ZIV driver for measurement device testo 300 and testo 330

Version 2.1.2
16 March 2011

Revision history

Version 1.2.0 (27.04.2005)

The direction *Read* is added. This method reads all measure values from the device and is designed for international applications.

Version 1.2.2 (19.06.2006)

Additional values CO ambient (5356027) and CO max (5356028) and Draught (5356052)

Version 1.3.0 (23.03.2007)

Bluetooth support for testo 330.
Support for the new USB driver from FTDI (Version 3 of FTD2XX.DLL).

Version 1.4.0 (18.08.2008)

Support for electric smoke pump testo 308

Version 1.5.0 (20.05.2009)

Support for fine draught probe. Additional values NO, NO_2, NO_x in mg/m³ in the format ZIV 2000.

Version 1.5.3 (17.08.2009)

Additional value CO in mg/m³ in the format ZIV 2000.

Version 1.6.0 (12.03.2010)

Changes due to the new German 1.BImSchV

Version 2.0.0 (23.07.2010)

Support for testo 330 (version 2010 with color display)

Version 2.1.0 (04.11.2010)

Support for testo 300

Version 2.1.2 (15.03.2011)

Support of Italian *Media 3 misure* measurement on testo 330 (version 2010)

Installation of the driver

The driver consists of one .exe file:

```
ZIVtesto330.exe
```

which requires the following .dll files in the same directory:

```
IdToStrConverter_T330.dll
Testo3XXT.dll
Testo3XXE.dll
TestoEmUSB.dll
TestoRS232.dll
```

It will do to copy this file into the correct directory where it is expected by the application programme.

In order to get a communication with the testo 330 measurement device via the USB interface the USB driver (testo driver CD 0501.0152) must be installed.

A communication via IrDA requires an appropriate IrDA adapter on the PC. Normally, such an adapter is integrated in a laptop. For a PC, such adapters are available with serial or USB interface.

The driver for the testo 330 is compatible to the driver for the testo 300. If your application programme does not yet supports the testo 330, you can rename the file ZIVTesto330.exe into testo.exe and the testo 330 instrument is addressed like the testo 300.

How to call the driver

```
ZIVtesto330 <file> <direction> <comport>
```

`file.xxx`	Name of the file where the driver writes (OUT) or reads (IN) the data. The success / error messages are stored in `file.err`.
`direction`	`IN,` `RECEIVE,` `RECEIVEALL` or `READ` to read measure data from the instrument into the PC. `OUT` or `SEND` to put locations into the device.
`comport`	Communication via IrDA: The value has to be IRDA. IrDA is not supported by the testo 330 version with color display. Communication via Bluetooth: The value has to be BT:xx where xx is the numer of the serial port which is assigned during the Bluetooth connection of the instrument. Communication via USB: Arbitrary value which is not IRDA or begins with BT: Communication to testo 300 via serial RS232: T300:xx where xx is the number of the serial port

Example of calling the driver:

```
ZIVtesto330 data.in in 2
ZIVtesto330 data.in in IRDA
ZIVtesto330 data.in in T300:5
ZIVtesto330 data.in read IRDA
ZIVtesto330 data.in read BT:8
```

Read values out of the device and write it to file `data.in` and the error protocol into the file `data.err`.

Success / error message format:
`Number; message`
Number = 0 means OK

```
ZIVtesto330 "c:\documents and settings\data.out" out 1
ZIVtesto330 "c:\documents and settings\data.out" out IRDA
ZIVtesto330 "c:\documents and settings\data.out" out BT:8
```

Writes the locations (read of `data.out`) and writes them into the device. The success / error messages can be found in `data.err`.

The data format

The data file is always an ASCII file, where the lines are separated by CR/LF. All lines are beginning with a number of 7 digits, which describes the data following in this line.

Reading of measure data (IN, RECEIVE, RECEIVEALL)

The file starts always with a header of five lines

Identifier	Value	Meaning
0000000	2.02	Version of the protocol
0010000	Code Page 1252	always Code Page 1252
0010001	,	decimal delimiter (always ,)
0010100	jjjj.mm.tt	Date format (is always jjjj-mm-tt) [YYYY-MM-TT]
0040000	2005-09-01	Date of transmission

If *direction* is IN or RECEIVE only the last measure protocol from one measure location is transmitted.

If *direction* is RECEIVEALL the all measure protocols from one measure location are transmitted.

Identifier	Value	Meaning
5300000	1	Location number generated by driver (1,2,3,...)
5300001	BEZEICHNER000	Location (client)
5300002	BEZEICHNER000	Location (barcode) identical with 5300001
5351130	Heizöl S	Fuel
5356000	1	Incrementing number of this measure in this location. In the mode IN or RECEIVE always 1, in the mode RECEIVEALL 1,2,3,....
5356004	2004-08-31	Date of the measurement in the format YYYY-MM-DD
5356011	26,9	Ambient air temperature in °C
5356012	37,1	Flue gas temperature in °C
5356013	60	HC temperature in °C
5356020	16,9	O_2 in %
5356021	3,1	CO_2 in Vol %
5356022	100	CO undiluted
5356024	21,0	$O_{2\ Zuluft}$
5356026	124	NO_x in ppm
5356031	2	Smoke number 1 (float value starting with version 1.4)
5356032	3	Smoke number 2 (float value starting with version 1.4)
5356033	4	Smoke number 3 (float value starting with version 1.4)
5356034	1	Oil derivate. 1: yes, 0: no, -: not measured
5356050	2,61	Draught in hPa
5356060	2,0	Loss in %
5356070	00196636	Serial number of device
5356072	RUS123XYZ	Serial number of smoke pump

In the mode RECEIVEALL the following additional values are given:

Identifier	Value	Meaning
5356090	10,3	NO in ppm
5356091	47,2	NO_2 in ppm
5356080	22,4	Ambient temperature in °C averaged over 30 seconds (starting with version 1.6.0)
5356081	120,4	Flue gas temperature in °C averaged over 30 seconds (starting with version 1.6.0)
5356082	6,4	O_2 in % averaged over 30 seconds (starting with version 1.6.0)
5356083	3,4	Mean flue gas loss qA in % (computed from the values 5356080, 5356081 and 5356082) (starting with version 1.6.0)
5356088	222	CO Emission in mg/kWh (starting with Version 1.6.0)

If the measurement is done with another unit as expected (e.g. °F instead of °C) no measure value is given in the protocol.

Reading of measure data (READ)

This mode is designed for international applications with additional measure values. The identifiers are added to the German ZIV rule.

The file starts always with a header of five lines

Identifier	Value	Meaning
0000000	2.02	Version of the protocol
0010000	Code Page 1252	always Code Page 1252
0010001	.	decimal delimiter (always .)
0010100	yyyy-mm-dd	Date format (is always yyyy-mm-dd
0040000	2005-09-01	Date of transmission
0040001	14:21:17	Time of transmission

This header is followed by a data record of the following form for each measurement

Identifier	Value	Meaning
5300000	1	Location number generated by driver (1,2,3,...)
5300001	BEZEICHNER000	Location (client)
5300002	BEZEICHNER000	Location (barcode) identical with 5300001
5300010	Bill Gates	Name
5350011	Testo Strasse 1	Street
5350012	98765	Postcode
5350013	Lenzkirch	City
5351130	Oil	Fuel

5356000	1	Incrementing number of this measure in this location. In the mode IN or RECEIVE always 1, in the mode RECEIVEALL 1,2,3,....
5356001	1	Actual number of the measure value for this measurement
5356002	4	Total number of measure values. Is normally 1 and 4 for the Italian median measurement. The first 3 measure values are the measured values and the fourth measure value is the mean value of the first three values.
5356004	2004-08-31	Date of the measurement in the format YYYY-MM-DD (start)
5356005	16:31:19	Time of the measurement in the format hh:mm:ss (start)
5356006	2004-08-31	Date of the measurement (end)
5356007	16:31:29	Time of measurement (end)
5356011	26.9	Ambient air temperature in °C
5356012	37.1	Flue gas temperature in °C
5356013	60	Heat carrier temperature in °C
5356020	16.9	O_2 in %
5356021	3.1	CO_2 in Vol %
5356022	100	CO undiluted
5356024	21.0	$O_{2\ Zuluft}$
5356026	124	NO_x in ppm
5356027	12.3	CO ambient in ppm
5356028	2,4	CO max in ppm
5356029	80	measured value of CO in ppm
5356031	2	Smoke number 1 (float value starting with version 1.4)
5356032	3	Smoke number 2 (float value starting with version 1.4)
5356033	4	Smoke number 3 (float value starting with version 1.4)
5356034	0	Oil derivate. 1: yes, 0: no, -: not measured
5356050	2,61	Draught in hPa
5356052	4.54	Difference pressure in hPa
5356060	2,0	Loss in %
5356070	00196636	Serial number of device
5356072	RUS123XYZ	Serial number of smoke pump
5356079	2005-04-26	Date of last service of the measure device
5356080	22,4	Ambient temperature in °C averaged over 30 seconds (starting with version 1.6.0)
5356081	120,4	Flue gas temperature in °C averaged over 30 seconds (starting with version 1.6.0)
5356082	6,4	O_2 in % averaged over 30 seconds (starting with version 1.6.0)
5356083	3,4	Mean flue gas loss qA in % (computed from the values 5356080, 5356081 and 5356082) (starting with version 1.6.0)
5356084	22	CO Emission in mg/kWh (starting with Version 1.6.0)
5356090	10.3	NO in ppm
5356091	47.2	NO_2 in ppm
5356092	12.3	NO in mg/m³
5356093	23.4	NO_2 in mg/m³
5356094	2.4	NO_x in mg/m³
5356095	1.2	eta (air ration)
5356096	0.92	lambda (efficiency)
9990000	0	Is it an Italian median measurement ? (0: no, 1:yes)

9990010	2	CO ≤ 1000ppm ? (0:no, 1: yes, 2: not checked)
9990011	2	ηc ≥ ηDPR412 ? (0:no, 1: yes, 2: not checked)
9990012	2	Isolation status ? (0:negative, 1: positive, 2: not checked)
9990013	2	Reg. devices ? (0:negative, 1: positive, 2: not checked)
9990014	2	Room ventilation ? (0:negative, 1: positive, 2: not checked)
9990020	1013.0	absolute air pressure in hPA
9990030	10.2	Gas flow rate in m³/h
9990031	57.1	Gas power in kW
9990040	10.8	Oil flow rate in kg/h
9990041	3.7	Oil pressure in bar
9990042	48.5	Oil power in kW
9990050	1000	Measure cycle in msec (4Pa test)
9990051	1.2	Minimal pressure value in Pa (4Pa test)
9990052	3.7	Maximal pressure value in Pa (4Pa test)
9990060	1.3;3.2;2.1	List of pressure values in Pa separated by ; (4Pa test)

Identifier in *italics* are not part of the German ZIV rule and may be in conflict with future versions of the German ZIV rule.

If the measurement is done with another unit as expected (e.g. °F instead of °C) no measure value is given in the protocol.

Sending of measure locations (OUT, SEND)

The given data file is read. All lines beginning with the identifier 5300001 or 5300002 are interpreted as new locations. These locations were added to the locations already available on the measure instrument.

Identifier	Meaning
5300001	Identifier of the measure location
5300002	Identifier of the measure location (can be used instead of 5300001)
5300010	Name of this measure location (optional)
5300011	Street (optional)
5300012	Postcode (optional)
5300013	City (optional)

The address fields 5300010, 5300011, 5300012 und 5300013 are informative and can be shown on the measure device together with the measure location.

Example:

```
5300001Lenzkirch
5300002Milano
5300010Bill Gates
5300011Testo Strasse 1
530001298765
```

```
5300013Roma
53000014711
1234567Nonsense
```

adds the locations Lenzkirch, Milano and 4711 on the measure instrument. For the measure location Milano also the address information is given.

Error messages

The following error messages were displayed at the end of the program and written into the error protocol file *.ERR.

Number	Text
0	All data are read or written correctly.
1	Wrong calling of program
2	Unknown direction
3	File cannot be opened
4	No connection to measure device possible
5	Invalid response received from measure device
6	No measure locations found in the transfer file
7	Too many measure locations for this device.
8	Driver requires new device firmware. Please update firmware.

If the program finished correctly no message is displayed at the end of the program.