

# Schaeffler SmartCheck/ProLink Firmware Release Notes



October 15, 2024

All changes of the previous releases are included in the latest version.

## Important information:

- To update the Schaeffler SmartCheck/ProLink firmware, use always the latest version of Schaeffler SmartUtility (Light) or use Schaeffler SmartWeb.
- Always use the correct image for your device, i.e. a firmware file named "SmartCheck\_Firmware...." for the Schaeffler SmartCheck or a "ProLink\_Firmware...." for the Schaeffler ProLink.
- Caution! Don't disconnect the power supply or the Ethernet connection to the Schaeffler SmartCheck/ProLink during firmware update! Otherwise, the process cannot be completed and the device will no longer function properly.
- Support for Internet Explorer, Edge and Firefox has been discontinued! Schaeffler SmartWeb can still work with these browsers, but it is no longer tested. We recommend using Google Chrome.
- Features with the <sup>license</sup> flag are optional and require a software license to be enabled. Please contact your sales representative for more information.
- If there is any problem with the firmware update, please go to [www.schaeffler.de/en/technical-support](https://www.schaeffler.de/en/technical-support) for help.
- Some release notes contain descriptions on fixed possible security issues. Most of these also contain CVE-numbers, which are defined by the US National Institute of Standards and Technology (NIST) on known software security issues. More information on those can be found by entering the CVE-number on the web page <https://nvd.nist.gov/vuln/search>.

## Version 3.0.10

### Bug fixes:

- [8837] In some rare cases, the warning for the flash usage was wrong, showing astronomical data rates. This has been corrected.
- [8838] After creating a bearing and a bearing job and deleting both, the import of data into Schaeffler SmartUtility failed, because references were missing in the downloaded data. This has been fixed. Downloading old data with this new firmware will create a download which can be imported into Schaeffler SmartUtility.
- [8849] The device connects to the Schaeffler cloud through Microsoft's IoT Hub. Certificates validate the connection but require periodic updates. To avoid this, the check is omitted. A bug in firmware 3.0.0 re-enabled this check.

## Version 3.0.0

### New features:

- [8780] For both Schaeffler SmartCheck and ProLink the amount of data written to the flash is reduced as much as possible to prolong the lifetime of the flash memory. **We strongly recommend to install this new firmware version because of this!**
- [8779] On the Schaeffler ProLink the status of the flash memory (i.e. the wear of the flash) is now continuously monitored. If the measurement configurations store data too often, a warning is shown that this will decrease the lifespan of the flash memory. In case the flash memory's wear is at a level where a reliable storage of data is at risk, the system will also show warning messages.
- [8771] The complete mechanism to read data from the devices has been rewritten, to speed up the import of large amounts of data into Schaeffler SmartUtility and to make this step more robust. With the introduction of this new mechanism, the data download from the device uses a new data container format (.sdc3-file), which is not compatible anymore with the previous containers .sdc2. **This means, that data of firmware versions before 3.x cannot be imported into a 3.x-SmartUtility and vice versa.** More information on this can be found on our download page under the button "Compatibility information".
- [8731] With the new measurement templates Load Duration Distribution (LDD) and Rainflow Counting (RFC), users can use classification functions to analyse the operating modes of machines more in depth.
- [8612] The status of an IEPE vibration sensor, i.e. the check for an open cable or a short circuit, is now not only shown in Schaeffler SmartWeb and on the module's LEDs, but can also be read via OPC/UA.

## Improvements:

- [8677] Updated Linux kernel from version 5.4 to 5.10 to ensure the long-term maintainability of the firmware (now also for ProLink). This also fixes several (for Schaeffler ProLink uncritical) security issues.
- [8727] Improved error handling for entering decimal points or comma's when configuring Schaeffler ProLink's analogue inputs.
- [8733] It is now possible to create users with a last name consisting of only 2 characters.
- [8751] Changes to alarm settings in the last page of the measurement job wizard are now validated directly after leaving the field. Until now this wasn't done until the OK-button was pressed.
- [8752] Changing the unit of an input would also delete the scaling factors without notifying the user. Now a warning is shown before deleting them.
- [8764] Trying to activate the user management without setting a password now shows a clear error message. The same applies when the passwords do not match on changing the password.
- [8767] Not entering a password when the user tries to login into Schaeffler SmartWeb (with activated user management), now shows a clear error message.
- [8783] After a firmware update, the logbook message for this now shows the previous and the new, current firmware version number.
- [8813] On power-up, the LEDs of the vibration and I/O module switch on all function LEDs for 2 seconds before starting the running lights, to improve the recognition of defect LEDs.
- [8822] From now on, the user receives an error message, when uploading a measurement configuration with an incompatible version, i.e. from a device with a newer firmware version. Until now, the device returned after the reboot to the old configuration, without a message to the user.
- [8823] When trying to upload a SmartCheck configuration to a ProLink or vice versa, now a clearer error message is shown.

## Bug fixes:

- [8721] The number of logbook messages on Schaeffler SmartWeb's status page could be wrong. It was only shown after a click on the column headings. Now the correct number of logbook messages is shown directly.
- [8718] Under certain conditions, a change of a Schaeffler ProLink's vibration input name was not displayed in the tree. This has been corrected.
- [8734] When entering a date trigger for a measurement job, parts of the date select window could not be reached. This has been fixed.
- [8737] It wasn't possible to delete users or user groups, even when the current user had the right to do so. This has been fixed.
- [8753] Using analogue inputs with very low maximum speeds (e.g 0-10V equals 0-5RPM) in combination with large speed scaling factors could lead to configuration issues in the measurement jobs. This has been corrected.
- [8756] When editing an email output configuration, which should only send an email on a system event, "the send by timer" setting was also activated. This would start to send emails every hour, even though the user didn't intend this. Now the previously configured settings will remain.
- [8769] When editing a single field of an alarm map, it was not possible to set the pre-alarm value higher than the default main alarm, even when the main alarm for that field was higher. This is now possible.

- [8728] Under certain conditions, switching the units from ISO to US would not change the unit of the temperature characteristic value in the default measurement configuration from Celsius to Fahrenheit. This has been corrected.
- [8793] Using a speed input which allows negative speeds (i.e. with direction information), it was not possible to set negative maximum speed for such an input. Now the absolute value has to be entered, the input range has been changed accordingly.
- [8798] Because of a bug, it was not possible to change the alarm thresholds of external channels like an OPC/UA-input, when used as an additional channel in a measurement job. This has been fixed.

## Version 2.4.10

### Bug fixes:

- [8748] It was not possible to set correct alarm limits for characteristic values using a Pt100/Pt1000 input on Schaeffler ProLink. This has been fixed.
- [8749] Due to a certificate error on the device, a connection to the OPTIME 3.x cloud was not possible when the certificate check was enabled. Now the connection works as before the 2.4.0-version, i.e. with and without the certificate check.

## Version 2.4.0

### New features:

- [8217] Added an experimental measurement template to use time synchronous averaging on the Schaeffler ProLink.
- [8548] In the context menu of the measurement tree, a measurement can be manually triggered, i.e. measure now. This is independent of other triggers, the state of measurement or time conditions or whether or not the job is disabled.
- [8549] Measurement jobs can now be disabled and enabled via the context menu in the measurement tree. Disabled jobs are skipped, they are not measured as long as they are disabled.
- [8550] Added the unit humidity to be used for input signals.
- [8628] When using SLMP, Schaeffler SmartCheck and ProLink manage a counter for configuration changes, to prevent writing to registers other than those defined for this purpose in the PLC program. Now it is possible for the user to set this counter to the desired value, to be able to change the devices configuration without updating the PLC program. Use this with caution: when the device writes values to changed registers because of a configuration change, while the user sets the counter to the original value, i.e. confirms that the change is OK from a PLC point of view, the device would write to registers it shouldn't write to.
- [8630] The Schaeffler ProLink now supports connections with Ethernet/IP networks using an additional module, which is to be plugged into the CPU module.
- [8631] Time and order analysis signals can now also be viewed as orbit plot.
- [8678] <sup>license</sup> Added a network traffic monitor and a port scanner as a tool for Schaeffler support to help customers with network issues when setting up Schaeffler SmartCheck or ProLink. This can be used to analyze problems related to OPC/UA, sending emails and SLMP. This feature can only be used with a special (temporary) license, which is issued by Schaeffler support to the customer who needs help. The information is encrypted and can only be viewed by Schaeffler specialists.

### Improvements:

- [8600] On slower computers or when the browser tab with SmartWeb is in the background, it could happen that some of the tree elements (e.g. measurement jobs or characteristic values) disappeared. Only a reload of the page fixed this. Unfortunately this behaviour cannot be prevented entirely, but it now will show itself a lot less.
- [8608] The range of inputs could be changed to be less than alarm limits set in any of the measurement jobs. In this way, these limits could never be reached. Now when changing the input range of any input, this range is checked against all alarm limits for this input in the measurement jobs, preventing to set a range smaller than makes sense.
- [8629] It is now allowed to edit measurement jobs which are in use as data input for SLMP outputs, as long as the basic settings of the measurement job (e.g. number of characteristic values, unit group, ...) are not changed.
- [8634] The table with bearings can now also be sorted descending by clicking a second time on the corresponding header.
- [8642] Updated curl library, even though Schaeffler SmartCheck and Schaeffler ProLink are not affected by CVE-2023-38545 and CVE-2023-38546.

- [8650] When an analogue or digital input is used in a measurement job, trigger or condition, it no longer allowed to change the unit group. Before there was a warning stating that the connected jobs, triggers and conditions would be deleted.
- [8677] Updated Linux kernel from version 5.4 to 5.10 to ensured the long-term maintainability of the firmware (Schaeffler SmartCheck only, ProLink will follow later). This also fixes several (for Schaeffler SmartCheck uncritical) security issues.
- [8679] Updated the following security libraries because of potential security risks: Mbed TLS (CVE-2022-35409, CVE-2022-46392, CVE-2022-46393, CVE-2023-43615) and OpenSSL (CVE-2023-0464, CVE-2023-0465, CVE-2023-0466, CVE-2023-2650, CVE-2023-3446, CVE-2023-3817).

### **Bug fixes:**

- [8643] The communication with Mitsubishi PLCs could have interruptions of seconds or minutes, when a lot of inputs and outputs are defined using various, non-continuous register blocks. This has been fixed, by keeping the TCP connection to PLC open instead of opening and closing it for each small part of the communication.
- [8595] It was possible to delete a scaling factor for an input channel used for the "machine is running" measurement condition. This led to an error, since the system then tried to delete this condition, which cannot be deleted. Now such a scaling factor cannot be deleted anymore.
- [8622] Changing the unit group from frequency to no-unit for a digital input showed an error message in the case that this input was in use by a measurement job, trigger or condition. Now it is not possible anymore to change the unit group, since this makes no sense to do in this case.
- [8624] Fixed several minor user interface issues, like not changing the tooltip for disabled fields, disabled buttons when a new bearing is added, etc.
- [8625] When all temperature pre-alarm limits for an additional characteristic value in a measurement job were negative, the configuration wizard could not show the additional signals step of the configuration wizard. This has been fixed.
- [8632] Changing the input unit from one unit to another (e.g. from °C to °F) changed the input range of the channel and could result in alarm limits of characteristic values that are beyond the new input range borders. Now the input range is converted to the new unit so that all alarm limits are still valid (e.g. an input range of 0 - 100 °C is converted to 32 - 212 °F).
- [8669] When uploading the same device configuration (.sc4 file), e.g. from device A, to multiple devices, e.g. device B and C, the data from these devices cannot be loaded into the same Schaeffler SmartUtility database. To fix this, first install a firmware 2.4.0 or higher on the device onto which the .sc4-file is to be uploaded (B and C). Then download the .sc4 file (File → Save device configuration) from the original device (A) and upload the file (File → Upload device configuration) to the other devices (B and C).
- [8682] Due to higher security standards in the current browsers, the firmware update didn't work when the connection to Schaeffler SmartWeb used https. This has been fixed.
- [8712] Due to bug introduced in firmware 2.2.0, it was no longer possible to change the value of a fixed-value-input used in a measurement configuration. This counteracts the idea behind this type of inputs, to be able to manually change e.g. the speed of a machine when this is used in a different operation mode. Now the fixed value can be changed again.

## **Version 2.2.10**

### **Bug fixes:**

- [8590] The settings for external inputs (ie. SLMP, OPC/UA, PROFINET) were locked when these were used in measurement jobs, triggers or conditions. This behaviour had been introduced in firmware 2.2.0, to prevent changes in the trends because of a change of these settings. Unfortunately this prevents the user from copying a configuration from one device to another while only changing for example the register settings. We decided to open up the settings again, only locking the unit group, as before.

## **Version 2.2.0**

### **New features:**

- [7837] To speed up the creation of multiple similar measurement jobs, the user can now duplicate an existing measurement job, rename it and change some settings.
- [8483] The user can now define a process signal monitoring measurement job to monitor up to 8 non-vibration signals. These can be internal channels or external channels like OPC/UA or SLMP.
- [8491] As a preparation for a new way of handling configurations between devices and Schaeffler SmartUtility, it is now possible to download and upload the configuration of a device directly in Schaeffler SmartWeb. The device configuration (.sc4-file) contains all settings of the inputs, outputs, external channels, and measurement configurations. The download and upload of the configuration can also be used to exchange a defective module.
- [8561] For most speed dependant measurement jobs, it is now possible to enable the order analysis, which compensates speed variations during the measurement.

## Improvements:

- [8378] On the status page, the system now shows which measurement job is running, which jobs will be measured next and which ones are waiting for triggers and conditions. It also shows how long a measurement job runs.
- [8381] When a measurement or time condition becomes valid, the then enabled measurement jobs are now inserted at the start of the measurement queue. This raises the probability that the conditional jobs are actually measured before the condition becomes invalid again. This is especially relevant on devices with lots of unconditional measurement jobs. Before this change, the conditional jobs were always inserted at the end of the queue.
- [8391] To help the user when contacting support, all the version information values shown in Schaeffler SmartWeb can now be copied to the clipboard with a push of a button.
- [8417] In the channel monitoring job, the user is now allowed to use the same channel multiple times, for example with different settings for the calculation type or the calculation time. It is now also possible to use external channels (SLMP, OPC/UA, ...) as input for the channel monitoring job.
- [8492] With some PLCs (e.g. Siemens S7), there were compatibility issues with OPC/UA because they can only use 31 bits for the OPC/UA node IDs (opposed to the 32 bits / unsigned int of the OPC/UA standard). Now the user can select in the expert settings of the OPC/UA configuration to use either 31- or 32-bit node IDs. When changing this setting, all node IDs are recreated, so existing external connections using these, e.g. on a PLC, have to be updated!
- [8493] Updated the following open source components because of potential security issues: Linux kernel, protobuf (CVE-2015-5237, CVE-2021-22570, CVE-2022-1941), sqlite (CVE-2022-35737), dropbear (CVE-2021-36369), expat (CVE-2022-40674, CVE-2022-43680), OpenSSL (CVE-2022-4304, CVE-2022-4450, CVE-2023-0215, CVE-2023-0286), kexec-tools (CVE-2021-20269), curl (CVE-2022-43551, CVE-2022-43552, CVE-2023-23914, CVE-2023-23915, CVE-2023-23916), tar (CVE-2021-20193, CVE-2022-48303). For version numbers of all open-source components, open Help -> Show open-source licences in Schaeffler SmartWeb.
- [8494] Newly entered alarm limits in the alarm settings dialogue for each characteristic value are now validated immediately, preventing the user from setting wrong alarm limits.
- [8510] In the gear measurement template, the output filter is now set as close as possible to the highest frequency window of the localised gear tooth damage characteristic values. This greatly improves the frequency resolution of the measurements. For new measurement jobs, this is set automatically. For existing jobs, the user has to walk through the configuration wizard once.

## Bug fixes:

- [8382] Clicking on the menu Help -> Open Help in Schaeffler SmartWeb could lead to warnings about phishing or malware in certain company environments, because of the use of http instead of https. Now all links to the external help pages use https and no warnings are shown anymore.
- [8414] The inverted flag for a Schaeffler ProLink digital input (vibration module or I/O module) was ignored, it had no effect. Now it works as expected.
- [8415] When using a Schaeffler ProLink digital input (vibration module or I/O module) in a measurement condition, the condition was not initialised correctly. If the input was true at start-up or after a configuration change, the condition stayed at false until there was a state change in the input (true - false - true). This now works as it should.
- [8430] After adding or removing a bearing manufacturer, the list was not updated, so the change wasn't visible until a reload. The list is now updated immediately.
- [8467] Using an external input (e.g. SLMP or OPC/UA) with a descending temperature curve could not be used in the base measurement job: it generated two different warnings when trying to save the configuration. This has been fixed.

- [8469] When using an input with a negative input range in a channel monitoring configuration, the default alarm values were wrong. Now the alarm values are set in a way that the configuration can be saved in the configuration wizard.
- [8477] On systems with an expired OPC/UA license, OPC/UA could not be used although this feature should be enabled for everyone as of firmware 1.28.0. Now this works as expected.
- [8541] After adding or deleting external inputs like from OPC/UA or profinet, this change was not visible in the input selection for a measurement condition, until a reload of Schaeffler SmartWeb. This has been fixed.
- [8544] In the edit window of a vibration input of the Schaeffler ProLink, the unit of the sensor sensitivity now matches the chosen signal unit.
- [8555] Fixed a problem with the horizontal scroll bar in the logbook of the status page.

## Version 2.0.20

### Bug fixes:

- [8444] Under certain conditions, the database could be corrupted by an update from firmware 1.28.x to 2.0.x. While the device operation is not influenced, the data import into Schaeffler SmartUtility failed because of the bug. With this update, the corrupted database is fixed on the device, so the import of data into the Schaeffler SmartUtility is also fixed. Background: after the Schaeffler SmartUtility sends a configuration to the device, a data partition reset changed the database in a way, that the firmware update to version 2.0.x corrupted the database.

## Version 2.0.10

### Bug fixes:

- [8416] Using an external source like a PROFINET or an OPC/UA input as a trigger input locked up the measuring process of the system. This has been fixed.
- [8420] Fixed a memory leak in the PROFINET implementation leading to a connection loss after some days of use.
- [8421] The PROFINET GSDML file for the import into the TIA Portal software contained a bug when using a Schaeffler ProLink with 8 modules. Now all these channels are imported correctly into the TIA portal.

## Version 2.0.0

### New features:

- [8283] The Schaeffler ProLink now supports connections with PROFINET networks using an additional module, which is to be plugged into the CPU module.
- [4774] Except for the base measurement, the user can now define if the measurement should be discarded when the speed deviation during the measurement is greater than the user defined value.

### Improvements:

- [8086] Fixed two possible security related issues after penetration test, to prevent a javascript injection into the user name field and risks using an old jquery version for diagrams.
- [8095] <sup>license</sup> Added Kurtosis high and low characteristic value to the OPTIME cloud measurement jobs.
- [8171] When a channel of the Schaeffler ProLink I/O-module configured as digital output, supplies too much current, this is now not only shown by the channel's LED, but also in the logbook.
- [8176] The list of open source licences in Schaeffler SmartWeb (Help-menu → "Show open source licences") now also contains the version numbers, to improve transparency in case of known vulnerabilities.
- [8359] Fixed the following libraries because of potential security issues: libtirpc, Open62541 (CVE-2022-25761), sqlite (CVE-2021-20227, CVE-2022-35737) and zlib (CVE-2022-37434).
- [8374] Some customers have higher needs with regards to user management. Therefore we removed the users and user groups guest and remote from the template for a new database (i.e. for new devices and for existing devices after a reset to factory defaults). For existing databases, it is now possible to delete these users and their corresponding user groups. Internal users (inactive\_user and system), which are only needed for some internal bookkeeping, are not shown anymore.

## Bug fixes:

- [7724] Fixed several problems on using the inverted flag for digital inputs on the ProLink vibration module.
- [8087] When a measurement job used inputs from several Schaeffler ProLink modules, and one of these modules was deleted, then it could happen that the measurement job was not deleted completely, leaving it in a corrupted state. This then prevented any changes to input or measurement settings, showing database errors. Now all measurement jobs using at least one of the inputs of a deleted module, are completely deleted as well, as was already shown in the warning message before delete.
- [8151] When deleting measurement data, the value of the free memory capacity didn't change, because the data was only marked to be deleted for performance reasons. Now the free capacity value also incorporates this marked data, so the value is correct from a user point of view.
- [8152] When changing the alarm limits via the configuration tree (not the configuration wizard), then the selected measurement jumped to a different one after pressing OK. This has been corrected.
- [8155] <sup>license</sup> When the user changes any configuration in SmartWeb while the device is sending an email, this email could be corrupted. This is now prevented.
- [8177] Fixed some inconsistencies when changing the name of a measuring job. Now the new name is shown in all places correctly.
- [8179] When using scaling factors for an analogue Schaeffler ProLink input, the firmware would show the input channel name instead of the scaling factor name for example in the input configuration settings, although the calculations were correct. Now the scaling factors name is shown correctly on all places.
- [8181] After a change of the signal unit for an analogue Schaeffler ProLink input, the corresponding fields in this dialogue are now refreshed correctly.
- [8188] Using scaling factors with different units for a temperature input caused an error message in the measurement assistant, because the upper alarm, alarm map or LDD limit was not converted into the selected unit. This has been corrected.
- [8199] Fixed missing translations of "Schaeffler Cloud" in several places.
- [8112] The user could enter an illegal time condition (this was not validated), which caused not showing tree or data elements in several places. Now time conditions are validated correctly, preventing all these errors.
- [8209] Fixed several problems when entering a decimal number in number fields.
- [8211] After deleting a Schaeffler ProLink, it could happen that configuration changes like adding a communication channel showed error messages. This has been fixed.
- [8214] When the alarm settings in step 5 of the configuration wizard were changed and then the expert mode was activated, the changed values were overwritten with the default values. Now the edited values remain.
- [8210] The lowpass settings for an analogue Schaeffler ProLink input are now ordered correctly by value instead of alphabetically.
- [8220] Changing a Schaeffler ProLink vibration input to a temperature input selected a much too high sampling rate (25600 SPS instead of 128 SPS) and lowpass filter (20 kHz instead of 50 Hz), which would lead to extremely large time signals. Now the correct sampling rate and with it lowpass are selected.
- [8242] The trend of the devices system alarm state could be corrupted with a wrong time stamp under certain conditions, preventing the correct import in Schaeffler SmartUtility. This is now fixed.
- [8261] In the DeviceConfig protobuf values in Schaeffler ProLink, the field ipv4\_addr contained the address of the network port to the modules. Now it correctly contains the address of the front network port.
- [8276] Editing the cloud measurement job was not possible because of a required speed signal. Now adding the speed signal is optional.
- [8278] After adding an additional signal in step 4 of the configuration wizard, the default alarm settings for this channel were wrong for some types of inputs. The default alarm limits are now set correctly based on the selected additional channel.
- [8293] Schaeffler cloud QR-codes were not displayed, when Schaeffler SmartWeb's language was set to Chinese, Japanese, Russian or Spanish. Now the QR-codes are displayed correctly in any language setting.
- [8294] The user right to configure outputs allowed the user to delete output configuration. Now the right to delete outputs is needed to do so.
- [8297] After enabling the data encryption password under Device settings → Edit security settings for the data containers for the SmartUtility, it was not possible to disable this setting. Now the password can be cleared to disable the encryption.
- [8343] Fixed several problem when when entering floating point number in fields at different places of Schaeffler SmartWeb.
- [8346] Entering some specific fixed speed values could lead to a permanent main alarm for the speed value due to rounding issues. Now this cannot occur anymore, old configurations are automatically corrected.

- [8348] When using the digital input of Schaeffler ProLink's vibration module as a measurement condition, then the condition was not updated for very slow signals (>10s between a status change), so the measurement condition was either always on or always off, even when the real state changed. Now each signal change on the digital input is processed correctly.
- [8358] When adding an input to an SLMP communication channel, deleting content of the start register field to then enter some text here would make the Schaeffler SmartWeb unusable. The user interface appeared to working correctly after that, but no changes to any values could be saved, without error messages popping up. Only a reload of the page would fix this. Now deleting this value has no effect.
- [8361] In some cases, changing the language in Schaeffler SmartWeb would not remain after reloading the page in the browser. This has been corrected.
- [8364] When the user added a Schaeffler ProLink module after the configuration has been sent to the device by Schaeffler SmartUtility, then editing any measurement job could lead to error messages and to not being able to save the configuration. This has been fixed.

## Version 1.28.20

### Bug fixes:

- [8323] Updating vibration modules with a firmware version smaller than 1.0.31 failed, resulting in a module which could not be used anymore. Now updating these old modules works correctly.

## Version 1.28.10

### Bug fixes:

- [8286] A downgrade from 1.28.0 to 1.26.x or lower fails, if the device was delivered with the version 1.28.0 or the user updated to that version and then did a data partition reset. With the installation of version 1.28.10, this is fixed in the file system and after that, a downgrade to lower versions works correctly.

## Version 1.28.0

### New features:

- [8262] The features OPC/UA, email and channel monitoring, which previously had to be licensed with cost for each device, are now included for all users free of charge.

### Improvements:

- [8284] Updated Linux kernel from 4.8 to 5.4.129, which fixed several minor, uncritical security issues.

### Bug fixes:

- [8249] Because of a non-critical security problem with the zlib library (CVE-2018-25032), we updated to the latest version to fix this vulnerability.
- [8254] On Schaeffler ProLink, when switching a vibration input with a defective sensor from IEPE to AC or DC, the channel's LED would remain red. Now it is set correctly to green.
- [8256] Updated openssl library (CVE-2022-0778) as well as glibc (CVE-2021-38604, CVE-2022-23218, CVE-2022-23219, glibc is Schaeffler ProLink only) because of possible denial of service attacks.
- [8265] Using the digital input of the Schaeffler ProLink with slow signals (more than 10 seconds between pulses, e.g. as input to trigger a measurement with an on-off-signal), then the software didn't recognize these pulses. This has been corrected, each change of signal is now detected correctly.
- [8271] On some devices, the power supply for the internal network adapter of the CPU module was too close to the limits of the device, causing the network connection to the modules to sometimes break down until the next reboot or power cycle. The modules were shown greyed-out in Schaeffler SmartWeb and the Link LED on the frontpanel was off, when this problem occurred. The power supply settings have been changed so that the problem should be solved.



## Version 1.26.30

### Bug fixes:

- [8245] <sup>license</sup> Because OPC/UA in firmware versions 1.26.0 and newer checks the server certificate on the device more accurately, Schaeffler SmartCheck produced several years ago could no longer communicate via OPC/UA after the update to a 1.26.x firmware version. These old (FAG) certificates are now updated automatically. User issued certificates are not influenced by this.

## Version 1.26.20

### Improvements:

- [8241] In version 1.26.0, we removed the UDP option from the SLMP setting, because it causes error messages and problems in the field. There are however situations, where this is acceptable and TCP is not an option. Therefore we enabled the UDP setting again.

### Bug fixes:

- [8239] More security issues were found in the expat XML library: CVE-2022-25235, CVE-2022-25236, CVE-2022-25313, CVE-2022-25314 and CVE-2022-25315. By updating to the library version 2.4.6 all of these are now fixed.

## Version 1.26.10

### Bug fixes:

- [8196] Updated expat library (parsing of XML structures) because of possible security vulnerabilities (CVE-2022-23852 and CVE-2022-23990).
- [8203] Entering a non-numeric value in the speed field of the base measurement can completely lock the user interface when pressing next, requiring a page reload to reset. Now such a value will show a validation error, disabling the next step.
- [8204] Reading binary data like time signals from the status webservice didn't work. This is possible again.
- [8205] When a Schaeffler ProLink vibration input is set to measure non-vibration values, it is was still shown as input for a cloud measurement job. This is now prevented.
- [8206] When a measurement job used inputs from several Schaeffler ProLink modules, and one of these modules was deleted, then it could happen that the measurement job was not deleted completely, leaving it in a corrupted state. This then prevented any changes to input or measurement settings, showing database errors. Now all measurement jobs using at least one of the inputs of a deleted module, are completely deleted as well, as was already shown in the warning message before delete.
- [8215] Trying to update a Schaeffler ProLink with a hardware revision 3.3 failed with an error message informing the user that the new firmware is not compatible with the current hardware. Now the firmware update image supports all hardware revisions of the Schaeffler ProLink.

## Version 1.26.0

### New features:

- [7618] For external inputs from SLMP or OPC/UA, the user is now able to add additional scaling factors when this is used as a speed input.
- [7885] Events like a defective sensor can now trigger an email to the user.
- [7966] Added context menu to the tree on the status and measurement data page to re-enable the learning mode for all configurations.
- [8008] The Schaeffler ProLink now supports I/O modules.
- [8051] Added automatic logout time setting to the device settings menu, so the user can decide if and when the SmartWeb automatically logs of the user.

## Improvements:

- [4502] When using a characteristic value calculated as DC (i.e. additional process values like speed, torque, ...), their value could become negative, which prevents the learning mode set to highest value to work correctly. Now these values are prevented to learn, since this doesn't make sense for process values. The firmware update will also correct this for existing configurations on the device.
- [4803] Removed the UDP setting für SLMP-connections, since they are not stable and are not recommended by Mitsubishi anymore.
- [6533] The NTP server setting now also accepts server names, rather than just IP addresses.
- [6069] When creating outputs for an SLMP connection, the user can now select all alarm status, value and/or alarm limit lines at once using a new context menu in the table header.
- [7821] A measurement job using a defective IEPE sensor on a Schaeffler ProLink vibration input cannot be measured and produces a warning message in the logbook. Now the number of these messages will be limited to prevent flooding the logbook.
- [8073] On gears with many teeth, the configuration wizard for the gear stage (optimised) showed an error that the needed filter setting will exceed the bandwidth of the system, even when the number of harmonics fields in the expert settings was reduced. We added another expert setting to control the number of harmonics for the filter selection for localised gear tooth damage. Reducing this number will decrease the quality of the diagnosis.
- [8081] Made several small improvements to the vibration modules firmware, which include better self-diagnosis of the hardware and checks of internal communication.
- [8088] Added a link to the Schaeffler support page to SmartWebs help page.
- [8089] Fixed two possible security risks in the OpenSSL library (CVE-2021-3711, CVE-2021-3712).
- [8130] Several network ports were closed, since they were not needed to be accessible externally. All of these did not pose an immediate security risk.
- [8136] In firmware version 1.14 an improved gear template was added, the old one was marked as deprecated (see feature 7016 in this document). As of this version, no new configurations can be created with the deprecated template, only with the new one. Existing configurations using the deprecated template can still be edited.

## Bug fixes:

- [6874] Fixed a problem, where failed SLMP connections showed up as OK in the logbook.
- [7373] Fixed several minor problems in the configuration tree, like not using alphabetic ordering on all places or not showing the correct tree element, when communication channels are selected.
- [7380] The check for SLMP register names now is case insensitive, not allowing names which are only different in lower or upper case.
- [7386] Fixed several problems to not allow the user to use the last SLMP register (e.g. R32767) for data needing more than one register.
- [7388] Entering a wrong character for an SLMP start register and then correcting that, could lead to reordering all registers. Now this only happens when the user explicitly clicks the reassign button to do so.
- [7391] Fixed several problems when moving multiple register assignments at once in the SLMP output table.
- [7917] Fixed a problem where time conditions could lead to not measuring this measurement job at all.
- [7923] The trend for trigger events now only shows a narrow main alarm stripe after a trigger event, instead of a main alarm for long periods of time.
- [7976] Editing fixed value inputs could show an error message, when it was used in a base measurement. This has been corrected.
- [8018] SLMP inputs set to vibration units can no longer be used as vibration input to measurement jobs, since they are too slow.
- [8024] The name of an output configuration produced an error message, when only characters were changed from lower to upper case or vice versa. This is now allowed.
- [8038] The context menu for the hour counter allowed to change alarm limits and to start the learning mode, which makes no sense and which showed an error message when doing so. This is now disabled.
- [8059] For the Schaeffler SmartCheck, the maximum temperature limit the user can set is now 85°C.
- [8063] Fixed a bug which prevented to the user to move forward and backward in the bearing list pages.
- [8064] Fixed a problem when multiple measurement jobs use the same trigger. Now the measurement jobs rotate after each trigger pulse, so each new pulse will trigger the next job in the list. (related, but not identical to 6566, which was fixed in 1.22.0)
- [8102] SLMP inputs didn't work, when at the same time OPC/UA without inputs was activated. Now this combination works correctly.
- [8126] After entering a wrong password to login into the Schaeffler SmartWeb, the user couldn't log in anymore even with the correct credentials. This has been corrected.

- [8129] Under certain conditions, the tree showing the measurement configurations was broken, e.g. the plus and minus symbols for expanding and collapsing didn't work anymore. This has been fixed.
- [8131] A belt drive configuration created with a firmware prior to 1.14 could not be edited with newer firmware versions, because in 1.14 the structure changed, like the defined characteristic values. Now these old belt configurations can be edited again, but without automatic update to the new structure, which is not possible anymore. Users should now create a new belt drive configuration and delete the old one, to benefit from the improved structure. (see bug 6918).
- [8137] When added a speed input as additional input to configurations already using a speed input, editing these configuration would show an error. This has now been corrected.

## Version 1.24.20

### Bug fixes:

- [8062] Fixed a problem where cleaning up measurement condition and trigger trends could lead to the system not responding anymore.

## Version 1.24.10

### Bug fixes:

- [8050] Fixed a problem when updating from older firmware versions (e.g. 1.12.30).

## Version 1.24.0

### New features:

- [7836] Added Russian language to the SmartWebs language selection.
- [7841] ProLink vibration inputs can now also be used for other signal sources like temperature or torque sensors.
- [7843] The time signals now additionally contain the real start time opposed to the overall start time of the measurement job. This is relevant when using pre-triggers.
- [7845] Each measurement condition now includes an operating hours counter showing for how long this condition was valid. This can be used to show for how long a component has been in service.

### Improvements:

- [6321] A trigger interrupts running measurement jobs. Until now, the system would check the measurement conditions for the triggered measurement after the not-triggered measurement already had been interrupted. Now, this interruption is only done when the conditions for the triggered measurement are fulfilled.
- [6523] The database cleanup now also reduces the trigger and condition trends, which improves the cleanup performance.
- [7235] <sup>license</sup> When trying to use an invalid license, e.g. when the license is for another device, then the license manager will now show an error message.
- [7253] Removed limitations for valid IP addresses for NTP, email and SLMP, since these could prevent users in some IT environments to enter their settings.
- [7333] Optimised license manager view.
- [7404] <sup>license</sup> It is no longer possible, to copy a configuration created on a device WITH a certain function license and then copy, use and edit it on another device WITHOUT this license. These configurations still can be copied using the SmartUtility software, but will be ignored for measurements and cannot be edited anymore.
- [7536] Improved data cleanup algorithm: until now, for a period in the past, the highest value in the trend for each characteristic value was saved, the other trend values with their time signals were deleted. This could lead to not having all values for a point in time. Now, for each highest point in one of trends, all characteristic values and time signals are saved.
- [7635] Overcurrent on the digital output of a vibration module and an IEPE sensor error are now logged in the logbook.
- [7725] For digital speed inputs, the user can no longer configure whether the input signal is inverted or not, since it is not relevant for a speed input.

- [7824] Updated linux operating system and several system libraries to prevent minor and uncritical security risks (CVE-2018-18751, CVE-2016-10739, CVE-2018-19591, CVE-2019-15239, CVE-2020-1749, CVE-2020-16166, CVE-2019-18222, CVE-2020-10932, CVE-2018-19211, CVE-2018-19217, CVE-2018-10754, CVE-2020-1967, CVE-2019-11059, CVE-2019-11690).
- [7839] <sup>license</sup> Added devices input settings to the protobuf device configuration send via email or OPC/UA.
- [7840] The protobuf device configuration is now also provided via the public webservice.
- [7852] Improved the error handling of the ProLink system when the normal application is not running, i.e. during reset data partition, during system boot, etc. When because of an internal error the system does not respond within 10 minutes, then the system will reset to enable communication with the device.
- [7859] All information about the used open-source components and their licenses are now shown in an additional menu item in the SmartWebs help menu.
- [7869] Added devices operating hours and temperature to the status page of SmartWeb.
- [7897] Improved stability of the network connection between ProLink modules and CPU, which now doesn't interrupt the measurements on some rare occasions.

## Bug fixes:

- [6487] On (de-)activating the user management or changing the password, the system now locks the user interface until this is processed, preventing the user to make changes during this time, which were ignored.
- [6863] When using asian languages during configuration, it could happen that an SLMP output configuration contained identical register names, which generated an error message on saving the configuration. This has been corrected.
- [7113] In the trend view, trend points without a time signal could overlap some points with a time signal, making it impossible to view the time signal. This has been corrected.
- [7154] Changing a 0-20mA-output to 4-20mA in a SmartCheck could lead to an output current of 2.4mA. This has now been corrected to 4mA.
- [7173] The firmware update waited forever, when the user management was activated and a user other then admin started the update from SmartWeb. Now only the admin user can start the firmware update.
- [7203] Moving back- and forward in the measurement configuration wizard could change alarm settings entered before. Now the values remain as entered.
- [7236] Selecting a measurement configuration should highlight the characteristic value configurations calculated from this. Selecting a different measurement configuration just added more characteristic values instead of highlighting the right ones. This now works as it should.
- [7242] On the SmartCheck, the learning mode could be started using the teach key on the device, even when this should have been disabled in the device configuration. This now works correctly.
- [7297] The deactivation of the SmartCheck keys didn't work. Now the keys are really deactivated.
- [7324] <sup>license</sup> In the device configuration send by email, the learning mode type is now set correctly.
- [7369] The user could enter a time condition with identical start and end time, resulting in an error message. Now a warning is shown to prevent this setting.
- [7372] The shown upper threshold level for a measurement condition was higher than the actually allowed value. Now both are identical.
- [7616] Sensor defects are now shown as a warning symbol for those characteristic values which could not be measured because of this defect.
- [7703] The temperature value in the base measurement is now always called system temperature, both after a system reset and after editing or newly creating it.
- [7719] The button to delete measurement jobs was disabled under certain conditions with activated user management, even though the user had the right to delete configurations. This has been fixed.
- [7721] With activated user management, users without the configure inputs rights could still change SmartCheck/ProLinks vibration and temperature inputs, scaling factors and triggers/conditions This has been corrected.
- [7789] Fixed a rounding problem when entering fixed speed values with positions after decimal point. This could create a main alarm for speed values. This bug was only partly fixed in release 1.20.
- [7809] Editing fixed value inputs could show an error message, even though the changes were saved correctly. This has been fixed.
- [7816] Fixed problem which prevented to change SmartWebs language when using the Edge browser.
- [7821] A measurement job using a defective IEPE sensor on a ProLink vibration input cannot be measured and produces a warning message in the logbook. Now the number of these messages will be limited to prevent flooding the logbook.
- [7829] <sup>license</sup> Under some conditions, the trend values for measurement triggers and conditions were not added when sending the data via email. This has been corrected.
- [7834] Having the user right to change input settings would still not allow the user to change the speed scaling factors. This is now allowed.

- [7855] When creating or editing a user defined or tracked frequency bands measurement job, the system now generates measurement and characteristic value names containing the correct signal unit, i.e. acceleration, velocity or displacement.
- [7882] Under certain conditions, the systems saved a different trigger compared to the one the user selected. Now this is correct.
- [7887] With activated user management, users with only the configure inputs rights could delete measurement jobs, conditions and triggers. This has been corrected.
- [7895] In the configuration overview, the time trigger was shown in the wrong time zone, while it worked correctly. This has been corrected.
- [7922] Using the same input signal multiple times in a measurement job (e.g. use a speed additional values as well as for the alarm map), then a faulty optimisation lead to not measuring this job at all. Now this works correctly.
- [7926] Any change in a configuration would result in resetting the trend value for oil temperature exceeded to zero. This now has no effect anymore.
- [7936] Changing the input channel for an existing alarm map in a measurement configuration could lead to error messages and not measuring the measurement job at all. This has been corrected.
- [7938] Updated gSOAP version to fix several security risks (CVE-2020-13574 to 2020-1313578).
- [7947] When all communication channel types were used, no additional Mitsubishi PLCs (via SLMP) could be added. This has been corrected.
- [7949] <sup>license</sup> When the device sends large email data, then this is split up into multiple emails. Fixed a bug in this process, where under some conditions, the first email was not send correctly.
- [7970] Due to a bug, it was not possible to change the minimum and maximum value of alarm map values. This has been corrected.

## Version 1.22.0

### New features:

- [7731] <sup>license</sup> Added an onboarding function for the Schaeffler cloud. This automatically creates a new measurement job, of which the data is send to the cloud.

### Bug fixes:

- [6566] When multiple measurement jobs listened for the same measurement trigger, then one trigger event would trigger all jobs, which then ran one after the other. Now the first trigger event starts the first job, next event the second, and so on. After all have been run, then it starts again with the first job.

## Version 1.20.0

### New features:

### Improvements:

- [7580] The minimum number of teeth for gear measurements has been reduced from 10 to 7.

### Bug fixes:

- [6467] Clicking in a zoomed part of the live view window stopped the live view. This has been corrected.
- [7403] <sup>license</sup> After the expiration of a temporary license, editing a measurement configuration needing this license showed an internal error message. Now it shows to the user, that the license is expired.
- [7604] In the configuration window for measurement conditions, the link to the input channel showed an error message for SLMP or OPC/UA channels. Now it redirects to the channel configuration.
- [7606] Downloading the register definition file for a Mitsubishi-PLC stopped working in newer versions of Google Chrome due to new security restriction. This has been fixed.
- [7625] When defining a new measurement condition on the ProLink system, the dialogue showed a module instead of a channel as default input channel, resulting in an error message on a missing unit. Now no channel is selected by default.

- [7727] When a measurement condition frequently cancels a running measurement, this could crash the I/O process after some time. This has been corrected.
- [7763] Large configurations, i.e. more than 50 measurement jobs or 500 characteristic values, were rejected by the ProLink system. Now larger configurations are allowed.
- [7789] Fixed a rounding problem when entering fixed speed values with positions after decimal point. This could create a main alarm for speed values.
- [7790] Changing fixed speed inputs multiple times too quickly could lead to not reading these values correctly. This has been corrected.
- [7792] <sup>license</sup> In an email using the IP address as variable, this address would be shown flipped in the email (first octet shown last). This now works as expected.
- [7754] Opening the dialogue to add an output for the first time could lead to a database error, when the default values were not changed. This dialogue now works as expected.

## Version 1.18.10

### Bug fixes:

- [7708] On power up, some ProLink CPU modules reboot multiple times between maintenance system and firmware start. This has been fixed by a new maintenance system version.

## Version 1.18.0

### New features:

- [7239] <sup>license</sup> Implemented OPC/UA server which can provide information on the monitored machine as well as use data from the OPC/UA client as input data.
- [7585] Added support for ProLink system.

### Improvements:

- [7449] When defining an input from a communication channel, the unit groups are now ordered alphabetically.
- [7640] <sup>license</sup> Improved OPC/UA communication with Siemens PLCs compared to the pre-release version.

### Bug fixes:

- [7439] Deleting a fixed value input or a scaling factor produced a database error, when it was used as input in emails. This has been corrected.
- [7490] The Schaeffler SmartWeb showed a time signal or spectrum, even when the time signal list of the selected trend section did not contain any data.
- [7531] Adding a scaling factor for an input channel on the second to last page of the configuration wizard allowed the user to change the unit group. This has now been disabled, since the scaling factor must be in the same unit group as the underlying input.
- [7538] A newly added scaling factor in the configuration wizard is now automatically selected again. This was the default behaviour in firmware versions up to 1.14.20, but was changed in 1.16.
- [7551] Adding scaling factors greater than one allowed the user to enter maximum speed values which were not allowed. This has been corrected.
- [7554] Resetting the data partition (Schaeffler SmartWeb - Help - Select device restart) actually selected the reset to factory defaults, removing not only the measurement data, but all settings. This now works as expected again.
- [7586] When writing a lot of data to a PLC using SLMP (more than around 250 registers), the communication broke down and the communication status was shown red in the Schaeffler SmartWeb. This has been fixed.
- [7623] Defining a measurement trigger or condition failed for the calculation type peak (signed). This has been corrected.
- [7627] Fixed several bugs in the maintenance system (version 1.0.24) regarding use of DHCP, default network addresses and special network configurations.

## Version 1.16.10

### Bug fixes:

- [7505] An invalid 4-20mA input could block all other measurements. Now only the measurement jobs using this input are omitted.
- [7506] Occasionally measurement or time triggers did not interrupt running measurement jobs. This has now been fixed: triggered measurement jobs have a higher priority than non-triggered jobs.
- [7507] Occasionally long running measurement jobs were not canceled when the used measurement condition became invalid during the measurement. Now the condition must be valid for the entire duration of the measurement.

## Version 1.16.0

### New features:

- [7183] Added function to mark measurement configuration as confidential in the configuration wizard. Combined with new user rights, this enables the user to define measurement configurations of which other users cannot see their configuration details.
- [7184] When users do not have the user right to edit measurement configurations, they can be allowed to only change the speed input with a special new user right.
- [7185] Added a license manager to enable special features via software licenses.

## Version 1.14.20

### Bug fixes:

- [7194] Multiple alarm changes within seconds in a channel monitor can lead to system instability, when there is a high system load, e.g. when multiple other configurations are running and alarm changes generate large emails. This has been fixed by only storing time signals for the highest alarm change and by optimizing the overall system performance.
- [7190] The logbook could show a hardware sampling rate error after changing the system time. This error now only appears when there really is a problem with the sampling rate.

## Version 1.14.10

### New features:

- [7155] <sup>license</sup> Added buttons to test the email server settings to server wizard and server information page.

### Improvements:

- [6873] When an NTP server cannot be reached, e.g. because of a missing gateway, the Schaeffler SmartCheck/ProLink will now write an error message to the logbook.
- [7156] The peak calculation for the channel monitor is now done as a signed value, including a lower main alarm threshold.

### Bug fixes:

- [7049] Fixed crash of I/O-process during data download with the Schaeffler SmartWeb.
- [7059] Under certain conditions, e.g. high system load when using the channel monitors, processes occasionally crashed. This has been fixed.
- [7061] Using a belt drive where both sheaves had the same diameter caused the measurement to crash. This has been corrected.
- [7006] The status webservice returned the field AlarmStatusSince with the time stamp of the last measurement. This has been corrected, now it returns the time stamp of the last alarm change.
- [7128] On rare occasions, the Schaeffler SmartWeb asked for a user name and password, even when the user management was disabled. This has been corrected.

- [7068] Editing the lower prealarm value of an alarm map could generate a database error, when the value is below the upper prealarm value. This has been corrected.
- [7033] When the channel monitor changes its alarm state in less than 1s, the device doesn't save time signals for each alarm change event. This has been corrected.
- [7064] In belt measurement jobs, alarm of the belt velocity and belt demodulation didn't change the alarm of the measurement job. This has been corrected.
- [6998] Fixed several rounding errors in Schaeffler SmartWeb.
- [7047] Fixed problem with time axis in measurement data viewer when switching between different characteristic values or channels.
- [7057] Changing user settings overwrites the password, effectively locking out this user from the system. This has been corrected.
- [7066] When using a channel monitor for a temperature channel and the calculation time is set at less than 1s, no values were calculated. This has been corrected.
- [7063] In the liveview, when using the "show hole signal" button, only part of the signal would be shown when changing to a smaller lowpass. This has been corrected.
- [7003] Fixed bug which prevented saving channel monitor configurations using an external (i.e. PLC) input.
- [7055] A bug limited the length of a measurement trigger or condition calculator for input channels to a fixed value. Now the maximum number of samples can be used depending on the channel type and its sampling rate.
- [7110] Removed percent-values for pre alarm values in both alarm settings dialogues, since their calculation was unlogical and different for different types of inputs.
- [7109] Under certain conditions, the channel monitors store trend values more often than is configured. This has been corrected.
- [7039] Fixed English translation for characteristic value settings in the channel monitor.

## Version 1.14.0

### New features:

- [7019] <sup>license</sup> Measurement data can be sent via email. For this, the section external devices has been renamed to communication channels, which now includes email configurations and configurations for Mitsubishi PLCs using the SLMP protocol.
- [7016] Added improved gear stage template, which contains an optimised set of characteristic values for monitoring different types of gear boxes. This template has been developed and validated in cooperation with a well-known gearbox manufacturer. This template should be used for all new gear box monitoring configurations. The previous gear stage template is still available for compatibility with existing monitoring configurations, but has been marked as deprecated.
- [7017] When using measurement triggers, the user can now also define a lead time. This will start the recording of all time signals for a defined time before the trigger event.
- [7020] For additional characteristic values (added via the measurement configuration) the user can now also define a negative main alarm threshold. This makes it possible to use symmetrical input signals (e.g. for speed signals with directional information or torque signals) and generate pre and main alarms for both positive and negative values.
- [7023] <sup>license</sup> Implemented a new channel monitoring template, which enables the user to permanently monitor and alarm up to three channels.

### Improvements:

- [6918] The belt template created different belt wear characteristic values for driving and driven sheave, which makes no sense, since there is only one belt speed. These values have been replaced by a velocity and a demodulation characteristic value. For new measurement configurations, this new template is used automatically, for existing configurations, you have to edit and save them (in Schaeffler SmartWeb Show measurement jobs → select job → Edit → press next several times and then press OK).
- [7021] Downloading data from the device without Schaeffler SmartWeb, now the username and password must be supplied in case the user management is enabled. Additionally the data container is now encrypted (a Schaeffler SmartUtility with version 1.14.0 or higher is required for importing these export files) and has a new file extension (.sdc2).
- [4817] Sending a downloaded debug file via email could fail because of security settings of some email servers, which consider .scr files as possibly harmful. Now the debug log file can also be downloaded via <ip-address>/debug\_info.log. To improve security, the debug log file is now also encrypted.



- [7021] After booting the SmartWeb and communication by the Schaeffler SmartUtility now work as soon as the status LED stops blinking.

### **Bug fixes:**

- [6178] Schaeffler SmartWeb displayed several errors when using the Microsoft Edge browser, including very strange views in full screen mode. This has been corrected.
- [6984] Fixed database errors on saving the configuration when using fixed speed inputs with other than integer numbers.
- [6872] When using a speed input with a fixed value in measurement jobs, the user can change the maximum speed in the wizard (expert setting). Using other than integer values for the fixed speed input could lead to a validation error preventing to continue on to the next page. This has been corrected.
- [6867] Adding an additional input with fixed value to a measurement job could create a permanent pre or main alarm for this value and job. Now such a value will not generate an alarm anymore.
- [6982] Fixed bug which prevented storing a gear configuration when both wheels had the same number of teeth.
- [6223] The templates for user defined frequencies also generated demodulation values when the input was set to velocity or displacement, which physically makes no sense. Now these characteristic values are omitted when the vibration signal is integrated. For existing configurations, you have to edit and save them (in Schaeffler SmartWeb Show measurement jobs → select job → Edit → press next several times and then press OK).
- [5049] Alarm limits for speed inputs are now set in a way that they do not generate an alarm when the speed is zero. This is especially important when the speed is read via SLMP (i.e. from a Mitsubishi PLC).
- [6903] Speed values used in measurement configurations were calculated as RMS, which resulted in positive speed values in the trend, even when the speed was negative. Speed is now calculated in DC, so negative speeds are displayed correctly. To use this for existing configurations, you have to edit and save them (in Schaeffler SmartWeb Show measurement jobs → select job → Edit → press next several times and then press OK).
- [6821] Working with negative speed ranges resulted in strange behaviour for the maximum speed field in the configuration assistant. Now the correct maximum speed is calculated when negative speeds are used.
- [6718] Setting the analogue input to a negative scaling factor could under certain conditions fail (settings are not saved, no error message is shown), which could show strange errors in the Schaeffler SmartWeb for next steps. This has been corrected.

### **Known bugs:**

- [6927] Directly after a firmware update and restoring factory default settings, sending emails might fail. This only occurs with version 1.0.20 of the Maintenance System. This can occur when using DHCP and when the email server is a name rather than an IP address. In the logbook on the status page, you will see the error message "Couldn't resolve host name". In this case, restart the device or do a power cycle the return to normal operation.

## **Version 1.12.30**

### **Bug fixes:**

- [6944] Added support for new hardware version k.

## **Version 1.12.20**

### **Bug fixes:**

- [6840] Editing the register order for external outputs didn't work correctly directly after creation or when reordering after a language change. This has been corrected.

## **Version 1.12.10**

### **Bug fixes:**

- [6828] Changes to the register order for external outputs were ignored under certain conditions. This bug has been fixed.

## Version 1.12.2

### New features:

- [6771] Added Japanese translation to Schaeffler SmartWeb.
- [6772] The links between characteristic values and external device output registers can now be edited by the user. It is now also possible to select all or no characteristic value when selecting the values used for external output registers.

### Improvements:

- [6806] The characteristic of the 2kHz lowpass has been improved. It has a higher attenuation over a wide range, although the stopband starts at a slightly higher frequency. This could have some impact on the following characteristic values in the base of default measurement job: RMS broad band demodulation and periodic value demodulation.

### Bug fixes:

- [6790] Changing the name of the SmartCheck/ProLink via Schaeffler SmartUtility or via Schaeffler SmartWeb was reverted sometimes after a reboot, especially but not only when the new name contained a space. Now the changed name is stored correctly and will remain even after a reboot.
- [6787] When the integrated signal was very small, i.e. when after the integration the amplitudes were very small, this signal could contain a significant offset. This resulted in a wrong ISO10816 or condition guard value. A change in the algorithm now prevents to offset.
- [6723] When using DHCP, reboot to the maintenance system (e.g. for firmware update or boot to maintenance system) could fail if the PC also has configured the 192.168.0.\* network. This has been corrected.
- [6642] The link between registers and characteristic values for measurement triggers and conditions could change after export and import via Schaeffler SmartUtility, i.e. a characteristic value could use a different register to write to. Now this link will never change during im- and export.
- [6205] On some occasions, there could appear peaks in the demodulation time signal, which were caused by a calculation glitch. This has been corrected.

## Version 1.10.2

### Bug fixes:

- [6369] When in the "Save settings for time signals" section on page 3 of the configuration wizard the interval is set to "Never", no time signals will be saved at all. Even in the case of an alarm change no time signal is saved. This was misleadingly stated wrong in the tool tip before and is now corrected.
- [6027] If a user has created other users, they are also deleted when their creator is deleted. The same applies if the deleted user has not created the user himself, but the user group to which they belong. In this case, both the user group and all users were deleted. This has been corrected.
- [6026] When a user who has edited an input channel (e.g., vibration sensor) is deleted, the created input channel disappears irretrievably from the SmartCheck/ProLink. This has been corrected.
- [6024] When a user was deleted, all measurement tasks created or edited by this user were also delete without any warning. Now a warning is shown.

## Version 1.10.0

### New features:

- [2215] New "Machine is running" measurement condition: With this measurement condition you can detect if the relevant machine is running or not. This measurement condition is by default assigned to the basic measurement configuration present on the device and all new created measurement configurations. In the factory default setting, the fulfilment of this measurement condition is based on vibration signals. Edit the measurement condition so that it meets the requirements of your machine (e.g. the engine speed is usually a better criterion for determining whether the machine is running).

- [3755] New template "Tracked frequency bands": In this template for measurement jobs, you can define speed-dependent frequency bands.

## Improvements:

- [5083] By using the learning mode for the ISO 10816 in the firmware version 1.4.27 the alarm limits could be set higher than the defined limits in the ISO norm (for example ISO class I with 4,5 mm/s). Downloading such a configuration with Schaeffler SmartUtility 1.6, the alarm limits will be reset to the standard norm values. In the firmwware version 1.6 it isn't possible to set the alarm limit to a higher value as defined in the ISO 10816 machine classes. This has been changed in a way that the alarm limits are now free, as the standard values of the norm are just recommendations and not limits.
- [5242] The behaviour of triggered measurement had an unclear description in the user manual. A triggered measurement will not be disrupted by another trigger. The documentation is now more precise.
- [5537] Now the time signals are displayed with the rotational speed value (if any) in the Schaeffler SmartWeb and Schaeffler SmartUtility Viewer software.

## Known bugs:

- [6077] If an external controller is not accessible during a measurement (e.g. due to network failures), the measurement cannot be interrupted until an internal timeout is reached. During that time communication attempts will fail from the Schaeffler SmartUtility software.

## Bug fixes:

- [6114] In some cases the alarm status could drop to "no alarm" even when the setting for reset alarms was set to "manually". This issue is fixed.
- [5955] The unit group 'Count' is not available any more, because this unit group is not supported by the PLC.
- [3978] If a trigger or measurement condition was removed from a measurement job it was not possible to add the same trigger or measurement condition again to that measurement job. This is now possible.
- [4443] It was possible to select an existing output configuration as the characteristic value of a new output configuration. When trying to save it, this led to a rejection of the new output configuration without notification. It is not possible anymore to select an output configuration as characteristic value for another output configuration.
- [4855] The numerical result of a characteristic value used in an alarm formula must not be used for an external output. This now impossible to configure.
- [4907] If individual characteristic values were added as external outputs for a Mitsubishi PLC, it could happen that the assignment of characteristic values to the PLC register was not correct. This issue is fixed.
- [4978] The setting for the ISO 10816 alarm levels will now allow values that exceed the recommendations of the ISO 10816 norm. Prior to this change it could happen, that it was not possible to change the machine classes when in doing so the alarm limits would be higher than the recommendation of the norm.
- [4979] It was not possible to change the machine classes when the alarm limits were higher than the recommendation of the norm. This issue is fixed.
- [5146] If the kinematic frequencies of a bearing are changed and this is used in a measurement configuration the frequency bands of a dependent characteristic value for this bearing weren't changed. This has been corrected. If a bearing which is in use is changed the depending characteristic values are changed as well.
- [5153] It was possible to start a download even when for the selected time range no data was recorded. This issue is fixed.
- [5356] Using characteristic values from trigger and/or measurement conditions that were used for an external output will not yield any data if the trigger or measurement condition is not used in another measurement configuration. This results in an external output channel that never has a value. For that reason it is not possible any longer to use characteristic values from trigger and measurement conditions in an external output configuration.
- [5489] The alarm level showing that a measurement condition is not valid at the moment were misleadingly transferred to the device level. Now the alarm level of measurement conditions is not transferred to the device level any more.
- [5514] The rotational speed signal from a PLC was not displayed correctly on the status area. This issue is fixed.
- [5834] It was not possible to rename an analogue input when it was associated with a trigger or measurement condition. This issue is fixed.
- [5900] It was possible to define a rotational speed value of '0.0 Hz', which led to an error. This issue is fixed.
- [5923] It was not possible to change an existing configuration for user defined frequency bands by adding or removing one or more frequency bands. This issue is fixed.

- [6085] The number of measurement values for trigger and measurement conditions could be set to '1' even for characteristic values of peak-to-peak and crest-factor, which is not correct as the result is always '0' (peak-to-peak, crest-factor). This has been corrected and the minimum number that can be entered in these cases is now '2'.
- [6160] The lower alarm limit for 'signal always greater than' for an ISO 10816 characteristic value was accidentally always set to '0' when changing a measuring configuration. This issue is fixed.

## Version 1.6.30

### Bug fixes:

- [5973] In rare cases, the Ethernet link was down and the Schaeffler SmartCheck/ProLink device was no longer accessible over the network, so that a manual restart was necessary. This issue is fixed.

## Version 1.6.20

### New features:

- [5329] Added French translation to Schaeffler SmartWeb.

### Improvements:

- [5498] An output associated with the condition guard was updated every 30 seconds or upon a state change of the alarm. This has been changed. The output is updated every second. The trend however is still updated every 30 seconds.

### Bug fixes:

- [5536] Using external inputs of a PLC with the type WORD yields wrong values compared to inputs of type INTEGER. This has been corrected.
- [5538] Under certain circumstances it occurred that measured values from the vibration channel were abnormally high. This error has been fixed.

## Version 1.6.12

### New features:

- [5117] The supported ESR (Extended Support Release ) for Mozilla Firefox has been raised from version 24 to version 31.

### Usability improvements:

- [2794] Switching the language of the Schaeffler SmartWeb software reordered under some conditions the registers used for sending information to the Mitsubishi PLC, because the variable names are ordered alphabetically. Now the names of the variables are not changed after they have been created, even in case of a language change.

### Improvements:

- [5257] Via a slow network connection, the data download could fail. The timeouts have been increased which should prevent this error.

### Bug fixes:

- [3030] When changing the bearing in the configuration assistant, the fixed bearing race setting is used incorrectly under certain conditions. This has been corrected.

- [3098] Following a firmware update, it was not possible to change the settings of the digital input. This has been corrected.
- [3168] Using wildcards in the bearing search dialogue didn't work and has been fixed.
- [4300] In an environment with strong electromagnetic fields, the current output could be reset to 0mA for some time until the following measurement. This has been corrected.
- [5089] In some cases the analog output signal has a value of 0mA instead of 4mA (in the 4-20mA mode) when the Schaeffler SmartCheck/ProLink was connected to a PLC. This has been fixed.
- [5118] "The position of characteristic values (for example Peak-Peak) at the handover to a Mitsubishi controller were different depending on the language setting. This could lead to store the same characteristic values in different registers on the controller. Now the mapping of the characteristic values to the controller's register is identical for each language."
- [5124] Due to a bug in the firmware, changing the Schaeffler SmartCheck/ProLinks name using Schaeffler SmartUtility was not possible. This has been corrected.
- [5290] Due to a change in Microsoft's Internet Explorer 11, the download of the Mitsubishi register file didn't work anymore. This issue has been fixed.

## Version 1.6.10

### New features:

- [4293] The user can now select whether to send the characteristics values alarm status, the absolute value or both to a Mitsubishi PLC.
- [4876] Added base configuration as new measurement job template, which is identical to the default configuration minus crest factor, Wellhausen counter and periodic value.

### Improvements:

- [4875] Improved the learning mode by learning longer (i.e. 1000 values by default) and by using highest values as default algorithm.
- [4877] A characteristic value will always be green during learning mode.

### Bug fixes:

- [2364] External alarm configurations / external outputs could not be created when using SmartWeb in Chinese. This has been corrected.
- [4621] After changing the IP address, Schaeffler SmartWeb would still show the old address. Now the new address is shown.
- [4799] Due to changes between Internet Explorer 10 and 11, SmartWeb did not work with IE11. This has been corrected.
- [4867] A firmware update from version 1.4.27 to version 1.6.x was not possible when the user management was activated. This has been corrected.
- [4904] Removing a single characteristic value from an external alarm configuration / external outputs was not possible, the SmartWeb always returned to the previous setting. This bug has been corrected.
- [4956] Due to memory leaks viewing a lot of trends will become very slow in any browser. This has been corrected.

### Known bugs:

- [5083] By using the learning mode for the ISO 10816 in the firmware Version 1.4.27 the alarm limits could be set higher than the defined limits in the ISO norm (for example ISO class I 4,5mm/s). Downloading such a configuration with Schaeffler SmartUtility 1.6, the alarm limits will be reset to the standard norm values. In the firmware version 1.6 it isn't possible to get higher alarm limit as defined in the ISO 10816.

## Version 1.6.6

### New features:

- [968] In the configuration menu for the outputs the user now has the option to test the output by pressing a test button, which outputs a voltage or current on the selected output.
- [1639] When creating measurement triggers and conditions, the user can now select which of the following characteristic values should be used: RMS, DC, peak, peak-to-peak and crest factor.
- [1703] The sampling rate of the digital speed signal has been reduced to 1280 samples per second, which is identical to that used for an analog speed input.
- [1719] Until now, speed values always has to be greater than or equal to zero. Now also negative speed values are allowed, for example when the sign of the speed is used as a direction indicator. It is also possible to trigger on negative speed values or use them as measurement condition.
- [1720] Until now, additional channels in measurement jobs were always calculated as RMS, preventing negative values. Now these are calculated in DC. With this for example negative speeds (e.g. for changing direction) become possible.
- [1753] Added trend for measurement triggers and condition which enable the user to check when e.g. conditions are valid or not, so it becomes clear why measurements take place or not.
- [1920] Measurement conditions were only checked before and after the measurement. Now the measurement conditions are checked permanently during a measurement.
- [2600] In the configuration wizard the user can now define time conditions which have to be valid for the measurement job to run.
- [2724] The number of samples of the vibration measurements are now as long as defined by the number of spectrum lines. All others (additional channels, speed signal and the signals used for the alarm map) are as long as the longest vibration measurement.
- [2885] With the new template user defined frequency bands" the user could set frequency bands (set signal to integration) from 2Hz - 1kHz for applications where the alarm levels of the ISO 10816 value are not sufficient.
- [3034] Changed status LED blinking settings (see device manual).
- [3111] In the configuration wizard, the user can now select the template user defined frequency bands.
- [3146] Several changes when using the learning mode:
  - After the learning has finished, learning is deactivated in the configuration, i.e. it must be reactivated in the configuration wizard before a new learning can be started. The learned values are written to the configuration so that they are visible on the configuration page of Schaeffler SmartWeb and on the alarm page of the configuration wizard.
  - Alarm limits can be changed regardless of the learning mode state or settings.
  - When using the alarm map, changing the alarm limits in the configuration wizard only changes the limits for fields which have not yet completed learning. Learned values can only be changed via the new change alarm limits wizard.
- [3386] When at least one characteristic value is learning, this is now shown in Schaeffler SmartWeb with a lamp symbol instead of a blinking alarm symbol.
- [3388] When using the default configuration, the ISO 10816 characteristic value now doesn't start the learning mode automatically.
- [3424] The smallest possible frequency window tolerance, which can be set in the expert settings of the configuration wizard, has been reduced from 3% to 0.1%.
- [3466] Until now, the default alarm levels are stored in the configuration. Now the learned alarm values are stored, which makes it possible to restore a configuration including the learned alarm values using the Schaeffler SmartUtility.
- [3759] The alarm counter can now also be set to any value between 1 and 5 (previously only 1 and 5).
- [4364] The external inputs (i.e. values read from a Mitsubishi-SPS) can now also be used for the alarm map.

## Usability improvements:

- [371] The maximum speed in the configuration assistant could be entered higher than the selected input allows. Now the value is checked against the input range.
- [1034] In the measurement data section the trend is now updated periodically, so new values appear without reloading the page.
- [1224] When changing the ISO machine class in the default configuration, the alarm limits are changed accordingly.
- [2297] The threshold(s) for measurement triggers and conditions are now validated in SmartWeb, preventing the user from entering an illegal value.
- [2353] The user can now delete measurement data in the SmartWeb.

- [2655] When a system reset occurs because of an error, the configuration of the device is restored, only the measured data is lost.
- [2792] Alarm limits can now be changed, using a graphical tool in the area measurement data.
- [2879] Schaeffler SmartWeb now automatically sets the language to the language of the browser, provided that the language is available.
- [2903] When a system starts with a empty database (i.e. without measurement data) and without NTP or backup battery, the clock is set to the release date of the firmware.
- [3245] The displayed limits for the maximum speed value in the configuration assistant were always 0-3000RPM. Now the input range for the selected speed input is shown.
- [3437] Schaeffler SmartWeb now automatically reloads the device configuration when Schaeffler SmartUtility sends a new configuration.

## Improvements:

- [ ] Handling of signals and filters has been improved, which results in a faster response when using Schaeffler SmartWeb.
- [2741] The learning mode now doesn't start automatically after the first boot of the device. The user has to press the teach key.
- [3112] Trigger events could not interrupt a running measurement job. Now a trigger event will interrupt a running measurement (as long as this measurement is NOT started by a trigger), so a triggered measurement will start very quickly.
- [3597] To prevent unintentional keystrokes, a key lock has been implemented. To enable the keys for two minutes, first press the reset and then the teach key. After that, the key led will blink for a brief moment.
- [3598] Due to slow processing in the Internet Explorer, all time signals and spektra were cut-off at 2048 values. The correct number of samples is shown in brackets in IE. Other browsers show the complete signals.
- [3688] All prealarm levels are now entered as absolute values instead of percentages. This prevent a lot of confusion when using signals which are partly or completely negative.
- [3761] When using the digital input as speed input, the number of pulses per revolution can now be up to 10,000 (was 250).
- [3946] In the default configuration, the ISO machine class has been changed from class I to class II.

## Bug fixes:

- [568] The integration of vibration signals (i.e. when the acceleration signal is converted to velocity or displacement signal) had a high attenuation below 20Hz. Now the integrator has been improved and lower attenuation at lower frequencies.
- [1463] Temperature values were calculated as RMS values, which rectified negative temperatures. These were then shown incorrectly on the status page and prevented the use of negative thresholds for triggers and conditions. Now the temperature value is calculated as DC value and can become negative.
- [1577] Until now the icon in front of a time signal in the section "measurement data" showed a main alarm ( red icon), when a characteristic value had an error, e.g. when the speed signal was zero. Now this is shown with a special icon.
- [1650] Integration of the vibration signal to velocity or displacement could not be selected in the live view. Now the velocity and displacement units can be selected and the integrated signal is shown.
- [1664] On some devices, the analog alarm output would show "no alarm" by outputting the maximum value. This has been corrected.
- [1725] When a trend started with error values (e.g. when the speed signal was missing), the alarm limits were not shown correctly. Now the alarm limits are shown correctly even when the trend values have an error.
- [1777] An interruption during sending of a new configuration by the Schaeffler SmartUtility could delete the active configuration on the device without having the new configuration. This has been corrected.
- [1789] When editing the default configuration after changing the language of Schaeffler SmartWeb, the name of the default configuration and the temperature value were not translated into the changed language. This has now been corrected.
- [1797] When the Schaeffler SmartCheck/ProLink is set do DHCP, but not DHCP-server is found, the DHCP-field in the SmartUtility is not activated for this device. This has been corrected.
- [1821] Removing additional channels in the configuration wizard could lead to deleting the entire measurement job. This has been corrected.
- [1878] Changing the name of a channel used as additional characteristic value removed this value from a measurement configuration. This has been corrected.

- [2102] Sometimes the trend in the measurement data section showed no or too few values, when the last measurement was older than 2 weeks. This has been corrected.
- [2244] When a device used DHCP and the network connection was lost, it dropped back to the default IP address and didn't restart the DHCP client. Now losing the network connection doesn't change the IP address nor the DHCP settings.
- [2248] Added a check which prevents the creation of two external devices with the same IP address and port number.
- [2310] When viewing the status page, the live value for a channel with a negative scaling factor was wrong. This has been corrected.
- [2523] For time signals, the user can now choose not to save time signals at all. In case of an alarm change saving of time signals is obligatory.
- [2601] When using a time or measurement trigger in combination with measurement conditions, then the system would wait for the condition to become valid after the trigger event. This means, that the measurement would start some time after the trigger event, i.e. when the condition becomes valid. Now the condition is checked at the time of the trigger event. When valid, the measurement job is started. When not, the trigger event is ignored and the system will wait for the next trigger event.
- [3297] When the system clock is changed to a time in the past, the outputs were not changed until the original time has been reached. Now the outputs are changed even when the system time is changed.
- [3316] If the SmartCheck/ProLink remains in the delivery status (regarding IP settings), then the connection between Schaeffler SmartWeb and Schaeffler SmartCheck/ProLink occasionally breaks down. This has been corrected.
- [3356] After a communication problem with a Mitsubishi SPS, the status flag in the SPS is never changed to OK after the communication resumes.
- [4095] Alarm levels for the ISO10816 value could be set higher than allowed by the standard, but ignored by the firmware. Now the user receives an error, when the alarm levels are set too high.
- [4322] In some conditions, a measurement using a measurement condition on the digital input ran all the time, regardless of the state of the digital input. Now the state is evaluated correctly.
- [4341] The state of the outputs was set after the first measurement. When this measurement used a trigger or condition, this could be a long time. Now the output is always initialized to its zero-state (e.g. 4mA for a 4-20mA-output) after a configuration change.

### **Known bugs:**

- [3100] Time triggers and time conditions always use standard time, daylight saving is ignored.
- [3586] When the digital output is burdened with a current greater than the specified limit of 1A, the output could be switched off. After some time, the output should be reset and can be used normally. Because of an error, the reset doesn't work, so the device has to be switched off and on again for the digital output to operate normally again.

## **Version 1.4.27**

### **New features:**

- [3192] Added Spanish translation to Schaeffler SmartWeb.
- [3398] Improved self monitoring capabilities of the firmware ensuring a restart of the firmware in case of a software error.

### **Improvements:**

- [3516] To prevent unintentional keystrokes, a key lock has been implemented. To enable the keys for two minutes, first press the reset and then the teach key. After that, the key led will flash for a brief moment.

### **Bug fixes:**

- [1772] When editing the default measurement job in any language other than German, the name was changed to the German one ("Standardmessaufgabe"). This has been corrected.
- [2966] Under certain conditions the system would stop storing data until the next reboot. This has been corrected.
- [3485] Google Chrome couldn't show measuring graphs as of version 25. This has been corrected. Be aware: Google Chrome will work, but is not officially supported nor tested!



- [3491] Entering numbers in Schaeffler SmartWeb didn't work anymore as of Firefox version 20. This has been corrected.
- [3496] A bug that prevented the use of both outputs with the same characteristic value as source (only one of the outputs was updated) was fixed. Now both outputs can be used with the same source characteristic value.
- [3589] When using measurement conditions, it could happen that over time no more measurements could be done and live view and live characteristic values didn't work anymore. A reset of the device, changing a configuration or reading data with the Schaeffler SmartUtility would return the device to normal operation. Now the measurement conditions can be used without limitations.
- [3592] Under certain rare conditions the system could switch into a state in which the device didn't react to anything. This has been corrected.
- [3192] Added Spanish translation to Schaeffler SmartWeb.
- [3398] Improved self monitoring capabilities of the firmware ensuring a restart of the firmware in case of a software error.