

YDOC-Insights Tutorial – Setting-up a basic implementation

This tutorial explains on a step by step base how to setup a basic implementation of YDOC-Insights in combination with the low-power YDOC-loggers. The YDOC logger is designed for outdoor situations omitting access to power grids and therefore perfectly suitable for rainfall monitoring and that's why we use a logger configured for rainfall recording as example in this tutorial. (How to configure the logger itself is not part of this tutorial)

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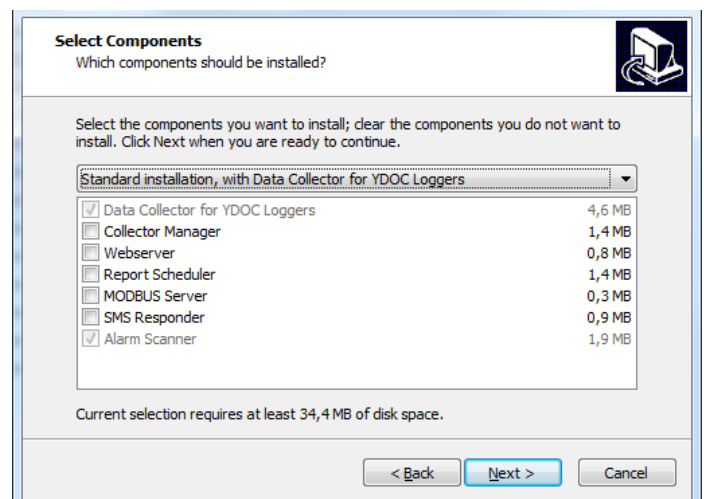
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1. Install YDOC-Insights

If you did not already install YDOC-Insights, please download and run <http://www.your-data-care.com/download/ydocinsightssetup.exe>.

Follow the obvious steps of the setup procedure and choose 'Standard installation' if you want to use YDOC-Insights without additional components (e.g. Web Server).

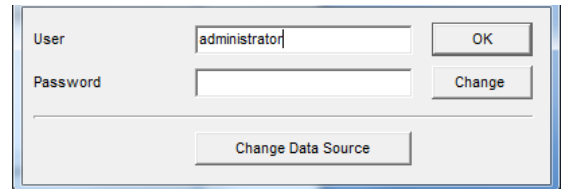
- Its required that you have administrator rights to be able to run setup.



2. Start YDOC-Insights

The setup procedure has installed a desktop shortcut to start YDOC-Insights. When you start YDOC-Insights for the first time or with the intention to configure collectors/components it is: **a)** required that you have administrator rights and **b)** you should start YDOC-Insights in administrator mode (right mouse click the shortcut and choose 'Run as Administrator').

- After an initial installation with an empty database the YDOC-Insights user name to login with is 'Administrator' and having a blank password.



The screenshot shows a login dialog box with the following fields and buttons:

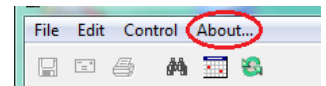
- User: administrator
- Password: (empty)
- Buttons: OK, Change, Change Data Source

3. Unlock YDOC-Insights

YDOC-Insights is a suite of scalable components and depending on your license you are permitted to use additional components, define a certain number of users and collect data from a licensed number of loggers/sources.

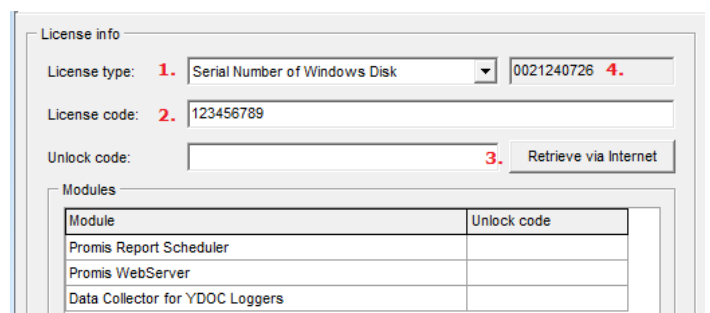
After buying a license you are receiving a unique license code and you can use this license code to unlock YDOC-Insights on one PC of your choosing. Please choose the PC with care as this is a onetime operation. If you want to change to another PC afterwards, you have to renew your license involving additional costs.

To unlock YDOC-Insights select the 'About'-option from the 'Menu'-bar:



In the 'About'-box choose (1.) 'System Identification Key' as license type, (2.) enter your license code and (3.) click the 'Retrieve'-button to get access to our licensing-server and to bind your license to this PC.

If you can't get access to the licensing-server, please handover (4.) the SN# of your hard disk to your distributor, so he can provide you with the necessary unlock codes to be entered manually.



The screenshot shows the 'License info' dialog box with the following fields and buttons:

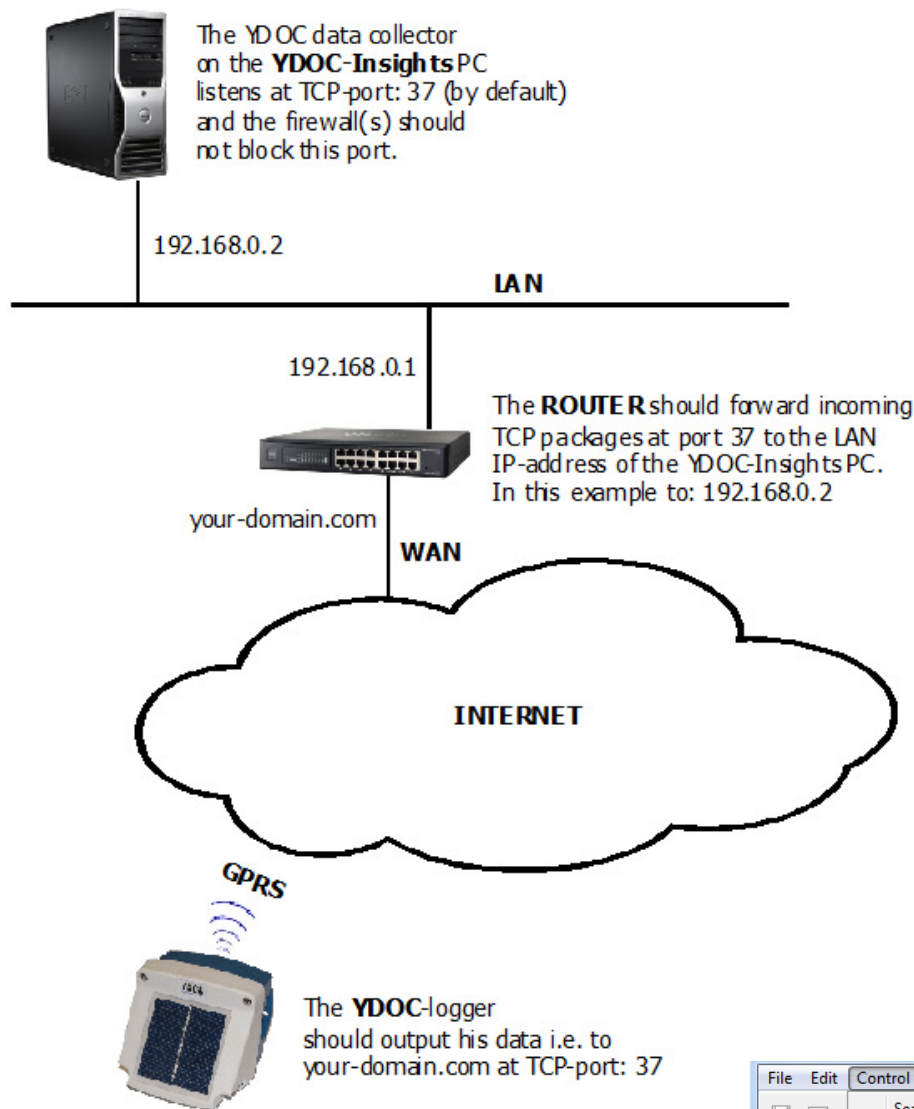
- License type: 1. Serial Number of Windows Disk
- License code: 2. 123456789
- Unlock code: (empty)
- Buttons: Retrieve via Internet (3.)

Below the license info section, there is a table for 'Modules' with the following data:

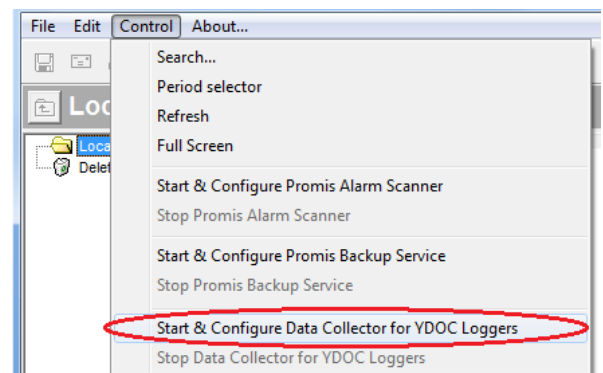
Module	Unlock code
Promis Report Scheduler	
Promis WebServer	
Data Collector for YDOC Loggers	

4. Configure the YDOC-collector

The function of the YDOC-collector is to wait for log data transmitted by the loggers and to import this data into the YDOC-Insights database automatically. If data from a new logger is received, the collector will automatically create a new location and according tags in the database. The collector can accept data thru various communication channels like E-mail, FTP and TCP. It's recommended to use TCP as this does not require an additional FTP- or E-mail server and is requiring less handshaking and therefore consuming less GPRS time and as a result drawing less power from the battery.



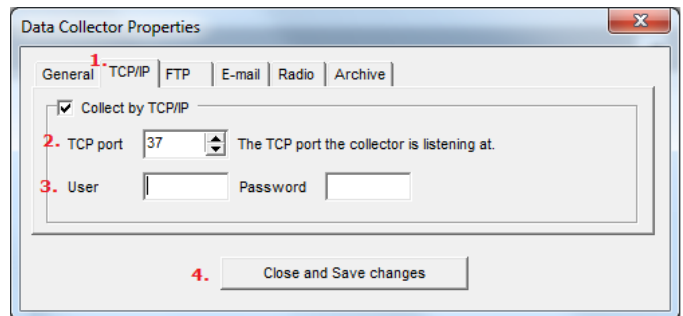
To configure the collector select the 'Start YDOC-collector' from the 'Control'-menu:



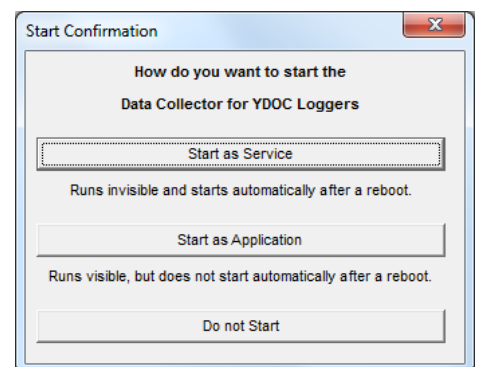
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In the 'Properties'-screen select (1.) the 'TCP/IP'-page and check the 'Collect by TCP/IP'-box. The collector acts as a TCP-server and listens (2.) at a TCP-port for incoming connections from loggers. The default port# is 37. It is recommended to specify (3.) a user name and password to prevent importation of log data transmitted from unauthorized sources.

- Make sure that your firewall(s) doesn't block incoming TCP-traffic on the specified port#
- If your PC is sitting behind a router, make sure that the router forwards incoming TCP traffic on the specified port# to the local IP-address of this PC.



After (4.) saving your changes and closing the 'Properties'-screen, YDOC-Insights asks you how to start the collector. For testing purpose you could start it as a visible application, but for operational purpose it is recommended to start the collector as a service. A service runs invisible in the background independent of the logged on user (very handy incase YDOC-Insights is installed on a server used by several remote desktop users) and will automatically restart when the PC powers up (e.g. after a power outage).



5. Run the YDOC-collector

When running the collector as a visible application the 'Status & Progress'-window will show (1.) a line for each log file received from a logger, saying importing file: *YDOC_<station name>_<station SN#>_<log file date>_<log file time>.txt*



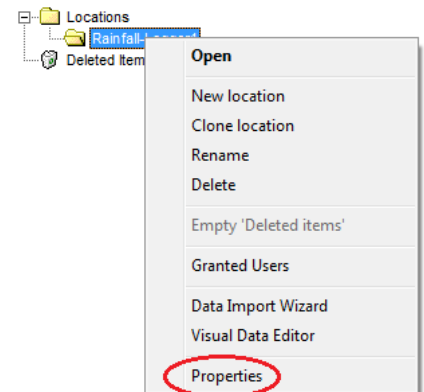
When log data from a logger is received for the first time, a location with a name equal to the station name (2.) will be created in the YDOC-Insights database.

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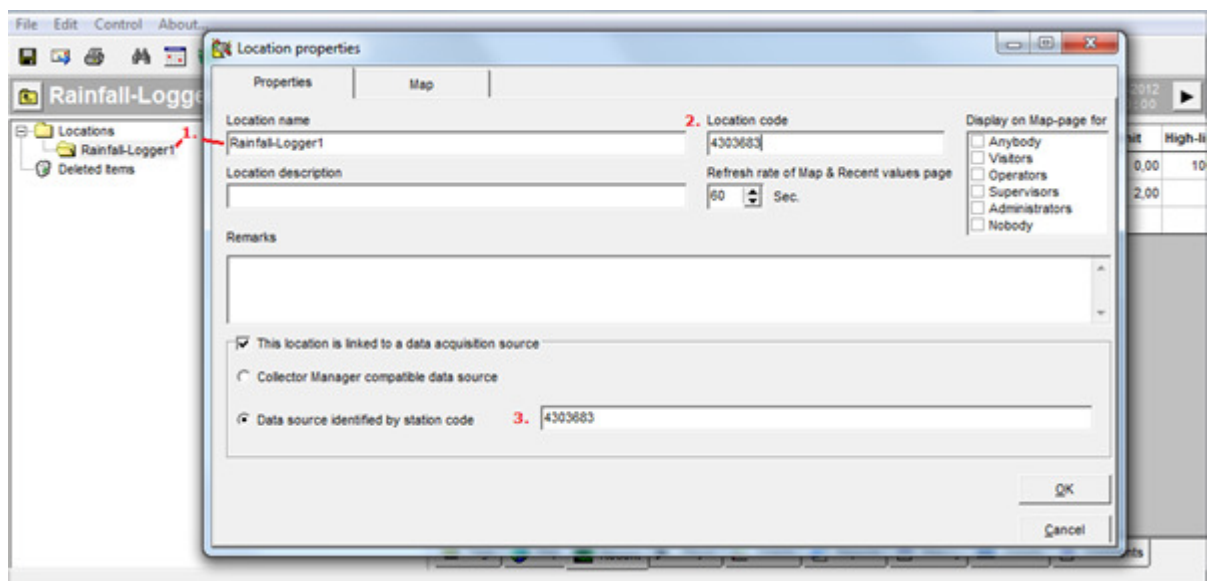
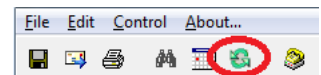
Each logger is uniquely identified by its (3.) serial number. This SN# is used as a reference to link a logger to a YDOC-Insights location, so consecutive transmitted log files from the same logger will be imported to the same YDOC-Insights location.

6. Configure the Logger-location

To (re)configure the location properties of an Logger location, right click the corresponding name in the 'locations'-pane and select the 'Properties'-option.



- If the concerned location is not displayed in the location tree, you might need to click the 'Refresh'-button to re-load the location tree from the database.



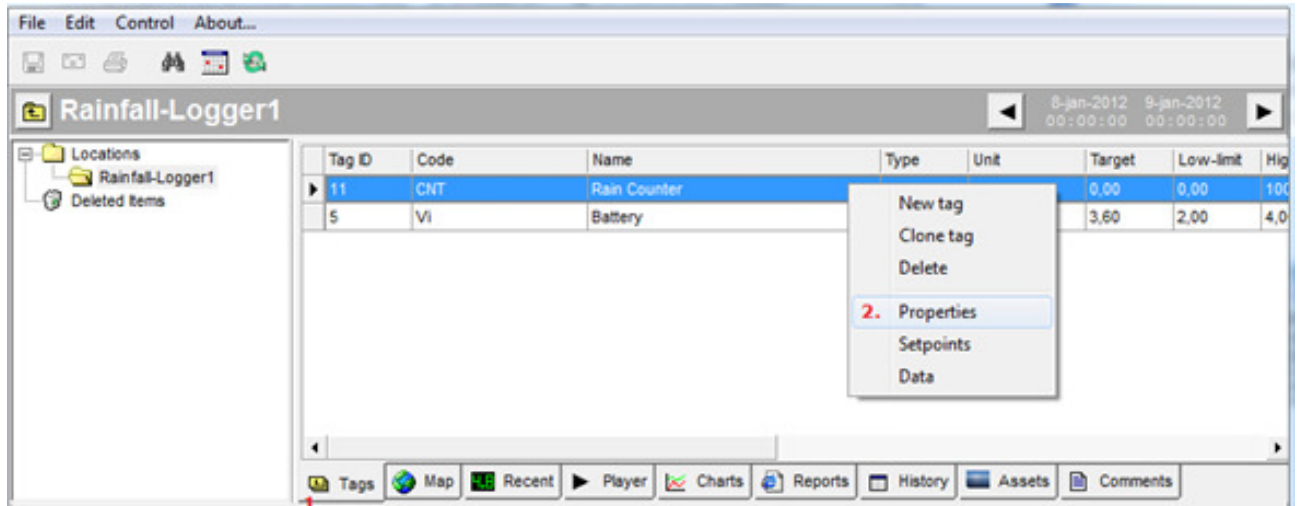
As said before, when log data from a logger is received for the first time, a location with a name (1.) equal to the station name will be created in the YDOC-Insights database. However you may change the name displayed in YDOC-Insights to whatever you like afterwards.

Each logger is uniquely identified by its serial number. This SN# is initially taken as code (2.) to uniquely identify the location, but you are allowed to change this code to whatever seems convenient to you (e.g. RL1).

******* The SN# is mandatory meant as a reference code (3.) to link a YDOC-Insights location to a particular logger. If you change this code afterwards, new incoming log data will not be imported to this location anymore, but to an alternatively created new location.

7. Configure tags

When log data from a logger is received and one or more tags recorded in the log data are not having a corresponding tag in the YDOC-Insights database, the collector will automatically create the necessary tags in the database. It could however that you want to make some changes to the default appearance of the tag like naming and limits.



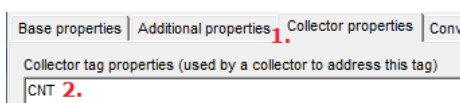
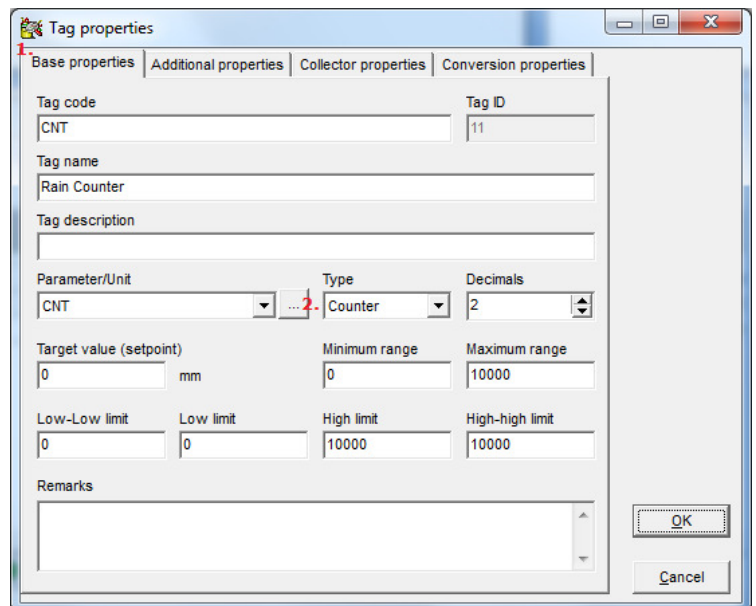
To (re)configure a tag select (1.) the 'Tags'-page of a particular location and right click the Tag you want to (re)configure and select (2.) the 'Properties'-option.

You may change anything on

(1.) the 'Base properties'-page to your convenience.

- It's wise to use a proper codification philosophy for your tags. E.g. that your 'Rain counter' tags over all your locations are having the same 'Tag code'.

In case of a cumulative counter like a rain or electricity counter it is recommended that you set (2.) the Type of the tag to 'Counter' as this will affect the default appearance of the tag. But it is even more important in case this tag is used in a 'calculated' tag, as the calculation engine treats counters a bit different than regular tags.



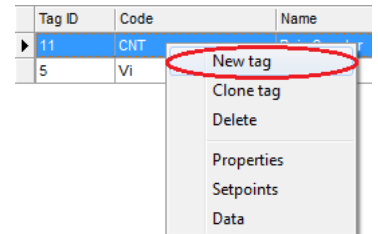
The link between a YDOC-Insights and a logger tag is defined on (1.) the 'Collector properties'-page by (2.) the text in the 'Collector tag properties'-box. If you change this text, new log data will no longer be recorded under this tag, but under a new alternatively created tag.

8. Define calculated tags

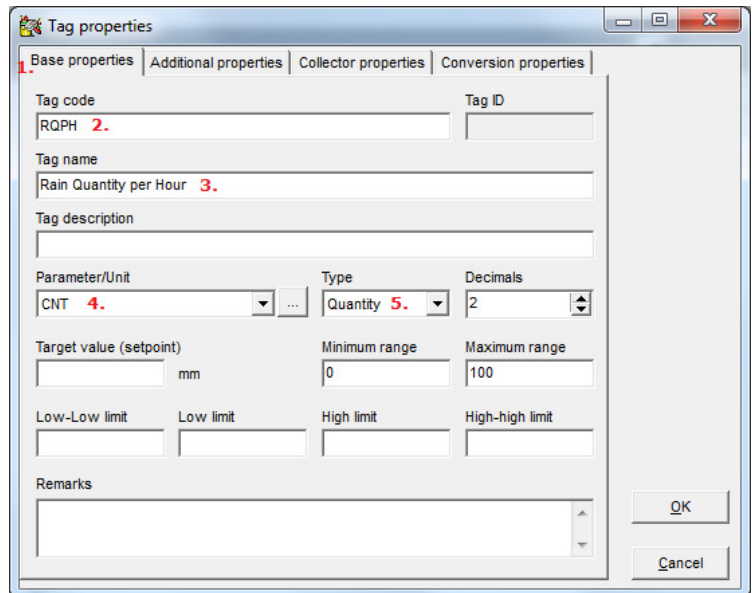
Counter tags are ideal for recording purpose, but of little use for analysis. The value of a counter itself is not really interesting, what you really want to know is the difference or rate over a certain period of time (e.g. the rain fallen per day or the intensity of rainfall in mm/h).

8.1 Define a calculated rain quantity tag

To define a tag to calculate the rain fallen per particular hour you have to create a new tag manually first, by right clicking your mouse on the 'Tags'-page and select the 'New tag'-option from the popup-menu.

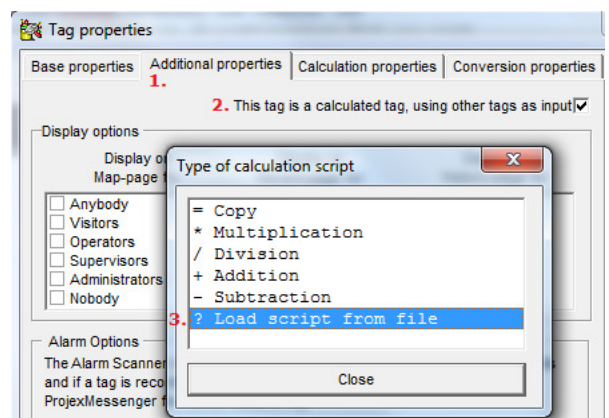


On (1.) the 'Base properties'-page its obligatory to define (2.) a code for the tag, in this case 'RQPH' and we name (3.) the tag 'Rain Quantity per Hour'. Rain is measured in mm and therefore we should select (4.) a parameter with mm as unit. If such a parameter is not in the list you can add one manually by clicking the '...'-button.



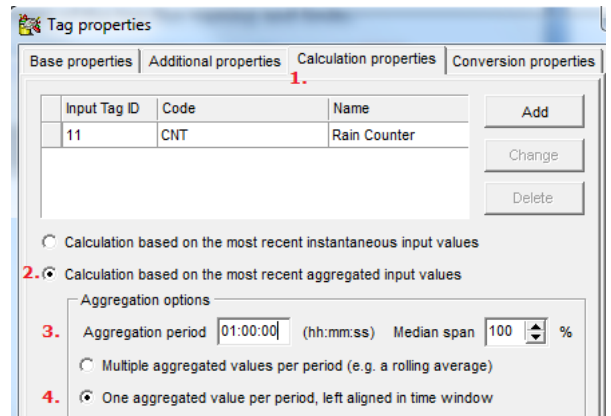
It is recommended that you set (5.) the Type of the tag to 'Quantity' as this will affect the default appearance of the tag. E.g. on the 'History'-page all recorded quantities will be summarized to display the total rain fallen during the selected period.

To indicate that this tag is a calculated tag, you have to check (2.) this on (1.) the 'Additional properties-page'. The first time you check (2.) it, a screen will popup to let you choose the Type of calculation script to use. Please choose (3.) 'Load script from file' and load the file 'Counter to Quantity.pcs' from the templates directory and choose the 'Rain counter' tag as input for this calculation.

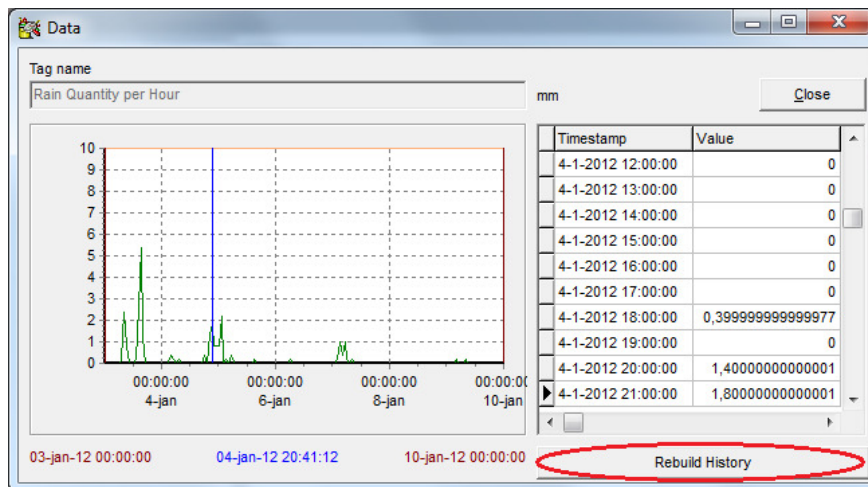
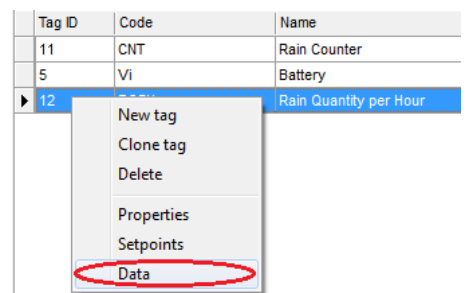


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After loading the script the software jumps to (1.) the 'Calculation properties'-page. On this page specify that your calculation should be aggregated over (2.) a series of recordings and specify (3.) an aggregation period of 01:00:00 to aggregate over one hour or 24:00:00 to aggregate over 1 day. It is recommend that you (4.) record one quantity value per aggregation period, otherwise the summaries on 'History'-pages or in reports will show more rain then actually fallen.



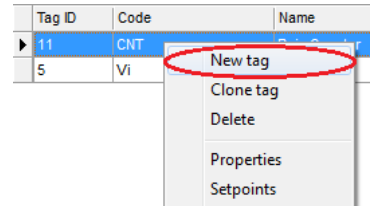
As soon as new log data is received, this calculated tag will be calculated and recorded to the database. It could however that you want this calculation to be done on previous recorded counter values. You can do this by right clicking this Tag in the 'Tags'-page and selecting the 'Data'-option from the popup-menu.



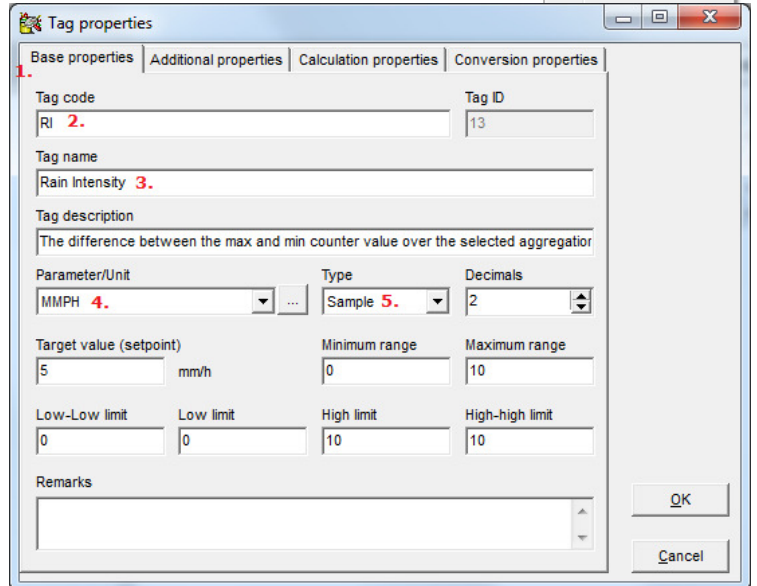
Click to the 'Rebuild History'-button to recalculate the recorded values of the calculated tag. Recalculation is performed over the currently selected period.

8.2 Define a calculated rain intensity tag

To define a tag to calculate the rain intensity you have to create a new tag manually first, by right clicking your mouse on the 'Tags'-page and select the 'New tag'-option from the popup-menu.

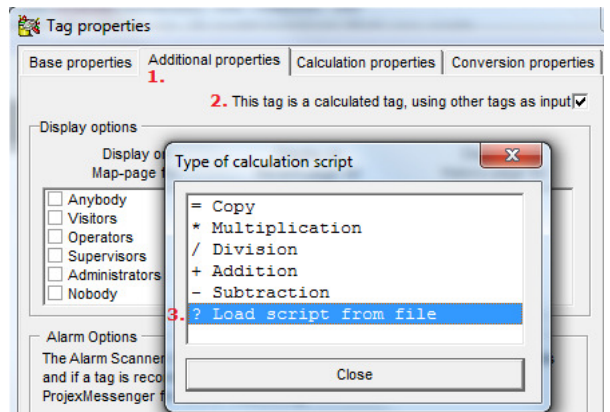


On (1.) the 'Base properties'-page its obligatory to define (2.) a code for the tag, in this case 'RI' and we name (3.) the tag 'Rain Intensity'. Intensity is measured in mm/h and therefore we should select (4.) a parameter with mm/h as unit. If such a parameter is not in the list you can add one manually by clicking the '...'-button.

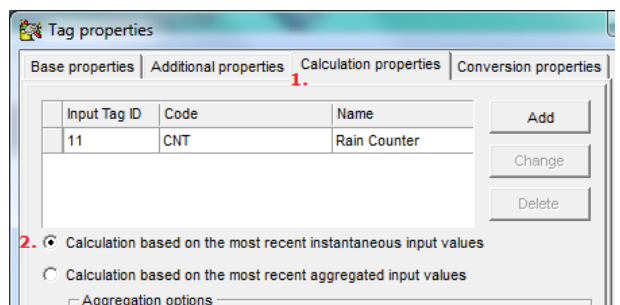


It is recommended that you set (5.) the Type of the tag to 'Sample' as this will affect the default appearance of the tag. E.g. on the 'History'-page all recorded intensities will be averaged to display the average intensity during the selected period.

To indicate that this tag is a calculated tag, you have to check (2.) this on (1.) the 'Additional properties-page'. The first time you check (2.) it, a screen will popup to let you choose the Type of calculation script to use. Please choose (3.) 'Load script from file' and load the file 'Counter to Rate.pcs' from the templates directory and choose again the 'Rain counter' tag as input for this calculation.

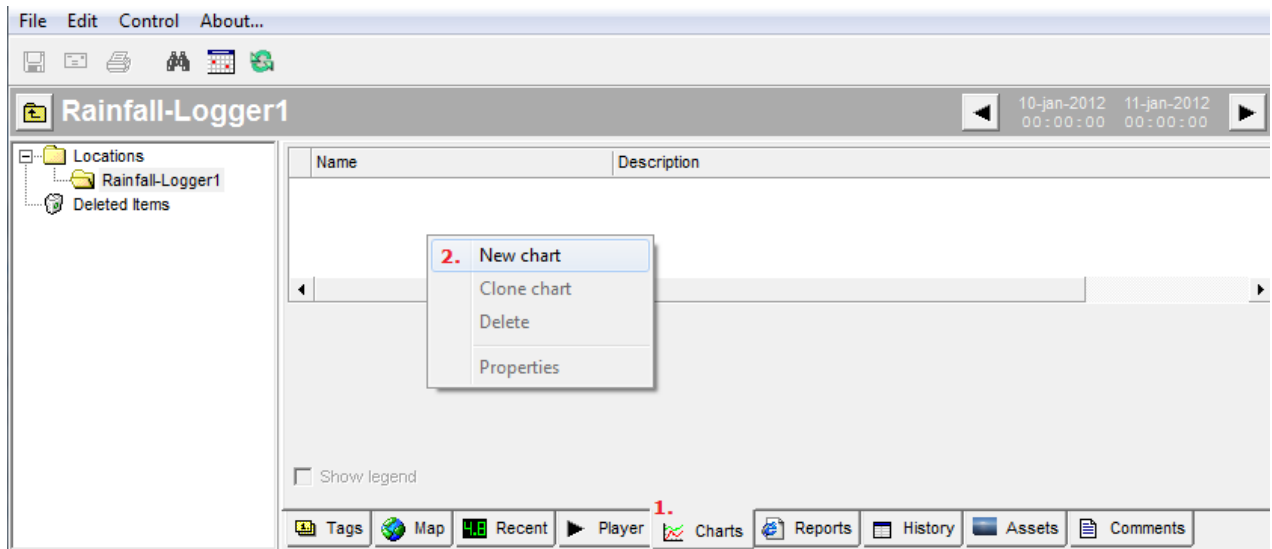


After loading the script the software jumps to (1.) the 'Calculation properties'-page. On this page specify that your calculation should be based on (2.) instantaneous input values, this will cause an intensity calculation between every two adjacent rain counter recordings.



9. Define a basic chart

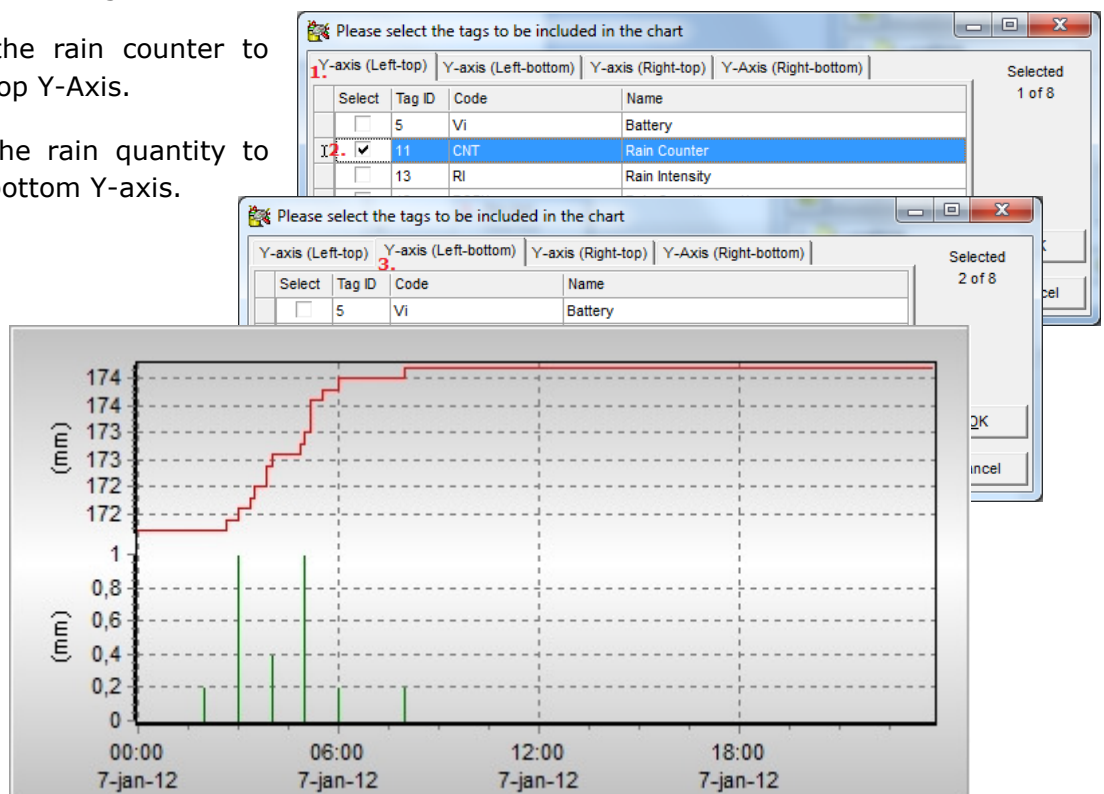
YDOC-Insights has a very power full chart engine with a lot of features and possibilities, to be able to deploy all the features you need to get familiar with it and take your time by just trying things out. However defining a basic chart is as simple as a few mouse clicks.



To define an new chart select (1.) the 'Charts'-page of a particular location and right click with your mouse in the (empty) chart list, followed by selecting (2.) the 'New chart'-option from the popup-menu. A window will pop-up that let you select the tags you want to visualize in the chart. If you select multiple tags per chart with values in non matching ranges (e.g. a continuously increasing counter and a rate per hour) one or more of the tags will not be scaled optimal when using one Y-axis. A basic chart can have 4 Y-axes: Two stacked Y-axes at the left and two at the right.

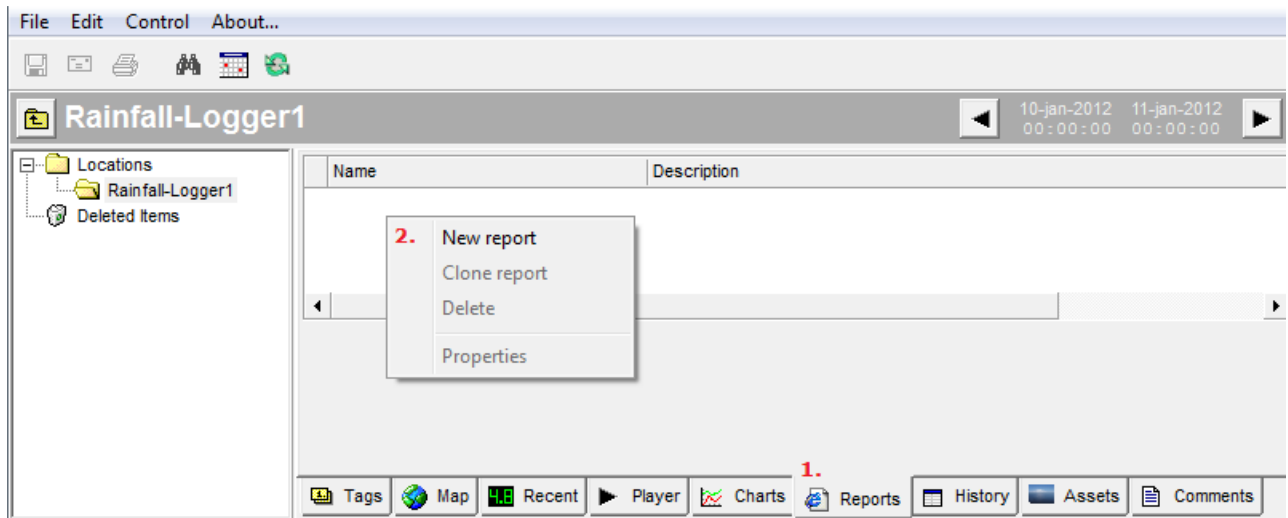
Assign (2.) the rain counter to (1.) the left-top Y-Axis.

Assign (4.) the rain quantity to (3.) the left-bottom Y-axis.



10. Define a standard report

YDOC-Insights has a very power full report engine as well, but It requires some advanced IT skills to be able to create your own custom reports. Fortunately the software comes standard with several predefined report templates. Defining a report from a template is as simple as a few mouse clicks.



To define an new report select (1.) the 'Reports'-page of a particular location and right click with your mouse in the (empty) report list, followed by selecting (2.) the 'New report'-option from the popup-menu. A window will pop-up that let you select a report template from the templates directory, in this case we choose the file 'Standard Report.prd' and after loading, another window will pop-up that let you select the tags you want to be included in the report. In this case we choose rain quantity and rain intensity.

Rain fall report

Select	Tag ID	Code	Name
<input type="checkbox"/>	5	Vi	Battery
<input type="checkbox"/>	11	CNT	Rain Counter
<input checked="" type="checkbox"/>	13	RI	Rain Intensity
<input checked="" type="checkbox"/>	12	RQPH	Rain Quantity per Hour

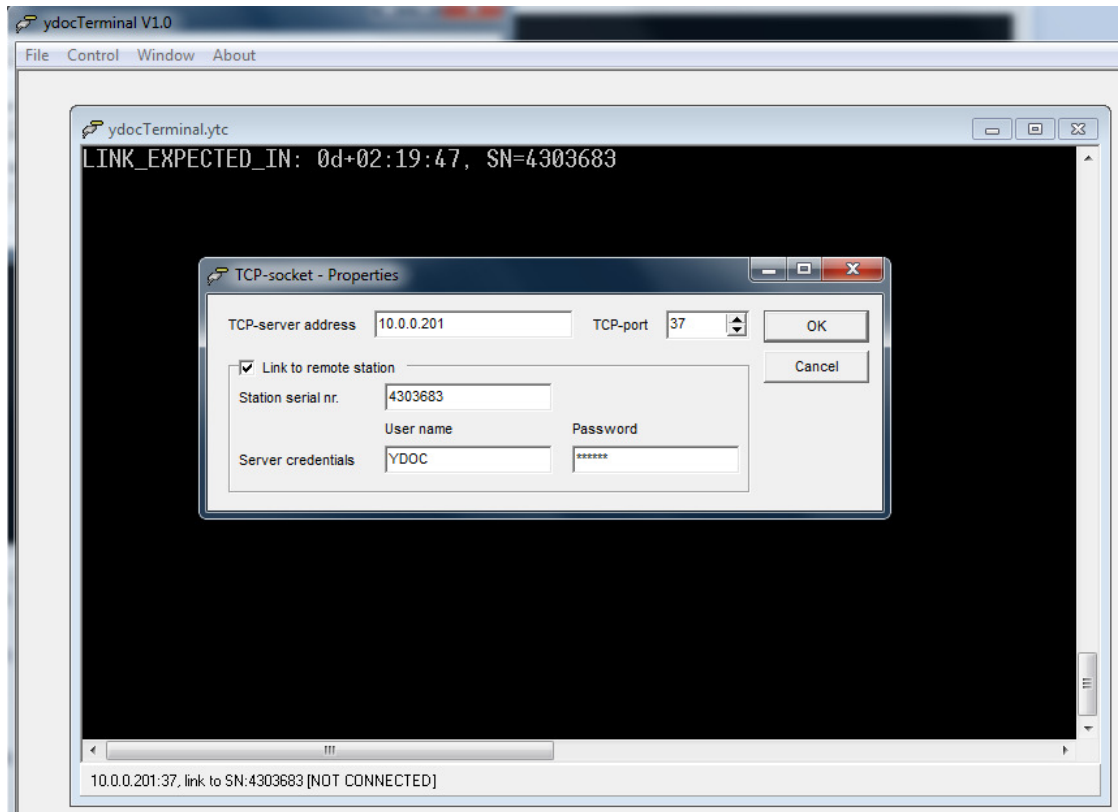
Timestamp	Rain Intensity mm/h	Rain Quantity per Hour mm
03-Jan-2012 14:00:00	0.00	2.60
03-Jan-2012 14:10:00	1.20	
03-Jan-2012 14:20:00	2.40	
03-Jan-2012 14:30:00	3.60	
03-Jan-2012 14:40:00	3.60	
03-Jan-2012 14:50:00	4.80	
03-Jan-2012 15:00:00	2.40	5.40
03-Jan-2012 15:10:00	4.80	
03-Jan-2012 15:20:00	4.80	
03-Jan-2012 15:30:00	4.80	
03-Jan-2012 15:40:00	4.80	
03-Jan-2012 15:50:00	10.80	
03-Jan-2012 16:00:00	1.20	1.20
03-Jan-2012 16:10:00	2.40	
03-Jan-2012 16:20:00	1.20	
03-Jan-2012 16:30:00	1.20	
03-Jan-2012 16:40:00	1.20	
03-Jan-2012 16:50:00	0.00	
03-Jan-2012 17:00:00	0.00	0.00
Summary	Rain Intensity mm/h	Rain Quantity per Hour mm
Count	19	4
Minimum	0.00	0.00
Maximum	10.80	5.40
Average	2.91	
Quantity		9.20

The standard report is a tabular report in HTML format with a summary over the selected report period at the bottom. A similar report is available in CSV, XLSX and plain text format.

11. Remote configuration

To save power the logger is switched off most of the time and can't be reached. However the logger wakes-up at regular intervals to output its logged data and we have implemented a mechanism to get access to the logger at such moments. The loggers must be configured for TCP data output.

11.1 By terminal emulator



- Start our free terminal emulator software ydocTerminal.exe
- Create or open a new TCP-socket to the YDOC-collector.
- Specify the SN# of the logger you want to configure.
- Make the connection and wait until the logger wakes up, depending on your configuration the time to wait for wake-up can be several minutes to several hours.
- When the logger wakes up and has transferred its log data, it will jump to the configuration menu and the collector will transparently pass all data to your ydocTerminal window and vice versa. It's like you are cable connected to the logger itself. You can even do a firmware upgrade if necessary thru this link.

11.2 By browser

If you have a WebServer license and did install it (see: step 1.), then you can configure the YDOC-logger with all mayor browsers as well, all you have to do is add the 'YDOC Terminal' report from the templates directory to the concerned location.

- Although that you have added the report in YDOC-Insights itself, it will only function when accessed from a browser.

11.3 Automatic configuration update

If you have a lot of loggers and don't want to reconfigure them all manually, you can just reconfigure one and use that configuration for automatic background transfer to all other loggers.

Automatic update requires that the logger firmware has version 1.8 or higher.

To automatic upgrade logger configurations, copy the configuration files to the 'ConfigTransfer' folder.

Note: When you copy a file, be aware that it should literally be a copy, as the file will be deleted after processing.

The file name syntax of an individual configuration file is: <your file name prefix>_<logger SN#>.cfg

To update multiple loggers with the same configuration you can:

- a) obviously copy and rename them to individual logger configuration files.
- b) Specify a configuration file with a <logger name prefix> instead of an individual <logger SN#> (e.g. when you rename a configuration file to LOGGER_TEST.cfg then all loggers with their name starting with TEST will be updated).

When a logger connects to the TCP-server to dump its data, the server will check if a configuration file for the logger is available and will try to transfer the file to the logger directly after he dumped its log data.

Successful or failed configuration updates will be listed in a monthly log file. The log file has the following format: ConfigTransfer_YYYY-mm.log