

This document contains important information about the IWOXX ComTrace hard- and software as well as of its installation and configuration. Please carefully read this information of the operation instructions before using ComTrace.

ComTrace 4.0

Operation instructions

IWOXX Software Development

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Program version: from 4.00

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2 Instruction objective

This document should help you to correctly install and prepare the delivered hardware to get accordingly proper measurement results.

The hardware components inside a ComTrace package (kit) are also described as well as the optional deliverable PC/notebook interface cards. These optional cards enable you to equip your PC or notebook with the both standard COM ports needed for IWOXX ComTrace for Windows.

3 Identification

3.1 Trademarks

- Microsoft, MSN and Windows Vista are trademarks of the Microsoft Corporation.
- Windows a registered trade mark of the Microsoft Corporation in the United States and other countries.

3.2 Type identification, order no., version, type no.

Description	Picture/Type label
1 x ComTrace-COM-AB-Cable 0320-082312	 <p>The image shows a white rectangular adapter cable with a black cable on the left. The label on the front reads: 'IWOXX ComTrace COM-AB adapter cable', 'Nur für RS232/V24-Verbindungen! Only for RS232/V24 connections!', 'Garantie erlischt bei Öffnen des Gehäuses! Warranty void, if case gets opened!', and 'Order No. / Bestellnr. 0320-082312'. On the right side, there are labels 'ComB' and 'ComA'.</p>
1 x ComTrace-TESTLINE-Cable / 9pin 0320-082303	 <p>The image shows a flat ribbon cable with three connectors: a 9-pin D-sub connector on the left, a 9-pin D-sub connector in the middle, and a 9-pin D-sub connector on the right.</p>
1 x ComTrace-TESTLINE- Cable / 25pin 0320-082304	Like 0320-082303, but 25pin!

3 x RS232-Adapter DSUB,9pin.M./25pin.F.
0320-082351



Pic.3: RS232-Adapter 9/25pin- (Pic. similar)

1 x RS232-Adapter SUB,9pin.F. / 25pin.M.
0320-082352



Pic.4: RS232-Adapter 9/25pin- (Pic. similar)

3.3 Address of manufacturer/supplier

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3.4 Declaration RoHS / ElektroG / WEEE

Declaration on the implementation of Directive 2011/65/EU (RoHS) of 8 June 2011 and the Electrical and Electronic Equipment Act (ElektroG2) of 24th of October 2015 as well as Waste Electrical and Electronic Equipment (WEEE) 2012/16/EC of 13th of August 2012.

From our knowledge IWOXX products do not contain any substances in concentration, confection or application, that are forbidden to be put on the market in relation to the valid requirements of the European policy 2011/65/EU (RoHS) from the 8th of June 2011 and the German Electro and Electronic Unit Law (ElektroG2) from the 24th of October 2015. Additionally IWOXX products also do not contain chromate coating with Chrome (VI) on their surface.

The IWOXX products listed at 3.2 are components without a standalone function and therefore are not subject to RoHS / ElektroG / WEEE. Thereto cables und wires, ready-made cables and wires, fittings, protective tubing systems and adapters belong to.

3.5 Optional extras

For the following products the declaration „3.4 Declaration RoHS / ElektroG / WEEE“ is not valid. These products are from other manufacturers. They contain own manufacturer specific declarations for the pre-mentioned properties.

Description	Picture/Type label
EX-1332HMV USB-Adapter 2x serial RS-232 1603-091511	 <i>Pic.5.a: USB 2.0 Adapter</i>
EX-1352 PCMCIA card 2x serial RS-232 1603-091512	 <i>Pic.5.b: PCMCIA card</i>

EX-1372-2 ExpressCard 34/54 2x serial RS-232
1603-091513



Pic.5.c: ExpressCard 34/54

EX-44092-2 PCI express 2x serial RS-232
1603-091514



Pic.5.d: PCI express card

EX-43073 2S RS232 PCI card, 2x 16C950
1603-091515



Pic.5.e: PCI card

4 Product specification

4.1 Functions and area of application

The delivered cables and adapters of the IWOXX ComTrace for Windows standard package are mentioned to be used in an serial interface environment of RS232/V24 (Voltage level typically - 15...-3 Volts and +3... +15 Volta). Therefore they are equipped with the typical Sub-D plugs and jacks in versions of 9 and 25 pins.

**HINT:**

For proper usage of these accessories you need 2 standard COM ports in your PC or notebook.

As described in the following chapters you can record and examine the data for analysis and diagnostics with „ComTrace“ after installation and configuration.

4.1.1 Typical areas of application

4.1.1.1 Search for physical errors

- Line interruptions
- Defect plugs or jacks
- Defect interfaces

4.1.1.2 Search for logical errors

- Wiring errors
- Wrong interface parameters (Baud rate, start & stop bits, data bits, parity)
- Protocol errors

4.1.1.3 Search for specific events

- Data patterns (n Bytes)
- Signal curves (High and low)
- Errors (Line, parity, framing)
- Combinations of the above
- Inactivity in a certain time frame

4.1.1.4 Monitoring

- Error count
- Data volume (Send and receive data)
- Reaction per user-defined, external program and parameters via „Alerter“

4.1.1.5 Alert (via trigger)

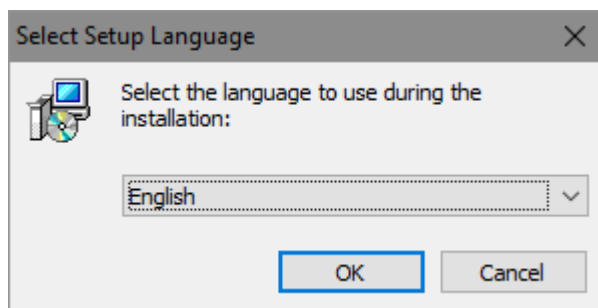
- Acoustically (Alerter, sound file selectable)
- User-define, external notifier program (Email, SMS, send fax) and parameter

4.1.2 Software installation

Please ensure that you accept the “Software License Agreement” for the use of this software. If you won't do this, please send the complete package back to IWOXX without opening the CD/DVD cover!

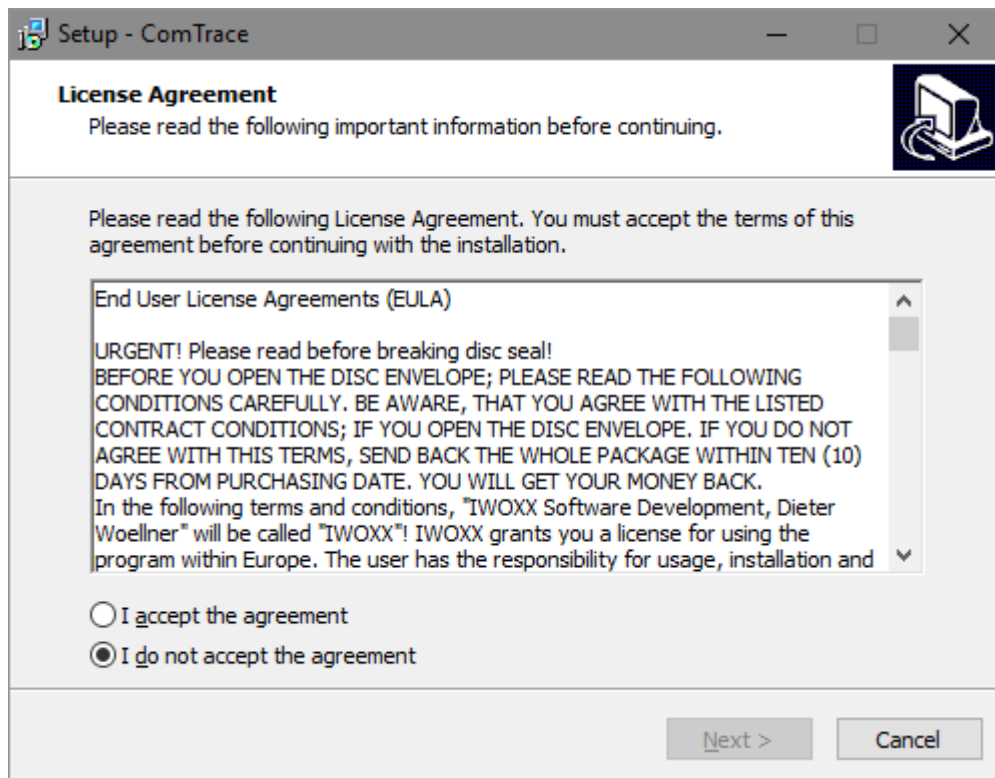
The following paragraphs show you the step-by-step process of installation!

1. Load the CDROM and wait until the “CD Installer” window appears. Select “Software installation”! If you have the “Autostart” function disabled on your system please open the CDROM with your Microsoft Explorer and start "setup.exe".
2. Select the required installation and application language and press <OK>:



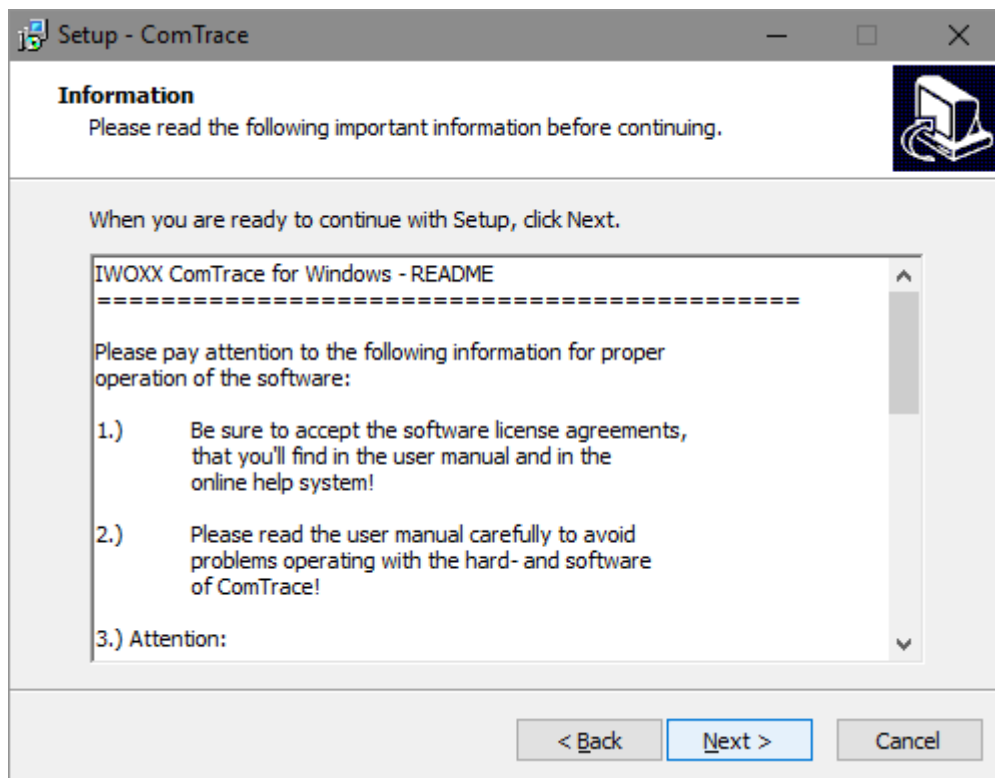
Pic.6.a: Dialogue for language selection

3. Accept the software license agreement and press <Next> afterwards. If you do not agree you are not allowed to install or use the application:



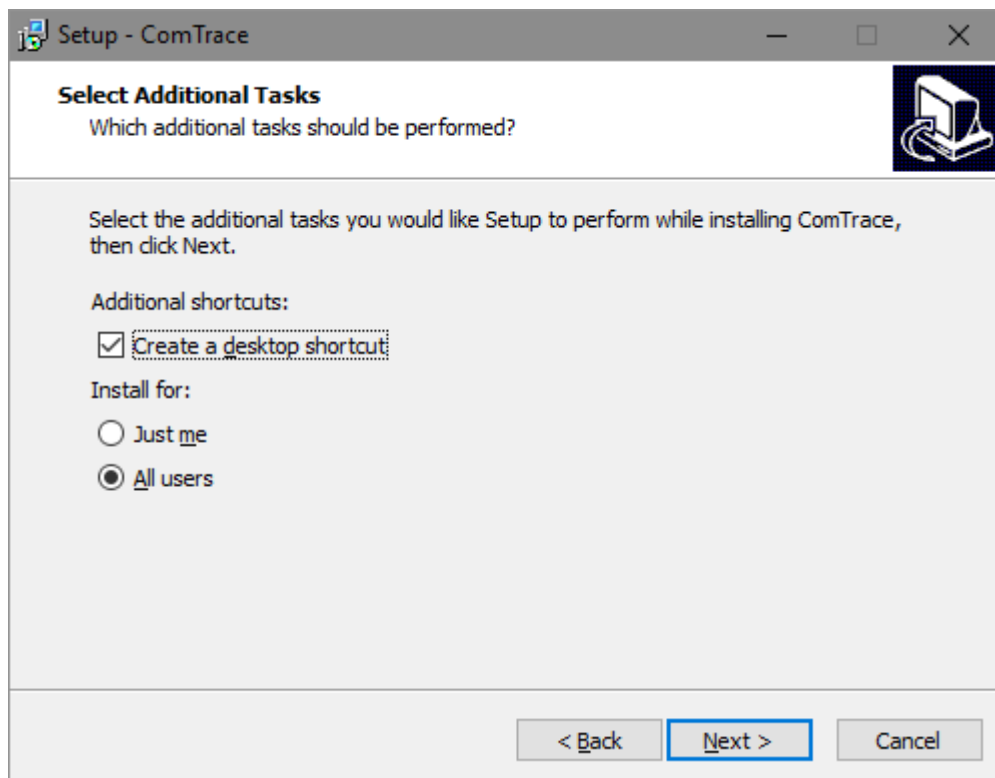
Pic.6.b: Dialogue of license agreement

4. The next dialogue shows you the Readme file with important information about the installation and/or other facts that are important or cannot be printed in the manual so far! Click on <Next> when you completed reading:



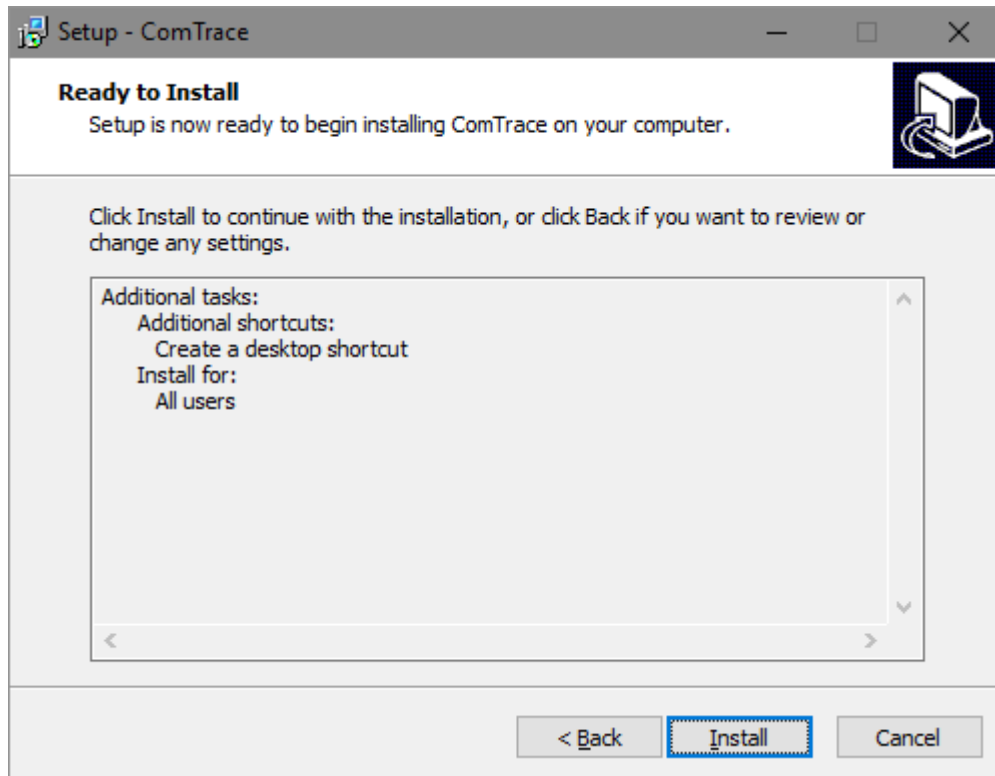
Pic.6.c: Dialogue for displaying the README file

5. Now select whether you want to create a desktop icon and install the program for all users of this computer or just for you! Click "Next >":



Pic.6.c: Dialog for selecting the installation parameters

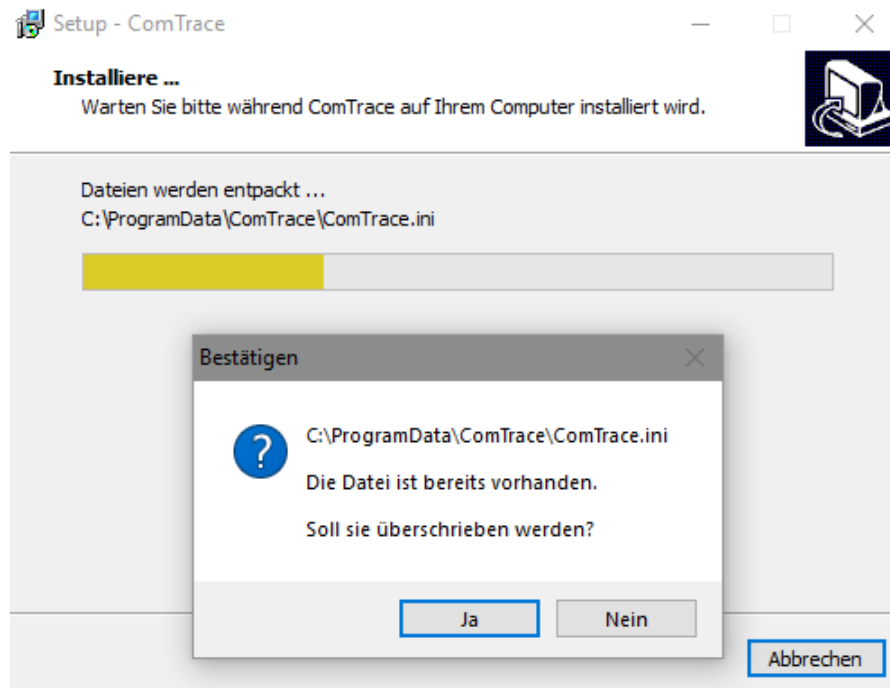
6. In this dialogue you can check all settings for the installation again. If you want to change anything please use the <Back> button to get one step back to the previous dialogues. Click <Install> when you are ready (Installation will start!!!):



Pic.6.e: Dialogue to execute installation

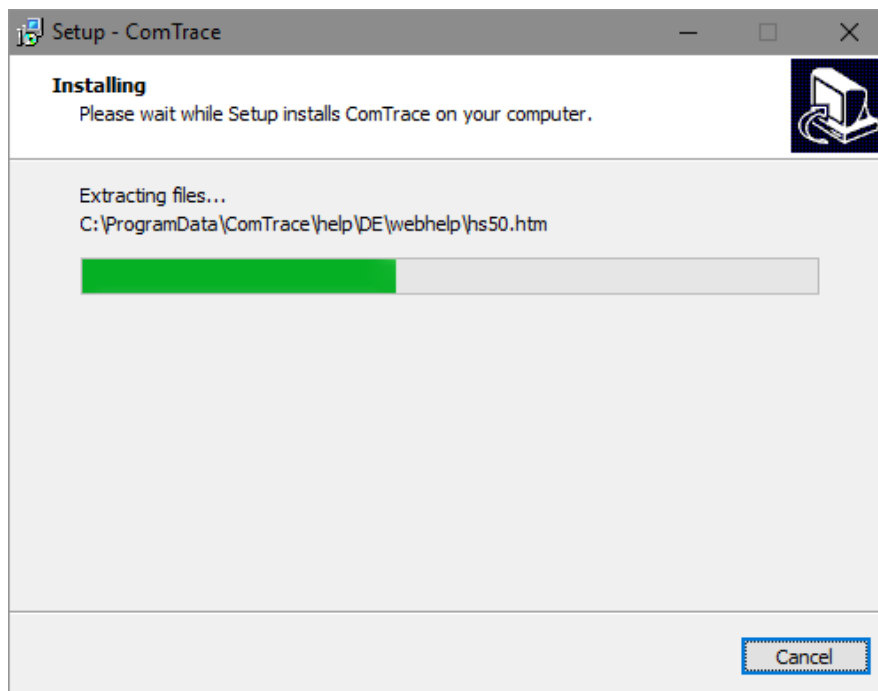
7. Overwrite an existing configuration:

If ComTrace is already installed on this computer, you can decide whether the existing configuration should be retained or replaced.



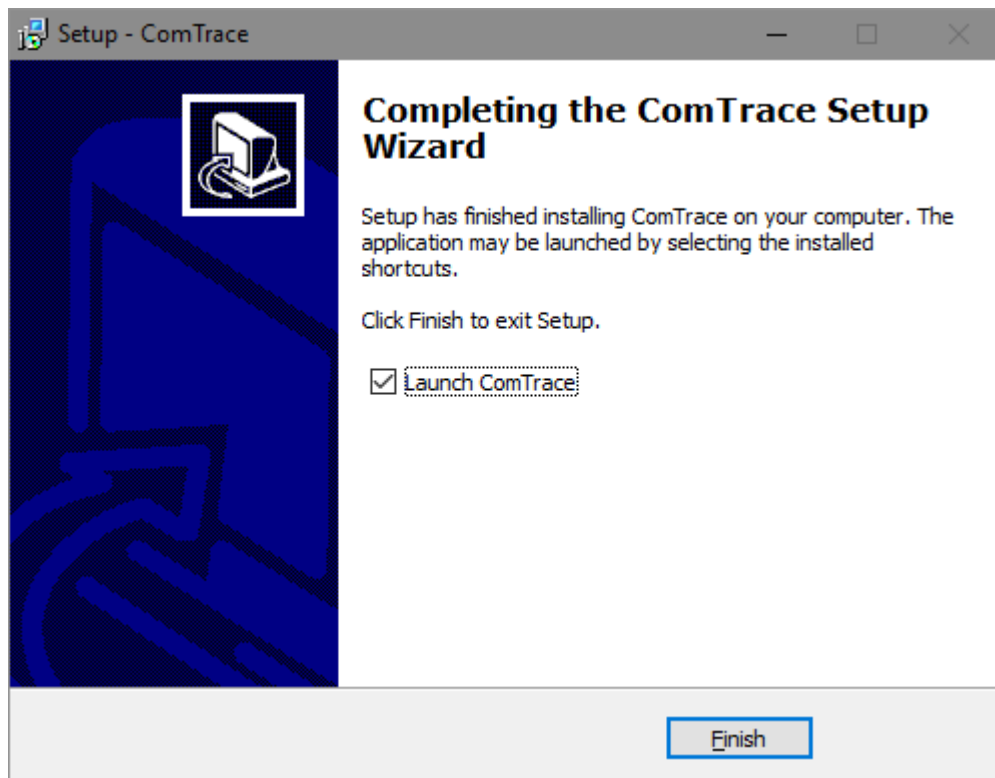
Pic.6.f: Installation progress dialog

8. Now installation of all required files is running...:



Pic.6.g: Dialogue for installation progress

9. Installation is finished. Please select whether ComTrace should be started now! Click <Finish> when you are ready:

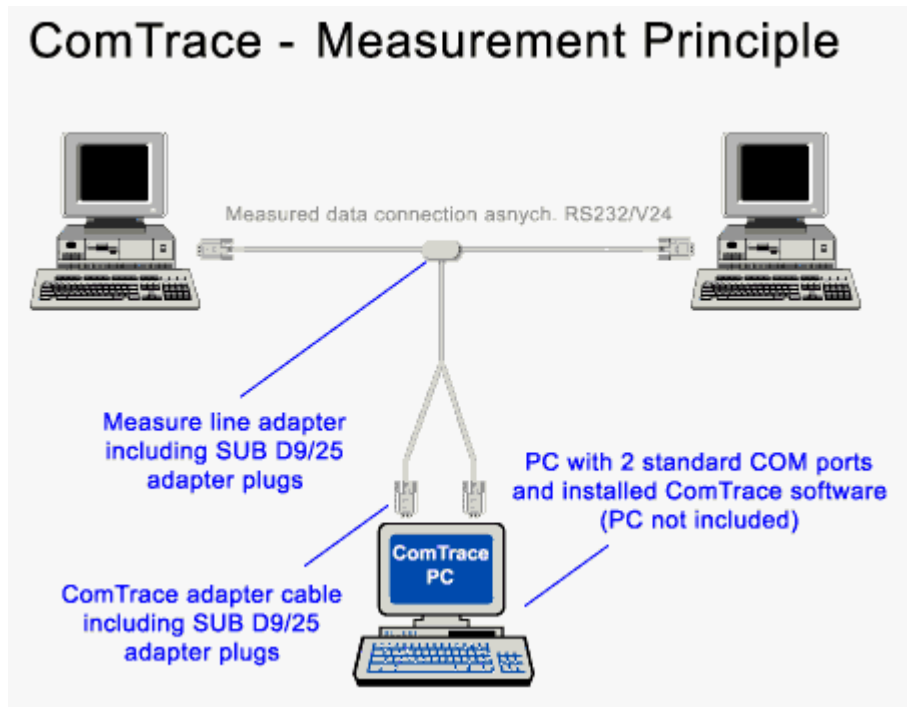


Pic.6.h: Dialogue of completed installation

*****CONGRATULATIONS: You successfully installed IWOXX ComTrace! *****

4.1.3 Hardware installation

4.1.3.1 Measurement setup principles - Overview



Pic.7.a: Measurement setup principle

4.1.3.2 Measurement setup step-by-step

The „ComTrace COM-AB adapter cable (small housing with 3 connection cables) will be connected via 2 wires (ComA and ComB) with 2 standard COM ports/interfaces of your PC. If needed the enclosed 9/25 pin RS232 adapters can be used. The remaining connection cable „Testline“ must be connected to the plug in the middle of the “Testline” adapter cable (flat wire). Here an adapter can be used as well if needed.



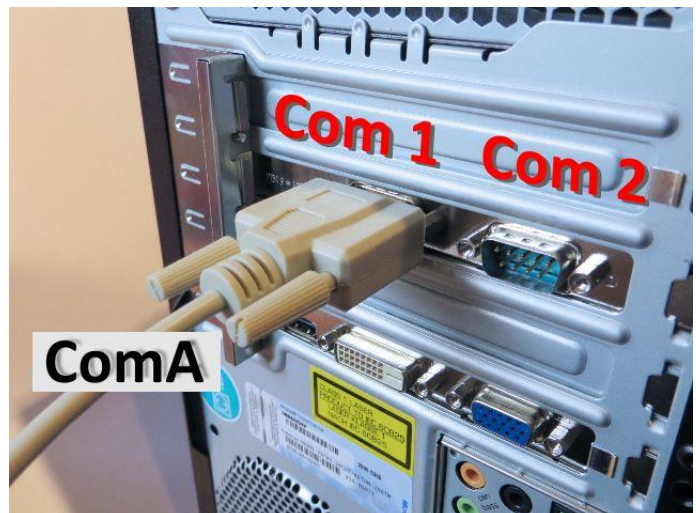
Pic.7.b: ComTrace-COM-AB adapter cable

In this picture you see a typical PC accessed with 2 standard COM ports (RS232 interfaces). The layout of the ports of “Com1” and “Com2” is an example.



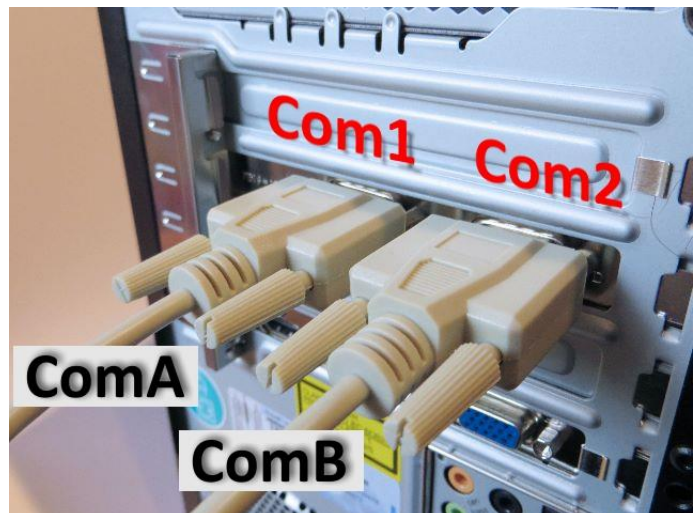
Pic.7.c: PC with 2 standard COM ports

Now connect the first cable labelled as “ComA” on the housing of the „ComAB adapter cables“ to the first free COM port. Here „Com1“ as an example.



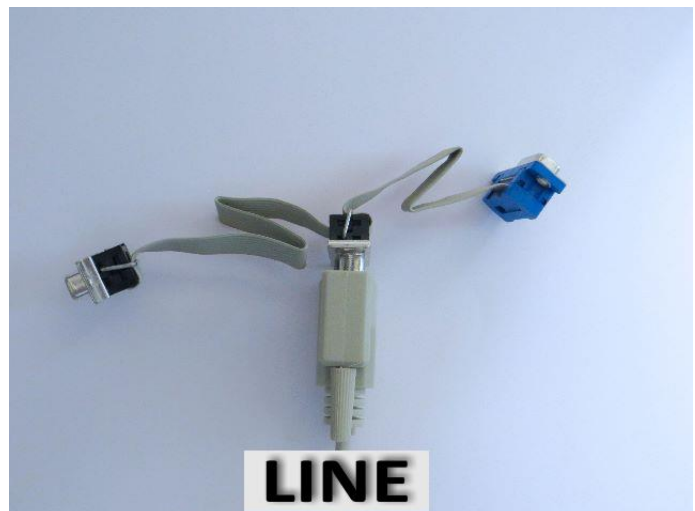
Pic.7.d: Connect ComA wire to first COM interface

Now connect the second cable with label “ComB” on the housing of the „ComAB adapter cables“ to the second free COM port. Here “Com2” as an example.



Pic.7.e: Connect ComB cable to second COM interface

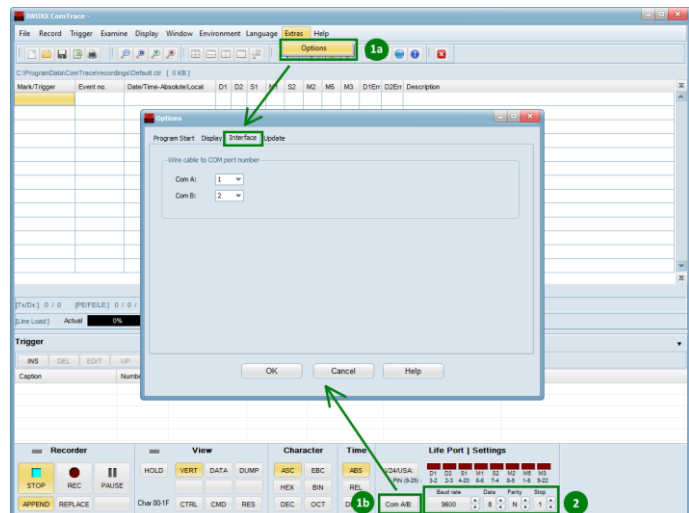
Next to last step connect the remaining cable with the label “LINE” on the housing of the “ComAB” adapter cable to the free Sub-D plug in the middle of the “TESTLINE” cable (here the 9pin version as an example). If you want to use the 25pin “TESTLINE” cable please connect the accessed 9 to 25 pin D-SUB 9/25 adapters.



Pic.7.f: Connect LINE cable to TESTLINE adapter cable

So that "ComTrace" knows which interfaces you want to work with, you can set this in the program. You reach the options for the COM port settings via the main menu "Tools | Options" or in the "Life Port | Settings" area via the button "Com A/B".

In the "Interface" tab, select the two COM ports of your system to be used. When you are finished, click OK. The settings will be saved.



Pic.7.g: Menu and button to display COM port settings in ComTrace

The both open ends of the TESTLINE adapter cable will now be looped into the RS232/V24 connection. Please pay attention to the following connection samples as well:

The measurement setup is now complete. The data of the examined connection will now be distributed from the ComTrace COM-AB adapter the appropriated data and control lines of both PC/notebook COM ports. Therewith the application software is able to record all required lines.

For further information on installation of the optional accessories RS232 PC extension cards please read the following chapters in detail. Especially the device manager settings are very important for proper measurement results.

For more information about the application software "IWOXX ComTrace for Windows" please use the accessed online help of the application that focus on the version specific properties.

4.1.3.3 RS232 pin descriptions

Short cut			Description		Direction	Pin number		
DIN	CCITT	EIA	Short			25pin	9pin	96pin
E1	101	AA	GND	Prot. Ground	DTE<->DCE	U+1	U	10c
E2	102	AB	GND	Signal Ground	DTE<->DCE	7	5	16c
D1	103	BA	TxD	Trans. Data	DTE ->DCE	2	3	11c
D2	104	BB	RxD	Receive Data	DTE<- DCE	3	2	12c
M1	107	CC	DSR	Data Set Ready	DTE<- DCE	6	6	15c
M2	106	CB	CTS	Clear to Send	DTE<- DCE	5	8	14c
M3	125	CE	RI	Ring Indicator	DTE<- DCE	22	9	19a
M4	112	-	-	Data Sign. Rate	DTE<- DCE	12	-	22c
M5	109	CF	DCD	Data Carrier Det.	DTE<- DCE	8	1	18c
S1.1	108/1	-	-	Connect Data Set	DTE ->DCE	20	4	16a
S1.2	108/2	CD	-	DTR Data Term. Ready	DTE ->DCE	20	4	16a
S2	105	CA	RTS	Request to Send	DTE ->DCE	4	7	13c
S4	111	CH	SEL	Data Sign.Sel.	DTE ->DCE	23	-	20a
PM1	142	-	-	-	DTE<- DCE	25	-	22a
PS2	140	-	-	Rem. Dig. Loop	DTE ->DCE	21	-	18a
PS3	141	-	-	Analog Loop	DTE ->DCE	18	-	14a
T1	113	DA	XCK	Transm. Clock	DTE ->DCE	24	-	21a
T2	114	DB	TCK	Transm. Clock	DTE<- DCE	15	-	11a
T4	115	DD	RCK	Receiv. Clock	DTE<- DCE	17	-	13a

U = Unit cover

4.1.4 Settings for device manager on used COM interfaces

4.1.4.1 Generale Settings – Table

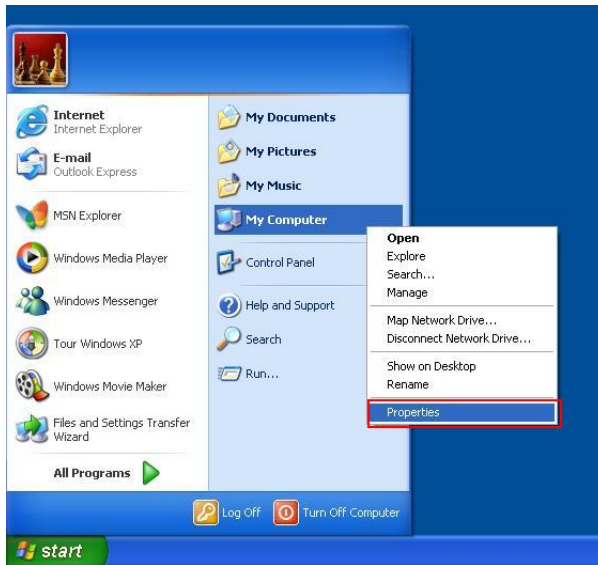
Open the properties in Device Manager – Ports (COM and LPT) of the required COM port and under „Extended“ setup the values as listed in the table:

Adapter	Parameter (depends on OS and Language)	Value
EX-1332H MV USB-Adapter 2x serial RS-232	USB Transfer Sizes - Receive (Bytes): BM Setup – Latency Timer (msecs):	64 1
EX-1352 PCMCIA-Karte 2x serial RS-232	FIFO Puffer verwenden – Empfangspuffer	Niedrig (1)
EX-1372-2 ExpressCard 34/54 2x serial RS-232	Use FIFO Buffers – Receiver	1
EX-44092-2 PCI express 2x serial RS-232	FIFO Interrupt Trigger Levels – Receiver	1
EX-43073 2S RS232 PCI Karte, 2x serial		

4.1.4.2 Windows XP



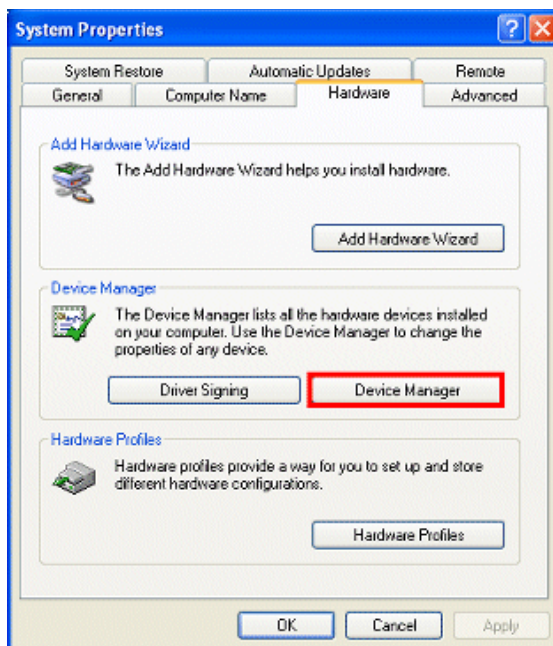
ATTENTION: The following settings are absolutely required for a proper operation of ComTrace. Else you will get wrong timestamps for the measurement events because Windows buffers up to 16 characters before firing an interrupt! After configuring these settings please restart your system! Please take care of setting BOTH COM PORTS that should be used for ComTrace.



Via Start-My Computer-Properties to open the configuration of your PC.

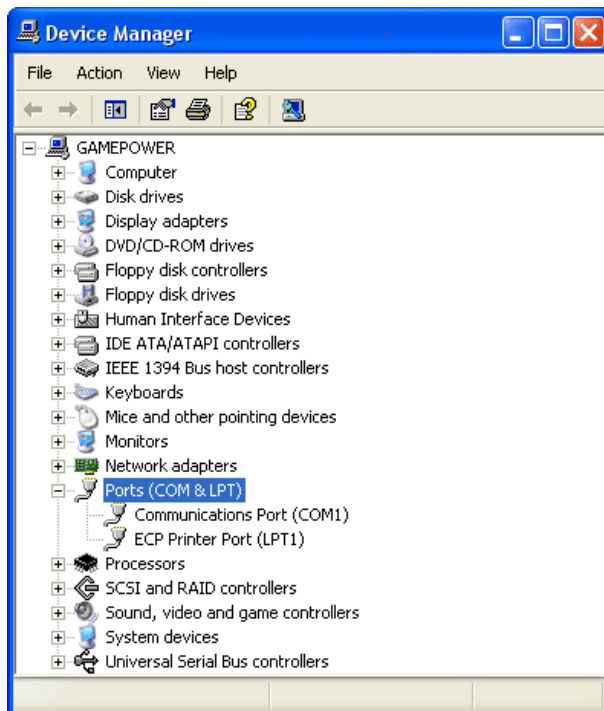
There under TAB „Hardware“ you find the button for “device manager”.

Pic.8.a: Calling the computers properties



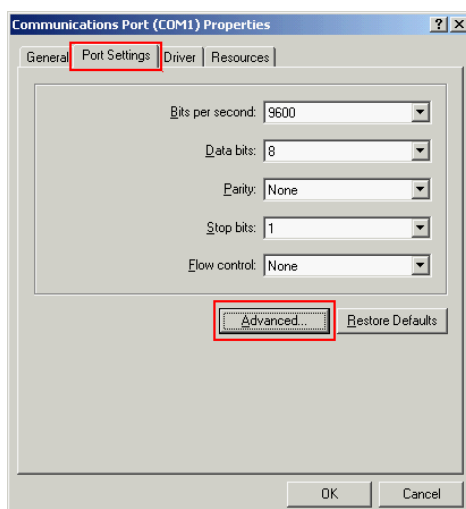
Pic.8.b: Call of device manager

Open the device manager of Windows! Search the section „Ports (COM&LPT)“:



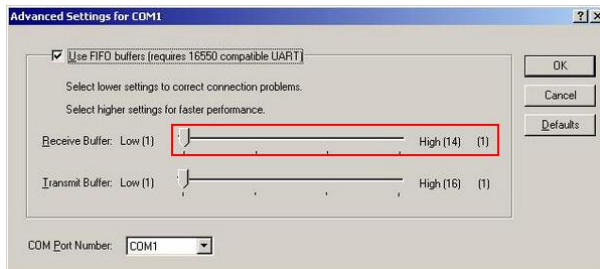
Pic.8.c: Device manager – Ports (COM and LPT)

In this section you find all available COM ports in the system. Depending on the bought COM port products you can open the properties of the COM port via the right mouse key - properties. Click on <Advanced...>



Pic.8.d: COM port settings

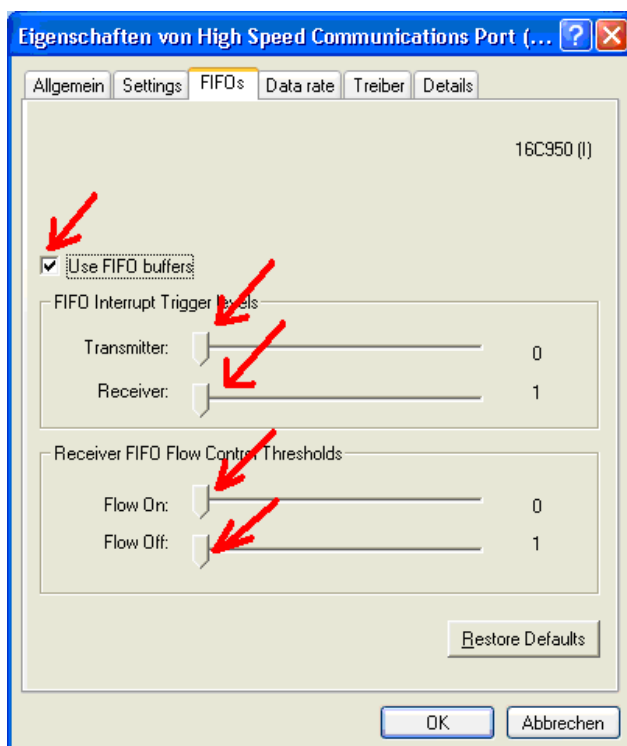
Under the TAB „Connection settings“ and the button <Advanced...> you find the following sample windows depending on the used hardware.



Example 1: SILICOM SRS (1 port) or S2S PCMCIA card (2 ports)

Please set the COM port UART FIFO receiver buffer of the 2 used interfaces for ComTrace to „Low(1)“.

Pic.8.e: FIFO buffer settings (Example 1)



Example 2: EXSYS EX-1352 PCMCIA Serial RS-232 2 Ports

If using this hardware please set the sliders under TAB “FIFOs” as following:

Pic.8.f: FIFO buffer settings (Example 2)

4.1.4.3 Windows 7 through 10 (32/64 bit)

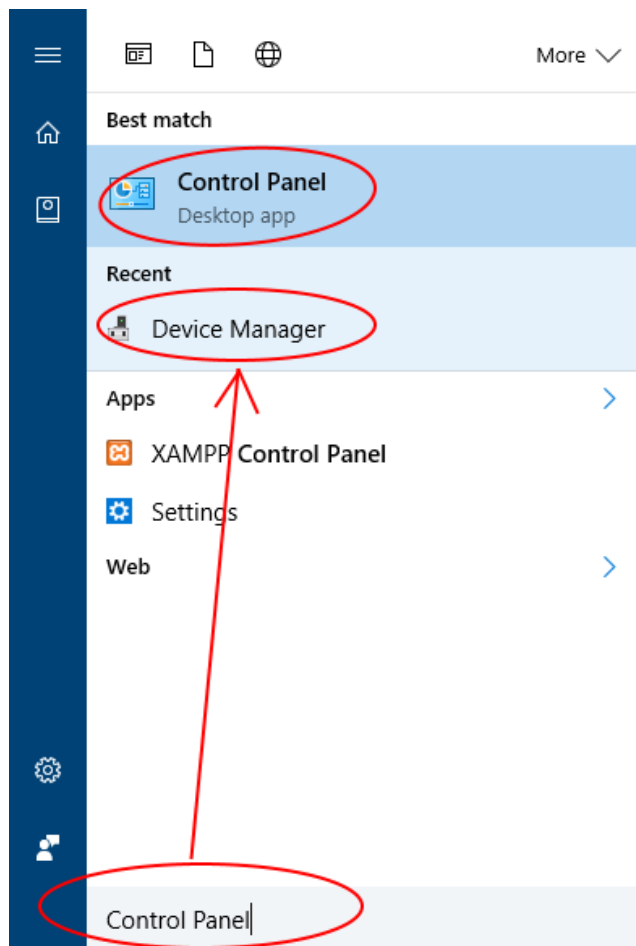


ATTENTION: The following settings are absolutely required for a proper operation of ComTrace. Else you will get wrong timestamps for the measurement events because Windows buffers up to 16 characters before firing an interrupt! After configuring these settings please restart your system!

Via Start-Computer-Settings you open the configuration for your computer. There you find the topic “Device manager”.

Method 1:

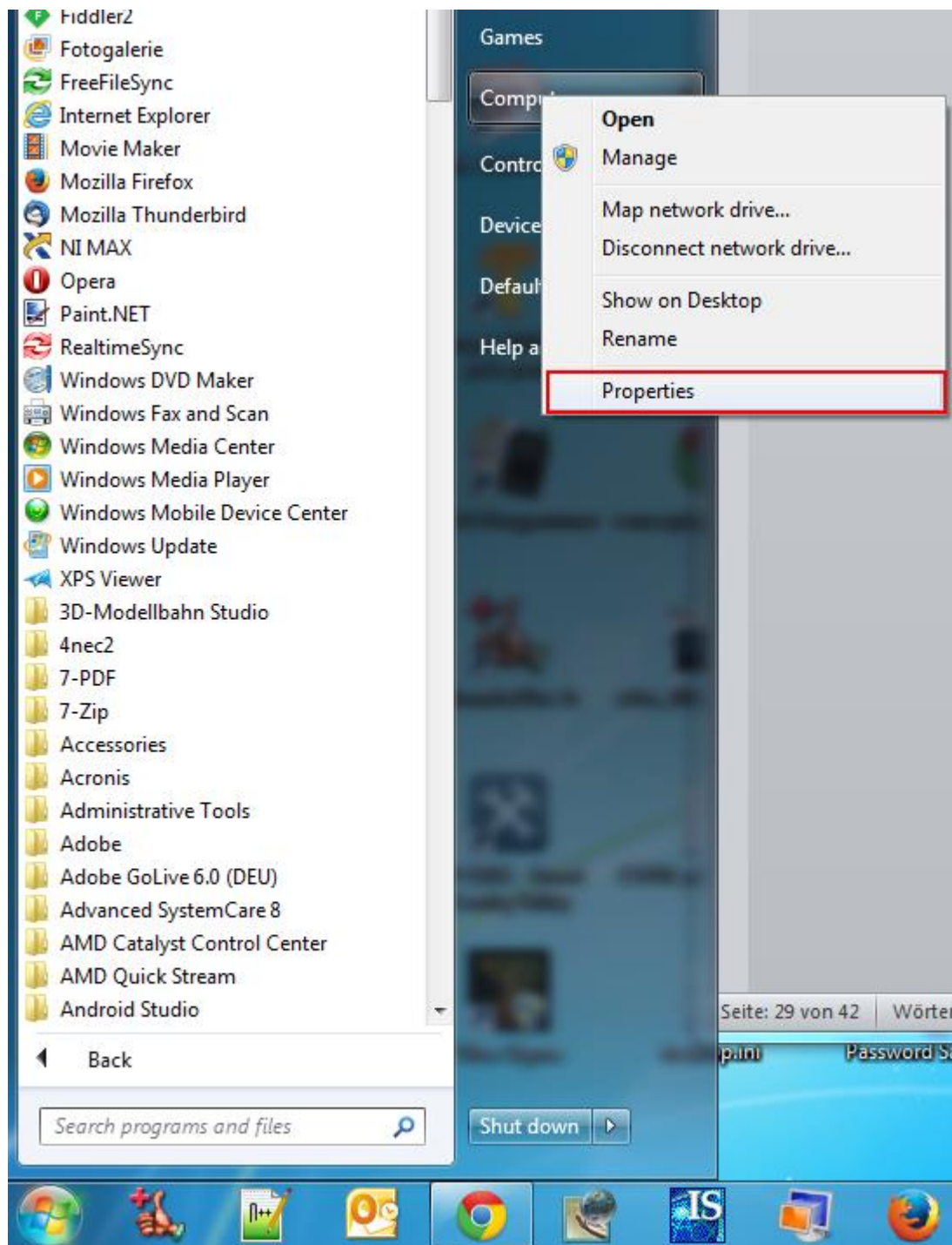
Under “Start” type “Device Manager” or type “Control Panel” then the “Device Manager” and/or “Control Panel” should show up. You can click to open it.



Pic.8.g: Opening computer properties under Windows 7

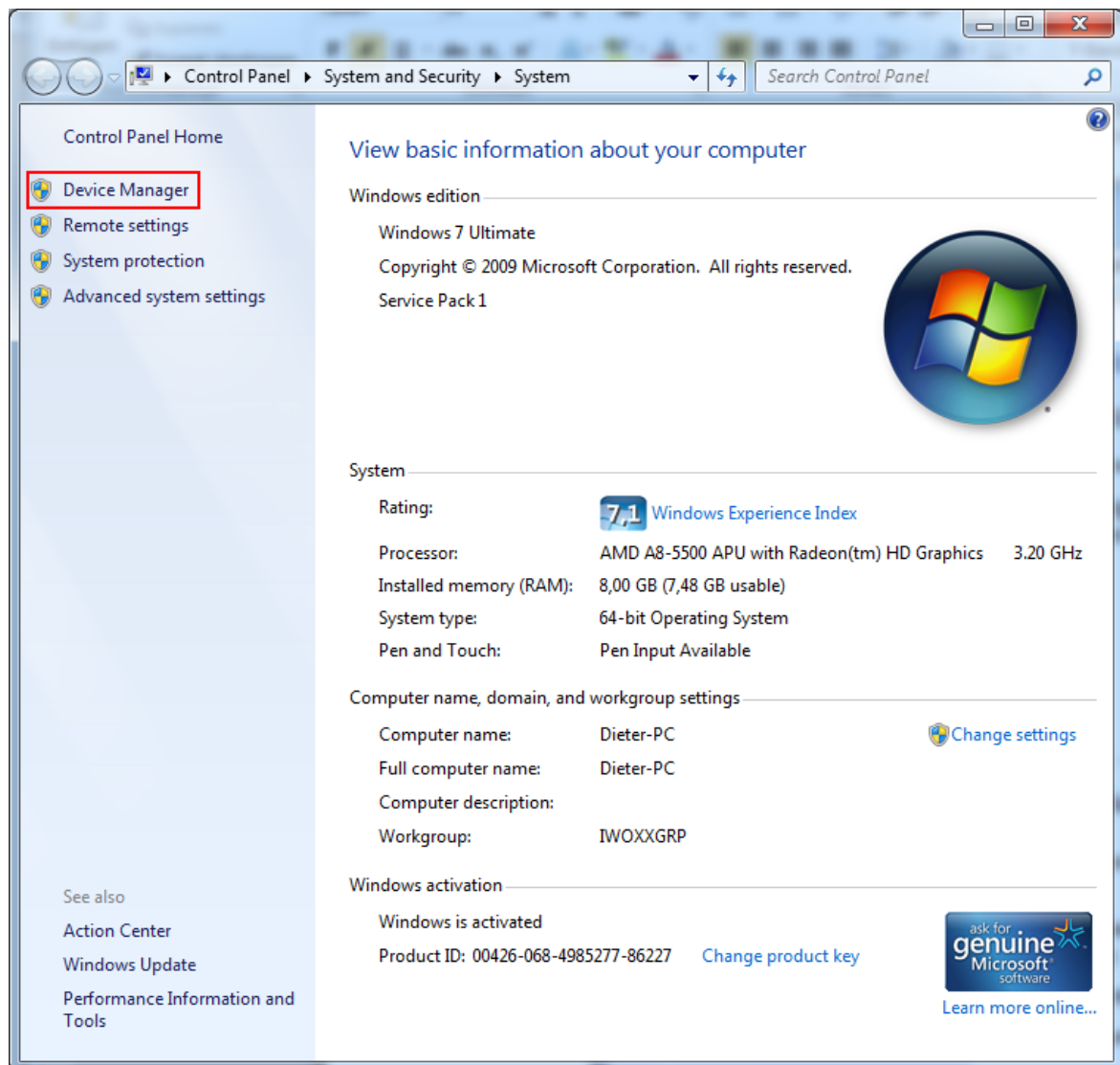
Method 2:

Startup computer properties open the computer settings. There you will find the item "Device Manager".



Pic.8.h: Opening computer properties under Windows 7

Open the device manager of Windows7!



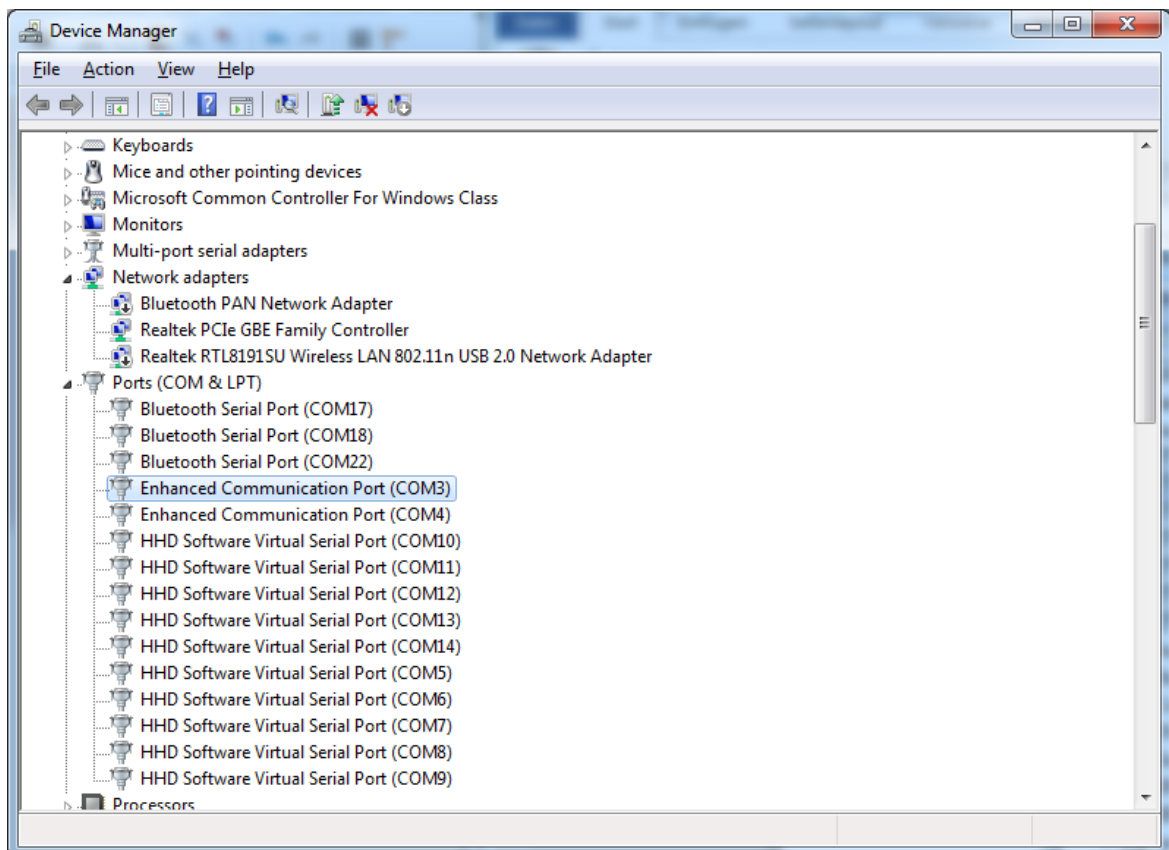
Pic.8.i: Open the device manager under Windows 7

Common:

Search for section "Ports (COM&LPT)":

In this section you find all available COM ports.

In this section you find all available COM ports in the system. Depending on the bought COM port products you can open the properties of the COM port via the right mouse key - properties. Click on <Extended...> then.

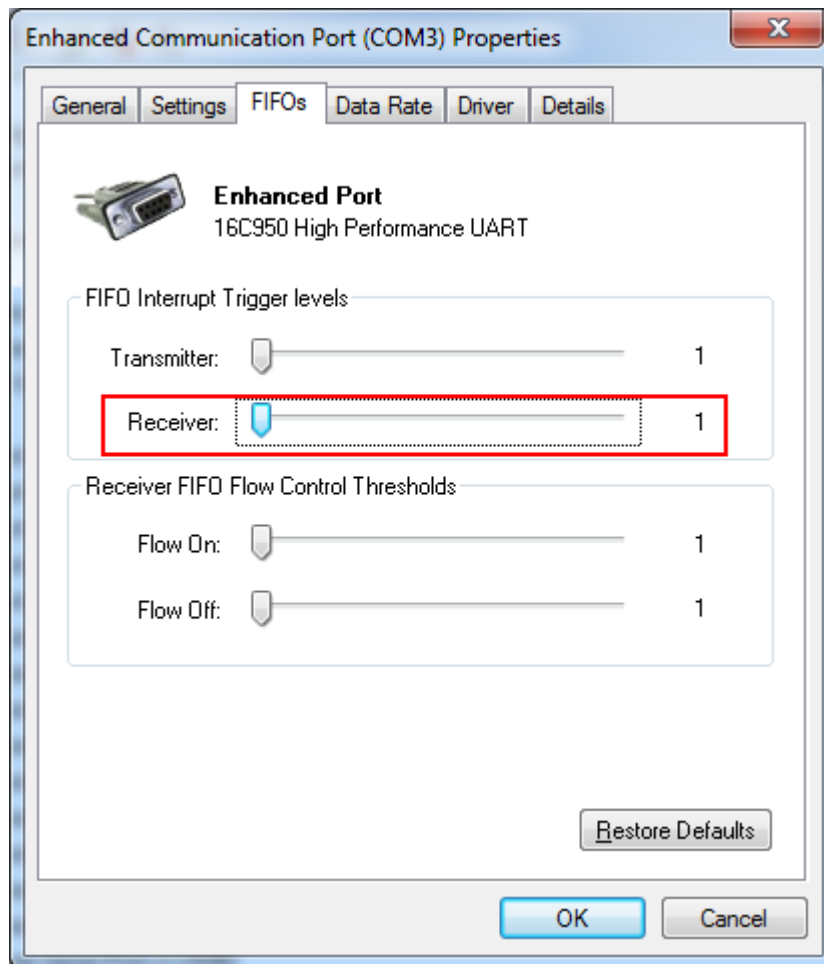


Pic.8.j: Open the ports (COM & LPT) under Windows 7

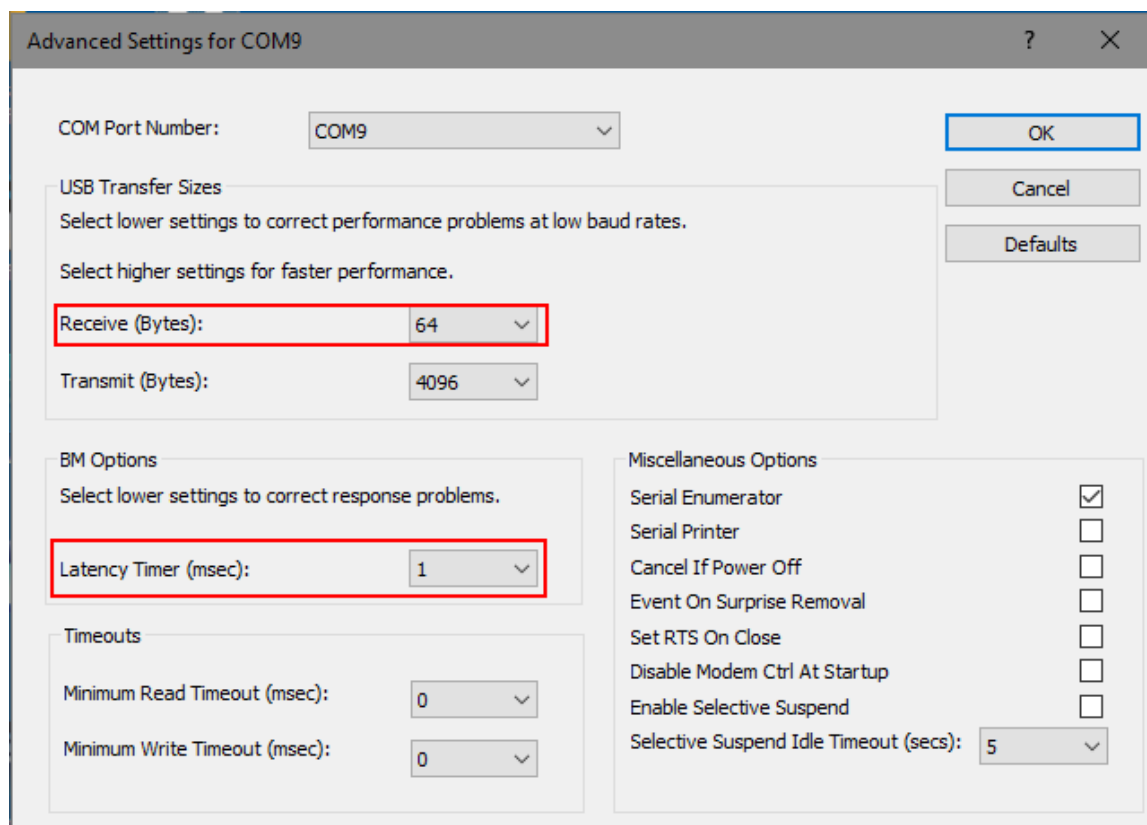
Under the TAB “FIFOs” you find the following sample windows depending on the used hardware.

Example: EXSYS EX-1352 PCMCIA Serial RS-232 2 Ports

Using this hardware please set the sliders under the TAB „FIFOs“ as following:



Pic.8.k: FIFO buffer settings under Windows 7 (Example)

Example: EXSYS EX-1332HMV USB Serial RS-232 2 Ports

Pic.8.1: FIFO buffer settings under Windows 10 (Example)

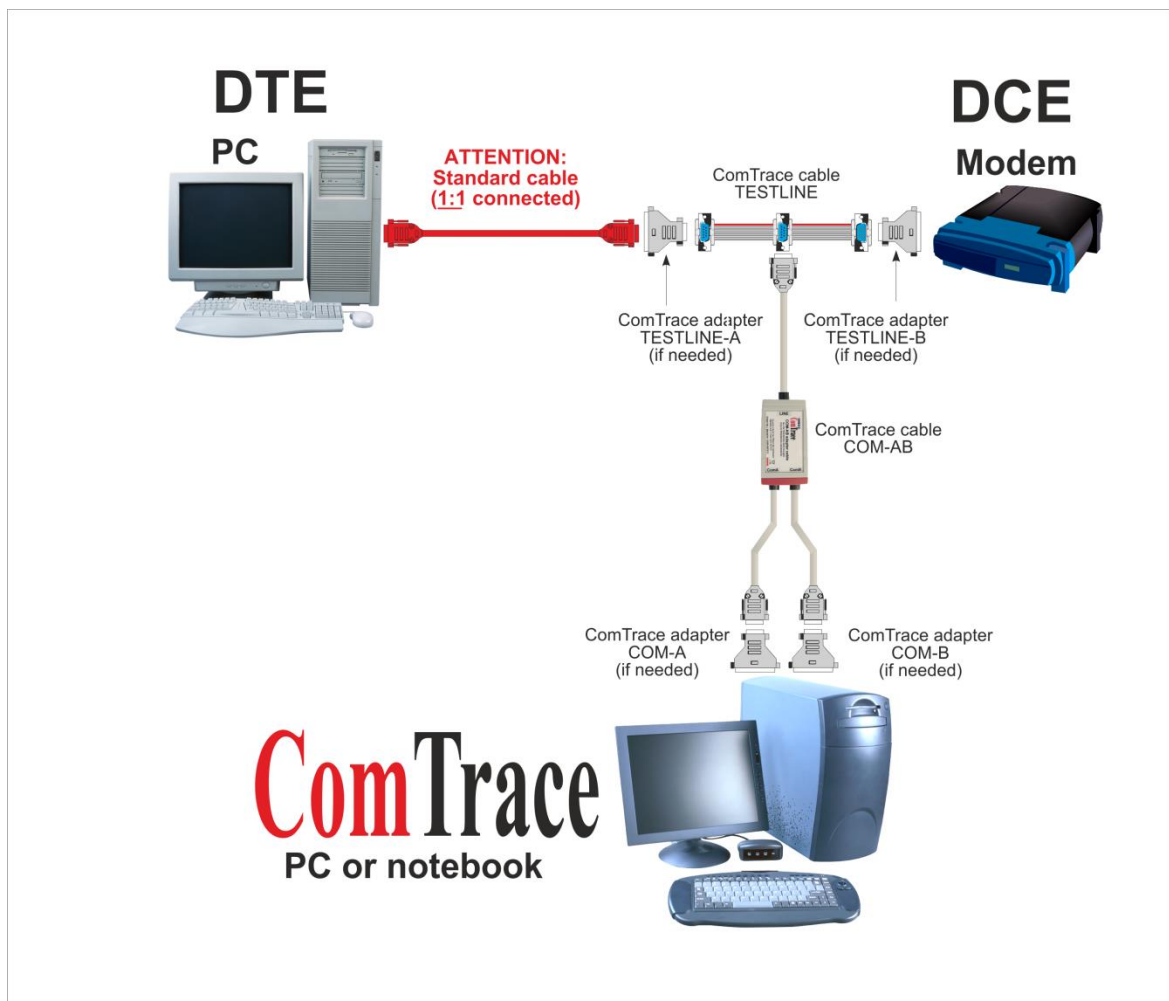
4.1.5 Measurement setup (Example 1) – DTE/DCE connection (e.g. PC modem)

This sample shows how ComTrace is inserted into an existing connection between a data terminal equipment (DTE) and the data communication equipment (DCE).

Normally these units are connected via a 1:1 wiring! That means that the send and receive connections are on the same pin.

Therefore you see the PC send and receive data along with the control lines always on the same pin for both parties no matter on what side ComTrace was inserted with the TESTLINE adapter cable!

The following example 1-A shows ComTrace inserted on the modem side (DTE) of the connection.



Pic.9.a: Measurement setup (Example 1) – DTE/DCE connection (e.g. PC modem)

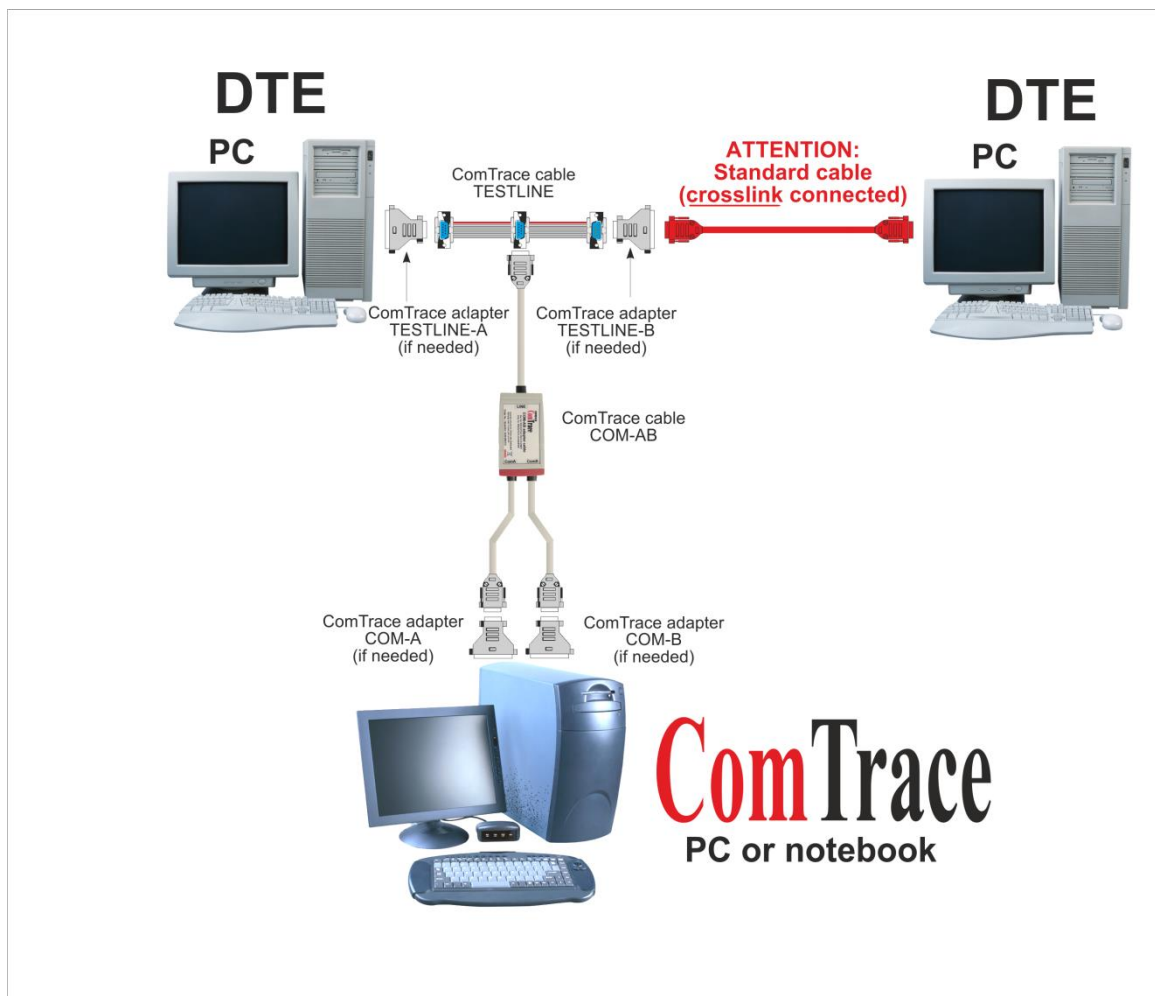
4.1.6 Measurement setup (Example 2) – DTE/DTE connection (e.g. PC-PC)

This example shows how ComTrace is inserted into a connection of 2 data terminal equipments (DTE).

Normally these devices are wired via a crosslink cable! This means that the perspective of ComTrace on each device's side is different. You'll have to take care on what side you are in this connection to avoid failure in interpreting send/receive data and control lines.

4.1.6.1 Example 2-A

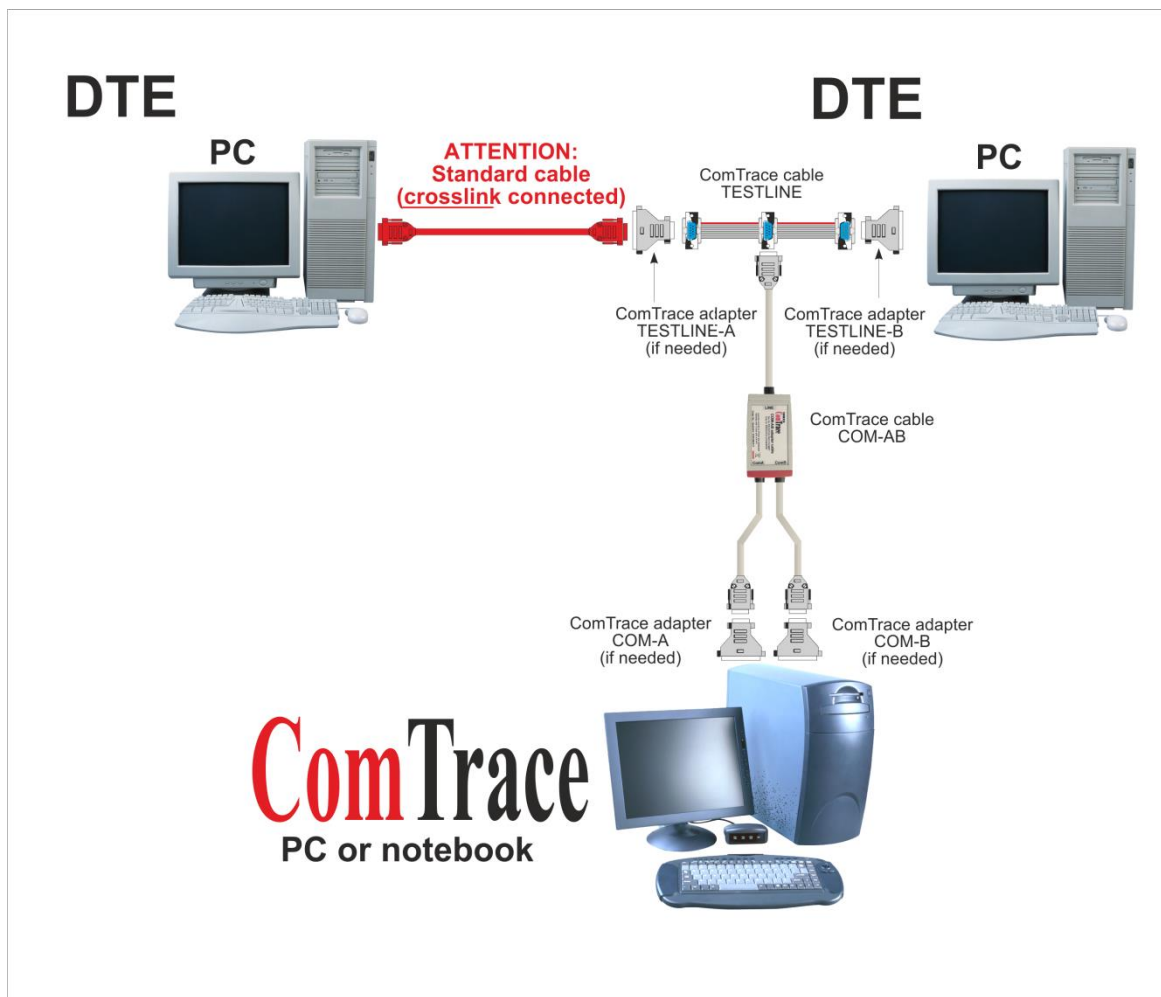
In the following example 2-A ComTrace is on the left side of the connection. This means data and signal lines in ComTrace look like from the left PCs perspective.



Pic.9.b: Measurement setup (Example 2-A) – DTE/DTE connection (e.g. PC-PC)

4.1.6.2 Example 2-B

In the following example 2-A ComTrace is on the right side of the connection. This means data and signal lines in ComTrace look like from the right PCs perspective.



Pic.9.c: Measurement setup (Example 2-B) – DTE/DTE connection (e.g. PC-PC)

4.2 Secure and correct usage

Please use the hardware only in the specified environment. Don't try to build connections by force or to break open plugs and housings.

Don't continue to use the hardware (cable, adapters, extension cards), if it is defect!

4.3 Performance data and conditions (Hardware and Software)

Built for environments based on RS232/V24 (Voltage level typically between -15...-3 Volt and +3...+15 Volt) with Sub-D plugs/jacks 9 and 25 pin.

4.3.1 Properties

4.3.1.1 *Realtime recording*

ComTrace is multithread-optimized to give you the highest precision and speed for data analysis.

4.3.1.2 *Timestamp*

The „High performance counter“ of your system is able to resolve to microseconds. ComTrace checks the available counter capabilities at startup.

4.3.1.3 *Trigger*

One of the key functions of ComTrace is the trigger engine. It helps you on searching for specific events on the data and control lines but also searching for errors, date and time events.

You can set up to 255 triggers in the trigger panel. You can use multiple START/STOP/INACTIVITY trigger in any sequence. So you are able to set one or more trigger conditions for a recording session. These triggers get saved in an own environment file. Therewith you can reuse these settings later on.

4.3.1.4 *Any number of environments*

You can load, save and edit a lot of environments that belong to a specific customer or laboratory environment! These environments also contain the settings for the port and recording file.

4.3.1.5 *View options*

There are many options to view the data as you need it at the moment. Switch to view "Detail (Vertical)", "Data only" or "Data dump". Display the characters as USASCII or EBCDIC with or without control and command characters. Set view to hexadecimal, decimal, octal or binary mode. Adjust the width of the view columns to get the best result.

4.3.1.6 *Report printing*

The recorded data and its detail information can be output to any printer (Laser, inkjet, PDF writer, ...). ComTrace prints the data as in the view on the screen! So you can provide your customers or your recording archive with professional reports including header information of the customer, location, laboratory environment.

4.3.2 Hardware support

Every PC with the following properties:

- CPU: INTEL Pentium oder AMD Athlon
- RAM: 256MB or more
- CDROM/DVD drive
- SSD/HDD (program 30MB, recordings/settings limited to disk space; max. recording size each file 320 GB = 4 giga events)
- 2 Standard COM ports

4.3.2.1 *Serial port*

2 x Standard COM (onboard or with extension boards).

The adjustable parameters also depend on the hardware used:

- Baud rates: 75, 110, 134, 150, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, 7200, 9600, 10400, 14400, 19200, 28800, 38400, 56000, 57600, 115200
- Start bits: 1
- Parity: none, even, odd, mark, space
- Stop bits: 1, 1.5, 2

4.3.2.2 *Compatibility list (evaluated)*

Find next a compatibility view of the optimal orderable PC/notebook interface cards for IWOXX ComTrace for Windows tested and approved by IWOXX Software Development · Dieter Woellner.

Other cards may work but is not guaranteed by IWOXX.

PC interface card	Windows							
	9x	NT	2K	XP	Vista	7	8	10
EXSYS EX-1332HVM USB EXSYS EX-135x PCMCIA EXSYS EX-137x ExpressCard EXSYS EX-43073 PCI EXSYS EX-44092 PCIeexpress	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Silicom SRS/S2S PCMCIA	Yes	Yes	Yes	Yes	Yes	No	No	No

4.3.4 Supported operating systems/technologies

IWOXX ComTrace for Windows supports the following operating systems at the moment:

- Windows 7 (32/64 bit)
- Windows 8 (32/64 bit)
- Windows 8.1 (32/64 bit)
- Windows 10 (32/64 bit)

4.3.5 Information about save disposal

DO NOT give it into the household garbage. Please dispose the hardware at the designated recycling depot.

5 Product preparation for usage

5.1 Safety measures before installation

Please ensure that the location for the application of the hardware is clean, dry and ESD-safe.

5.2 Unpack, secure disposal of the packaging material

The cable and adapters can be put bag into the delivered plastic bag for storage. The plastic bags can also be disposed via the common recycle processes as desired.

5.3 Installation and assembly

There are no special tools needed for installation. But if you want to setup a screwed connection of the cables you can accomplish this with a customary screw driver.

Please consider at installation that you have enough space for moving, no trip hazards and ensure keeping possible escape routes.

5.4 Storage and protection between the intervals of normal usage

We recommend putting the delivered hardware (except fix-installed components) back into the plastic bags and on newer versions of "IWOXX ComTrace for Windows" into the delivered transport bag. Thus the accessories are optimally protected and re-usable at any time.

5.5 Location to attach the instructions

Always carry these instructions along with the product and its accessories and between intervals of normal usage together with the accessories with the delivered bag. So you have access to this information at any time.

6 Maintenance and cleaning

6.1 Security measures

Please remove all cable connections und make them dead before cleaning parts of the hardware.

Disassemble possibly fix-installed components beforehand or unplug adapters and cables with the respective desired customary tools.

6.2 Preventive maintenance and inspection

Control before and after every operation the electrical and mechanical integrity of the components (Broken attachments, open or broken cables). In case of a detected damage DO NOT continue to use the accessory.

6.3 Maintenance and cleaning by user

The cleaning of the accessories may be made only with a dry anti-static rag. The accessories are not suitable to be wet cleaned.

6.4 Error status diagnostics and repair

Please DO NOT repair any defect accessory by yourself. Please call IWOXX Software Development · Dieter Woellner for a replacement.

6.5 Support through service/manufacturer

Upon problems with the delivered accessories or defects please contact:

IWOXX Software Development
Dieter Woellner
Ehrenpreisstrasse 35
86899 Landsberg am Lech
Bavaria/Germany

Fon +49 (0) 81 91 / 97 34 41 3

Fax: +49 (0) 81 91 / 97 34 41 4

Internet: <http://www.iwoxx.de>

Email: <mailto:info@iwoxx.de>

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Room for your notes:

