

# **MASSER DEVELOPER**

USER MANUAL V 2.5

PC SOFTWARE

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## 1. INTRODUCTION

This document is the instruction manual for the Masser Developer PC software. Use Masser Developer products on the Microsoft Windows operating systems.

**Masser Developer** is a PC-program and a tool for creating the data collection programs for Masser calipers. Use Masser Developer data collection programs both on the one-hand and on the two hand calipers. Masser Developer is a freeware product.

**Masser Developer Light** is a PC-program to transfer the data between the PC and the caliper. Use Developer Light PC-program to load a new data collection program to the Masser caliper. Receive the collected data from the caliper to the PC after the field work. Both Masser Developer and Masser Developer Light can be used to transfer the data between PC and caliper.

**Interpreter** is a caliper driver program. Interpreter program works as a user interface on the Masser caliper. Use the interpreter program to set caliper ready for downloading a new data collection program to the caliper. Send measured data from the caliper to the PC with caliper transmit function. Interpreter program is normally preloaded to the caliper in manufacture.

**Data collection program (Developer program/application)** is defined in a full version of the Masser Developer PC-program.

- Apply at max 20 fields of header (batch) data information to the program.
- Every batch may contain at max 30 sub header (lot) data fields (if defined in the data collection program).
- Define at max 30 measured data fields per each measured tree (record).

Developer data collection program is loaded into the caliper before the caliper measurement. The program download is operated by the Masser Developer PC-program or by Developer Light PC-program. It is possible to load multiple data collection programs to the caliper. Each program works independently by using their own data blocks (1-6) on the caliper.

Use the Masser Developer PC-program and the caliper in two ways:

### 1. User defined data collection programs

- Define on the Developer PC-program what kind of data is to be collected with the caliper. After definition and edit the program is downloaded into the caliper.
- After the fieldwork, the gathered data is transferred to the PC. The measured data is saved in Excel and/or Text-format file.

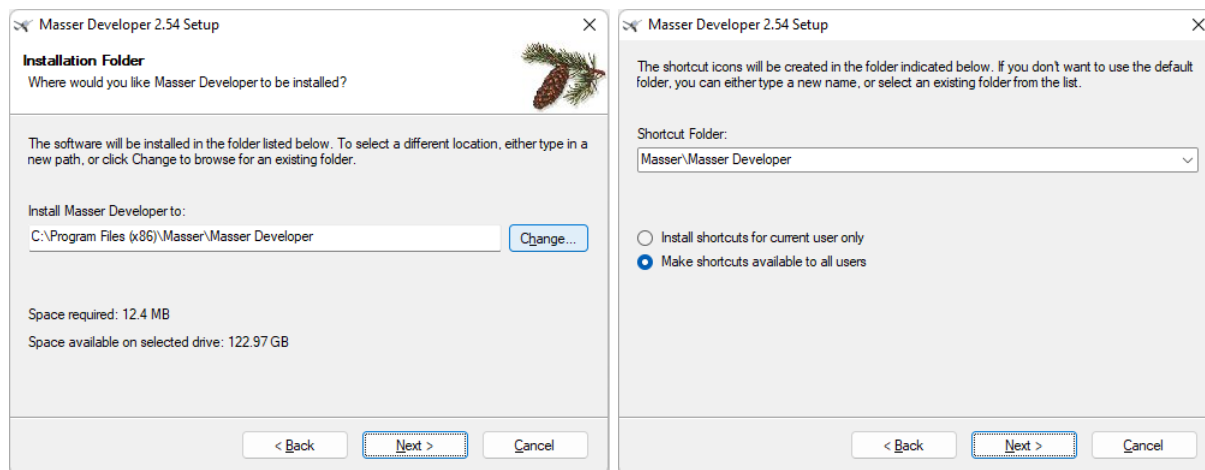
### 2. Using tailored data collection and data analysing / report programs

- Define the report (or transfer file) and the method how the data should be analysed and computed. Masser Oy makes a predefined data collection program and a report module which runs in the PC or directly in the caliper program.

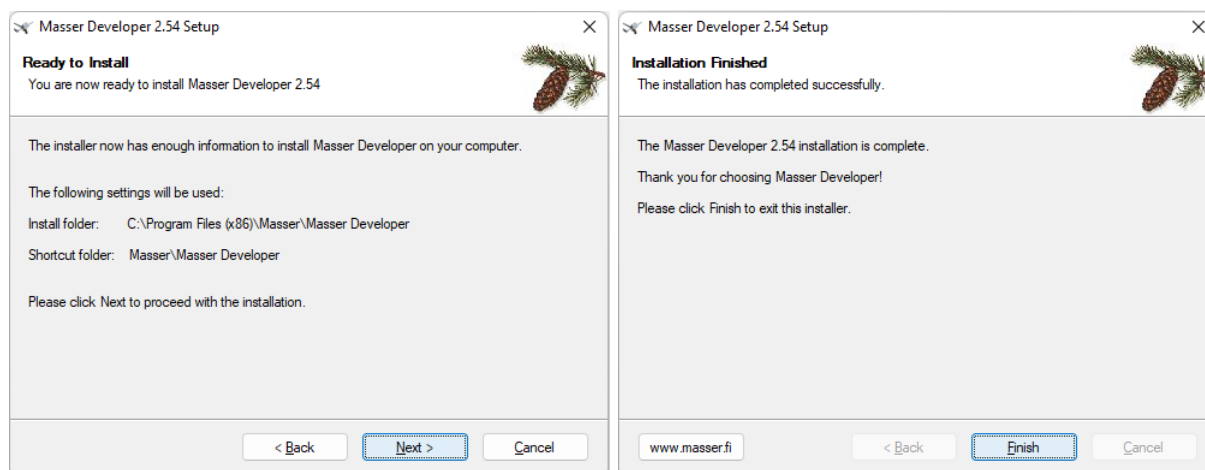
## 2. PC SOFTWARE INSTALLATION

Start the installing program Masser Developer setup.exe. Follow the installing program's instructions. Press Next to proceed with the installation.

Select the PC-program installation path. Select a shortcut folder after the installation folder is accepted.



Finally accept the defined installation settings. When program installation is finished, start program from the Windows start-menu. Also, installing program creates a shortcut to the desktop.



## 3. CREATING DATA COLLECTION PROGRAMS

Start the Masser Developer PC-program. When the program starts, empty main display is opened first. This display is a tool to create and edit the Developer data collection program definitions.

A new data collection program includes three main data field groups:

- Batch fields, at max 15 different batches on the caliper user interface. Define max 20 header data fields for each batch.
- Lot fields, at max 30 different lots per each batch. Define max 5 sub header data fields for each lot.
- Data fields which constitute the Developer table tree measurement. Define at max 30 data fields for each measured tree record.

First, enter the Developer program name and the description. Program name and description will be displayed on the caliper display.

## 3.1 BATCH FIELDS

Batch Fields 1 & 2					Batch Fields 3 & 4					Batch Display 1	
Name	Type	Length	Des.		Name	Type	Length	Des.			
NUM field	NUM	8		Values	Date	GPS	8		Gps-data	NUM field	99999999
TXT field	TXT	8		Values					Values	TXT field	< >
SMS field	SMS	10		Values					Values	SMS field	ABCDEFGHIJ
DATE field	DAT	10		Values					Values	DATE field	2006.04.10
UTC time	GPS	8		Gps-data					Values	UTC time	< >
Latitude	GPS	9	4	Gps-data					Values		
Longitude	GPS	10	4	Gps-data					Values		
Satellite	GPS	2		Gps-data					Values		
HDOP	GPS	4	1	Gps-data					Values		
Altitude	GPS	6	1	Gps-data					Values		

Lot Fields					Lot Display	Measure Display
Name	Type	Length	Des.			
				Values		
				Values		
				Values		
				Values		
				Values		

Batch fields are the identification information fields. Define 1-20 batch fields for each measured batch. Define following data definitions for the each used field:

- Name** The variable name which is shown on the caliper display. Name of the data column in the report.
- Type** Describe the used data format (options are described later in this document).
- Length** Max number of the used characters. Includes the possible decimal point if decimals are defined below.
- Des.** Number of decimals (optional). Number of decimals should be at least 2 characters shorter than the total length of the field.

The batch field data will be asked only once when new batch measurement starts. Use batch data to insert such field items which will be asked only once (for example, measurer ID if each batch has a separate measurer).

Lot data is asked every time when a new lot is started within one selected batch.

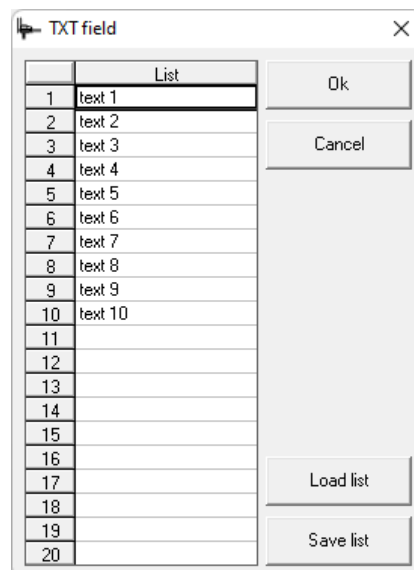
Each batch field data type can be any off the following examples:

**NUM** Numeric data, maximum length is 8 digits. Data is entered either by keyboard type (two hand calipers) or by a toggle switch (one-hand calipers).

**TXT** Browse and select a text data from the predefined list by a toggle switch. For the text selection list, maximum length is 10 characters. Define a selection list by pressing **Values** button on the PC-program. When the selection list is defined to the batch data field the Values button colour will change to yellow.



Load and save edited lists for later use by pressing Load list / Save list -buttons.

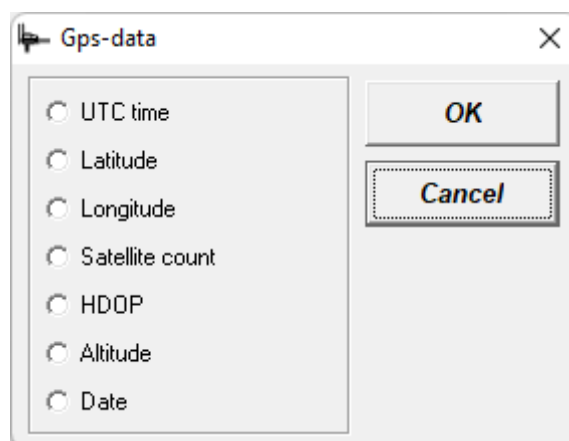


**SMS** SMS-text is a free text input from the keyboard or by the toggle switch from an alphabetic selection list. Maximum length is 10 characters.

**DAT** Date field, length is 10 numbers. Type date by keyboard (two hand calipers) or feed by a toggle switch (one-hand calipers). Used date format is: YYYY.MM.DD

**GPS** Define a GPS-data field. Data is read from the connected GPS receiver to the caliper during the measurements.

When GPS data is selected, a **GPS-data** button appears on the PC-program. Select one GPS-data field at the time. If several GPS data types are needed, every data type must be defined in separate fields.



## 3.2 LOT FIELDS

Lot Fields				Lot Display		
Name	Type	Length	Des.			
NUM field	NUM	8		Values	NUM field	99999999
TXT field	TXT	8		Values	TXT field	< value 1 >
DATE field	DAT	10		Values	DATE field	2006.04.10
Latitude	GPS	9	4	Gps-data	Latitude	< >
Longitude	GPS	10	4	Gps-data	Longitude	< >

Lot fields are optional fields to use within one selected batch. If any of the lot fields are defined, each batch includes 30 different available lots. Otherwise, all the measured tree data records are saved straight under the 15 batches.

Lot fields are defined same way than batch fields (name – type – length – decimals). However, the SMS type data field is not available in the lot field. Every lot has max 5 data fields.

## 3.3 DATA FIELDS

Data Fields												
	1	2	3	4	5	6	7	8	9	10	11	12
Name	NUM	Species	Diameter	Diameter	Height	Sum dia						
Type	NUM	TXT	DIA	MDIA	INPUT	CALCI						
Length	5	8	3	3	5	8						
Des.	2				2							
Min.	1											
Max.	99		500	500								
Step	1											
Unit			mm	mm	m	mm						
Default												
List	Values	Values	Values	Values	Values	Calc	Values	Values	Values	Values	Values	Values
Sample frequency												
Ask If												

Maximum number of measurements: 1619

Define 1-30 variables or measured data fields per each measured record (tree).

Data field parameters define how and what kind of data is collected for every tree measurement. For example;

- diameter measurement method; single diameter, cross diameter measurement
- make a species selection text list
- define height classes list to categorize measured tree heights
- set default value lists for e.g., tree quality variables

Filling all the data field parameters is not necessary. Only the data field type and the length of the field are obligatory. Also, if the text field is used on the measurement the selection list must be predefined to the caliper program.



Data field parameters:

**Name** Name identification of the data field, max 8 characters

**Type** Type of the data field

**Data types:**

**NUM** Numeric data

**TXT** Text data, selection is made from predefined selection list

**DIA** Diameter measurement, accepted by pressing ENTER on the caliper

**MDIA** Multiple diameter measurement. Input a variable number of diameters (not more than defined)

- One-hand calipers; diameters are entered automatically when the caliper jaws are closed and the measured diameter reaches 0 mm after the measurement. Stop the sequence by pushing ENTER.
- Two hand calipers: the diameters are entered by pressing the ENTER-button. The sequence is stopped by measuring diameter 0 mm (or when all the defined fields are measured).

**INPUT** Input data via the caliper serial port (height, slope, distance, diameter or from a Bar code reader). Data is entered via Bluetooth if the option is available on the caliper program. Max length for the receiving data is 8 characters and only numbers are accepted (ASCII, 8 bits, 1 start, 1 stop and no parity, 9600 baud).

**CALC** Customized mathematical calculations. For example:

**CALC1** Calculator, possible calculations +, -, /, \*.

Define a calculation formula by pressing **Calc** button on the PC-program. When the calculation formula is defined to the data field the Calc button colour will change to yellow.

Example calculation formula "2" + "3" / 2, where

"3" = reference to a diameter field

+

"4" = reference to a diameter field

/

2 = number of measured diameters

result = average of two measured diameters

The screenshot shows a dialog box titled "Sum dia" with a close button (X) in the top right corner. It contains a table with 20 rows and 2 columns. The first column is labeled "List" and the second column is labeled "Ok". The first three rows contain the following data:

	List	Ok
1	"3"	<input type="button" value="Ok"/>
2	+	<input type="button" value="Cancel"/>
3	"4"	
4	/	
5	2	
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		<input type="button" value="Load list"/>
17		
18		
19		<input type="button" value="Save list"/>
20		

## CALC2 Incrementing sum calculator.

Sum the current numeric data field values to the previous sum. For example, sum diameter values during data collection and use the sum in calculator. The calculation formula is defined by typing the data field number to calculation formula list. For example, if the field number 2 (diameter) sum will be calculated, the value in calculation formula list will be "2".

## OTHER CALC types Customized mathematical calculations. For detailed information, please contact Masser Oy.

<b>Length</b>	The number of characters in the data field (1-8).	<input type="text" value="Length"/>
<b>Optional data field parameters:</b>		
<b>Des</b>	The number of decimals (data type NUM). Max. total length – 2	<input type="text" value="Des."/>
<b>Min</b>	Minimum value of the data which is accepted	<input type="text" value="Min."/>
<b>Max</b>	Maximum value of the data which is accepted	<input type="text" value="Max."/>
<b>Step</b>	Number of the caliper's toggle switch step in numeric data field. Each toggle switch press changes the current number with the selected step interval.	<input type="text" value="Step"/>
<b>Unit</b>	Used unit for the data field (mm, dm...). Diameters are automatically displayed as a millimeter unit.	<input type="text" value="Unit"/>
<b>Default</b>	Default value. If not defined, the default will be the result of the previous record data field (for example for the height value, the last measured height).	<input type="text" value="Default"/>

The maximum number of the records (trees) which can be measured is displayed on the lower left corner. This counter is updated automatically when changes are made to the Developer program. Total number of measurements depends on the number of the table variables.

Maximum number of measurements: 1619

Use **Sample frequency** and **Ask if** parameters to speed up the field work. For example, make rules with these parameters when to measure heights or how often the sample tree data fields are asked.

**Sample frequency** If not defined, the data field is asked for each record (tree). If value is for example 3, data field is asked for every third measured tree. If the value is defined 0, the data field will be asked only for once (for the first record of the new batch / lot).

**Ask If** Also an active measurement condition like sample frequency field. Use "Ask if" -data field to enter more advanced conditions whether the field is asked or not. Format for Ask If -data field condition is described below:

"Compare field1" - **comparison character** - "Compare field2 or value".

Allowed logical comparison characters are:

> (bigger than),  
< (smaller than)  
= (equal)  
! (diverge)

If the compared value is read from another measurement field, field numbers are pointed inside quotation marks "". **Notice:** if the compared field is a text-type field, comparison is made against an index number from the value list (first item on value list has index 1, second has 2 etc.).

Optionally make value comparison against the defined permanent values.

**Example 1. Compare two fields**

"5" > "6"

Explanation: If value in field 5 is bigger than value in field 6, this defined data field will be asked.

**Example 2. Compare field against predefined value**

"5" = 500

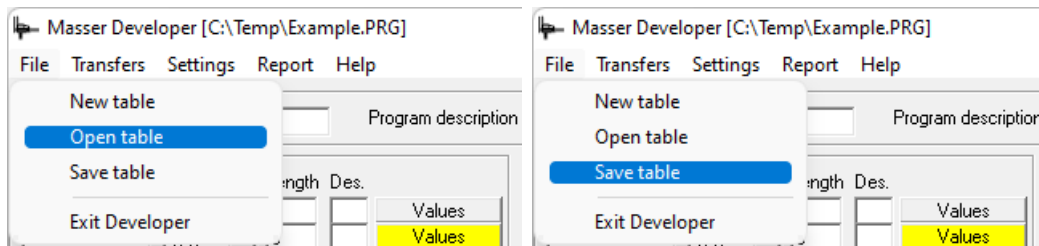
Explanation: If value in field 5 is 500 then this data field will be asked.

Browse and review some of the example tables in the Masser Developer installation folder. Example tables display how to define the different types of caliper programs and how to use different types of parameters. A couple of the example programs are described later on this document.

## 4. CALIPER DATA TRANSFERS

### 4.1 SAVE AND LOAD DEVELOPER TABLES (.PRG)

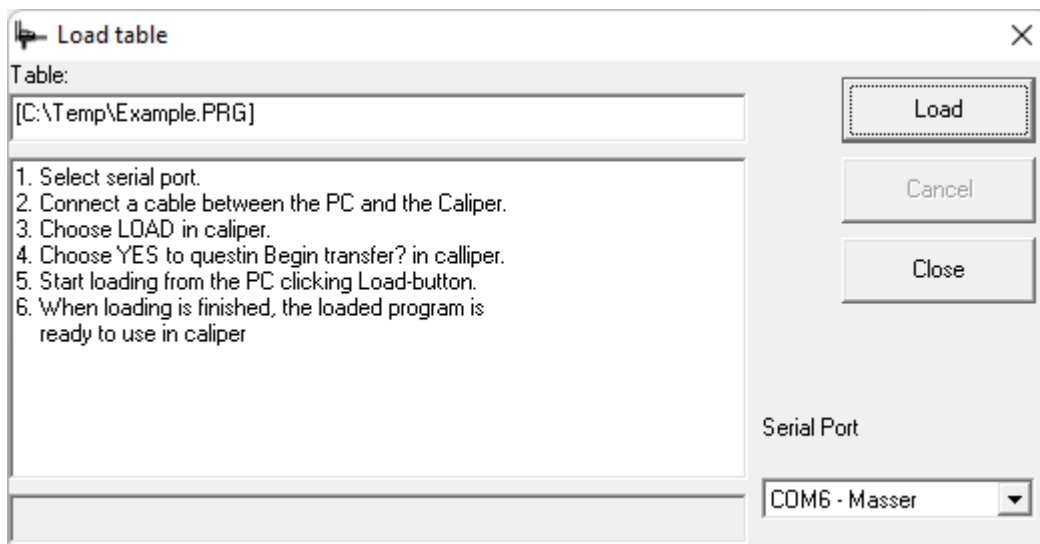
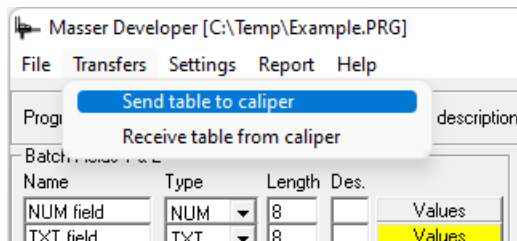
Developer measurement tables are saved and opened from *File->Open table/Save table-* menu. Developer table file type is *name.PRG*. Program saves the table which is opened/edited on the program main menu display.



### 4.2 LOAD DEVELOPER PROGRAM TO CALIPER

Send a new created Developer program or previously saved program to the caliper.

First, open the table to the main screen of the PC-program. Select *Transfers->Send table to caliper* to send the program to the caliper. Developer PC-program opens the loading data transfer display.



Connect a cable between the PC and the caliper or establish a Bluetooth connection if Bluetooth is used for the data transfer.

Load table to caliper:

1. Open table
2. Select *Transfers->Send table to caliper*
3. Select the used serial port between the PC and the caliper
4. Choose Load in the caliper. Select the used memory block for the downloaded Developer program.
5. Start loading from the PC. Press the Load-button.

This working order is essential. The caliper must be set to wait the receiving program before starting to load from the PC. PC-program loads a caliper table with the used language settings to the caliper.

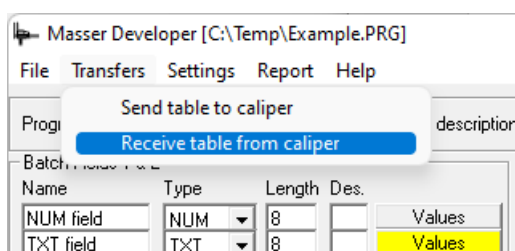
When loading is finished, the loaded program is ready to use in caliper.

It is possible to load and use several Developer programs simultaneously in the caliper memory. Select a caliper interpreter memory block (1-6) for the transferred Developer program on the on the caliper program. Each block can use one program at a time.

## 4.3 RECEIVE DATA FROM CALIPER

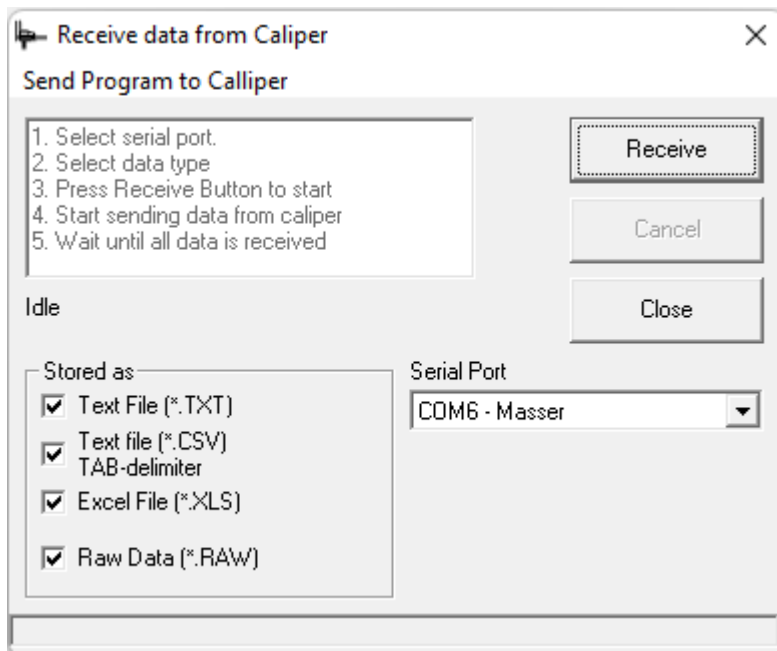
Receive the collected data from the caliper to the PC-program.

Select *Transfers->Receive table from caliper*. Developer PC-program opens the receiving data transfer display.



Select the used data saving format or formats for receiving data. The data types are:

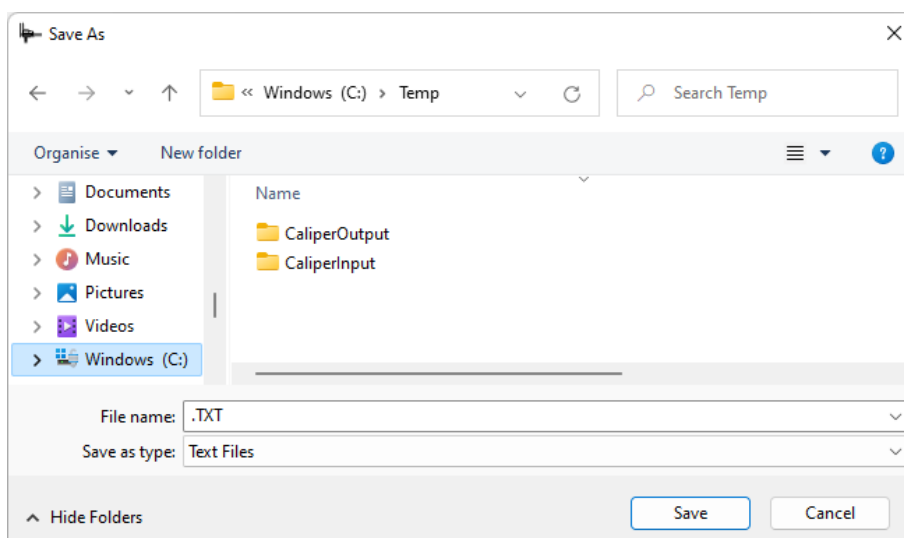
- Text File (.TXT)
- Delimited text file (.CSV)
- Excel File (.XLS)
- Raw data (.RAW), use file format when tailored reporting is used for the collected data on the PC program.



Receive data from the caliper:

1. Select *Transfers->Receive data from caliper*
2. Select the used serial port between the PC and the caliper
3. Select the storage type for receiving data. Several data types are possible.
4. Press Receive-button to set the PC program ready to receive the data from caliper.
6. Start sending data from caliper. Select TRANSMIT from the caliper program and select the used caliper memory block.
7. Wait until data is received to the PC-program.
8. Save the received data.

When transfer is completed, Developer PC-program opens a display to save the received data to the defined folder. Filename for the data is asked and all the selected file types are saved.



Example of .txt -file.

MASSER DEVELOPER				
BATCH	Latitude	Longitude	Date	
1	6631.5425N	2547.1812E	60722	
LOT	PILE NR	Species		
1	1	Pine		
TREE NR	Dia 1	Dia 2	Lenght	Grade
1	123	125	43	Grade 1
2	153	153	43	Grade 1
3	153	155	40	Grade 1
4	182	185	46	Grade 1
5	123	130	39	Grade 3
6	183	188	46	Grade 2
7	169	171	43	Grade 1
8	93	109	37	Grade 3
9	129	127	46	Grade 2
10	183	184	46	Grade 1
11	213	210	47	Grade 1
LOT	PILE NR	Species		
2	2	Spruce		
TREE NR	Dia 1	Dia 2	Lenght	Grade
1	212	214	50	Grade 1
2	247	241	49	Grade 2
3	262	262	50	Grade 1
4	216	216	50	Grade 1
5	243	243	50	Grade 1

Example of Excel .xls-file (when opened).

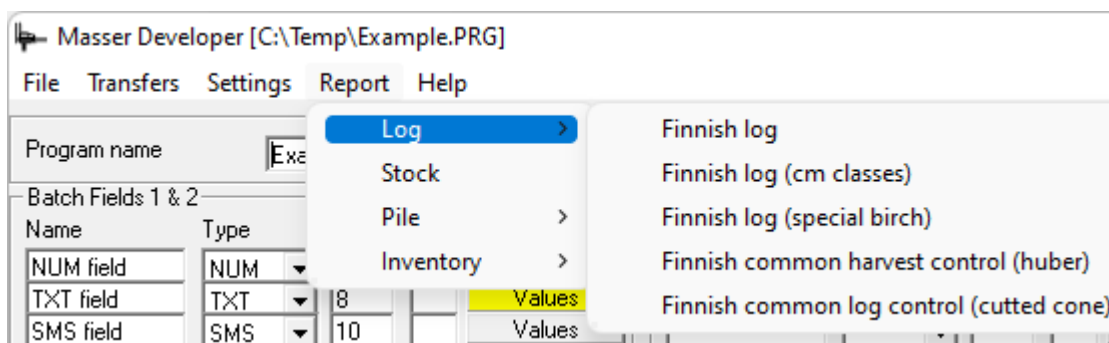
	A	B	C	D	E	F	G	H	I	J	K	L
1	MASSER DEVELOPER											
2	BATCH	Latitude	Longitude	Date	LOT	PILE NR	Species	TREE NR	Dia 1	Dia 2	Lenght	Grade
3	1	6631.5425N	2547.1812E	60722	1	1	Pine	1	123	125	43	Grade 1
4	1	6631.5425N	2547.1812E	60722	1	1	Pine	2	153	153	43	Grade 1
5	1	6631.5425N	2547.1812E	60722	1	1	Pine	3	153	155	40	Grade 1
6	1	6631.5425N	2547.1812E	60722	1	1	Pine	4	182	185	46	Grade 1
7	1	6631.5425N	2547.1812E	60722	1	1	Pine	5	123	130	39	Grade 3
8	1	6631.5425N	2547.1812E	60722	1	1	Pine	6	183	188	46	Grade 2
9	1	6631.5425N	2547.1812E	60722	1	1	Pine	7	169	171	43	Grade 1
10	1	6631.5425N	2547.1812E	60722	1	1	Pine	8	93	109	37	Grade 3
11	1	6631.5425N	2547.1812E	60722	1	1	Pine	9	129	127	45	Grade 2
12	1	6631.5425N	2547.1812E	60722	1	1	Pine	10	183	184	46	Grade 1
13	1	6631.5425N	2547.1812E	60722	1	1	Pine	11	213	210	47	Grade 1
14	1	6631.5425N	2547.1812E	60722	2	2	Spruce	1	212	214	50	Grade 1
15	1	6631.5425N	2547.1812E	60722	2	2	Spruce	2	247	241	49	Grade 2
16	1	6631.5425N	2547.1812E	60722	2	2	Spruce	3	262	262	50	Grade 1
17	1	6631.5425N	2547.1812E	60722	2	2	Spruce	4	216	216	50	Grade 1
18	1	6631.5425N	2547.1812E	60722	2	2	Spruce	5	243	243	50	Grade 1
19	1	6631.5425N	2547.1812E	60722	2	2	Spruce	6	264	263	51	Grade 1
20	1	6631.5425N	2547.1812E	60722	2	2	Spruce	7	200	200	50	Grade 1

## 5. TAILORED REPORT AND ANALYSE PROGRAMS

Masser Oy has a big library of different report and data analyse packages for all kinds of applications. Also, tailored analyse programs can be created and delivered.

Report-module uses always stored .RAW-type data file which is defined when receiving the data from the caliper.

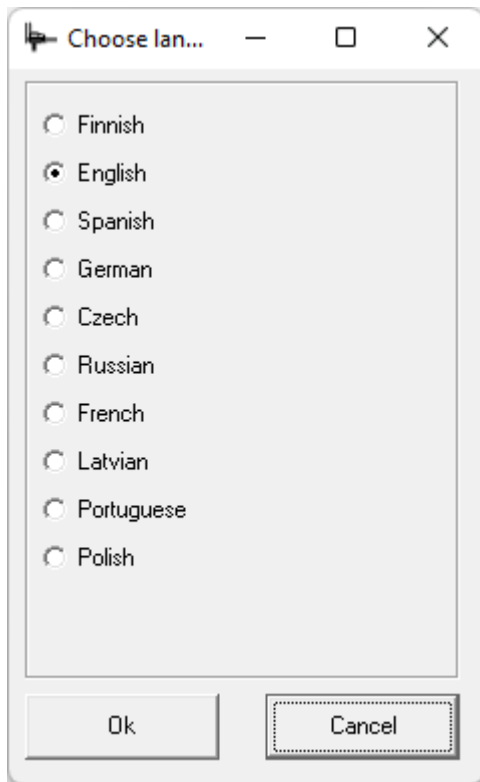
Open "Report" from the main menu tree. The available customized programs are displayed below. These reports/calculations have special locked data collection tables. It is not possible to edit or alter the calculation tables.





## 6. SELECT PROGRAM LANGUAGE

Default language for the PC-program is English. Change language from *Settings->Language* menu. Restart Masser Developer- program after the language is changed. Program language selection is updated on the start.



Used Masser Developer language setting is updated to the Masser caliper program once new caliper program is loaded to any of the caliper's memory blocks.

## 7. EXAMPLE TABLES

These following example tables are available on the Masser Developer installation folder.

### 7.1 EXAMPLE MEASUREMENT 1 – MEAS 1.PRG

The first example table MEAS1.prg is a program usable for the total standing inventory. Every tree is measured (diameter) and every tenth tree is a sample tree. The tree height and quality are entered for the sample trees.

Masser Developer [C:\Program Files (x86)\Masser\Masser Developer\MEAS1.PRG]  
File Transfers Settings Report Help

Program name  Program description

Batch Fields 1 & 2				Batch Fields 3 & 4	
Name	Type	Length	Des.	Name	Type
SITE NR	NUM	8			

Data Fields					
	1	2	3	4	5
Name	Species	Diameter	Height	Quality	
Type	TXT	DIA	NUM	TXT	
Length	8	3	3	8	
Des.					
Min.					
Max.					
Step					
Unit		mm	dm		
Default					
List	Values	Values	Values	Values	Values
Sample frequency			10	10	
Ask If					

Maximum number of measurements: 3400

## 7.2 EXAMPLE MEASUREMENT 2 – MEAS 2.PRG

The second example table MEAS2.prg is the sample plot program for standing trees in monoculture forest (only one species). Tree height is asked for the selected trees on the field.

Select sample tree by measuring a zero diameter on the first data field. Program asks to measure the second diameter if the first diameter is zero. Also, the tree height measurement activates.

Masser Developer [C:\Program Files (x86)\Masser\Masser Developer\MEAS2.PRG]

File Transfers Settings Report Help

Program name  Program description

Batch Fields 1 & 2				Batch Fields 3 & 4	
Name	Type	Length	Des.	Name	Type
SITE NR	NUM	8			
Species	TXT	8			

Data Fields

	1	2	3	4
Name	Diameter	Diameter	Height	
Type	DIA	DIA	NUM	
Length	3	3	3	
Des.				
Min.				
Max.				
Step				
Unit	mm	mm	dm	
Default				
List	Values	Values	Values	Values
Sample frequency				
Ask If		"1"=0	"1"=0	

Maximum number of measurements: 3400

Results

MASSER DEVELOPER			
BATCH	SITE NR	Species	
1	12345678	Pine	
TREE NR	Diameter	Diameter	Height
1	84		
2	70		
3	71		
4		89	64
5	114		
6	131		
7	117		
8		127	85
9	114		
10	105		

## 7.3 EXAMPLE MEASUREMENT 3 – MEAS 3.PRG

The third example table MEAS3.prg is the log measurement program. Measurement location date is red from the GPS-device. Separate piles with different tree species are saved in separate lots. Two diameters (cross section), length and grade are entered for every log.

Masser Developer [C:\Program Files (x86)\Masser\Masser Developer\MEAS3.PRG]

File Transfers Settings Report Help

Program name  Program description

Batch Fields 1 & 2

Name	Type	Length	Des.	
Latitude	GPS	9	4	Gps-data
Longitude	GPS	10	4	Gps-data
Date	GPS	8		Gps-data
				Values
				Values
				Values
				Values
				Values

Batch Fields 3 & 4

Name	Type

Lot Fields

Name	Type	Length	Des.	
PILE NR	NUM	8		Values
Species	TXT	8		Values
				Values
				Values

Data Fields

	1	2	3	4
Name	Dia 1	Dia 2	Lenght	Grade
Type	DIA	DIA	NUM	TXT
Length	3	3	3	8
Des.				
Min.				
Max.				
Step				
Unit	mm	mm	dm	
Default				
List	Values	Values	Values	Values
Sample frequency				
Ask If				

Maximum number of measurements: 3090

**MASSER**  
PRECISION

## CONTACT INFORMATION

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