

Software History Xvi48V8

8.02A - 30th of October 2024

Fixes

- Missing TCP/IP events "@S1"/"@S2" at moves to actual position fixed

8.02 - 11th of October 2024

New

- LINAX® Lxs**F60S** / LxuF60S support
- Profinet MC_HOME support
- Force Monitoring Verification support
- Storage of force calibration data into motor can now be disabled which is useful if force calibration is run frequently
- New ASCII-Commands
 - PMHSD Profinet MC_HOME Support Disable
 - FMV Force Monitoring Verification
 - FCSM Force Calibration Storage Mode
 - IEMAC Industrial Ethernet MAC address
- New SDO Objects corresponding to ASCII-Commands
 - 0x5003:102
 - 0x5003:103
 - 0x5008
 - 0x5009

Fixes

- TCP/IP and WebMotion communication problems after upgrade from firmware version <8.00 fixed

Improvements

- Minor optical WebMotion® improvements

8.00B - 09th of September 2024

Fixes

- Abort during single protocol Busmodule update fixed

8.00A - 27th of August 2024

Improvements

- General WebMotion® improvements
 - Preserve zoom when changing motion diagram display data
 - Logarithmic sliders changed to linear
 - Input fields in the MOVE section of move axis by click now persistent
 - Selected filter in advanced settings section of setup state controller now persistent
 - Filter not set automatically, when selecting desired frequency in FFT diagram
 - Correct display of Gantry Offset setting
 - Various minor optical improvements
- Consistency of PSR bits and internal trajectory generator state improved
- Various improvements in service menu

Fixes

- Correct handling of ROTAX® Rxhq motors with not yet determined Position I_Force Drift Compensation
- Incorrect display of error 91 after self starting program in Main/Sub configuration removed

8.00 - 19th of July 2024

New

- General synchronisation of controller firmware Xvi75V8S, Xvi48V8 and Tvi36V5
- Full functionality support for Busmodule MP
 - Ethernet over EtherCAT (EoE)
 - TCP/IP communication for WebMotion®, ASCII protocol and Ethernet Installer over Busmodule MP
- New ASCII-Commands
 - LARES Linear Axis Resolution
 - LAST Linear Axis Stroke
 - RP Repeat Positions
 - BCSPR Buffered CSP reserve
 - APSD Automatic program start delay
 - APSM Automatic program start number
 - FEIP Fieldbus ethernet IP address
 - FEMAC Fieldbus ethernet MAC address
 - FENM Fieldbus ethernet net mask
 - FEGW Fieldbus ethernet gateway address
 - FTCP Force Busmodule MP to TCP/IP communication
 - TLICA Tell installed licences
- New error numbers
 - Info 28 "IP range overlap"

Improvements

- General controller improvements
 - Cyclic synchronized position mode with feed forward
 - More accurate I2T calculation
 - General calculation optimization within controller
- General WebMotion® improvements
 - Various optical adjustments

- More detailed information in application data file
- Controller and motor serial number available
- Extended error history buffer
- Automatic program start
- WebMotion® access preventable by pin
- Quickstart function improved
- General communication improvements
 - TCP/IP stack update

5.26A - 16th of Mai 2024

- No functional changes

5.26 - 14th of Mai 2024

- Spurious faulty calculation of error ramp down fixed (this caused error 50 when axis was referenced in soft limit with Codesys)

5.24 - 19th of March 2024

- New ASCII-Command
 - BCSPR Buffered CSP Reserve
- Spurious error 77 at Power ON/OFF with Ethernet/IP buffered CSP mode at low RPI<4ms fixed
- DS402 mode initialisation adjusted (no reinitialization of already active DS402 mode, prevents problems with multiple mode request to same mode as done in Codesys)
- Initialisation issue for position correction table at ROTAX® Rxhq with optical encoder fixed

5.22A - 01th of March 2024

- General limit switch behaviour in gantry systems improved
- Improved communication stability between the controller and rotative drives

5.22 - 09th of February 2024

- Support for Rxhq110T4.0
- Ethernet/IP Buffered Cyclic Synchronous Position mode bus cycle time (RPI) is now configurable. Bus cycle time down to 1ms is possible
- Referencing a rotative motor will set the position of the motor to its single turn position
- New SDO Objects corresponding to ASCII-Commands
 - 0x5003:98 (ENAR)
 - 0x5003:99 (CTAB)
- Limit switch warning displayed correctly after enabling power stage

5.20B - 11th of December 2023

- Additional debug functionality added (no functional changes)

5.20A - 04th of December 2023

- No functional changes

5.20 - 28th of November 2023

- No functional changes

5.18A - 13th of November 2023

- Improvements in cyclic synchronized position mode with intensive additional SDO communication

5.18 - 26th of September 2023

- Correction table support for ROTAX® Rxhq motors with optical encoder
- General controller performance improvements for ROTAX® Rxhq motors with optical encoder
- Autogain setting via WebMotion for all ROTAX® Rxhq motors sets a lower gain leading to more stable controller behavior

5.16 - 17th of August 2023

- Support for high resolution optical Rxhq 110 and Rxhq 50 motors
- Support for absolute gantry reference
- General improvements for gantry reference

5.14B - 24th of May 2023

- No functional changes

5.14A - 09th of May 2023

- Bug in output function assignment fixed

5.14 - 17th of April 2023

- Z-Mark detection for reference drive made more robust, especially for Lxs160F60/Lxu160F60 with magnetic measuring system
- New SDO Objects corresponding to ASCII-Commands
 - 0x5003:96 (EGMSO)

5.12 - 05th of April 2023

- Gantry master/slave offset settings improved for easier commissioning of gantry systems
- New ASCII-Commands
 - TMO Tell Mode of Operation
- ROTAX® Rxhq measuring system filtering improved
- New Error 52 "The connected Jenny Science Motor is not supported by this servo controller"
- Same output functions can now be assigned to multiple outputs
- Velocity estimation used in ASCII command "TV" (Tell Velocity) improved
- Power stage control signal generation for small target currents improved

5.10G - 19th of December 2022

- Gantry master/slave offset settings now available at gantry master WebMotion
- New ASCII-Command
 - EGMSO Enable user defined gantry master slave offset
- Maximum allowed servo controller identification string length now 32 characters (ASCII-command "SID")
- Command line echo can be switched off for socket server communication

5.10F - 09th of November 2022

- Increased tolerance for continuous broadcast frames
- Optimized timing when setting the statusword bit which indicates success after reference drive (HORM). Prevents illegal state in a special case

5.10E - 07th of September 2022

- I2C communication improved for master/slave configuration

5.10D - 08th of August 2022

- Functionality "Position Window Time" added (selectable delay of the PSR-Bit "IN_POSITION" and Statusword-Bit "Target Position Reached")
- New ASCII-Command
 - PWT Position Window Time
- New SDO Objects corresponding to ASCII-Commands
 - 0x6068
 - 0x5001:42
- Update time of PDO objects 0x2005 (I_Force Actual) and 0x200A (Force Actual Value) reduced to 100us
- Communication more robust against excessive Ethernet broadcast load

5.10C - 09th of June 2022

- Default value of "Emergency Deceleration" after reset command now depending on encoder resolution
- Controller problem with rotative motors passing overflow position $2^{\exp(31)}-1$ to $-2^{\exp(31)}$ and vice versa solved

5.10B - 14th of February 2022

- No functional changes

5.10 - 17th of December 2021

- Support for ROTAX Rxhq110-50T1.5
- ROTAX Rxhq measuring system filtering improved (static position error eliminated and control settling time reduced)
- New ASCII-Commands
 - TVPSM Tell Voltage Power Supply Motor
- Error number 54 extended for ROTAX Rxhq measuring system failure
- Error number 92 (3-phase motor output frequency exceeded 599Hz) only showed when power stage is enabled
- Error number 50 (Position deviation too large) works now as well with deviation position set to 1'000'000

5.08F - 10th of December 2021

- No functional changes

5.08E - 12th of November 2021

- No functional changes

5.08D - 03th of November 2021

- Fixed WebMotion rarely stuck at startup

5.08C - 04th of October 2021

- New value for CANopen direct command object 0x5000
 - Object 0x5000, value 0x1050: AREF1 command
- Error 76 (Gantry Master Slave Offset deviation greater than 0.5mm) changed to Info 35
- Sporadic offline problem with WebMotion solved
- Incorrect display of low active inputs during ramp down fixed
- Missing input events at low active inputs fixed

5.08B - 01th of July 2021

- New value for CANopen direct command object 0x5000
 - Object 0x5000, value 0x1040: DMES command
- New SDO Objects corresponding to new ASCII-Commands
 - 0x5003:95
- Improved trajectory generation in cyclic synchronized mode, when only position is transmitted by PDO communication (noise reduction)
- Data consistency problem of Busmodule object 0x607A (target position) at changing from cyclic synchronized mode to any other mode fixed
- Spurious toggling of Force Calibration Valid "FCV" during active force calibration fixed

5.08A - 11th of June 2021

- New ASCII-Command
 - DMES drive mechanical end stop
- Cyclic synchronized mode for reverse direction gantry systems improved
- WebMotion motion recorder speed filter added

5.08 - 28th of May 2021

- No functional changes

5.06G - 06th of May 2021

- THORLABS DDR25/M angle identification bugfix

5.06F - 09th of April 2021

- Add support Rxhq110-50T1.4
- Add support THORLABS DDR25/M
- New ASCII-Command
 - AREF automatic reference drive when entering DS402 mode 6
- Improve field adjustment with active brake for brakes with <12um backlash

5.06E - 05th of January 2021

- The correct inductance value is entered in the motor table for Lxe 550F40, 100nm / Ra50R30 and Ra 60R30. This means that the controlling option "current feed forward" is also possible with these motors
- Watchdog timer command over socket connection worked only the first time the command was sent and after that not anymore. This is now fixed

5.06D - 04th of December 2020

- Parameter input check for configuration over Xenax Ethernet Installer improved
- Error 82 in conjunction with excessive temperature requests over Busmodule fixed
- Minor WebMotion modifications

5.06C - 27th of November 2020

- Info number for "I_Force Drift Compensation Drive failed" changed from 31 to 32
- Process Status Register inconsistency for Ethernet/IP fixed
- Error 98 after driving into soft limits in Ethernet/IP buffered cyclic synchronised mode fixed
- Blocked switch from WebMotion to UpdateGUI fixed

5.06B - 22th of September 2020

- Current Feed Forward algorithm improved
- Internal trajectory generator for cyclic synchronous position mode improved

5.06A - 21th of July 2020

- WebMotion Force-MotionRecorder and I/O Function Indexes management improved

5.06 - 10th of July 2020

- New SDO Objects corresponding to ASCII-Commands
 - 0x603F:00
 - 0x606C:00
 - 0x60FF:00
- Bitfield for warning 46 implemented to find out, which DS402 object caused the warning 46
- Ramp down behaviour in error case in buffered cyclic synchronized mode for Ethernet/IP improved
- Spurious warning 40 after enabling power stage in cyclic synchronised position mode without reference fixed

5.04B - 01th of July 2020

- Problem in port number request over UDP fixed

5.04A - 25th of June 2020

- Transfer of current TCP/IP setting to bootloader improved

5.04 - 15th of June 2020

- Buffered cyclic synchronized mode for Ethernet/IP implemented

5.02A - 12th of June 2020

- Static Error in the evaluation of the actual position signal for Rotax Rxhq fixed

5.02 - 29th of May 2020

- Signal conditioning for Rotax Rxhq encoder improved
- Spurious Error 74 after reference of some Lxs/Lxu motors fixed
- Incorrect trigger at activation of capture position with input 4 fixed

5.00 - 08th of May 2020

- Switch to DS402 mode 8 without reference now possible (starting a drive in mode 8 without reference is still not possible and leads to error 75)
- Synchronous program start support (mode 20)
- Cogging compensation test mode with enabled current feed forward improved
- Default value for avoid vibration damping (AVD) changed to 1
- Spurious Error 77 after switch to mode 8 fixed
- Error in input functions EE/EE1 change over ASCII-Commands or SDO Objects fixed

4.16 - 03th of February 2020

- Gantry jog functionality implemented
- ROTAX position correction table functionality implemented
- Detection for communication error Busmodule (Error 77) improved
- Limit I_Force setting ignored during cogging reference drive
- Problem in controller parameter calculation for 3th party motors with very small induction values solved
- Problem with ELAX reference drive when Limit I_Force is set solved
- Problem with rotative motors reference drive to Z-Mark solved, if motor is already on Z-Mark position at reference drive start
- Problem with force calibration for Lxc1600F60 solved

4.14A - 29th of November 2019

- Electrical angle check for ROTAX Rxvp/Rxhq implemented (error 74)
- Limit I_Force setting ignored during force calibration
- Z-Speed setting for ROTAX Rxvp must have values >0. If Z-Speed is set to 0 (old application), default Z-Speed is used for ROTAX Rxvp
- Field adjustment current for ELAX increased to improve field adjustment with heavy loads
- Problem in field adjustment with enabled current feed forward fixed
- Problem with missing output functions when application loaded from Startup Key fixed

4.14 - 11th of November 2019

- Avoid vibration filter functionality
- Current feed forward for improved current control
- AUTOGAIN function in WebMotion for ROTAX Rxhq
- New ASCII-Commands
 - AVF Avoid Vibration Frequency
 - AVD Avoid Vibration Damping
- New SDO Objects corresponding to new ASCII-Commands
 - 0x5003:79 – 0x5003:80

4.12C - 10th of November 2019

- Output and input functions programmable over ASCII-Commands and SDO Objects
- New ASCII-Commands
 - NOF Number of Output Function
 - TYOF Type of Output Function
 - NIF Number of Input Function
 - TYIF Type of Input Function
 - PAIF Parameter A of Input Function
 - PBIF Parameter B of Input Function
 - PCIF Parameter C of Input Function
- New SDO Objects corresponding to new ASCII-Commands
 - 0x5003:67 – 0x5003:76
 - 0x5003:81 – 0x5003:87
- Problem with force calibration for Lxc272F40 solved
- Problem with Busmodule firmware update over Ethernet Installer solved

4.12B - 18th of October 2019

- Improved 3 phase Delta I2T supervision for ELAX
- Optimized ROTAX Rxhq ABZ position encoder signal acquisition and controlled overflow
- Adjusted “I run” values for ELAX and ROTAX Rxhq
- WebMotion: Improved text feedback for Errors 65, 67 and 90 and support for ROTAX Rxhq Autogain functionality

4.12A - 24th of September 2019

- Problem by updating Object 0x60FE (Digital Outputs) in case of active BRK output function solved
- Problem with ASCII-Commands via Socket connection solved

4.12 - 03th of September 2019

- Support for ROTAX Rxqh absolute encoder mode
- Support for ROTAX Rxhq force calibration started by program
- Round table RT-120-25H80-229440 and RT-120-37H37-314720 added to third party motor parameter table in WebMotion
- Character "#66" in the ASCII protocol for uncompleted commands as well for socket interface, not only for serial interface (timeout 5s between each character)
- TCP/IP Socket 10001 closes when network cable is disconnected or when command "ENPR" is sent over TCP/IP Socket 9999

4.10B - 23th of August 2019

- New procedure to ensure that after an Error 54 (Reference is lost) the PLC is able to power on again the drive without Error 75 (Reference is pending) and a new reference can be correctly executed
- Improvement of DS402 status machine in order to allow the direct power on of the axis in mode of operation 0 without disabling Bit 12 of the DS402 Statusword in TwinCAT3 (Build > 4020)
- WebMotion: Correction of Auto Gain Settings for ROTAX Rxhq

4.10A - 25th of June 2019

- Adjustment of ASCII-Command ACV (Acceleration variation) output, value of jerk scaled in x1000inc/s3 to cover the whole range of possible values
- Correct setting of I_FORCE_MAX_LIMIT (Bit 15 in Process Status Register) in deceleration phase of a limited force drive
- Problem with controller block in the case of active BRK function solved
- Improvement for ROTAX Rxhq ABZ position encoder signal acquisition

4.10 - 23th of April 2019

- Support for ROTAX Rxhq
- Swing Out Reduction functionality implemented
- I_Force Drift Compensation functionality implemented
- New ASCII-Commands
 - SORF Swing Out Reduction Frequency
 - SORD Swing Out Reduction Damping
 - IFDCP I_Force Drift Compensation Positive
 - IFDCN I_Force Drift Compensation Negative
 - IFDCS I_Force Drift Compensation Setting
 - PIFDC Position I_Force Drift Compensation
- New program function I_FORCE Drift Compensation Positive/Negative
- New values for CANopen direct command object 0x5000
 - Object 0x5000, value 0x4010: IFDCP command
 - Object 0x5000, value 0x4011: IFDCN command
- New Info 27 "Swing Out Reduction parameter changes not applied yet"
- New Info 31 "I_Force Drift Compensation Drive failed"
- New Process Status Register Bit 26: I_FORCE_DRIFT_COMPENSATION_DRIVE_ACTIVE
- New character "#27" in the ASCII protocol if command is rejected caused by ongoing I_Force Drift Compensation drive
- For 3th-party rotative motors: In standstill, I_NOM is used for current limitation
- For Rotax Rxhq/Rxvp, Z-Mark reference is mandatory (SPZ can't be set to 0 anymore for Rotax Rxhq/Rxvp)
- Scaling factor for the use of objects 0x60B1 (velocity offset) and 0x60B2 (torque offset) with TwinCAT adjusted
- DHCP is activated, if IP-address of XENAX is set to 0.0.0.0

4.08E - 24th of January 2019

- Command RESM (Reset Motor Data) supported via Busmodule access

4.08D - 29th of October 2018

- Transmission of changed indexes in master/slave configuration fixed
- WebMotion: Redesign menu "setup->state controller"

4.08C - 09th of October 2018

- Stability/Dynamics settings implemented. Depending on the application needs, controller can be tuned for higher stability or higher dynamics
- New error number 59, if connected JSC motor does not fit to the application data on the servo controller (e.g. if a new JSC motor type is connected to the servo controller)
- New ASCII-Commands
 - RESM Reset Motor Data
 - PPSD Pole Placement Stability Dynamics
- LIF (Limit I_Force) and program functions DIF (Drive I_Force) and CLIF (Change Limit I_Force) are now limited to "I run"
- I2T supervision continuous at disabled power stage and does not reset at power quit anymore
- Electrical angle for LINAX Lxs800F60 optimized
- Problem with controller settings over CANopen Busmodule resolved (Busmodule stuck after BWP, BWC or ML commands)

4.08B - 13th of July 2018

- Problem after switching back from DS402 mode of operation 8 to 1 or 6 while being in DS402 state "operation enabled" resolved

4.08A - 02th of July 2018

- For reference drive, always "I run" is used as current limitation, independent of "Limit I_Force" setting
- JOG commands now refused during ramp down after warning or error detection to prevent impact on ramp down behaviour in warning and error case

4.08 - 14th of May 2018

- Internal trajectory generator for cyclic synchronous position mode improved
- New PDO objects for transmission of speed and acceleration in cyclic synchronous position mode:
 - 0x60B1 (velocity offset)
 - 0x60B2 (torque offset)
- New PROFIdrive parameter p2000 (Bezugsgeschwindigkeit) to enable transmitted speed in PROFIdrive standard telegram 5
- Objects 0x6060 and 0x6061 now can be mapped to PDO
- Problem with SDO access to PDO mapped objects at low process cycle times < 1 ms resolved
- Deceleration during Z-Mark search for ROTAX Rxvp changed to prevent error 67 at high Z-Mark speeds
- Access to non-volatile memory improved (problem with application data loss resolved)

4.06K - 13th of March 2018

- Problem in application download solved

4.06J - 01th of February 2018

- Sporadic error "L" at start of firmware update corrected

4.06I - 23th of January 2018

- I_Force change minimized and incorrect error 72 behaviour corrected after abort of a movement in cyclic synchronized mode

4.06H - 20th of December 2017

- New ASCII-commands AIXD, DIXD, SIXD and TYIXD to set dynamic index values which are not stored in non-volatile memory

4.06G - 19th of December 2017

- Access to non-volatile memory improved (reduction of error 83)
- Default position bandwidth for ROTAX Rxvp set to 100

4.06F - 01th of November 2017

- New character “#49” in the ASCII protocol for JSC motor commands, if no JSC motor is detected at start up
- I2C communication improved for master/slave configuration

4.06E - 18th of September 2017

- Repeat force calibration will improve the force calibration result

4.06D - 12th of September 2017

- New ASCII-command "ACB" for telescope structure support
- Improvement of internal test functions

4.06C - 28th of June 2017

- Busmodule access to soft limits (CANopen object 607D) corrected

4.06B - 27th of June 2017

- No functional changes

4.06A - 23th of June 2017

- Power supply voltage measurement improved

4.06 - 20th of June 2017

- Support for ROTAX Rxvp
- Enhanced bandwidth mode implemented for more robust control behaviour in resonant systems
- New info 25 "Sign of life counter on Busmodule disabled"
- New info 26 "3th-party motor not configured or DIP-switch is set to 'ROT' instead of 'LIN'"
- Diverse Error/Warning/Info text updated
- New ASCII-Commands
 - GR Gear Ratio of rotative jenny science motors
 - RXZP ROTAX Rxvp Z-mark position
 - FFS Filter Frequency Speed
 - FQS Filter Quality Speed
 - EBMD Enhanced Bandwidth Mode Disable
- ASCII-Commands renamed
 - FQF1 to FFC (Filter Frequency Current)
 - BWF1 to FQC (Filter Quality Current)
- New SDO Objects corresponding to new ASCII-Commands
 - 0x5001:31 – 0x5001:40
 - 0x5003:61 – 0x5003:66
- New program/input function "change index to actual position"

- I_Force change minimized after abort of a movement in cyclic synchronized mode
- Faster XENAX to Busmodule communication
- Cyclic check of hall signals
- Crash handling improved
- TCP/IP Socket connection with long frames improved
- Automatic output clear at program start removed
- Diverse small modifications in WebMotion

4.04D - 22th of May 2017

- Change of indexes in master/slave configuration now available via Busmodule access

4.04C - 28th of March 2017

- CANopen states "Ready to Switch On" and "Switched On" stay unchanged after switching off power stage by Emergency Exit function
- Motors Lxc230F10-7 and Lxc135F10-7 included

4.04B - 10th of February 2017

- Separate Error 93 in "Encoder cable disconnected" (new: Error 99) and "Encoder plausibility failure" (Error 93)

4.04A - 07th of November 2016

- WebMotion V5.72A: Correction minimal distance value in QuickStart

4.04 - 02th of November 2016

- Non-volatile application data storage improved (reduction of Error 86 "wrong checksum of application data")
- New ASCII-commands ACI, OVRDI, POI, SCRVI, SPI, WAI and WTI to set non-volatile initial values of the motion data. Values set by the ASCII-commands AC, OVRD, PO, SCRVI, SP, WA and WT are not stored in the non-volatile memory anymore
- PLC outputs are not initialized to value 0 at program start anymore. This allows setting outputs across different programs
- New Info 24 "Parameters of index invalid"

4.02B - 03th of October 2016

- No functional changes

4.02A - 31th of August 2016

- Watchdog functionality now available with socket communication

4.02 - 08th of July 2016

- I2T supervision for LINAX and ELAX motors implemented
- New info 22: "Interrupted program start (by IP input function)"
- New info 23: "Start position of profile not valid"
- Warning 46 extended with "Invalid PDO cycle time set" (only multiple of 100us are valid)
- Appearance of HTML WebMotion within different web browsers harmonised
- New option whether Ethernet settings should be stored in startup key or not
- I2C communication improved
- Error history after power cycle still available
- New character "#66" in the ASCII protocol for uncompleted commands over serial interface or socket interface (timeout 5s between each character)

4.00D - 29th of April 2016

- Output format of input events corrected

4.00C - 21th of April 2016

- Socket server improved for faster access via socket connection

4.00 - 11th of December 2015

- Initial version with XENAX® Xvi48V8 support
- Input function PQ just on rising edge
- Changing speed during reference is not possible
- PSR InPosition is set even a reference is cancelled
- If Mode of Operation is 8 and no valid reference is done if a LINAX/ELAX is connected, error 75 is shown
- New rotative motors in motor database, RT-62-12H60, RT-120-24H80, RT-120-30H37
- New command "EIPB" and "RESB" for EtherNet/IP Busmodule
- Reading MAC-Address from Powerlink Busmodule is possible
- New command "VERL" to get the version of the bootloader
- New warning 46 if cyclic data are not valid
- New Error 55 if the temperature HW-Signal is activated if a ELAX or LINAX without optical measurement system is connected
- New SDO Objects
 - 0x5001/26 – 0x5001/30
 - 0x5003/59 – 0x5003/60
 - 0x5006/00 – 0x5006/10
- Objects 0x5003 and 0x5004 can generate an error code
- Gantry reference can be cancelled
- Correct behaviour of soft limit-checking during reference after a Jog drive