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**User's Guide**

# **DISTO online**

**Leica Geosystems**



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This manual describes the versions 2.x of the program DISTO online.

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# Introduction

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## DISTO online

DISTO online is a program, which enables you to operate any Leica DISTO at any serial interface on your computer running under Microsoft Windows 95/98/ME or Windows NT/2000.

DISTO online supports all Leica DISTO laser range finder with a serial interface and detects these automatically.

With DISTO online all windows programs and even DOS programs running in the DOS box of windows can be supplied the measured values of the DISTO. Further the measured values can be processed later by other programs e.g. by Microsoft Excel.

With Leica DISTO devices with an internal memory on-line and an off-line communications are possible.

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## Installation of the Program

For DISTO online there are 2 installation programs: An installation program for the "minimum" installation, in which no system files are contained, and an installation program for the "maximum" installation, in which also all necessary system files for Microsoft Windows are contained. This distinction was therefore made, since the very most computers contain the current system files, and it is not necessary to update them, the installation program for the minimum installation is therefore much smaller and therefore it is much faster to download it from the Internet.

*You will get DISTO online on a CD with your DISTO or you can download it at:*

<http://www.disto.com>

<http://www.elcovision.com>

The installation of the program becomes quite simple. Run the program "SetupDisto.exe". All necessary DISTO online files are copied into the directory "C:\Program Files\Disto". The max. installation updates the Windows system files then if necessary, thus a restart of the computer becomes necessary. After installation the program is immediately ready for use.

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## Uninstall of the Program

To uninstall DISTO online follow these steps:

- ▶ Click on "Start" -> DISTO online -> uninstall DISTO online
- ▶ A dialog appears, in which you are asked whether they would really like to uninstall DISTO online. The uninstall program removes all files, which the installation program put on your system, measurement records are however preserved.

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## Installation of a Leica DISTO

Attach your Leica DISTO with a suitable data cable to any serial interface of your computer.

If you ever changed the settings for the serial interface on the DISTO, make sure that the settings of the Leica DISTO for the serial interface correspond to factory Settings of Leica.

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## The First Start of DISTO online

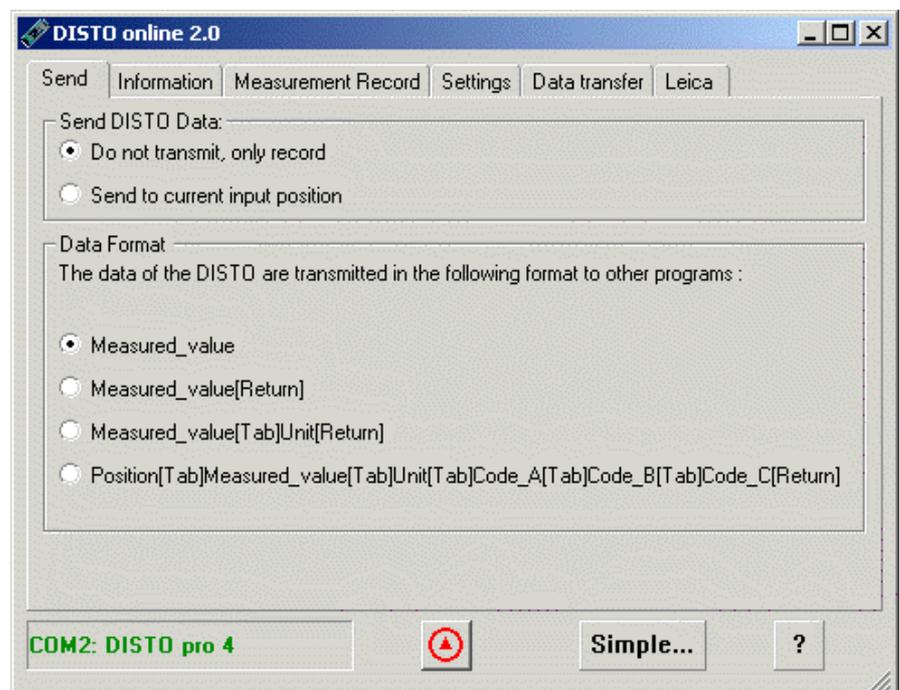
After the start of the program all available serial ports of the computer are searched for a Leica DISTO and the communication parameters are adjusted automatically. As soon as a DISTO was found, on the information page displays the device-specific parameters such as the serial number, version etc. The program is now ready for the measurements, you can now leave this page and go to the page "Send" and adjust transmission format if necessary.

# The Operation of DISTO online

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## Operation and Possibilities in the Simple Mode

### The Page "Send"

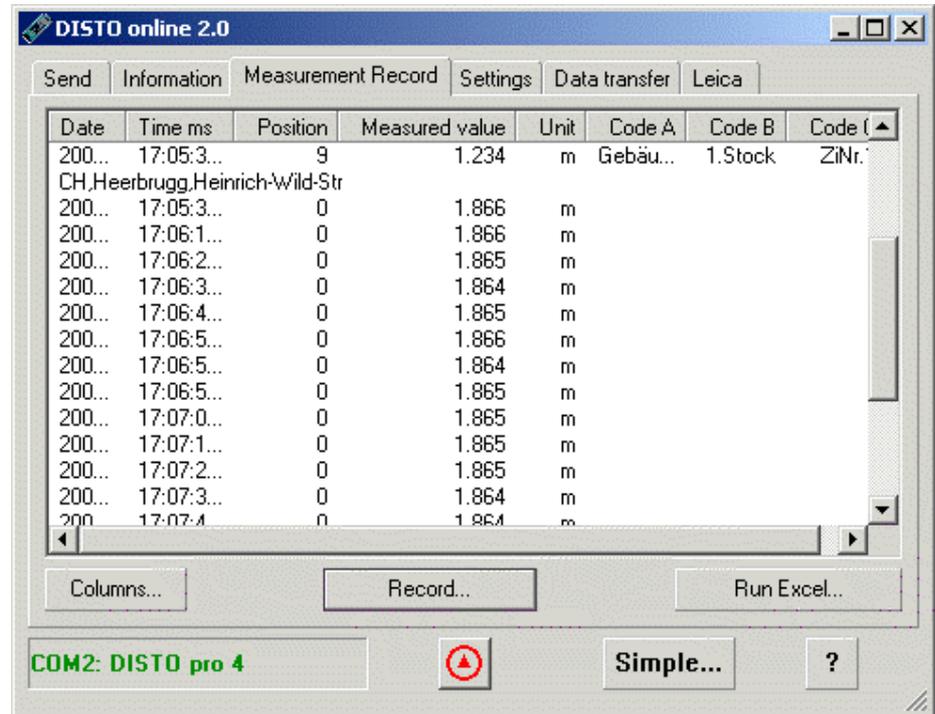


The window is divided into two areas. In the upper subrange is defined, what should be done with the data. Within the lower area of the page the data format is defined. Four pre-defined formats are possible:

1. Only the measured value will be transferred
2. Only the measured value will be transferred and a press of the "return" key will be simulated.
3. The measured value followed by a "tab" and the pertinent unit followed by a "Return". This format could be typical for communication with Microsoft Excel
4. The fourth format is supposed for the off-line use of the DISTO (here particularly the DISTO pro 4).

## The Page "Measurement Record"

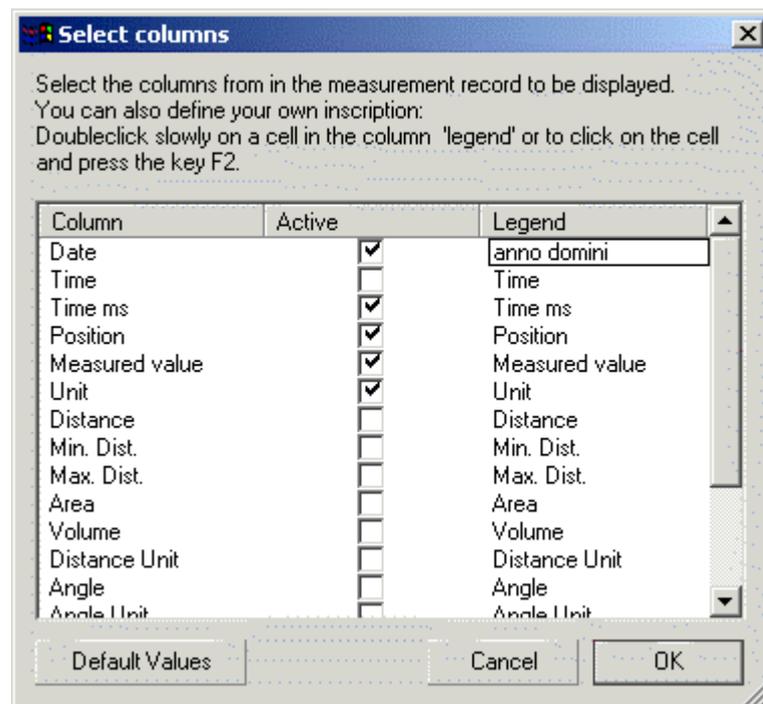
Additionally to the transfer to the individual Windows programs DISTO online writes a measurement record. The format of the log can be arranged independently of the output:



The log is independently carried by DISTO online and is stored automatically into a file "DISTO online YYYY-MM\_DD.log", whereby YYYY is for the year, MM for the month and DD is for the day.

### Button "Columns"

By clicking the button "Columns" a dialog pops up where you can select the columns which are to be displayed:



The column "column" defines the internal control instruction and in the column "legend" you can modify the inscription of the corresponding column in the measurement record.

Using the checkboxes in the column "Active" you can switch on and off the columns in the measurement record.

#### **Button "Record"**

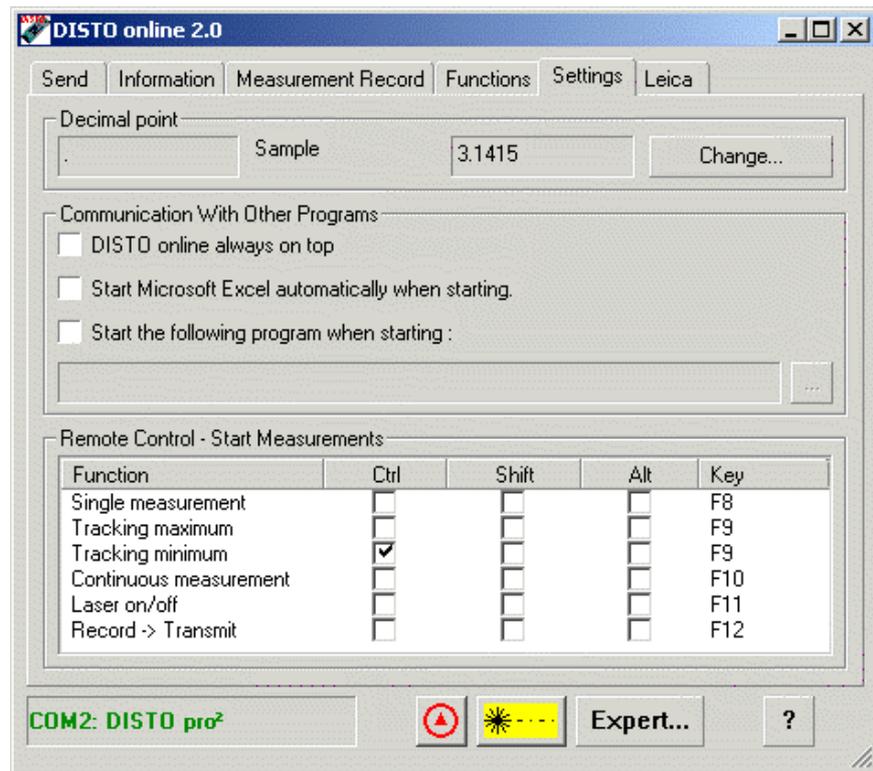
By clicking the button "Record" you can process the measurement log: You can save the records, you can open old records, you can print it on your standard printer. You can also delete the whole record.



#### **Button "Run Excel"**

By clicking this button DISTO online write an Excel file with the current record and opens Microsoft Excel with this file.

## The Page "Settings"



On the page "Settings" you can configure the program:

You can choose as decimal point a dot (.) or the windows decimal point which can be modified in the system configuration.

You can configure DISTO online to start other applications when you start it. Mostly you will choose Microsoft Excel, because of the tight integration of DISTO online within Microsoft Excel.

The remote control enables you to configure most keys on your keyboard as function key for DISTO online. These programmed keys will also work when DISTO online is not the active program on your computer.

The following remote control functions are at present possible

1. Single measurement  
A measurement is released and processed in accordance with adjustment on the page "Send"
2. Tracking maximum  
The Leica DISTO executes continuous measurements, and DISTO online analyses internally these measurements. After that a second press of the appropriate keys, here e.g. SHIFT and F8 DISTO online returns the shortest distance from the measurements.
3. Tracking minimum  
Like tracking maximum but DISTO online returns the biggest distance  
Continuous measurement
4. The Leica DISTO executes continuous measurements and DISTO online returns all of them.
5. Laser on/off  
The laser of the DISTO is switched on or off.
6. Record ->Transmit  
The entry currently selected at the record is transmitted like a measurement.

That is very useful if you want to create a drawing from the measurements in a CAD program.

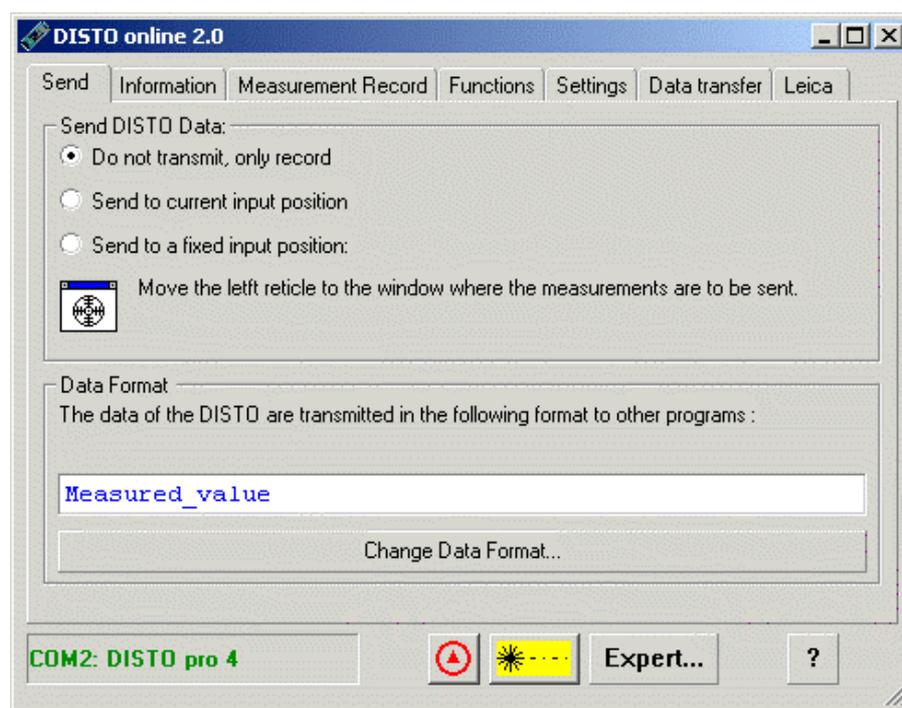
## Operation and Possibilities in the Expert Mode

By clicking the button "simple" in the lower border of the program, DISTO online could be toggled between simple and expert mode.



The substantial differences to the simple mode are on the program page "Send". Moreover a page with the name " functions " is added.

### The Page "Send"



The page "Send" was extended as now the measured values can be always written a fixed position of an application. This is particularly useful with many CAD applications or when you want to fire up measurement by pressing the



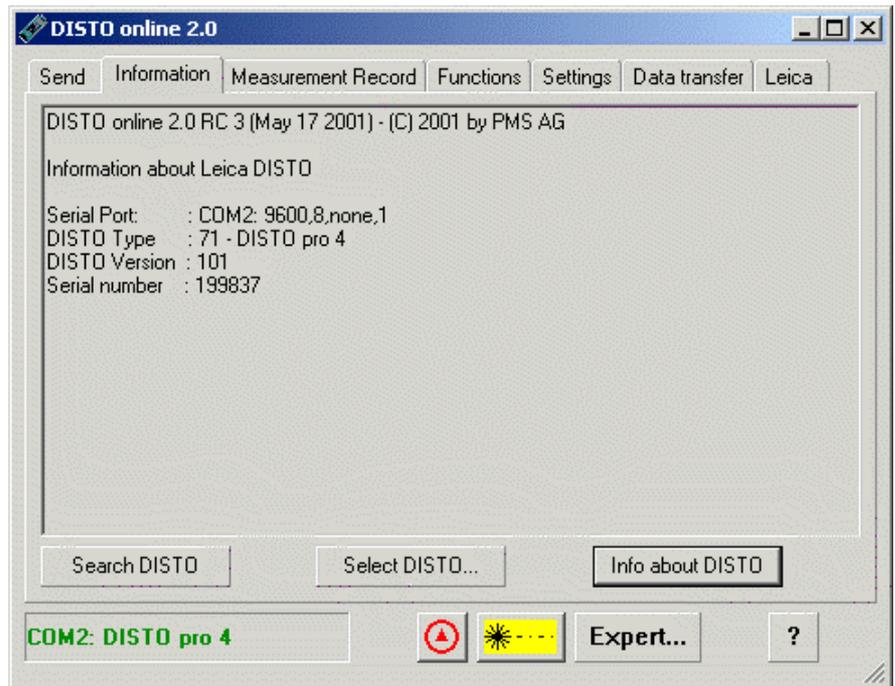
button.

In order to define the fixed input position proceed as following:

- Click the  icon and don't release the mouse button. The mouse cursor changes its shape into a reticule.
- Move the cursor to the field you want to have the measurements filled in. For elucidation where the data will be written, around this field a red framework is drawn. If you release the mouse button, the last selection becomes the fixed input position.

The modification of the transmission format is not to be compared in the expert mode no more with the simple mode. When the formats were firmly given in the simple mode, then the format can now be defined completely freely and flexibly in the expert mode. Read about this in the chapter "Format Transmitting String".

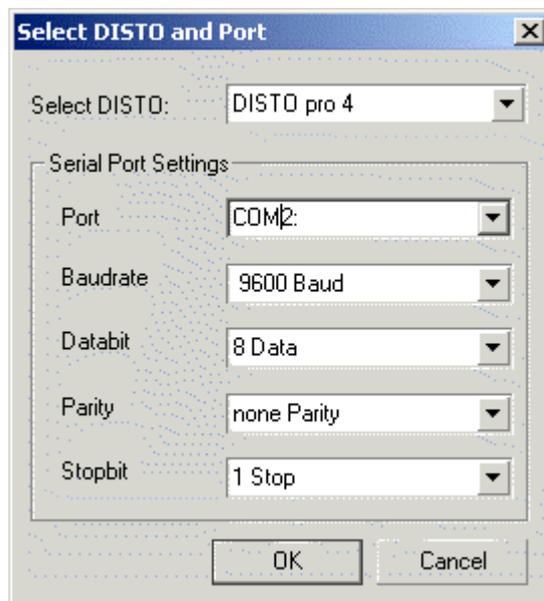
## The Page "Information"



At this page there are now to more buttons labelled "Select DISTO" and "Info about DISTO"

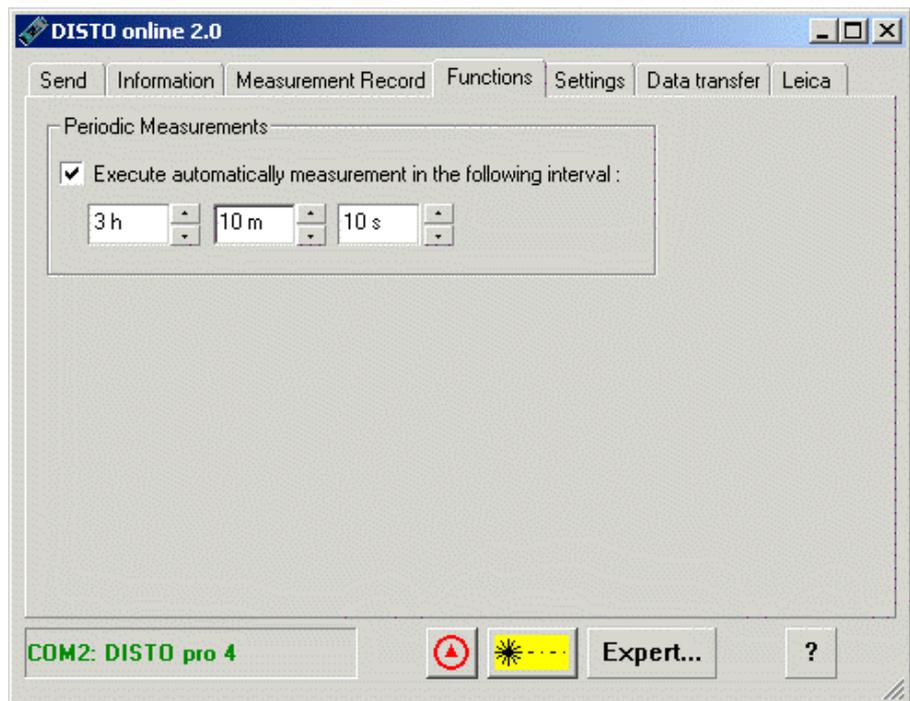
## Select DISTO Type Manually

Click on the button "Select DISTO" and following dialog will pop up:



The DISTO model and the serial port setting's can be selected here freely. If from the selection list "Select DISTO" a DISTO model is selected, then the serial port setting's are adjusted accordingly.

## The Page "Functions"



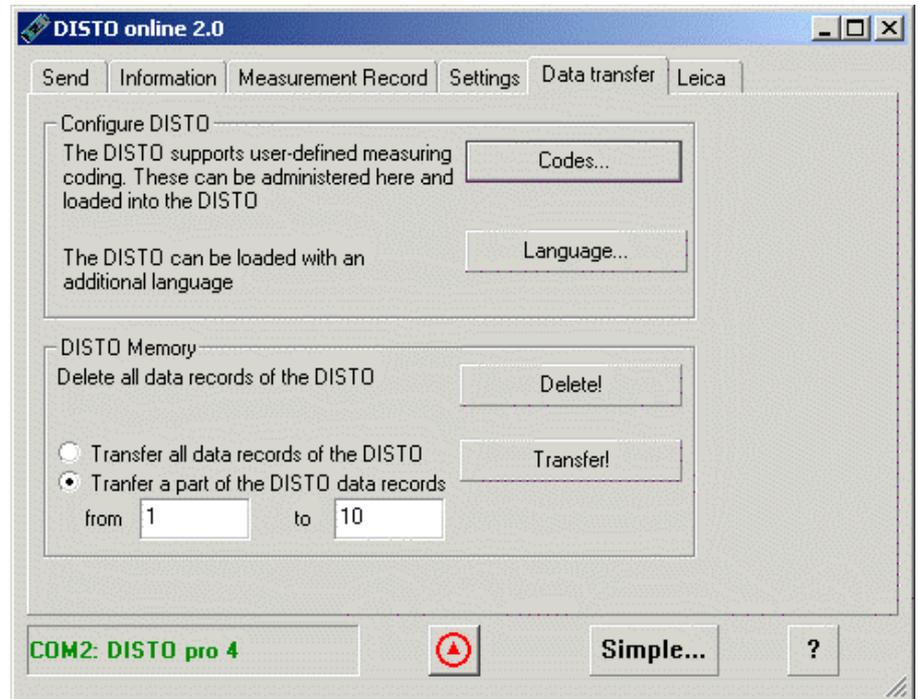
The page "Functions", which is added in the expert mode, enables you to cause measurements in regular intervals from the computer automatically. The possible measuring intervals are between 23 hours, 59 minutes, 59 seconds as the longest interval and five seconds as the shortest interval. It has to be made certain that the measuring interval is not shorter than the measuring period is, since the Leica DISTO could send otherwise errors. The measuring period of the Leica DISTO depends on the measuring distance, on the object surface and on the angle of incidence of the laser beam.

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## Pages depending by DISTO Type

### The Page "Data transfer"

If a Leica DISTO of the new generation (DISTO pro<sup>4</sup>) is attached, then this additional page becomes available. On this page then abilities become available, which are only supported by the new generation of the DISTO. This page can be accessed in both modes of DISTO online.



With "Configure DISTO" you can download new languages into the DISTO and you can administer your own measurement codes.

### Download a new Language into the DISTO

The new DISTO pro<sup>4</sup> supports an additional language, which can be downloaded by DISTO online easily. Click on button "Language... ". The standard Windows "File open" dialog appears in which you can select the desired language file. The language is then downloaded to the DISTO

## Download of User Defined Codes

By clicking on button "Codes" following dialog pops up.



Pos.	Code A	Code B	Code C
1	Flur	Wand	Länge
2	Dusche	Türe	Breite
3	Bad	Decke	Diagonal
4	Essen	Leibung	links
5	Zimmer	Vorsprung	unten
6	Eltern	Kamin	oben
7	Gast	Offnung	innen
8	Speicher	Schwelle	Ost
9	Treppe	Brüstung	West
10	Balkon	Badewann	Fläche
11	Garage	Rolladen	Dreieck
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buttons: Load Codes..., Save Codes..., Send to DISTO, OK

Here you can change the coding as desired, store them, and load them again. And of course you can download them into the DISTO.

For the coding the following limitations exist:

Max. 3\*20 codes can be downloaded into the DISTO.

A code can be as long as max. 8 characters.

# Reference: The pages and dialogs of DISTO online

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## The footing line of DISTO online

In the footing line of DISTO online there are the following items from the left to the right:

**COM2: DISTO pro 4**

This field shows on whether and which DISTO type was detected by DISTO online, and on which port it is attached.



If you click this button a measurement is done. Please note that if DISTO online was in the mode "Send to current input position" the measurement is only recorded because by clicking the button you change the current input position to this button.



This button switches the laser on and off. This button is only available in the expert mode of DISTO online

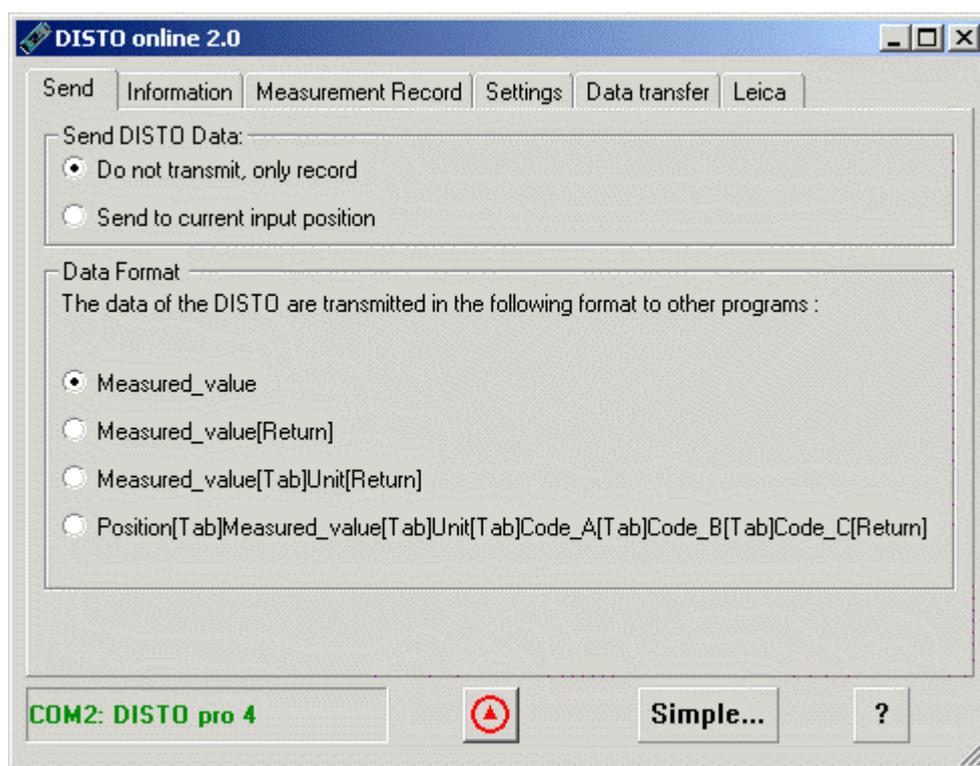
**Simple...**

This button toggles DISTO online between simple and expert mode.

?

Click this button to get the online help system for DISTO online. If you press the F1 key instead you will get context sensitive help.

## The Page "Send" in the Simple Mode



### **Do not transmit, only record**

All measurements from the DISTO are only logged into the measurement record.

### **Send to current input position**

All measurements from the DISTO are formatted as you chose in "Data Format" and were transmitted to the current input position. Additionally the measurements are logged into the measurement record.

### **Measured\_value**

Only the measured value is transmitted.

### **Measured\_value[Return]**

Only the measured value is transmitted followed by a "Return".

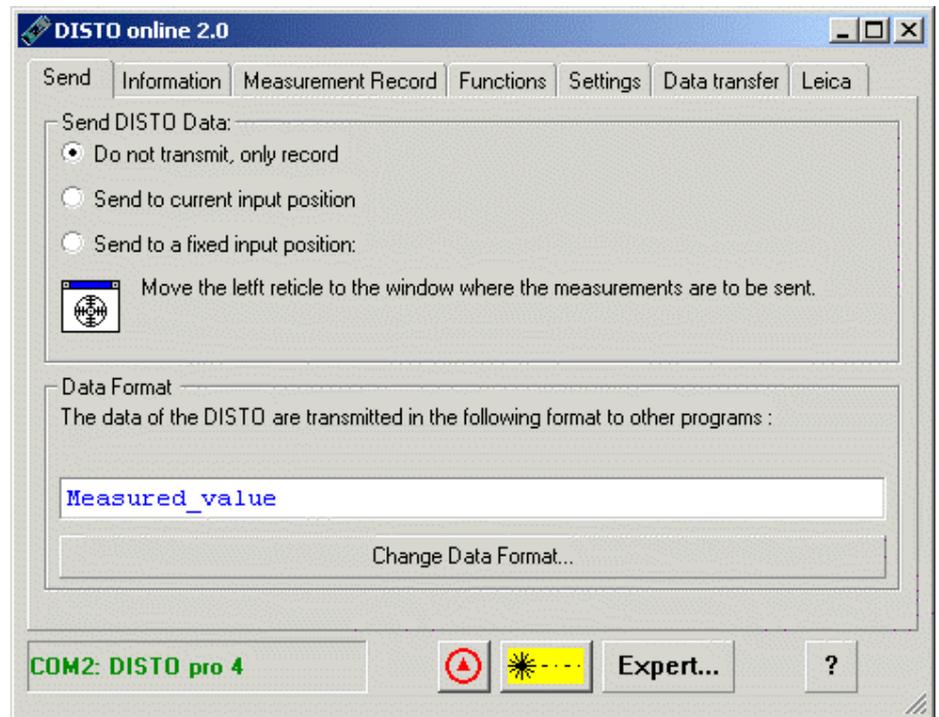
### **Measured\_value[Tab]Unit[Return]**

The measured value followed by a "Tab" and the pertinent unit followed by a "Return" is transmitted.

### **Position[Tab]Measured\_value[Tab]Unit[Tab]Code\_A[Tab]....**

Accordingly some data are sent separated by tabs followed by a terminating "Return"

## The Page "Send" in the Expert Mode



### Do not transmit, only record

All measurements from the DISTO are only logged into the measurement record.

### Send to current input position

All measurements from the DISTO are formatted as you chose in "Data Format" and were transmitted to the current input position. Additionally the measurements are logged into the measurement record.

### Send to a fixed input position

All measurements from the DISTO are formatted as you chose in "Data Format" and were transmitted to the previously fixed input position.

In order to define the fixed input position proceed as following:

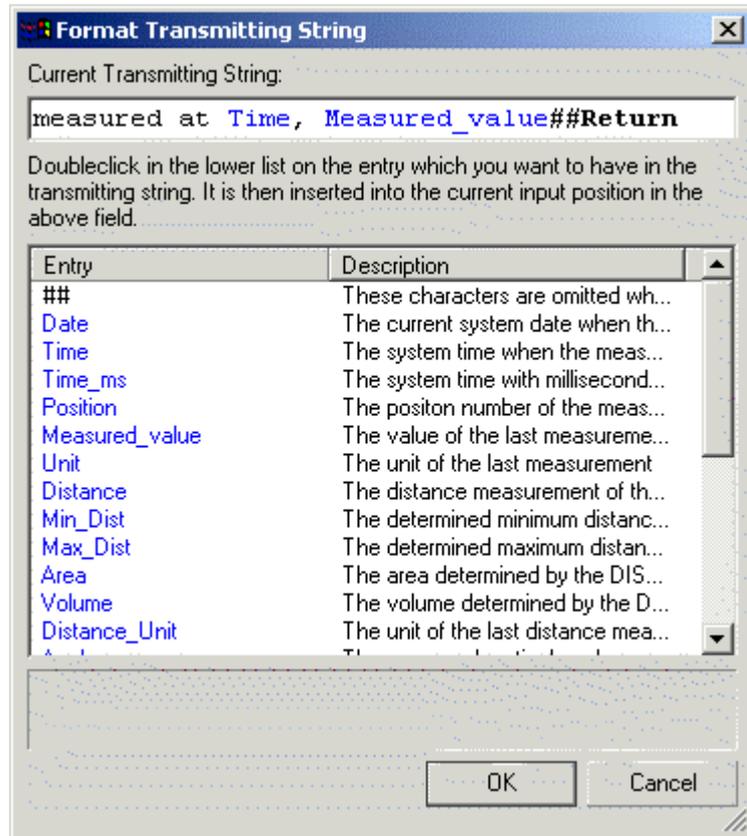
- Click the  icon and don't release the mouse button. The mouse cursor changes its shape into a reticule.
- Move the cursor to the field you want to have the measurements filled in. For elucidation where the data will be written, around this field a red framework is drawn. If you release the mouse button, the last selection becomes the fixed input position.

### Configure your Data Format

You can enter your desired data format directly into the input field. DISTO online triggers thereby to certain keywords: Keywords which are replaced by DISTO data are blue emphasised, e.g. "Measured\_value", "unit" etc., keywords which are replaced by special keys e.g.. "Return", "Tab", are fat represented. All other characters are transmitted unchanged. An exception forms the "# #" sequence, which are used internally as separators, and are not to be transmitted.

## The Dialog "Format Transmitting String"

You get a list with all keywords by clicking the button "Change Data Format..."

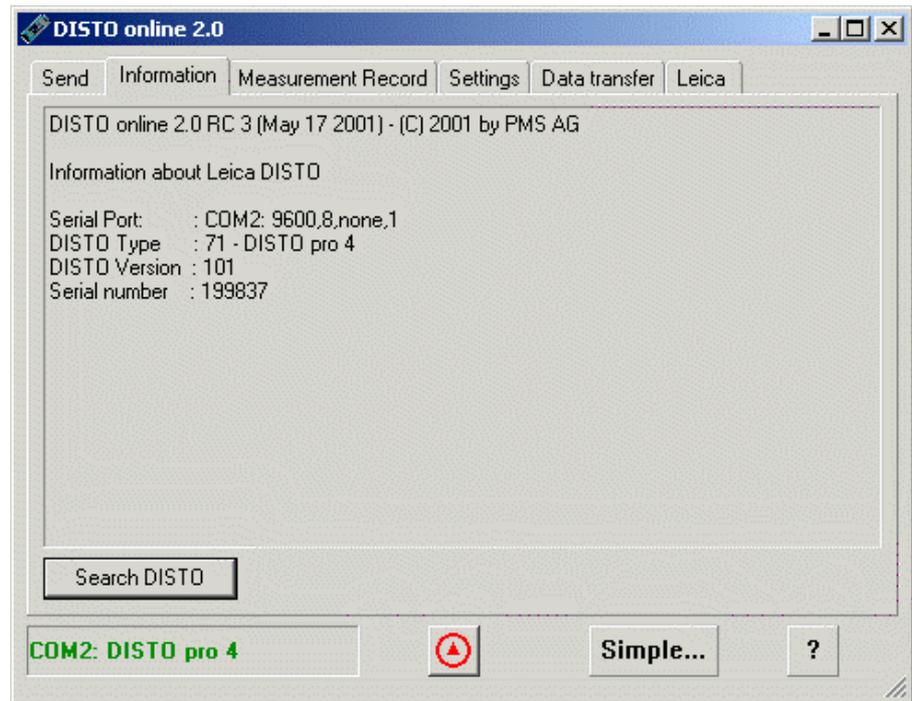


##	Special character for DISTO online. These characters are used in order to keep two successive keywords apart. E.g. DISTO online could not detect "Measured_valueUnit" as "Measured_value" and "Unit ", but it could detect them when they are edited as "Measured_value##Unit" The characters " # # " are used only internally by DISTO online and are not transmitted.
Date	The system date of your computer when the measurement from the DISTO was received. The output format of the data reads YYYY-MM-DD thus e.g. 2001-05-14
Time	The system time of your computer when the measurement from the DISTO was received. The time is stored internally depending upon operating system in millisecond accuracy. The output format of the data reads hh:mm:ss thus e.g. 16:45:30
Time_ms	Like Time however with the additional output of the milliseconds. This accuracy is operating system dependent:  Windows 95/98/ME uses a 1/55 second timer so you get this precision, Windows NT 4.0/2000 is using a 1ms timer so you get a 1ms precision.  The output format of the data reads hh:mm:ss.ms thus e.g. 16:45:30.12
Position	The position number of the measurement in the DISTO memory. Please read your DISTO manual for further information.
Measured_value	The value of the DISTO that has measured last. Could be distance, area, volume, angle etc..
Unit	The corresponding unit for Measured_value

<a href="#">Distance</a>	Only the last distance, not area, volume etc.
<a href="#">Min_Dist</a>	The determined minimum distance during a continuous measurement which must be started from DISTO online
<a href="#">Max_Dist</a>	The determined maximum distance during a continuous measurement which must be started from DISTO online
<a href="#">Area</a>	Only the last area, not distance or volume etc
<a href="#">Volume</a>	Only the last volume, not distance or area etc.
<a href="#">Distance_Unit</a>	The corresponding unit for Distance
<a href="#">Angle</a>	Only measured or calculated angles.
<a href="#">Angle_Unit</a>	The corresponding unit for the angle
<a href="#">Code_A,B,C</a>	The freely definable codes for measurements. Please not also the chapter about downloading them into the DISTO.
<a href="#">Key_code</a>	The transmitted the key code for the DISTO , for closer information read your manual for the DISTO.
<b>Return</b>	DISTO online simulates the press of the "Return" key on the keyboard
<b>Tab</b>	DISTO online simulates the press of the "Tab" key on the keyboard
<b>CursorLeft</b>	DISTO online simulates the press of the "Cursor left" key on the keyboard
<b>CursorRight</b>	DISTO online simulates the press of the "Cursor right" key on the keyboard
<b>CursorUp</b>	DISTO online simulates the press of the "Cursor up" key on the keyboard
<b>CursorDown</b>	DISTO online simulates the press of the "Cursor down" key on the keyboard

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## The Page "Information" in the Simple Mode



The page "Information" shows you more exact information about the DISTO online program and about the attached Leica DISTO.

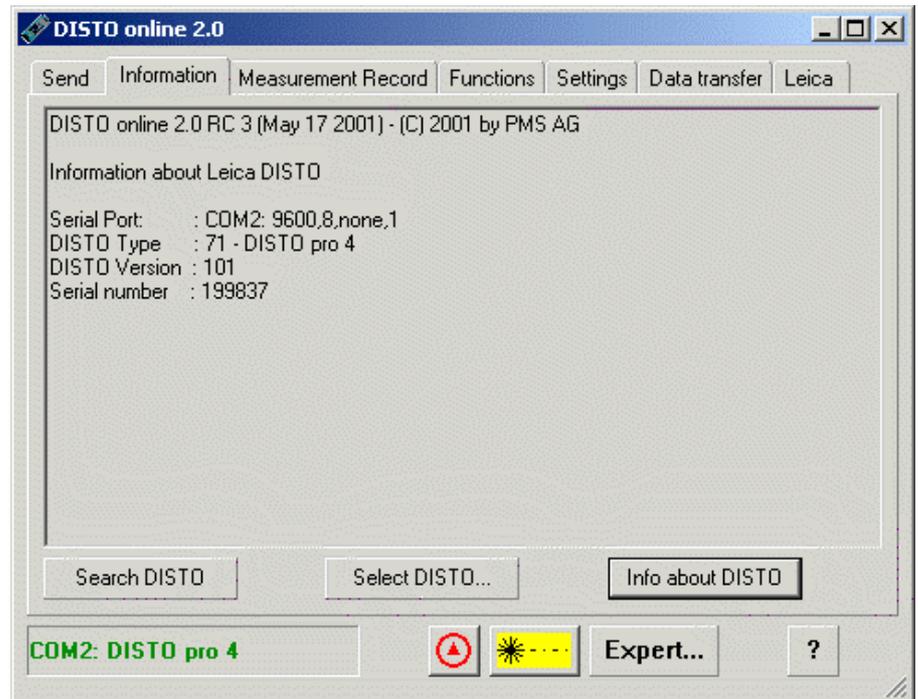
If the DISTO outputs error messages, you can get here the error numbers and an explaining text.

### Search DISTO

By clicking this button all serial ports of the computer are scanned for an attached DISTO. If a DISTO is found, then the search is stopped.

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## The Page "Information" in the Expert Mode



The page "Information" shows you more exact information about the DISTO online program and about the attached Leica DISTO.

If the DISTO outputs error messages, you can get here the error numbers and an explaining text.

### **Search DISTO**

By clicking this button all serial ports of the computer are searched for an attached DISTO. If a DISTO is found, then the search is stopped.

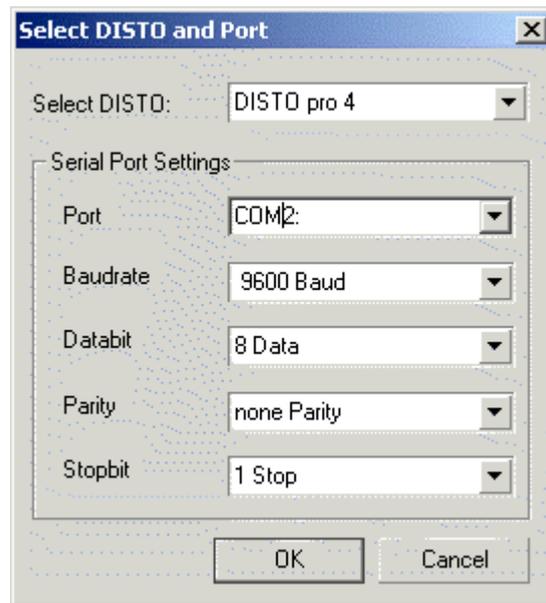
### **Select DISTO**

By clicking this button a dialog pops up in which you can make your own values for the type of the DISTO and the serial port.

### **Info about DISTO**

By clicking this button a "send serial number" instruction is sent to the DISTO. If the DISTO answers, then the information about the DISTO is displayed, if the DISTO did not respond, then no information is displayed. Thus it can be determined easily whether communication with the DISTO is possible or not.

## The Dialog "Select DISTO and PORT"



### Select DISTO

In this selection list all at present well-known DISTO are listed. If one is selected this, then the fields Baud rate, data bit, parity and stop bit become automatically pre-set to the factory setting's of the respective DISTO.

Present well-known DISTO types are

DISTO GSI

DISTO memo<sup>2</sup>/pro<sup>2</sup>

DISTO pro<sup>4</sup>

### Port

In this selection list all available serial interfaces of the computer are to be listed, i.e. interfaces occupied by another program are not listed here.

### Baud rate

Select here the Baud rate for communication with the Leica DISTO. Possible Baud rates are from 110 to 56000 Baud.

### Data bit

Select here the number of data bits for communication with the Leica DISTO. Possible data bit settings are 7 or 8

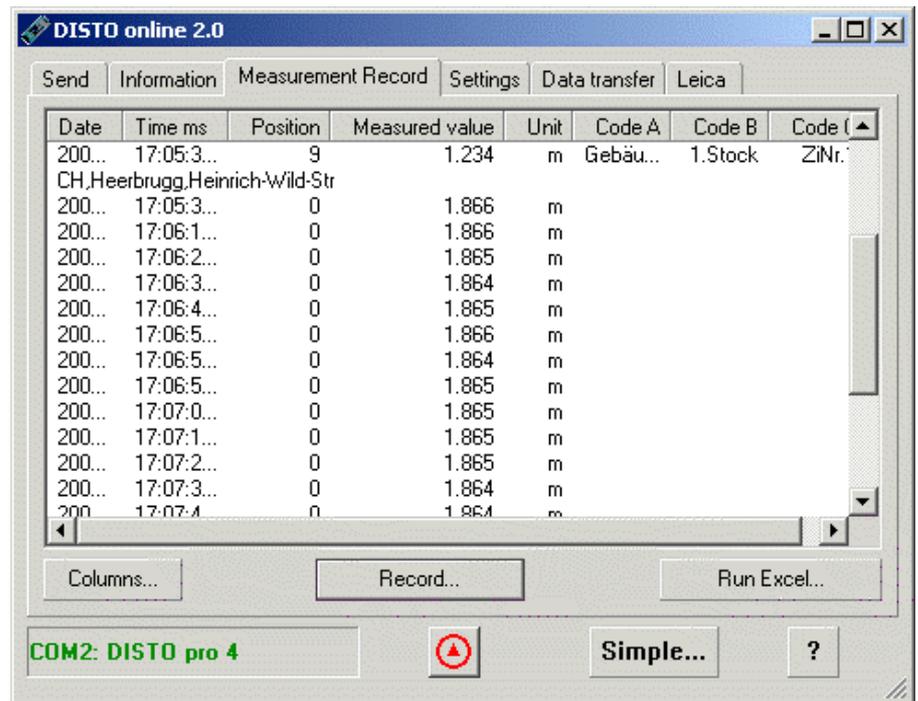
### Parity

Select here the communication parity bit Possible values are none, even or odd parity

### Stopbit

Select here the number of stop bits for communication with the Leica DISTO. Possible values are 1, 1.5 and 2.

## The Page "Measurement Record"



Here all measurements of DISTO online are logged. The measurements are also stored automatically in the file " DISTO online YYYY-MM\_DD.log ".

### Columns

Opens a dialog in which those columns could be selected which are to be displayed. Also own inscriptions for the columns can be defined.

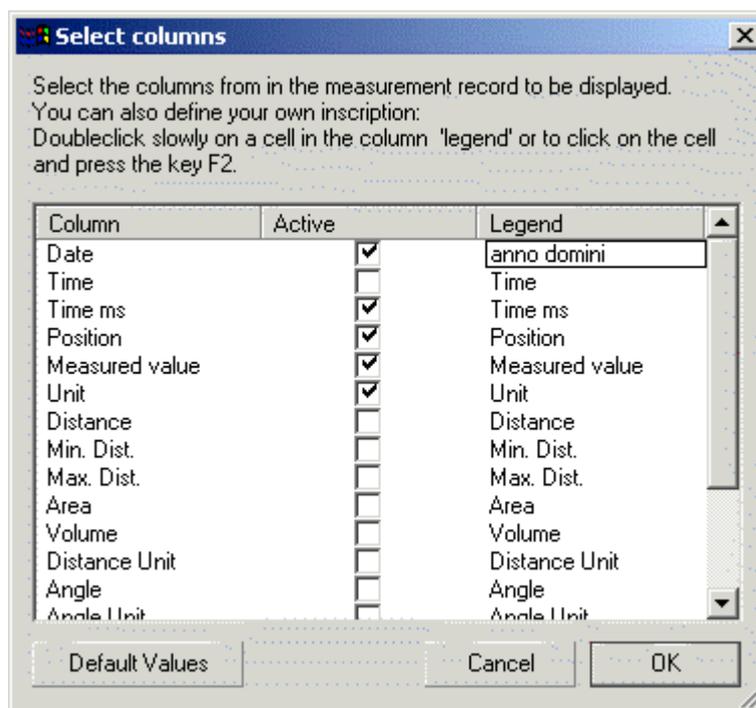
### Record

By clicking the button "Record" you can process the measurement log: You can save the records, you can open old records, you can print it on your standard printer. You can also delete the whole record.

### Run Excel

By clicking this button DISTO online write an Excel file with the current record and opens Microsoft Excel with this file.

## The Dialog "Select columns"

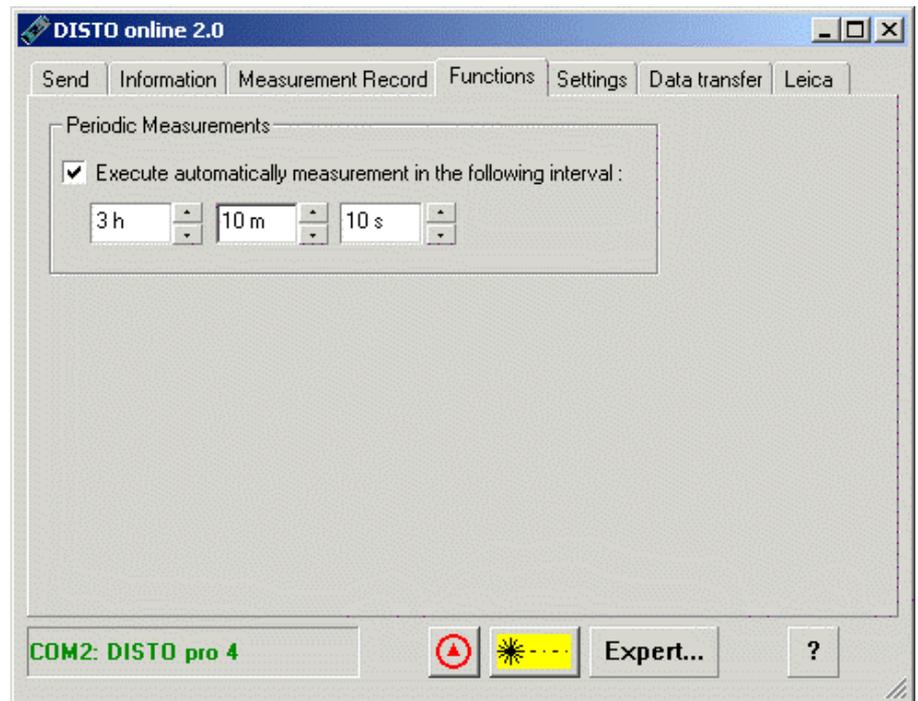


Here you can select these columns which are to be displayed in the measurement record. By a slow double click on a cell in the column "Legend" you can change the inscription of the corresponding column in the measurement record. All modifications are reflected immediately in the measurement record.

### Default Values

The only following columns are activated: Time, position, Measured value and Unit, all self defined inscriptions are deleted and replaced by the original inscriptions.

## The Page "Functions"



Here it can be adjusted whether and in which time interval DISTO online cause measurements. This can be used for monitoring functions.

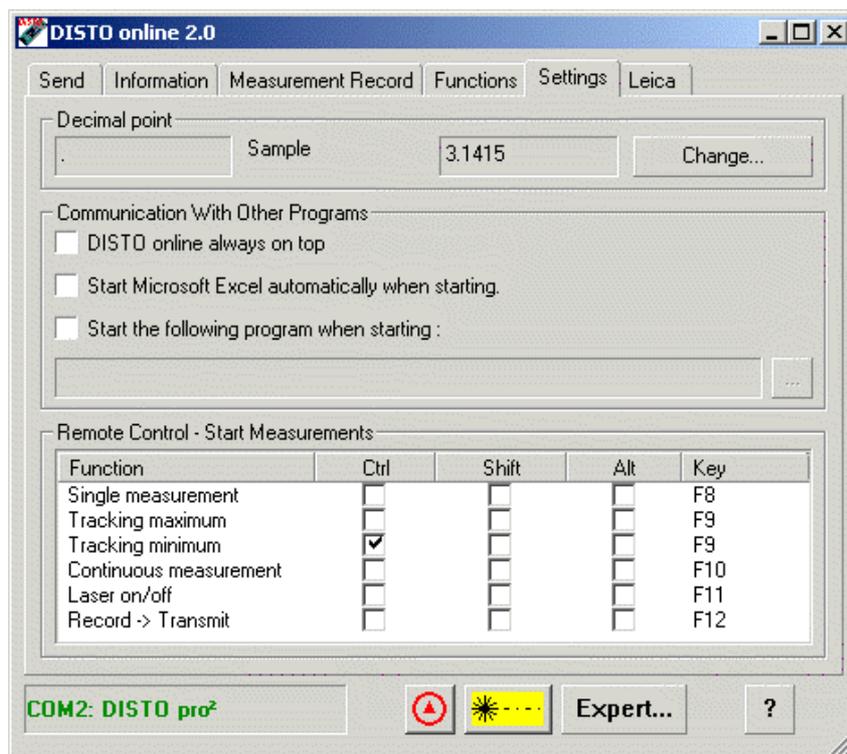
### **Execute automatically measurements in the following interval**

The possible measuring intervals are between 23 hours, 59 minutes, 59 seconds as the longest interval and five seconds as the shortest interval. It has to be made certain that the measuring interval is not shorter than the measuring period is, since the Leica DISTO could send otherwise errors. The measuring period of the Leica DISTO depends on the measuring distance, on the object surface and on the angle of incidence of the laser beam.

If the field is deactivated, then DISTO online execute no measurements.

The measuring interval begins with each modification of the gate time again.

## The Page "Settings"



### Decimal point

Some programs need the dot as decimal point, other one may need the comma for decimal separators. Here can be adjusted which character should be used as decimal point

### DISTO online always on top

If this box is checked, DISTO online will always stay on top of any other program.

### Start Microsoft Excel automatically when starting

If this box is checked, DISTO online automatically starts up Microsoft Excel

### Start the following program when starting

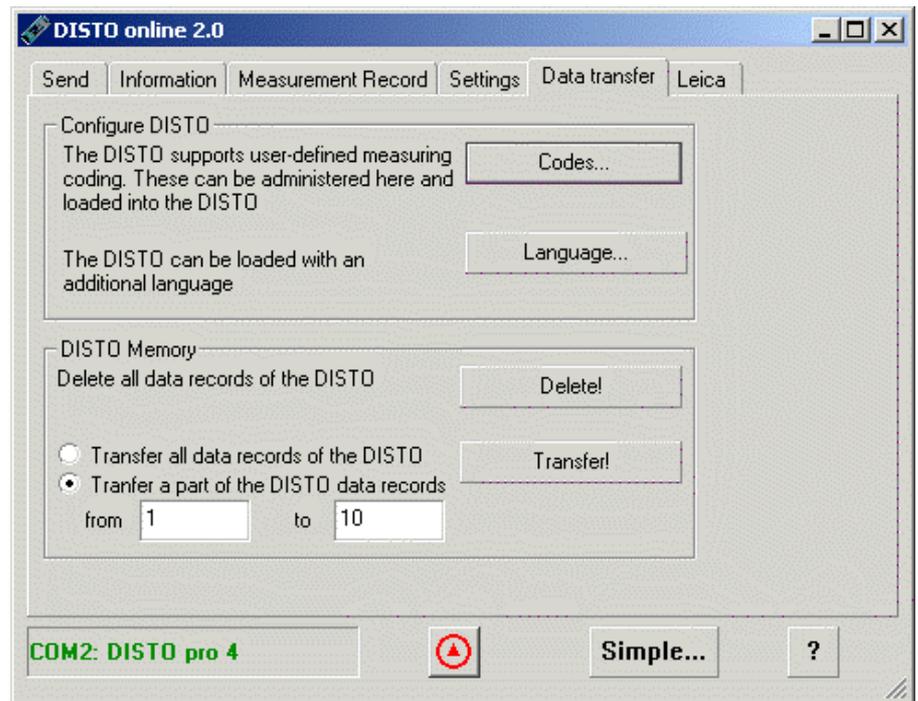
If this box is checked, DISTO online automatically starts up the selected program. The program which can be started can be chosen by clicking on the button [...].

### Remote Control – Start Measurements

DISTO online observes sequentially your computer keyboard. If one of these combinations of keys is pressed, then the appropriate internal command is executed. This will work also even if DISTO online is not the active program.

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## The Page "Data transfer"



This page appears only if a DISTO of the newer generation (DISTO pro<sup>4</sup>) is attached to the computer.

### **Codes...**

This button a dialog pops up in which you can manage the usercodes for DISTO measurements.

### **Language**

This button starts the Windows "file open" dialog. There you can choose a language file for the DISTO. If you accept the dialog with [OK] then the language is downloaded to the DISTO.

### **Delete!**

This button deletes all the DISTOs memory.

### **Transfer!**

With this button all or only determined data records of the Leica DISTO can be loaded to DISTO online. The data are logged in the measurement record, and may be transmitted to a further program. For this however the option "Send to a fixed input position" has to be activated.

## Manage DISTO Usercodes



Pos.	Code A	Code B	Code C
1	Flur	Wand	Länge
2	Dusche	Türe	Breite
3	Bad	Decke	Diagonal
4	Essen	Leibung	links
5	Zimmer	Vorsprung	unten
6	Eltern	Kamin	oben
7	Gast	Öffnung	innen
8	Speicher	Schwelle	Ost
9	Treppe	Brüstung	West
10	Balkon	Badewann	Fläche
11	Garage	Rolladen	Dreieck
12			
13			
14			
15			
16			
17			
18			
19			
20			

Buttons: Load Codes..., Save Codes..., Send to DISTO, OK

### Load Codes

By clicking this button a Windows "File open" box pops up. Here you can select any saved codes.

### Save Codes

By clicking this button you can save the current codes to any file using the windows "File save as" box.

### Send to DISTO

By clicking this button DISTO online downloads the current codes to the Leica DISTO. The progress is visualised by a progress bar.

Caution: Do not disconnect your DISTO during transfer!

### Edit Codes

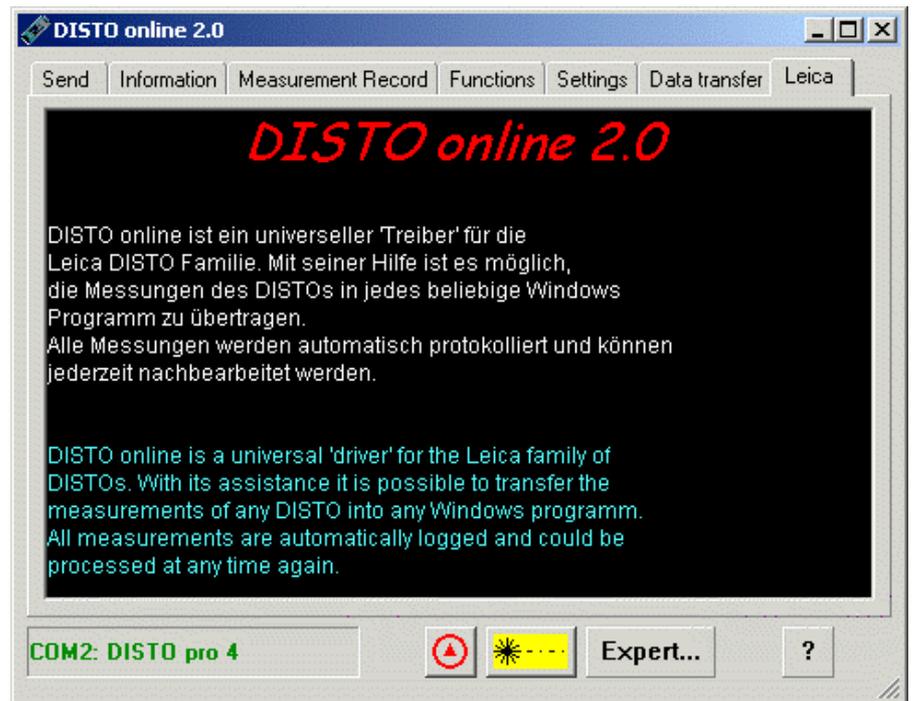
By double clicking into a cell you can edit the code. After pressing the return key the code is modified. Please note that a code could have at least 8 characters.

### Delete Codes

Select one or more rows and press the [DEL] key on your keyboard. The selected rows will be deleted after a confirmation.

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## The Page "Leica"



Here you can read some interesting information about DISTO online. There are also some hyperlinks for your browser.



# Troubleshooting

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## DISTO online did not detect a Leica DISTO

### **Can't open COMx:. The device is not available or not existing.**

If DISTO online only display such line on page information there may be following errors:

The serial ports COM1, 2 etc. are missing actually. Maybe check your BIOS set-up.

The interface COM1, 2 etc. is occupied by another program. That could be e.g. a driver for a modem, a driver for a mouse, a synchronisation program for a Palm, a Psion or a Windows CE Organiser etc.. Check, whether you installed such a program, and configure you it in such a way that the interface is released, or uninstall the appropriate program.

### **Port COMx: opened. Searching for DISTO...no DISTO found.**

This error may have many reasons:

At this port there is no DISTO connected.

The interwiring between DISTO and PC could be incorrect, check your data cable.

The interface parameters of the Leica DISTO do not correspond to the factory settings. In order to reset the parameters consult the manual to your DISTO.

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## DISTO online displays "your system files are outdated... "

On your system some outdated system files are installed, i.e. you have one of the first versions of Windows 95, or of Windows NT 4.0. You can update the system files as follows:

Install the Microsoft Internet Explorer 5.x or newer. The installation of this program updates also most system files on your computer.

Install the max. installation of DISTO online. It will update also update all necessary system files. You will find the installation program either on <http://www.disto.com> or on <http://www.elcovision.com>.

# Glossary

## **DISTO GSI**

The Leica DISTO with the serial "Geo System Interface". This differs slightly from a RS232 interface. The DISTO GSI usually functions, but not always, with a computer.

The factory settings for the serial port are:

2400 baud, 7 data bit, 1 stop bit, even parity

## **DISTO memo<sup>2</sup>/pro<sup>2</sup>**

The DISTO based upon DISTO basic.

The factory settings for the serial port are:

9600 baud, 7 data bit, 1 stop bit, even parity

## **DISTO pro4**

The newest DISTO.

The factory settings for the serial port are:

9600 baud, 8 data bit, 1 stop bit, no parity

## **DISTO RS232**

The first Leica DISTO with a serial RS 232 interface. Otherwise identical to the DISTO GSI.

The factory settings for the serial port are:

2400 baud, 7 data bit, 1 stop bit, even parity



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