



Supports Windows® Vista, XP, 2000

CONTROS™ DETECT 2.0

Windows® Data Acquisition Software

For

HydroC™, NanoC™ Sensor
SmartDI™, MicroDI™ Datalogger

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1.0	13.12.08	SWH	First release with .NET, Installer, USB-RS232 Adapter
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2.3	05.05.09	AB, SWH	Quick reference update
2.5	13.05.09	SWH	Ultra-Sleep-Mode and General Setup Updates
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2.7	15.07.09	SWH,AB	Changed Baudrate 9600 to 19200bps
2.8	11.07.09	LS, SWH	Corrections
2.9	24.11.09	LS, SWH	Corrections

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In view of our continual improvement policy, the design and specifications of our products may vary from those illustrated in this brochure.



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1. Getting started

1.1. General information

This document should not be considered to be a replacement for formal training for the user or personnel. CONTROS cannot accept liability for any errors contained herein or consequences arising as a result of such errors. Feedback regarding any of such errors identified by the reader is appreciated so that immediate correction may be served.

Corporate policy dictates that CONTROS products are continually evolving. Therefore the content of this document will likewise be updated from time to time without any official announcements to that effect.

This manual should not be distributed to any third party without prior approval of CONTROS.

**TIP !**

We encourage exchange of information and cooperation! If any queries or problems occur please contact us. To evaluate your concern, we need as much detailed information as possible, for example:

- Hardware and software configuration of your PC or laptop
- Program Version
- Description of problem(s)
- Data logs
- Can the equipment be returned to CONTROS or an authorized dealer if required?

1.1.1. Secondary Documents

. All CONTROS manuals are available as PDF downloads from our FTP-Server subject to a special username and password – allocated on application.

1.1.2. Limited Liability Statement

Extreme attention should be ensured while using or servicing HydroC™ equipment. It should only be used or serviced by personnel with knowledge of and training in the use and maintenance of oceanographic and subsea offshore electronic equipment.

CONTROS Systems & Solutions GmbH disclaims all product liability risks arising from the use or servicing of this system. CONTROS has no way of controlling the use of this equipment or of choosing the personnel to operate it and therefore cannot take steps to comply with laws pertaining to product liability, including laws which impose a duty to warn the user of any dangers involved in operating this equipment. Therefore, acceptance of this system by the customer shall be conclusively deemed to include a covenant by the customer to defend, indemnify, and hold CONTROS harmless from all product liability claims arising from these or servicing of the HydroC™ System.



1.1.3. Manufactory Guarantee

We guarantee that this product complies with the quality and specification stipulated. We undertake to remedy any defect from faulty design, material or workmanship during one year after delivery of the equipment. This guarantee is not extended to underwater connecting cables supplied by CONTROS Systems & Solutions GmbH where breakage or malfunction occurs to the cable during installation or when caused by wear or other external forces, e.g. to the membranes.

1.1.4. Hardware and Software Support

- Operating Systems (OS) are: Windows® XP, Windows® Vista, Windows® Server 2003 with Microsoft® .NET 3.0 and Microsoft® .NET 3.5
- Windows® 2000, 98, ME with Microsoft® .NET 2.0
- Microsoft® .NET Version 2.0 or higher is required. Please find the latest Software on our driver CD or at the CONTROS Homepage download pages.
- For other OS you can use the embedded SmartDI™ software, e.g. embedded RT Kernel, Win 9x, ME, NT, 2000, XP and Vista.
- All hardware platforms supported from these operating systems, e.g. AMD and Intel PC's like Pentium® class PC's.
- For each single attached Sensor or Datalogger one RS-232 comport is required. An RS-232 to USB adapter is desirable. The USB adapter driver must be available and work for these OS and hardware platforms. Please find suitable USB-RS232 Driver for our adapter on our driver CD or at the CONTROS Homepage download pages.



Supports Windows® Vista and XP with Microsoft.NET 3.x

2000, ME and 9x with .NET 2.x





1.2. Important notices / How to handle

HydroC™ Users:

**TIP!**

- In case of failures / connection problems disconnect and reconnect your USB-RS232 Adapter first. Then check if the USB driver is properly installed.
- You need a warm-up time of 15-30 minutes depending on the environment conditions.
- Please be extremely careful with the membrane, the smallest hole will flood the sensor!
- For deeper operating depths, thicker membranes (4, 6, 10 µm) are required. Please keep in mind that the response time decreases with the membrane thickness.
- After cleaning no special handling for storage is required.
- After a longer period of storage a calibration is not necessary – only the zero offset must be removed.
- For long distances up to 5 km a RS485 interface can be used.



2. Installation

With this MS-Windows® Software package, the HydroC™ Sensors and SmartDI™ or MicroDI™ Data-logger can be connected directly via RS-232, RS-485 or other transmission lines, e.g. Ethernet or USB with adapters. Transmitted data are displayed in real-time and can be logged and processed later with standard tools.

2.1. Installation

The installation needs three steps:

1. Install an RS-232 to USB converter, if your PC does not support an RS232 comport. The provided RS232-USB adapter consists of a driver disk. Please follow the instructions.
2. Install the Microsoft® .NET runtime environmental – only if not already installed. All newer Windows© Versions XP, VISTA etc. come with a.NET framework library already installed.
3. Install the CONTROS™ DETECT Windows® Software package. There is no special windows installation necessary, e.g. you can start the program directly from the program directory.



- You need a password from CONTROS to unzip or run the packed files or installation program. Use “tycobob” for the Software.



2.1.1. Installation of the USB to Serial RS232 Converter

Please refer to the installation manual of your USB-RS232 converter.



TIP!

- The CONTROS Software Package supports USB – RS232 converter and virtual COM ports from COM1 to COM256.
- You do not have to set the configuration for the COM port, the program will configure all COM ports for the user.

You will find a converter (if ordered or necessary) in the HydroC™ Transport Box:



Image 1: A RS232-USB Adapter is supplied from CONTROS. Use the CD to install the driver.

Please see the chapter before to read how to access the settings for COM ports. It is the same for USB COM ports – they are mostly installed on higher value ports, for example COM 9, COM 10, COM 11.

You DO NOT have to change the COM port settings in Windows® !



2.1.2. Installation of the CONTROS™ DETECT Software

The CONTROS™ DETECT Windows® Software comes with its own installation package.



- The required password is “tycobob”.
- The Microsoft® .NET runtime engine version 2.0 or higher is required and provided from CONTROS with its own Windows® installation package. See the special chapter.

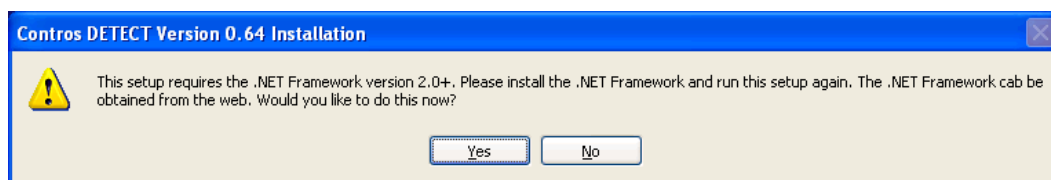


Image 2: The Microsoft® .NET framework is required. Please follow the link or install the software from the CONTROS product CD.

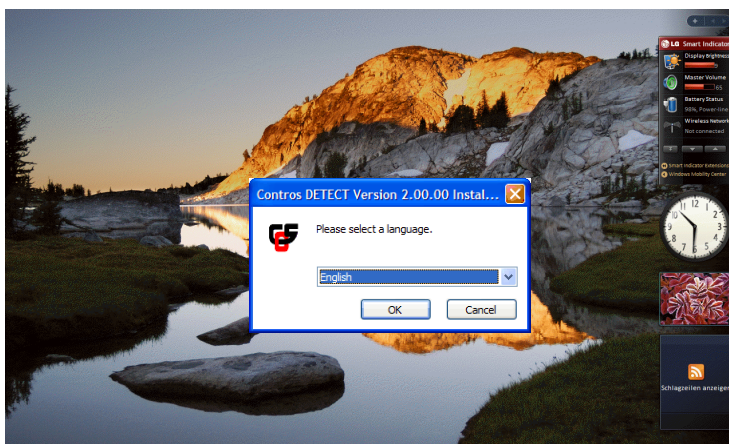


Image 3: Windows® VISTA look and feel. Start the installation software and use all default settings. No restart of your PC is required.



Image 4:

Please use all default-settings. No restart of your PC is required at the end of the installation process.

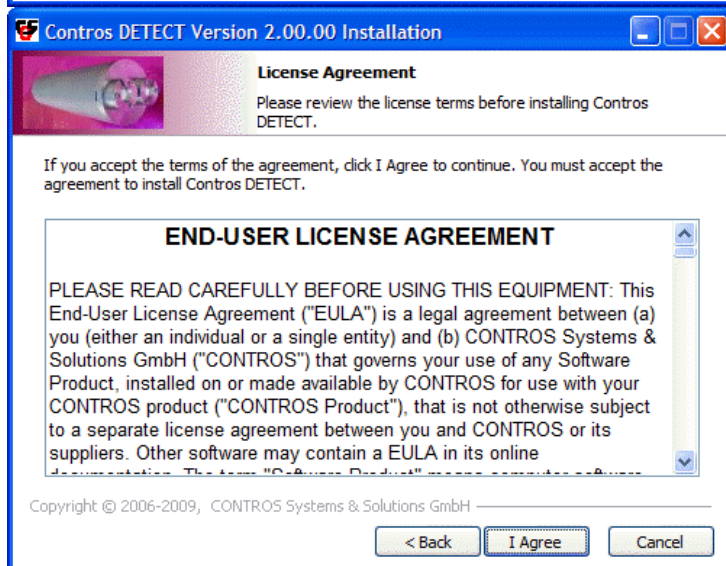


Image 5:

Please read carefully and confirm our End-User licence to install and use this software.

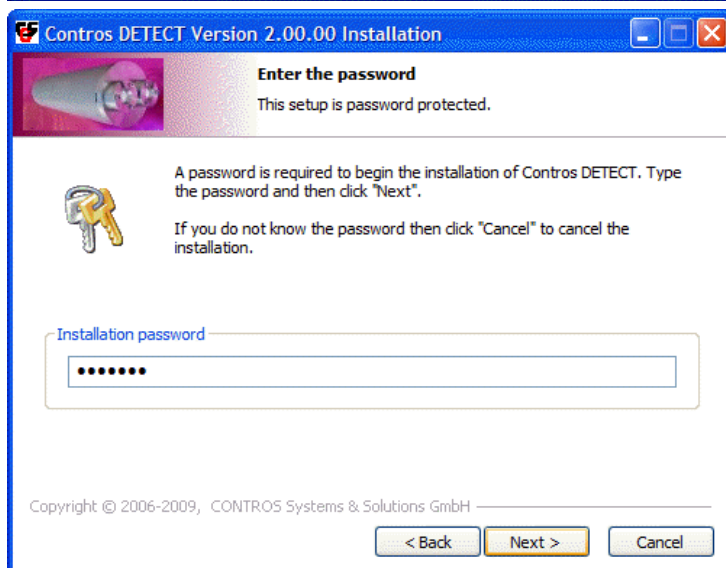


Image 6:

The password is "tycobob".

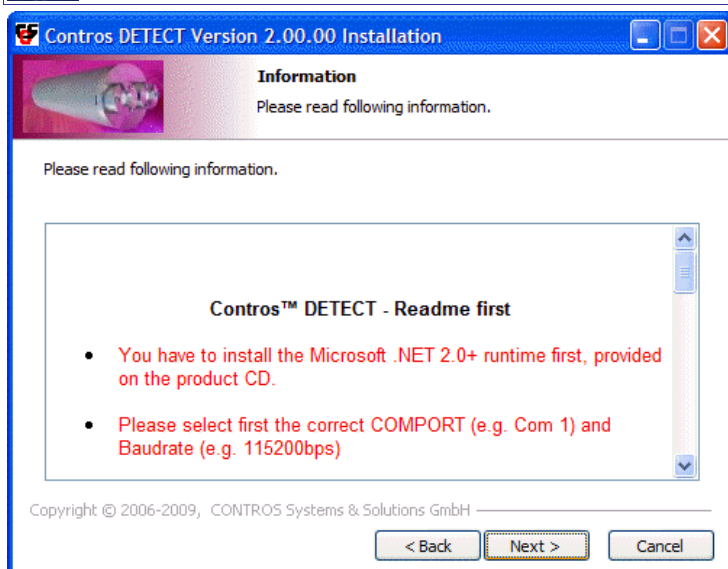


Image 7:

Please read updated and important instructions carefully.

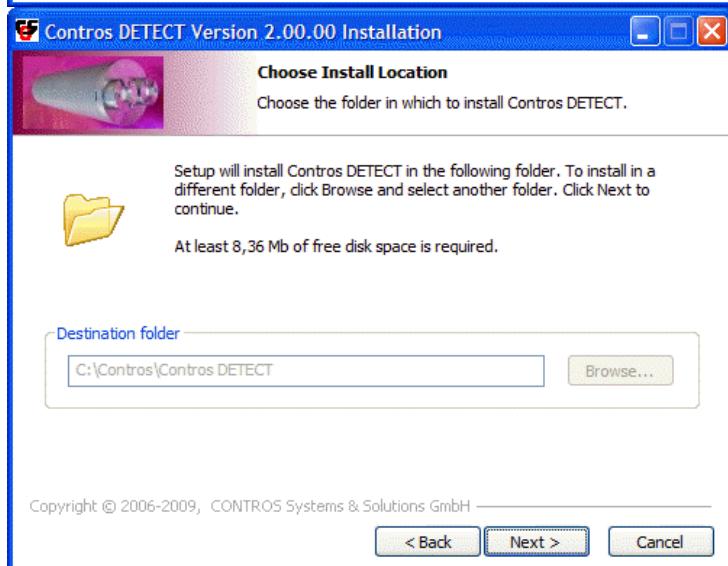


Image 8:

The installation folder is NOT under \programs\ due to special links.

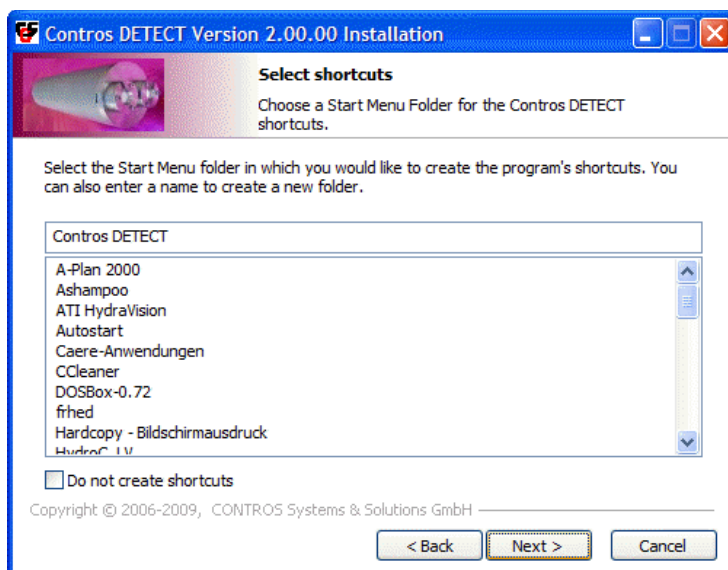
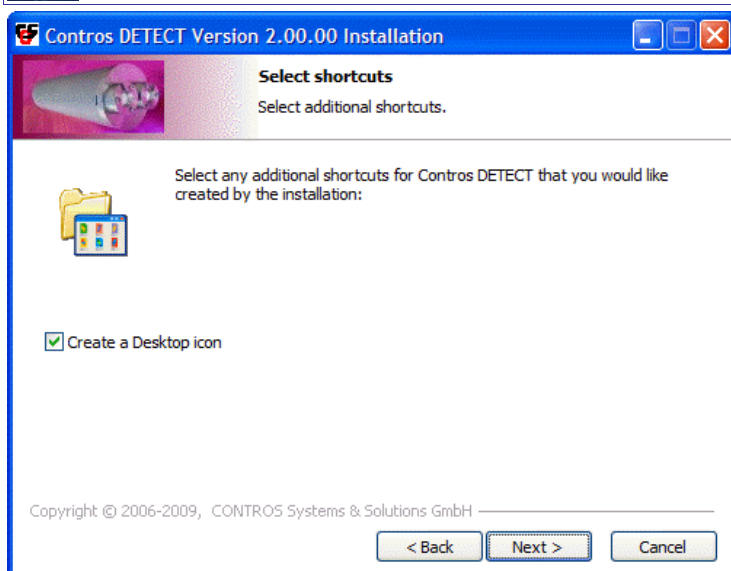
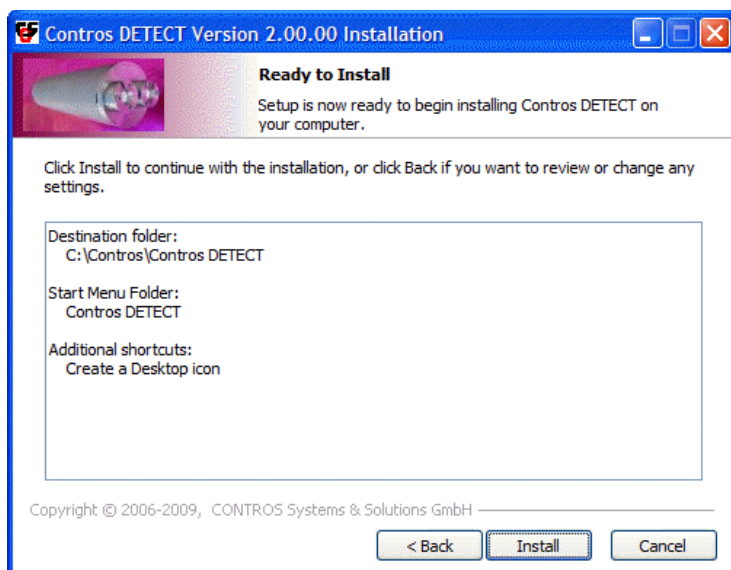


Image 9:

The entry for a program group is not required, but helpful.

**Image 10:**

A desktop link is not necessary, but may be helpful.

**Image 11:**

The last step before the installing process will start.

**Image 12:**

After having installed the software you can visit the CONTROS homepage, read the manual (this) or just start the program.



2.2. Removing

With the CONTROS™ DETECT installation software you have some options to remove the software:

- To remove the CONTROS™ DETECT software manually, you must delete the program path (e.g. C:\Contros\Detect\) and all the files on your own.
- Use the Uninstaller from your CONTROS™ DETECT program folder, e.g. START → PROGRAMS → CONTROS → Detect → Uninstall.
- Use the START → Windows® Control Panel → Software.



➡ **Do NOT** remove the Microsoft® .NET Software, it is part of all new software programs.



3. Operation

3.1. Start

3.1.1. .NET

You have to install the .NET version 2.0 or higher first. Please see the chapter above how to get and install it.



Image 13: If you get an error like this, you have to install the .NET version 2.0 or higher first. Please see the chapter above how to get and install it.

You can start the program with the desktop icon or from the program folder.

3.1.2. Start with the Desktop Icon

To start the software, just double-click on



Image 14: Use the desktop icon or go to START → PROGRAM FILES → Detect.

The program will start with an initialization screen, searching for connected devices.



Image 15: The software is automatically searching for attached devices.

Clicking “L” will abort searching and load the last saved setup. “X” will abort the search and start the program without a device connected.



3.2. Working with DETECT

3.2.1. The Default Screen

After starting the program will open all relevant windows.

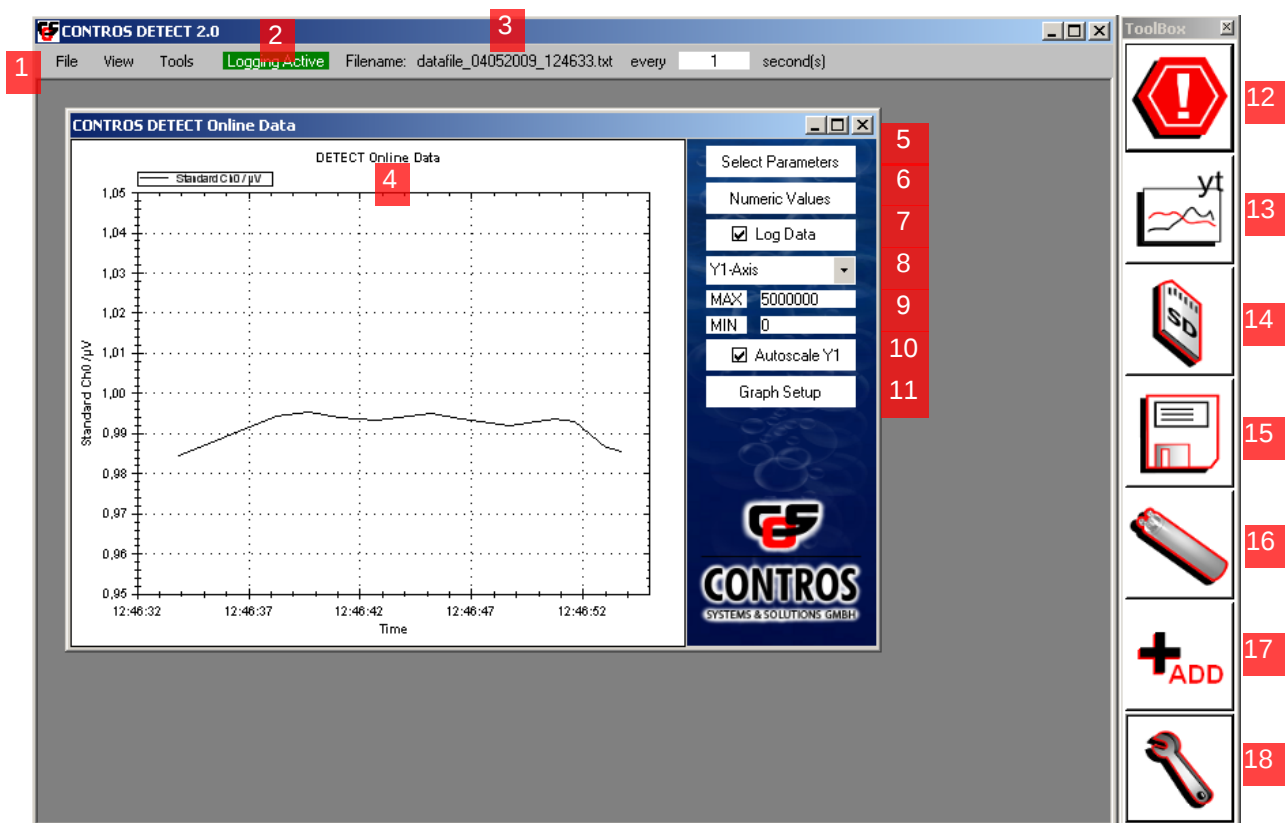


Image 16: The default start Menu

1. The main menu
2. Status indicator for logging function. Green = Logging active; Red = NO logging
3. Name of the actual Log file
4. First graphic online window. You can open more windows by clicking button **13** or via main menu
5. Button to select the channels for this graphic window
6. Button to view numeric values in parallel
7. Button to start or stop the online / real-time data logging
8. Select scaling settings for primary or secondary Y-axis.
9. Y-axis scaling factor, manual settings
10. Y-axis auto scaling feature (disabled by default)
11. Setup graph properties
12. Toolbox: Start / stop all data inputs
13. Toolbox: Generate new Graphic window
14. Toolbox: Download stored data from a MicroDI™ or SmartDI™ Datalogger Flashcard (MicroDI™: μSD card; SmartDI™: CF-card)
15. Toolbox: Read back already logged / archived data from an ASCII data file
16. Toolbox: Special configuration / setup menu
17. Toolbox: Add external sensors or search again for new attached Dataloggers or Sensors
18. Toolbox: General Setup



3.2.2. Main menu: View / Arrange Windows

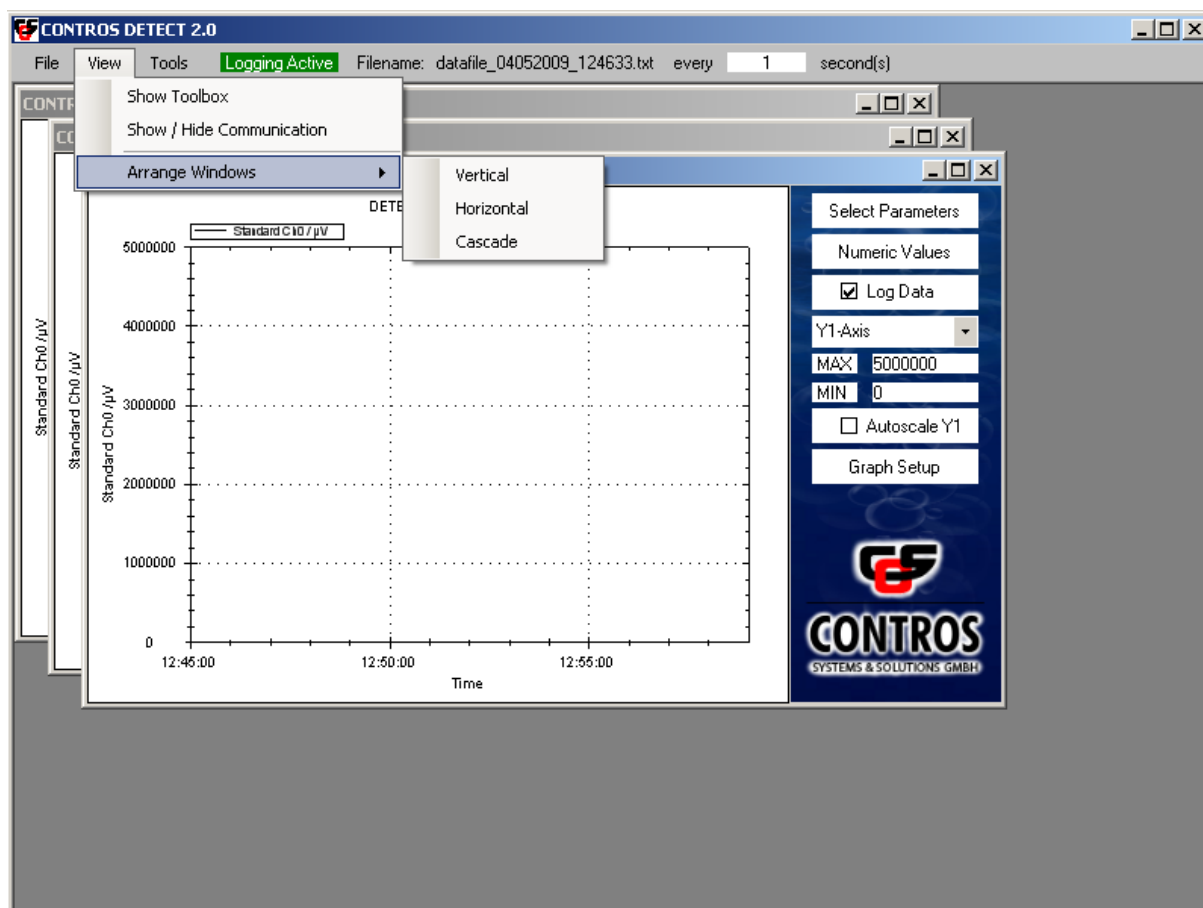


Image 17: Main menu: VIEW

- Show Toolbox: If you have closed the Toolbox Window, you can reopen it here.
- Show / Hide Communication: Open window to view the data commands in real-time.
- Arrange Windows: Arrange multiple windows on the screen.

3.2.3. Main menu: File

Save Configuration: Saves information about connected sensors. Next time you can quit the starting progress by clicking "L" in the upper right corner. Instead of searching the old configuration will be restored. This requires that the COM Ports are not changed.

Exit: Closes this program.

3.2.4. Main menu: Tools

Instead of using the toolbar all features can be accessed via this menu.



3.2.5. Working with the Graphic Window

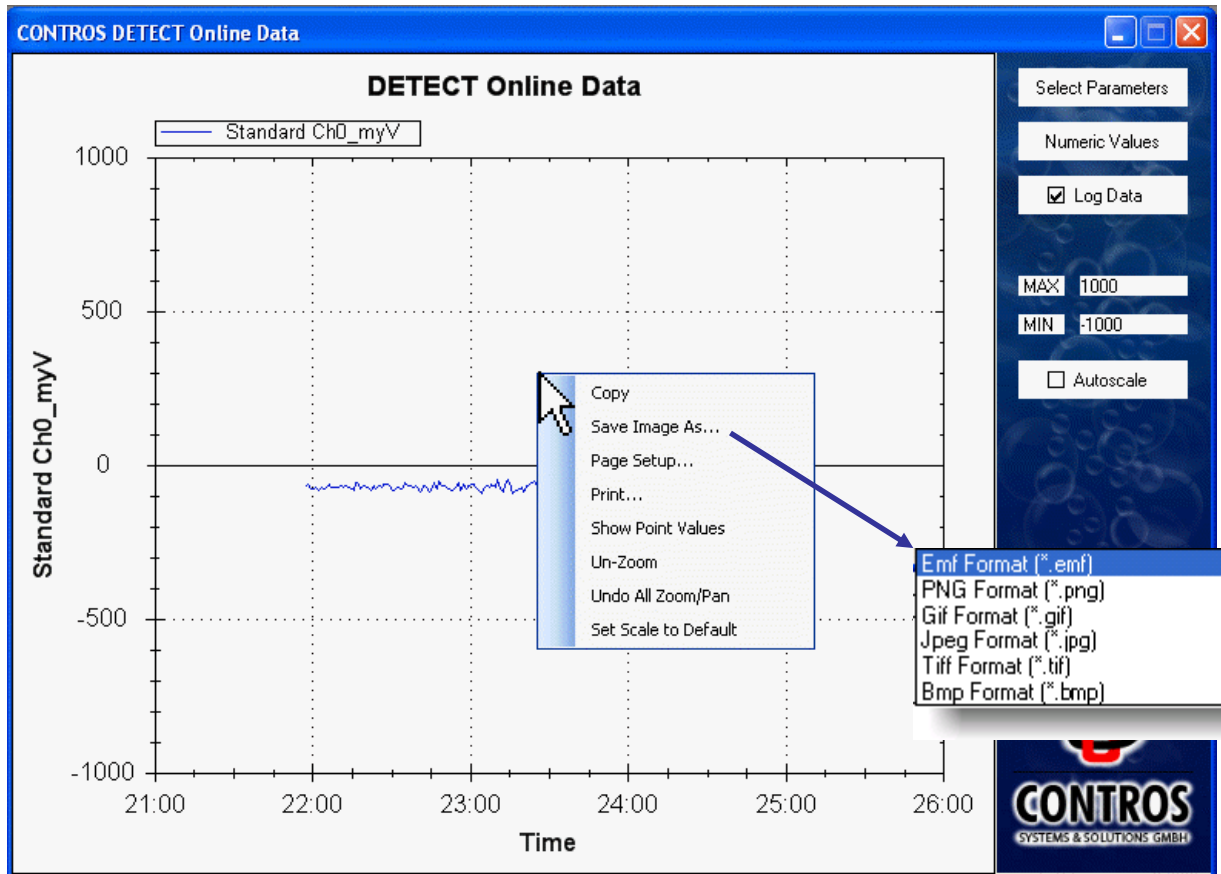


Image 18: Right mouse-click in the Graphic Window

With the right Mouse Button, you can:

- Copy the graphic and add to the clipboard
- Save / Export the graphic to different file formats (see list above)
- Page setup for best printing jobs
- Print the colour graphic
- Show measuring / pointed values
- Un-zoom the graphic
- Undo all zooms
- Set graphic scaling to default values



3.2.6. The online / real-time Graphic Window

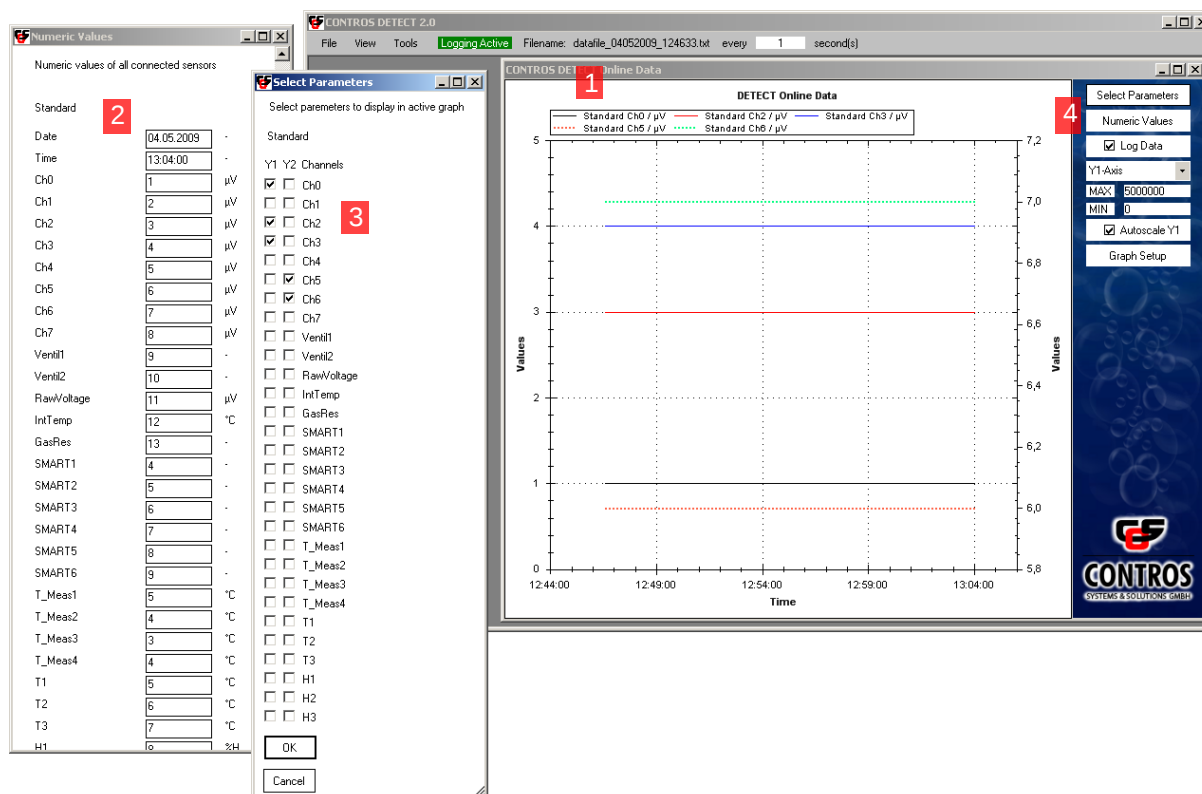


Image 19: The Graphic online Window with optional windows “Numeric Values”, “Communication Window” and “Select Parameter”

1. The main graphic window
2. The “Numeric Values” window to view the online data as numeric values in parallel to the graphical chart and non-displayable text information.
3. The “Select Parameters” window to select any channels for the graphic chart window. Channels attached to the primary Y-axis are displayed as a straight curve, while the secondary Y-axis has dotted lines.
4. The buttons to show the “Numeric Values” or “Select Parameters” window



3.2.7. HydroC™ Sensor Settings

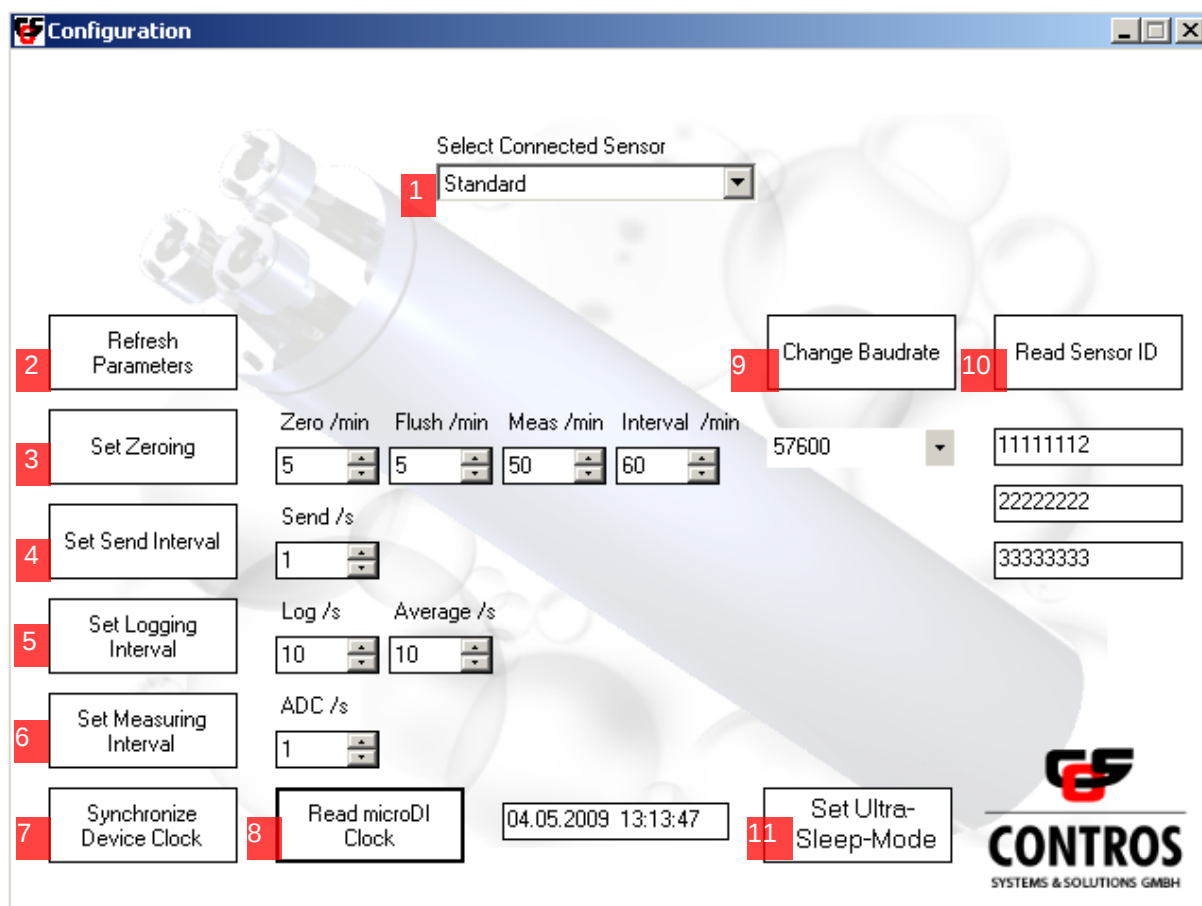


Image 20: The special configuration menu

1. First select an attached device
2. After changing the timing settings you can refresh the data to check that all parameters are stored or processed correctly.
3. Set the zeroing, flushing and measuring time of HydroC™ sensors with zero gas option. Zeroing = 0 disables the auto zeroing feature
4. Set the online transmission interval. Default = 1s (send every second a new data set)
5. Set the logging interval to the internal memory (e.g. µSD card) and the averaging time for calculating the arithmetic mean. The min. interval is 1s for the MicroDI™ Datalogger or HydroC™ Sensor.
6. Set the sampling rate of the ADC. The min. sample rate is 0.1s (10 Hz) for the MicroDI™ Datalogger. Note, that 8 channels on the MicroDI™ cannot be sampled with 10 Hz together.
7. Synchronize the internal Datalogger clock with the PC time.
8. Read back the Datalogger clock.
9. Change the communication baudrate. Please don't use this option if not absolutely necessary. The default baudrate is 115200bps for a direct RS232 or RS485 link, or 19200bps for some other telemetry links.
10. Read the device Id.
11. The device (Sensor or Datalogger) IDs
12. Set Ultra-Sleep-Mode

Depending on your type of sensor, some options are not available and won't be displayed.



3.2.8. Ultra-Sleep-Mode

If your device is equipped with the power saving Ultra-Sleep feature for timed sensor operation, you can set the timing parameters here. On sensor Start-Up the Ultra-Sleep-Mode is inactive. It has to be enabled via this software or with a magnetic hardware switch near the connector (see HydroC manual).

1 ☒ Set Times Power ON every 4 hr for 1 hr

2 ☐ Synchronize Clock with microDI

3 ☒ Start Power Saving Operation now!

4 ☐ Start Power Saving Operation next Power-Up!

OK Cancel

1. Set the operation times. Choose the time between power-ups and the duration. The intervals are visually displayed on a timeline for easy control. Keep in mind, that sensors need time for thermal stabilisation before producing reliable measurements.
2. Synchronizes the times of microDI-Datalogger and Ultra-Sleep-Board.
3. Starts the Ultra-Sleep-Mode instantly.
4. Ultra-Sleep-Mode will be activated the next time power is applied to the sensor.



3.2.9. The Download Window

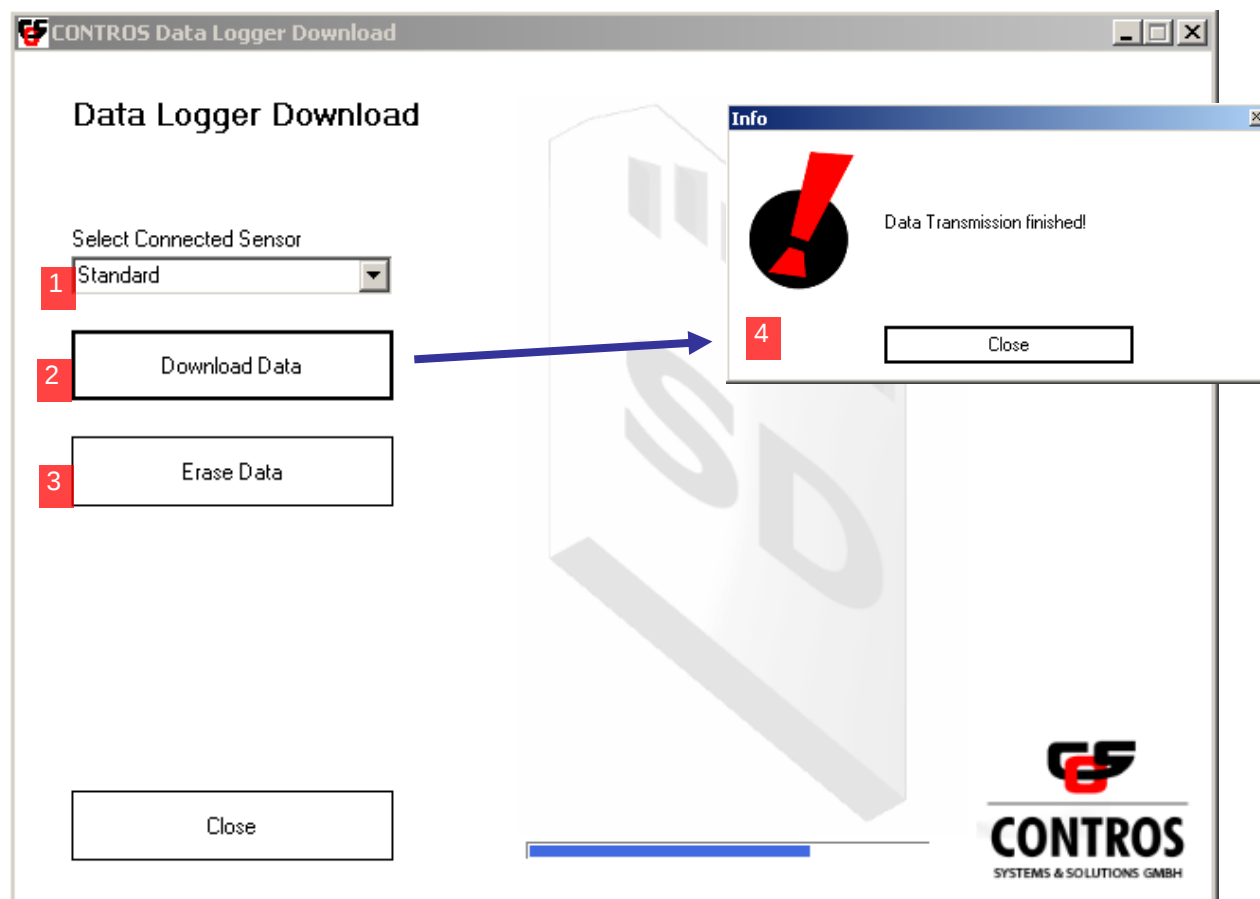


Image 21: The Download Window

1. First select an already attached device, e.g. a Datalogger or HydroC™ Sensor with internal Datalogger.
2. Click here to start the download
3. After downloading the data, you can delete the stored data on the device.
4. Successful data transmission is indicated by an info window.



3.2.10. Search newly attached sensors / instruments

After changing the attached device, or if the software was started before connecting any device, you can search for HydroC CH₄ and CO₂ Sensors.

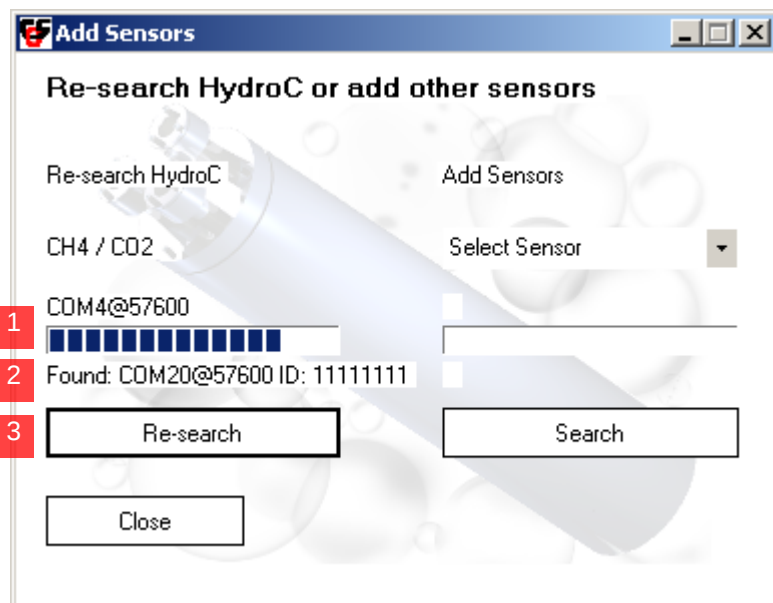


Image 22: Search for new attached devices and show the result.

1. Progress status indicator shows where the software is looking for new devices
2. The result with communication settings and device ID.
3. Button to start searching

The same way you can search for other supported devices. These should be operated with standard configuration, e.g. a GPS mouse should run at 4800 or 9600 baud and provide either \$GPRMC or \$GPGGA-String.



3.2.11. Archived Data and GPS waypoint export to Google Earth

To read back already stored data you can use the “View Archived Data” feature. With this feature you can export GPS data to KML files to get locations in Google Earth, linked with logged data for each position.

Files are stored in the directory \DETECT\datafiles.

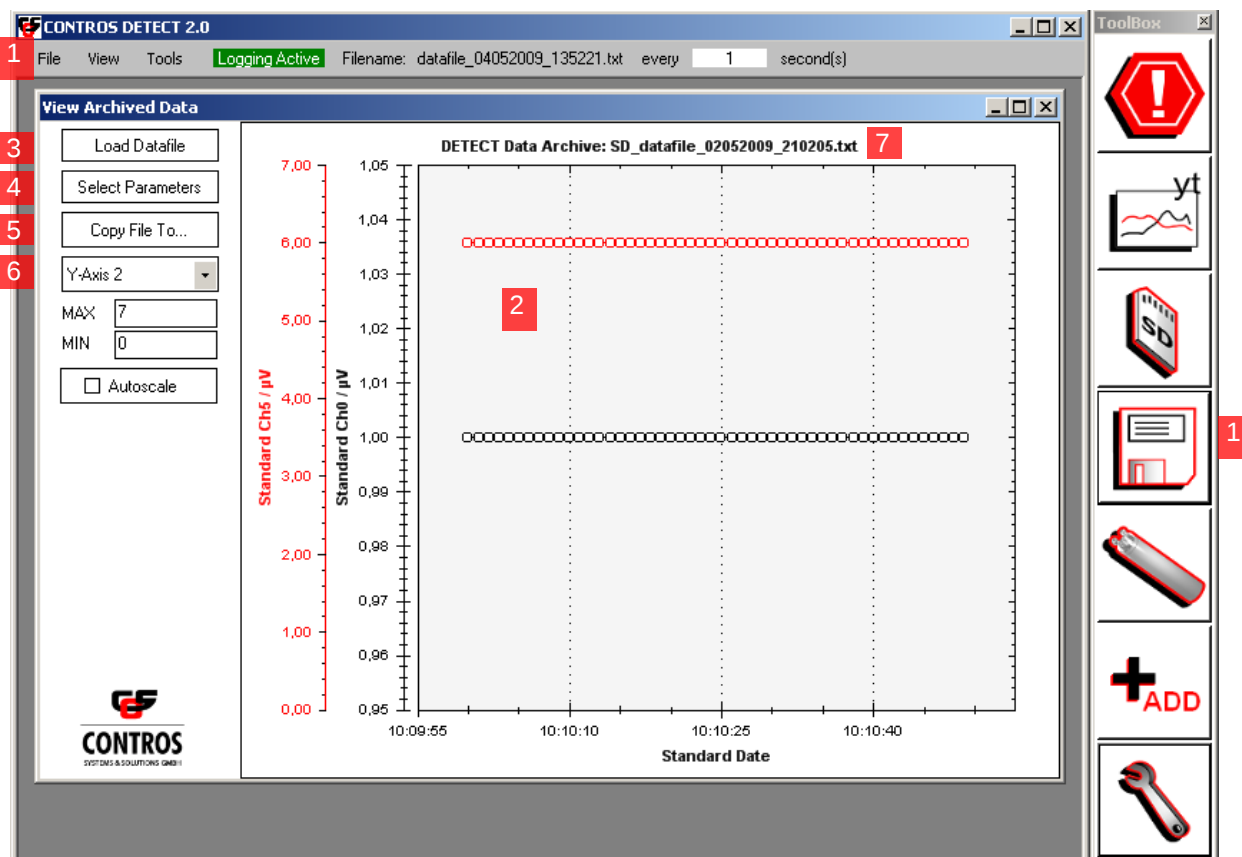


Image 23: The Archived Data Window

1. Open the “Archived Data” Window via the Main Menu or the Toolbox
2. The “Archived Data” Window
3. Load already stored data here
4. After selecting a data file, you must select the channels for the X- and Y-axis, please see the following description
5. Save a copy of the selected file to a different location (e.g. USB pendrive) as CSV.
6. You may choose up to 4 curves to be displayed in the graph. Every Y-axis may be set up independently.
7. The name of the data file

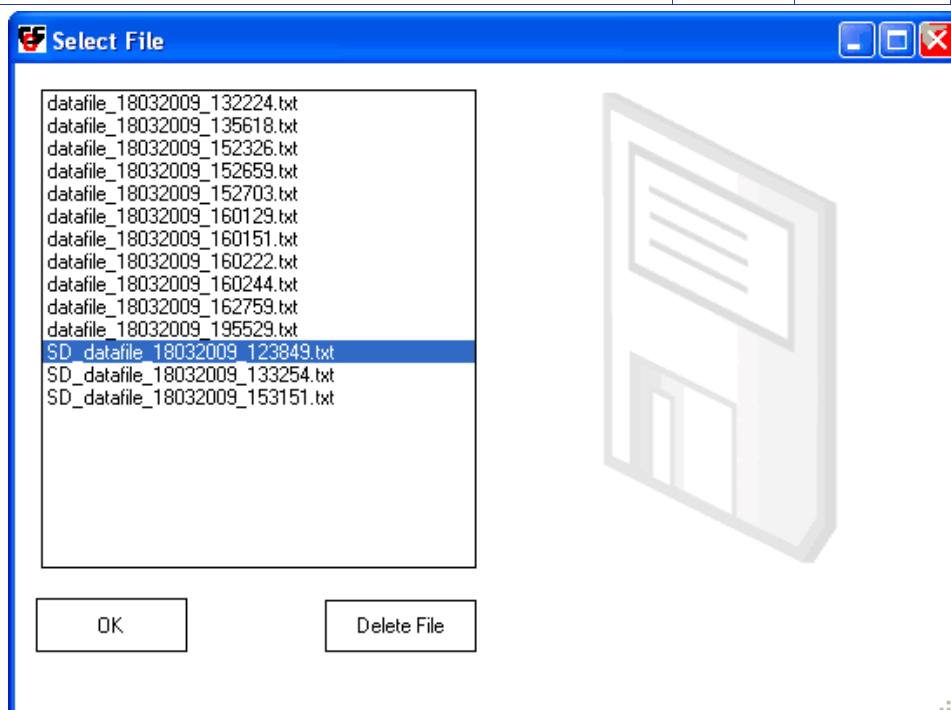


Image 24: The Archived Data Window: select a data file. The name “SD_” is an indicator for downloaded data. The other files are real-time recordings.

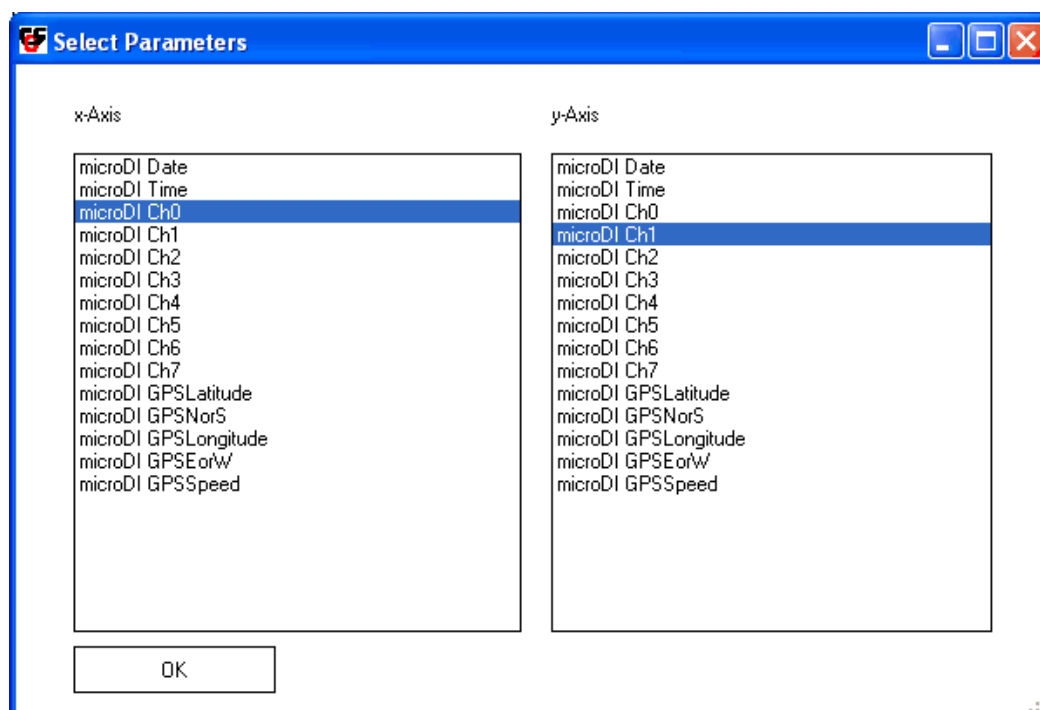


Image 25: To view any archived data, you must select the channels for the X- and Y-axis. Up to 4 channels can be chosen for display on Y-axis.



3.2.11.1. Export the GPS locations to Google® Earth

If your set of recorded data provides GPS channels according to NMEA the geographical locations can be read-out by Contros DETECT 2.0 software. With this NEW software it is possible to export the data directly to Google® Earth to watch the waypoints. For more details, please read the chapter “Windows Software”.

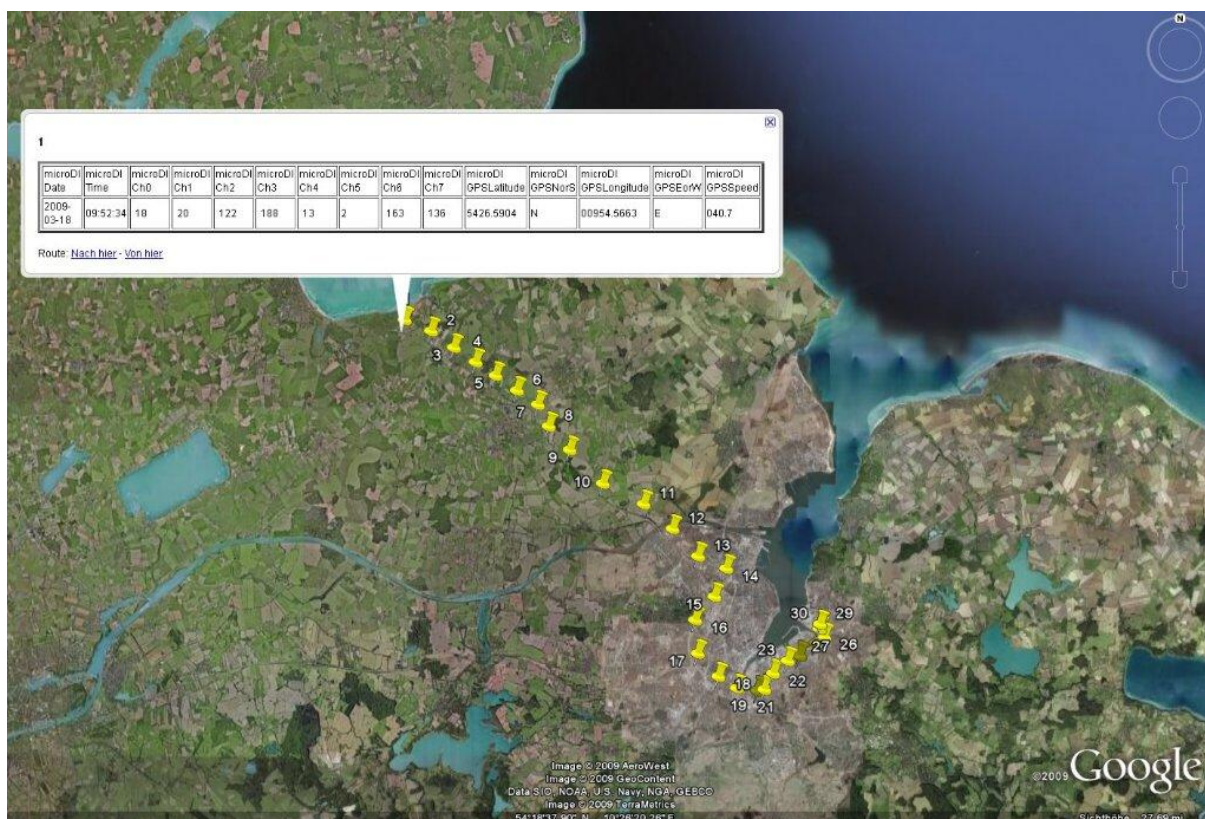


Image 26: Google Earth with imported waypoints from GPS data. Here you can see the CONTROS location at the right end of the way close to the Kiel Fjord / Baltic Sea.



TIP!

- For a detailed documentation of the GPS data export, please see the DETECT 2.0 software manual.
- Please read the “Terms of conditions” from Google® Earth carefully. (For the US: <http://www.google.com/accounts/TOS>). E.g. it is not allowed to use this software package for commercial purpose – especially not for fleet management or car street tracking applications. The example above is an internal function test by CONTROS only.



3.2.12. General setup

3.2.12.1. Virtual Channels – Formula Parser

With virtual channels you can use parameter values for calculations. The formulas are parsed and work according to mathematical laws (e.g. division has a higher priority than addition). The Number of Virtual Channels is initially set to 0 and can be changed up to 10.

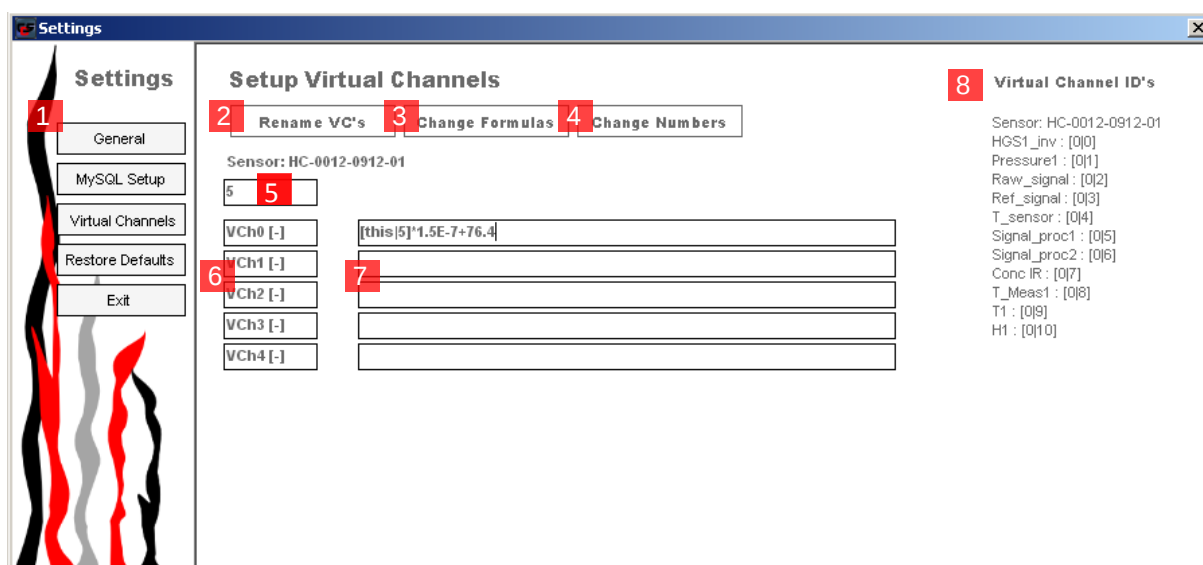


Image 27: Virtual Channels

1. Open Virtual Channels setup window
2. Button to rename all Virtual Channels
3. Button to change all formulas
4. Button to change number of Virtual Channels
5. Number of Virtual Channels for sensor
6. Virtual Channel names listed by sensors
7. Virtual Channel formulas
8. Window displaying Virtual Channel IDs

The parser requires a special syntax that allows following operators:

+, -, *, /, % (modulo division), ^ (power), LOG (Briggs) , LN, SQRT, SIN, COS, TAN, EXP

XEY can be used to replace the scientific notation $Y \cdot 10^X$.

Capitalization of characters is not needed. Brackets may be set. Parameter values like temperature or raw voltage can be included with Virtual Channel IDs. Instead of numbers put the IDs in the formula.

Example:

Raw Voltage has the ID [0|3]. According to calibration parameters the concentration is 3 times the voltage plus 4. The proper formula then is:

[0|3]*3+4

Every sensor provides up to 5 Virtual Channels. If you want to use only parameters of the associated sensor, you can change the first number to "this" (e.g. [this|3] instead of [0|3]). The advantage is, that if you connect other sensors, the own parameters will always be found, no matter how the sensor is addressed by DETECT. If you want to include parameters of other sensors you have to use the specific ID which might change if you modify the sensor connections.



3.2.12.2.MySQL Setup

Data can not only be logged locally but also exported to remote MySQL databases. This requires server address (eventually with port, e.g. "www.address.com:3600"), username and password and name of the database. Before you can start logging the connection must be tested successfully.

The program will create a table according to the form "log_DDMMYY_HHMMSS" with fields for every parameter.

Stopping the local data logging will also stop MySQL uploading.

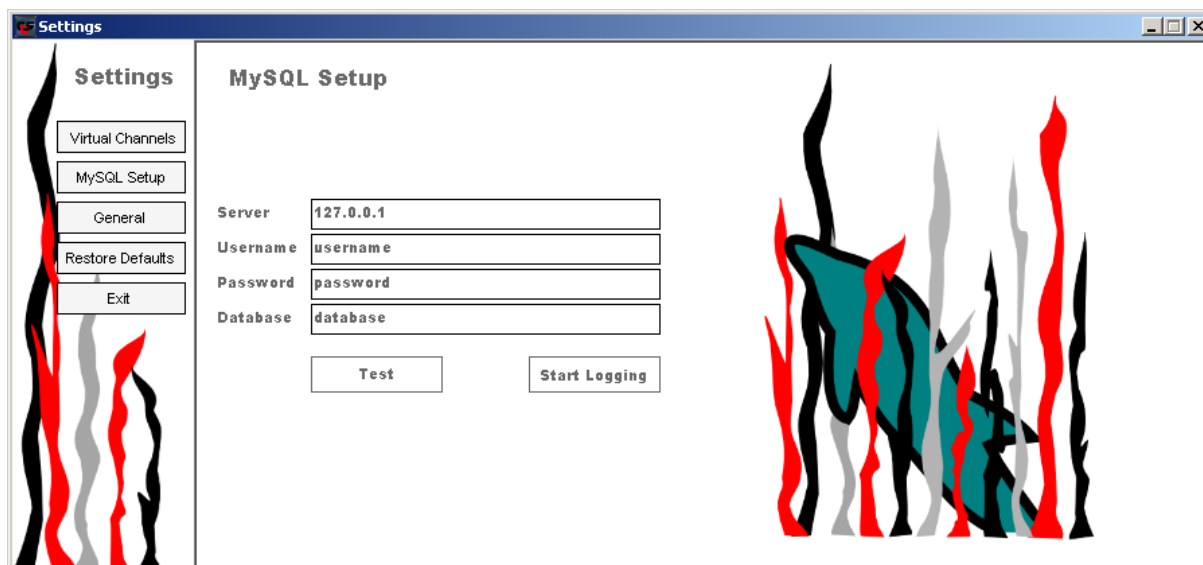
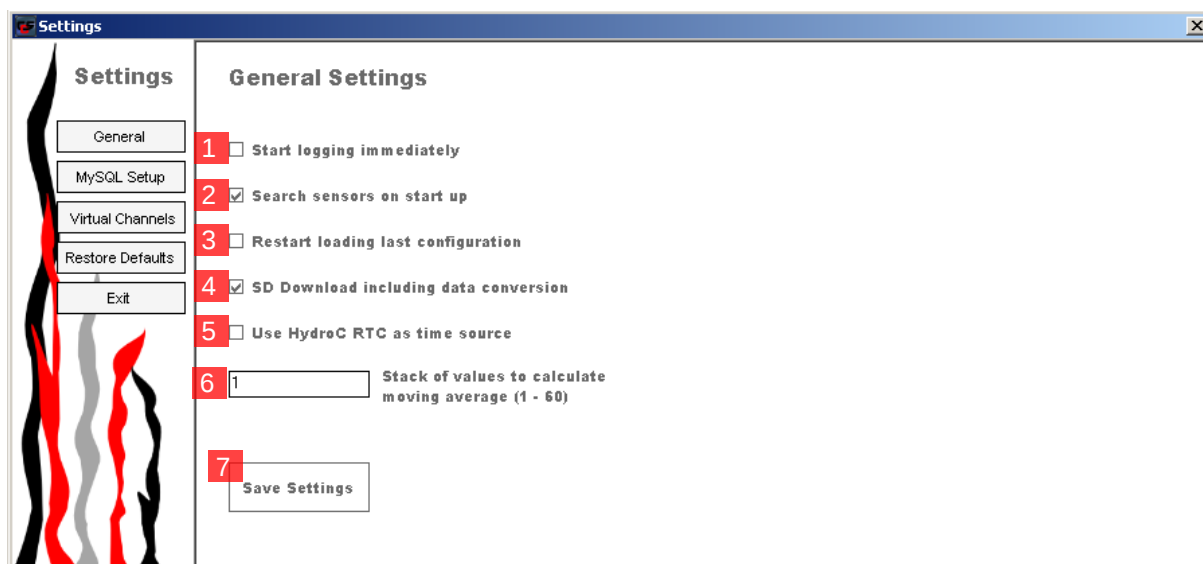


Image 28: MySQL database setup



3.2.12.3. General Setup



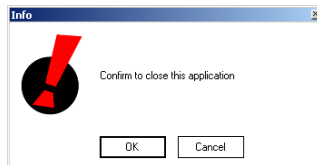
1. Uncheck to disabled automatic logging after starting DETECT.
2. Uncheck to disable the automatic sensor search on start up. Instead you will be able to choose which type of sensors you want to connect to next time DETECT is started. The right COM-Port and Baudrate are needed.
3. Check to automatically load the last configuration during start-up. This might be applicable for long term data acquisition to guarantee operation after a computer crash resp. restart with DETECT being autostarted by windows.
4. Check to calculate virtual channels when downloading. Disabling might speed up the data download.
5. Check to use the internal clock of HydroC™ probes. Otherwise data will be logged with a time-stamp of the computer DETECT is running on.
6. Set the stack of values to calculate the arithmetic mean.
7. Changes will only have effect if they are saved.



3.2.12.4. Restore Defaults

This will restore the default sensor configuration file. This also includes Virtual Channel Formulas.

3.3. Exit the program

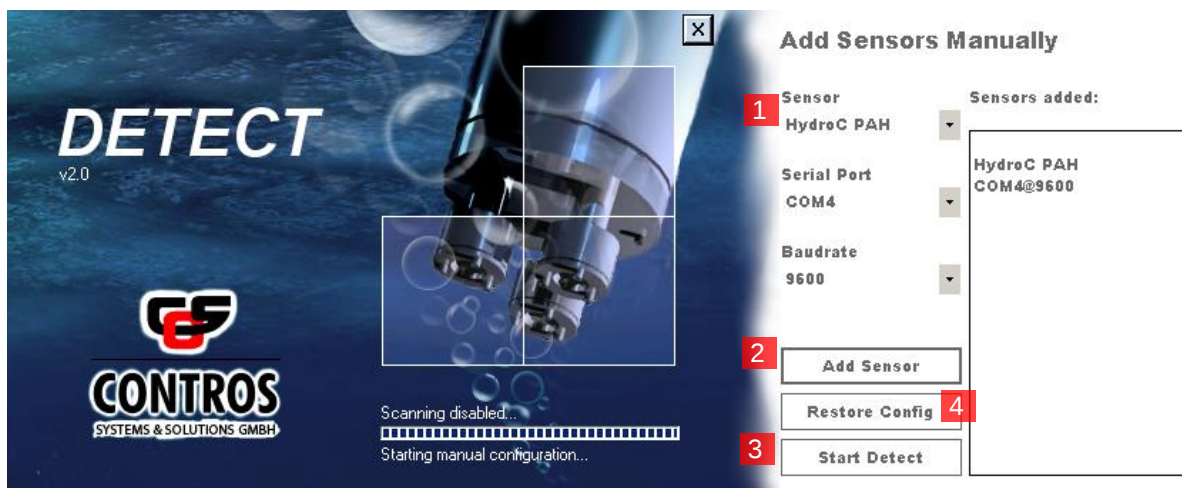


You can end the program in the ordinary Windows™ typical way or any-time by clicking the “Exit” button. No data will be lost; all configuration parameters are saved automatically.

Image 29: Confirm that you want to exit now.

3.4. Manual Sensor Configuration

If the autosearch feature is disabled, you can choose the connected sensors manually after having started DETECT.



1. Choose sensor, serial port and baudrate.
2. Click “Add Sensor”. You can add connected sensors one after another.
3. Start DETECT with added sensors.
4. If an old configuration was saved (File -> Save Configuration) it can be loaded and further sensors can be added afterwards.



4. File formats

4.1. Data files after downloading or online logging

The data files are in ASCII CSV format and can be imported directly to MS-Excel® or other special post-processing software.

```
HydroC;HydroC;HydroC;HydroC;HydroC;HydroC;HydroC;HydroC;HydroC;.....  
Date;Time;Ch0;Ch1;Ch2;Ch3;Ch4;Ch5;Ch6;Ch7;T1;T2;T3;H1;H2;H3;Ventil1;Ventil2;...  
; ;µV;µV;µV;µV;µV;µV;µV;µV;°C;°C;°C;%H;%H;%H;...  
2009-03-16;22:25:05;-62;-61;-178;-248;-63;-54;-222;-191;;;;;;;;0;0;;;;;;;;;  
2009-03-16;22:25:35;-70;-69;-185;-258;-74;-19;-206;-205;;;;;;;;0;0;;;;;;;;;  
2009-03-16;22:26:05;-65;-75;-181;-265;-60;-43;-215;-208;;;;;;;;0;0;;;;;;;;;
```

Image 30: Example of download / logged ASCII CVS data file (lines shorten)

In the example above a standard configuration is used. This is the default setup for unknown or new systems, e.g. Datalogger.

Online logged data: datafile_17032009_092228.txt
Downloaded data: SD_datafile_17032009_092228.txt

Here: data from 17th March 2009 at 09:22:28 PC (local) time

The first three lines are headers that contain information about

1. Device name
2. Logged parameters
3. Units



4.2. Data files on a Datalogger micro-SD card

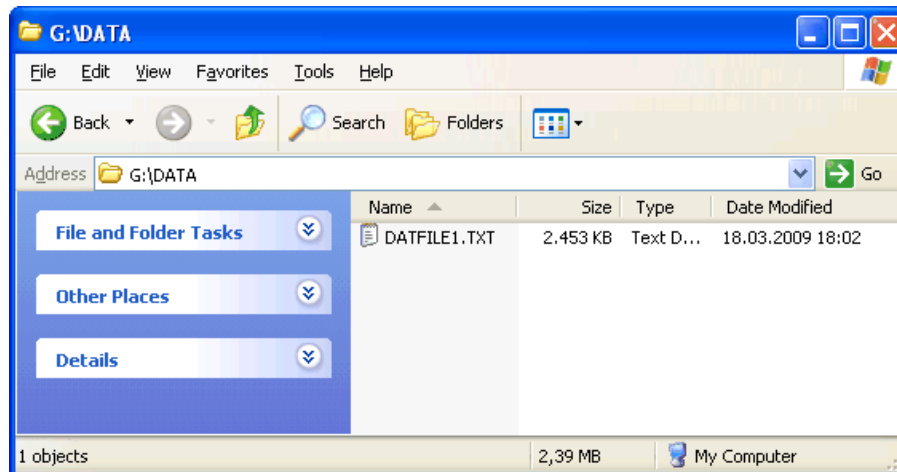


Image 31: After inserting a (micro-)SD card into a CD-card reader on your PC you can copy the datafile.

For example, a typical content of the MicroDI µSD card is:

```
$CODB1,0,0,D,1,0,2009-03-18,15:29:55,400,, -73,-57,-174,-224,-54,-31,-196,-
188,,,,,,,,
$CODB1,0,0,D,1,0,2009-03-18,15:29:56,900,, -61,-63,-163,-241,-59,-30,-201,-
194,,,,,,,,
$CODB1,0,0,D,1,0,2009-03-18,15:29:56,500,, -66,-51,-169,-243,-46,-27,-211,-
190,,,,,,,,
$CODB1,0,0,D,1,0,2009-03-18,15:29:56,600,, -66,-51,-169,-243,-46,-27,-211,-
190,,,,,,,,
$CODB1,0,0,D,1,0,2009-03-18,15:29:57,100,, -67,-56,-168,-246,-57,-22,-201,-
191,,,,,,,,
$CODB1,0,0,D,1,0,2009-03-18,15:29:57,200,, -67,-56,-168,-246,-57,-22,-201,-
191,,,,,,,,
$CODB1,0,0,D,1,0,2009-03-18,15:29:57,800,, -79,-47,-173,-239,-60,-19,-203,-
198,,,,,,,,
$CODB1,0,0,D,1,0,2009-03-18,15:29:58,900,, -79,-47,-173,-239,-60,-19,-203,-
198,,,,,,,,
...
```

Image 32: Example of a micro-SD ASCII data file

Please keep in mind, that complete NMEA-0183 sentences are stored. After downloading with the Contros DETECT Software the data is always stored in pure ASCII / CVS text format.

4.3. Configuration files

The configuration file is stored in XML format. No changes are suitable here. The configuration will be managed automatically by the program.



5. Trouble shooting



- This chapter was created with the support of our clients and partners – so your input is very valued!

5.1. Communication

5.1.1. No data / communication failure

Possible Problem:

A measurement was started and nothing happens: no curves displayed, no actual values appear in the signal-legend windows.

Maybe the system reports communication failure with the sensor

Solution:

- ➡ Try to disconnect and connect again an USB-RS232 adapter.
- ➡ Check the function of the USB or RS232 Comport in the Windows® “Device Manager”
- ➡ Data transmission problem through the RS485/RS232 desktop converter: the red LED should flash when the transmission runs. If no transmission occurs, the LED is glowing continuously and the sensor gives a signal (Voltage output measured at the connector), check for loose connections. Pull out the energy supply cable and connect it after a few seconds. This will re-set the Sensor.

5.1.2. Spikes in the data

Possible Problem:

Wrong or loose connector

Solution:

- ➡ Try to disconnect and connect again at every connector.
- ➡ For internal adapters, please contact CONTROS.

5.2. Data readout / SD card (internal / external Datalogger only)

5.2.1. Can not open the SD card on my PC

Possible Problem:

The SD card was removed after switching off the Sensor or Datalogger. The file system was not closed correctly. This is very unusual.

Solution:

- ➡ Insert it into your Device (Sensor or Datalogger) again and turn on and off. Try again.



5.3. HydroC™ Measurement

5.3.1. After „switch-on” the measured value remains high

Possible Problem:

If the sensor has not been zeroed, the actual measured value is scaled and shows a too high value.

Solution:

- ➡ Carry out the zeroing process, either with the zeroing switch (analogue version) or through commands via the serial interface. After the zeroing the value is subtracted as an offset from the subsequent measured values.

5.3.2. After „switch-on” the analogue signal remains high for some minutes

Possible Problem:

After power-on the output goes to a high value. If the internal calibration feature is enabled, some minutes are needed.

Solution:

- ➡ After being powered-on the output goes to a high value. If the internal calibration feature is enabled, some minutes are required.

5.4. Windows Software

5.4.1. Program fails and stops

Possible Problem:

Something is going wrong during the startup procedure.

Solution:

- ➡ Be sure that all files are installed (copied) into one folder. The name and path of the folder is not relevant.
- ➡ In case of trouble, copy all files from your CD or any backup to a new folder and try again. Maybe the files are corrupted after a Windows® crash.
- ➡ In case of remaining trouble install the Software again. First backup your configuration (*.INI) files.
- ➡ Restart your PC.



6. Attachments

6.1. RS-232 serial Interface

JALKANEN ALBUM - PC TECREF
**SERIAL PORT
 COM1, COM2**
 THIS PAGE WAS CREATED USING ALBUM & QUICKPAGE.
 ASK FOR THEM, WHEN YOU NEED
 PERFECT ELECTRONIC CATALOGUES.
 EMAIL: ALBUM@PRESSE.FI

Signal Ground..... GND ... 5
Ring Indicator RI IN -----> 9
Data Terminal Ready. DTR OUT <-- 4
Clear To Send CTS IN -----> 8
Transmit Data TXD OUT <-- 3
Request To Send..... RTS OUT <-- 7
Receive Data RXD IN -----> 2
Data Set Ready DSR IN -----> 6
Carrier Detect DCD IN -----> 1

**25 pin male
 "PC type"**

**Corresponding
 Serial port pins
 25 pin / 9 pin**

2	TXD	3
3	RXD	2
4	RTS	7
5	CTS	8
6	DSR	6
7	GND	5
8	DCD	1
20	DTR	4
22	RI	9

NOTE! "OLD" PCs HAD
 25 PIN FEMALE
 CONNECTOR, COMPAT-
 ILE TO "STRAIGHT-
 THROUGH" CABLES
 ABOVE.

**9 pin male
 "AT type"**

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 COPIED AND
 DISTRIBUTED
 FREELY IN
 ANY FORM
 (C) TIMO JALKANEN

**PRACTICAL SIGNAL
 DESCRIPTION**

- "RING INDICATOR" INDICATES THAT MODEM DETECTED RINGING SIGNAL
- "DATA TERMINAL READY" TELLS TO MODEM THAT PC IS "READY"
- "CLEAR TO SEND" INDICATES THAT MODEM IS READY TO RECEIVE DATA FROM PC
- "TRANSMIT DATA" IS SERIAL BIT STREAM TO MODEM
- "REQUEST TO SEND" TELLS TO MODEM THAT PC WANTS TO SEND DATA (OR THAT PC IS "READY")
- "RECEIVE DATA" IS SERIAL BIT STREAM FROM MODEM
- "DATA SET READY" INDICATES THAT MODEM IS "READY"
- "DATA CARRIER DETECT" INDICATES THAT MODEM HAS PROPER REMOTE CONNECTION

**PC TO PC "NULL-MODEM" CABLES (ALL THE CON-
 NECTORS 3 PIN FEMALE)**

ALL THESE CABLES WORK WITH
 *INTERLNK DATA TRANSFER

7 WIRE (WITH HANDSHAKING)

DCD 1	1 DCD
RXD 2	2 RXD
TXD 3	3 TXD
DTR 4	4 DTR
GND 5	5 GND
DSR 6	6 DSR
RTS 7	7 RTS
CTS 8	8 CTS
RI 9	9 RI

8 WIRE (WITH LOOP-BACKS)

DCD 1	1 DCD
RXD 2	2 RXD
TXD 3	3 TXD
GND 5	5 GND
DSR 6	6 DSR
RTS 7	7 RTS
CTS 8	8 CTS

3 WIRE (MINIMUM LINKS)

RXD 2	2 RXD
TXD 3	3 TXD
GND 5	5 GND

*INTERLNK/INTERSUR IS PC TO PC DATA TRANSFER FEATURE OF MICROSOFT DOS 6.0 OR GREATER.

**NOTE! IN MODEMS
 YOU ALWAYS HAVE
 A 25 PIN FEMALE
 CONNECTOR, COMPAT-
 ILE TO "STRAIGHT-
 THROUGH" CABLES
 ABOVE.**

COM1:
 I/O ADDRESS 3F8H-3FFH
 INTERRUPT IRQ4

COM2:
 I/O ADDRESS 2F8H-2FFH
 INTERRUPT IRQ3

SERIAL DATA BIT STREAM

IDLE STATE DATA BITS (8 MAX.) NEXT BYTE

START BIT PARITY BIT STOP BIT (IF ANY)

From: www.tec.sci.fi/tecref



6.2. The NMEA-0183 Data Format

6.2.1. Overview

The „CONTROS ASCII Data Transmission Protocol“ is a bi-directional data protocol for communication between different devices or computers (e.g. SmartDI™ or MicroDI™ data loggers, HydroC™ or NanoC™ sensors). It is suited for standardized communication, like commands and data transmission. In contrast to the „CONTROS Binary Telemetry Protocol“ it is an ASCII protocol, understood by every terminal program. All commands can be sent directly and answers verified.

This ASCII protocol is derived from NMEA-0183 protocol (used e.g. by GPS receivers). The NMEA (**N**ational **M**arine **E**lectronics **A**ssociation) is committed to promoting and developing the market for maritime electronics. It is an association of manufacturers, resellers, educational institutes and other people with interest in this market.

(Source: "NMEA News").

Features

- ASCII protocol, referencing the NMEA-0183 protocol
- Length of data string up to 255 Bytes
- All data and parameters separated by point
- Checksum marked by star *, may be omitted
- Bi-directional: data and commandos in both directions
- Logging data and terminal programs allow easy control and supervision of sensor settings.
- information is separated into address, format und data



- For a detailed description of the CONTROS NMEA-0183 data format, please see the specification manual.



6.2.2. Data format specification

<CR> ASCII control character decimal 13 or hex \$0D

<LF> ASCII control character decimal 10 or hex \$0A

[Name] Optional parameter

{Name} Place holder for parameter

[*{Checksum}] Optional checksum, starts with an asterisk *
Checksum is calculated by XOR addition of all bytes.

Start Sign	Contros Id	Function Code	Dest. Id	Source Id	Mode Sign	Data	(Checksum)	End Sign
1 char	2 chars	3 chars	1-3 chars	1-3 chars	1 char	0..N chars	3 chars	2 chars

Field	Example	Meaning
Start Sign	\$	Data from receiver to host
Manufactory Id	CO	Always CO for CONTROS
Function Code	DS4	For Dataset 4
Destination-Address	0 1..255	No address: only one sensor, no bus or to all (any address) otherwise : device / sensor address
Sender-Address	0 1..255	No address: only one sensor, no bus or to all (any address) otherwise : device / sensor address
Mode	R W D	Read/Request Write Data
Data	1.0,-5,...	ASCII data separated by points or ASCII text. Missing values may be blank: ,,,,
Checksum	*E9 └─Checksum └─Delimiter	Delimiter * presents: 2 characters ASCII-hex XOR checksum. No asterisk: no checksum available
End	CR LF	End of line decimal 13 10

Complete NMEA conform string of the upper example is:

\$CODS4,0,0,D,0.1234,,,1,2345*E9 <CR><LF>

Here with a variable number of data.



6.3. How to check the Windows® USB-RS232 Adapter Comport

The simplest way for you now is to check and adjust the Windows settings:

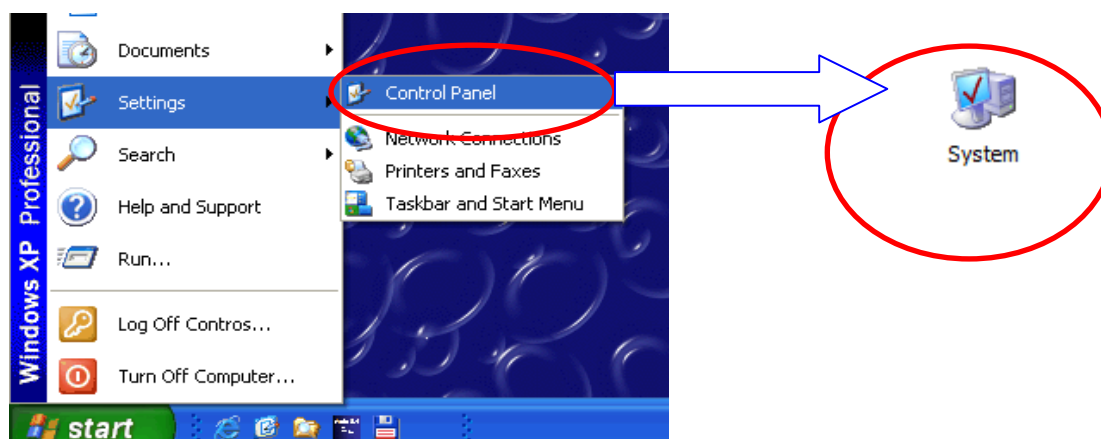


Image 33: open the Windows® “Control Panel” and “System”.

--- Or press just **WINDOWS + PAUSE** ---

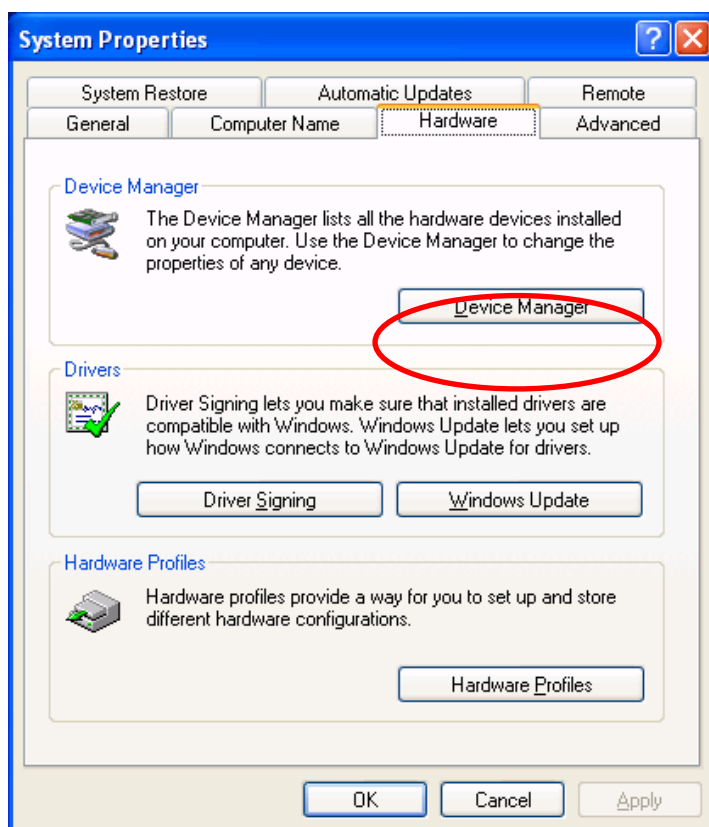


Image 34: Inside the Windows® “Control Panel” → “System” open the “Device Manager”

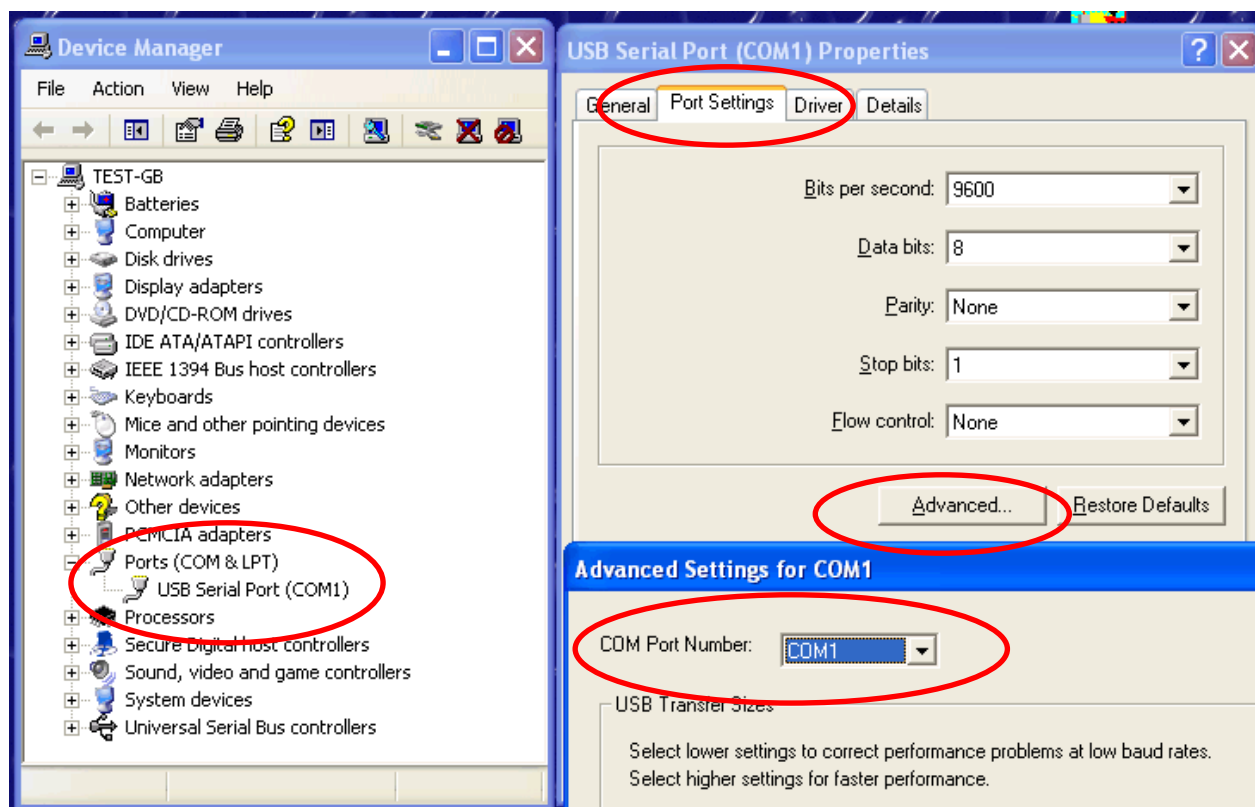


Image 35: Inside the “Device Manager” you can double-click the needed comport. In the “Settings” → “Advanced” you can change the settings if you want.



TIP!

- Refer to the USB manual to install a USB-RS232 adapter.
- If the needed COM port is NOT FREE, do not hurry – try and use it.
- You do not have to set the configuration for the COM port, the program will configure all for you.



6.4. Installation of the Microsoft® .NET framework software

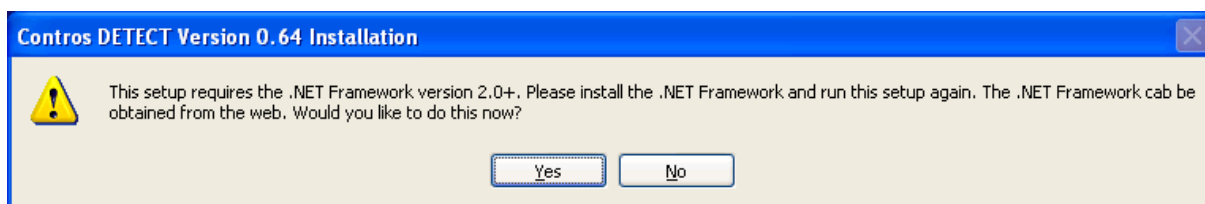


Image 36: The Microsoft® .NET framework is required. Please follow the link or install the software from the CONTROS product CD.

- Operating Systems (OS) are: Windows® XP, Windows® Vista, Windows® Server 2003 with .NET 3.0 and .NET 3.5
- Windows® 2000, 98, ME with Microsoft® .NET 2.0
- Microsoft® .NET Version 2.0 or higher is required. Please find the latest Software on our driver CD or at the CONTROS Homepage download pages.

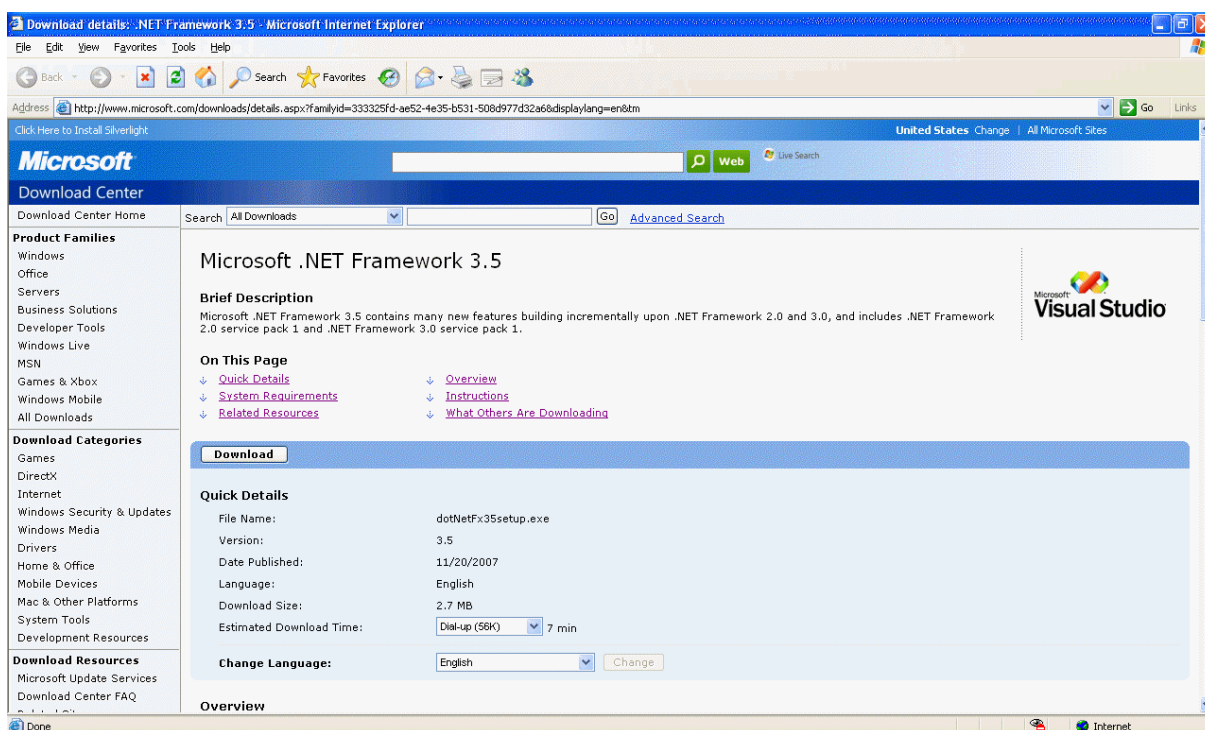


Image 37: Download the Microsoft® .NET framework from the Microsoft® Download Centre or from the CONTROS product CD.

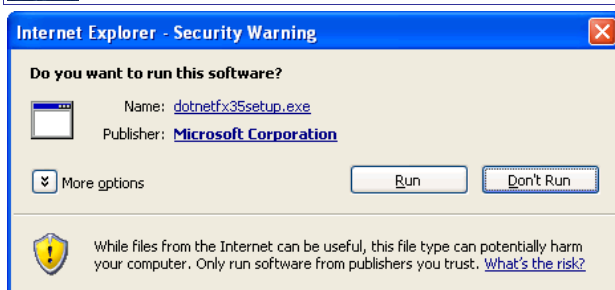


Image 38: You can allow starting the software in any case!

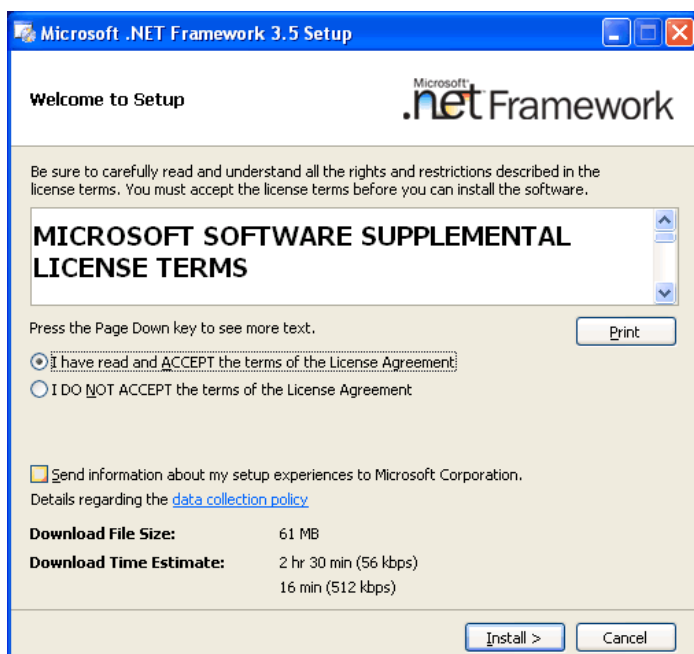


Image 39: Please confirm the Licence Agreement.

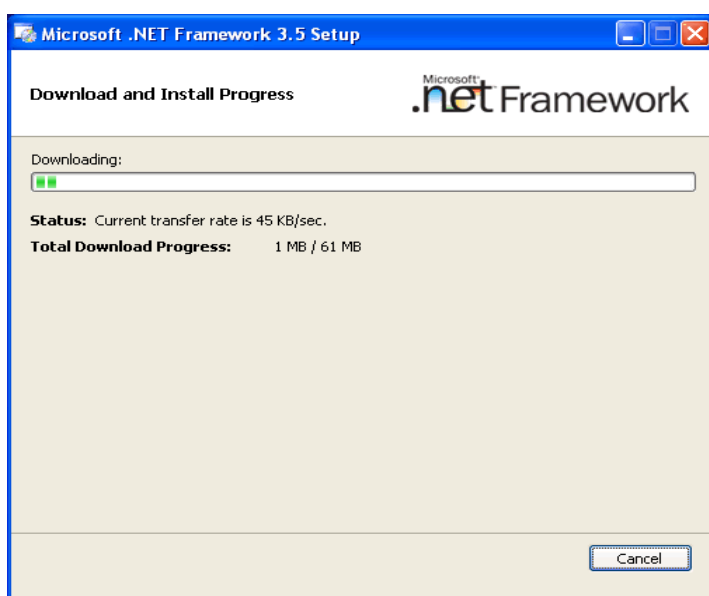


Image 40: The download needs some minutes.



7. Quickstart Reference

7.1. Start



Connect your HydroC™ Sensor

Start DETECT e.g. on your Desktop

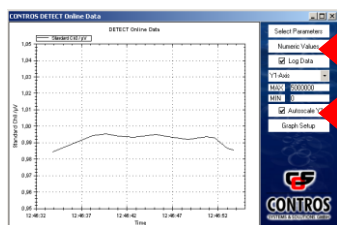


Click to stop

Auto search for connected HydroC™ Sensors will identify devices.

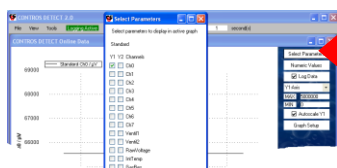
If you want to select other sensors or configurations by yourself, you can stop the auto search in the upper right corner.

Data is displayed in a graphic window.

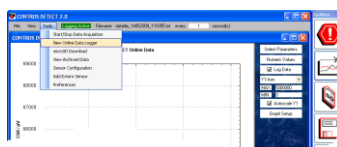


Click **"Numeric Values"** to see all measured data as alphanumeric / text.

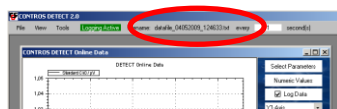
If data is out of displayed range check **"Autoscale"** or set scale manually. Keep in mind, that you can use two different y-axis for independent scaling.



Click **"Select Parameters"** to choose measured data to show in the graph. Y1 refers to the left, Y2 to the right axis. Each found sensor or instrument will be listed and can be chosen independently.



With **"Add new online Datalogger"** or the yt/Graph Icon in the "toolbox" you can get more graphic charts. Select again the parameters you want to see and e.g. auto scaling. The charts can be arranged with the "view" menu.



Data logging will start immediately. The name of the ASCII-file is displayed in the menu strip. Data will be saved to (e.g.)

C:\Contros\Contros DETECT\datafiles.

Stop logging by un-checking "Log Data".



7.2. Add new sensor: HydroC™ PAH



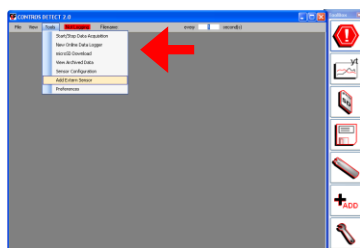
Connect your Sensor, e.g. HydroC™ PAH or others

Start DETECT e.g. on your Desktop

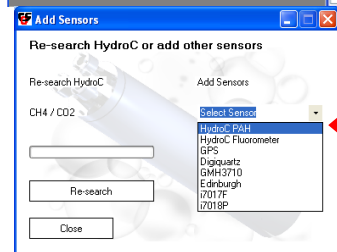


Click X to stop

Stop Auto search to connect the HydroC™ PAH Sensors by yourself manually later.



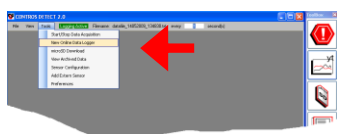
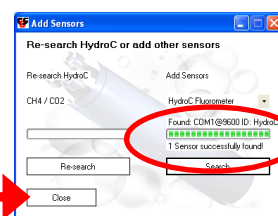
Click **"Add Sensor"** to connect your HydroC™ PAH (or e.g. other sensors)



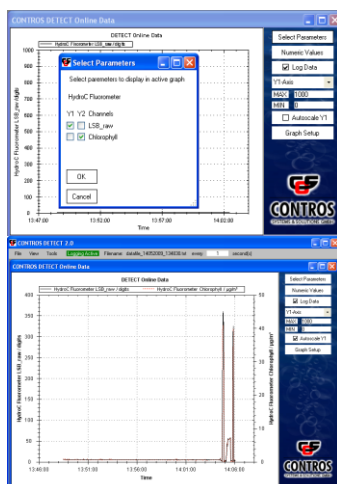
"Select PAH Sensor" (or other to your choice).

Click **"Search"**. All found sensors will be displayed.

Click **"Close"** to use it.



With **"Add new online Datalogger"** or the yt/Graph Icon in the "toolbox" you can open a graphic chart.



Click **"Select Parameters"** to choose measured data to show in the graph. Y1 refers to the left, Y2 to the right axis. Each found sensor or instrument will be listed and can be chosen independently. Push "ok" to apply.

Select **"Autoscale"** and all other options for your new sensor.

All sensors can be used and displayed independent in one or more graphic charts. All data will be logged into the AS-CII logfile at once.