

imc LINK 1.2

User's Manual

Doc. Rev.: 4 - 2020-09-07



Foreword

Thank you for deciding to purchase our product. We wish you total success in accomplishing your measurement assignments with the help of your hardware and software. If you have any open questions about our products, please contact our Hotline (hotline@imc-tm.de).

Disclaimer of liability

The contents of this documentation have been carefully checked for consistency with the hardware and software systems described. Nevertheless, it is impossible to completely rule out inconsistencies, so that we decline to offer any guarantee of total conformity.

We gratefully accept any suggestions for improvements, please contact our Hotline (hotline@imc-tm.de).

We reserve the right to make technical modifications of the systems.

Copyright

© 2020 imc Test & Measurement GmbH, Germany

This documentation is the intellectual property of imc Test & Measurement GmbH. imc Test & Measurement GmbH reserves all rights to this documentation. The applicable provisions are stipulated in the "imc Software License Agreement".

The software described in this document may only be used in accordance with the provisions of the "imc Software License Agreement".

imc Software and Microsoft® Windows

imc software runs on the Microsoft® Windows operating system.

GPL Sources

Some components of our hardware use software, that is licensed under GNU General Public License (GPL). If you would like a copy of the GPL source code contained in this product please contact our Hotline.

1 General Notes	4
1.1 Before you Start	4
1.2 Notes / Quality Management	4
1.3 imc Customer Support / Hotline	5
1.4 imc Software License Agreement	5
1.5 Introduction - What does imc LINK do ?	9
1.6 Installing imc LINK	10
1.7 Licensing	10
2 Operation	11
2.1 Procedure	11
2.2 Calling by command line	13
2.3 Online Mode	14
2.4 Offline Mode	14
2.5 UDP Status Monitoring	15
3 Themes	19
3.1 Device Settings	20
3.2 Status	26
3.3 Log Book	27
3.4 Actions	28
3.5 Project-Settings	29
3.6 Map	35
4 User-Interface	36
4.1 Menu description	36
5 Tutorial	39
5.1 Tutorial: UDP Status Monitoring	40
5.2 Tutorial: imc FAMOS sequence in imc LINK	42
6 Technical Specs	43
Index	45

1 General Notes

Welcome to imc LINK

In this manual, you will find a detailed description of how to operate the software.

Customer Support / Hotline

If you have any open questions about our products, please contact our Hotline.

Questions or problems? Contact our [Customer Support / Hotline](#) .

Copyright

© 2020 imc Test & Measurement GmbH. All rights reserved.

1.1 Before you Start

Dear user.

1. The software you have obtained, as well as the associated manual are directed toward competent and instructed users. If you notice any discrepancies, we request that you contact our [Hotline](#) .
2. Updates during software development can cause portions of the manual to become outdated. If you notice any discrepancies, we request that you contact our Hotline.
3. Please contact our Hotline if you find descriptions in the manual which you believe could be misunderstood and thereby lead to personal injury.
4. Read the license agreement. By using the software, you agree to the terms and conditions of the license agreement.

1.2 Notes / Quality Management

Quality Management



imc Test & Measurement GmbH holds DIN-EN-ISO-9001 certification since May 1995. You can download the CE Certification, current certificates and information about the imc quality system on our website: www.imc-tm.com/quality-assurance/.

imc Warranty

Subject to the general terms and conditions of imc Test & Measurement GmbH.

Product Improvement and change requests

Please help us to improve our documentation:

- What terms or descriptions are incomprehensible?
- What additions and enhancements you suggest?
- Where have material mistakes slipped in?
- Which spelling or typing errors have you found?

Responses and other feedback should be directed to the [Hotline](#)  (phone / e-mail) or by writing to: imc Test & Measurement GmbH, Voltastrasse 5 in 13355 Berlin, Germany

1.3 imc Customer Support / Hotline

If you have problems or questions, please contact our Customer Support/Hotline:

imc Test & Measurement GmbH

Hotline Berlin (Germany): **+49 (0)30 / 467090-26**

Hotline Frankfurt (Germany): **+49 (0)6172 / 59672-40**

E-Mail: hotline@imc-tm.de

Internet: www.imc-tm.com

International partners

For our international partners see www.imc-tm.com/distributors/.

Tip for ensuring quick processing of your questions:

If you contact us **you would help us**, if you know the **serial number of your devices** and the **version info of the software**. This documentation should also be on hand. Thank you!

- The device's serial number appears on the nameplate.
- The program version designation is available in the About-Dialog.

1.4 imc Software License Agreement

imc Test & Measurement GmbH
Voltastrasse 5
13355 Berlin
Commercial register: Berlin-Charlottenburg HRB 28778
Managing director: Kai Gilbert, Ralf Winkelmann

imc Test & Measurement GmbH
Terms and Conditions
Governing the Use of imc Test & Measurement GmbH Software
As of: January 10, 2020

§ 1 Objects of the Agreement

- (1) In addition to the "General Terms and Conditions Governing imc Test & Measurement GmbH Deliveries and Services to Customers", these terms and conditions apply to all contracts concluded with imc Test & Measurement GmbH (hereinafter referred to as "imc") which involve the transfer of rights of use to any software developed by imc (standard software, software created or adjusted specifically for the Customer, which is recorded on the machine-decodable data carriers such as data files, databases and database material, updates, upgrades, releases, etc., including corresponding documentation, information and materials, hereinafter referred to as "Software").
- (2) The Software is provided to the Customer as an executable object program on machine-decodable data carriers specified in the "Objects of the Agreement". The Software's product documentation is also supplied to the Customer either in print or on a machine-decodable data carrier. Unless otherwise expressly agreed in writing, the Customer is not issued the source code of the Software.

§ 2 Rights of Use, Scope

With regard to any transfer of rights of use to Software created by imc, the following provisions apply:

(1) Basic provisions

- a) The Customer is granted a non-exclusive and – subject to the terms and conditions governing the use of Software by third parties, resale and leasing – non-transferrable right of use to the Software for its own purposes. "Use" signifies running the programs and editing the data records.
- b) Until each due fee is paid in full, the Customer is entitled to use the Software solely on a revocable basis. If the Customer is in default with regard to the payment of fees, imc is entitled to revoke the use of the respective services for the duration of the default. The Customer is granted the permanent right to use copyright protected services, in particular the Software, only upon full payment of the agreed fee.
- c) The Customer agrees to undertake appropriate precautionary measures to prevent unauthorized access by third parties to the Software. The original data carriers and the data carries used to make copies as per the agreement, as well as the documentation, are to be stored in a secure location. Employees are to be notified that the production of copies beyond the scope of the agreement is not permitted.
- d) If the right of use is revoked or expires due to another reason, the Customer is obligated to return to imc the Software, the copies made by the Customer and the documentation. Provided that a physical return of the Software and the copies is not possible due to technical reasons, the Customer is obligated to delete such and confirm deletion to imc in writing.

(2) Reproduction

- a) The Customer is entitled to make copies of the Software only if copies are necessary to use the Software in accordance with the contract. The following are considered cases in which reproduction is necessary: installation of the Software from the original data carrier onto the hard disk drive of the hardware used, as well as loading the Software into the computer memory.
- b) The Customer is entitled to create a backup copy if such is necessary to safeguard future use. Copies may only be made for other purposes after prior written consent has been issued by imc.
- c) The Customer is not allowed to make any reproductions other than those expressly permitted under the provisions of this agreement.

(3) Use of the Software by Third Parties, Resale and Leasing

- a) The Software may be used for the purposes stipulated in this contract, in particular for the Customer's business operations. Access to the Software may also be provided to parties which rely on using the Software as instructed by the Customer. In particular, the Customer is entitled to operate the Software or allow the Software to be operated on data processing devices, which are located on the premises of and are directly owned by a third party company (outsourcing). The prohibition against multiple use remains unaffected.
- b) The Customer may permanently sell or give the Software to third parties provided that the Customer is granted permanent use of the Software. In the context of its period of use, the Customer may temporarily transfer the Software to third parties for a fee or free of charge. The prohibition against multiple use remains unaffected. The Customer is expressly notified that transfer to third parties is not permitted and use by third parties is technically not possible if an individual license must be acquired or an individual activation is required for third party usage, such as in the case of runtime licenses.
- c) With regard to the valid use of Software by a third party, the Customer is obliged to ensure that the third party acknowledges the provisions of this agreement governing the rights of use as binding for such third party. The Customer may not transfer Software and documentation to third parties if there are grounds to suspect that the third party may infringe upon the provisions of this agreement governing the rights of use, in particular with regard to the unauthorized production of copies.
- d) Subject to the provisions stipulated in § 4 Paragraphs 1 and 2 or a deviating express agreement in writing, the Customer may not use the Software while the Software is being used by a third party (prohibition against multiple use); in the event that the Software is transferred to the third party, the customer is obliged to surrender to imc all Software copies including, if applicable, all existing backup copies, or to destroy copies not surrendered.

(4) Decompilation

The reverse translation of the provided program code into other code forms (decompilation), disassembling and other forms of reverse engineering of the various production phases of the Software is not permitted. If interface information is required to achieve the interoperability of a separately created computer program, such may be requested from imc, or a third party to be named by imc, for a minor fee. Section 69 e of the German Copyright Act ("UrhG") remains unaffected by this provision.

(5) Changes by imc

If imc conducts adjustments, changes or enhances the Software on behalf and on account of the Customer, the Customer thus acquires the corresponding rights of use to the changes or enhancements of the Software to which he is entitled according to the stipulations of this agreement.

(6) Exceptional Usage Requests by the Customer

If the Customer requests to use the Software according to terms which deviate from the requirements stipulated in Paragraphs 2 through 5, this exceptional use of the Software must be agreed in writing by imc. In such an instance, the Customer agrees to provide imc with information about the desired scope of use, the pertinent field of application, etc. If imc subsequently grants a license covering the Customer's special intended use, the parties agree that a new license fee is owed by the Customer, which is independent of payments made by the Customer for the previously existing license.

§ 3 Copyright, Protection of the Software

- (1) The intellectual property, in particular the copyright as well as all industrial property rights and trade secrets, are retained by imc and are not transferred to the Customer. The Customer's ownership of the machine-decodable data carries and data processing units remains unaffected.
- (2) Copyright notices, serial numbers as well as designations and reservations of rights which serve as program identification or a protective right may not be removed or changed. The Customer is obliged to transfer the existing protective right notices to all copies. In particular, backup copies of the Software must be expressly designated as such.

§ 4 License Types, Multiple Use

- (1) In the case of a Single-User License, the Software may be activated and run on only one data processing unit. "Activation" refers to the process of transferring the license to the data processing unit.
If the technical specifications for the Software permit a second activation, then the Customer may additionally activate the Software on a second data processing unit. However, the Software may only run on one data processing unit at any one time, not on both simultaneously.
- (2) With a Network License, the Software may be run on as many data processing units as the amount of licenses obtained. In this case a central data processing unit acts as the license server for which the activation process is performed.
If the technical specifications for the Software permit a second activation, then the Customer may additionally activate and run the Software on as many data processing units as the amount of licenses obtained. However, these additional data processing units must be used by the same users who operate the Software via the license server.
- (3) Subject to the provisions in Paragraphs 1 and 2 or a deviating express agreement in writing regarding network use, multiple use of the Software is not permitted.
- (4) If the data processing unit is changed, the Customer is obliged to delete the Software from the hard disk drive of the previously used hardware.

§ 5 Trial Version

If the Software used is a free trial version, then the following additional limitations apply:

- (1) The trial version only entitles the user to test the Software. In particular, commercially productive utilization is not permitted.
- (2) The rights of use granted expire after the elapse of a period stated in the product description.

§ 6 License Key

- (1) Upon delivery of the Software the Customer receives a License Key. Using this License Key, the Customer is able to activate the Software purchased. By means of this License Key the Customer can also view his license status and order updates and upgrades.
- (2) The License Key is to be protected against access by third parties in order to prevent misuse. If, however, a third party gains unlawful access to the Key, the Customer is obliged to notify imc immediately via telephone, as well as in writing, so that the previous License Key may be suspended and a new one issued.

§ 7 Conclusion

- (1) The law of the Federal Republic of Germany shall apply under exclusion of private international law. The provisions of the UN Convention on Contracts for the International Sale of Goods (CISG) do not apply.
- (2) The place of performance for all obligations arising from this agreement is imc's registered seat. Insofar as the Customer is a merchant as defined by the German Commercial Code (HGB), a legal entity under public law, or a special asset under public law, the exclusive place of jurisdiction for all disputes directly or indirectly arising from the contractual relationship is agreed as imc's registered seat. The same applies to persons who have no general place of jurisdiction in Germany, as well as to persons who have moved their place of residence or usual whereabouts abroad since conclusion of the contract, or whose place of residence or usual whereabouts is unknown at the time the action is filed. In addition, imc is entitled to file suit at the statutory venue.
- (3) Oral side-agreements are not valid. Deviating or supplementary conditions as well as modifications of this contract, including this written requirement clause, are only valid if agreed in writing and expressly marked as a modification or supplement.
- (4) If certain provisions of this contract are inoperative or unfeasible, this does not prejudice other provisions of the contract. The contracting parties agree to contractually substitute an operable provision which approximates the commercial intention of the contract as closely as possible for any inoperable one.

1.5 Introduction - What does imc LINK do ?

Remote device access, system monitoring and automatic transfer of the measured data

imc LINK enables the automated transfer and analysis of data files from an imc data acquisition system (or systems) to a computer. Remote systems may also be monitored in real time through imc LINK, including the live display of GPS based position on the computer that runs imc LINK.

By enhancing the networking ability inherent to all imc data acquisition systems, imc LINK is especially useful in environments where the network connection might be unreliable or available only occasionally. And even with reliable network connectivity, imc LINK assists with the collection, processing, and storage of data coming from many different concurrent data acquisition sources, such as test stands or fleet vehicle testing.

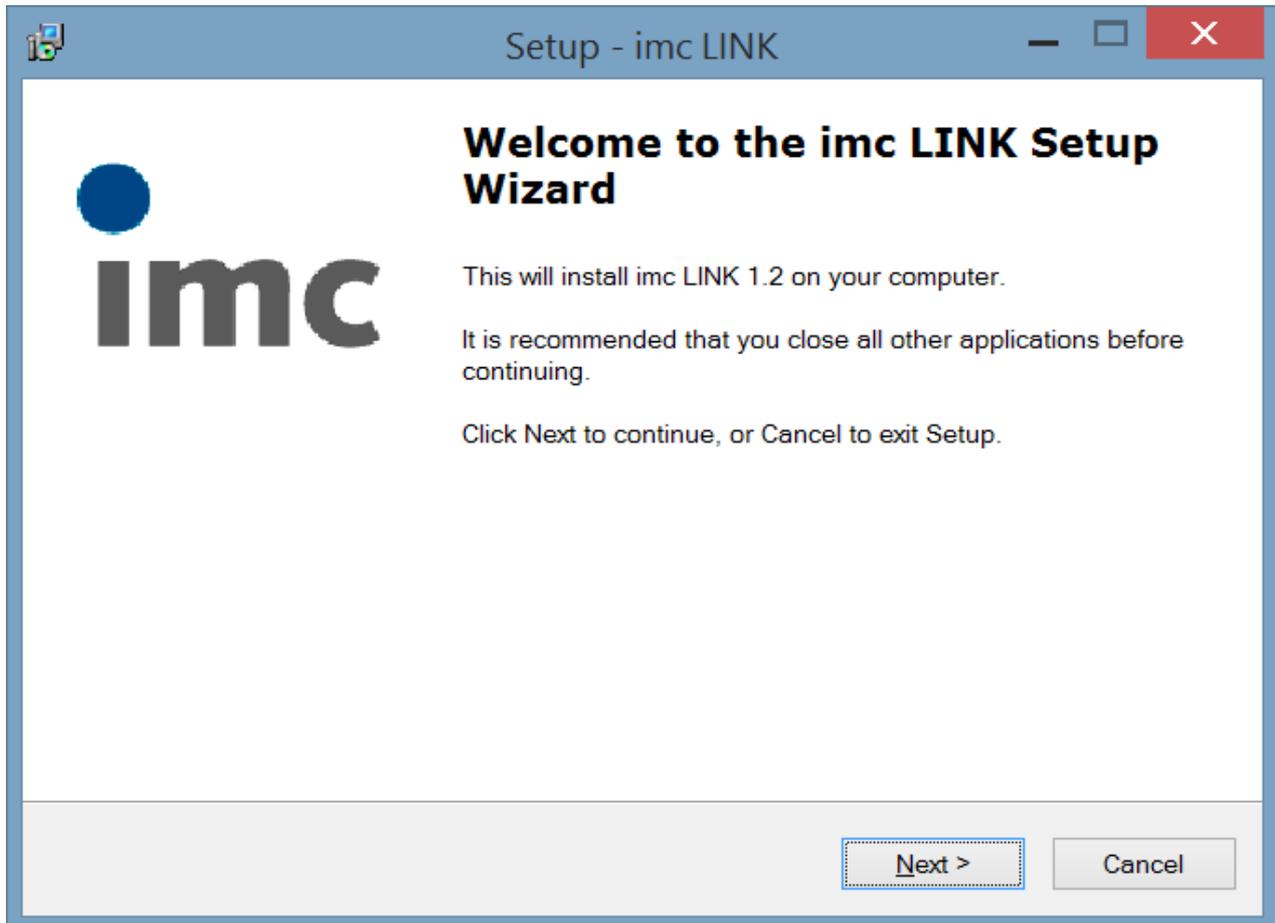
Through the automatic transfer of data from an imc system's local storage to a data management computer, imc LINK users have the data security of storage local to the acquisition, plus the convenience of fast and reliable data access local to the user.

Functions:

- **Automatic transfer** of folders and files from the measurement device to a computer
- **Optional deletion** of folders and files from the measurement device once transferred successfully
- **Any TCP/IP network connection supported**, including both wired and wireless networks (LAN, WLAN/WiFi, Modem, Wireless 3G/4G, UMTS, etc.)
- **Initiation of data transfer** based on both availability of the network connection and the configured onboard storage interval
- **Automatic PC based post processing of data** once data files are transferred. Such post processing may include data analysis by imc FAMOS sequences, file compression (e.g. *.zip), the launch of a 3rd party executable program, and transfer from the computer running imc LINK to a secondary file server
- **Live status monitoring including GPS position** of the measurement system. The imc UDP Status Monitoring mechanism can be used to see the current device status as well as current measurement or virtual channel values (based on "Display Variables" and "Virtual and Ethernet Bits" of an imc system). Additionally, GPS position information may be displayed in an imc curve window (e.g. overlaid on a map graphic), or exported to a KML file (for external viewing, e.g. Google Earth)
- **Download and remote system restart** with a new system configuration
- **ftp-protocol**; is supported for all imc measurement devices: device group 2 to 7 (only exception μ -MUYCS)
- **secure https-protocol**; can be used as an alternative to the ftp-protocol and will support the following devices imc CRONOS*compact*, imc CRONOS*flex*, imc CRONOS-XT, imc SPARTAN-N (device group 5, 6, 7). Besides the imc LINK license, this feature requires an additional device based license "imc REMOTE". This license comprises imc REMOTE LinkSecure and also imc REMOTE WebServer and imc REMOTE SecureAccess.
- **Language Selector**: choose from German, English (U.S.) and Chinese

1.6 Installing imc LINK

To install imc LINK, run the program Setup_imcLink.exe and follow the subsequent instructions.



1.7 Licensing

imc LINK requires possession of a license.

The licensing has to be done with the imc LICENSE Manager. A license activation is necessary to use imc LINK. imc LINK is configured to work with one PC and one imc measurement system, additional user and/or device licenses may be purchased by special order (imc LINK-1). The imc LINK license covers both the installation on a dedicated PC plus operation with a defined number of devices. This device related portion of the license is not linked to specific devices but just limits the number of arbitrary devices that can be operated simultaneously.

The use of the secure https-protocol, in addition to the imc LINK license (both PC installation and device count), requires an additional device license "imc REMOTE". This license (unlike the imc LINK device count license) is directly linked and limited to a specific device. It covers imc REMOTE LinkSecure and the extra functionalities imc REMOTE SecureAccess and imc REMOTE WebServer.

The activation of the software and the device license has to be done with the license manager!

If you have not yet activated any license, start the License Manager:

- upon installation from the CD by means of the corresponding button in the Setup dialog (imc License Manager)
- or by means of the corresponding item in the Windows Start menu

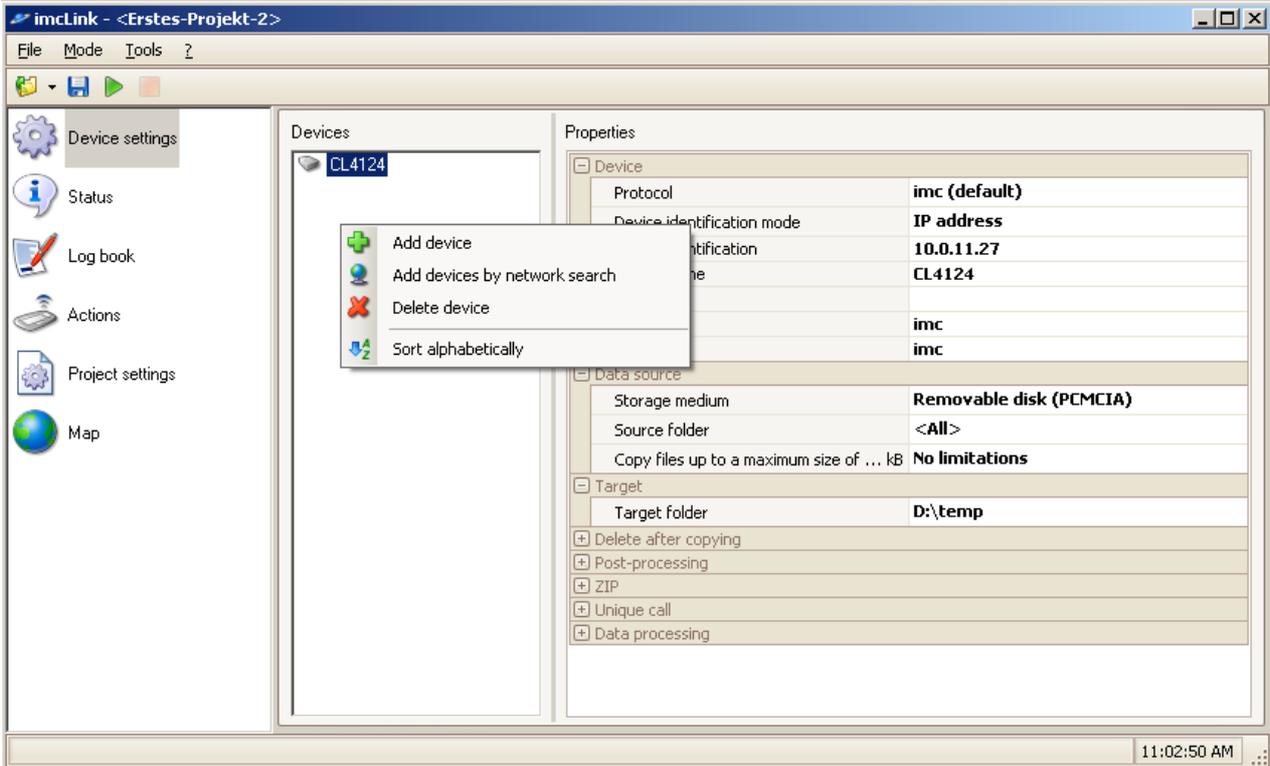
Follow the instructions for the License Manager. There is a separate document "Licensemanager_e.pdf" which provides further details.

2 Operation

2.1 Procedure

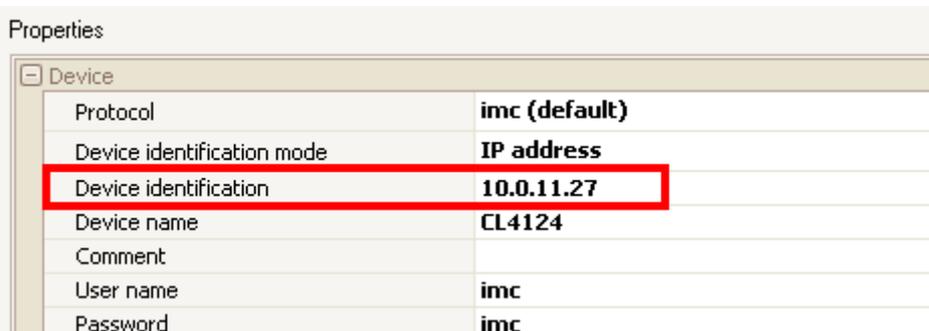
2.1.1 Configuration

To add your device after starting imc LINK, use the context menu item [Add devices by network search](#) (as shown below). After a successful network search a device can be selected out of the device list.



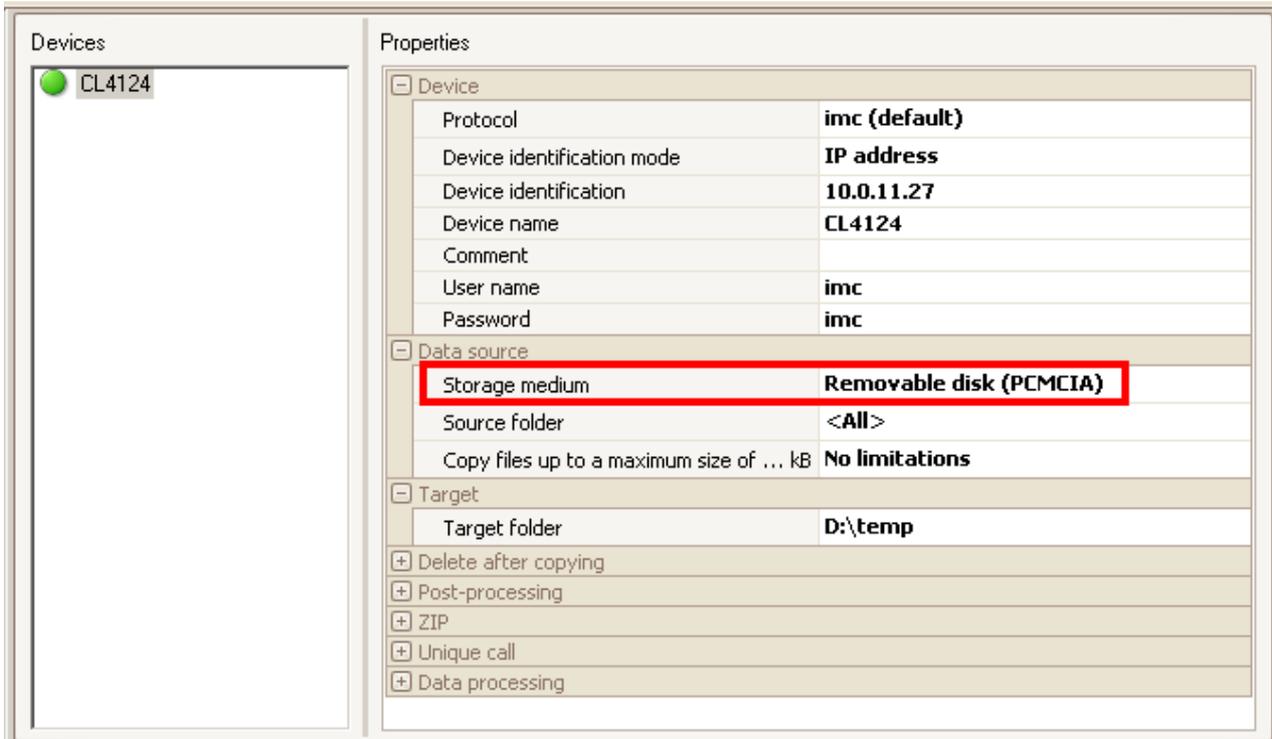
imc LINK - user interface with the context menu to "Add device"

By default, a device is already in the [Device List](#). You can also directly enter your device's IP-address, the exact name of your measurement device or even the dynamic DNS entry during the [device identification](#):



Settings of the selected device

To select the experiment to be copied to the device drive, select the following option in the imc LINK user's interface:



Source folder option: <Update> will display all available experiments and the one to be copied can be selected.

By setting the target folder, you determine to which folder on your PC the data will be copied. [Online Mode](#) ¹⁴⁾ must be started to begin copying files from the imc device to the PC.

Note

Every time you open imc LINK, the latest project will automatically be opened.
Even with the first call of the installed software imc LINK will list a device.

2.2 Calling by command line

It is possible to call imc LINK by command line. Depending on the settings, the following entry must be made:

```
c:\Program Files\imc\imcLink\imcLink.exe (complete filename of imcLink.exe)
```



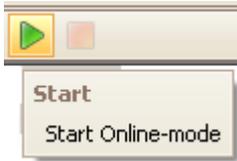
To open a project, the project name must be specified:

```
c:\Projects\imcLink1.prjimclink
```

To be able to run in Online mode directly upon calling a specific project, you must enter the following command line:

```
c:\Program Files\imc\imcLink\imcLink.exe /S c:\Projects\imcLink1.prjimclink
```

2.3 Online Mode



In Online Mode, data are copied from the device to the PC.

Depending on the settings, the copied data may be post-processed, e.g.

- by means of a imc FAMOS sequence,
- under some circumstances, zipped and transferred to a server. The data volume of a zipped file is substantially reduced and in consequence the transfer duration is as well.
- Copied files may be deleted.

In Online Mode, Status monitoring infos are updated

Generation of KML-files with the GPS-coordinates of the devices.

In Online Mode, it is not possible to make any changes to the configuration.

Note

Only which contain the file "DirClosed" are copied. This file is generated automatically by imc DEVICES when all files pertaining to a complete saving interval have been copied to the device drive.

Files are copied only once from the device and this is saved to imc LINK. If after successful copying, files the copied to the PC are deleted manually, then the files are not automatically copied again.

2.4 Offline Mode

Offline Mode is the "configuration mode", i.e. it is only possible to make settings in this mode.

In Offline Mode, any information received by the devices via UDP Status Monitoring is displayed.

In Offline Mode, the data from the device will not be copied the PC.

2.5 UDP Status Monitoring

In order to make it possible for devices to send UDP messages, an appropriate [UDP Status Monitoring configuration](#) ^[29] must be set for the device. Also, the port at which the PC receives the UDP Status Monitoring messages must be set.

The port is set in the [Options dialog under "UDP Status Monitoring"](#) ^[37] ("Global settings").

For the purpose of identifying the device from the UDP-message, the device name which this UDP-message must contain is used. The device name set in imc LINK must match this device name.

In order to transfer the device name, the command line

```
Message=DN={DeviceName}
```

must be included in the UDP Status Monitoring message. If the device name transferred and the one entered in imc LINK do not match, then the UDP status information is ignored. The associated boxes remain empty.

If the device is identified by its IP-address, then the UDP message can also be identified according to the IP-address. In that case, the status-information may be displayed anyway, even though the device name set is different from the device name transferred.

Reference

Please find here a [Tutorial: UDP Status Monitoring in imc LINK for FTP](#) ^[40]

Example of a UDP Status Monitoring configuration:

```
DestinationIP=10.0.3.100
DestinationPort=5000
Interval=20
Message=DN={DeviceName}
Message=SN={SerialNumber}
Message=LO={DisplayVar_01, %u}
Message=LA={DisplayVar_02, %u}
Message=FS={DisplayVar_32, %u}
Message=SV={SoftwareVersion} {SoftwareDateTime, %Y-%m-%d}
Message=DT={DateTime, %Y-%m-%d %H:%M:%S}
Message=Dist1={DisplayVar_03, %u}
Message=Dist2={DisplayVar_04, %u}
Message=TOF={TimeOfFirstStart,%Y-%m-%d %H:%M:%S}
Message=DC={DirCounter,%u}
Message=State_of_measurement={MeasurementStatus, %d}
```

- DestinationIP:* IP-address of the PC on which the UDP Status Monitoring messages are to be received.
- DestinationPort:* Port on the PC, on which the UDP Status Monitoring messages are to be received.
- Intervall:* Time interval for the UDP Status Monitoring messages in s
- Message:* An encoding (e.g. LO) and the variable value to be transferred in the appropriate format. The encoding is needed for imc LINK to be able to identify the data transferred (for instance, LO may be identified as longitude; see UDP Status Monitoring under the project settings).

Message variable	Description
DateTime	Date and time in any format ^[18] .
DeviceName	User-defined name for the device.
DirCounter	Counts all closed folders which contain measured data and which were created since the last preparation procedure. Folders which contained no measured data upon being closed and which were consequently deleted are not counted. Format numerical ^[17] .
DisplayVar_01-32	the display variable's current contents Format numerical ^[17] .
Ether_Bit01-32	the network bit's current state Format numerical ^[17] .
EventOverruns	total number of events which couldn't be processed because they came too quickly in succession. Format numerical ^[17] .
MeasurementStatus	Indicates one of the following device states: 1: No measurement was started. It is not possible to distinguish whether a measurement has been prepared. 2: A timed start was set up, but the start time has not yet been reached. 3: A measurement has started and data capture is running. It is not possible to see whether a trigger has already been released. Format numerical ^[17] .
SerialNumber	Returns the device's serial number as a text. For this variable, no formatting can be specified.
SoftwareDateTime	Returns the day on which the software was created. For formatting the output, the same formatting instructions are available as for the variable DateTime. If output of the time is demanded in the formatting instructions, then 0 is always returned, since the time is not available.
TimeOfFirstStart	Contains the starting time of the first measurement following the last preparation procedure in any format ^[18] .
Virt_Bit01-32	the virtual bit's current state. Format numerical ^[17] .

When transferring the GPS-coordinates, make note of the following:

At this time, it is not possible to transfer imc DEVICES process vector elements via UDP Status Monitoring. For this reason, in imc Online FAMOS it is necessary to assign process vector elements to a Display variable. For example,

```
DisplayVar_01 = pv.GPS.longitude ; longitude
DisplayVar_02 = pv.GPS.latitude ; latitude
```

One bit of the number transferred represents 10⁻⁷ (0.0000001) degrees. The conversion to correctly scaled GPS-coordinates is performed automatically by imc LINK.

UDP Status Monitoring configurations can be transferred to the device by means of XMLRpc commands. (See in the software manual under "Configure via FTP". In older manual versions the expression "UDP-Noise" instead of "UDP Status Monitoring" is used).

2.5.1 Formatting of numerical variables

The formatting instructions always begin with a percent-symbol, followed, in the simplest case, by a single letter. This letter determines the numerical format as per the table below:

Format type	Definition
%d or %i	signed integer in decimal format
%u	unsigned integer in decimal format
%o	integer in octal format
%x	integer in hexadecimal format (0-9, a-f) without prefix (0x)
%X	integer in hexadecimal format (0-9, A-F) with prefix (0X)
%f	real number in fixed-point format
%e	real number in exponential format (e.g. 1.0e+4)
%E	real number in exponential format (e.g. 1.0E+4)
%g	like %f or %e, whichever is shorter
%G	like %f or %E, whichever is shorter

The complete syntax of the format specification takes the following form:

%	modifier	minimum width	.	Precision	Format type
necessary	optional	optional	optional	optional	necessary

Modifier:

Modifiers can be combined wherever it makes sense. They affect the output as follows:

Modifier	Effect
-	left justified (default is right justified)
0	output is zero-padded instead of filled out with spaces
+	a plus-sign precedes positive numbers
space	a space precedes positive numbers
#	depends on the format type:
	%#o (octal) output prefixed with a zero
	%#x (hexadecimal) output prefixed with "0x"
	%#X (hexadecimal) output prefixed with "0X"
	%#f,%#e,%#E,%g,%#G ensures output of a decimal point

Minimum width:

By default, as many characters are outputted as are necessary to display the value. For a formatted output it may be desirable to set a minimum width. The output is then filled up with spaces to achieve this width. The modifier "0" causes the output to be padded with zeroes instead of spaces.

Example:	%d	Value = 734	Output = "734"
	%10d	Value = 734	Output = " 734"
	%010d	Value = 734	Output = "0000000734"

Precision:

If a real number is to be rounded to a certain number of decimal places, a period followed by the number of places (digits) must be entered.

Example:	%f	Value = 734.458	Output = "734.458"
	%.1f	Value = 734.458	Output = "734.5"
	%8.2f	Value = 734.458	Output = "734.46"

In the third example, the output is intended to have a width of at least 8 characters, including the decimal point.

Example: Message=The temperature is {DisplayVar_01, %5.1f}°C.

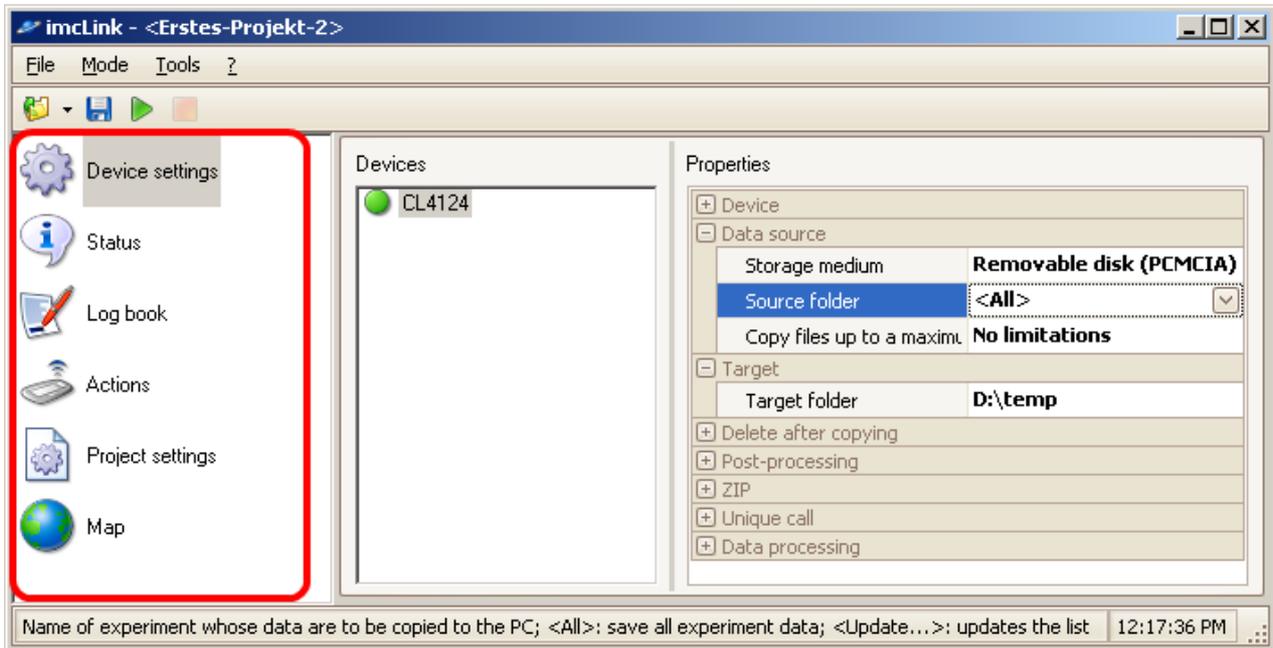
2.5.2 Formatted output of date and time

The following time representations are available:

Formatting specification	Definition
%d	day (01 – 31)
%e	day (1 – 31) with preceding space if single-digit
%m	month (01 – 12)
%y	two-digit year (00 – 99)
%Y	four-digit year
%G	four-digit year in conformance to the calendar week as per %V
%g	like %G but two-digit
%C	two-digit century
%F	as per %Y-%m-%d (ISO 8601 date format)
%D	as per %m/%d/%y (American date format)
%j	ordinal day of the year (001 – 366)
%u	weekday (1 – 7, Monday is 1)
%w	weekday (0 – 6, Sunday is 0)
%W	calendar week (00 – 53) beginning on first Monday
%U	calendar week (00 – 53) beginning on first Sunday
%V	ISO 8601:1988 calendar week (01 – 53) beginning with the first week having 4 days. The weeks begin on Monday
%H	hour (00 – 23)
%k	hour (0 to 23) with preceding space if single-digit.
%l	hour (01 – 12)
%l	hour (1 – 12) with preceding space if single-digit.
%M	minute (00 – 59)
%S	seconds (00 – 61) 60 & 61 only appear in special cases
%P	am/pm 12:00; noon is "pm", midnight "am"
%p	AM/PM 12:00; noon is "PM", midnight "AM"
%R	corresponds to %H:%M
%T	corresponds to %H:%M:%S
%r	corresponds to %l:%M:%S %p (American time representation)

3 Themes

At the left of the user's interface, different Themes are displayed.



After a theme is selected, its respective settings are displayed at the right of the user interface. The themes [Device Settings](#)^[20], [Status](#)^[26], [Log Book](#)^[27], [Actions](#)^[28], [Project Settings](#)^[29] and [Map](#)^[35] are discussed below.

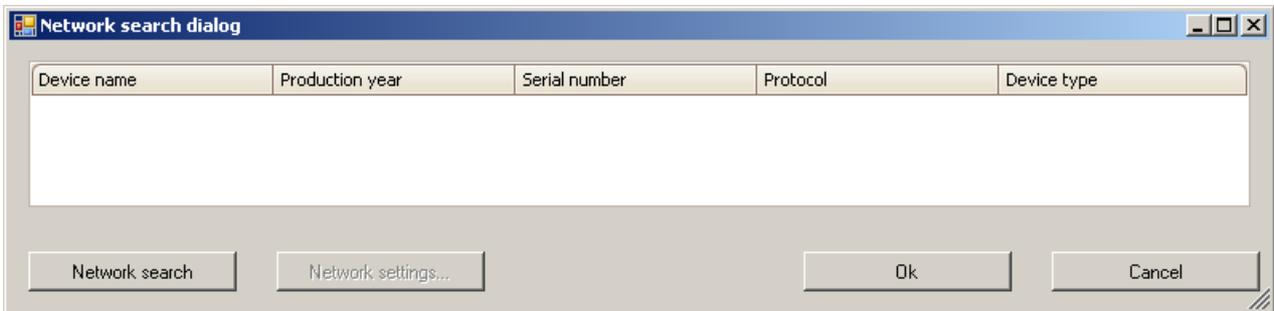
3.1 Device Settings

3.1.1 Device List

Adding and removing of devices is accomplished using a **context menu (right mouse click.)**



When adding a device by means of a network search, the network search dialog is called:



With the "network search", all devices available in the local network are displayed.

3.1.2 Device



Protocol: imc standard, FTP and HTTPS

If there is a local network, the **imc standard** protocol is recommended. This makes the process of copying from the device to the PC faster than with *FTP* or *HTTPS*. Additionally with imc standard, any brief interruptions of the connection to the device during copying can be buffered (for up to 10 days), so that large files do not need to be re-copied from the beginning due to any brief lapse.

As of imc LINK version 1.2 R2 the TLS 1.2 security protocol is supported.

Device identification mode

By selecting <Network Search>, a dialog for searching for devices in local networks is called. The available modes are *dynamic DNS* entry, unique device name or *IP-address*. The device identification must be set according to the respective setting.

Device identification

The entry depends on the device identification mode. It may be the unique dynamic DNS entry (DNS:Domain-Name-System), e.g. imcDevice04.dyndns.org.

It may be the unique device name, e.g. imcDev__09123456. The unique device name is composed according to the following scheme:

"imcDev__" + "nn" + "sssss", where "nn" is the year of production and "sssss" the serial number.

Example **imcDev__09123456**; "09" = production year and "123456" = device's serial number.

It may be the device's current IP-address, e.g. 10.0.10.166.

Device name

The name of the device, is displayed e.g. during device search.

This name is also used in the device software.

Device password

Password for imc REMOTE LINKSECURE (HTTPS), if a password has been set in the device

Comment

Accompanying text for the device. Here, it is possible to enter the serial number, for instance.

User name, Password

User name and password for FTP

3.1.3 Get data from device

Copy data after ... hours

After the specified time in hours, a connection to the device is established and the accumulated data are copied from the device. Once all accumulated data have been copied, imc LINK disconnects again from the device.

As of imc LINK 1.2R1 the specified time can be configured with a accuracy of 15 minutes, e.g. a setting of 0.5 means the data will be copied after 30 minutes.

Copy data for only one event

An event occurs if a changed value is transferred for an [event-variable via Status Monitoring](#)²⁹. In that case, a connection with a device is established and the accumulated data are copied from the device. Once all accumulated data have been copied, imc LINK disconnects again from the device.

3.1.4 Data source

Storage medium

From which storage medium are the measured data on the device to be copied to the PC, from the *removable drive (PCMCIA)* or from the internal *hard drive (HD)*? If no data are to be copied from one device in the project, it is possible to set "Do not use" in order to conserve the PC's capacities.

With imc DEVICECORE devices the file directory is set automatically.

The directory can consist of several subdirectories, e.g. "Internal\Projects".

With the command <Update...> all device directories of the currently set directory are displayed.

If the hierarchy of the directories on the imc DEVICECORE devices is not known, proceed as follows to determine the complete directory (including the subdirectories):

- For example, the experiment is called "EOS_001".
- With <Update...> at the storage medium the device directory is determined, e.g. "Internal".
- Set "Internal".
- With <Update...> for the source directory, the corresponding subdirectories are set to "Internal"; the result is "Projects", for example.
- If this is not the experiment name you are looking for, set "Internal\Projects" in the storage medium.
- With <Update...> at the source directory the corresponding subdirectories are set to "Internal\Projects", as a result you get e.g. "EOS_001".
- Set "EOS_001" as source directory.

Source folder

From which folder on the device (from which experiment) are the measurement files to be copied to the PC? With <Update>, all existing folders (experiments) on the device drive are displayed. With <All>, the measurement files of all existing folders (experiments) are copied from the device drive set to the PC.

Copy files up to a maximum size of ... kBytes

The maximum size of the files to copy (in kBytes) can be set. With "No limitations", files of arbitrary size are copied from the device drive to the PC.

Apply filename filter

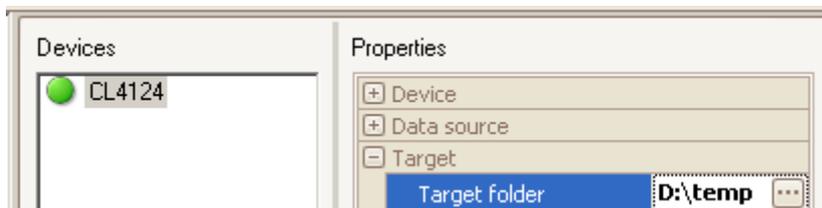
Do you want to copy all files from the imc measurements device's hard disk to the imc LINK PC ? If you only want to copy a specified selection of files you can use a filter that select those files you want. With this option you can set the filter to copy files you select or you set the filter to those files that should not be copied.

Note: It is necessary to define the file names in the imc STUDIO/DEVICES software accordingly. The filename may differ from the channel name and is specified in *imc STUDIO* in the *Setup* for the channels under *Data Transfer*. In *imc DEVICES*, the *filename* is entered in the device's "Save and Display" dialog.

Filter for file names

A filter can include a " * ", or you specify directly the entire file name. Several filter can be separated with a " ; ", e.g. abc* ; *yz.raw

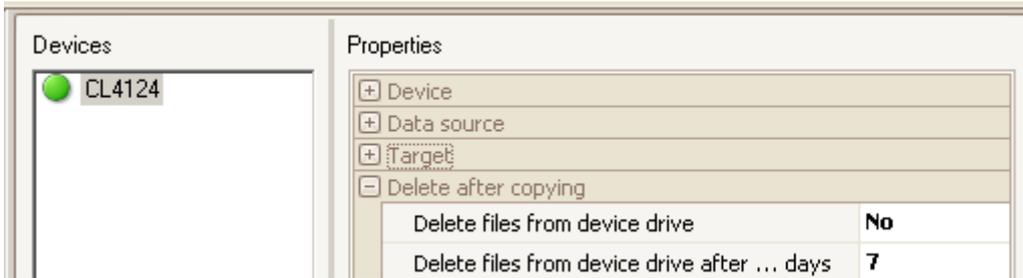
3.1.5 Target



Target folder

To where on the PC are the data from the device drive to be copied? The target folder (experiment name) is automatically appended to the target folder set. A folder (on the PC) must be set in the input box in order to be able to start the Online mode.

3.1.6 Delete after copying



Delete files from device drive

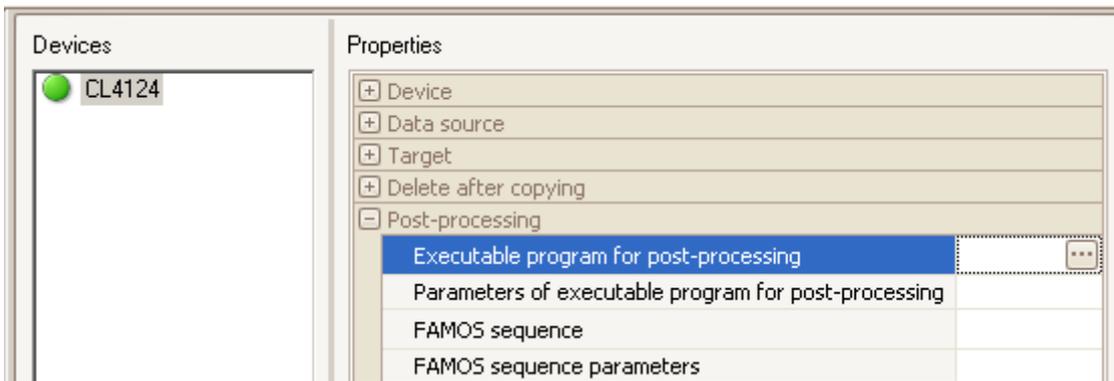
Are the files copied to the PC to be subsequently deleted from the device drive? It is recommended to clear the device drive once the measured data have been successfully copied, in order to avoid needlessly filling up the drive. Depending on how long the storage intervals are and on the data volume, this may occur after about one day, for instance.

Delete files from device drive after ... days

After how many days should the files be deleted from the device drive, if the system is set to delete them?

Fractions of days are allowed, e.g. 2 or 0.125. If 0.125 is entered, the files are deleted from the device drive after 3 hours.

3.1.7 Post-processing



Executable program for post-processing

The complete filename of an executable program is expected, which is always called following the copying of a folder from the device drive to the PC drive. Here, it is possible to copy additional files to the folder on the PC which was just copied. E.g. c:\BatchFiles\driver.bat

Parameters of executable program for post-processing

%1 is a placeholder for the name of the folder just copied to the PC hard drive, e.g. %1.

imc FAMOS sequence

Complete filename of the imc FAMOS sequence which is to be called after copying a folder from the device drive to the PC hard drive. E.g. c:\FamosSeq\Test.seq or Test.seq.

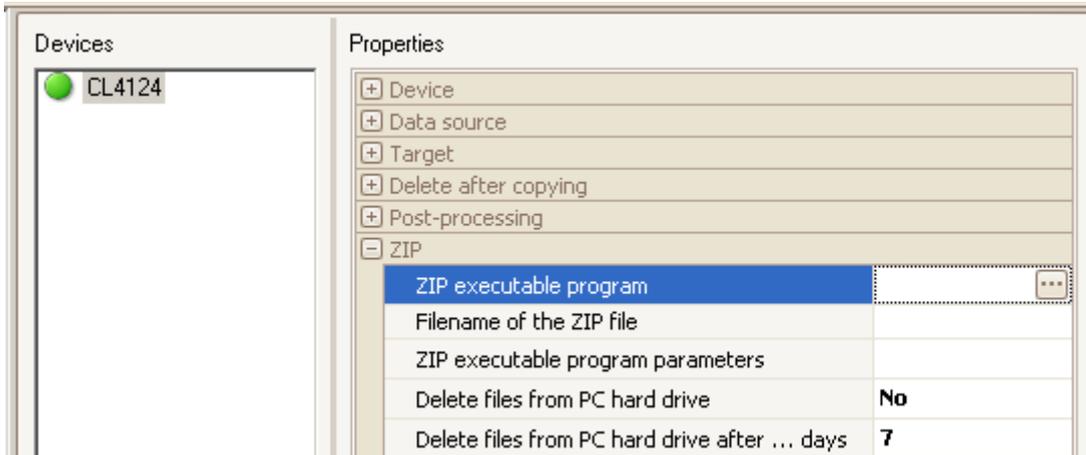
In the absence of a complete folder name, the imc FAMOS default folder is used.

Mit der imc LINK Installation werden Beispiel-Sequenzen im Verzeichnis "*imcLink\Example*" abgelegt.

imc FAMOS sequence parameters

The imc FAMOS sequence's **first parameter** is always the folder which was just copied to the PC hard drive. Additional parameters can be specified (each separated by spaces). E.g. 125 0.1 0.5 Placeholder are available for device name (%5) or device identifier (%6).

3.1.8 ZIP



ZIP executable program

Complete filename of an executable ZIP program. The ZIP program set is run automatically after successful copying of a folder from the device to the PC hard drive (possibly after post-processing has been performed).

If no filename has been entered (empty text), the zipping is not carried out and the subsequent settings are ignored.

Filename of the ZIP file

Filename of the ZIP file with file extension. &4: Placeholder for date and time of the copied folder. E.g. abc%4.7z or databc.zip

ZIP executable program parameter

A selection of available settings is displayed in the pop-down list. Other parameters available for the ZIP program set can also be used.

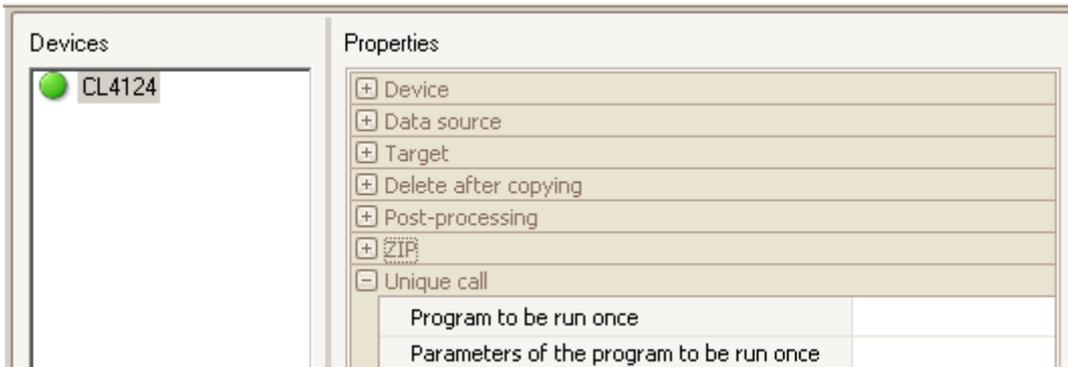
Delete files from PC hard drive ?

Are the files copied from the device drive to the PC to be deleted from the PC hard drive?

Delete files from the PC hard drive after ... days

If files are set to be deleted from the PC hard drive, they are deleted after the amount of time in days set here. Fractions of days are allowed, e.g. 2 or 0.5. If 0.5 is entered, the files are deleted from the PC hard drive after 12 hours.

3.1.9 Unique call



Program to be run once

Complete filename of an executable program which runs once upon starting Online mode. Example: c:\init.bat

Parameters of the program to be run once

%3 is a placeholder for an additional folder. After copying a folder from the device to the PC, the additional folder's content is copied to the folder on the PC which was just copied.

3.1.10 Data processing

Display name for GPS coordinates on the map

For the purpose of displaying the GPS coordinates in the curve window, a display name (channel name) can be defined for use in the curve window. If no display name is set, the device name is used.

3.2 Status

3.2.1 Status indication for the devices

The *Status*, *Connection*, *Last download* and *download Progress* are always displayed. All other columns are variable.

Status <input type="checkbox"/> Devices column by column				
Device	Status	Connection	Last download	Progress
Test_001		<input type="checkbox"/>		

In Online mode, a **green dot** is displayed if no problems have occurred. In the case of an **error**, a **red dot** is shown. As long as there is no connection to a device, the standard icon of a device will be displayed. When "*connected*", a checkmark is displayed if there is a connection to the device while in Online mode.

As long as no attempt has been made to access the device, the device's standard icon is visible. If it was possible to establish a connection with the device while Online-mode is active, but the device is **no longer connected** with imc LINK, then a **blue dot** is displayed.

The last download of measurement files from the device drive following the start of Online mode is displayed. Under Progress, the amount of files having been copied at the moment is displayed.

In accordance with the respective settings for status monitoring, the currently operative values of the parameters transferred from the device are displayed. E.g., the device's current GPS coordinate values (longitude and latitude) can be displayed (see status monitoring under [Introduction](#)¹⁵) and [Project-Settings](#)²⁹).

Status <input checked="" type="checkbox"/> Devices column by column	
Properties	Test_001
Status	
Connection	<input type="checkbox"/>
Last download	
Progress	

Devices can be displayed in the status page line-by-line or column-by-column.

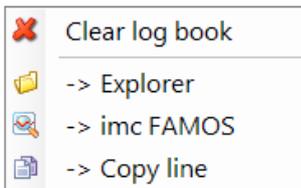
3.3 Log Book

The log book lists information on and error messages from all devices, plus general status information.

Log book				
Date	Time	Category	Text	Device
5/30/2011	11:14:09 AM,651		Copying of the files has started	
5/30/2011	11:14:15 AM,683		Copying of the files has stopped	

Log book display in imc LINK

Deleting the log book's content is performed by means of a context menu item "Clear log book":



Copied folders and files can be displayed with the *Explorer* or by *imc FAMOS*. For this purpose, the log book must contain the name of either a folder or a file.

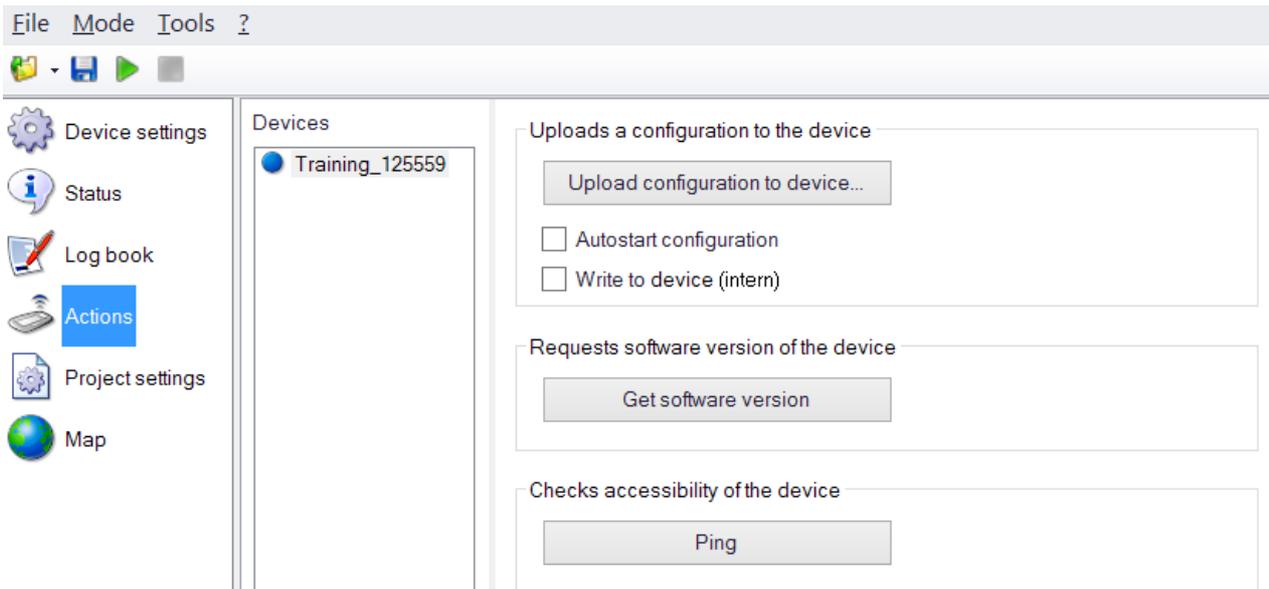
Furthermore, individual entries can be copied to text editors or emails via the Clipboard.

The amount of information displayed in the log book can be selected in the Options dialog. [See Log Book \(Global Settings\) in the Options dialog](#) ³⁷

Depending on the OS, the log book is found in the following folder:

C:\Documents and Settings\All Users\ApplicationData\imc\imcLink

3.4 Actions



Configuration to device:

Writing a Disk- or Autostart configuration to the removable data storage drive or to an internal hard drive is possible. An Autostart-configuration in the device can only be overwritten with another Autostart-configuration.

When the option "*Write to device (intern)*" is active, the system performs an upload to the internal RAM-memory. For this purpose, FTP-protocol is required and there must already be a Diskstart/Autostart-configuration in existence.

To transfer an Autostart-experiment to the device, it is necessary to set "*Autostart configuration*". To transfer a Diskstart-experiment to the device, it is necessary to switch "*Autostart configuration*" off. In the device settings, the storage medium (e.g. removable storage) and target folder (e.g. Experiment1) must be set appropriately.

<Do not use> as the storage medium and <All/> as the target folder are not acceptable selections. Clicking on the button "*Configuration to the device*" opens a dialog for selecting the Diskstart- or Autostart-configuration. After selecting the appropriate file (e.g. dev001.ume.zip), the configuration is transferred to the device. This process can last for a few seconds. Following successful transfer, the new configuration in the device is started.

It is possible to copy an Autostart-configuration to the device without any configuration being present.



As soon as there are two Autostart configurations on a single device, for instance in two different folders, the device will no longer be able to run an Autostart, i.e. the device can only be started manually on site.

Get software version

The device's software version is imported via FTP. The device is identified by means of the device settings. This process can last for several seconds.

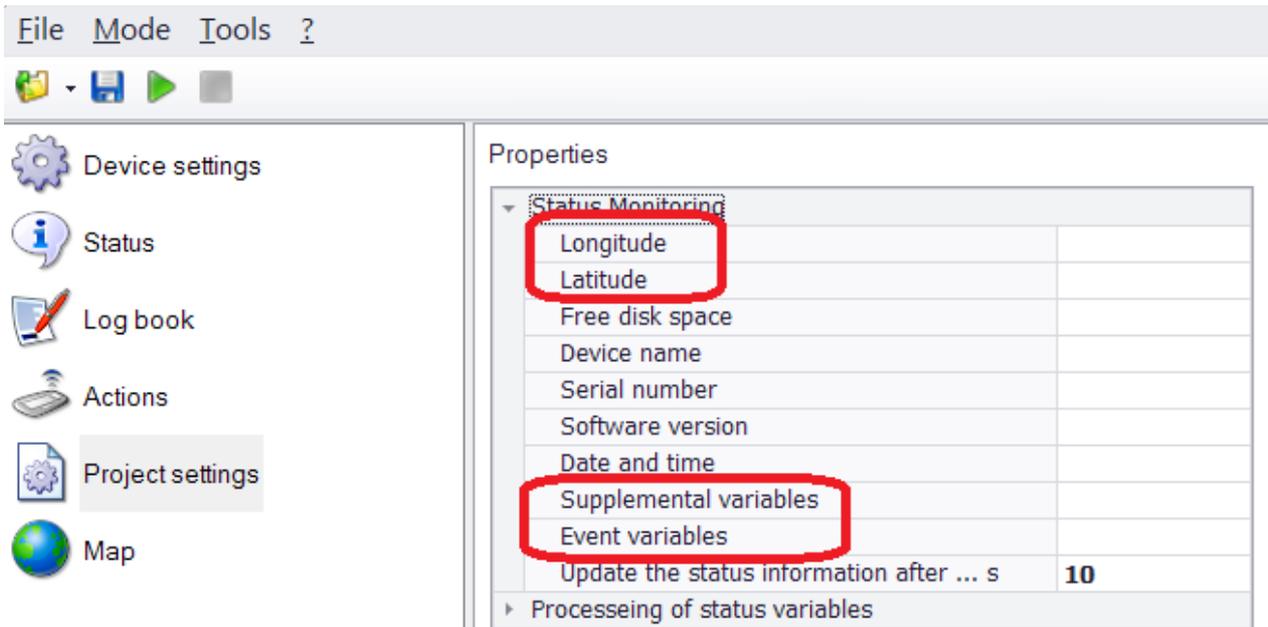
Ping

Quick check of whether the device can be accessed. In local networks with IP-addresses, the ping for identifying the device is carried out very quickly. Otherwise, the process can last for several seconds.'

3.5 Project-Settings

3.5.1 Status Monitoring

3.5.1.1 UDP Status Monitoring



If you use the pre-defined codes (e.g. for longitude, latitude), then the text assigned to the code appear in the status window as column headers. As soon as you receive a UDP Status Monitoring message with the code "Lo" (for Longitude), then "Longitude" appears as the column header in the status window. The corresponding line in the UDP Status Monitoring configuration appears as follows:

```
Message=LO={DisplayVar_01, %u}
```

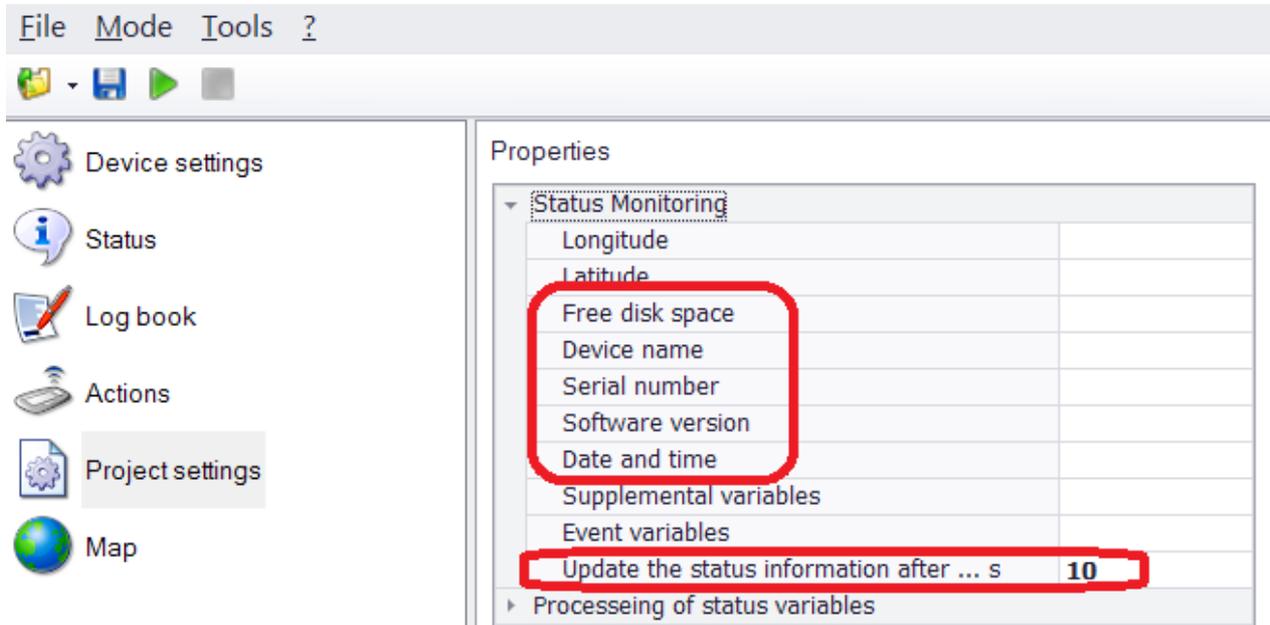
Then, under the column header "*Longitude*" the respective last value of the variable DisplayVar_01 is displayed. In the status window, only the UDP Status Monitoring codes are displayed, which are also specified in the project settings. If the code is deleted (empty text), no column header is displayed in the status window. If all codes are deleted, only the 5 standard items (device name, status, connection, last download, progress) appear in the status window.

Additional codes can be entered under "**Supplemental variables**" in the Project-Settings (e.g. "Dist1, Dist2"). In that case the column headers "Dist1" and "Dist2" appear in the status window ([see also UDP Status Monitoring](#))¹⁵.

Furthermore, it is possible to define "**Event variables**", separated by the character ";" (e.g. "EV1;EV2"). In that case, the headings "EV1" and "EV2" appear in the Status window (see also UDP Status Monitoring). With the help of Event-variables, data can be retrieved from the device in response to events. In that case, a connection is only established with the device once an event has occurred, and all data accumulated until then are copied from the device. An event occurs when a changed value for an event-variable is transferred by means of Status Monitoring.

3.5.1.2 HTTPS Status Monitoring

Enter the name of the variable instead of the code of the variable itself, e.g. at longitude the name of the variable DisplayVar_01.



The following fixed name of the variable are supported:

- Free disk space: FreeSpace
- Device name: DeviceName
- Serial number: SerialNumber
- Software version: SoftwareVersion
- Date and time: DateTime

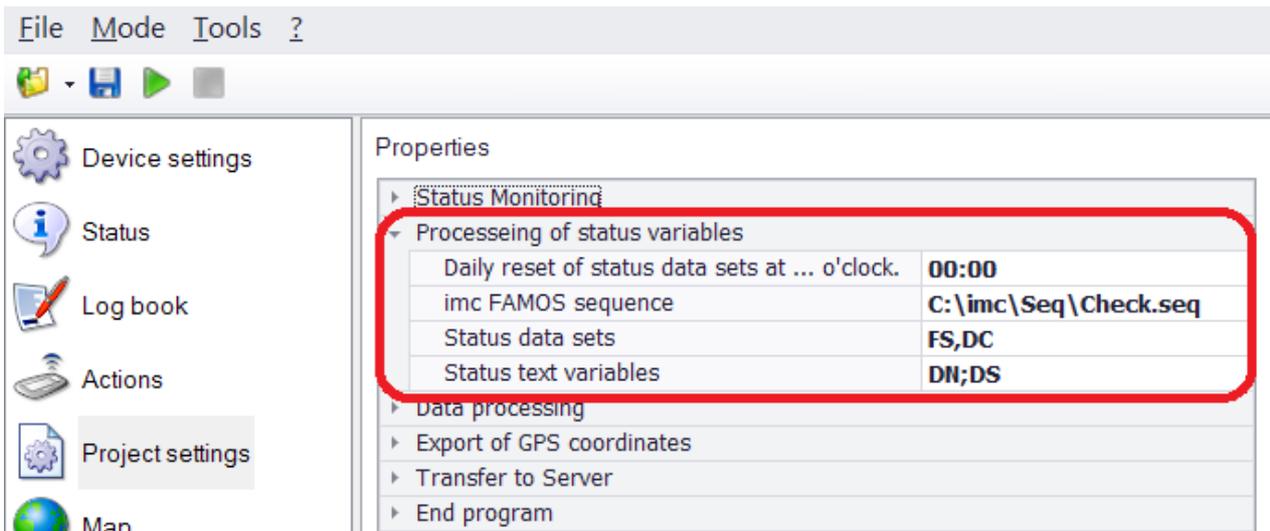
Update the status information after ... s:

According to the configured time the state information will be updated and displayed on the status page.

The configured interval of updates can only be observed with HTTPS. As per standard 5 s, 10 s, 20 s and 30 s are recommended and possible to select by the user.

In addition, from imc LINK 1.2 R2 the value 0 is allowed. With this setting no status information is determined. This reduces the transmission load.

3.5.2 Processing of status variables



Daily reset of status data sets at ... o'clock

If a time is entered here, all Status data sets are reset at that time (e.g. 22:00). Before resetting, a FAMOS-sequence may first be called. If no time is entered, there is no reset.

imc FAMOS sequence

An imc FAMOS-sequence, which is called before the daily reset of the Status-data set. The 1st parameter of the FAMOS-sequence is always the complete filename of a FAMOS file with all status-variable (Status data sets and Status text variables), e.g. "C:\FAMOS\Seq\DoFAMOS.SEQ".

This file is generated temporarily and is automatically deleted again after the FAMOS-sequence has been executed. In order that the file can be deleted, all resources used by FAMOS must be enabled, e.g. channel objects, etc.

If some resources remain intact after completion of the FAMOS sequence, the file can not be deleted and remains in existence along with the temporary folder.

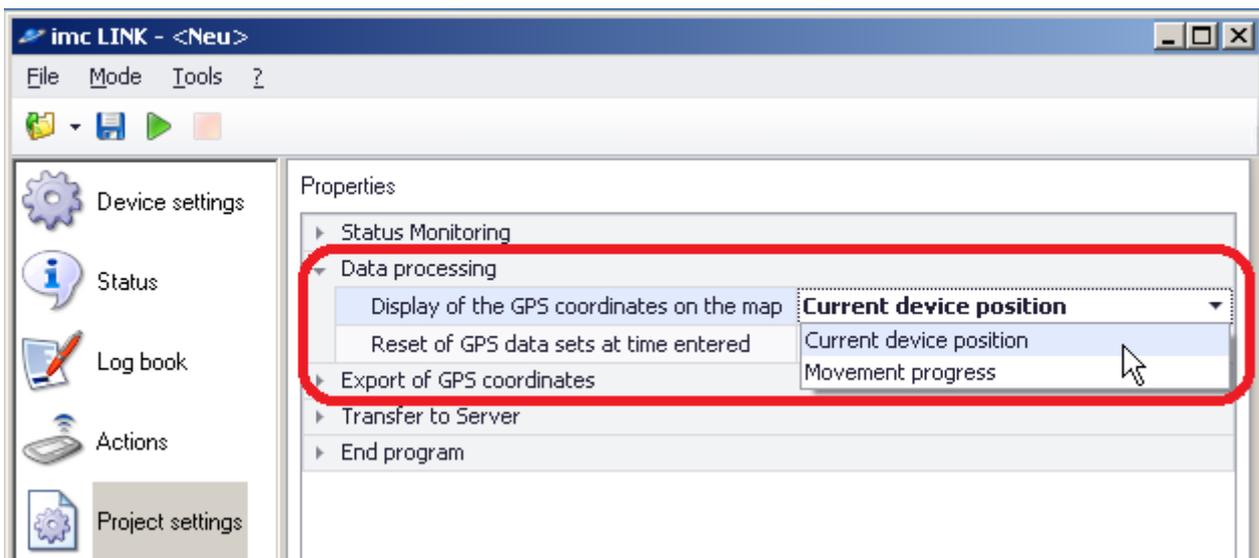
Status data sets

List of UDP Status Monitoring encodings, from which FAMOS data sets are to be generated. The individual encodings must be separated from each other by the character ';', e.g: *FS;DC*.

Status text variables

List of UDP Status Monitoring encodings, from which FAMOS text variables are to be generated. The individual encodings must be separated from each other by the character ';', e.g: *DN;DS*.

3.5.3 Data processing



Display of the GPS coordinates on the map

A data set is constructed which contains only one GPS-coordinate or either one or all GPS-coordinates transferred in Online-mode thus far.

Reset of GPS data sets at time entered

The GPS data sets are reset daily at the time specified. The time is formatted hh:mm. If no time is set, no reset is performed. If you only display the current GPS-coordinate in the [curve window](#)³⁵, the time set will be ignored, e.g. 23:00

3.5.4 Export of GPS-coordinates

Export filename

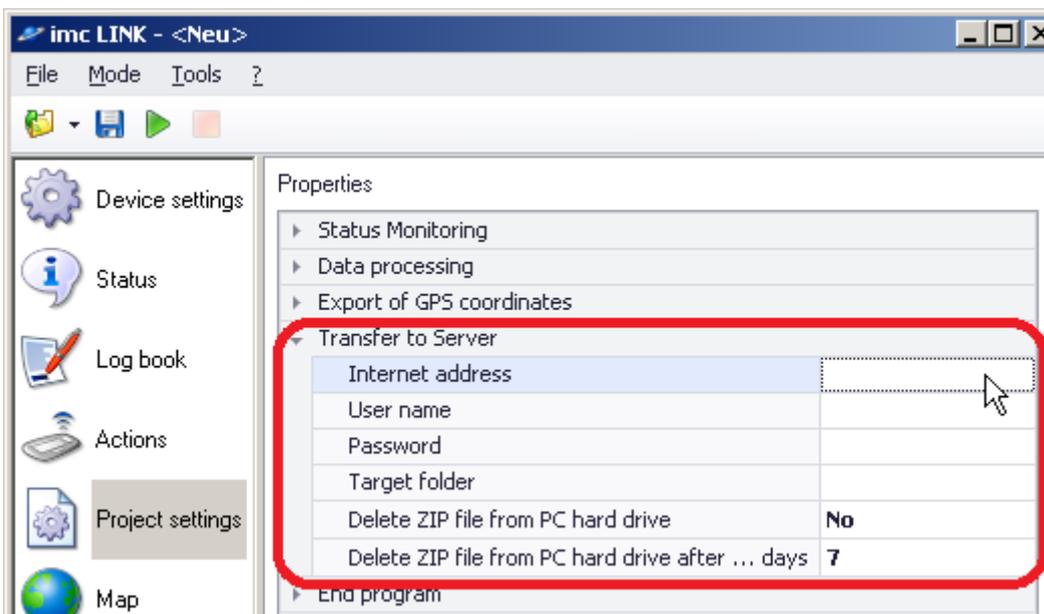
In this box, enter the complete name of the file with the GPS-coordinates for all devices contained in the project, on which a suitable UDP Status Monitoring configuration is set. The file extension indicates the export file's format. At this time, only the KML format is supported. If the input box is empty, no export file is generated.

If no GPS mouse is connected or if a device is not transferring any GPS-coordinates via UDP Status Monitoring to the port specified, this device is not taken into consideration for the KML-export.

[See also UDP Status Monitoring.](#)¹⁵

Every 10 s, a current export file is generated in the folder specified.

3.5.5 Transfer to the Server



Internet address

Internet address of the server to which the ZIP files are to be transferred. E.g. XMPS2.KPZ.Com.

If no Internet address was entered (empty text), nothing is transferred to any server. The subsequent settings are ignored. If no zipping is set (empty text for the filename of the ZIP-program), the settings for "Transfer to Server" are ignored.

User name

The user name of the server to which the ZIP files are to be transferred. E.g. MKTH01

Password

Password of the server to which the ZIP files are to be transferred. E.g. XXYYZZ

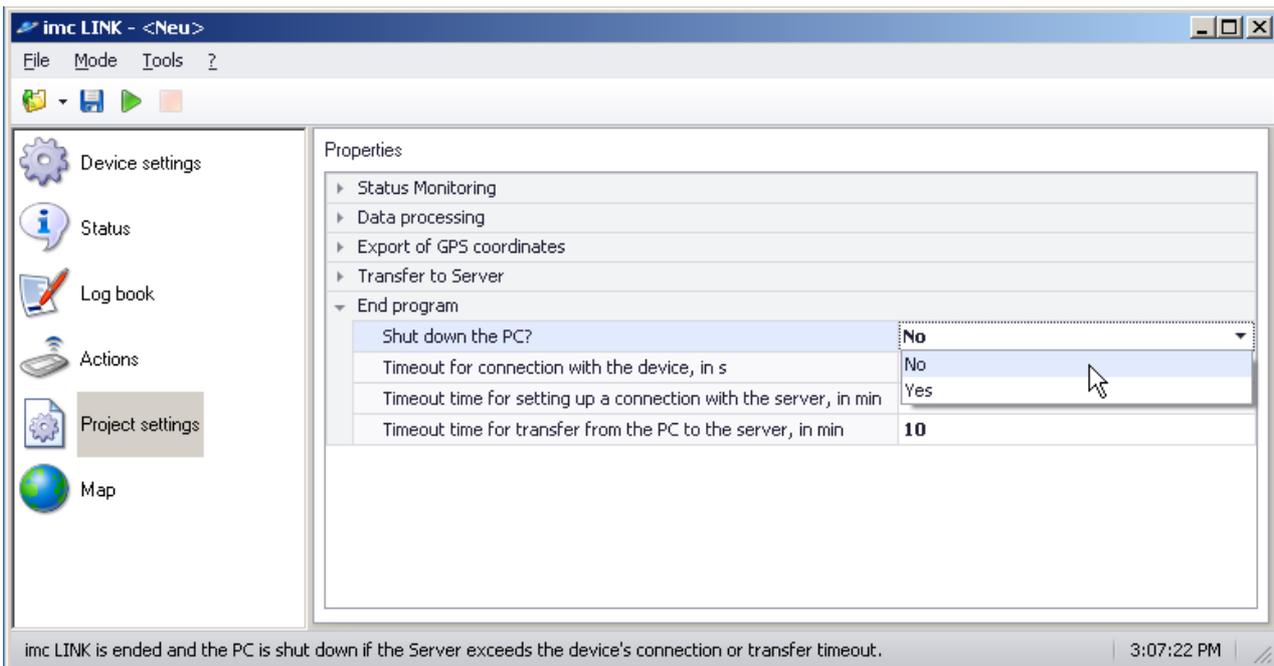
Delete ZIP file from PC hard drive

Is the ZIP file to be deleted from the PC hard drive once it has been copied to the server?

Delete ZIP file from PC hard drive after ... days

If "Delete ZIP file from PC hard drive" is set, the ZIP file is deleted after the amount of days set here from the PC hard drive. Fractions of days are permitted. E.g. 1 or 0.25. If 0.25 is entered, the ZIP file is deleted from the PC hard drive after 6 hours.

3.5.6 Exiting the program



To turn off the PC, the following conditions must be met:

1. The copied data must be zipped
prerequisite for 2nd transfer, to the server
(see Device Settings: the [executable Zip program](#)²⁴ must be set accordingly)
 2. Data must be transferred to a server ("Transfer to Server" must be set accordingly).
 3. Timeout for establishing a connection with the device has elapsed.
 4. Timeout for establishing a connection with the device has elapsed or the timeout for transfer from the PC to the server has elapsed.
- Only once all the conditions are met can the PC actually be turned off.
 - Once the device timeout has elapsed, shutdown of the PC is prepared. The timers for establishing a connection with the server and for transfer from the PC to the server start. Only once one of the two timeouts has elapsed with the PC turn off.
 - If copying to the server is currently taking place, this action is completed before imc LINK and the PC are shut down. The timeouts are to be considered the minimum time needed to shut down the PC. The time until the PC is actually shut down may be longer due to any additional timeouts.

3.6 Map

Display of the GPS-coordinates in the curve window. For this purpose, the GPS-coordinates must be transferred via UDP Status Monitoring. For the purpose of displaying the GPS-coordinates, imc LINK must be in [Online-Mode](#) ¹⁴.



Reference

[See UDP Status Monitoring.](#) ¹⁵



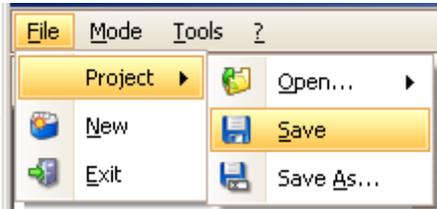
Note

With new or with changed display names for the GPS coordinates, you may wish to add the data to the curve window in the map. To do this, right click in the curve window, and in the context menu which appear, select the item "Configuration" -> "More Waveforms". Then you can simply use Drag & Drop to move the available data to the list (left side).

4 User-Interface

4.1 Menu description

4.1.1 File - menu



**Open, Save
Project**

A project comprises all associated settings, i.e. device settings and general project settings.

Options (e.g. the port for support of UDP Status Monitoring) and general imc LINK settings (e.g. window size) are saved automatically and do not belong to the project.

With "**Save**", the current project is saved, with "Save As..." the project can be saved under a new name. The 6 last projects saved are displayed in a list under "Open project".

New

All devices in the project are deleted and the project configuration is set to the standard settings. Subsequently, a new device is added to the configuration.

Exit

imc LINK is closed.

4.1.2 Mode - menu



Start

Starts Online-Mode. [See Online-Mode](#) .



Stop

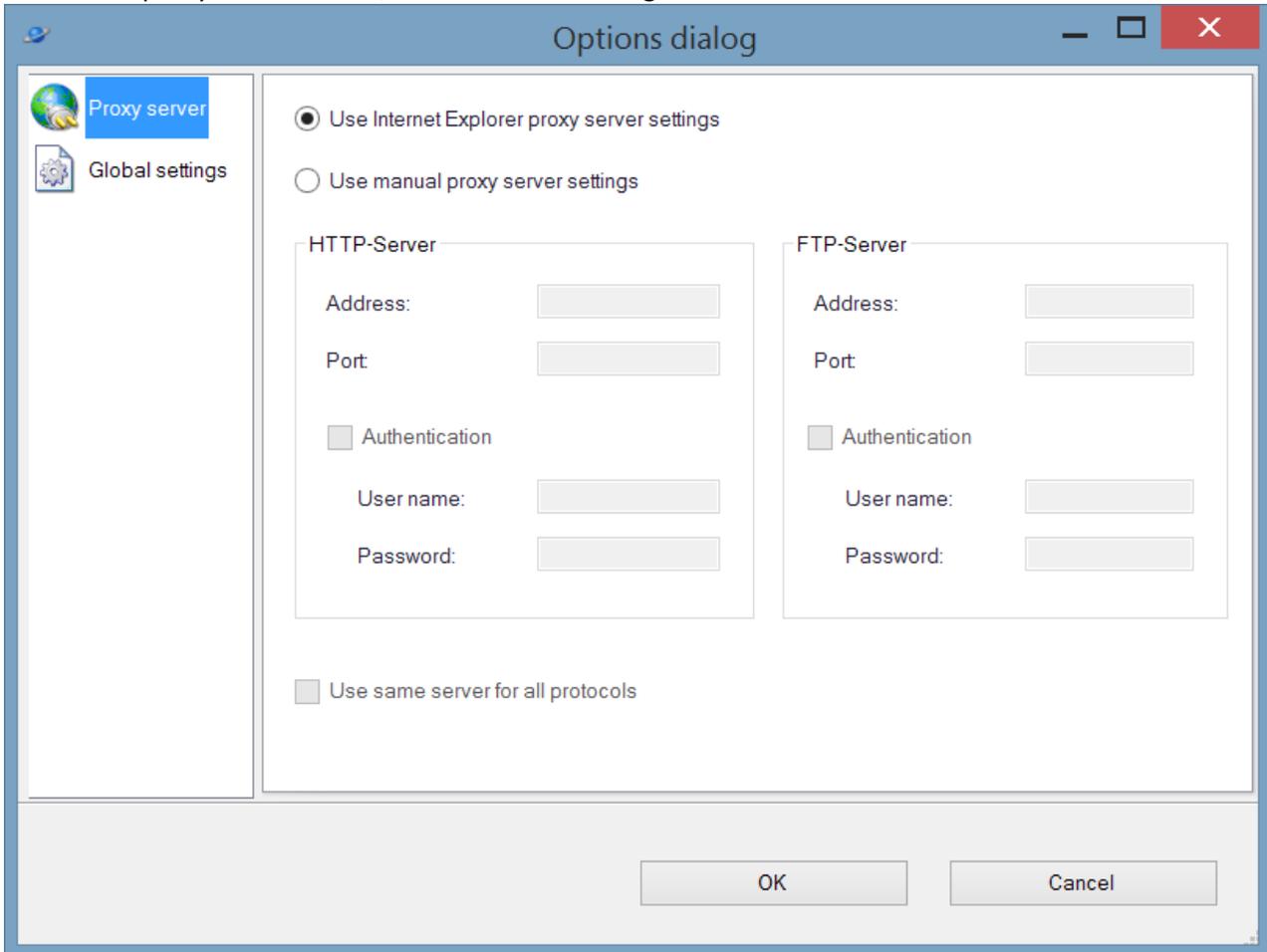
[Offline-Mode](#) .

4.1.3 Tools (Options) - menu

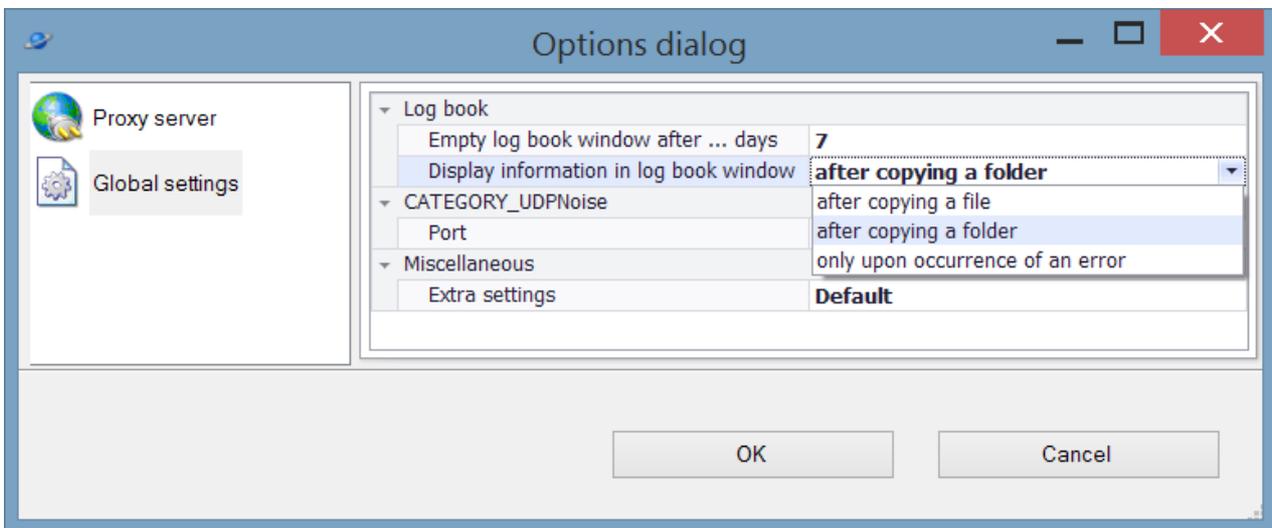
Options... Starts the Options dialog.

Proxy Server

When a proxy server is used, the associated settings can be made here:



Global settings



Log book

*Empty log window
after ... days:*

The log book is emptied automatically after the amount of days set here.

*Display information
in log book window:*

Here you can select how many entries are to be entered in the log window. With "After copying a file", an entry is displayed in the log book each time a file is copied from the device to the PC. When there are many files to copy and only short saving intervals, the contents of the log window can accumulate rapidly. With "After copying a folder", an entry is displayed in the log book each time a folder is copied. With "Only when error occurs", only error messages are displayed in the log window. The readouts "Progress" and "Last download" in the status display indicate copying procedures which are in progress. By default, "After copying a folder" is set.

UDP Status Monitoring

Port:

Sets the port on the PC at which UDP Status Monitoring messages are to be received, e.g. 5000.

Miscellaneous

Extra settings:

Do not change! Leave the default setting.

4.1.4 ? (Help) - menu

Help... Calls online help for imc LINK.

Info... Displays the info on imc LINK.

5 Tutorial

Please find here some tutorials:

Tutorial	Description
UDP Status Monitoring in imc LINK 	Description of necessary steps the FTP configuration with UDP Status Monitoring in imc LINK.
FAMOS sequence 	Example for execution of FAMOS sequence in imc LINK.

5.1 Tutorial: UDP Status Monitoring



Example

UDP Status Monitoring in imc LINK for FTP - or imc (Standard)-protocol

1. Configure imc Online FAMOS

Determine what Display variables, virtual bits etc., are to be transferred by means of UDP Status Monitoring, e.g. use the template "Online_FAMOS.txt":

```
DisplayVar_01 = pv.GPS.longitude
DisplayVar_02 = pv.GPS.latitude
DisplayVar_03 = Channel_001
DisplayVar_04 = Channel_002
```

2. Create a UDP Status Monitoring-configuration

For this purpose use the template "UDP_Status_Monitoring.txt", for instance:

```
[UDP Status Monitor]
DestinationIP=10.0.3.12
DestinationPort=5000
Interval=10
Message=DN={DeviceName}
Message=DT={DateTime, %Y-%m-%d %H:%M:%S}
Message=SN={SerialNumber}
Message=LO={DisplayVar_01, %u}
Message=LA={DisplayVar_02, %u}
Message=MI1={DisplayVar_03, %f}
Message=MI2={DisplayVar_04, %f}
Message=TOF={TimeOfFirstStart,%Y-%m-%d %H:%M:%S}
Message=DC={DirCounter,%u}
```

Any properties and variables to be displayed in imc LINK must be present in the UDP Status Monitoring-configuration. What must be adjusted is the IP-address of the PC on which imc LINK is to run, e.g. for an IP-address of 10.0.3.12 the following line of code must be entered:

```
DestinationIP=10.0.3.12
```

Another thing to adjust is the port on which UDP Status Monitoring is to be run, e.g. for the port 5000 the following line of code must be entered:

```
DestinationPort=5000
```

Another thing to adjust is the interval at which the device sends the UDP Status Monitoring-configuration, e.g. if the UDP Status Monitoring configuration is to be sent every 10 s by the device, the following line of code must be entered:

```
Interval=10
```

Another thing to adjust is the variables to be transferred. For instance, if the longitude of a GPS-coordinate is to be transferred as the Display variable DisplayVar_01, the following line of code could be entered:

```
Message=LO={DisplayVar_01, %u}
```

LO is the code by which imc LINK identifies the variable. %u signifies that it is an unsigned integer. For details on creating a UDP Status Monitoring-configuration, see the imc STUDIO and imc DEVICES user's manual.

3. Create XMLRPC-configuration files

To do this, create two files, xmlrpccmd.call and xmlrpccmd.call.valid (sample files using the template "UDP_Status_Monitoring.txt" are provided in the folder Examples).

4. Load XMLRPC-configuration files to the device

To do this, copy the two files to the PCMCIA folder from the device by means of FTP (e.g. if the IP-address is 10.0.10.55, enter the following call in the Internet-Explorer: ftp://imc@10.0.10.55/PCMCIA/). Copy the file xmlrpccmd.call to this folder. Next, copy the file xmlrpccmd.call.valid to this folder. The device automatically imports these files and creates the filesxmlrpccmd.response and xmlrpccmd.response.valid. Open the file xmlrpccmd.response in any text editor program (e.g. Notepad). If the value entered in the tag <i4> is 0, the configuration has been successfully transferred to the device.

5. Set the port in imc LINK

To do this, set the port to the same value as in the UDP Status Monitoring-configuration under "Extra"/"Options" under "Global Settings" (e.g. to the value 5000).

6. Adapt the project settings

To do this, set the codes for Longitude, Latitude, etc. under "Project-Settings" which were used in the UDP Status Monitoring-configuration. E.g. LO for longitude, LA for latitude, DN for device name, SN for serial number, DT for date and time and MI1 and MI2 under Miscellaneous. "Updating of the status information after ... s" is only evaluated in the HTTPS-protocol.

7. Check the display of the status information

In imc LINK, the columns/cells are created automatically for the properties set.

8. Start the Online-Mode in imc LINK

If the device has been configured with appropriate UDP Status Monitoring, then during a running measurement, the current values of the variables for the device to be transferred are displayed.

5.2 Tutorial: imc FAMOS sequence in imc LINK



Example

Example of running an imc FAMOS-sequence in imc LINK

The first parameter (PA1) of FAMOS-sequences called in imc LINK is always the currently copied folder (e.g. "2012-08-17 07-55-04 (1)" or "00000001"). Subfolders such as "Trigger_01_0001" for triggers with separate folders are not included in the parameter PA1 and, if there are any, would need to be treated separately in the sequence.

In order for the sample FAMOS-sequences to return correct results, the virtual channels Virtual_Channel_001 and Virtual_Channel_002 must be created using Online-FAMOS and saved to the device hard drive, for example:

```
Virtual_Channel_001 = SawTooth(Channel_001, 1, 1, 100)  
Virtual_Channel_002 = SawTooth(Channel_002, 1, 1, 200)
```

Running an imc FAMOS-sequence with two additional sequence parameters:

1. Create the FAMOS-sequence. E.g. FAMOS_Example_1.SEQ. The sequence expects a parameter PA1. The example-file is located in the folder Examples.
2. Set the complete file name of the FAMOS-sequence. In imc LINK, enter the complete file name for "imc FAMOS-Sequence" in the device settings under Reprocessing (e.g. c: \imc\FAMOS\Sequences\FAMOS_Example_1.SEQ).
3. Make the setting for "imc FAMOS Sequenz parameters". Do not enter any more parameters for the example FAMOS_Example_1.SEQ.
4. Start Online-mode in imc LINK. Once a folder has been copied, the FAMOS-sequence specified is run.

Running an imc FAMOS-sequence with two additional sequence parameters:

1. Create the FAMOS-sequence. E.g. FAMOS_Example_2.SEQ. The sequence expects three parameters PA1, PA2 and PA3. The example-file is located in the folder Examples.
2. Set the complete file name of the FAMOS-sequence. In imc LINK, enter the complete file name for "imc FAMOS-Sequence" in the device settings under Reprocessing (e.g. c: \imc\FAMOS\Sequences\FAMOS_Example_2.SEQ).
3. Make a setting for "imc FAMOS Sequenz parameters". The other parameters are entered for "imc FAMOS Sequenz parameters" in the device settings under post-processing (e.g. 1 5. In that case the parameter PA2 is 1, the parameter PA3 is then 5).
4. Start Online-mode in imc LINK. Once a folder has been copied, the FAMOS-sequence specified is run.

6 Technical Specs

System prerequisites

Supported operating systems
Windows 10*
Windows 8.1
Windows 7
*released in conformance with the version of Windows 10 applicable at build date of imc software
Minimum requirements for the PC

Compatibility

- as of imc STUDIO 3.0R4 (July 7, 2011)
- as of imc STUDIO 4.0 for the use of https-protocols with security standard TLS version 1.0
- as of imc STUDIO 5.2R17 for the use of https-protocols with security standard TLS version 1.2
- as of imc FAMOS 6.1 Professional, Enterprise or Runtime (optional)

Licensing

- The licensing has to be done with the imc LICENSE Manager. A license activation is necessary to use Technical Specs. Technical Specs is configured to work with one PC and one imc measurement system, additional user and/or device licenses may be purchased by special order (Technical Specs-1). The Technical Specs license covers both the installation on a dedicated PC plus operation with a defined number of devices. This device related portion of the license is not linked to specific devices but just limits the number of arbitrary devices that can be operated simultaneously.
- The use of the secure https-protocol, in addition to the Technical Specs license (both PC installation and device count), requires an additional device license "imc REMOTE". This license (unlike the Technical Specs device count license) is directly linked and limited to a specific device. It covers imc REMOTE LinkSecure and the extra functionalities imc REMOTE SecureAccess and imc REMOTE WebServer.

Order Code

Order Code	Article number	Remarks
Technical Specs-SW+1	10100116	Software including one device license "Technical Specs-1"
Technical Specs	10100108	Software Technical Specs: It requires a device license for at least one device
Technical Specs-1	10100109	Technical Specs device license
imc REMOTE		imc REMOTE device license
	11700200	imc CRONOS <i>compact</i>
	11900123	imc CRONOS <i>flex</i>
	14000083	imc C-SERIE-FD
	11300128	imc SPARTAN-x-N
	10100159	Code to enable one PC

Options and enhancements

- imc FAMOS Professional, Enterprise or Runtime for post-retrieval automated analysis

Index

%

- %5 device name) for sequence 23
- %6 (device identifier) for sequence 23

A

- Autostart configuration 28

C

- Calling by command line 13
- CE Certification 4
- Certificates 4
- Change requests 4
- column-by-column 26
- curve window 35
- Customer Support 5

D

- Data processing 25
- Date (format)
 - imc Messaging 18
 - UDP Status Monitoring 18
 - UDPNoise 18
- Delete after copying 23
- delete log book's content 27
- Device list 20
- DIN-EN-ISO-9001 4
- Display of the measurement device 20

F

- Format of numerical variables
 - imc Messaging 17
 - UDP Status Monitoring 17
 - UDPNoise 17

G

- General terms and conditions 4
- Get software version 28
- GPS 33
- Guarantee 4

H

- Hotline 5

I

- imc FAMOS sequence 23
- imc Software License Agreement 5
- imc Messaging
 - Format date/time 18
 - Format of numerical variables 17

- Introduction 9
- ISO-9001 4

L

- License 10
- Limited Warranty 4
- line-by-line 26
- Log Book 27

M

- map 35

N

- network search 20

O

- Offline Mode 14
- Online Mode 14

P

- Ping 28
- placeholder for sequence device identifier %6 23
- placeholder for sequence device name %5 23
- Post-processing 23
- Product improvement 4

Q

- Quality Management 4

S

- sequence (imc FAMOS) 23
- Service: Hotline 5
- Status indication 26
- Storage medium 21

T

- Telephone numbers: Hotline 5
- TLS 43

U

- UDP Status Monitoring 15, 29
 - Format date/time 18
 - Format of numerical variables 17

W

- Warranty 4

Z

- ZIP 24