



Software Description

Application Software

OTT Hydras 3 net



English

We reserve the right to make technical changes and improvements without notice!

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1 Overview of OTT Hydras 3 net

OTT Hydras 3 net is software based on the OTT Hydras 3 platform, which facilitates the administration of monitoring networks. There are two versions of the software:

- ▶ OTT Hydras 3 net **Client** and
- ▶ OTT Hydras 3 net **Server**.

OTT Hydras 3 net Server has an integrated web server (= HTTP(S) server), which enables the receipt of data from the individual stations within a monitoring network. Both versions allow for easy configuration of the data loggers.

This is done internally using the XML commands defined on the servers, which are automatically retrieved and executed by the data logger following a data transmission. These "offline" commands enable the modification of the most important configuration parameters (for example, the transmission interval), the firmware for individual data loggers or a list of data loggers.

The scope of OTT Hydras 3 net's functions can be fully exploited in monitoring networks that transmit data to the server via HTTP in OTT-ML format. The OTT netDL range of data loggers currently supports these functions (which are described in the document "Description of XML Data Exchange").

The client only communicates with the server and does not communicate with the data logger directly. The client enables the visualisation of status information from the server and the generation of commands to modify the data logger configurations.

The user interfaces of the client and server are for the most part identical. There are a small number of differences in the "Options" window and in the list of alarms.

1.1 System requirements

Minimum requirements

- ▶ Dual core processor, min. 2 GHz
- ▶ 2 GB RAM
- ▶ HDD or SSD, min. 60 GB
- ▶ Operating system: Microsoft Windows Server 2012 R2 or higher; alternatively Microsoft Windows 7 (32- or 64-bit architecture) or higher

Recommended equipment

- ▶ Dual core processor, min. 3 GHz or Quadcore processor, min. 2 GHz
- ▶ 8 GB RAM
- ▶ HDD or SSD, min. 80 GB
- ▶ Operating system: Microsoft Windows Server 2016 or higher

2 Data transmission

2.1 Receiving data

OTT Hydras 3 net Server can receive data directly from the data logger via the integrated HTTP (or HTTPS) server. The following data formats are supported:

- ▶ OTT-ML*
- ▶ MIS
- ▶ ZRXP
- ▶ OTT Binary

* preferred format

The data can also be transmitted in compressed form (using the "deflate" or "gzip" method).

When data is transmitted in OTT-ML format, the additional metadata transmitted in the header of an OTT-ML message, such as the current voltage value or the current firmware version, is stored internally and further processed. These values are then analysed on the "Status" sub-tab, for example, to alert the user to the existence of data loggers with an obsolete firmware version. In order for the metadata to be transmitted, the "Status infos" field must be enabled for the transmission in the OTT Data Logger Operating Program. The data is received by the server, stored in the AutoImport directory and taken from there by the AutoImport.

In order to transmit data to an OTT Hydras 3 net server using an OTT netDL data logger, the following path must be specified for the various server scripts in the OTT Data Logger Operating Program: "otml.htm".

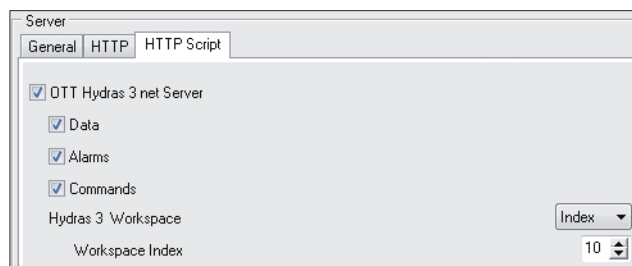
In more recent versions of the operating program (3.00.0 or higher), these paths no longer need to be set explicitly because you can specify that the server is an OTT Hydras 3 net server.

In this case, you select the relevant checkboxes to determine which interactions are to take place between the data logger and the server:

- ▶ to transmit data to the server, select "Data";
- ▶ to transmit alarms to the server, select "Alarms";
- ▶ to make commands for setting the data logger parameters available on the server, select "Commands".

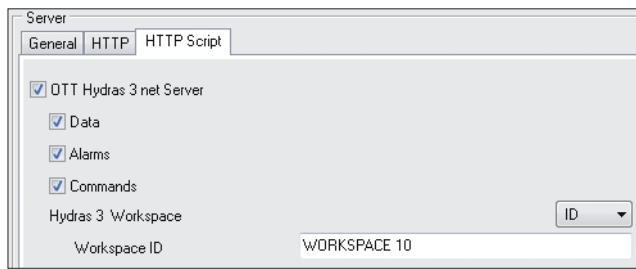
OTT Hydras 3 net Server assigns the stations to workspace 1 by default. If you want to assign a station to a different workspace, you must explicitly assign the station to this workspace using an index.

Fig. 1: Defining the optional interaction between an OTT data logger and OTT Hydras 3 net server in the data logger operating program.



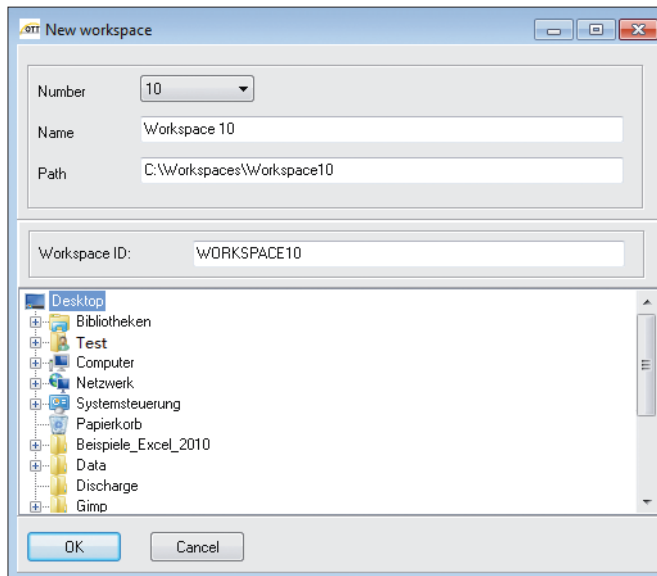
Alternatively, an alphanumeric workspace ID can be used to reference a workspace on the server.

Fig. 2: Assigning the workspace used in the OTT Data Logger Operating Program.



You have the option of defining this ID when creating a workspace on the server (see Fig. 3).

Fig. 3: Creating an alphanumeric workspace ID in OTT Hydras 3 net Server.

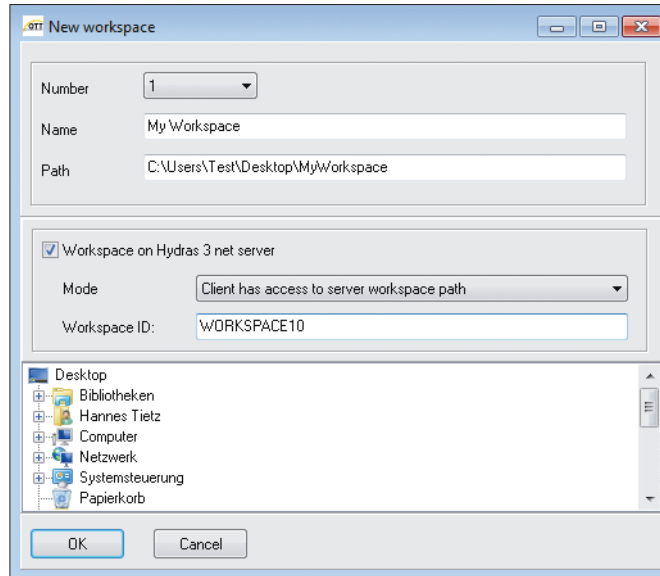


If an ID was defined for a workspace on the server, it is essential that this ID be used in the data logger and in the OTT Hydras 3 net client to reference the workspace. Referencing the workspace using a workspace index is no longer permitted and results in HTTP error 403 (= forbidden) as soon as a data logger or an OTT Hydras 3 net client executes an HTTP access to the workspace.

This means that workspace indexes on the server can be kept separate from those on the client. As a result, you can, for example, create a workspace with the index 1 on the client, which corresponds to index 10 on the server. However, the same workspace ID must be defined for the workspace on both the client and the server.

The workspace ID is also defined when creating a workspace on the client.

Fig. 4: Assigning the workspace used in OTT Hydras 3 net Client.



If the workspace is on an OTT Hydras 3 net server, it is necessary to specify how the client can access the workspace. If the client has direct access to the workspace on the server, i.e. if the workspace path refers to the same physical directory as the path configured for this workspace on the server, select the following mode: "Client has access to server workspace path".

If this is not the case, the workspace on the server is physically separate from the workspace on the client, i.e. the client has a copy of the workspace that is on the server. If this type of workspace is created on the client, OTT Hydras 3 net prompts you to confirm that the workspace configuration is to be imported from the server.

If you confirm this prompt, the stations and sensors are also created in the client copy but initially without the relevant data. If the data is accessed on the client, the data is retrieved in each case from the server and is stored as a copy of the server data in the workspace on the client. Editing the data on the client thus has no effect on the data on the server.

The server workspace can also be configured on the client at a later point in time. To do this, select the workspace node on the client and then select the menu option "File | Import workspace configuration (from Hydras 3 net Server)".

If the client has a local copy of the server workspace, you can specify whether or not the client, when accessing the data, is to automatically retrieve it from the server and copy it to the local workspace copy ("fetch data on demand").

2.2 Coupling OTT Hydras 3 and the data logger operating program

As of OTT Hydras 3 Version 3.00.0 and Version 3.00.0 of the data logger operating program, there is a tighter coupling of the two programs.

2.2.1 Creating a station manually

If a new station has been configured in the operating program, this configuration can be transferred directly to Hydras 3. However, OTT Hydras 3 net and the operating program must be installed on the same host computer in order for this to be possible.

In the current OTT Hydras 3, select the workspace (or a sub-node) in which you want the station to be created. Then select the menu option "File | Create/change station in OTT Hydras 3" in the operating program.

If the station does not yet exist in the selected workspace, it is created there now. If the station already exists, the configuration is modified accordingly, for example, new sensors are added.

- **Note:** If sensors were deleted in the new configuration, these are not automatically removed in OTT Hydras 3 in order to prevent a loss of data. The sensors must be explicitly deleted manually in OTT Hydras 3.

2.2.2 Creating a station automatically

OTT Hydras 3 net server supports the automatic creation of a station. When a previously unknown station transmits data to OTT Hydras 3 net for the first time, this data message is rejected and a command for this data logger is generated automatically to request the configuration of the data logger. The data logger then sends its configuration to the OTT Hydras 3 net server, which in turn creates a new station with this configuration and processes subsequent data messages correctly.

For a station to be created automatically, the "Command" option must be enabled in the data transmission (see Fig. 2) because this is necessary in order for the data logger to retrieve and execute the command that is generated automatically by OTT Hydras 3 net server.

2.2.3 Editing an OTT Hydras 3 net configuration file

OTT Hydras 3 net automatically manages a list of configuration files for the configured stations. These configuration files were either sent automatically by the station or were imported manually by a user. The configuration files are displayed in a separate list on the "Configuration" tab as soon as a station is selected there (see also Section 4.3).

When you double-click on a "BIN" configuration file, the data logger operation program launches automatically and shows the configuration file you clicked on. You can also edit the configuration and select the menu option: "File | Write back configuration to OTT Hydras 3 net" to return the configuration to OTT Hydras 3 net. The existing configuration file is overwritten as a result. When you select this menu option, the operating program prompts you to confirm whether you want a command for updating the OTT netDL to this configuration to be generated automatically in OTT Hydras 3 to ensure that this change is also automatically transferred to the data logger later. If you choose "No", the configuration file is modified but not the data logger.

2.3 Configuring the web server

You configure the settings for the web server of OTT Hydras 3 net server in the "Options" window (press F2 to access) on the "Web Server" tab.

2.3.1 Data transmission via HTTP

To activate the HTTP server, select the corresponding checkbox. You can also specify the port at which the server is to "listen". The default port for HTTP is 80.

If you want data to be sent in encrypted form via HTTPS, you must select the checkbox for the HTTPS server. The default port for HTTPS is 443 but this can also be changed.

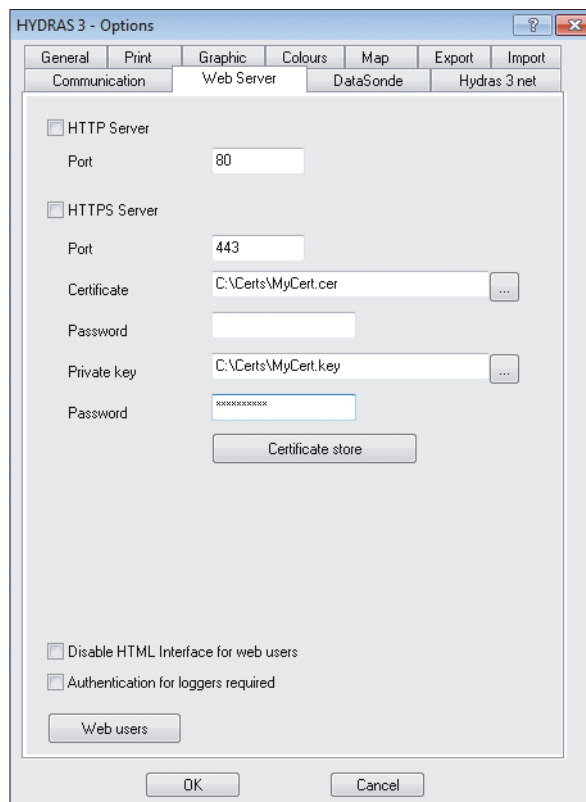
2.3.2 Data transmission via HTTPS

With data transmission via HTTPS, the encryption modalities are negotiated before the transmission. As this involves a great deal of effort on the part of the data logger, the timeout should be set for approx. 30 seconds in the data logger configuration for the server.

The server must have a certificate in order to use HTTPS. This contains (among other things) the server's public key, which is used on the other side (e.g. on the data logger) to encrypt the contents that are to be transmitted. The server must use its private key (which matches the public key) to decrypt these encrypted contents.

OTT Hydras 3 net server can generate what is known as a self-signed certificate, use a certificate from the Windows certificate store, or use a certificate from a certification authority.

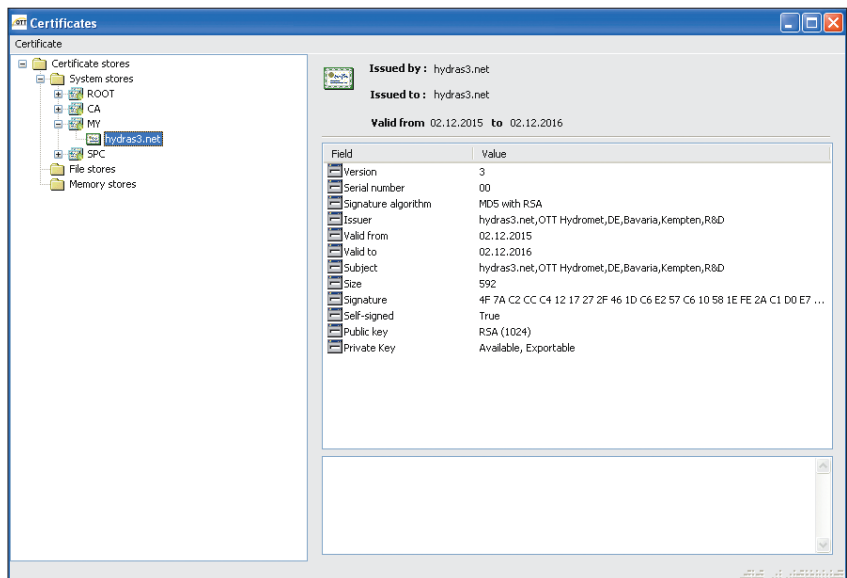
Fig. 5: "Port", "Certificate" and "Key" configuration options on the OTT Hydras 3 web server for data transmission via HTTP and HTTPS.



To generate a certificate automatically, leave the "Certificate" field blank. These automatically generated, self-signed certificates are not accepted by all browsers. For example, Google Chrome does not permit connection with this type of server. However, this is not relevant for communication between data loggers or OTT Hydras 3 net client and OTT Hydras 3 net server and is only of relevance to the HTML web interface (hydras3.htm). The automatically generated certificate is generated again each time OTT Hydras 3 net is started, and has a validity period of 5 years.

To generate a self-signed certificate manually or to use a certificate from the certificate store, click on the "Certificate store" button. This opens a separate dialog box in which the various certificate stores of the Windows system are displayed.

Fig. 6: Certificate stores in Microsoft Windows.



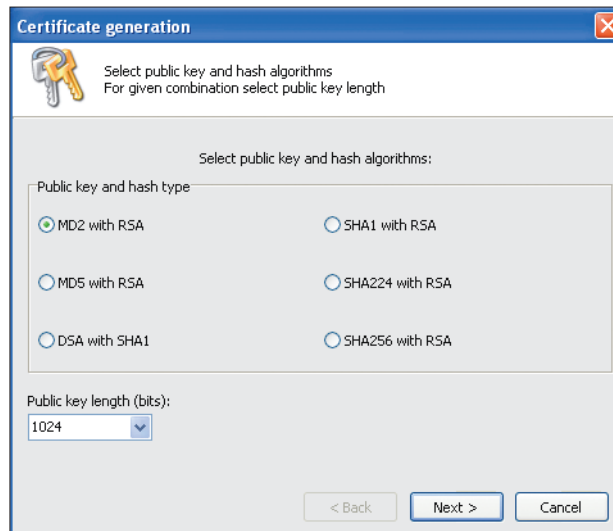
To use a certificate from the Windows certificate store, first select the certificate in the tree. The details of the selected certificate, including its validity period, are displayed in the detailed view of the certificate on the right of the screen.

Next, the certificate must be exported. To do this, select the menu option "Certificate | Save Certificate". This opens a file dialog box in which the file name for the certificate file must be specified. Certificates can be stored in various formats (e.g. in binary ".cer" format or ".pem" text format).

If a certificate is stored in .cer format, you are also prompted to confirm whether or not the private key (if one is contained in the certificate) is to be saved. As this key is needed by OTT Hydras 3 net, it must either be saved or made available elsewhere as a file. When exporting the key, you are prompted to enter a password for the key file. This password is required later to read the key file. The key file itself is saved as a ".key" file. The exported ".cer" and ".key" files now need to be configured in the OTT Hydras 3 net "Options" window under "Certificates" or "Private key". You also need to enter the password for the key file. If a certificate is stored in ".pem" format, the private key (if it exists) is automatically written to the file and you are prompted to enter a password for this key. This certificate file is then specified under "Certificate" in the OTT Hydras 3 net "Options" window, and the password specified directly below.

To generate a self-signed certificate, select the "New certificate" menu option. This opens a dialog box that guides you, step by step, through the settings that have to be made for the public key and the certificate properties (e.g. validity period).

Fig. 7: Generating a self-signed certificate on Microsoft Windows.



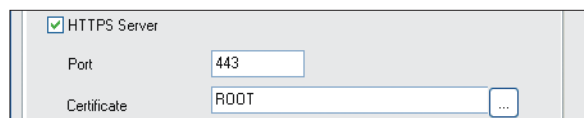
As the "Common Name", you must normally enter the name of the domain in which the server can be contacted. You can use any name here, as this is not explicitly checked by OTT Hydras 3 net client.

As a final step, click on the "Generate" button to generate the certificate in the currently selected certificate store. You normally also need to confirm a system dialog box before you can enter the private key in the certificate store. This certificate can be exported into a file as described above and used by OTT Hydras 3 net server for encrypted connections.

Certificates may also be selected directly from the Windows Certificate Store (no import of a certificate file). For this, instead of the file name of a certificate, enter one of the key words MY or ROOT in the options dialogue on the Seite Web Server.

MY uses an appropriate certificate from the personal certificate store. ROOT uses an appropriate certificate from the certificate store "Trusted Root Certificate Authorities".

Fig. 8: Use certificate from the certificate store "Trusted Root Certificate Authorities".

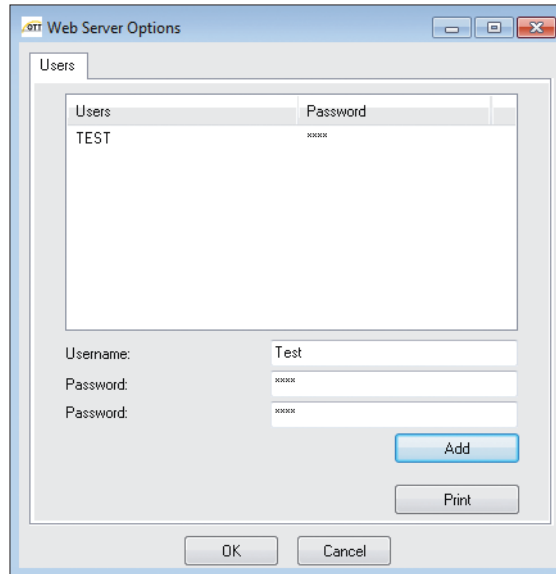


2.3.3 Additional settings

The following additional settings are available for the web server:

- ▶ You can use the "Disable HTML Interface for web users" option to disable the HTML interface for data access via the browser. This means that only the data loggers and the OTT Hydras 3 net client can communicate with the web server.
- ▶ You can use the "Authentication for loggers required" option to specify whether the data loggers require authentication in order to communicate with the OTT Hydras 3 net server.
- ▶ You can click on the "Web users" button to configure users and their passwords for access to the web server.

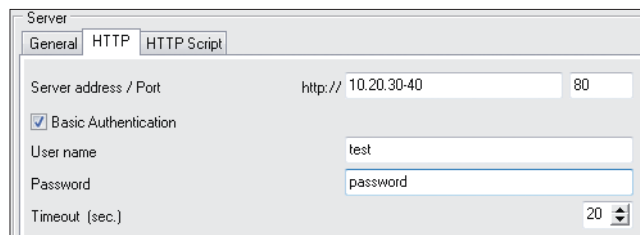
Fig. 9: Creating OTT Hydras 3 web server users.



If no users are entered here, this means that no logon information is required to access the web server (this applies to the HTML interface (if enabled), the data loggers and the OTT Hydras 3 net client).

If users are created here, a user name and password are required to log on to the server. In the case of the HTML interface, these details are entered on a logon screen in the browser. For the data loggers, the relevant user and password must be specified in the settings for the HTTP(S) server (see Fig. 10).

Fig. 10: Enabling authentication and entering the user name and password for the OTT Hydras 3 web server in the data logger operating program.



If the "Authentication for loggers required" option is disabled (default setting), a user name and password are not required for the data logger, even if user names for web access are defined on the server.

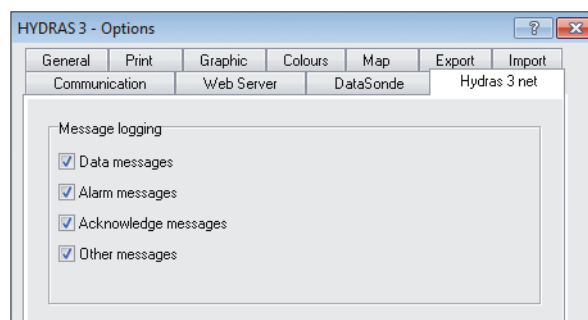
You need to configure a user and password for server access for the OTT Hydras 3 net client on the "OTT Hydras 3 net" tab in the "Options" window (see the "Configuring the OTT Hydras 3 net client" section). For the configured users you can define the privileges for access with OTT Hydras 3 net client (e.g. the privilege for performing firmware updates) in the privilege manager. If a user for accessing the server is not defined in the OTT Hydras 3 net client, the client's license number is used for the assignment of privileges. For more details, see the "Privilege manager" section.

- **Note:** All changes made on the "Web Server" tab of the "Options" window only take effect after you exit and restart OTT Hydras 3.

2.4 Configuring message logging

OTT Hydras 3 net server can automatically log the messages sent by the data loggers. To activate this feature, you must select the checkboxes for the relevant message types on the "OTT Hydras 3 net" tab in the "Options" window (press F2 to access).

Fig. 11: Message configuration options and logging.

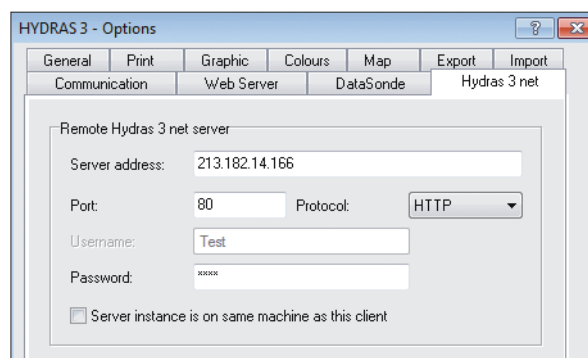


Messages that are more than 14 days old are deleted automatically.

2.5 Configuring the OTT Hydras 3 net client

For each OTT Hydras 3 net client, it is necessary to configure the IP address of the corresponding OTT Hydras 3 net server. You do this in the "Options" window (press F2 to access) on the "OTT Hydras 3 net" tab.

Fig. 12: Configuration options for OTT Hydras 3 net client.



In addition to the address, you must also specify the port and the protocol (HTTP or HTTPS), as well as the user name and password. The server can use the user name to detect the corresponding privileges. Privileges are defined on the server in the Privilege manager (see next section). The client's Windows login name is entered as the user name by default.

For each client that needs to access the server with a user name, the corresponding server and matching user name must be created on the server. See the "Configuring the web server" section.

You can make the following setting to optimise performance: "Server instance is on same machine as this client (RDP)".

You can enable this setting if you are working in an RDP or a terminal server environment. This means that an OTT Hydras 3 is installed on a server and can be started as a separate instance by multiple users. In this case, this option will mean that files are in some cases accessed directly instead of via the server, which increases performance.

3 Privilege manager

In OTT Hydras 3 net server, you can assign privileges to individual users. These privileges comprise the standard privileges that are familiar from OTT Hydras 3 (e.g. privileges for editing data, importing data etc.), as well as new OTT Hydras 3 net privileges for interaction with OTT netDL data loggers.

Privileges are typically defined for each individual user (Windows login name). However, privileges can also be defined for OTT Hydras 3 license numbers. If a user is assigned both user name privileges and license number privileges, the user name privileges take precedence. This section describes the possible actions for users only but the same points also apply in principle to license numbers.

In the Privilege manager (Extras | Privilege manager), all workspaces are displayed in the list on the left. For each workspace, the number, name, and optional ID are shown, as well as the mode on the client in which the workspace is accessed. If a workspace is selected, the users or license numbers defined for that workspace are displayed in the two lists on the right. The standard privileges are shown in the list at the top, while the OTT Hydras 3 net privileges are shown in the list at the bottom.

3.1 Client with local workspace copy

On the OTT Hydras 3 net client, there is one exception to note in the case of workspaces that are on an OTT Hydras 3 net server and where the client has a local copy. In this case, the user privileges for the local workspace copy are displayed in the list at the top. The standard privileges for the corresponding workspace on the server cannot be displayed or changed on the client. To view these privileges, you must either run the Privilege manager on the server or use a client that has direct access to the workspace.

3.2 Creating users

The first time the Privilege manager is called, both lists are initially blank. This means that all privileges apply to all users. To create a user, enter the user name in the relevant field and click on the corresponding "Add" button. The first user created must be the current user (or the current user's license number).

3.3 Changing privileges

To change the privileges displayed, click on the corresponding checkbox. If the user does not have the privilege required to change the privileges, a message is displayed. At least one user must always have the privilege required to change privileges.

3.4 Deleting users

To delete a user, select the user in one of the lists and click on the "Remove" button. In order for a user to be removed, the current user must be authorised to change privileges. The user is then deleted from both lists. When the final user is removed from the list, all privileges once again apply to all users.

Changes made to the privileges are saved either when the workspace is changed or when the Privilege manager is closed. To discard any changes that have not yet been saved, click on the "Cancel" button.

Changes made to privileges on the server are not applied to the client immediately. The client must be restarted first. For clients that run permanently, the privilege information from the server is updated within one hour.

4 User interface

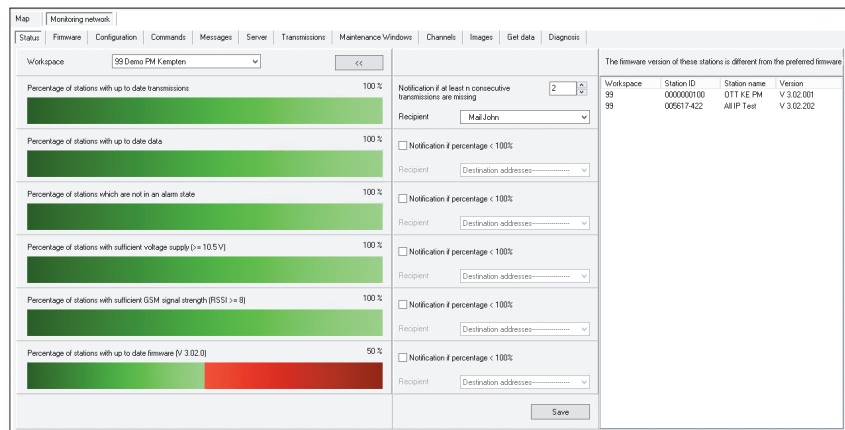
As OTT Hydras 3 is based on OTT Hydras 3 application software, the OTT Hydras 3 net interface will appear very familiar to users of OTT Hydras 3. Almost the entire user interface for OTT Hydras 3 net functions can be found on the "Monitoring network" tab on the OTT Hydras 3 main screen. When you open the "Monitoring network" tab, a view showing several sub-tabs is displayed. The following sections describe in detail the individual views that are found on these sub-tabs.

4.1 "Status" sub-tab

When you open the "Monitoring network" tab, the "Status" sub-tab is initially visible. The "Status" sub-tab provides a visualisation of the current status of the monitoring network, so that you can tell, at a glance, whether any potential problems exist. For this purpose, several important key figures are shown as bars (see Fig. 13).

On these bars, the red portions indicate the percentage of stations that do not currently have the required status, for example, no up-to-date data is available or the firmware needs to be updated. When you click on a bar, a list of stations that do not meet the relevant criterion is displayed in the detailed area on the right of the bar.

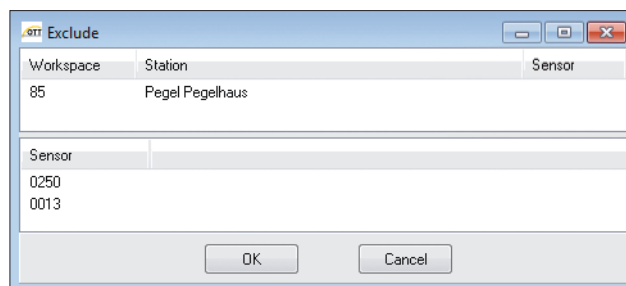
Fig. 13: Current status of the monitoring network as visualised on the "Status" sub-tab of OTT Hydras 3 net.



You can use the workspace drop-down list to specify whether you want to display the statistics for a specific workspace or for all workspaces (---). On the client, you can only display the statistics for individual workspaces.

If there are stations that you do not want to be included in the statistics, you can explicitly exclude these from the calculations. To do this, click on the "Exclude+" button. The screen then appears as shown below:

Fig. 14: Defining stations to be excluded from the visualisation on the "Status" sub-tab.



You must add specific workspaces, stations or sensors (of a specific station) to the list at the top using the Drag & Drop function in order to exclude them from the statistics. If you want the statistics to always exclude certain sensors, you must drag these sensors into the list at the bottom. This information is also used for indicating whether the data is up-to-date on the map.

The individual areas of the "Status" sub-tab are explained below.

4.1.1 "Transmissions" status

In this area, the proportion of stations with transmissions that are up-to-date/not up-to-date is displayed as a bar. The header in an OTT-ML message indicates the current transmission interval (and possible time offset) for transmissions to the server. OTT Hydras 3 net can use this information to determine the time of the next transmission. If a message is not received within 120 seconds starting from that point in time, the relevant station is flagged as not up-to-date. This statistic only includes stations that transmit their data in OTT-ML format to OTT Hydras 3 net via HTTP(S). Stations that transmit their data via FTP, for example, or where the data is retrieved automatically are not shown in this statistic. When you click on the bar, a list of stations that are not currently up-to-date is displayed in the detailed view on the right. The time of the most recent message received is shown for each station in this list.

4.1.2 Checking whether the data received is up-to-date

The ratio of stations with up-to-date data to stations with data that is now obsolete is represented by a bar on the left of the "Status" window. The time of the most recent transmission is determined from the configuration in order to detect whether a station has the latest data. The storage intervals of the sensors is then used to calculate the latest timestamp that should be available for each sensor, which is compared with the most recent timestamp that actually exists in each case. If the actual timestamp is older, the station is considered as not being up-to-date.

When you click on the bar, a list of stations with obsolete data is displayed, in addition to the timestamp that violates the criterion for being up-to-date. If you click on a station in the list, the sensors that have obsolete data are indicated in the sensor list below the station list.

In the case of stations that do not transmit their data in OTT-ML format, the information about the transmission interval is not available. As a result, there is an option for configuring the point in time as of which data is to be considered obsolete. You will find this on the "OTT Hydras 3 net" tab in the "Options" window (press F2 to access):

Fig. 15: Making settings for the "Status" sub-tab.

Status settings

Maximum age of data for up to date check: 0 06:00:00

Lower voltage limit for power supply (5-30 V): 10,5

Lower limit for GSM signal strength (RSSI) (6-12): 8

Some stations are excluded from check Exclude

4.1.3 "Alarms" status

In this area, the ratio of stations that have an alarm status to stations with a normal status is displayed as a bar. When you click on the bar, a list of stations that have an alarm status is displayed in the detailed view on the right. A station has an alarm status if one of the sensors drops below or rises above the pre-defined limits.

4.1.4 "Supply voltage" status

In this area, the proportion of stations with low to sufficient supply voltage is displayed as a bar. The voltage value as of which the station is judged to be in a critical status can be configured on the "OTT Hydras 3 net" tab in the "Options" window (press the F2 function key to access).

4.1.5 "GSM signal" status

In this area, the proportion of stations with low to sufficient GSM signal quality is displayed as a bar. The signal value as of which the station is judged to be in a critical status can be configured on the "OTT Hydras 3 net" tab in the "Options" window (press the F2 function key to access).

4.1.6 "Firmware" status

In this area, the proportion of stations with up-to-date/obsolete firmware is displayed as a bar. The firmware that is to serve as a reference point for this statistic must be explicitly defined. You define this reference firmware version on the "OTT Hydras 3 net" tab in the "Options" window, where you can select the reference firmware version from a list of known firmware versions.

On the "Firmware" tab, firmware versions can be explicitly loaded into the OTT Hydras 3 net. These are then displayed in the list. When you click on the bar, a list of stations that do not currently have up-to-date firmware is displayed in the detailed view on the right. The firmware version is shown for each station on this list.

4.1.7 Alarm messages depending on the network status

The OTT Hydras 3 net Server can send automatic email or SMS notifications if there are critical changes in the network status, e.g. if stations have failed to send current data.

For this, you can define individual criteria for each workspace in the status window, when a notification should be made.

Concerning the timeliness of data transmissions you can define, how many data transmissions from a station may be missing until a notification is sent. Concerning other status parameters, you can only define that a notification is made if the percentage of the relevant station is lower than 100 percent.

If one criterion is met, OTT Hydras 3 displays a message in the list of alarms. If you want this message to be not only displayed but also sent by email or SMS, you have to select the required recipient from the pre-defined addresses in the recipients list.

You have to save the changes you have made in the settings by clicking on the "Save" button.

4.2 "Firmware" tab

On the "Firmware" tab, you can view the firmware versions that are currently installed at the individual stations. To display the firmware version for a station, use the Drag & Drop function to add the station to the list view. You can only drag stations into the list if they correspond to the selected device type. At present, the data logger devices in the OTT netDL range are supported. A region or workspace node can also be dragged into the list. All stations in this region/workspace that correspond to the selected device type are then added to the list.

You also have the option of copying the stations listed in the "Search" dialog box into the station list. To do this, open the "Search" dialog box (Extras | Search), where you can then search for stations based on various criteria. To copy the stations listed there, right-click in the firmware list and select the following option in the context menu: "Add stations". The option is also available in the various other station lists that appear on the other sub-tabs.

For each station on the list, the workspace, station number, station name, device type, currently installed firmware version, time of the last transmission and the current transmission interval are displayed.

The last 3 columns only have contents if an OTT-ML message has been received from this station.

Fig. 16: Overview of the firmware versions in use at the stations.

Workspace	Station ID	Station name	Device	Firmware	Last Transmission	Interval
85	U1_...	Hydras3_P98...	U1 netDL	V 3.00.0	2016-05-02 11:01:36	02:00:00
85	DOMSDETIK	Mobob	OTT netDL	V 3.00.0	2016-05-02 11:40:00	02:00:00
85	NAVACERR...	NETDL_FLUVL...	OTT netDL	V 2.83.0	2016-05-02 10:03:04	02:00:00
85	OTTABFLU...	OTT_Soncklow...	OTT netDL	V 2.72.1	2015-12-11 10:31:48	00:30:00
85	OTT_MET...	Paravel + Plixio2	OTT netDL	V 3.00.0	2016-05-02 11:01:12	02:00:00
85	OTT_PEG...	Pegel Pegelhaus	OTT netDL	V 3.00.0	2016-05-02 11:01:55	02:00:00
85	OTTABFLU...	Pegelhaus_SLD	OTT netDL	V 3.00.0	2016-05-02 11:41:36	02:00:00

In the "Firmware" column, all firmware versions that differ from the current reference version are highlighted in grey. The documentation for the "Status" sub-tab describes how to define the reference firmware version. Click on the "Clear" button to delete the entire list. To delete individual entries, select an entry (which is then highlighted in blue) and press the "Del" (Delete) button.

4.2.1 Adding firmware

To add a firmware version to the system, click on the "Add Firmware" button. This opens a file dialog box in which a valid firmware file must be specified. The file name of a firmware file for OTT netDL follows the convention:

5555230293_0XYYZZZ_netDL.bin

Here, XYYZZZ indicates firmware version V X.YY.ZZZ.

The relevant file is stored in the "CommonAppData" directory of OTT Hydras 3 in the "Firmware" subdirectory. Firmware versions stored there are displayed in the corresponding selection list and can be used for a firmware update.

Note: On Windows XP, the CommonAppData directory is here:

C:\Documents and Settings\All Users\Application Data\OTT\Hydras3\Firmware

Windows 7/10:

C:\ProgramData\OTT\Hydras3\Firmware

4.2.2 Performing a firmware update

To perform a firmware update, all stations to be updated must be dragged into the station list. Next, select the relevant firmware version in the "Firmware Version" selection list and click on the "Update Firmware" button.

- **Note:** For OTT netDL firmware versions before V 3.00.0, it is necessary to specify the server index. For later versions, this is no longer necessary and the option is no longer displayed.

The data logger automatically loads the firmware from the server from which it received the command

You must explicitly confirm the generation of the commands for the firmware update in a confirmation prompt. Here, you can also opt to activate the command at a later time, for example, if you want a firmware update to be performed at night.

As soon as the command is generated, the "Firmware" column is highlighted in a light green colour to indicate that a command has already been generated. The colour of this column changes again if execution of the command is subsequently acknowledged by the data logger. If the command is received successfully, the column is initially coloured blue. If the command is not successful, the column is coloured red. A blue column means that the data logger successfully received the command and acknowledged it but does not mean that the firmware has been updated successfully.

A firmware update is considered successful when the first data message with the new firmware version is received. When this happens, the colour of the column changes from blue to dark green. If a message with a different version is received, the firmware update is considered to have been unsuccessful and the colour of the column changes to red. The firmware version can only be detected automatically if data is transmitted in OTT-ML format.

If a firmware update is initiated on an OTT Hydras 3 net client, the status (= colour) is not updated automatically in the firmware list. To refresh the firmware list, you must go back to the "Firmware" sub-tab from another view. As soon as commands have been generated, this is indicated on the "Commands" tab in the detailed view.

4.3 "Configuration" sub-tab

On the "Configuration" sub-tab, you can manage the configurations of the individual stations. To display the station configurations detected by the system, use the Drag & Drop function to add the station to the list view and then select it. The station is then highlighted in blue in the display and, in the detailed view on the right of the station list, a list of configuration files is displayed for this station, with the most recent configuration shown at the top.

For OTT Hydras 3 net, it is essential that you always have access to the most recent configuration of each data logger. A configuration can be imported manually or transmitted automatically to OTT Hydras 3 net by the data logger.

4.3.1 Creating a station

The preferred method of creating a new station in OTT Hydras 3 net is to import the ".BIN" configuration file for the station into OTT Hydras 3 net by selecting the menu option "File | Import Station Configuration (XML | BIN)" or to transfer the configuration directly from the operating program OTT Hydras 3 using the coupling described in section 2.2. This creates the station automatically, and the entire configuration of the data logger is then already detected.

4.3.2 Importing a configuration manually

To manually import the configuration of an existing station, you must first select the relevant station in the list and then click on the "Import configuration" button. A file dialog box opens, in which you select the configuration file (BIN or XML). You are then prompted to specify whether the file represents the latest configuration of the data logger. If you confirm that it does, the file is assigned the current timestamp and is treated as the latest configuration.

Otherwise, the file is merely copied and is not assigned a timestamp. This means that you can also import older configurations into the system (e.g. for documentation purposes) without overwriting a more recent configuration.

4.3.3 Requesting the configuration of a station

To explicitly request the current configuration of one or more stations, you must first drag the relevant station(s) into the station list. Then select the format of the configuration file (BIN or XML) and click on the "Request configuration" button.

- **Note:** For OTT netDL firmware versions before V 3.00.0, it is necessary to specify the server index. For later versions, this is no longer necessary and the option is no longer displayed.

The data logger automatically sends the configuration to the server from which it received the command.

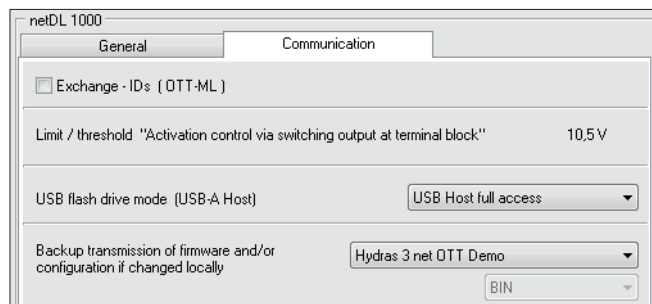
The next time the data logger sends data to the server and receives the command, it immediately transmits its current configuration to the server in the requested format. As soon as the command has been generated, the "Requested" column is highlighted in light green. As soon as the command has been successfully executed, the column colour changes to green. In the event of an error, the colour changes to red.

- **Note:** A configuration in XML format contains the most important parameters in the configuration and can be imported very quickly. However, it does not contain all details, e.g. channel configurations. A configuration file in BIN format contains the complete configuration but takes somewhat longer to process.

4.3.4 Automatic transmission of a configuration

An OTT netDL can be configured in such a way that it automatically transmits its configuration to a server after each modification of the configuration or of a parameter. This is useful when using OTT Hydras 3 net, as it ensures that the server can always access the current data logger configuration, regardless of whether the configuration was changed on-site or remotely. To enable automatic transmission, enable the following option in the OTT Data Logger Operating Program:

Fig. 17: Enabling automatic transmission of an OTT netDL configuration in the OTT Data Logger Operating Program.



Here you must specify a configured transmission and a format. The transmission determines which IP connection and server are used. Typically this is the transmission, which sends data periodically to the OTT Hydras 3 net server.

4.3.5 Updating a station configuration

To program a configuration that is known to the system onto a station, first select the station in the list. The available configurations are then displayed in the detailed list on the right of the station list (with the most recent shown first). From this configuration list, select a configuration and then click on the "Update configuration" button. As a result, a corresponding command is generated and the "Update" column is coloured light green. As soon as the command has been successfully executed, the column colour changes to green. In the event of an error, the colour changes to red.

You can also edit the existing configuration files in the OTT Data Logger Operating Program directly and then write the files back to OTT Hydras 3 net. For more details, refer to the section discussing the coupling of the OTT Data Logger Operating Program and OTT Hydras 3 net.

4.4 "Commands" sub-tab

On this screen, you can display and delete the XML commands that are generated by OTT Hydras 3 net for interaction with a data logger.

4.4.1 New commands

The "New commands" view displays the commands whose execution has not yet been acknowledged by the data logger. As soon as a command has been generated internally by a user action, this command is displayed here in detail. To view these commands, you must explicitly click on the "Refresh" button. The relevant commands then appear in the command list. The following columns are displayed for each command:

- ▶ Workspace
- ▶ Station name
- ▶ Station number
- ▶ Sensor number (if the command refers to a specific sensor)
- ▶ Time at which the command was created
- ▶ Time as of which the command is valid
- ▶ Time at which the command was retrieved from the data logger
- ▶ Type of command
- ▶ Unique identification number for the command

When you select a command in the list, the detailed view below the command list displays the relevant XML command in text form.

Fig. 18: Managing XML commands for interaction with an OTT data logger.

Workspace	Station name	Station ID	Channel ID	Created	Valid from	Requested	Command	Ack ID	User
85		PH00000001		2016-04-20 10:47:45			GetPicture	2584	ADMINISTRATOR

```
<?xml version="1.0" encoding="iso-8859-1"?>
<OTTMLCommandXML xmlns="http://www.ott.com/ottml" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" />
<OTTMLCommandXML>
```

You can use the filter options to restrict the view of the command list based on the following criteria:

- ▶ Time range
- ▶ Workspace
- ▶ Stations in the selection list

If you select the last of these options, commands are only shown for stations in the selection list. You can drag several stations (from various workspaces) simultaneously into the selection list below the tree. To quickly restrict the time range,

you can click on the buttons labelled "1 h", "2 h" etc., which restrict the time range to the last hour (and so on) and then refresh the list.

4.4.2 Deleting commands

To delete a command from the list, select the command and press the "Del" (Delete) key. A confirmation prompt is displayed, in which you must explicitly confirm that you want to delete the command. Alternatively, you can click on the "Delete selected command" button.

There are also buttons that allow you to delete all commands shown in the list or delete all existing commands.

4.4.3 Resetting a command

If a command has been retrieved but never acknowledged, you can click on the "Reset command" button to activate it again. This means that the time of retrieval is deleted and the command has the same status as a newly generated command.

4.4.4 Executed commands

The "Acknowledged commands" tab displays the commands whose execution has already been acknowledged by the data logger. The display of the commands can be restricted using the same filter criteria used for new commands. In addition, there is a filter option for displaying failed commands only.

The columns shown are largely the same as those used in the list of new commands. However, the time at which the command was acknowledged by the data logger is displayed instead of the time as of which the command is valid. In addition, the status of the command is displayed. An error message is displayed in the event of an error. If you select a command and press the "Del" ("Delete") key, the relevant command is removed from the list (and from the database).

4.5 "Messages" sub-tab

You can display the messages received from the web server on the "Messages" sub-tab. You can use various filter criteria to control which messages are displayed. You can choose from the following criteria:

- ▶ Time range
- ▶ Message type
- ▶ Workspace
- ▶ Stations in the selection list

The following information is displayed for each message

- ▶ Workspace
- ▶ Station name
- ▶ Station number
- ▶ Time received
- ▶ Type of message
- ▶ Unique message ID
- ▶ ID of the command (if a command is being acknowledged)

When you select a message in the list, the contents of the message are displayed in the detailed window below the list. The message's HTTP header is shown on the right of the detailed window.

4.6 "Server" sub-tab

The "Server" sub-tab displays the server settings for the stations that were dragged into the list. Initially, all destination servers configured for data transmission for the relevant station are displayed. When the relevant server type is selected, the display is then restricted to this specific server type. You can choose from among the following server types:

- ▶ HTTP (OTT Hydras 3 net)
- ▶ HTTP
- ▶ HTTPS (OTT Hydras 3 net)
- ▶ HTTPS
- ▶ FTP

There is, in principle, no difference between HTTP and HTTP (OTT Hydras 3 net). However, all server paths are displayed for the HTTP setting, whereas these are not displayed in the case of HTTP (OTT Hydras 3 net) because all paths are the same (otm.htm). The same applies to HTTPS. When you select an index, the display is restricted to all servers with that index. To change the settings, you must explicitly select a server type. If you also select an index, the settings that can be changed and that differ from the most frequently occurring setting are highlighted in grey (see Fig. 19).

Fig. 19: Managing server settings for OTT data loggers.

Workspace	Station ID	Station name	Index	Server name	Server address	Port	Username	Password	Data Script
85	OTT_GUE...	Hydrolab_Pegel...	1	OTT netview	netview.ott.com	80			demo/dac/post_mis...
85	OTTABFLU...	OTT_Sonicflow...	1	OTT Netview	netview.ott.com	80			demo/dac/post_mis...
85	OTT_MET...	Parsivel + Pluvio2	1	OTT Netview	netview.ott.com	80			demo/dac/post_ban...
85	OTT_PEG...	Pegel Pegelhaus	1	netview Server HTTP	netview.ott.com	80			demo/dac/post_mis...

When a setting has been changed, the corresponding cell is highlighted in light blue. When you click on the "Generate command" button, the relevant command is generated and the cell is coloured light green. As soon as the command has been executed and an acknowledgement message has been sent to OTT Hydras 3 net, the colour of the relevant cell changes to green (success) or red (failure). If you want the setting in a cell to be used for the entire column, you can right-click in the cell to display a context menu and select the "Apply to all" menu option.

4.7 "Transmissions" sub-tab

The "Transmissions" sub-tab displays the transmission settings for the stations that were dragged into the list. If you select an index from the selection, the display is restricted to transmissions with the relevant index and modifiable settings that deviate from the most frequently occurring setting are highlighted in grey (see Fig. 20).

Fig. 20: Managing transmission settings for OTT data loggers.

Workspace	Station ID	Station name	Index	Transmission name	Interval	Offset	Alarm interval 1	IP Connection
85	005617-422	All IP Test	1	NetDL to FTP	01:00:00		01:00:00	1: LAN
85	OTT_GUETE	Hydrolab_Pegel...	1	Übertragung HTT...	01:00:00	00:01:00	00:10:00	2: PPP Verbindu...
85	NAVACERRAD	NETDL_PLUVI...	1	DATOS NAVACE...	01:00:00		01:00:00	1: GPRS NAVA...
85	OTTABFLUS2	OTT_Sonicflow...	1	Übertragung Netvi...	00:30:00	00:00:40	00:30:00	2: GPRS Modem
85	OTT_METED	Parsivel + Pluvio2	1	zu Netview	00:30:00	00:00:30	00:30:00	1: Internes Modem
85	OTT_PEGEL	Pegel Pegelhaus	1	HTTP Übertragung...	01:00:00	00:10:00	01:00:00	1: GPRS Übertr...
85	PM00000001	PM Metcam	1	custom built	01:00:00		00:05:00	1: Verbindung L...
85	PM00000003	PM Mobil 2 Hydr...	1	FTP	02:00:00		00:05:00	1: Mobil
85	PM00000002	PM Mobil Hydr...	1	FTP	04:00:00		00:05:00	1: Mobil

The following settings for a transmission are displayed:

- ▶ Station workspace
- ▶ Station number
- ▶ Station name
- ▶ Index of the transmission
- ▶ Name of the transmission
- ▶ Transmission interval
- ▶ Offset to 00:00:00 for the time of the transmission
- ▶ The first transmission interval for alarms
- ▶ Index and name of the connection used by the transmission
- ▶ Index and name of the server used by the transmission
- ▶ List of the channels that are sent in the transmission
- ▶ Data format (OTT-ML, MIS, ZRXP)
- ▶ Optional compression format (deflate, gzip)

You can click on a modifiable cell to modify its contents. There are different options for editing the contents depending on their type. For example, names can be edited in a text field. Intervals can be selected from a selection list, while channels can be selected using a checkbox.

Values are only displayed if they are valid for the relevant station configuration. For example, in the "Server" column, you can only select servers that are also available in the relevant station configuration. It is therefore important that OTT Hydras 3 net can always access the latest station configuration.

If a selection or a text field is displayed for a cell, you can press the "Esc" key to cancel editing.

If you want the setting in a cell to be used for the entire column, you can right-click in the cell to display a context menu and select the "Apply to all" menu option. For settings that depend on the individual configuration of the data logger, a check is automatically performed to determine whether the new setting you want to make is possible in principle on this data logger.

For example, if you want a server with Index 3 to be used for all data loggers, a check is performed for each transmission on the list to determine whether a server with Index 3 exists for the data logger. Only if this is determined to be the case is the cell set to the value "3" (the corresponding server name depends on the individual configuration and may differ in name from other configurations). Channels are only activated if they also exist in the relevant configuration.

In the list view, you can click on the "Refresh" button to undo any changes that have been made but for which a command has not yet been generated. When you click on this button, the original settings for the stations that were dragged into the list are displayed again. Any list entries that were previously removed by clicking on the "Del" ("Delete") key are displayed again.

To remove all entries on the list, click on the "Clear" button.

4.8 "Maintenance window" sub-tab

This sub-tab displays the maintenance window settings for the stations that were dragged into the list. The settings are displayed on 3 tabs:

- ▶ General: General settings for the configured maintenance windows
- ▶ Timing: a graphical visualisation of the duration of the maintenance windows in the form of a timeline
- ▶ One-time: Settings for a one-time maintenance window

4.8.1 "General" sub-tab

The "General" sub-tab displays the general settings for the configured maintenance windows. If a mode is not selected from the selection list, all maintenance windows are displayed. For each maintenance window, only the index, name and type are displayed. When you select an index in the selection list, the display is restricted to maintenance windows with that index.

"Call" mode

If you select "Call" mode, only maintenance windows of this type are displayed. In this case, the device on which the call is received as well as up to 4 caller IDs are displayed. If caller IDs are entered, calls will only be accepted from these numbers.

"RING/SMS" mode

In this case, the device on which the call or SMS is received, as well as the transmission with which the data logger connects to the server are displayed. You can also define up to 4 caller IDs to which the data logger responds.

"Accept IP" mode

In this case, the IP connection that connects the data logger to the Internet is displayed, as well as the port at which the data logger receives incoming HTTP requests.

4.8.2 "Timing" sub-tab

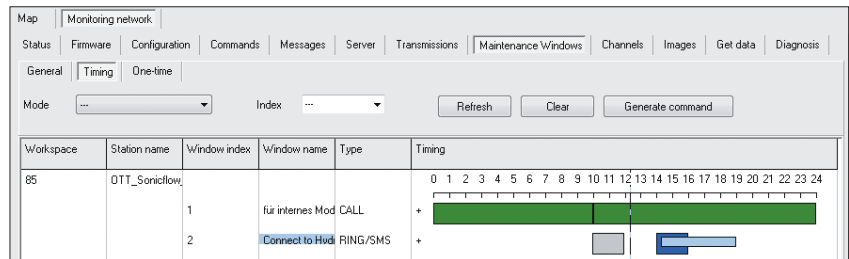
This tab visualises the start time and duration for each maintenance window that corresponds to the selected filter criteria (mode and index). Every time range configured for a maintenance window is represented as a grey bar in a timeline.

The time range that is currently selected (via mouse click) is highlighted in blue. If you press the "Del" ("Delete") key, the selected time range is deleted. To add a new time range to a maintenance window, click on the plus sign icon ("+") on the left next to the timeline. This opens a dialog box in which you can enter the start and end dates of the new time range. You can define up to 4 time ranges for each maintenance window.

If a time range is active for the current point in time, it is displayed in green. The current point in time is highlighted by a vertical line on the timeline. You can double-click on a green bar to establish a direct connection with the corresponding data logger. In the case of "Accept Call" and "RING/SMS", the call-up window opens, showing the pre-defined connection data. In the case of "Accept IP", the display switches to the "Online" tab, which shows a browser window with the web interface of the relevant data logger. It may take a number of seconds, depending on connection speed, before this web page is displayed.

To edit an existing time range, right-click in the bar. This opens a dialog box in which you can change the start and end dates. Alternatively, you can press and hold down the "Ctrl" key and then left-click to change the time range. You can shift the start of the time range by clicking in the bar near the start. You can determine the duration by clicking in the bar near the end. Time ranges that have been edited are displayed as thinner light-blue bars alongside the existing time ranges. For maintenance windows in which time ranges were edited, the name is highlighted in light blue.

Fig. 21: Managing maintenance windows for OTT data loggers.



If you click on the "Refresh" button, the changes made are rejected and the list display and timeline display are reset to their original status (based on the filter criteria). To remove the maintenance window from the list, click on the "Clear" button. If you click on the "Generate command" button, the commands that correspond to the changes are generated and the modified cells in the list, as well as the names of the relevant maintenance window in the timeline are highlighted in bright green.

4.8.3 "One-time" sub-tab

You can define maintenance windows for one-time use on this tab. The mode of the maintenance window must be defined first. Then you need to drag the stations for which the maintenance window is to be created into the list.

The start time and duration of the maintenance window can then be defined for each station in the list. If the start time is not specified (default setting), the maintenance window starts immediately after the data logger has retrieved the relevant command and executed it.

Depending on the mode, you may also be able to select the device on which a call/SMS is received or define caller IDs if required. You can also define the IP connection and the port for an IP connection.

4.9 "Channels" sub-tab

This sub-tab displays the settings for the individual channels of the stations that were dragged into the list. The channels are displayed in the form of a table, which makes it easy to compare various channels with each other. This display in table form provides a simplified representation and does not show the complete modules for all channels.

The following information is displayed for each channel:

- ▶ Station workspace
- ▶ Station number
- ▶ Station name
- ▶ Sensor number
- ▶ Sensor name
- ▶ Interval between entries of measured values
- ▶ Measured value input
- ▶ Scaling formula (if it exists)
- ▶ Storage interval (if mean/sum module exists)
- ▶ Time offset of the storage interval (if mean or sum module exists)
- ▶ Up to 3 limits (if the corresponding limit modules exist)
- ▶ Up to 3 gradient values (if the corresponding modules exist)

If you enter a 4-digit sensor number in the "Channel ID" field and click on the "Refresh" button, only the sensors with the relevant sensor number are displayed. Settings that can be changed and that differ from the most frequently occurring setting are highlighted in grey (see Fig. 22).

Fig. 22: "Channels" sub-tab – table providing an overview of selected parameters of OTT data logger channels.

Workspace	Station ID	Station name	Channel ID	Channel name	Sampling interval	Input	Scaling	Storage interval	Offset
85	NAVACERR...	NETDL_PL...	0003	RECIPIENT...	00:15:00	V6	1 *X + 0		
85	OTT_MET...	Parsivel + PL...	0003	Wettercode...	00:05:00				
85	OTTABFLU...	Pegelhaus...	0003	IP Cam	00:30:00				
85	PM00000001	PM Metcam	0003	virtuell for 2...	00:30:00	V1	1 *X + 3334444		
85	PM00000003	PM Mobil 2...	0003	RSSI	00:30:00				
85	PM00000002	PM Mobil H...	0003	RSSI	00:30:00				
85	TESTLANIPS	Test netDL...	0003	Livello simul...	00:01:00		1 *X + 10		

This makes it easy to check whether specific channels have an identical configuration in several stations.

If you click on the arrow of a gradient cell, you can change the type of the gradient. You can also modify the type of a limit and the value itself by modifying a limit cell. The storage interval of a channel can only be modified if a mean or sum module is defined in the channel and if the relevant sensor is configured as "aperiodic" in OTT Hydras 3.

You can choose the "Apply to all" option in the context menu to apply settings to an entire column.

4.10 "Images" sub-tab

On this sub-tab, you can request and display images from the IP cameras that are connected to the data loggers. If a station is dragged into the list, a separate row is displayed for each IP cam module in the station configuration. When you select a row, the most recent image received from this IP cam is displayed (where available). The station can be configured in such a way that it automatically sends images to OTT Hydras 3 net at specific points in time. Alternatively, you can use a command to manually request an up-to-date image. To do this, click on the "Request Image" button. The relevant commands for all entries on the list are then generated.

- **Note:** For OTT netDL firmware versions before V 3.00.0, it is necessary to specify the server index.

For later versions, this is no longer necessary and the option is no longer displayed. The data logger then automatically transmits the data to the server from which it received the command.

- **Note:** The images are stored with unique names in the "Images" sub-directory in the station directory.

4.11 "Get data" sub-tab

The data loggers normally send their data to the OTT Hydras 3 net server automatically. If a server is temporarily unavailable for any reason (e.g. due to a router failure), the data loggers will send their data again automatically once the server can be contacted again. This is intended to ensure the continuous availability of measurement data in OTT Hydras 3. Therefore, the user is not normally required to manually request data from the data logger.

However, if this should become necessary for any reason, an option is provided that allows you to use a command to explicitly request data for a time range from one or more data loggers. This function is provided on the "Get data" sub-tab. A station must be dragged into the station list before you can request data from that station. The time range for which you want to request the data can then be configured in the list.

You can also make a setting to specify the channels from which data is to be requested, as well as the type of data to be returned (measured values, sensor events, station events). Finally, you can also select the data format and, where relevant, compression format. When you click on the "Generate command" button, the relevant command is generated for each station in the list, and this command triggers the return of the required data by the data loggers.

4.12 "Diagnosis" sub-tab

On this sub-tab, you can request and display diagnosis files (debug logs) from the data loggers.

4.12.1 Diagnosis files

To request a diagnosis file, you must drag the relevant stations into the list and then click on the "Request diagnosis file" button. The rows are then highlighted in light green. As soon as the command has been successfully executed, the column colour changes to green. In the event of an error, the colour changes to red.

When you click on a cell in the station list, the available diagnosis files are listed in the detailed view on the right next to the station list, together with the date and time. If you click on a diagnosis file in the detailed list, the contents of the diagnosis file are displayed in the detailed area below the station list.

4.12.2 Error Log

In addition to the diagnosis files, you can also display the error log for a station. This log file logs all error and warning messages from the headers of the OTT-ML messages sent by the data logger. To display a station's error log, you must select the relevant station in the station list and then select the "Error Log" tab in the detailed area below this. The most recent entries are shown at the bottom of the list.

- **Note:** For OTT netDL firmware versions before V 3.00.0, it is necessary to specify the server index. For later versions, this is no longer necessary and the option is no longer displayed.

5 Alarm list

The alarm list logs all unexpected events that occur in OTT Hydras 3. Normally, only the local alarm list is displayed. In an OTT Hydras 3 net client, you can toggle between a local alarm list and the server alarm list (see Fig. 23).

Fig. 23: OTT Hydras 3 net client alarm list – display of alarms on the server.

Time	WS	Station	Sensor	Message
5/2/2016 01:02:42	85	DTT_PEGEL	0010	Wert 90.5 [cm][5/2/2016] >= Obere Grenze 90.0 (Alarmstufe: 1) Sehr hoch
4/30/2016 23:02:35	85	DTT_PEGEL	0010	Wert 72.3 [cm][4/30/2016 22:00:00] >= Obere Grenze 71.0 (Alarmstufe: 2) Hoch
4/30/2016 17:02:33	85	DTT_PEGEL	0010	Wert 70.4 [cm][4/30/2016 16:00:00] < Obere Grenze 71.0 Hoch
4/29/2016 21:02:27	85	DTT_PEGEL	0010	Wert 71.0 [cm][4/29/2016 20:00:00] >= Obere Grenze 71.0 (Alarmstufe: 2) Hoch

If the server alarm list contains entries when you start the OTT Hydras 3 net client, the server alarm list is immediately shown. Otherwise, the client alarm list is displayed first. If the server alarm list is displayed, it is not refreshed automatically. To refresh the alarm list, click on the "Refresh" icon with the green arrows. The entries in the server alarm list can be acknowledged in exactly the same way as those in the local alarm list.

6 Online map view

In addition to the familiar map view that can be used to represent shapefiles or bitmaps, OTT Hydras 3 net also offers a new online map view based on OpenStreetMap. The map data is loaded directly from freely accessible servers via the Internet.

To display a station on the online map, you must define a degree of latitude and a degree of longitude for the station. You do this on the "Map" tab in the station configuration window (see Fig. 24).

Fig. 24: Entering station coordinates for display in an online map.

The image shows a software window titled "Station configuration" with three tabs: "General", "Communication", and "Map". The "Map" tab is active. Under the heading "Map coordinates", there are two rows of input fields. The first row is for "Längengrad" (Longitude) with the value "10,32286" and a small "x" label to its right, followed by a field containing "0". The second row is for "Breitengrad" (Latitude) with the value "47,71163" and a small "y" label to its right, followed by a field containing "0". Below this, under the heading "Gauss-Krueger", there are two rows. The first row is for "Right" with a field containing "0". The second row is for "Up" with a field containing "0".

Once you have configured the stations as described above, they are shown in the relevant positions on the map.

3 different display modes are available for the map:

- ▶ Alarm levels
- ▶ Timeliness of data (i.e. is it up-to-date?)
- ▶ IP Cam

In the "Alarm levels" display, all stations with alarm level 1 are highlighted by a red marker. All stations with other alarm levels are indicated by an orange marker. Stations that do not have any alarm level at present are displayed in green.

In the "Timeliness of data" display, stations with data that is now obsolete are highlighted in red. Stations with data that is outdated to a lesser extent are shown in orange. Stations with up-to-date data are shown in green.

You can specify the criteria that determine the points as of which data becomes somewhat outdated or completely obsolete in the screen area shown below. In each case, you specify the number of days, hours, minutes and seconds by which the data must be outdated before it falls into each category as represented by the corresponding colour.

Fig. 25: Entering criteria for the display of data timeliness (in the format Days hh.mm.ss).

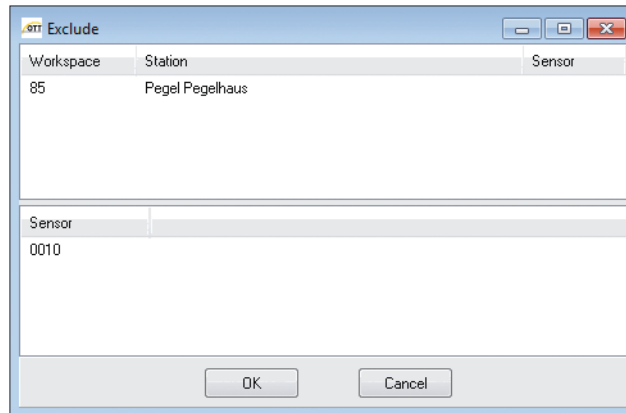
The image shows a dialog box titled "Timeliness of data". At the top, there is a dropdown menu with "Timeliness of data" selected. Below this, there are two rows. The first row has an orange square icon, followed by the text "Older than:", a dropdown menu showing "0", and a time field showing "06:00:00". The second row has a red square icon, followed by the text "Older than:", a dropdown menu showing "0", and a time field showing "16:00:00". At the bottom of the dialog, there is a button labeled "Exclude".

The sensor with the oldest timestamp determines how up-to-date the station as a whole can be considered to be.

In many cases, however, you will only be interested in specific sensors for determining data "timeliness". You can click on the "Exclude" button to specify stations and sensors that you want to exclude from the calculation of data timeliness.

To add a station or a sensor to the list, you can use the Drag & Drop function to drag it from the tree into the relevant list. If you drag a sensor into the list at the bottom, this means that all sensors with this sensor number will be excluded.

Fig. 26: Excluding sensors from the display of data timeliness.



In the "Webcams" display, all stations equipped with a web cam are indicated by a small camera icon on the map.

Clicking on this icon opens a pop-up window showing a preview of the latest image of this station. If several IP cams are installed at the station, previews are shown for each camera installed.

Clicking in the preview opens a large display of the image in a separate window.

7 Web interface

Starting with version 4.00.0 a web interface is available for OTT Hydras 3 net. A large part of the OTT Hydras 3 net functions can be called up in an Internet browser.

The web interface is a paid option for OTT Hydras 3 net Server. If required, it can be unlocked with an activation code.

The activation code is bound to the respective license key of OTT Hydras 3 net; it is not transferable to other OTT Hydras 3 net servers. In addition, the activation code regulates the maximum number of concurrent users logged on to the server (e.g. 10). Any number of users can be created in the user administration; the number of users logged on to the server at the same time is limited. In order not to experience any restrictions, it is important that a user explicitly logs out of the web interface at the end of a browser session ("Logout" button).

7.1 Setting up a Web interface for a workspace

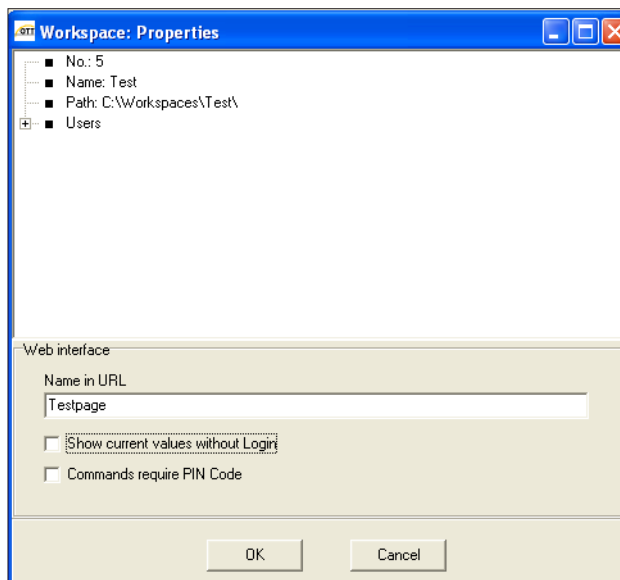
How to activate the Web interface

- Select menu "File", function "Activate function" → the dialog window "Activate function" opens.
- Enter the activation code and click on the "Activate" button → OTT Hydras 3 net now displays the entry " Web Interface" under "Activated Functions".
- Click on "OK".

Enter name for workspace and set options

- Select the desired workspace in the tree view.
(Workspace that is to be accessible in the Internet browser).
- Open the properties dialog of the workspace with a right click → the "Workspace: Properties" dialog box opens.
- Enter the part of the name (within the URL) for this workspace.

Fig. 27: Enter name for workspace (within the URL) and set options.



■ Set options if required:

- „ Show current values without Login“

Shows current values in tabular and graphical form on the start page of the web interface, even if the user is not logged in.

- „ Commands require PIN code“

Every command that changes a data logger setting must be secured with a PIN code. OTT Hydras 3 net sends the required PIN code via SMS to a mobile phone.

Prerequisite: a mobile phone number must be assigned to a user in the user profile (see below). OTT Hydras 3 net must also be configured so that it can send SMS via Twilio. (→ choose the menu "File"; function Options (F2), register "Communication", register "Send SMS", " SMS via Twilio"). Twilio is a service that allows you to send SMS messages over the Internet. To use this service, you need a Twilio account with a cost.

- Click on "OK".

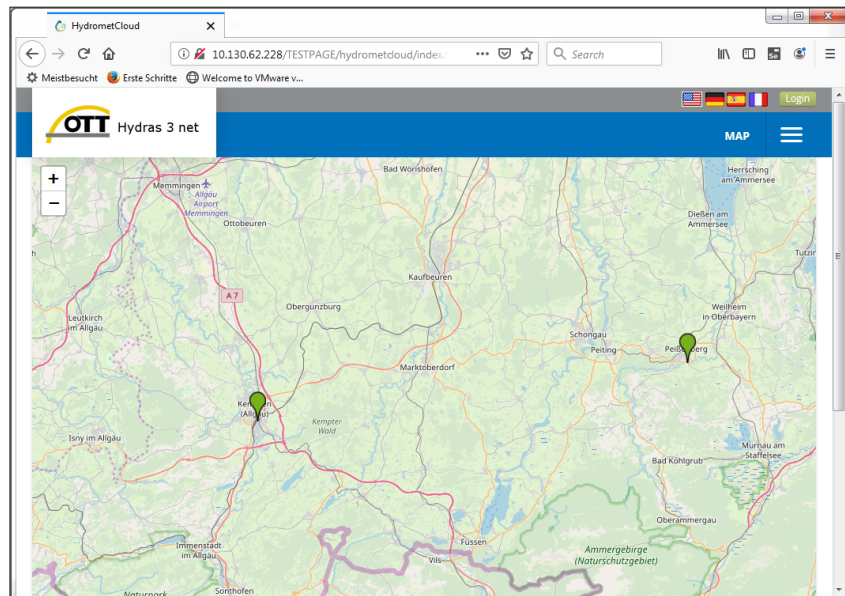
7.2 Calling the Web interface

- Start Internet browser.

- Call the start page of the workspace via URL "http://Server name/Page name" or "https://Server name/Page name" → the start page of the OTT Hydras 3 net web interface opens with a map display.

* a secure connection requires a valid certificate of the server.

Fig 28: Web interface of OTT Hydras 3 net.



- **Note:** In order for OTT Hydras 3 net to display a station in the map, the corresponding longitude and latitude must be entered in the "Map" tab of the measurement station configuration.

- Click on the "Login" button (top right in the browser window) and enter your user name and password. (Without a login only a limited functionality is available in the web interface of OTT Hydras 3 net.)

- **Note:** In order not to experience any restrictions, it is important that a user explicitly logs out of the web interface at the end of a browser session ("Logout" button).

7.3 Managing users

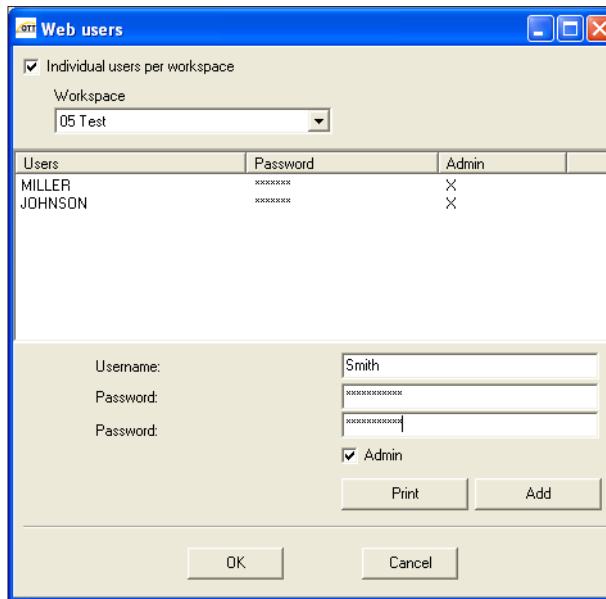
You have two options for managing users for the Web interface:

- directly in the interface of the OTT Hydras 3 net Server
- for users with OTT Hydras 3 net administrator privileges in the web interface

... under OTT Hydras 3 net server

- Choose the menu "Extras", function "Web user" → the dialogue window "Web user" will open:

Fig. 29: User management for the OTT Hydras 3 net web interface.



By default, created users have identical rights for all workspaces. In connection with the web interface, however, it makes sense to define users individually for each workspace. Prerequisite for this: "User management per workspace" is activated; see Appendix A.

- Select the desired workspace.
- Create a new user: enter the user name.
- Enter the password for this user twice.
- Assign administrator privilege for the Web interface: activate checkbox " Admin".
- Click on the "Add" button.
- If necessary, delete user: Select the user in the list and press the "Remove" button.
- Click on "OK" → a prompt appears asking whether the newly created users should also be created in the privilege manager.
Users who are created in the privilege manager automatically receive full privileges. If necessary, you can then adjust these accordingly. If no users are entered in the privilege manager, all users from the user administration have full rights. Details on the Privilege Manager can be found in Chapter 3.

- **Note:** At least one of the created users must have the right to change privileges in OTT Hydras 3.

... under the Web interface

To manage users in the Web interface, at least one of the created users must have the right to change privileges in OTT Hydras 3.

- Log on to the web interface with a user with OTT Hydras 3 administrator privileges.
- Select the "User list" menu item. The user list shows the existing users. Existing users can be edited or deleted; new users can also be added by clicking the "Create user" button.
- Enter for every new user: password, phone number, e-mail address, language setting and a potential administrator privilege. In addition, select which pages are available as links for this user
 - Station list: List of all stations of the workspace
 - Sensor list: List of all sensors of the workspace
 - Alarms: list of all stations, that are in an alarm state
 - Data evaluation: display of data as diagram or chart and download
 - Measuring network: condition of the measurement network as well as tabular view of the station settings with possibility to change parameters

The map view is available for every user and does not have to be set explicitly.

The following sections provide an overview of the individual pages.

7.4 Map view

In the map view, a marker represents one station at a time. If there are many stations close to each other, they are combined into a cluster that represents the number of stations contained. By zooming in or clicking into the cluster, the cluster dissolves into the individual stations.

The colour of the markers indicates whether stations are in alarm or not:

- red: the highest upper limit has been exceeded or the lowest lower limit has been fallen below;
- orange: a limit other than the highest limit has been exceeded or fallen below;
- green: the station is not in alarm condition.

If a user is logged in (or the option "Show current values without login" is activated), a table of the last available measured values of this station appears when the mouse pointer is moved over the marker. Sensors in an alarm state are marked in color accordingly.

Clicking on a station marker displays an area with information on the respective station below the map:

- ▶ Table with current data,
- ▶ diagram with graphically displayed sensor values,
- ▶ general information about the station,
- ▶ a possibly uploaded picture of the station,
- ▶ a current image of a webcam connected to the station (if available).

7.5 Station list

The station list displays all stations of the workspace alphabetically sorted by name.

Clicking the station name takes you to a page where station details such as latitude and longitude can be displayed and edited. A static image of the station can also be uploaded. To do this, first click on the "Edit" button and then on the "Select image" button. After clicking on "Save" the uploaded image appears in the page.

By clicking the "Add Stations" button above the station list, stations can be created manually on the server by uploading their configuration file. First, an XML or BIN configuration file of an OTT data logger must be selected. Then click on the button "Transfer file to server". If the configuration file was successfully transferred and processed, the detail page of the newly created station appears.

If you click on the link "Show in map" at the end of a station line, you will get to the map display, where only this station is shown.

7.6 Sensor list

The sensor list lists all sensors of the workspace in alphabetical order in tabular form.

The Alarm Limits column displays the alarm limits defined for a sensor, if applicable.

By clicking on the editing symbol, a dialog box appears in which up to 2 upper and 2 lower limits can be defined for this sensor. For each limit value, an additional address or address group can be defined, which is to be notified by mail or SMS if the value exceeds or falls below the limit value. The setup of these addresses is described in the section "Define alarm actions" below.

The settings "Reject High" or "Reject Low" can be used to define values above or below which a measured value is stored but marked as implausible with the attribute "Not for statistics".

Fig 30: Alarm limits in the Web interface of OTT Hydras 3 net.

Limit Type	Operator	Value	Notification
Reject High	>=	1000	Markus Mail
Red High	>=	5	Markus Mail
Yellow High	>=	4	Markus Mail
Normal			
Yellow Low	<=		Destination addresses.....
Red Low	<=		Destination addresses.....
Reject Low	<=	10	

Notification: Markus Mail (dropdown), Markus Mail (dropdown), Destination addresses..... (dropdown), Destination addresses..... (dropdown)

OK Cancel

7.7 Alarms

This page displays current alarm or system messages from the server. Individual messages can be deleted by clicking on the delete symbol at the end of the line. To delete all these messages, click on the delete icon at the end of the header.

Under these messages, all sensors are displayed that are in an alarm state because one of the upper or lower limits defined in Hydras 3 has been exceeded or fallen below. By clicking on the sensor name, details of this alarm appear.

7.8 Data evaluation

On this page you can visualize and download the measurement data of single or multiple sensors in tabular or graphical form.

First, the sensors to be visualized must be marked with a check mark in the tree view under "Sensor selection". It is also possible to display only certain stations or sensors in the tree by selecting the search type "Stations" or "Sensors" and entering a part of the station or sensor name in the search field. For example, to display all temperature sensors, set the type to "Sensors" and enter "Temperature" as the search text. By pressing the return key, the tree display is adapted accordingly. Clicking the X symbol resets the search. The display sequence can be switched between "Stations/Sensors" and "Sensors/Stations".

The time range for the data evaluation can either be selected from a predefined list, or explicitly defined via start and end time. Afterwards, a diagram or table can be displayed by clicking on the corresponding button or the files can be downloaded in MIS format or as Excel files..

In the graphic display, a separate diagram is first displayed for each sensor. By selecting "Single graph" all sensors can be combined in one diagram. If limit values are defined for a sensor, these are optionally shown in the diagram. The scaling of the Y-axis is automatic, but can be adjusted manually to the desired value range. If the mouse pointer is moved over the diagram, the value is explicitly displayed below the mouse pointer together with the associated time stamp.

You can switch between graphical and tabular view simply by clicking on the corresponding tab pages.

The tabular view displays a maximum of 200 values at once. If there are more values in the desired value range, the upper right corner shows 1 | 2 | 3 ... etc. Links to further pages are offered.

If data is downloaded in MIS format, a separate browser tab is opened. In Excel format a file "Report.xls" is downloaded directly.

7.9 Measuring network

This page basically provides the same information and functions as the corresponding page of the Windows user interface of OTT Hydras 3 net.

Status

The status page visualizes the status of the measurement network as a bar chart. To list stations that do not meet a certain criterion, click on the corresponding bar of the diagram.

Firmware

The firmware page first lists all OTT netDL stations with information about the device type and the current firmware. The device type can be changed between "OTT netDL", "OTT ecoLog 1000" and "Sutron Xlink 100/500" via the corresponding combo box. Stations can also be filtered by entering name components in the search field.

Stations can also be selected explicitly in the station tree on the left. To update the firmware list view, click on the button "Update".

To perform a firmware update of one or more stations, the corresponding stations must be displayed in the list. Then the firmware version to be installed must be selected in the corresponding combo box. By clicking on the button "Update firmware" and confirming the dialog, the corresponding commands for the firmware update are generated on the server. If the option "Commands require PIN code" is activated for this work area, an input field for entering the PIN code is displayed. The code will be sent to your mobile phone by SMS. The Hydras 3 net server must be configured for sending SMS via the Twilio service.

Configuration

This page lists all stations selected in the tree with information about the last transmission time and the current transmission interval. In the view to the right a click on a station shows a list of configuration files of that station, with the most recent configuration at the top. By clicking on a configuration file, this file appears in the detail area below. XML files are readable by humans. BIN files however not.

Commands

On this page you can list the commands currently available on the server as well as commands already executed.

By selecting a time range and clicking "Refresh" the commands are displayed in the selected time range. If a button such as "1 h" is clicked, the commands of the last hour are displayed without having to explicitly click on "Update".

In order to display commands of only certain stations, these stations must be selected in the station selection with a check mark and the option "Stations in selection list" activated. By clicking on "Refresh" the filtered commands appear.

Using a combo box, you can switch between new commands and confirmed commands.

To view a command in detail, click on it in the list. The details will then appear in the area below.

In addition, the currently selected command or all commands in the list can be deleted.

Messages

On this page you can list the messages received and logged on the server (if logging is enabled on the server).

The filter mechanisms correspond in principle to those of the commands. In addition, you can filter according to certain message types

Server

The configured servers for all selected stations are listed here. These servers can be filtered by server type and/or index.

If the logged-in user has the corresponding privileges, basic server settings such as address and port can also be changed here. If a setting has been changed, it is highlighted in light blue and the "Generate command" button is displayed. If this button is clicked and the dialog window confirmed, the corresponding commands for all edited settings are created on the server and these settings are highlighted in light green in the web interface.

As soon as the command has been processed and confirmed by the logger, the color of the changed setting changes to dark green or red in the event of an error.

Transmissions

In this view the configured transmissions for all selected stations are displayed. These can be filtered by index. If the user has the proper privileges, he can modify the transmission settings and generate the corresponding commands on the server.

Editing the list of transmitted channels can be done by clicking in the corresponding field. In the displayed sensor list multiple sensors can be selected by a mouse click, while holding the Ctrl-key pressed. A range of sensors can be selected by a mouse click with the Shift-key pressed.

Maintenance window

In this view the configured maintenance windows for all selected (netDL) stations are displayed as a list. The maintenance windows can be filtered by type and index.

Additionally the time ranges of the maintenance windows are visualized in a diagram.

Modifications of the maintenance window settings are not possible in the web interface.

Channels

In this view the channels of all selected stations are displayed in tabular form. This tabular view allows for an easy comparison of the settings of specific channels across multiple stations.

Not all modules of the configured channels are displayed, but only the most common settings like sampling- and storage interval (if it differs from sampling interval).

In case of existing limit/gradient modules, the corresponding settings will also be displayed. However only for the first limit/gradient module per sensor.

With the proper privileges the user can edit the settings and generate the corresponding commands on the server.

Diagnosis

In this view the diagnosis files stored on the server for each selected station can be listed and displayed in detail. To show the list of files for a specific station, the station has to be selected with a checkmark in the selection list and the "Refresh" button has to be clicked. When this station is then selected in the tabular view, the available diagnosis files are displayed in a list to the right in descending order. Additionally all logged error and warning message extracted from the OTT-ML headers of the data transmissions of the selected stations are displayed in a text area below the station list.

Clicking on a diagnosis file name shows the content of that file in a text area below the file list.

By clicking on the "Request diagnosis file" button, commands are created for all stations in the tabular view to request the diagnosis file.

User with administrative privileges additionally can access the following pages from the selection menu in the upper right corner.

7.10 Account settings

In this page general informal settings for the account can be defined, e.g. the timezone or data about a contact person.

7.11 User List

In the user list all users that have been created in the Hydras 3 user management ("Extras" | "Web Users") are listed and can be edited or deleted. New users can be added by clicking on "Create User".

More details can be found in the section about user management.

7.12 Define Alarm Actions

In Hydras 3 alarm limits can be defined for sensors so that notifications via SMS or E-MAIL are sent in case of exceeding or falling below these limits. The recipients of these notification can be defined in the section "Define Alarm Actions".

Click on "Add action" to add an alarm action (=recipient). A dialog window is shown, in which name, type (SMS or E-MAIL) and the corresponding mail address/phone number have to be defined.

To be able to send either mail or SMS, the server has to be properly configured in the options dialog (F2) on page "Communication".

Alarm actions can be grouped, so that notifications are sent to multiple recipients. To do so, click on "Add alarm group", define a name for the group and repeat selecting an action from the combo box and clicking "Add action" until all desired actions are added to the new group.

By clicking on the corresponding symbols alarm actions and groups can be edited or deleted.

8 Integration of Sutron Xlink 100/500 data logger

In addition to OTT netDL and OTT ecoLog 1000 data loggers, you can also manage Sutron Xlink 100 and 500 data loggers with OTT Hydras 3 net. The prerequisite for this is firmware version 827r3087 or higher.

If a Sutron Xlink 100/500 data logger sends data to OTT Hydras 3 net for the first time and no configuration of this data logger has been created there, OTT Hydras 3 will query the configuration automatically. OTT Hydras 3 net then automatically creates a new configuration.

Sutron Xlink 100/500 data loggers send data in OTT MIS format. In contrary to the OTT-ML format, not all metadata is available (e.g. no supply voltage). Therefore the status display is reduced (only up-to-dateness of data and firmware version).

The following management operations can be performed with OTT Hydras 3 net and Sutron Xlink 100/500 data loggers:

- ▶ Execute firmware update
- ▶ Display configuration history and upload configuration files per command
- ▶ Display and change various server settings;
for example server address and network port
- ▶ Display and change various transmission settings;
for example transmission interval
- ▶ Change various channel settings;
for example query and storage interval
- ▶ Display received messages (if logging is enabled)
- ▶ Display current and confirmed commands on the server

As a user you can operate Sutron Xlink 100/500 data loggers in OTT Hydras 3 net like OTT netDL and OTT ecoLog 1000. Internally OTT Hydras 3 net generates different commands which can be processed by the Sutron Xlink data loggers.

Annex A – Settings for multi-tenancy

Most settings of the OTT Hydras 3 net Server are global settings and are valid for all workspaces. These are e.g. settings for the logging of messages or limit values for alarm messages if the battery voltage is insufficient.

However, in many cases it makes sense to make individual settings for a workspace. Particularly, if OTT Hydras 3 net is used in a multi-tenancy environment where the individual workspaces are completely separated from each other.

To overwrite global settings (→ Menu "Options"; Register "Hydras 3 net") individually for a workspace, you have to use a text editor to create a configuration file "Workspace.cfg" in the relevant directory of the workspace.

You may now enter the required settings in the form "name=value" into this configuration file.

```
Example: Log_Data_Messages=1
         Station_Status_Low_Voltage=10.5
         import_OTTML_BatteryVoltageSensor=0301
```

Name	Meaning
▶ Maximum_Station_Count	Maximum admissible number of stations in the workspace
▶ Web_Server_Enforce_HTTPS	Shall the HTTPS transmission protocol for this workspace be forced? 0 = no 1 = yes
▶ Web_Server_Allow_Logger_HTTP	Shall the HTTP transmission protocol be allowed for data loggers, even if HTTPS per "Web_Server_Enforce_HTTPS=1" is forced? 0 = no 1 = yes
▶ Web_Server_Logger_Auth	Do data loggers have to authenticate themselves at the server? -1 = global setting is valid 0 = no 1 = yes
▶ Web_Server_Disable_HTML_interface	Deactivate HTML Interface for this workspace? -1 = global setting is valid 0 = no 1 = yes
▶ Log_Data_Messages	Log data messages for this workspace? -1 = global setting is valid 0 = no 1 = yes
▶ Log_Ack_Messages	Log acknowledge messages for this workspace? -1 = global setting is valid 0 = no 1 = yes
▶ Log_Alarm_Messages	Log alarm messages for this workspace? -1 = global setting is valid 0 = no 1 = yes

Name	Meaning
▶ Log_Image_Messages	Log image messages for this workspace? -1 = global setting is valid 0 = no 1 = yes
▶ Log_Other_Messages	Log other messages for this workspace? -1 = global setting is valid 0 = no 1 = yes
▶ import_OTTML_BatteryVoltageSensor	Sensor number where battery voltage from OTT-ML Header shall be saved
▶ import_OTTML_TemperatureSensor	Sensor number where internal temperature from OTT-ML Header shall be saved
▶ import_OTTML_HumiditySensor	Sensor number, where internal, relative humidity (only for OTT ecoLog 1000) shall be saved
▶ import_OTTML_GSMsignalSensor	Sensor number where (GSM) signal strength from OTT-ML Header shall be saved
▶ import_OTTML_TransmissionCycleSensor	Sensor number where transmission interval from OTT-ML Header shall be saved
▶ Station_Status_Low_Voltage	Limit value for battery voltage on status window
▶ Station_Status_Low_Signal	Limit value for signal strength on status window
▶ Station_Status_Default_netDL_Firmware	Target firmware version for OTT netDL data loggers
▶ Station_Status_Default_ecoLog1000_Firmware	Target firmware version for OTT ecoLog 1000 data logger (e.g. V1001)
▶ Station_Status_Default_XLink100_500_Firmware	Target firmware version for Sutron 100/500 Datenlogger (e.g. V8273087)
▶ Station_Status_Max_Data_Age	Maximum age of data for aperiodic sensors (1 = 1 day; 0.5 = 0.5 day)

User management per workspace

If you want to manage web users individually per workspace (instead of collectively for all workspaces) you need to set the Microsoft Windows Registry key

```
HKEY_CURRENT_USER\Software\Ott-Hydrometry\Hydras3\Com...
...munication\WebUserPerWorkspace
```

to the value "1" and restart OTT Hydras 3 net.

Then use the option "Extras | Web user" to select a workspace and assign web users individually to this workspace (checkbox "User per workspace" must be active).

If you create a new user in this process, OTT Hydras 3 net will aks you if you want to create this user also for the administration of rights (privilege manager). If you answer negatively the new user will not be assigned any rights at all. It is possible to create the new user manually in the administration of rights at a later time.

Annex B – Install OTT Hydras 3 net Server as system service

You can install OTT Hydras 3 net Server as system service by using the executable file "Hydras3Svc.exe" (service host). Subsequently, OTT Hydras 3 net Server is available as system service when you start the PC. External tools like "SrvAny" or "RunAsSvc" are no longer required.

How to install OTT Hydras 3 net Server as system service:

Installing the software

- Install OTT Hydras 3: run the file "Setup.exe" and follow the installation instructions on the screen.
- Start the application OTT Hydras 3 (file "Hydras3.exe").
- Enter licence key for OTT Hydras 3 net Server.

Preparing the software

- Set up OTT Hydras 3 net Server:
 - Create workspaces; please keep in mind: path specifications may not contain "mapped" network drive letters! (These are not available for the system service!) Alternatively you can indicate UNC network paths! The same applies to any path definition, e.g. the export path for an export job.
 - Activate Web Server for HTTP and/or HTTPS (Menu "File | Options", register "Web Server").
 - Configure message protocol (Menu "File | Options", register "Hydras 3 net")
 - Configure criteria for status check (Menu "File | Options", register "Hydras 3 net")
 - Optional: create users for client access (Menu "Extras | Web user")
 - Optional: assign authorizations (Menu "Extras | Privilege manager")
- Restart OTT Hydras 3 net Server to save the server settings.
- Check:
 - Do you receive data?
 - Does access via an OTT Hydras 3 net client work?
- Execute function "Save System Service Options" in the menu "File". Hereby you overtake registry-settings and configuration files of the current user into the SYSTEM account.
- Quit OTT Hydras 3 net Server.

System service start

- In a command line window, go to the directory "HYDRAS3" and enter

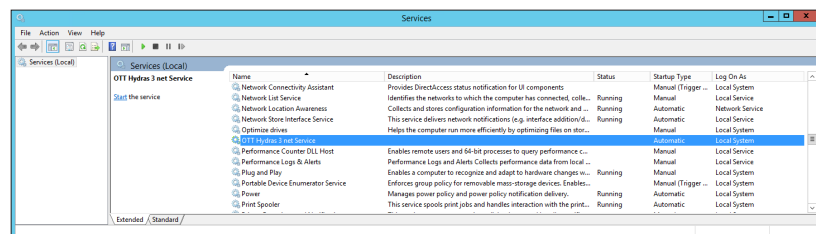
```
C:\Program Files (x86)\OTT\HYDRAS3>Hydras3Svc /install
```

A message appears that the system service has been installed successfully.

- The system service "OTT Hydras 3 net Service" is now displayed in the Computer Management under "Services":

Fig. 31: Installing system service in the command line window.

Fig. 32: Computer Management, „Services“.



- To start the OTT Hydras 3 net Server automatically when the PC is restarted, go to "Properties" of the system service (context menu) and set the start type to "Automatic".
- "Data exchange between system service and desktop" should be activated in the "Properties" of the system service (context menu) because this ensures that any error messages will be displayed on the screen.
- Now you can start the system service using the context menu or by clicking the link "Start service".
- After a few seconds the status "running" will be displayed for the system service and it is now possible to access the server per OTT Hydras 3 net Client.

If the PC is restarted the OTT Hydras 3 Service is automatically started as well, without the need for a user login.

Changing server settings

It is not possible to change basic settings of the server like e.g. port of the server, settings of certificates, creating or deleting new users via a client! For this, the server has to be executed temporarily as application.

How to change server settings of the system service:

- Quit the system service OTT Hydras 3 net Server in the computer management.
- Start the application OTT Hydras 3 net Server (File "Hydras3.exe").
- Make changes in the user interface of the OTT Hydras 3 net application (e.g. in the options dialogue or in the user management).
- Execute the function "Save options for execution as system service" in the menu "File" to execute the recent changes for the service as well.
- Quit application OTT Hydras 3 net Server.
- Restart service OTT Hydras 3 net Server.

Annex C – Forwarding data to an other HTTP Server

It is possible to forward OTT-ML data which have been received via HTTP(S) to an other (OTT Hydras 3 net) Server via HTTP(S).

To do this, you have to create a configuration file "DataForward.txt" in the relevant workspace.

In this file you can make the following settings:

```
mode=1
serverurl=http://...
```

The direct transmission to an other server is configured with "mode=1". In this case you have to define the parameter "serverurl" which specifies, where to send the OTT-ML data to.

This URL may reference an HTTP or HTTPS server. With the tag "<STATIONID>" it is possible to integrate the station number of the relevant station into the URL.

Example for a URL of an OTT Hydras 3 net Server:

```
serverurl=http://hydras3.abc.com/otml.htm?action=senddata&ws=1...
...&stationid=<STATIONID>
```

If the server needs an authentication in the form of a username and password, these have to be entered in the configuration file by "username=..." and "password=...".

If a proxy is needed for transmission it can be specified by "proxyhost=..." and "proxyport=...".

Direct export of received data

If "DataForward.txt" "mode=0" is used in the configuration file the OTT-ML data which has been received will not be forwarded to any other server. The data will be exported as file to a directory directly after reception.

The directory is specified with "path=...", the filename with "filename=...".

For the path and also for the filename you may use the following placeholders which are replaced at the time of the export:

- ▶ #N is replaced by the 10-digit station number
- ▶ #S is replaced by the 4-digit sensor number
- ▶ #Y is replaced by the 4-digit current year
- ▶ #M is replaced by the 2-digit current month
- ▶ #D is replaced by the 2-digit current day
- ▶ #H is replaced by the 2-digit current hour
- ▶ #I is replaced by the 2-digit current minute
- ▶ #E is replaced by the 2-digit current second
- ▶ #Z is replaced by the 3-digit current millisecond
- ▶ #T is replaced by the current timestamp (which is #Y#M#D#H#I#E)

Data which is received in the OTT-ML format is usually also saved as OTT-ML file. It is also possible to change the output format into MIS or ZRXP.

To specify the target format, the line "format=MIS" or "format=ZRXP" must be added to the configuration file. In the options dialogue of the ZRXP export option it is specified, which header of the ZRXP format will be used (CKONV, SANR/CNR, REXCHANGE).

If an "#S" is used in the filename this indicates that a separate file will be generated for each sensor (only in MIS or ZRXP format).

To enable complex dynamic file names which cannot be generated by simple placeholders, so-called lookup tables may be used.

A lookup table offers the possibility to assign a different string of characters to e.g. each station number:

Example:

```
0000000001=Station1  
0000000002=Station2
```

These assignments can be saved in a text file.

To reference this file for the direct export, a line "lookup=..." has to be added to the configuration file which includes the filename (including path).

To access the lookup table e.g. in the filename, the placeholder #LOOKUP is used.

Example:

```
filename=Test_#LOOKUP(#N).mis
```

First the placeholder "#N" is replaced by its value e.g. "0000000001" (station number). Then the lookup table is searched for what is assigned to "0000000001" to replace the "#LOOKUP" placeholder, resulting in the filename "Test_Station1.mis".

Annex D – Reception of data from Sutron data loggers via TCP Socket

From version V 3.08.0 of OTT Hydras 3 net it is possible to receive data from various Sutron data loggers directly via TCP Socket.

The designated TCP Socket has to be activated explicitly in the registry. For this, you have to indicate the port number which is supposed to "listen" to incoming messages/data in the registry-key

```
HKEY_CURRENT_USER\Software\Ott-Hydrometry\Hydras3\...  
...Communication\Data_Socket_Port
```

The data loggers have to send data in the following CSV format:

```
1  
_9210XLITE  
0  
04/13/2017,08:50:50,BATT,11.97,V,G  
04/13/2017,08:50:40,BATT,11.96,V,G  
04/13/2017,08:50:30,BATT,11.96,V,G
```

The first line specifies the session type (0 or 1). OTT Hydras 3 net supports both variants which follow slightly different procedures.

The second line indicates the station name as it was configured in the data logger. This name has to correspond to the 10-digit OTT Hydras 3 net station number.

Then follow the measured values, consisting of date, time, name of measurement, measured value, measurement unit and a quality indication ("G" → "Good").

The name of measurement must correspond to the 4-digit sensor number to enable OTT Hydras 3 net to make an unambiguous assignment.

Supported data loggers

The following data loggers support the data transmission to a TCP Socket in CSV format:

Data logger	Session Type 0	Session Type 1
▶ Sutron Xpert2 (GPRS modem; LAN)	3.11.0.26	3.22.0.5
▶ Sutron 9210B (GPRS modem; LAN)	3.11.0.26	3.22.0.5
▶ Sutron 8310 (GPRS modem; LAN)	2.0.23	2.12.5
▶ Sutron 7310 (GPRS modem)	2.12.5	

The firmware versions of the different data loggers indicated in the table show, starting from which version data transmission in CSV format is supported.

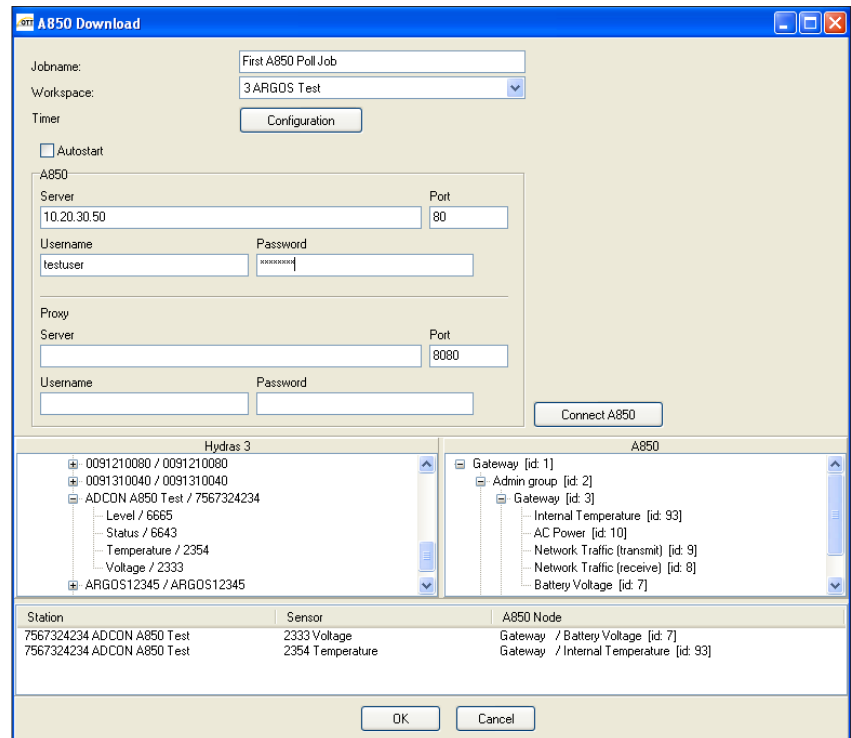
Annex E – Automatic data retrieval from Adcon A850 Gateways

To retrieve data automatically from an Adcon A850 Gateway, OTT Hydras 3 provides the job type "Adcon A850 Download Job".

How to create an Adcon A850 download job:

- Choose the menu "Extras | Job Manager".
- In the dialogue window "Job Manager", choose the menu "File | Adcon A850 Download Jobs".
- Click on the "New" button in the dialogue window "Adcon A850 Download" → a dialogue window for a new Adcon A850 download job opens:

Fig. 33: Dialogue window to enter the required parameters for an Adcon A850 download job.



- Enter job name, choose workspace and configure execution times.
- Enter IP-address of A850 Gateway with assigned port, user name and password for the login at the gateway.
- Optional: if using a proxy-server enter the corresponding settings.
- Click on the "Connect A850" button → OTT Hydras 3 establishes a connection to the A850 Gateway and displays the sensors which are available at the gateway in the tree view under "A850" in a hierarchical order.
- Establish links between A850 sensor nodes to Hydras 3 sensor nodes: move all required sensor nodes from the A850 tree view one after the other per Drag&Drop onto the relating sensor nodes in the Hydras 3 tree view → the link created hereby appears in the list below the two tree views. (Delete entry: mark entry and click on the "Del" key.)

Please note: the Hydras 3 tree view displays only the relevant subtree of the workspace chosen. When switching to an other workspace, the established links will be lost!

During the execution of the A850 download jobs, OTT Hydras 3 establishes a connection to the A850 Gateway at the defined execution times and sends a data call for every sensor on the list. Then OTT Hydras 3 overtakes the data automatically by the autoimport function. If no autoimport path is established for the relevant workspace this is done automatically when the download job is executed for the first time.

Annex F – Automatic data retrieval from Hydromet Cloud Servers

To retrieve data automatically from a HydrometCloud Server, OTT Hydras 3 provides the job type "HydrometCloud Download Job".

How to create an HydrometCloud download job:

- Choose the menu "Extras | Job Manager" → the dialogue window "Job Manager" opens.
- Choose the menu "File | HydrometCloud Download Jobs" → the dialogue window "HydrometCloud Download" opens.
- Click on the "New" button → a dialogue window for a new HydrometCloud Download Job opens:

Fig. 34: Dialogue window to enter the required parameters for a HydrometCloud Download Job.

Station	Sensor
MONTAIGNE_36	Alimentation
MONTAIGNE_36	Niveau
MONTAIGNE_36	Température

- Enter job name.
- Choose workspace.
- Configure execution times (Timer, button "Configuration").

- If required, activate the "Start date" checkbox and select the date. This defines a point in time from which the data are loaded at the first retrieval. If the checkbox is deactivated, OTT Hydras 3 net retrieves the last 7 days by default. All subsequent jobs automatically load data from the last available measured value of a sensor.
- If necessary, activate checkbox "Convert UTC time to local time" and select time difference (UTC to local time). This converts the time provided by the Hydromet-Cloud server to local time.
- Enter the credentials of the HydrometCloud server: IP address, associated port, ClientID and API key.
- If required, enter the credentials of a proxy server: IP address, associated port, user name and password.
- Click on the "Connect HydrometCloud" button → OTT Hydras 3 establishes a connection to the HydrometCloud server and displays the stations and sensors available on the server hierarchically in the tree view under "HydrometCloud".
- Click on the "Import Configuration" button → if not already available OTT Hydras 3 net retrieves the configuration from the HydrometCloud server for each station and sensor and creates it correspondingly in OTT Hydras 3 net (the HydrometCloud station ID differs from the OTT Hydras 3 station ID and is stored as station variable "HC_ID"). This can take some time depending on the number of stations and sensors as well as the transmission speed. If stations or sensors are added to the HydrometCloud server at a later time, you can call this function again.
- Select stations and sensors whose data are to be downloaded by the job from the HydrometCloud server:
 - Variant 1
 - " Download all stations": loads the data of all stations and additionally
 - " Download all sensors": loads the data of all sensors of these stations
 - or
 - " Download these sensors": loads only the data of the sensor types, listed in the list to the right; drag the desired sensors from the tree display to this list using "Drag&Drop".
 - Variant 2
 - " Download all stations": loads only the data of the stations and sensors that are listed at the bottom of the list; drag the desired sensors from the tree display to this list using "Drag&Drop".
 - If a station is in the list, the data of all sensors of this station will be loaded, unless " Download these sensors" is activated.
 - In this case only the data of the explicitly listed sensor types are loaded.

Annex G – Optimizing the auto-import performance

The OTT Hydras 3 net server can receive data from several hundred stations. If these stations send data almost simultaneously, the performance of OTT Hydras 3 net may be significantly reduced: an auto-import for data transfer temporarily restricts the interaction with the user interface of OTT Hydras 3 net.

As of version V 4.00.0, there are various options available for optimizing an auto-import. Specific settings in the Microsoft Windows Registry allow you to significantly increase the auto-import speed and prevent the user interface from being impaired.

With these settings the auto-import can be optimized:

Key name	Description
▶ AutoImport_Thread	Should the auto-import take place in a separate thread in the background so that interaction with the user interface is not restricted? 0 = no → performance as before 1 = yes → optimized performance
▶ AutoImport_InMemory	Should the received data be buffered exclusively in the working memory before being processed by the auto-import? 0 = no → performance as before, i.e. OTT Hydras 3 net first saves the data in a file in the Autoimport directory and then imports it from there. 1 = yes → optimized performance. OTT Hydras 3 net does not generate a file, but the auto-import is done directly from the working memory.
▶ AutoImport_TDB	Should OTT Hydras 3 net compare the new data to be imported with the existing data in the sensor database in the working memory, or should a temporary database table be created in the file system for this purpose? 0 = yes → Optimized variant with data synchronization in the working memory 1 = no → slower variant with data synchronization via database table in file system

All Microsoft Windows Registry keys are located under
HKEY_CURRENT_USER\Software\Ott-Hydrometry\Hydras3\General

- **Note:** Use the setting "AutoImport_TDB = 0" only on systems where access to OTT Hydras 3 data is exclusively via the web interface, or read-only by other OTT Hydras 3 instances (OTT Hydras 3 Windows Clients). No data import via OTT Hydras 3 Windows is allowed! Likewise no data may be edited on the clients! Otherwise a correct synchronization of the write access by several users is no longer guaranteed! In case of doubt, do not use this setting.

Change in message logging

Up to version V 3.08.0, the OTT Hydras 3 net server stored received messages in the directory "...\\Hydras3\\MessageLog" and additionally managed them in the message database "OTTMLMSG.DB".

As of version V 4.00.0 OTT Hydras 3 net no longer uses a message database and stores received messages in the directory "...\\Hydras3\\MsgLog" in a slightly modified way. For users, the changes to the user interface are not visible; however, they offer improved performance and system stability.

Previously received messages (after 14 days an automatic deletion takes place) can no longer be viewed with the new OTT Hydras 3 version.

If this should be necessary nevertheless, a script is available under the following link, which takes over the transfer and the conversion of the past messages into the new directory.

<https://hydras3net.ott.com/free/MoveMessageLogToMsgLog.txt>

If required, download and save this encrypted script in the directory "...\\Hydras3\\Plugins\\Workspace". After restarting OTT Hydras 3 net Server it can be called by right-clicking on any workspace node via "Plugins" | "MoveMessageLogToMsgLog". The transfer takes place in the background. Afterwards the previous messages can be displayed again in the OTT Hydras 3 net user interface.

Document number
56.570.006.B.E 05-0919



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