

## METRAwin 10

Parameters Configuring and Analysis Software for Electrical Measuring Instruments



# METRAwin<sup>®</sup> 10

the measuring software  
for the PC

 GOSSEN METRAWATT

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We make every effort to keep these instructions up-to-date in accordance with the latest software version. It is nevertheless possible that differences may exist between the software and the instructions. Further information may be provided in a README.TXT file in your program directory.

Subject to change without notice.

## Preface

### Contents of these Operating Instructions

This document describes the specific functions of METRAWin 10 parameters configuring and analysis software in combination with METRAHit 30M multimeters. Detailed information regarding the device functions is included in the operating instructions for each respective instrument.

Use of the general functions of this software is described in a separate document which can be accessed by clicking **Program Functions** in the **Help** menu.



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### Target Group

These instructions are intended for users of the software.

The software is designed for use with the Microsoft Windows<sup>®</sup> operating system. Users must be familiar with basic Windows<sup>®</sup> functions.

### Scope of Validity

These instructions are valid for METRAWin 10 version 6.20 or higher.



### **Note**

The version number can be displayed by clicking **About** in the **Help** menu.

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# 1 Features

## 1.1 Scope of Functions

In conjunction with multimeters type METRAHit 30M 10 the PC software METRAWin 10 realizes the following functions:

<b>Online recording of meas. data</b>	Polling, visualization and recording the current readings of up to four simultaneously connected multimeters in online mode. In single-channel operation, the shortest recording interval is 0.1 second (depending on the measurement function).
<b>Read and visualize data storage</b>	Reading, visualization and archiving of data recorded in the device memory.
<b>Setup device</b>	<p>Remote configuration and querying of measurement functions and ranges – regardless of the current position of the function selector switch on the unit – as well as of memory parameters.</p> <p>For coupling a METRAHit 30M multimeter to a PC an RS232 interface adapter type "BD232" or IR-USB interface adapter type "USB-HIT" (optional accessory) is required in each case. These connect the infrared interface of the multimeter over a 1.5 m long cable with a free RS232 or USB interface of the PC.</p> <p>The adapter type BD232 can be cascaded: Up to four multimeters, each with an adapter can be connected simultaneously to build a multi-channel measurement system.</p> <p>Simultaneous communication over different adapter or with other multimeter types is not possible.</p>

## 1.2 System Requirements

Refer to the description of the program functions in section 1.2 (**Program Functions** in the **Help** menu) for general requirements.

Special requirements for the connection of multimeters:

### Hardware Requirements

<b>Computer</b>	1 free USB port per instrument with a load capacity of 50 mA for electrical power supplied via USB or 1 free COM port
<b>Measuring Instruments</b>	1 to 4 multimeter(s) METRAHit 30M
<b>Adapters</b>	1 to 4 RS232 Interface Adapter(s) BD232 or 1 IR-USB Interface Adapter USB-HIT (optional accessory)
<b>Software Requirements</b>	<p>Installed METRAWin 10 software (version 6.20 or higher) with device drivers for METRAHit 30M multimeters (<i>MULTL_O.DLL</i>).</p> <p>Installed device driver „GMC-I Driver Control“ for IR-USB interface adapter USB-HIT with assigned virtual COM port in the range COM1 ... COM8.</p>


## 2 Initial Start-Up

### 2.1 Setting Communication Parameters at the Multimeter

The following settings are important for communication between METRAWin 10 and the multimeter, and must be entered using the device's setup menu. Please refer to the operating instructions for the multimeter for detailed information on how to set the device parameters.

#### Automatic PowerOff disable

During computer controlled multimeter operation, it is usually advisable to deactivate automatic device shutdown which is provided in order to extend the service life of the batteries:

- ▶ Hold the **FUNC** key pressed when switching on the device with key **ON|OFF** for 2s.
- ⇒ The  symbol is displayed at the upper left-hand corner of the multimeter display.



#### Note

Maximum operating time with new alkaline manganese batteries is 12 hours approx. The **NA 5/600** mains power pack (accessory) is recommended for long-term recording.

#### Baudrate

The communication speed (baud rate) of the device can be set to 9600 baud or 19200 baud and remains stored non-volatile. In EMC critical environments or RS232 cable lengths > 3 m (max. 10 m) the lower baud rate should be set. For online records with sampling intervals of less than 1 s, the higher baud rate must be selected.

**MENU : rS 232 : 9600/ 19200 ↵**

#### Device address

The device address can be set as desired within a range of 1 to 15. If several multimeters are connected simultaneously by means of RS232 Interface Adapters BD232, it is mandatory to set the individual multimeters to different addresses:

- ▶ **MENU : Addr : 1 / 2 / ... / 15 ↵**

The measuring channels C1 through C10 in METRAWin 10 are assigned in ascending order of the device addresses.



#### Example

Multimeter Device Address	METRAWin 10 Meas. Channel
Addr 1	C1
Addr 5 (better: Addr 2)	C2
Addr 12 (better: Addr 3)	C3

### 2.2 Connecting the Multimeter to the PC

In order to connect a METRAHit 30M multimeter to the PC, two different interface adapters (optional accessory) are available:

- The IR-USB Interface Adapter USB-HIT enable the connection of only one multimeter to a USB interface of the PC.
- With the cascable RS232 Interface Adapters BD232 up to four multimeters can be simultaneously connected to a RS232 interface of the PC.

The adapters connect the optical infrared interface of the multimeter over a 1.5 m long cable to the corresponding interface on the PC.

Separate supply power is not required, because the adapter is supplied with electrical power from the connected port.



### Notes

By means of a commercially available USB-RS232 converter also the RS232 interface adapter BD232 can be connected to a USB port. However, many converters available on the market are not equipped with the control signal contacts and load capacities needed to supply the adapter. An appropriate USB-RS232 Converter can also be purchased from us.

Maximum distance between the PC and the multimeter is restricted to approximately 1½ meters due to the length of the cable for the IR-USB interface adapter. USB extension cables and USB couplers for other communication systems (e.g. Ethernet, Bluetooth etc.) are available from commercial outlets, by means of which greater distances can be spanned either with a cable, or with a wireless connection. However, we have had no experience with systems of this type to date.

The interface of the multimeters doesn't use the IrDA protocol. Therefore a communication via an IrDA port of a PC is not possible.

Ensure that the IR elements are not obscured by stickers on the upper end of the housing.

## 2.2.1 Connecting via USB IR Interface Adapter



### Important Notes

Install the USB device driver before you plug one of the adapters on the PC. Otherwise there is a risk that a wrong driver is installed by the automatic driver installation from Windows Update.

Note that for the driver installation administrator rights will be required!

### Installing the USB Device Driver

A CD ROM is provided with the adapter which includes the driver installer "GMC-I Driver Control" and the corresponding Installation Instructions. Both can also be found on the METRAWin 10 installation CD and on our website for free download: <http://www.gossenmetrawatt.com> > Products > Software > Software for Measuring Devices > Utilities > Driver Control

► To install it, follow the steps described in the Installation Instructions.

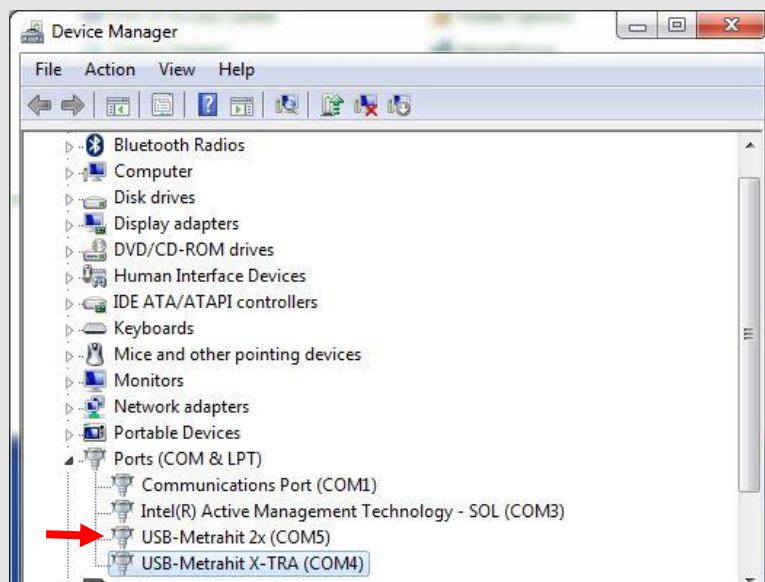
Driver Control installs the USB device drivers for almost all of our products with USB port. When connecting the device / adapter to an USB port the associated driver is loaded and Windows assigns to the device / adapter an individual, virtual COM port.



### Note

You can check to make sure that installation has been successful in the Windows Device Manager, which also displays the COM port number which have been assigned to the adapter and must be in the range COM1 ... COM8:

Click the **Start** button, then **Control Panel : System : Hardware : Device Manager**



### Plug the Adapter to the Multimeter

- ▶ Snap-on the adapter USB-HIT at the top of the multimeter as shown here.



### Connecting the Adapter to the PC

- ▶ Insert the adapter's USB plug into a free USB port at the PC.
  - ⇒ If the USB driver for the adapter/device has already been installed, this is now loaded by the Windows operating system and a virtual COM port is assigned to the adapter/device.
  - ⇒ Else Windows reports that a new USB device has been found and will start driver installation. Cancel this and proceed as described above.

## 2.2.2 Connecting via RS232 Interface Adapter

### Plug the Adapter to the Multimeter

- ▶ Snap-on the adapter at the top of the multimeter as shown here.



- ▶ If you want to build a multi-channel measurement system, you can connect up to four adapters to each other and secure with the thumbscrews as shown above.

### Connecting the Adapter(s) to the PC

- ▶ Plug the supplied RS232 interface cable to the left side of the adapter, and then connect the other end of the cable to an available RS232 port (COM port) of the PC.



#### **Attention!**


The housing of the adapter consists of electrically conductive plastic BD232. It must not be touched with live parts.

## 2.3 Executing the Communication Test

As long as the device is switched on, its infrared interface is ready to receive data and is capable of communicating with METRAWin 10.

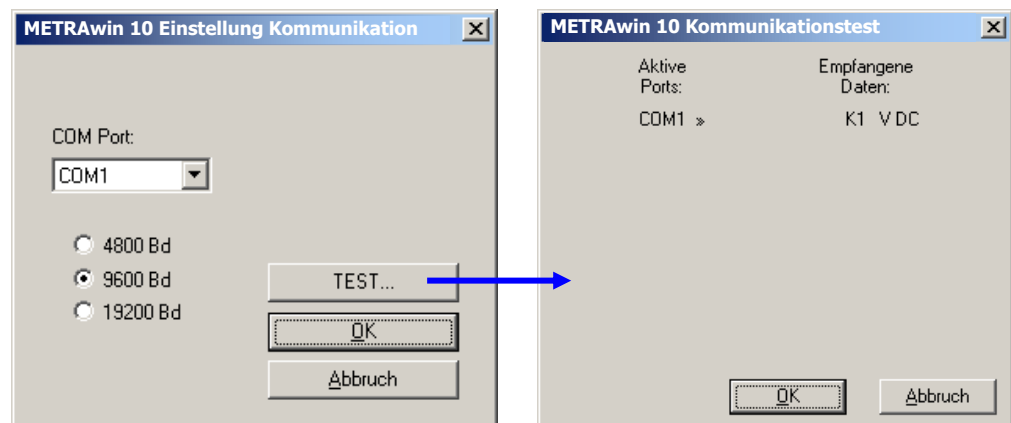
A communication test can be executed in order to test the connection between METRAWin 10 and the multimeter for correct functioning:

- ▶ Switch the multimeter(s) on and select any desired measuring function.
- ▶ Start METRAWin 10 and make sure that **METRAHit 30M** is selected under **Device Type** in the **Device** menu.
- ▶ Open the **Communication Setup** dialog box by clicking **Communication** in the **Device** menu.
- ▶ Select the **COM Port** being used and the baudrate **9600 Bd / 19200 Bd** being set at the multimeter.
- ▶ Start the communication test by clicking the **[TEST]** button.

⇒ The  icon in the **tool bar** indicates active communication:  
 green lamp on = PC is transmitting data to the device  
 red lamp on = PC is receiving data from the device

⇒ If communication functions correctly, the measured quantities acquired from the multimeters, as well as their measuring channel assignments, are listed after a few seconds in the **Input Test** window under the **Received Data** heading.

- ▶ These are automatically activated as measuring channels in the **Channels Setup** dialog box after closing the window by clicking the **[OK]** button.



If data are not received correctly, “- - -” is displayed or an appropriate error message appears. If this is the case, check the above described parameter settings at the multimeter, and make sure that the adapters have been correctly connected and that their drivers have been installed.



### Note

The elements in the **Communication Setup** dialog box are identical to those in the **Input Setup** section of the **Channels Setup** dialog box, by means of which the communication test can also be executed.



## 3 Operation

### 3.1 Online Recording of Live Measurement Data

Before starting online recording, be sure to read all of the applicable notes included in the description of the **Program Functions** in section 3.5.2 regarding the **Start Online Recording** function in the **File** menu.

The following specific operating parameters and conditions apply to recording currently measured live data from the connected METRAHit 30M multimeter(s) to the PC by means of METRAWin 10:

- Up to four multimeters can be connected to the PC (using RS232 Interface Adapters BD232), to which the active measuring channels C1 through C4 will be assigned (in ascending order based on the device addresses being set at the multimeters).
- The shortest selectable sampling interval is 0.1 second.  
*Note: Measured values can be stored to memory at the multimeters at a minimum sampling interval of 0.01 seconds.*
- The desired measuring function and range can be set manually by means of function selector switch on the multimeter or controlled by METRAWin 10 (→3.3).
- As is the case with all devices which are equipped with auto-ranging, it is advisable to deactivate this function and to work with an adequately large, fixed measuring range. Erroneous measured values and/or recording gaps may otherwise occur as a result of range switching. This applies to recordings in device memory as well.

### 3.2 Reading Out and Visualizing Stored Data

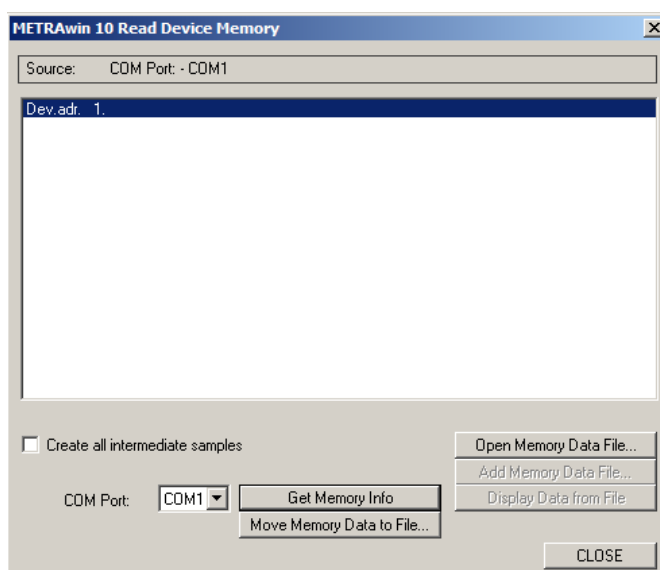
Proceed as follows in order to read out and visualize measurements which have been recorded to memory at METRAHit 30M multimeters:

Device : Read Memory



[ F5]

- Open the **Read Device Memory** dialog box by clicking **Read Memory** in the **Device** menu.



The fields and buttons in this dialog box have the following functions:

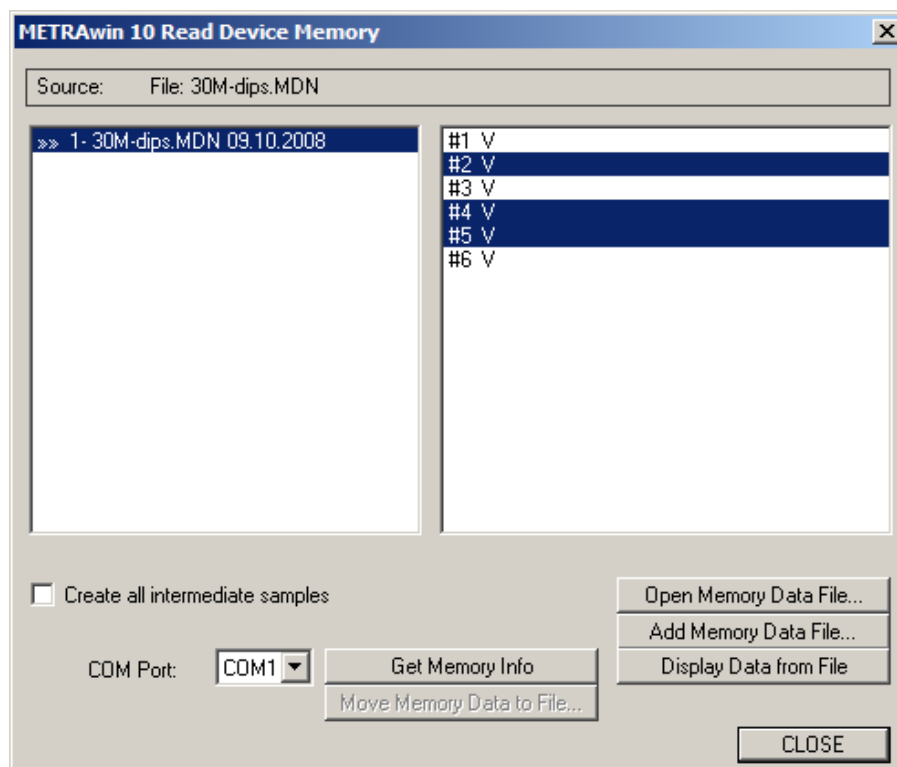
COM Port:

Select the **COM Port** being used.

Get Memory Info

Starts a search for connected multimeters and lists the device address(es) of the found units.

- Move Memory Data to File** Opens the **Save as** dialog box in order to select a directory path and enter a filename for the memory data file to which the memory contents from the selected devices will be saved after clicking the **[Save]** button. The file type for memory data from these multimeters is always pre-specified as *MDN*.
- Progress is displayed in the information bar at the main program window during read-out.
- 
- Open Memory Data File** The above described files can be opened again later by clicking this button.
- The button has the same function as the **Memory Data File** item under **Open File** in the **File** menu, which is described in detail in section 3.5.2 under **Program Functions** in the **Help** menu.
- 
- Add Memory Data File** An additional memory data file can be added to an already open memory data file by clicking this button. This may also be the already opened file, for example if it contains several recordings.
- 
- Display Data from File** After memory read-out has been completed, or memory data files have been opened or added, the measuring units are displayed in the info fields for the recordings (data blocks) which are contained in the respective multimeter's memory.



- ▶ Select the recording(s) being desired for analysis.
- ▶ Then click the **[Display Data from File]** button.
  - ⇒ The measured values of the selected recording(s) are displayed on the screen and can be analyzed in different view modes, edited, printed, and finally be stored in a measurement data file *\*.MDF*.



#### Note

Since these multimeters have no real-time clock, the acquisition of the measurement data in memory is done with time information relative to the start of recording 00:00:00. This start of recording METRAWin 10 refers to the time when reading out the memory.

### 3.3 Device Settings via the Interface

With METRAWin 10 the current settings of the connected multimeter(s) can be queried and controlled remotely. The remote setting of the measurement functions and ranges is possible regardless of the current position of the function selector switch.

Device : Setup Device



- Open the **Device Setup** dialog box by clicking **Setup Device** in the **Device** menu, by means of which remote control of the devices is possible.

The fields and buttons in this dialog box have the following functions:

**Search**

Starts a search for connected multimeters under the selected **Comm. port** with the defined **Baud rate**. After a few seconds the number of found devices and their addresses are displayed.

**Read In**

Reads in current settings and status information from the multimeter with the currently selected **Dev. number** (address), and displays them.

**Send**

Sends the given device setting parameters to the selected device. Please refer to the instruction manual of the multimeter for the meaning of these parameters and functions as well as their setting ranges.

**Memory All dev.**

Sends the following memory operation commands to all devices.

**Memory Start**

Starts recording of the measured data in the memory of the multimeter.

**Memory Stop**

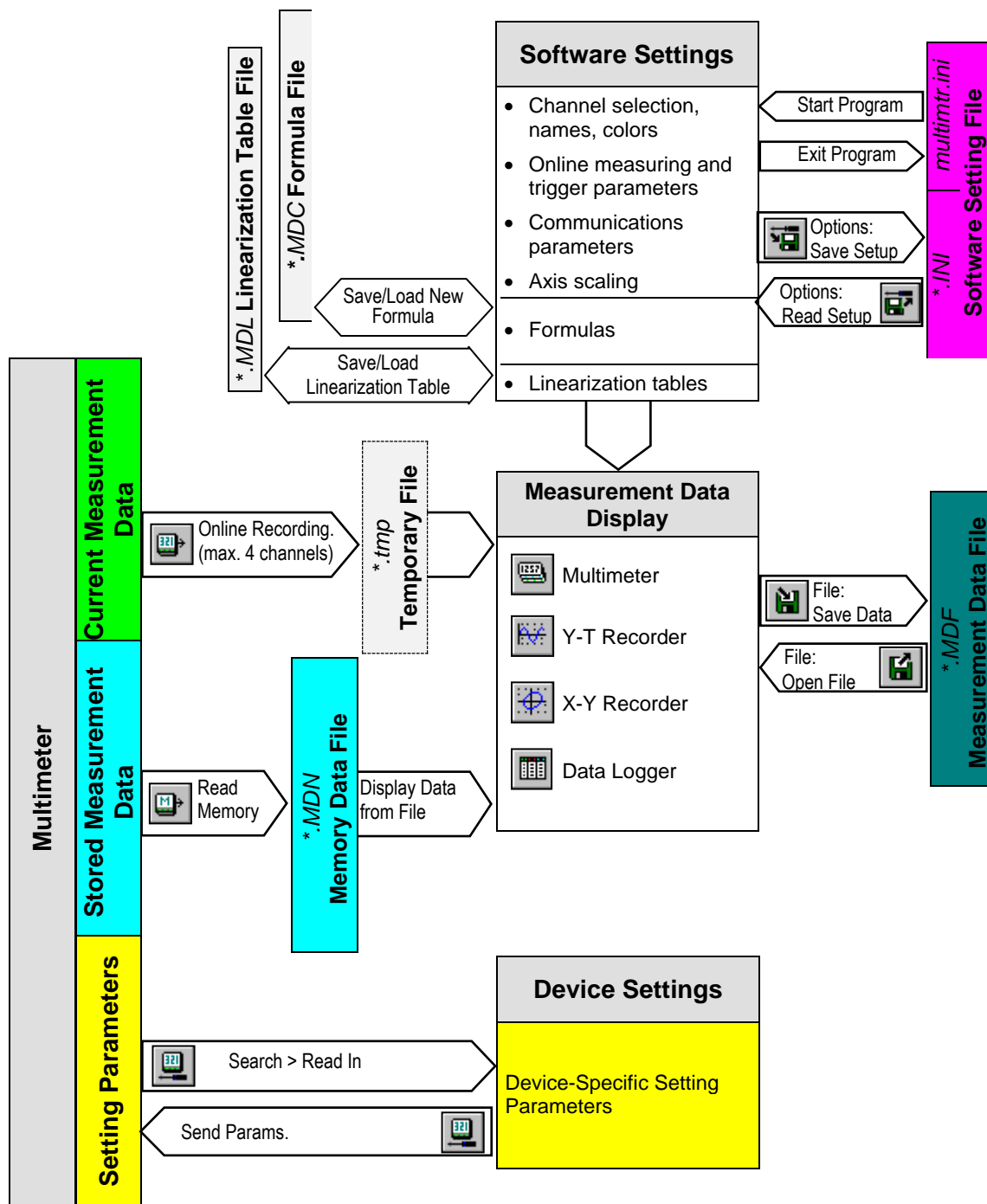
Stops recording of the measured data in the memory of the multimeter.

**Memory Clear**

Deletes the measurement data recorded in the memory of the multimeter.

## 4 Appendix

### 4.1 Schematic Diagram of Program Functions



## 4.2 Examples of Measurement Data

METRAWin 10 contains some sample data files for this multimeter type:  
DEMO\_O.MDF, DEMO\_O2.MDF

