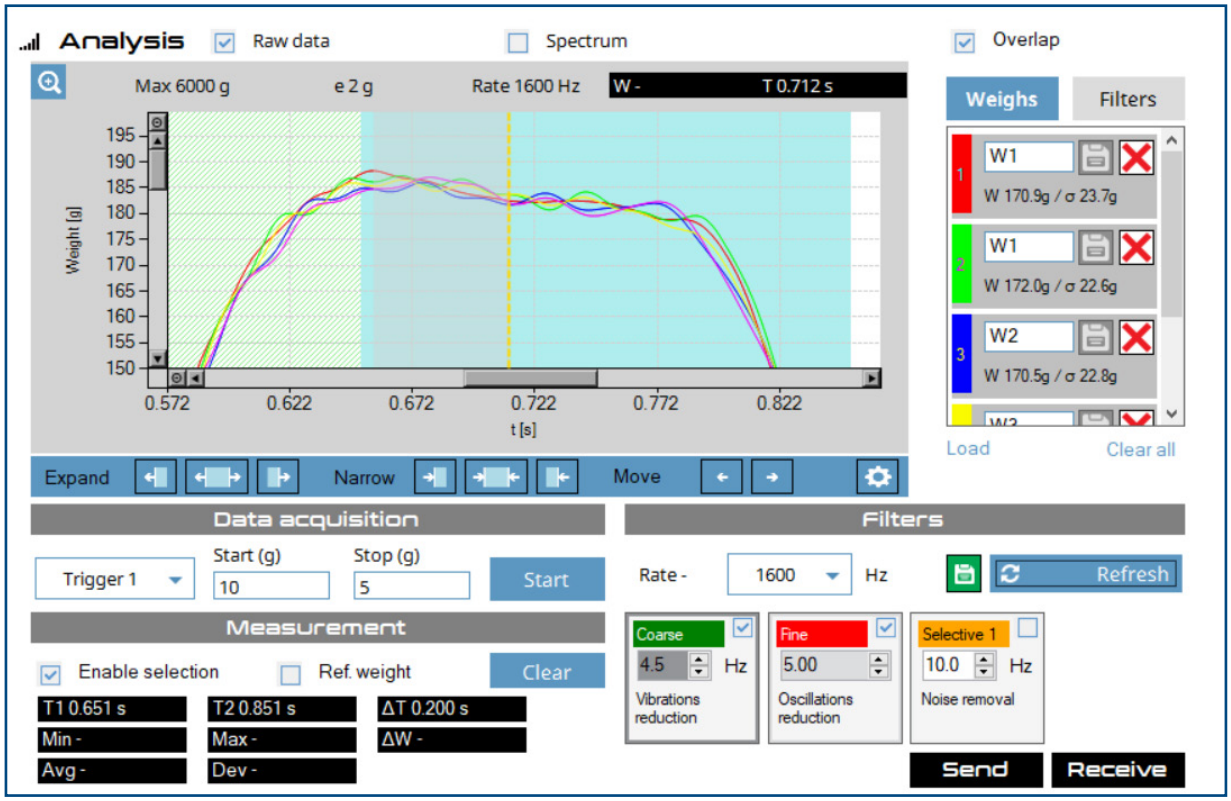
If precise adjustment is required for the measurement zone (blue area), the Enable selection tool allows you to redraw the measurement zone on the graph. The following procedure demonstrates how to use the tool to redraw the measurement zone on a signal without photocell data. This procedure is the same for data with photocells.

1. Load or process 5 data samples.
2. Enable Raw Data or Overlap mode.

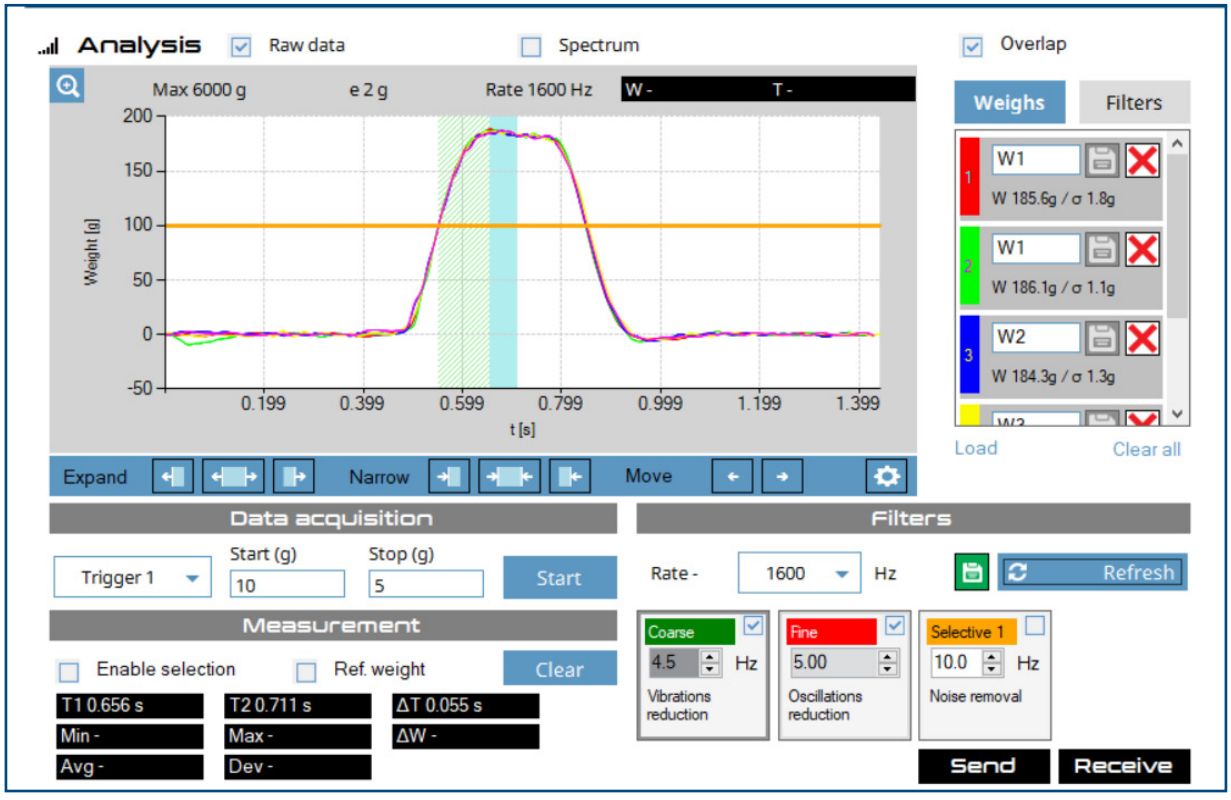
3. Roll the mouse wheel to zoom in on the desired area.
4. Use the scroll bars to adjust the view of the signal.



3. Adjust the Coarse and Fine filters.
4. Select Refresh button and observe changes to the sample signals.
5. Repeat until filters are flat as and noise free as possible.



6. If needed, enable Overlap mode.
7. View weight differences of each measurement in the Weighs column. Ideally, the weights are as close to each other as possible.
8. Adjust filters until smallest difference between weights is achieved.

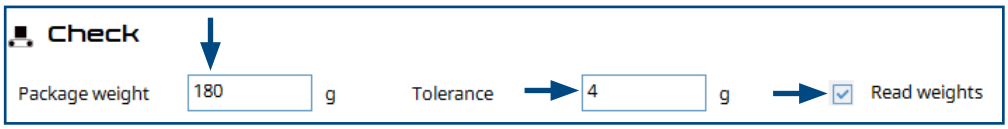


9. Select **Send**.

Testing

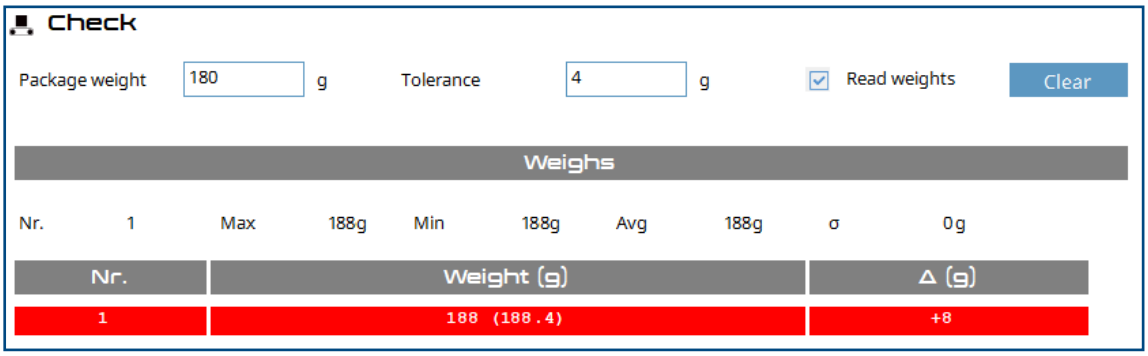
Once signal analysis is complete, it is necessary to test the configuration in the Check tab. This section allows you to process packages and review if they pass or fail testing with the applied filters and settings. Ideal packages should pass testing in the Check tab; this section aids in identifying if a Correction offset should applied to accommodate weight variances introduced by the belt (vibrations, oscillations, or noise).

1. Select **Check**.
2. Enter the ideal package weight in grams.
3. Enter the allowed tolerance weight in grams.
4. Enable Read weights.



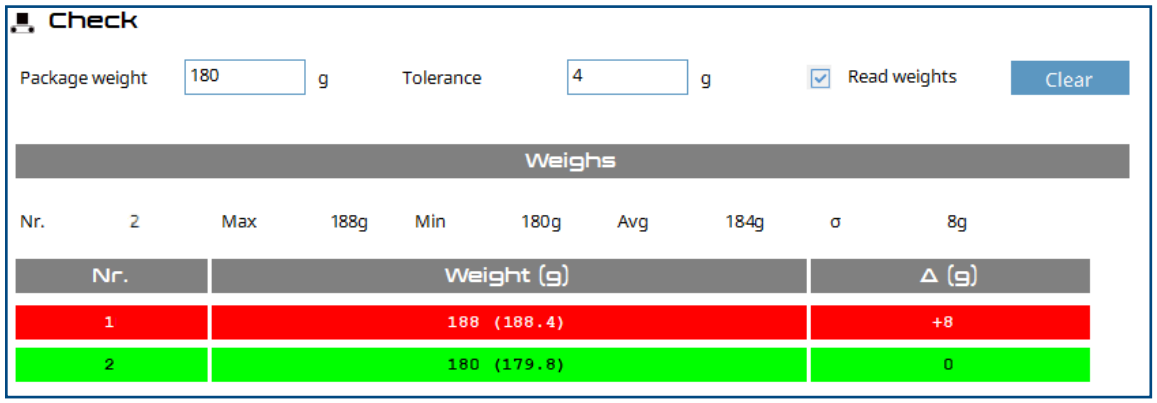
5. Process one ideal package and review results:

- If the package passes (highlights green), advance to the next step.
- If the package fails (highlights red):
  - Observe the delta value then access the Check/Settings menu from Analysis.



  - Adjust the Correction offset parameter (to account for the weight that caused the package to fail), and then Send the parameters.

  - Reprocess the package. If it passes, proceed to next step; if it fails, repeat this step until the package passes.



6. Process several ideal packages and review their results.

- If packages pass (highlight green), advance to the next step.
- If packages fail (highlight red) adjust and Send the Correction offset parameter and reprocess the packages until they pass.

7. Process several packages that are underweight and overweight (greater than the tolerance) and verify they fail.

8. If underweight or overweight packages pass, adjust and Send the Correction offset parameter and reprocess the packages until they fail.

Nr.	Weight (g)	Δ (g)
1	188 (188.4)	+8
2	180 (179.8)	0
3	180 (180.0)	0
4	180 (179.4)	0
5	234 (234.4)	+54
6	234 (234.6)	+54
7	236 (235.8)	+56
8	162 (162.4)	-18
9	162 (162.4)	-18
10	162 (162.4)	-18

There are several register pages (2020, 2021, 2022, 5017, 5018, and 5019) for the DGT1SX. Each of these pages begin with the following 16 bytes:

Table 1 - **First 16 Bytes**

Byte	Name
1	Gross weight (B3) - (*)
2	Gross weight (B2)
3	Gross weight (B1)
4	Gross weight (B0)
5	Net weight (B3) - (*)
6	Net weight (B2)
7	Net weight (B1)
8	Net weight (B0)
9	Input Status Register (B1)
10	Input Status Register (B0)
11	Command Status Register (B1)
12	Command Status Register (B0)
13	Output Status Register (B1)
14	Output Status Register (B0)
15	Page number (B1)
16	Page number (B0)

* Values can be integer value, absolute, signed, or float depending on indicator configuration.

Table 2 - **Page 2020**

Page 2020 (7E4) – Queue check weights detected:

Byte	Name
1-16	First 16 Bytes
17	General weighing counter (B3)
18	General weighing counter (B2)
19	General weighing counter (B1)
20	General weighing counter (B0) (write zero to reset)
21	Weights placed in the queue (B1)
22	Weights placed in the queue (B0) (write zero to reset)
23	Weights lost due to full queue (B1)
24	Weights lost due to full queue (B0)
25	Weight 1 (B3)
26	Weight 1 (B2)
27	Weight 1 (B1)
28	Weight 1 (B0)
29	Weight 2 (B3)
30	Weight 2 (B2)
31	Weight 2 (B1)
32	Weight 2 (B0)

Table 3 - **Page 2021**

Page 2021 (7E5) – Queue check weights detected:

Byte	Name
1-16	First 16 Bytes
17	Weight 3 (B3)
18	Weight 3 (B2)
19	Weight 3 (B1)
20	Weight 3 (B0)
21	Weight 4 (B3)
22	Weight 4 (B2)
23	Weight 4 (B1)
24	Weight 4 (B0)
25	Weight 5 (B3)
26	Weight 5 (B2)
27	Weight 5 (B1)
28	Weight 5 (B0)
29	Weight 6 (B3)
30	Weight 6 (B2)
31	Weight 6 (B1)
32	Weight 6 (B0)

Table 4 - **Page 2022**

Page 2022 (7E6) – Queue check weights detected:

Byte	Name
1-16	First 16 Bytes
17	Weight 7 (B3)
18	Weight 7 (B2)
19	Weight 7 (B1)
20	Weight 7 (B0)
21	Weight 8 (B3)
22	Weight 8 (B2)
23	Weight 8 (B1)
24	Weight 8 (B0)
25	Weight 9 (B3)
26	Weight 9 (B2)
27	Weight 9 (B1)
28	Weight 9 (B0)
29	Weight 10 (B3)
30	Weight 10 (B2)
31	Weight 10 (B1)
32	Weight 10 (B0)

The indicator at each acquisition adds the detected weight to the queue, if it is not full it increments the general weigh counter and the queue weigh counter.

If the queue is full, the acquired weight is lost and the lost weigh counter is incremented.

If a non-zero value is set in the weigh counter to reset the list to zero and a number of weights equal to this value have been entered into the queue the list is reset to zero, along with the entered weights counter and the lost weights counter, and the new weight will become the first in the list.

To reset the queue to zero use command 73. The counters, with the exception of the general counter, and the weights are reset.

The general counter is reset by command 74.

The most significant bit of each weight value is set to 1 in the case of acquisition error so it is to be considered invalid. In the case of float data format if there is an acquisition error the stored value will be negative.

All values are lost when the indicator is turned off.

Table 5 - **Page 5017**

Page 5017 (1399 hex) - Configuration check:

Byte	Name
1-16	First 16 Bytes
17	Check mode (B1)
18	Check mode (B0)
19	Threshold (B3)
20	Threshold (B2)
21	Threshold (B1)
22	Threshold (B0)
23	Offset weight detected (B3)
24	Offset weight detected (B2)
25	Offset weight detected (B1)
26	Offset weight detected (B0) (value with sign)
27	Setting time counter (B1)
28	Setting time counter (B0)
29	Average time counter (B1)
30	Average time counter (B0)

Check mode values follow:

Value	Mode
0	None
1	Pre trigger
2	Post Trigger
3	2 Photocells High (*)
4	2 Photocells Low (*)

* High/Low is the status of the digital input when the photocell is obstructed.

Setting time counter:

- Pre trigger mode: number of ADC conversions from weight passes threshold to the instance of the starting weight average calculation
- Post trigger mode: number of ADC conversions from the end of weight average calculation to the instance when the weight falls below the threshold
- 2 photocells mode: percentage data discarded before second photocell is compared to the data between the two photocells. The value is a percent with two decimals.

Average time counter:

- Pre/post trigger mode: number of ADC conversions in which average weight is calculated.
- 2 photocells mode: percentage of data used for weight average calculation compared to that between the 2 photocells. The value is a percent with two decimals.

To set the data, write values to the same positions and use the WRITE_SETUP command (27) with parameter 1 equal to 5017.

To make the changes permanent use the WRITE_FLASH command (28).

Table 6 - **Page 5018**

Page 5018 (139A hex) - Configuration check:

Byte	Name
1-16	First 16 Bytes
17	Tolerance band (B3)
18	Tolerance band (B2)
19	Tolerance band (B1)
20	Tolerance band (B0)
21	Weight factor detected (B3) (6 decimals)
22	Weight factor detected (B2)
23	Weight factor detected (B1)
24	Weight factor detected (B0)
25	Counter for auto zeroing of weighing list (B1). 0 (disabled) ÷ 10
26	Counter for auto reset weigh list (B0).
27	Reference weight calculation mode (B1)
28	Reference weight calculation mode (B0)
29	Weight reference setting time counter (B1)
30	Weight reference setting time counter (B0)
31	Weight reference average time counter (B1)
32	Weight reference average time counter (B0)

Tolerance band (tolerance mode): the tolerance the weight to be acquired must remain in.
Detected weight factor: factor of the acquired weight subtracted by the offset.
Counter for auto zeroing weigh list, when the number of queued weights reaches this value, the list is zeroed.

Reference weight calculation modes:

Value	Mode
0	None
1	Post end trigger
2	Pre start trigger

To set the data, write values to the same positions and use the WRITE_SETUP command (27) with parameter 1 equal to 5018.
To make the changes permanent use the WRITE_FLASH command (28).

Table 7 - **Page 5019**

Page 5019 (139B hex) - Configuration Check:

Byte	Name
1-16	First 16 Bytes
17	Automatic zero range (B3)
18	Automatic zero range (B2)
19	Automatic zero range (B1)
20	Automatic zero range (B0)
21	Automatic zero intervention time interval (sec) (B1)
22	Automatic zero intervention time interval (sec) (B0)
23 - 32	-

To set the data, write values to the same positions and use the WRITE_SETUP command (27) with parameter 1 equal to 5019.
To make the changes permanent use the WRITE_FLASH command (28).

Table 8 - **Registers 42801 - 42818**

Check parameters:

Register	Description
42801	Check mode
42802	Threshold (H)
42803	Threshold (L)
42804	Detected weight offset (H)
42805	Detected weight offset (L) (value with sign)
42806	Setting time counter
42807	Average time counter
42808	Tolerance band (H)
4209	Tolerance band (L)
42810	Detected weight factor (H) (6 decimal places)
42811	Detected weight factor (L)
42812	Counter for auto zeroing of weighing list. 0 (disabled) ÷ 10
42813	Reference weight calculation mode
42814	Reference weight setting time counter
42815	Reference weight average time counter
42816	Automatic zero range (H)
42817	Automatic zero range (L)
42818	Automatic zero time interval (sec)

Check Modes:

Value	Mode
0	None
1	Pre Trigger
2	Post trigger
3	2 photocells high (*)
4	2 photocells low (*)

* High/Low is the level of the digital input when the photocell is obstructed.

Setting time counter:

- Pre trigger mode: number of ADC conversions from weight passes threshold to the instance of the starting weight average calculation
- Post trigger mode: number of ADC conversions from the end of weight average calculation to the instance when the weight falls below the threshold
- 2 photocells mode: percentage data discarded before second photocell is compared to the data between the two photocells. Value in percent with two decimals.

Average time counter:

- Pre/post trigger mode: number of ADC conversions in which average weight is calculated.
- 2 photocells mode: percentage of data used for weight average calculation compared to that between the 2 photocells. Value in percent with two decimals.

Tolerance band (tolerance mode): the tolerance the weight to be acquired must remain in.

Detected weight factor: multiplicative factor on acquired weight subtracted by offset

Counter for auto zeroing weigh list: when the number of queued weighs reaches this value the list is zeroed.

Reference weight calculation mode:

Value	Mode
0	None
1	Post End trigger
2	Pre Start trigger
3	2 photocells high (*)
4	2 photocells low (*)

* High/Low is the level of the digital input when the photocell is obstructed.

To save the configuration, use command 28.

Table 9 - **Registers 42821 - 42844**

Queue check weights detected:

Register	Description
42821	General weighing counter (H)
42822	General weighing counter (L) (write zero to reset)
42823	Weights entered in queue (write zero to reset queue)
42824	Weights lost due to full queue
42825	Weight 1 (H)
42826	Weight 1 (L)
42827	Weight 2 (H)
42828	Weight 2 (L)
42829	Weight 3 (H)
42830	Weight 3 (L)
42831	Weight 4 (H)
42832	Weight 4 (L)
42833	Weight 5 (H)
42834	Weight 5 (L)
42835	Weight 6 (H)
42836	Weight 6 (L)
42837	Weight 7 (H)
42838	Weight 7 (L)
42839	Weight 8 (H)
42840	Weight 8 (L)
42841	Weight 9 (H)
42842	Weight 9 (L)
42843	Weight 10 (H)
42844	Weight 10 (L)

The indicator at each acquisition adds the detected weight to the queue, if it is not full, and increments the general weigh counter and the queue weigh counter, if the queue is not full.

If the queue is full, the acquired weight is lost and the lost weigh counter is incremented.

If a non-zero value is set in the counter for zeroing the list and number weights equal to this value have been entered in the queue the list is zeroed, along with the entered weight counter and the lost pound counter, and the new weight will become the first in the list.

To zero the queue write zero in register 42823, the counters, with the exception of the general counter (42821 and 42822), and the weighings are zeroed. Only the value zero can be written.

The queue can also be zeroed with the appropriate command (73).

The general counter is zeroed by writing the zero value to register 42822 or by means of command 74.

The most significant bit of each weight value is set to 1 in the case of an error in the acquisition so it is to be considered invalid.

All values are lost when the indicator is turned off.

Check DGT1SX Firmware:

Check weigh mode on DGT1SX requires firmware 1.19.00 or greater.

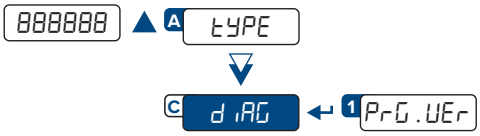
Visit www.diniargeo.com to review DGT1SX "Last Firmware Revision News" and determine the most current firmware version.

1. Restart the DGT1SX.

2. Press and hold ▲ when 888888 displays.

3. Release the ▲ button.

4. Select PrG.UEr from the diAG menu.



5. Firmware version displays on DGT1SX.

Update Firmware

Requirements:

- Windows 10 or greater computer
- Micro-USB cable
- Firmware update tool

To update a DGT1SX with older firmware without check weigh mode, contact sales to purchase new firmware.

1. Download the firmware update tool.

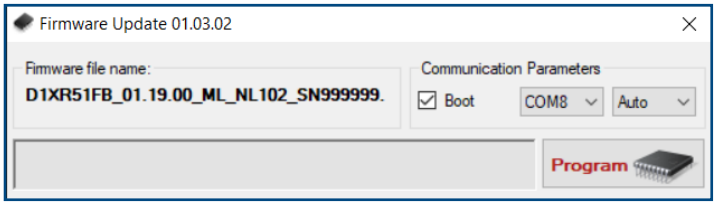
2. Connect the DGT1SX to a Windows computer.

3. Launch the firmware update executable.

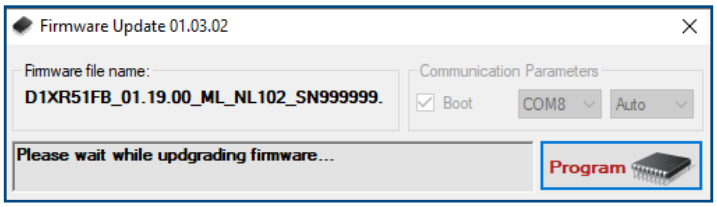
4. In the firmware updater, select the COM port used by the computer. If needed, check Windows device manager to verify which COM port is used.

5. Enable Boot check box.

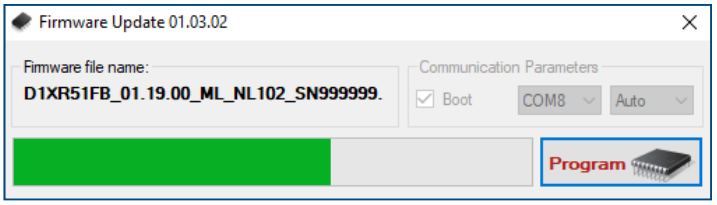
6. Select the **Program** button.



7. The firmware update software briefly processes the update and then begins to update the firmware.

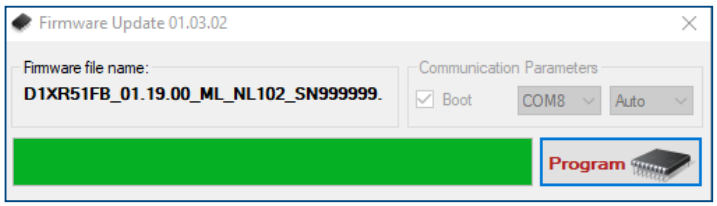


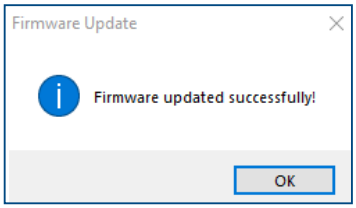
8. The firmware progress bar fills as the instrument is updated.



9. When firmware has been updated, the progress bar is filled and a success prompt displays.

10. Select OK to close the pop-up window.

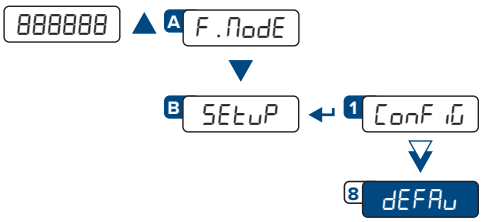




11. Unplug the USB cable from the DGT1SX.

12. Power cycle the DGT1SX.

13. Default the device after the firmware upgrade is complete.



14. Setup the DGT1SX as described in DGT1SX User Manual.

Notes

DINI ARGEO
Scales - Weighing systems
A RICE LAKE WEIGHING SYSTEMS COMPANY

HEAD OFFICE
Via Della Fisica, 20
41042 Spezzano di Fiorano, Modena - Italy
Tel. +39 0536 843418 - Fax +39 0536 843521

SERVICE ASSISTANCE
Via Dell'Elettronica, 15
41042 Spezzano di Fiorano, Modena - Italy
Tel. +39 0536 921784 - Fax +39 0536 926654

www.diniargeo.com

Stamp of the authorized service centre

DGT15X-CHECK_0119_23.08_EN_U
Rev. 14.03.2023