AnDOP

USERS MANUAL

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1 Introduction

1.1 Purpose

The purpose of this document is to describe how to use the "Device Operating Program" AnDOP application running on Android tablets and Smartphone's having an Android based operating system.

The AnDOP application is a tool for calibrating the H&B load cell digital amplifier devices and making detailed recordings of load cell data streaming.

The "Device Operating Program" AnDOP Android application software will hereafter be referred to as the AnDOP app.

Android devices having Android version 4.0 and later is supported by the AnDOP app.
The AnDOP app has of today successfully been tested on the following devices:

- Samsung Galaxy Tab 2 10.1
- Samsung Galaxy Tab 2 7.0
- Samsung Galaxy Tab 3 7.0
- Samsung Galaxy III
- Samsung Galaxy III Mini
- Nexus 7 (2013 edition)
- HTC One Mini

The detailed functionality of the different H&B device command parameters used in the AnDOP app will not be explained in this document. The commands are described in details in other documents covering the functionalities of the different H&B devices.

A detailed description of the command parameters can also be found on this link:

http://hbdn.haubac.dk/manual.php?pagename=ALL

As the functionality of the AnDOP app is a subset of the DOP4 Windows PC application, it's recommended to use the DOP4 Windows application for more complex H&B device operations.

A link to the DOP4 Windows application can be found here:

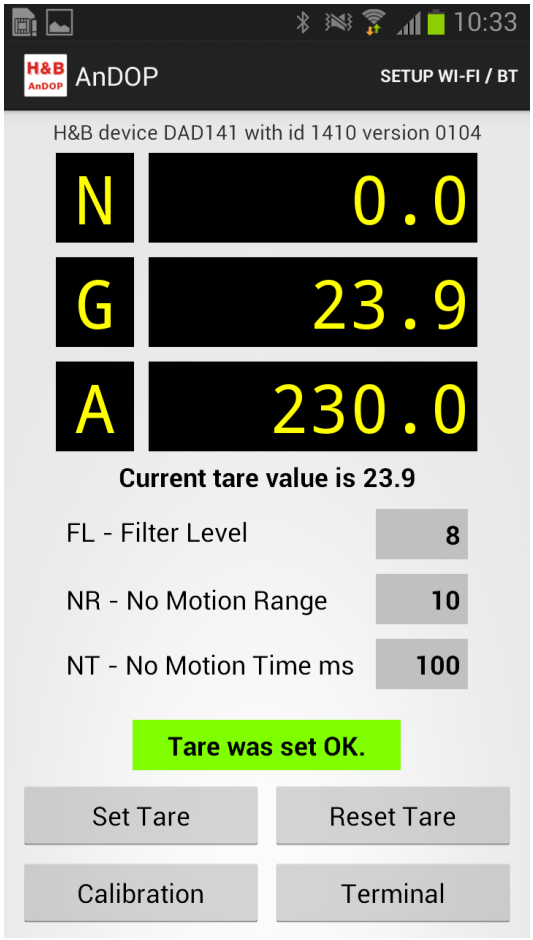
http://haubac.com/haubac.asp?p1=167

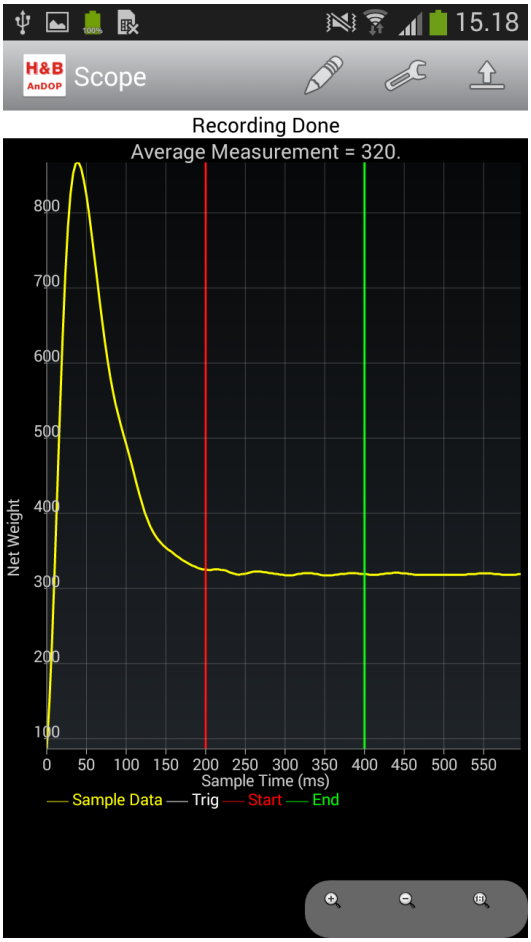
1.2 Overview

The AnDOP app is a tool for calibrating, analyzing and fine tuning measurement parameters for a number of the Hauch & Bach digital amplifier devices for weighing and force measurements.

Only H&B devices having Serial RS 232/422/485 or having support for serial communication over Ethernet can be used for communication, such as the DAS72.1, DAD141.1, WCN-E/H, LDM 88, the LDU series LDU 68.x, LDU69.1 and LDU 78.1.

Communication Interfaces such as CANopen, Modbus and Profibus are not supported by the AnDOP app.





After a disclaimer is accepted by the user and the communication interface is set up, the Main page with its functionality can be reached.

From the Main page, load cell weight values can be monitored.
Tarring can be performed and special Calibration and Terminal pages can be opened.

The Scope page covering functionality for load cell data recording to scope can also be reached from the Main page. Analyzing load cell data recordings can be done by examination of the scope object containing the graphical representation of the data recorded.

From the Main page, dialogs for setup and changing the communication parameters for communication with an H&B device via Wi-Fi or Bluetooth can be reached.

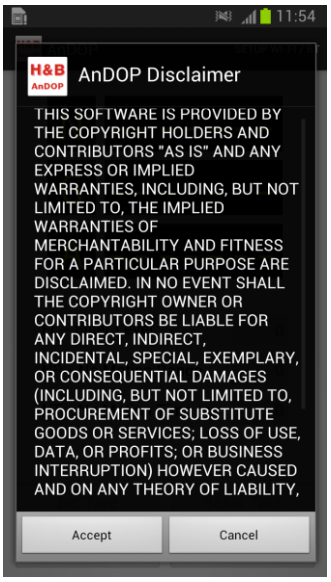
2 The First Startup

When the AnDOP app is started first time after installation the user will be presented by a disclaimer dialog.

The user has to accept the terms described in the disclaimer text to continue to the communication setup dialogs.

The disclaimer is accepted by **tapping** on the Accept button.

If the disclaimer is not accepted by **tapping** on Cancel button, the AnDOP application will be terminated.

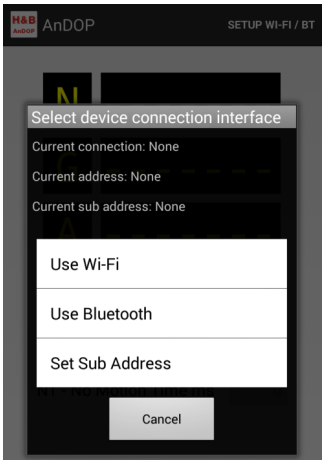


After the disclaimer is accepted the dialog for selecting the preferred communication type and optional selection of sub address to be sent with an initial OP - Open Device command is opened.

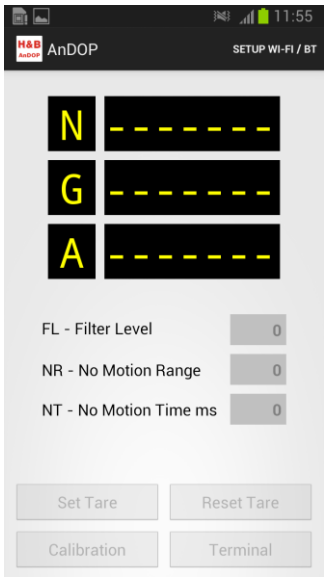
From the dialog it can be selected if the current communication should be Wi-Fi or Bluetooth and if sub addresses should be used.

The dialog can also be selected from the main page by **tapping** on the text field "SETUP WI-FI / BT" in the upper right corner.

For details on the device communication setup refer to the section covering this item.



If no communication interface is selected the main page will remain empty as shown on the figure to the right.



3 Setup Device Communication

As mentioned earlier, only H&B devices having Serial RS 232/422/485 or having support for serial communication over Ethernet can be used for communication, such as the DAS72.1, DAD141.1, WCN-E/H, LDM88 and the LDU series LDU 68.x, LDU69.1 and LDU 78.1.

Communication between an H&B device and the Android device on which the AnDOP app is installed can be done using either Wi-Fi interface or Bluetooth interface which must be available on the Android device.

When using Wi-Fi interface for communication, the H&B device for communication must be connected to an "Ethernet to serial port RS 232/422/485" adaptor which is connected to a LAN interface again having connection to a Wi-Fi router
The socket address for the Ethernet adaptor must match a socket address from the socket address list in the AnDOP app.
A lot of different Ethernet adaptors can be found on the market.
Setup of socket addresses and other internal parameters for the adaptor, will not be covered in this manual as they normally are covered by the manual for the Ethernet adaptor.

The DAD141.1 device has directly Ethernet connections support so no adaptors here. Just connect the DAD141.1 device directly to a LAN interface using an Ethernet cable.

When using Bluetooth interface for communication, the H&B device for communication must be connected to a Bluetooth to serial port RS 232 adaptor.
The baud rate for the Bluetooth adaptor must match the baud rate for the connected H&B device.
A lot of different Bluetooth adaptors can be found on the market.
Setup of baud rate and other internal parameters for the adaptor, will not be covered in this manual as they normally are covered by the manual for the Bluetooth adaptor.

From the "Select device connection interface" dialog the preferred communication method can be selected.
Available communication methods are Wi-Fi interface and Bluetooth interface.

The dialog is shown right after the disclaimer is accepted, but can also be reached from the main page by **tapping** on the menu text field "SETUP WI-FI / BT".

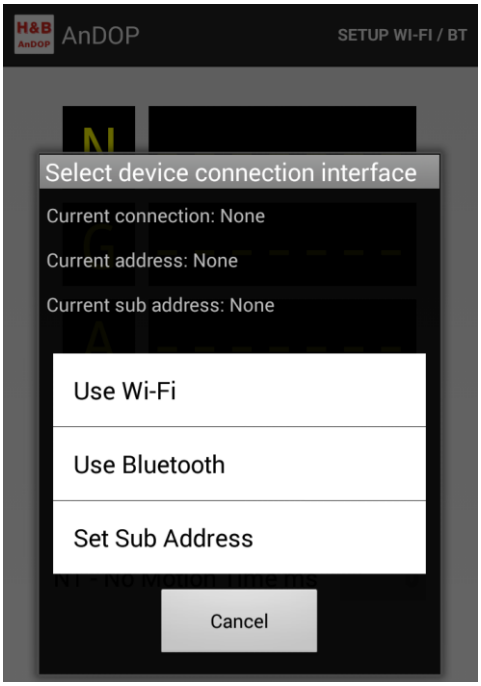
If a device communication connection has been established earlier, information on the current connection can also be found in the top of this dialog.

Tap on the "Use Wi-Fi" field if communication with an H&B device is to be established using Wi-Fi.

Tap on the "Use Bluetooth" field if communication with an H&B device is to be established using Bluetooth.

Tap on the "Set Sub Address" field if sub addresses are to be used.

Tap on Cancel button to return to Main page.



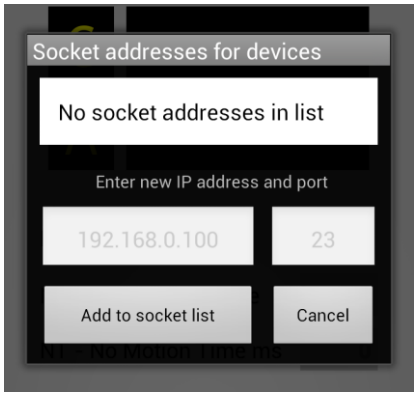
In the following sections the selection of communication interface will be described in details.

3.1 Setup Wi-Fi Connection

This section describes how to add socket addresses to the AnDOP socket address list and how to connect to an Ethernet adaptor using one of these socket addresses. Socket addresses are used when connection to an H&B device using Wi-Fi.

When selecting the "Use Wi-Fi" field in the "Select device connection interface" dialog, the device socket address setup dialog will be opened.

Initially the socket address list is empty as shown on the figure to the right.



By **tapping** on the "Add to socket list" button, the hint IP address and port number will be added to the socket address list as a new socket address.

Currently the hint IP address text value and hint port number value is the default socket address assigned to the DAD 141.1 H&B device namely address 192.168.0.100:23.

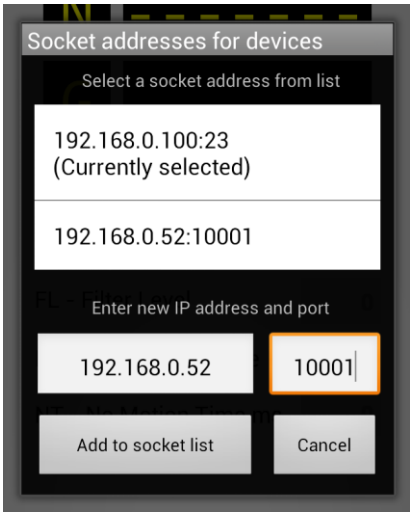
By **tapping** on one of the addresses in the socket address list, the selected address will be used for connection to an H&B device connected to an adaptor assigned to that address for the LAN interface.

After the socket address has been selected, the socket address dialog will be closed and the user will return to the Main page of the AnDOP app where a connection to the adaptor being assigned to the selected socket address will be attempted.

A socket address can be removed from the socket address list by **long pressing** on the socket address field of the address to be removed.

Tap on Cancel button to return to Main page.

More addresses can be added to the socket address list. Just enter a valid IP address into the IP address value field and a valid port number into the port number value field.



Tap the "Add to socket list" button and the address if valid will be added to the socket address list.

By **tapping** on the new added socket address, the address will be selected as the currently selected address as mentioned earlier in this section.

By reentering the device socket address setup dialog, another socket address can be selected.
Also the currently selected socket address can be seen from the "Socket address" list.

3.2 Setup Bluetooth Connection

This section describes how to find and select Bluetooth adaptors to be used for communication between the AnDOP app and the H&B device to be connected.

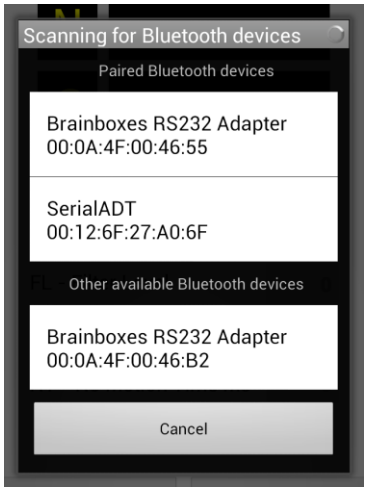
When selecting the "Use Bluetooth" field in the "Select device connection interface" dialog, the "Paired Bluetooth devices" selection dialog will be opened.

The "Paired Bluetooth devices" list shows the currently paired Bluetooth devices/adaptors

By **tapping** on one of the Bluetooth adaptor items in the "Paired Bluetooth devices" list, the selected Bluetooth device will be used for communication between the AnDOP app and the H&B device to be connected.

After a Bluetooth adaptor has been selected, the "Paired Bluetooth devices" selection dialog will be closed and the user will return to the Main page of the AnDOP app where a connection to the selected Bluetooth adaptor will be attempted.

By **tapping** on the "Find Bluetooth devices" button, the AnDOP app will start searching for available but not paired Bluetooth devices.

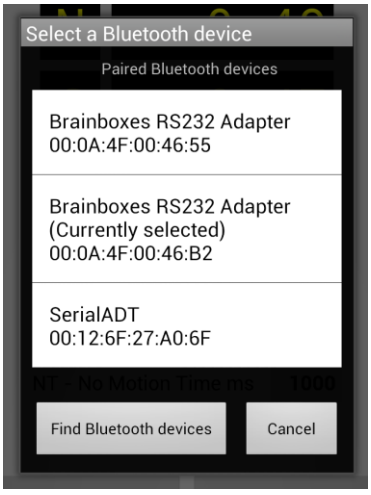


When the search for available Bluetooth devices is done, the found Bluetooth devices will be shown in the "Other available Bluetooth devices" list.

By **tapping** on one of the Bluetooth adaptor items in the "Other available Bluetooth devices" list, the selected Bluetooth device will be used for communication between the AnDOP app and the H&B device to be connected.

Normally a pin code of "0000" or "1234" is to be entered when pairing a Bluetooth device.

By reentering the "Select a Bluetooth device" dialog, another Bluetooth adaptor can be selected.



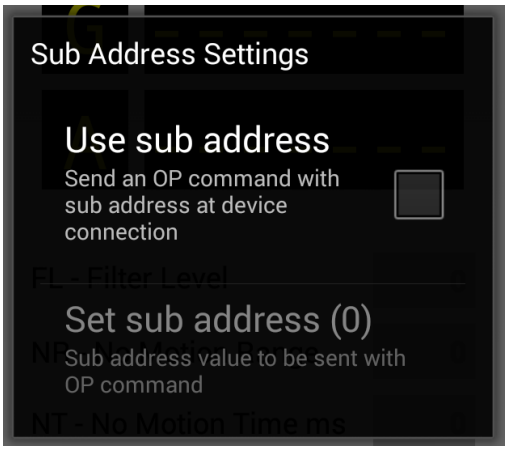
Also the currently selected Bluetooth devices can be seen from the "Paired Bluetooth devices" list.

Tap on Cancel button to return to Main page.

3.3 Setup Sub Address Settings

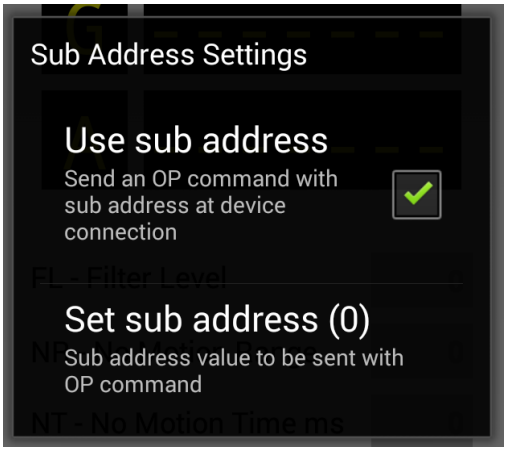
This section describes how to select if a sub address value should be sent with an OP - Open Device command when initiating the connection of an H&B device.

When selecting the "Set Sub Address" field in the "Select device connection interface" dialog, the "Sub Address Settings" selection dialog will be opened.



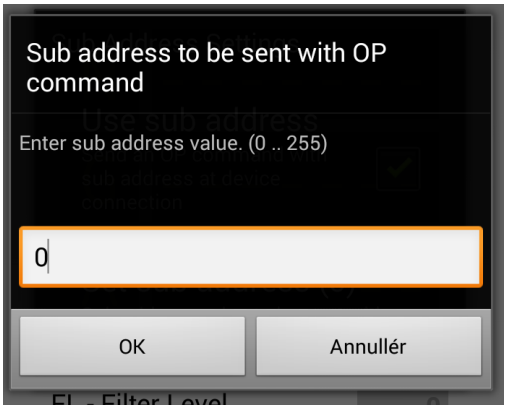
Default the use of sub addresses is set to none. In this case no OP - Open Device command will be sent to to the currently selected H&B device at communication setup.

Tap on the "Use sub address" field to select if sub addresses is to be sent with an OP - Open Device command when an H&B device is to be initiated →



Tap on the "Set sub address" field to select the sub address value to be sent with an OP - Open Device command when an H&B device is to be initiated →

Tap on the value field to enter the sub address value to be sent with an OP - Open Device command when an H&B device is to be initiated →



An OP - Open Device command can also be sent manually with a sub address parameter value from the Terminal page after connection is established.
Refer to the section describing the Terminal page.

4 Main Page

When starting the AnDOP app after previously having selected a communication interface adaptor connected to an H&B device, the AnDOP app will attempt to connect to that same device again at every AnDOP startup until another communication adaptor/device is selected.

The user may get a reminder / warning of turning on the Wi-Fi interface or Bluetooth interface during the startup process if not already turned on.
When a connection to an H&B device is established the Main page will look like the figure below.

Tap on the "SETUP WI-FI / BT" text field for entering the "Select device connection interface" dialog→

Name. id and version of the connected H&B device→

Current net weight value. **Tap** fields to enter scope function for recording net weight values→

Current gross weight value. **Tap** fields to enter scope function for recording gross weight values→

Current average weight value if average values are supported by the currently connected H&B device. **Tap** fields to enter scope function for average measurement→

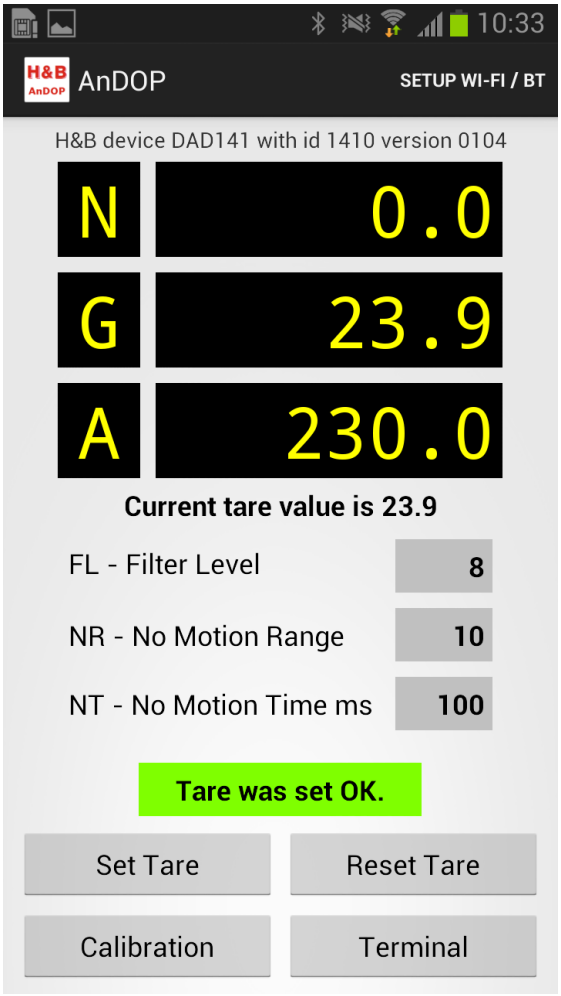
Current Filter Level, No Motion Range and No Motion Time command parameter values read from the connected H&B device. Can be changed if tarring fails due to unstable load cell scale.

Tap on value fields to change the current command parameter values→

Status field. **Tap** on field to clear→

Buttons for setting and resetting the tare value. **Tap** to select→

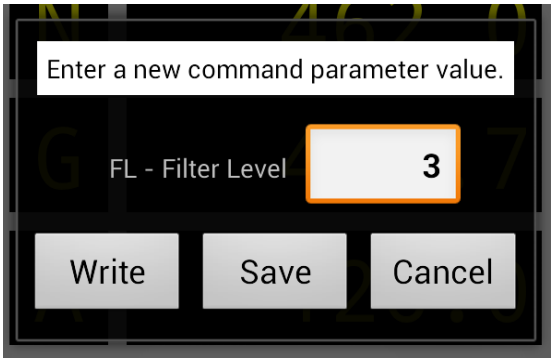
Buttons for entering Calibration and Terminal dialogs. **Tap** to select→



Example of the edit dialog opened by tapping on FL, NR or NT value fields. In this case, the Filter Level parameter edit dialog

Tap on value field to edit parameter value →

Tap on Write button to write the value to the H&B device. Value will not be saved for next power on for the device.
Tap on Save button to save the value to the EEPROM of the H&B device.
Tap on Cancel button to return to the Calibration page→



5 Calibration Page

When **tapping** on the Calibration button on the Main page, the Calibration page is opened. The Calibration page will look like the figure below.

Tap on the "SET DECIMAL POINT" text field for entering the "Set decimal point" dialog →

Name. id and version of the connected H&B device →

Current net weight value →

Current A/D sample value →

Current Traceable Access Code value →

Current Filter Level, No Motion Range and No Motion Time command parameter values read from the connected H&B device.
Can be changed if calibration fails due to unstable load cell scale.

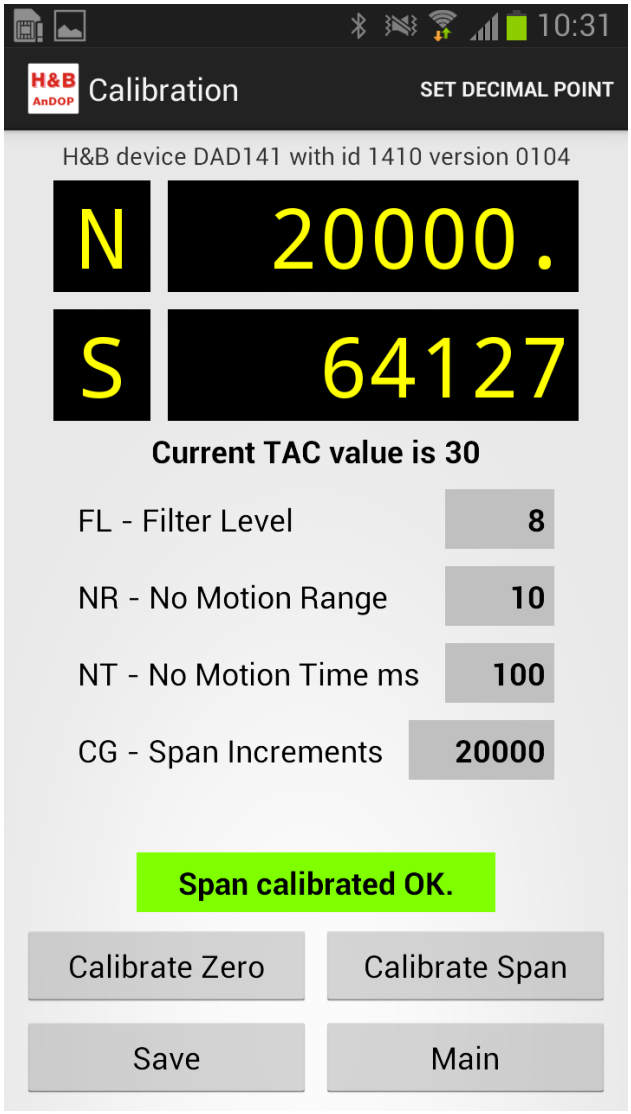
Tap on value fields to change the current command parameter values→

Current calibration span (gain) value.
Tap on value field to change current value →

Status field. **Tap** on field to clear →

Buttons for calibrating Zero and Span values.
Tap to select →

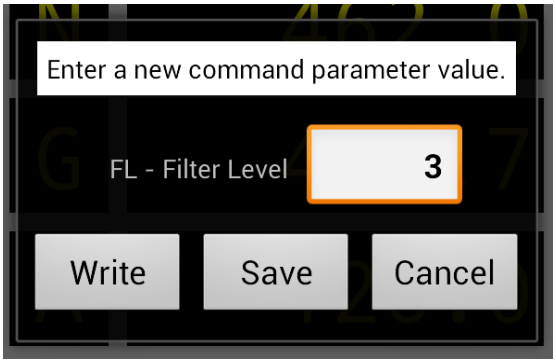
Buttons for saving Calibration and return to Main page. **Tap** to select →



Example of the edit dialog opened by tapping on FL, NR or NT value fields. In this case, the Filter Level parameter edit dialog

Tap on value field to edit parameter value →

Tap on Write button to write the value to the H&B device. Value will not be saved for next power on for the device.
Tap on Save button to save the value to the EEPROM of the H&B device.
Tap on Cancel button to return to the Calibration page →



5.1 Calibrate Zero

When **tapping** on the Calibrate Zero button on the Calibration page, the Zero value calibration procedure is started.

The user will be asked to check and confirm if load cell scale is empty before the calibration procedure continues.

If the zero calibration was performed successfully the text "Zero calibrated OK" will be shown in status field. If the calibration went wrong an error message will be shown in the status field.

If the Zero calibration went wrong it can be due to an unstable load cell scale.

The parameters Filter Level, No Motion Range and No Motion Time can be adjusted, so the calibration can be performed successfully.

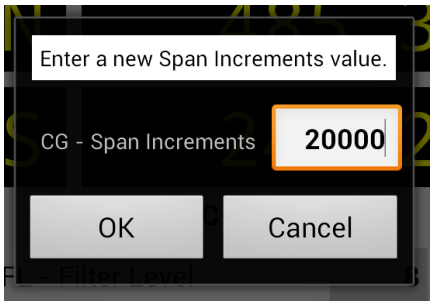
The Zero calibration will only remain as long as the H&B device is powered on if not the calibration is saved using the Save button before the H&B device is powered off.

5.2 Calibrate Span

Before a Span calibration starts, it might be necessary to adjust the calibration span (gain) value. From the Calibration page, t**ap** on the Span Increments value field to open the Change Span Increments dialog.

By **tapping** on the on "CG – Span Increments" value field, the Span increments parameter value can be edited.→

Change the current value and **tap** on the OK button to accept the new Span Increments value.→
Tap on Cancel button to return to calibration page.→



When **tapping** on the Calibrate Span button on the Calibration page, the Span value calibration procedure is started.

The user will be asked to check and confirm if load cell scale is loaded with correct weight value before the calibration procedure continues.

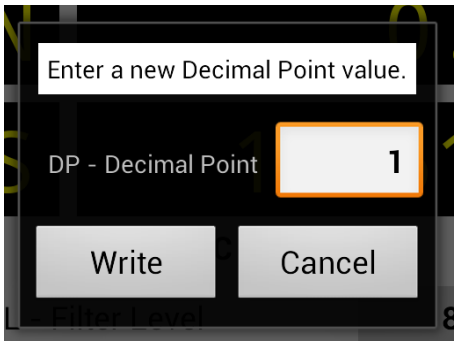
If the Span calibration was performed successfully the text "Span calibrated OK" will be shown in status field. If the calibration went wrong an error message will be shown in the status field.

The parameters Filter Level, No Motion Range and No Motion Time can be adjusted, so the calibration can be performed successfully.

The Span calibration will only remain as long as the H&B device is powered on if not the calibration is saved using the Save button before the H&B device is powered off.

5.3 Decimal Point

Tap on the "SET DECIMAL POINT" text field on top of the Calibration page for entering the "Set decimal point" dialog.



By **tapping** on the on "DP- Decimal Point" value field, the decimal point parameter value can be edited.→

Tap on Write button to write the value to the H&B device. Value will not be saved for next power on for the device.→
Tap on Cancel button to return to Calibration page.→

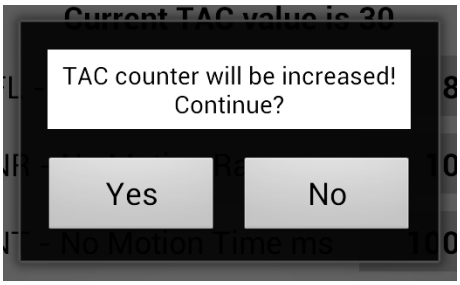
The Decimal Point setting will only remain as long as the H&B device is powered on if not the setting is saved using the Save button before the H&B device is powered off.

By **tapping** on the Save calibration button on the Calibration page, the decimal point value will be saved to the EEPROM of the H&B device.

5.4 Save Calibration

When **tapping** on the Save button on the Calibration page, the Save calibration parameters procedure will be started.

By **tapping** on the on the Save button, a warning "TAC counter will be increased" dialog will be opened→



Tap on Yes button to accept that the TAC counter will be increased by one.
The previously performed calibration will be saved to the EEPROM of the H&B device.

Tap on No button to cancel the Save calibration procedure and return to Calibration page.

6 Terminal Page

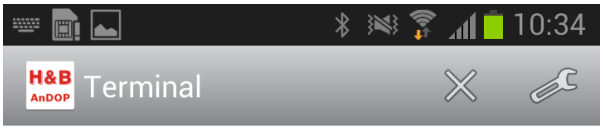
When **tapping** on the Terminal button on the Main page, the Terminal page is opened.

From the Terminal page, H&B device command parameter values can be entered and send to the connected H&B device.

All valid commands are accepted as the entered Command Request is send unfiltered as an ASCII string to the connected H&B device. So from this page, command parameters can be read, written and saved depending on the format of the sent command request string.

The Terminal page will look like the figure below.

Tap on the CLEAR symbol to clear Command Response window→
Tap on the SETTINGS symbol to setup behavior for the Terminal page→



H&B device DAD141 with id 1410 version 0104

Tap on Command Request value field to clear and enter a command request string value→
Tap on Send button to send command request string value to connected H&B device →

The Command Response window is showing the response strings received from the connected H&B device→
Behavior of the Command Response window can be changed from the Terminal Settings dialog by **tapping** on the SETTINGS symbol.

Remove keyboard for getting more space in the Command Response window.

Clear the Command Response window by **tapping** on CLEAR symbol.

The Command Response window will be cleared automatically after 400 entries.

Tapping on the "Done" button will act as tapping on the Send button and remove the keyboard→

A detailed description of the valid command parameters can be found on this link:

http://hbdn.haubac.dk/manual.php?pagename=ALL

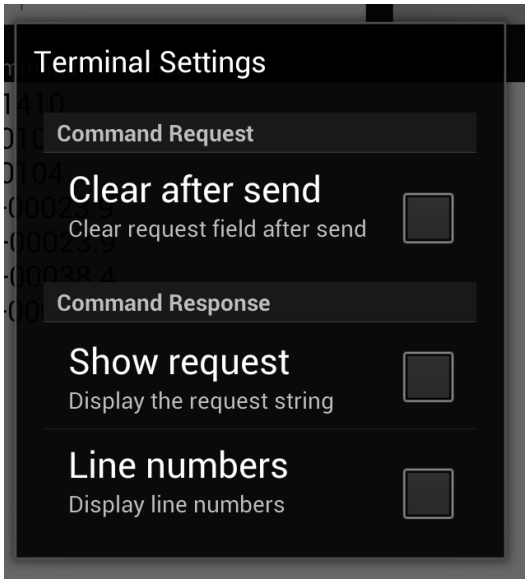
6.1 Terminal Page Settings

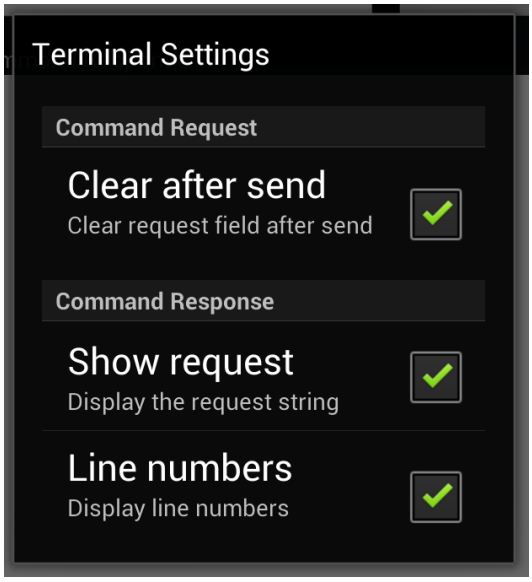
Tap on the SETTINGS symbol on top of the Terminal page for entering the "Terminal Settings" dialog.

Tap on the "Clear after send" check box to set if Command Request text field should be cleared when Send button is activated. →

Tap on the "Show request" check box to set if Command Request text field should be shown in the Command Response window after sent. →

Tap on the "Line numbers" check box to set if line numbers should be added to the Command Response windows. →





Tap outside "Terminal Settings" dialog or select Back button to return to the Terminal page.

7 Scope Page

By **tapping** on the weight display fields on the Main page, the Scope page will be opened.
The behavior of the Scope page will depend on the display field tapped and the type of H&B device currently connected.

If the Net or Gross value display on the Main page is **tapped**, the Scope page will be opened in "Record Net/Gross" values mode.

If the Average value display on the Main page is **tapped**, the Scope page will be opened in "Average measurement" mode.

Some H&B devices have extended re-trigger checkweigher commands which will be reflected in the Scope page by having capability of showing more scope measurements lines.

Tap on the EDIT symbol to edit checkweigher command values →
Tap on the SETTINGS symbol to setup behavior for the Scope page→
Tap on the RECORD symbol to start recording streamed data from scale→
Recording status line→

Long Press on Scope picture or **tap** on RECORD symbol to clear screen and start new recording→

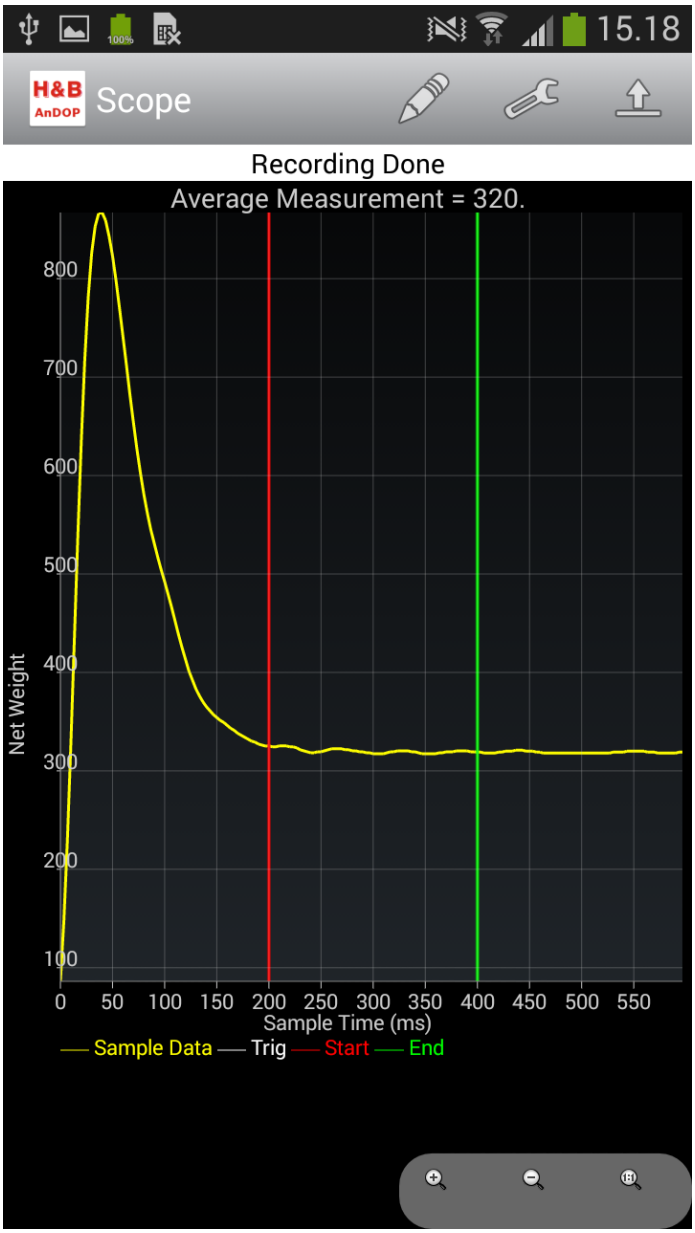
Swipe on Scope picture to pan around→

Recording time can be set from Scope Settings dialog.

Recording time in milliseconds shown on X-axis→

Scope lines explained→

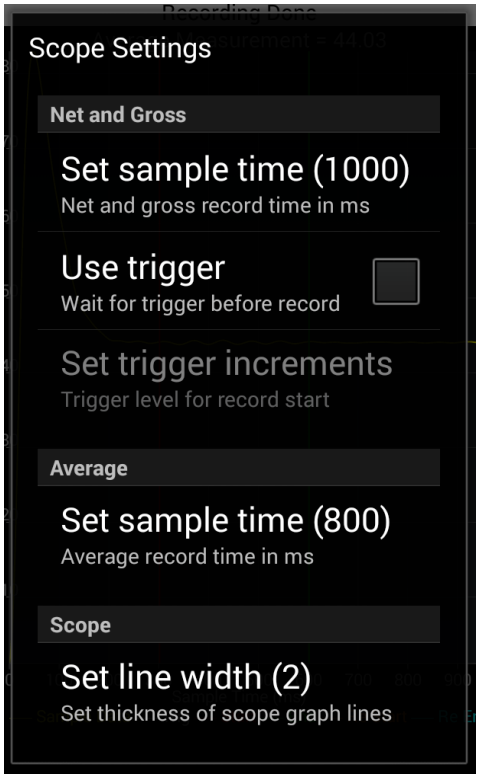
Tap on the buttons in the zoom group to zoom in and out on Scope picture →



7.1 Scope Settings

Tap on the SETTINGS symbol on top of the Scope page to enter the "Scope Settings" dialog.

The Scope Settings is grouped with settings for "Net and Gross" recordings in one group and settings for "Average measurements" in another group.



Tap on the "Set sample time" text field to change the net and gross recording time. See the figure below. The current value is shown next to the text→

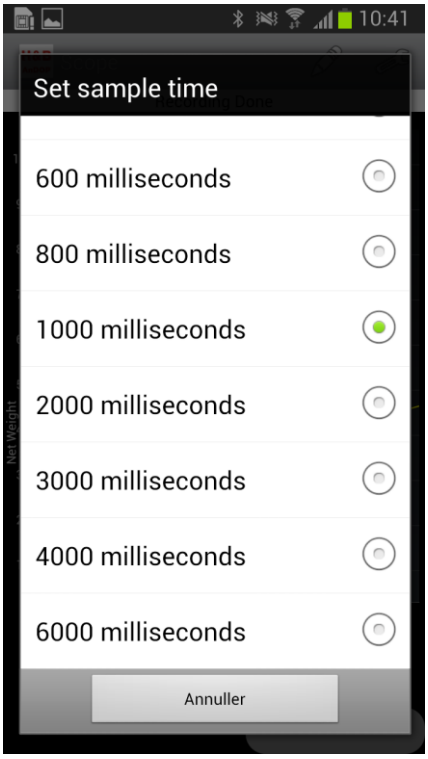
Tap on the "Use trigger" check box to set if a certain weight level should be reached before a net or gross recording should start→

Tap on the "Set trigger increments" text field to open the "Trigger increments value" dialog for net and gross recording. See the figure below→

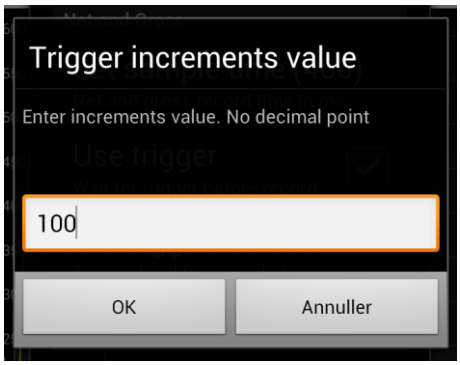
Tap on the "Set sample time" text field to change the average recording time. See the figure below. The current value is shown next to the text→

Tap on the "Set line width" to set the thickness of the scope graph lines as number of pixels. The current value is shown next to the text→

From the "Set sample time" dialog the recording time reflected in the scope X-axis can be selected→
Sample times can be selected in a range from 300 milliseconds to 6000 milliseconds by **tapping** on the desired value.



From the "Trigger increments value" dialog the weight value at which Net and Gross recordings should start can be set.
The weight value is defined without the decimal point. (1.00 = 100)



Tap outside "Scope Settings" dialog or select Back button to return to the Scope page.

7.2 Net / Gross Recording

The Scope page for net / gross record mode is opened by **tapping** on the net display or the gross display on the Main page.

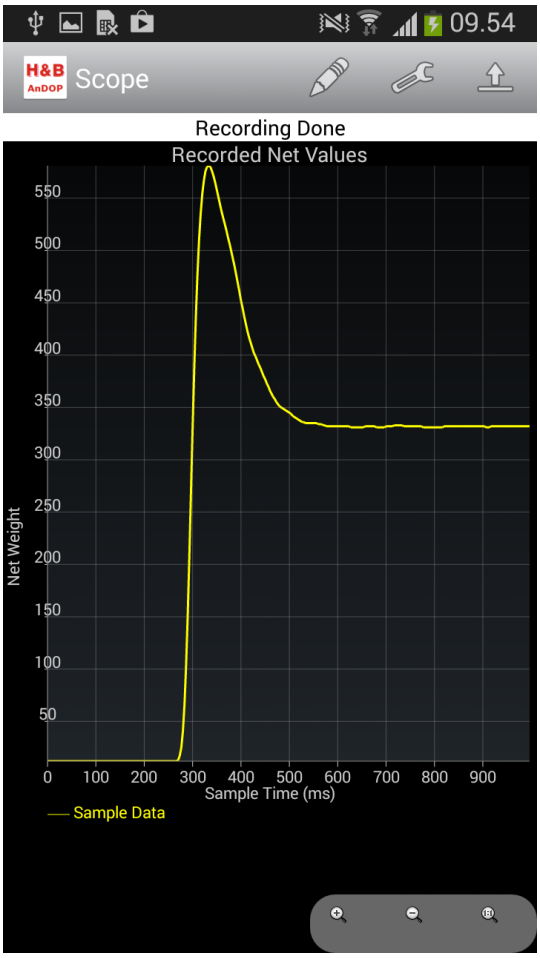
A recording of load cell data stream is initiated by **long pressing** on the screen or **tapping** on the RECORD symbol after entering the Scope page.
A new recording can be initiated by **long pressing** on the Scope picture or **tapping** on the RECORD symbol again.

After initiating a recording, the actual recording will start immediately if trigger function is not used. If trigger function is selected, the recording of the load cell data stream will start when the trigger level defined in the "Scope settings" dialog is reached from below and up or the weight value is higher than the trigger level value.

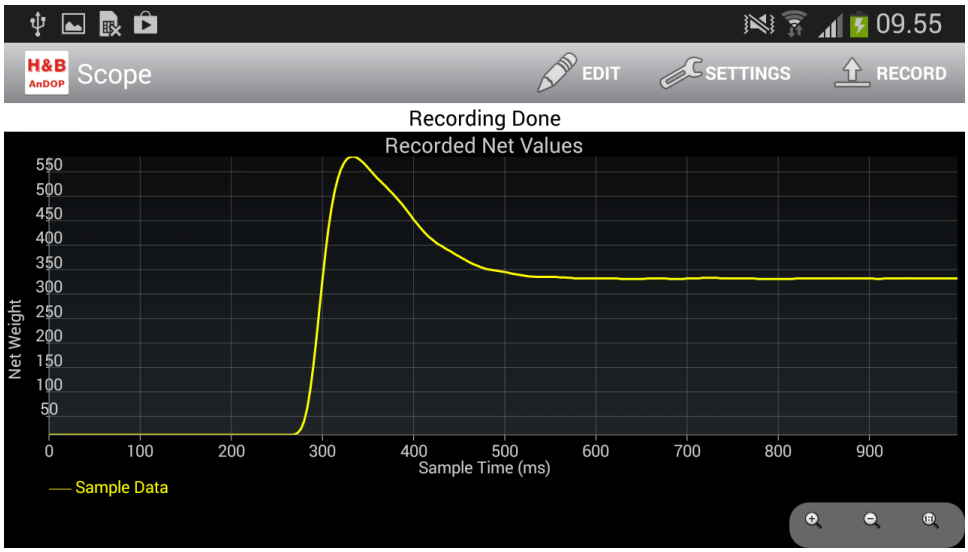
The data stream recording will last the record time defined in the "Scope settings" dialog.
The record time is by default defined to 1000 milliseconds.

When a recording is finished, the resulting data curve can be examined.

In this case the Scope picture shows an un-triggered measurement with a record time of 1000 milliseconds.



As seen from the figures the Scope picture can be watched in both portrait and horizontal directions.



By examining the recordings on the Scope pictures from the previous figures it can be seen that the data stream recording time can be reduced to 400 milliseconds without loss in details if we also use the trigger function.

So by means of the "Scope settings" dialog we can change the record time from 1000 milliseconds to 400 milliseconds and select "Use trigger" so the recording starts when the trigger level is reached.

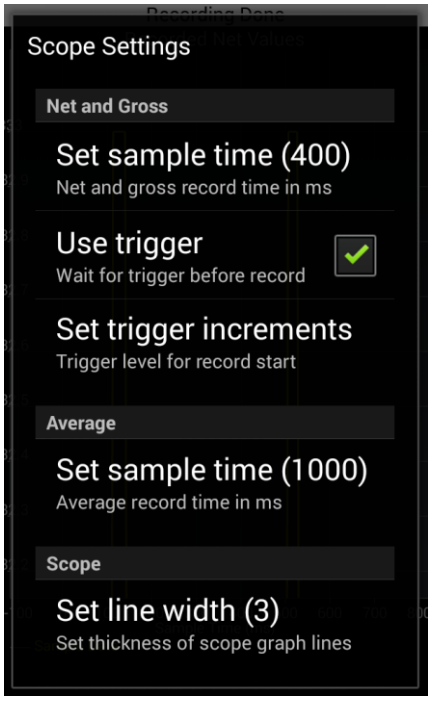
The waiting for trigger text with the trigger level will be showed in the status field until the trigger level is reached.

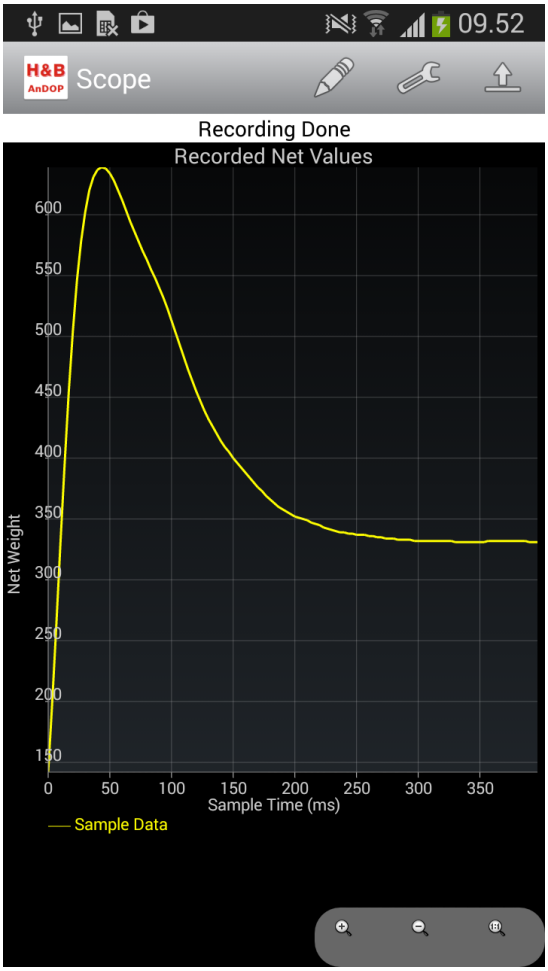
We then do a new record by doing a **long press** on the current scope picture or **tapping** on the RECORD symbol and get the result as shown in the figure below.

New sample time for Net and Gross recording→

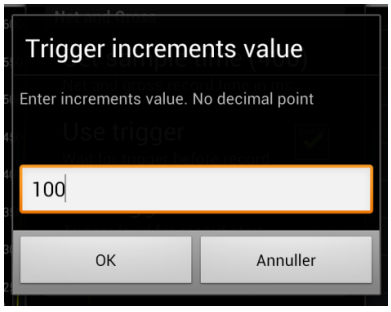
Use trigger is selected →

Set trigger level →





Trigger level is set to 100 increments →



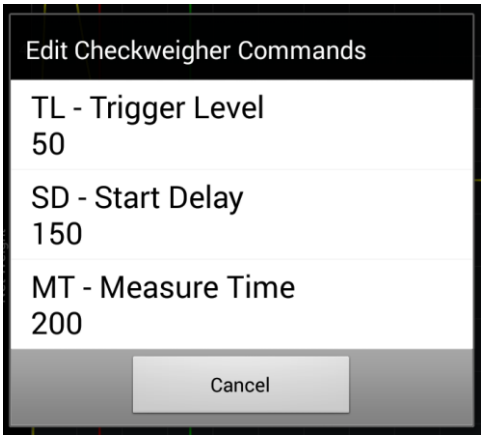
7.3 Average Measurement

The Scope page for average measurement mode is opened by **tapping** on the average display on the Main page.

Before the average measurement is started, the values of some of the relevant checkweigher command parameters can be examined or edited by **tapping** on the EDIT symbol on top of the Scope page.

By **tapping** on the EDIT symbol, the "Edit Checkweigher Commands" dialog will be opened→

From this dialog the current Trigger Level, Start Delay and Measure Time to be used in an average measurement can be examined and edited.
The values are read from and written to the currently connected H&B device.
Tap on one of the command parameter names for editing the current values.



An average measurement is initiated by **long pressing** on the screen or **tapping** on the RECORD symbol after entering the Scope page.

A new recording can be initiated by **long pressing** on the Scope picture or **tapping** on the RECORD symbol again.

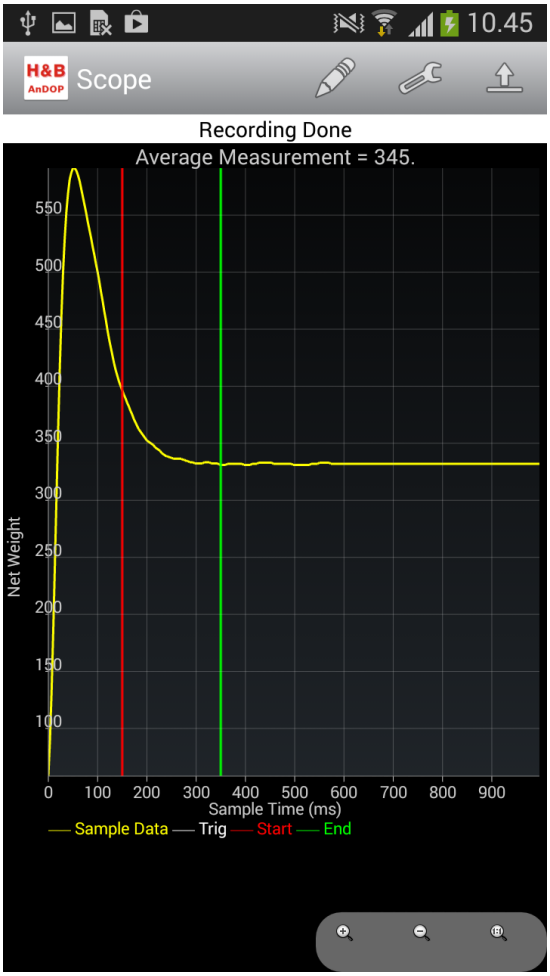
After initiating a recording, the actual recording will start when the defined trigger level for average measurement is reach.
A trigger level for average recording is defined by the value of the command parameter TL – Trigger Level stored in the connected H&B device.

The data stream recording will last the record time defined in the "Scope settings" dialog. The record time is by default defined to 1000 milliseconds.

When a recording is finished, the resulting data curve and measurement lines can be examined.

The Average value for the measurement is read from the connected H&B device and written to the measurement result status field on top of the Scope picture.

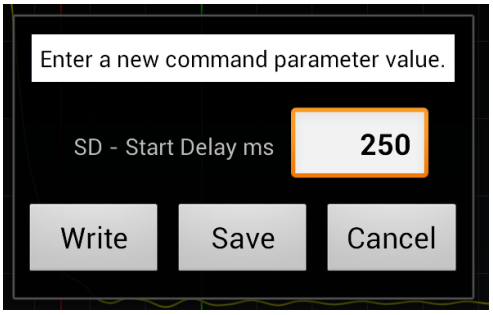
In this case the Scope picture shows a measurement with a record time of 1000 millisecond.
The average measurement has a start delay of about 150 milliseconds and a measure time of about 200 milliseconds giving in this case a total average measure time of 350 milliseconds.



By examining the recordings on the Scope pictures from the previous figures it can be seen that the start delay should be increased from 150 milliseconds to about 250 milliseconds for a more accurate average measurement.

So by means of the "Edit Checkweigher Commands" dialog we can change the start delay to 250 milliseconds by **tapping** on the "Start Delay" field of the Edit dialog

By **tapping** on the "Start Delay" field, a dialog for editing the start delay is opened→



Tap on the current start delay value to edit.

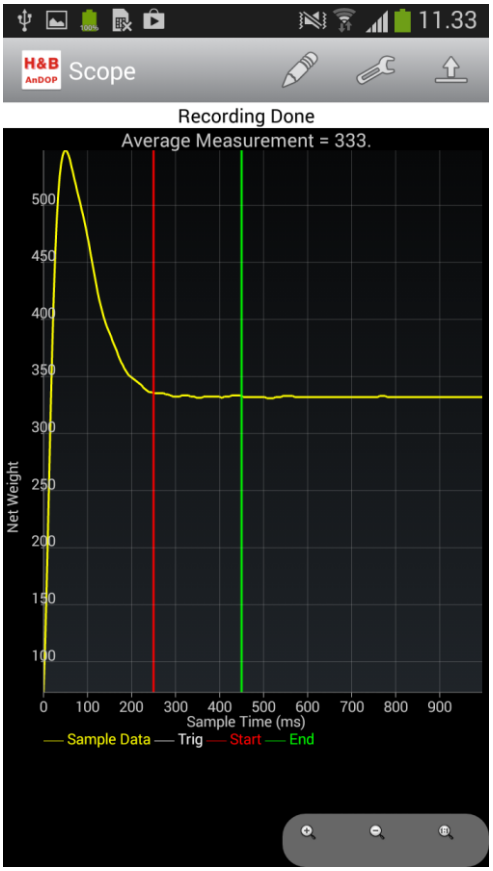
Tap on Write button to write the value to the H&B device. Value will not be saved for next power on for the device.

Tap on Save button to save the value to the EEPROM of the H&B device.

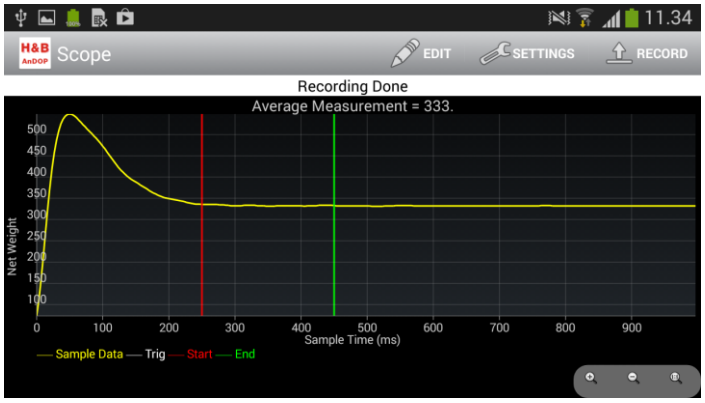
Tap on Cancel button to return to the Scope page.

We can now do a new record by doing a **long press** on the current scope picture or **tapping** on the RECORD symbol.

When the recording is finished, we will get the result as shown in the figures.
The measure lines are placed more correctly now giving a more correct average result for the loaded weight value.



As seen from the figures the Scope picture can be watched in both portrait and horizontal directions.

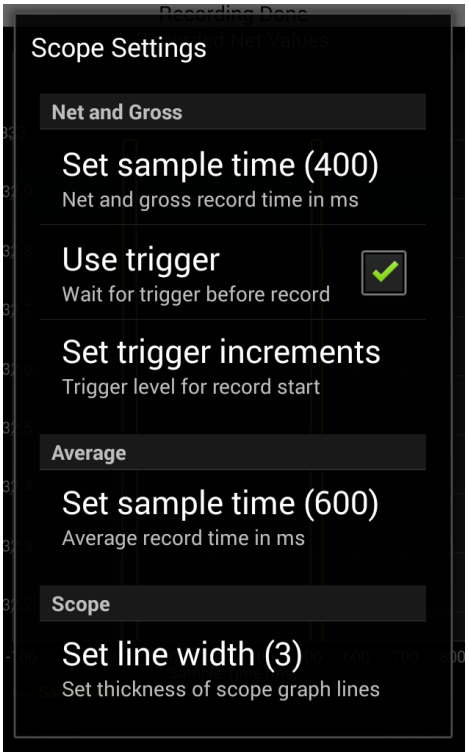


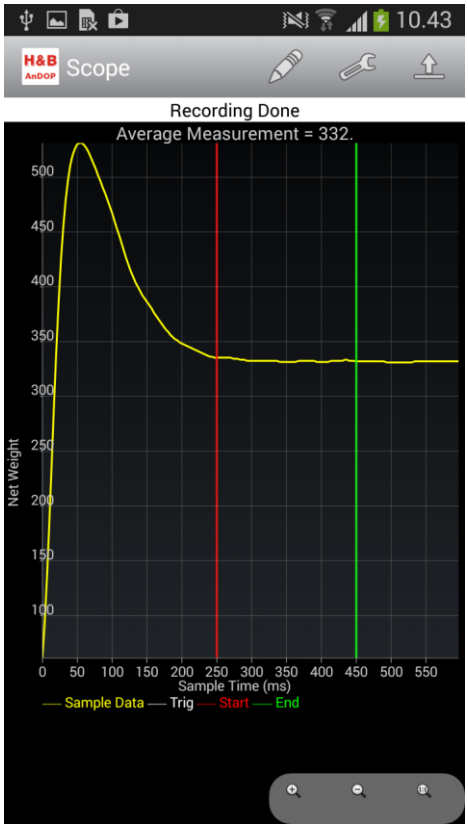
By examining the recordings on the Scope pictures from the previous figures it can be seen that the data stream recording time can be reduced to 600 milliseconds without loss in details.

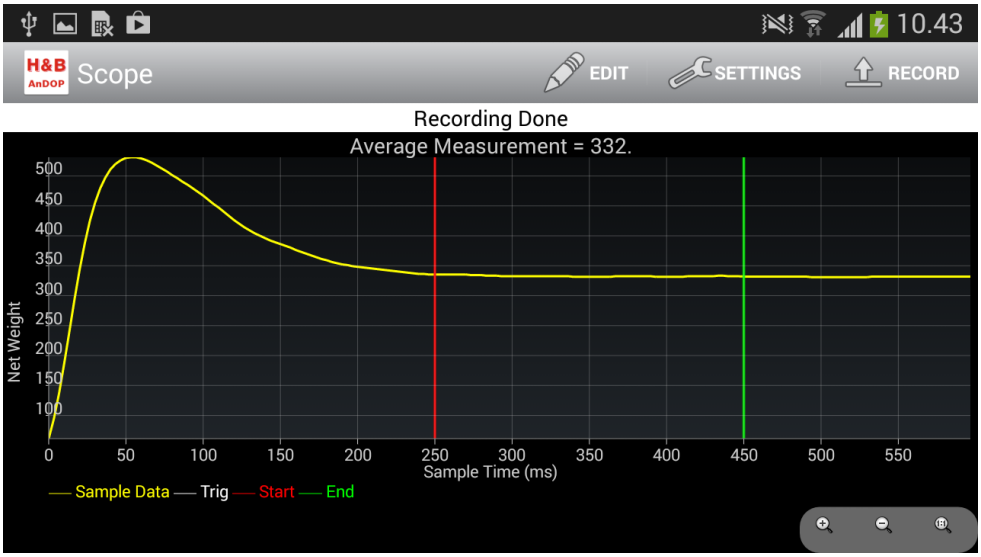
So by means of the "Scope settings" dialog we change the record time from 1000 milliseconds to 600 milliseconds.

We then do a new record by doing a **long press** on the current scope picture or by **tapping** on the RECORD symbol and get the result as shown in the figure below.

New sample time for average recording→

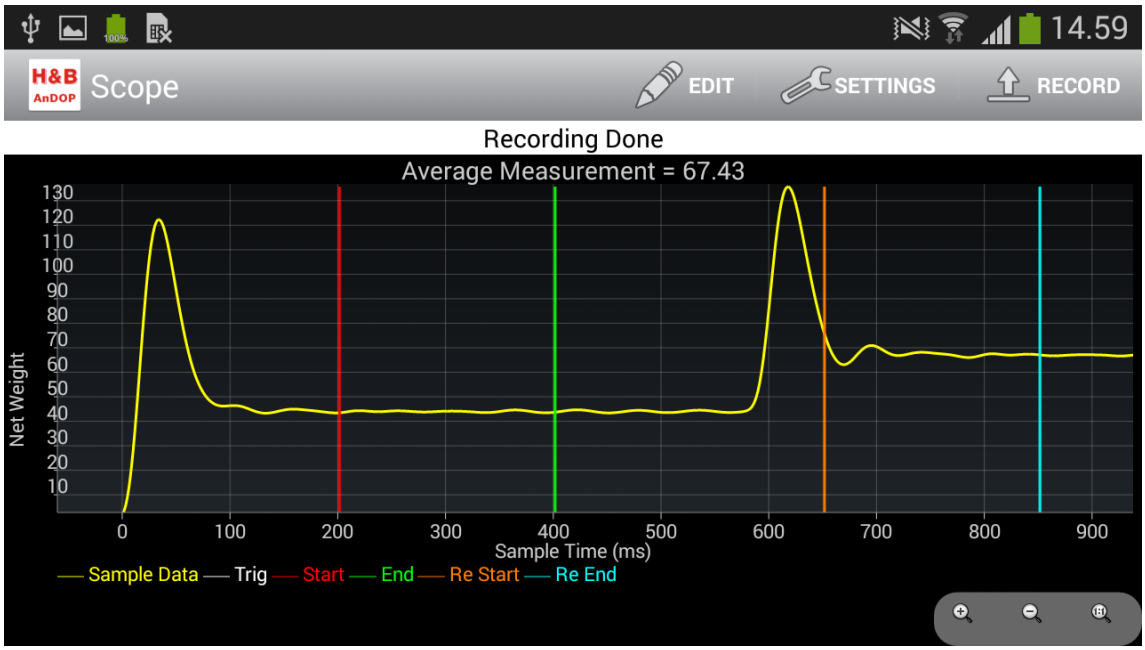


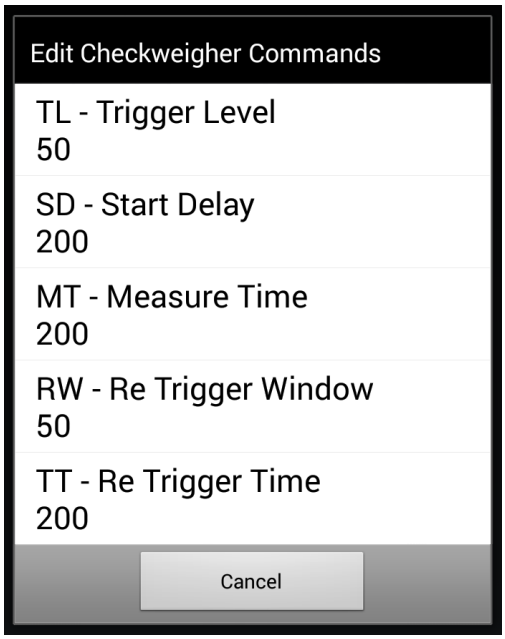




7.3.1 Average Measurement Re-Trigger

Some of the H&B devices like the LDU 78.1, the WCN 122.1 and the LDM 88 (8813) have support for Re-Trigger commands. When such a device is detected, the Scope picture is expanded with re-Trigger measurement lines and the retrigger commands "RW- Re Trigger Window" and "TT Re Trigger Time" is included in the "Edit Checkweigher Commands" dialog as shown on the figures below.





For more information on the Scope picture and the "Edit Checkweigher Commands" dialog, refer to the sections covering these issues.

7.3.2 Set Start Offset Time

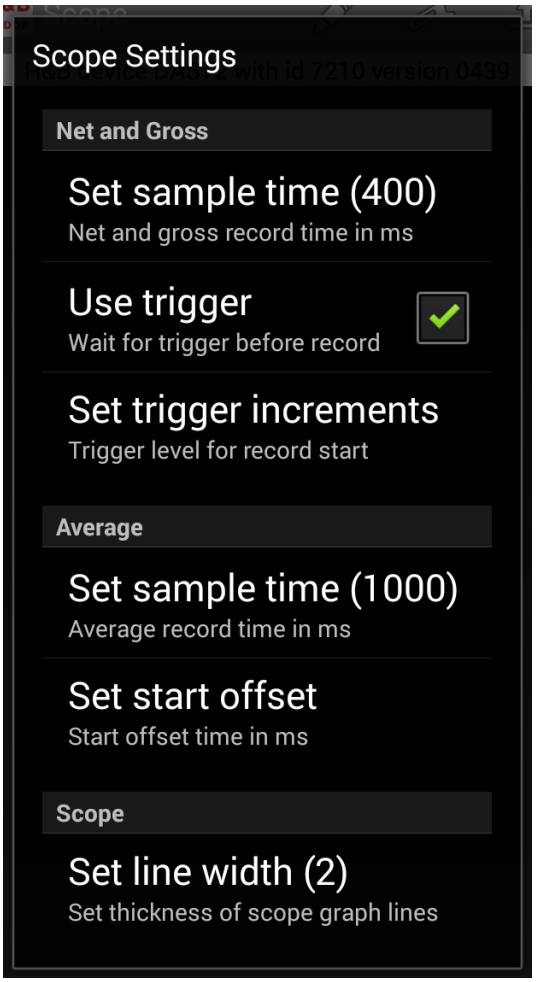
Some of the H&B devices such as the DAS 72.1 and the LDU 68.x don't support real time average measurement status information, so the placement of the start and end measurement lines must be estimated from the values of the SD – Start Delay and the MT – Measure Time alone.

To get an accurate placement of the average measurement lines for the mentioned H&B devices a possibility of making placement adjustments by using a measure time offset value is introduced.

The start offset time default has a value of 40 milliseconds which should be sufficient in most cases.

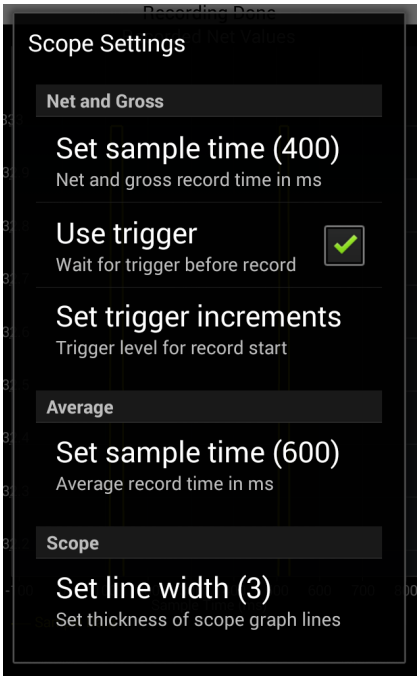
The start offset time value can be changed from the "Scope Settings" dialog. The "Set start offset" field is only present if it's relevant for the currently connected H&B device.

Start Offset→



7.4 Scope Line Width

On some Android devices it can be difficult to see the measurement lines on the Scope picture clearly under certain light conditions when using the default 2 pixel line thickness.



By **tapping** on the "Set line width" field the default thickness of the measurement graph lines can be changed from the default 2 pixel thichness, to a line thickness of 1 to 5 pixels →

On the pictures below, the thickness of the measurement lines is set to 1 and 5 pixels.