

Product Release Notice

KINGSTAR 3.7

General Availability Release Date

December 20, 2019

Product Overview

KINGSTAR is an all-software, complete “plug-and-play” PC-based Machine Automation platform for IoT and Industry 4.0. Key pre-tested and pre-integrated industrial machine components include software-based motion control, machine vision, programmable logic controller (PLC) and the industry’s only plug-and-play EtherCAT master that auto-discovers any vendor’s EtherCAT drive, IO or device and auto-configures the EtherCAT environment at startup. Built on the EtherCAT standard and supported by a real-time 64-bit Windows operating-system (RTOS) from IntervalZero, KINGSTAR empowers engineers to design, develop and integrate machine control applications or a system of controllers on a single Industrial PC. The KINGSTAR platform can replace all hardware with software-only motion controllers and machine vision positioning systems, quickly and cost effectively.

There are two product lines – **KINGSTAR Motion** and **KINGSTAR Fieldbus**:

- **KINGSTAR Motion** replaces hardware motion cards with an all-software solution that creates PC-based machine controllers for premium precision and performance.
- **KINGSTAR Fieldbus** offers support for CANopen over EtherCAT and simplifies configuration of EtherCAT networks with its unique plug-and-play approach.

KINGSTAR Motion

New Features

- Provides a Scope tool to observe axis/IO channel data to monitor how variables (Channels) evolve over time. [KS-1149]
- Provides the ability to add simulated axis while the KINGSTAR Subsystem is running. [KS-247]

- Adds functionality to get the number of simulated axes and I/O modules. [KS-1652]
- Adds support for Touch Probe functionality with simulated drives. [KS-1269]
- Expands the functionality of the Tuning Console to include:
 - editing features for offline axes and I/O modules [KS-594]
 - device matching [KS-1148]
 - IO and SDO pages [KS-1159] [KS-1160]
 - Testing page [KS-1400]
 - options for DC master shift and DC check in Connection settings [KS-1615]
- Expands the KINGSTAR PLC to include:
 - support for I/O variables in bits [KS-832]
 - ST functions for Configuring Linked Devices [KS-971]
 - simulated motion library for SimuLab so users can test their programs in the simulation mode. [KS-1516]
- Adds helical interpolation functionality to PLCopen APIs and function blocks. [KS-1536]
- Adds functionality to use a configuration file to start the KINGSTAR Subsystem. [KS-1282]
- Adds support for DC Master Shift mode where a reference clock is used. [KS-1164]
- Adds the ability allow users to disable DC checks during the startup of KINGSTAR Subsystem. [KS-1500]
- Adds the ability to write data to a digital input of an axis. [KS-1268]
- Adds sync methods to the IoModule Class to read and write I/O and SDO data. [KS-1309]
- Adds the Position Lag property to the Axis class in the .NET Class API. [KS-1473]
- Adds parameters and properties to get the moving direction of an axis. [KS-1620]
- Adds the ability to read all PID settings without changing the control mode. [KS-1639]
- Adds jump protection. If the distance between the new target and the latest target exceeds the maximum position lag, a software alarm will be triggered to disable the motion and axis. [KS-1644]
- Adds functionality to get the state of the slave axis in CAM and simulate the CAM result. [KS-1646]
- Adds a 5th degree polynomial interpolation for CAM. [KS-1647]
- Adds functionality to read the values of all the KINGSTAR settings. [KS-1649]

- Allows users to select between different ESI file for a given device. [KS-1664]
- Adds support for PDO Assignment for I/O modules in KINGSTAR ESI Import Tool. [KS-528]
- Allows continuous update of position and distance in single-axis motion. [KS-742]
- Adds support for large CAM tables. [KS-1633]
- Supports the latest Windows 10 Features release 1909. [KS-1347]
- Provides Traditional Chinese version of KINGSTAR help system. [KS-1553]

Updates & Resolved Issues

- Updates the Tuning Console:
 - full configuration of devices can be exported to a .hpp file. [KS-1162]
 - Axis Testing feature is now part of the Tuning page. [KS-1399]
 - When certain values are changed in the Configure, Test, and Tuning page, the changed items will be marked. [KS-1571]
- Expands error messages provided when dealing with reading or writing the digital input or output of a servo drive. [KS-1270] [KS-1308]
- Resolves an issue regarding MC_TouchProbe and MC_DigitalCamSwitch not having any PDO protection. [KS-1313]
- Resolves an issue where the following error bit of the servo drive is TRUE, and KINGSTAR was sending a warning instead of an alarm. The axis would keep working without being interrupted by the alarm. [KS-1503]
- Improves how deceleration distance is determined. [KS-1534]
- Synchronizes the PLC Fast Task with EtherCAT. [KS-1706]
- Resolves an issue where Motion commands may not receive the last moving direction of the previous command. [KS-777]
- Resolves an issue where, under certain circumstances, an axis accelerates and decelerates repeatedly during the last cycles. [KS-979] [KS-977]
- Resolves an issue where MC_MoveAbsolute may not complete and repeatedly move the axis back and forth. [KS-1144]
- Resolves an issue where servo drives vibrated when switched between CSP and CST modes. [KS-1165]
- Resolves an issue where a restarted slave was not able to switch the SanyoDenki RS2-H device back to the Op state. [KS-1168]

- Resolves an issue regarding MC_MoveContinuousAbsolute and MC_MoveContinuousRelative's deceleration profiles not being continuous. [KS-1182]
- Resolved an issue in KINGSTAR PLC for function blocks. If a move command is sent and cancelled (Execute set to FALSE), the axis will still be moved by that command until the move is finished. After the move is done, the command Done should be TRUE, but it is FALSE. [KS-1266]
- Resolves an issue regarding inputs of a large Jerk size in MC_MoveContinuous functions may fail to ramp up to EndVelocity even if the distance is enough. [KS-1267]
- Resolves a discontinuity of velocity issue that may occur when using MC_MoveContinuous functions if the start velocity is larger than the velocity parameter. [KS-1271]
- Resolves an issue regarding not returning an error when you send MC_TouchProbe in which servo drive's touch probe is enabled. [KS-1272]
- Resolves an issue where the InputNumber of MC_ReadDigitalInput can be negative. [KS-1274]
- Resolves an issue where MC_MoveContinuousAbsolute and MC_MoveContinuousRelative sometimes speed up to EndVelocity and keep using it. [KS-1295]
- Resolves an issue where the KINGSTAR Demo and Tuning Console would not connect to the KINGSTAR Subsystem if they were previously terminated by another application. [KS-1302]
- Resolves an issue regarding Baud not being editable in Beckhoff EL6751 CANopen. [KS-1307]
- Resolves an issue where new sensor settings were not applied correctly. [KS-1316]
- Resolves a memory leak when using GetServoStatus in Win32 API. [KS-1355]
- Resolves an issue where the MC_MoveVelocity deceleration, if too large, could not decrease with the velocity while the velocity was decreasing to zero. [KS-1391]
- Resolves an issue where when an axis is accelerating, and MC_MoveVelocity is sent with a velocity lower than the current velocity of the axis, the current velocity of the axis will sudden change to the velocity set in MC_MoveVelocity. [KS-1397]
- Resolves an issue where when MC_MoveVelocity is running, it cannot reverse the axis during deceleration when the velocity is zero. [KS-1398]
- Resolves an issue where the velocity of the axis does not change with the acceleration after you send MC_MoveAbsolute, in which the velocity is higher than the current velocity of the axis. [KS-1435]

- Resolves an issue where the velocity of the axis does not reach the velocity of MC_MoveAbsolute and a steady gap is kept between them after you send the command, in which the velocity is lower than the current velocity of the axis. [KS-1436]
- Resolves an issue regarding acceleration and deceleration existing simultaneously in MC_MoveContinuousAbsolute or MC_MoveContinuousRelative. [KS-1448]
- Resolves an issue where the reading of the Explicit ID fails on slower slaves. [KS-1462]
- Resolves an issue where the PDO assignment of an I/O module does not detect and handle the completion of access flags. [KS-1463]
- Resolves an issues regarding PDO generating assignments generating unneeded commands for MDP devices. [KS-1464]
- Resolves an issue regarding simulated axes not working well in faster EtherCAT cycles. [KS-1495]
- Resolves an issue where setting the maximum application velocity when the motion profile is set for DelayInSeconds, causes the new maximum velocity to be used in the calculation of acc/dec/jerk, which resulted in a bad profile or caused the computer to stop responding. [KS-1517]
- Resolves an issue in the .NET API, PLCopen.Log was unable to record an I/O input. The Busy output was always FALSE and the input value was not written to the shared memory. [KS-1535]
- Resolves an issue where MC_MoveVelocity did not control the axis after InVelocity is TRUE if there was no buffered motion command. [KS-1541]
- Resolves an issue regarding an error in calculating the Ramp mode for a CAM movement. [KS-1599]
- Resolves an issue regarding KINGSTAR PLC installation generating an incorrect message that AIOPCUAServer.exe stopped working. [KS-945]
- Resolves an issue were uninstalling KINGSTAR SDK removes KINGSTAR Runtime system environment variables. [KS-1210]
- Enables DC Master Shift in the KINGSTAR Demo. [KS-1616]
- Resolves an issue where exiting the .NET sample (WpfApplication.exe) leads to the RT-TCP/IP Stack shutting down. [KS-1364]
- Resolves an issue where KINGSTAR Demo will crash if the axes are already enabled. [KS-1294]
- A new Motion sample replaces the previous MFC sample.

KINGSTAR Fieldbus

New Features

- Adds support for DC Master Shift mode where a reference clock is used. [KS-1164]
- Adds the ability allow users to disable DC checks during the startup of KINGSTAR Subsystem. [KS-1500]
- Allows users to select a different ESI file for the same device. [KS-1664]

Updates & Resolved Issues

- Handles profile operation modes in auto-configuration. [KS-785]
- Supports Windows 10 feature update 1909. [KS-1347]
- Allows multiple applications to run using the EtherCAT interface. [KS-1439]
- Resolves an issue where the Following Error bit of the servo drive is TRUE, and KINGSTAR was sending a warning instead of an alarm. The axis would keep working without being interrupted by the alarm. [KS-1503]
- Modifies the SDO error log in KINGSTAR Analysis Console so it can now display the error name. The failing object will be displayed if KINGSTAR Fieldbus cannot start due to CoEinit. [KS-1645]
- Resolves an issue where an RTX64 exception occurs if the FoE local path does not exist. [KS-1076]
- Resolves an issue regarding Restart Slave may not be able to switch SanyoDenki RS2-H device back to the Op state. [KS-1168]
- Resolves an issue where the incorrect error message is displayed when the network card is not configured. [KS-1247]
- Resolves an issue regarding Baud not being editable in Beckhoff EL6751 CANopen. [KS-1307]
- Resolves an issue where new sensor settings were not applied correctly. [KS-1316]
- Resolves an issue where the data for SDO segmented upload is incorrect. [KS-1366]
- Resolves an issue where the reading of the Explicit ID fails on slower slaves. [KS-1462]
- Resolves an issue where the PDO assignment of an I/O module does not detect and handle the completion of access flags. [KS-1463]

- Resolves an issue regarding PDO generating assignments generating unneeded commands for MDP devices. [KS-1464]
- Resolves an issue regarding simulated axes not working well in faster EtherCAT cycles. [KS-1495]
- Resolves an issue where KINGSTAR will crash during the distributed clock (DC) calculation under certain configurations [KS-1573]
- Resolves an issue regarding passwords not being used with the FoE functions. [KS-1676]

Hardware Support

KINGSTAR Motion & KINGSTAR Fieldbus have added out-of-the-box support for the following new hardware. See the *KINGSTAR Supported Hardware* document for a complete list of hardware supported by KINGSTAR.

Servo drives

- ACS Motion Controll DM [KS-1474]
- Axor Mack Uninano (MKUN) series [KS-1677]
- Baumuller b maXX 2500 [KS-1475]
- Baumuller b maXX 5500 [KS-213]
- Etel AccurET 400 [KS-1476]
- HDT NTT 240/460 [KS-1611]
- Kinco FD3 [KS-1388]
- Maxon Motor EPOS4 70/15 [KS-1478]
- Metronix BL 4102-C [KS-1479]
- Sanyo Denki RS3 3E [KS-1196]
- Schneider Electric Lexium 28E and BCH2 [KS-1568]
- TPM SVR-K111 [KS-1537]
- Wittenstein cyber simco [KS-1298]
- XINJE-DS5-C [KS-1618]
- YAKO MS-MINI3E [KS-1619]

Stepper drives

- Applied Motion Products STF-EC [KS-1666]

- Kinco FM880 [KS-1188]
- MOONS' SSDC06-EC [KS-1254]
- Servotronix stepIM [KS-1482]
- TPM STP-K121B [KS-1207]

EtherCAT I/O modules

- Beckhoff EK1110 extension [KS-1389]
- Beckhoff EL5042 2-channel BiSS-C interface [KS-693]
- Beckhoff EL6695 bridge terminal [KS-934]
- Beckhoff EL7342 EtherCAT terminal [KS-1156]
- Berghof ECC I/O modules [KS-1299]
- Berghof E I/O modules [KS-1300]
- Brunner GER1085 I/O module [KS-1699]
- Kuhnke Ventura Fast IO (VFIO) [KS-1653]
- Omron NX-EC203 series [KS-1638]

EtherCAT I/O couplers

- Festo CPX-AP-I-EC-M12 [KS-1477]
- ICPDAS ECAT-2093 [KS-1446]

Other

- Advantech AMAX-3285IO slave module [KS-1579]
- Nexcom AXE-5904 EtherCAT slave module [KS-1206]
- Omron 3G3AX-MX2-ECT inverter [KS-1297]
- Omron GX-JC03/JC06 junction slave [KS-1672]
- Panasonic SC-HG1-ETC communication unit [KS-1480]
- Ropex RES-5012, UPT-6012 temperature controllers [KS-1481]
- TPM 207-ADIO-KIT [KS-1209]
- TPM 207-D402H [KS-1208]

Availability

KINGSTAR 3.7 Motion and KINGSTAR Fieldbus are available beginning December 20, 2019, through Partners and by contacting KINGSTAR Sales at KINGSTARSales@kingstar.com or (781) 996-4481.

We welcome your comments and feedback. If you have any recommendations or wish to suggest product enhancements, please contact [Product Management](#).