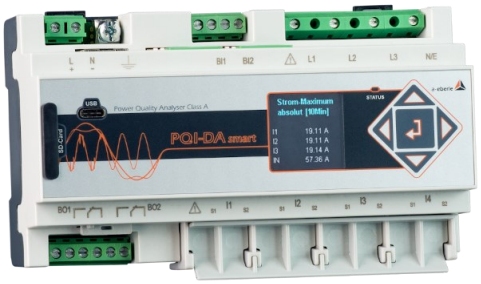
PQSys

Release Notes

PQI-DA smart & PQI-DE

Firmware V2.14.6



Note: Current information about the releases of the parameterization software WinPQlite can be found here.

Firmware v2.14.6 Revision 21507

- Supported by WinPQ lite Version 7.1.3
- Note about incompatibilty: WinPQ V6.3.1 to V6.3.4 are incompatible with reading measurement data from firmware ≥V2.12. If your system is running with one of these versions **it is absolutely necessary to make an update to WinPQ ≥V6.3.5!**

Improvements and fixes

- The secure VPN "Wireguard" can now be deactivated/activated via a parameter. [15343]
- Improvements in “Wireguard” communication and expansion of logging [15905]
- Correction of a shift in the data points in IEC60870-5-104, which is present in V2.14.0 - V2.14.4 starting from current i1. [16811]
- Correction in the use of the harmonic significance threshold for measuring the harmonic phases [16940]
- Improved use of the internal rotary operators to determine the harmonic phases [16940]

Firmware v2.14.4 Revision 21360

- Supported by WinPQ lite Version 7.1
- Note about incompatibilty: WinPQ V6.3.1 to V6.3.4 are incompatible with reading measurement data from firmware ≥V2.12. If your system is running with one of these versions **it is absolutely necessary to make an update to WinPQ ≥V6.3.5!**

Improvements and fixes

- MappingDB: Fixed irregularities in the datatypes of PQI-D(A) day statistics [16718]

Firmware v2.14.2 Revision 21312

- Supported by WinPQ lite Version 7.1
- Note about incompatibilty: WinPQ V6.3.1 to V6.3.4 are incompatible with reading measurement data from firmware ≥V2.12. If your system is running with one of these versions **it is absolutely necessary to make an update to WinPQ ≥V6.3.5!**

Improvements and fixes

- Modbus communication
  - Correction of the modbus registers in dataclasses 1s, n*sec, 10min, N*min, 2h. With firmware version V2.14.0 the registers are swapped starting from the current supraharmonics of phase 2. [16626]
  - Increasing of the system stability while very high polling rates of modbus queries ≤10ms [16078]
  - Reduction of modbus response times due to optimizations of the internal process handling [16609], [16612]
- Deleting duplicated entries in language files and MappingDB [16552]

Firmware v2.14.0 Revision 21240

- Supported by WinPQ lite Version 7.1
- Note about incompatibilty: WinPQ V6.3.1 to V6.3.4 are incompatible with reading measurement data from firmware ≥V2.12. If your system is running with one of these versions **it is absolutely necessary to make an update to WinPQ ≥V6.3.5!**

Features and news

- Modbus Master – Feature P3 [14835]
  - Generic function to read up to 31 slaves via Modbus RTU RS485 and store the data in internal recording files
  - Compatibility with the A. Eberle feeder measurement **I-Sense**
  - LUA command "pq.listMbMasterData()" to display the live values [15479]
  - Introduction of feature P3 "Modbus Master" incl. representation in the device display [15501]
- Recording of supraharmonics up to 20 kHz with feature B1 [14848]
- Harmonic State Estimation with feature Z2 [14971]
  - Switchability of the phase reference between the reference phasor and the fundamental oscillation
  - Recording of the prevailing ratio
- Reduction of the parameterization readout time by 80% [15674]

Security relevant contents

- Update of the library *wolfSSL* to version 5.6.0 [14675]
- Update of the library *dropbear* to version 2022.83 [14806]
- Update of the library *civetweb* to version 1.16 [14806]
- Support for communication via secure VPN *"Wireguard"* [15257]

Improvements and fixes

- Various improvements in system stability and startup behaviour. [14313]
  - Stabilization of firmware update when device memory is full [15622]
  - Stabilization of communication via CCCI to avoid communication failures at maximum system load [15656]
  - Reduction of the process load of the IEC60870-5-104 module [15041]
- Adaptation of Spanish translations in the display of the PQI-DA smart [15207]
- Prevention of device restart if navigation through the display of the PQI-DA smart is too fast [16046]
- Correction of parameters for display and menu lock on the PQI-DE [15662]
- Optimization of the display control of the PQI-DE to prevent flickering [15218]
- Stabilization of the initialization of the temperature driver on the DAQ [15319]
- Optimizations of the calculations of the 10/12T data class
  - Optimization of the input signal of the resampler [15320]
  - Optimization of the calculation of the time stamp [15744]
  - Optimization of the interval length calculation [15871]
- Optimization of the performance of the PQ algorithm [15304]
- Optimization of the internal message handling [15303]

Firmware v2.12.2 Revision 20671

- Supported by WinPQ lite Version V6.4
- Note about incompatibilty: WinPQ V6.3.1 to V6.3.4 are incompatible with reading measurement data from firmware ≥V2.12. If your system is running with one of these versions **it is absolutely necessary to make an update to WinPQ ≥V6.3.5!**

Features and news

- DSP: Extension of the possible lower threshold for RoCoF triggering to 0.005 Hz/s 15614

Firmware v2.12 Revision 20502

- Supported by WinPQ lite Version V6.4
- Note about incompatibilty: WinPQ V6.3.1 to V6.3.4 are incompatible with reading measurement data from firmware ≥V2.12. If your system is running with one of these versions **it is absolutely necessary to make an update to WinPQ ≥V6.3.5!**

Features and news

- Open file exchange
  - Implemented a REST-API in the web server to retrieve Comtrade, PQDIF and proprietary records [13778] [13779]
  - New parameter to select the file export. The previously existing parameter for selecting the Comtrade/PQDIF export format in IEC61850 is no longer applicable and must be newly selected. [14706]
  - Output of PQ events via PQDIF as single files [14072]
- DSP
  - Increased sensitivity in triggering to ROCOF by using a new algorithm which prevents false triggering due to phase jumps [9972]
  - New sampling rate for oscilloscopic disturbance records of 1kHz → Fulfilment of regulatory requirements of European Grid Code RfG (2016/631) for oscilloscopic disturbance records >60sec duration [14428]
  - Further development of the algorithm of residual current measurement [12843]
  - Transducer (RCM) [14590]
    - Extension of the measurement bandwith up to 20kHz for transducer type B+
    - New parameter for selection of measurement bandwidth for transducer types A, AC and B
    - Improved and transducer type dependent wire break detection [11336]
- Support of the Modbus command „Read Device Identification“ [14038]
- Display
  - Safety query on the PQI-DA smart whether data should really be deleted [12479]
  - Extension of the display of the energy meter on the PQI-DA smart up to 100GWh with fixed unit [kWh]/[kvarh] [13424]
  - Revision of the display language in German, English, French and Italian [12346]

Security relevant contents

- Update of the SSH server *dropbear* to V2022.82 [9335]
- Implementation of a secure update procedure with certificate handling [11772]
    - Protection of the firmware archive and the update procedure by digital signature
    - Starting with V2.12 the device will only accept firmware archives with digital signature
    - Delivery of future firmware archives exclusively with digital signature
- Update of the used SSL/TLS-library *wolfSSL* to V5.3.0 [13036]
- Web server with https and standard certificates, which can be exchanged via parameterization [13780]
- Correction of a security hole in the default parameters of the security mode for sealing off the SSH tunnel [13817]
- Correction of the internal Vendor ID for RADIUS to 59339 (Link to iana) [14661]

Improvements and fixes

- Display of the status of the SD card after starting the synchronization method in the display of the PQI-DE [8338]
- Use of a different time stamp when copying memory to SD card, so that the entire selected interval is copied to the SD card [12314]
- Input of a gateway with active DHCP for parameterization of static IP possible again [13353]
- Healing mechanisms to restore a disturbed USB transfer of many recorder files [13400]
- Bug fixing in the process of limiting PQDIF files in memory [13477]
- Extension of the addres check for block operations via Modbus [13547]
- Automatic scaling of the display of real-time values on PQI-DA smart now independent of historical extremes [13618]
- Display of pop-ups from the device display is possible again in WinPQlite in the device view [13654]
- Additional locking in the write process of measurement files to prevent double entry of a measurement value in case of exceptionally high system load [14215]
- Reduction of the default parameter for triggering the ROCOF to 0,5Hz/s [14560]

Firmware v2.10.4 Revision 19836

- Supported by WinPQ lite Version 6.3.5

Improvements and fixes

- Prevention of short-term temperature measurement failures during moments of high system load
- Improvement of internal configuration file recovery during firmware update
- Correction of internally used voltage RMS values for TRMS voltage triggering

Firmware v2.10.2 Revision 19566

- Supported by WinPQ lite Version 6.3.1

Features and news

- Addition of new measurement types to protocol IEC 60870-5-104
  - Apparent energy (consumption and output per phase as well as mains)
  - Distortion reactive energy (supply and output per phase as well as mains)

Improvements and fixes

- Higher level of stability while running PQDIF

Firmware v2.10.0 Revision 19532

- Supported by WinPQ lite Version 6.3.1

Features and news

- Modbus
  - Gateway functionality via RS232 and RS485
  - Extension of the available data points to all data classes and measurands
  - Query of the status of the binary outputs
- Additional connection configuration for measurement of UNE and IN in 3-wire mode
- Addition of new measurement types
  - Total Demand Distortion (TDD)
  - Apparent energy (consumption and output per phase as well as mains)
  - Distortion reactive energy (supply and output per phase as well as mains)
  - TanPhi quadrant-wise according to IEEE 1459
- Differential current measurement at PQI-DE
  - Addition of new structures of active and reactive conductance values
  - Warning and alarm thresholds can be parameterized linearly as a function of power

Security relevant contents

- Separate security log according to BDEW white paper
- Address conflict detection (ACD) can be (de)activated

Improvements and fixes

- MappingDB: Renaming the data class names
- Change of accumulation of net energies from string energies
- PQI-DE: Energy representation format generally in [kWh]
- PQI-DE: All 8 binary inputs are recorded by default
- PQI-DA smart: Improved behavior of IBN wizard for current transformer
- PQI-DA smart: Input of NTP server on device display
- Improvement of SD card handling
- Deactivation of wire break detection at temperature sensor

Firmware v2.8.0 Revision 19199

- Supported by WinPQ lite Version 6.2.0

Features and news

- Power Quality Data Interchange Format – PQDIF (software feature F1)
  - General conversion to the "IEEE 1159.3 - 2019" standard for fault records and synchronous data (10s, 10min, 2h)
  - Different file wrapping criteria 2h, 6h, 12h, 24h
  - Reserved memory of PQDIF is parameterizable
- Uniform format of the displayed quantities in the display of the PQI-DA smart.
- Reduction of the noise signal by the inherent noise of the calibration with respect to IEC 61557-12
- Calculation of the residual current TRMS (RCM) with a bandwidth of 20kHz
- New language Italian on PQI-DA smart
- New display pages on PQI-DE
  - state of binary inputs and outputs
  - level time diagram of RCM and FCM
- Actualization of the MappingDB with PQDIF Support

Security relevant contents

- Improvement system behavior for SSH communication
- defense mechanism against automated brute force - IP blacklist like Fail2Ban (intrusion prevention)
- Closing of an CMP Based TCP Reset Denial of Service Vulnerability

Improvements and fixes

- Improvement of the passive trigger after startup
- Displayed time on PQI-DE is now in local time
- Improved error handling of communication when reading data when a timeout occurs
- Switching to automatic operation of the temperature chip

Firmware v2.6.4 Revision 18986

- Supported by WinPQ lite Version 6.2.0

Improvements and fixes

- Prevention of wrong ip address binding after update-process of the firmware
- Improvement system behavior for SSH communication
- Fixed connection limitations caused by the Zero Windows Probe algorithm
- Improvement of raw write function used to flash booter image

Firmware v2.6.0 Revision 18945

- Supported by WinPQ lite Version 6.2.0

Features and news

- New IP stack with full DNS support
- New popup notification on IPv4 Address conflict Detection – double IP adress detection
- Blocking coarse time synchronization in the system time after the start of the measurement and recording.
- DNS hostname can be used as an NTP server address parameter
- Update of the real-time operating system
- Actualization of the MappingDB with PQDIF Support

Security relevant contents

- Improvement system behavior for SSH communication (Broadcast storm protection)
- IPv4 Address Conflict Detection (RFC 5227)
- MAC Authentication Bypass as fallback for 802.1X port authentication
- Sending hostname (Option 12) to server from DHCP client
- Deletion of public keys possible

Improvements and fixes

- Improved high pass filter values of current clamps inputs
- Degree unit added for Comtrade exports
- Corrected display of the serial number
- Modbus addresses of harmonics are specifically readable
- Modbus default configuration changed
- States of measurement supervision can be read via Modbus without restart
- Corrected the handling in IEC61850 with limit violations of the 10s-frequency - new ICD file necessary!

Firmware v2.4.8 Revision 18760

- Feature and bug fix version of v2.4.6, Revision 18451
- Supported by WinPQ lite Version 6.1.0

Features and news

- Improvement of resistive residual current monitoring
- Reduced settling time for rogowski coils (C40)
- Adapted calculation of displacement voltage for halfcycle recording
- Actualization of the MappingDB

Improvements and fixes

- System behaviour for SSH communication, especially in instable mobile networks
- System behavior for IEC 61850 communication
- Comtrade files are not deleted by a reset anymore

Firmware v2.4.6 Revision 18451

- Feature and bug fix version of v2.4.4, Revision 18290
- Supported by WinPQ lite Version 5.2.8 & 6.0.0

Features and news

- Actualization of the MappingDB

Security relevant contents

- Readout of the ip-settings in the parameterization

Improvements and fixes

- Screensaver of the PQI-DE is activated by default
- Startup with activated SCADA, if the Ethernet cable is physically disabled

Firmware v2.4.2 Revision 18228

- Feature and bug fix version of v2.4.0, Revision 17795
- Supported by WinPQ lite Version 5.2.8 & 6.0.0

Features and news

- Template EN50160-NS-IT added to commissioning wizard of PQI-DA smart & PQI-DE.
- Log message about connection establishment during Modbus communication extended.
- Ethernet settings for security mode shown in device display of PQI-DA smart & PQI-DE.
- MappingDB integrated into firmware.
- Automatic long-term recording of RCM measured variables implemented when starting the RCM function.

Security relevant contents

- Modified behavior of the system tick for SSH communication.
- Stability improvements with regard to ARP storms.
- Improvement of the security vulnerability (severity 2) in the ICMP protocol.

Improvements and fixes

- Improvement of the download of COMTRADE files via IEC61850.
- Modification of the update process for PQI-DE with hardware feature E3.

A. Eberle GmbH & Co. KG
Frankenstraße 160
D-90461 Nuremberg
Phone: +49 911 - 62 81 08 0
Fax: +49 911 - 62 81 08 99

E-Mail: info@a-eberle.de
Internet: www.a-eberle.de

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