

# KINGSTAR 3.7

## MOTION RELEASE NOTES

KS-DOC-X64-0015-R21

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# KINGSTAR Motion 3.7 release notes

## New features

The following new features and improvements are available in this release:

**NOTE:** Reference numbers, [KS-<XXX>], are for internal tracking purposes.

- Add new supported hardware:
  - Servo drives
    - ACS Motion Control IDM [KS-1474]
    - Axor Mack Uninano (MKUN) series [KS-1677]
    - Baumuelller b maXX 2500 [KS-1475]
    - Baumuelller 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]
- EtherCAT couplers
  - Festo CPX-AP-I-EC-M12 [KS-1477]
  - ICPDAS ECAT-2093 [KS-1446]
  - Omron NX-ECC203 series [KS-1638]
- Others
  - 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]
- Add **SetVirtualAxis** (RT and Win32) and **SetVirtualAxis** (.NET API) to add a simulated axis after the KINGSTAR Subsystem is started. [KS-247]
- Tuning Console
  - Add the editing features for offline axes and I/O modules to Tuning Console. [KS-594]
  - Add the process of device matching to Tuning Console. [KS-1148]
  - Add the **IO** and **SDO** pages to Tuning Console. [KS-1159] [KS-1160]
  - Add the **Test** page to Tuning Console. [KS-1400]
  - Add options for DC master shift and DC check in **Connection settings** in Tuning Console. [KS-1615]
- KINGSTAR LogicLab
  - Support I/O variables in bit. [KS-832]
  - Add the ST functions of **ConfigLinkedDevice**. The content can be found in KINGSTAR PLC > KINGSTAR LogicLab > Use an IO-Link, MDP or CANopen device. [KS-971]
- Add **GetFullStatus** to .NET API. [KS-915]
- Add KINGSTAR Scope, which can be found in Tools > KINGSTAR Scope. [KS-1149]
- Add **EnableDcMasterShift** (RT and Win32), **EnableDcMasterShift** (.NET API), **DcMasterShift** (.NET Class) to support the reference clock for Master Shift. [KS-1164]

- Add **ForceServoDI** (RT and Win32), **ForceDI** (.NET API), and **ForceDigitalInputAsync** (.NET Class) to write data to a digital input of an axis. [KS-1268]
- Add **StartFromConfiguration** (RT and Win32) and **StartFromConfiguration** (.NET API) to use the configuration file to start the KINGSTAR Subsystem. [KS-1282]
- Add the Use SDO page in Concept to explain how to use the new SDO functions: **ReadSdoODList**, **ReadSdoObjectDescription**, **ReadSdoEntryDescription**. [KS-1290]
- Add the Touch probe page in Concept. [KS-1306]
- Add sync methods to the **IoModule Class** in the .NET Class API to read and write I/O and SDO data. [KS-1309]
- Add the **PositionLag** property to the Axis class in the .NET Class API. [KS-1473]
- Add **EnableDcCheck** (RT and Win32), **EnableDcCheck** (.NET API), **DcCheck** (.NET Class) to allow users to disable DC checks during the startup of KINGSTAR Subsystem. [KS-1500]
- Add helical interpolation functions and function blocks to PLCopen APIs and function blocks. [KS-1536]
  - RT and Win32: **MC\_MoveHelicalAbsolute**, **MC\_MoveHelicalAdditive**, **MC\_MoveHelicalRelative**
  - .NET API: **MoveHelicalAbsolute**, **MoveHelicalAdditive**, **MoveHelicalRelative**
  - .NET Class: **MotionMoveHelicalAbsolute Class**, **MotionMoveHelicalAdditive Class**, **MotionMoveHelicalRelative Class**
  - Function blocks: **MC\_MoveHelicalAbsolute**, **MC\_MoveHelicalAdditive**, **MC\_MoveHelicalRelative**
- Provide Traditional Chinese version of KINGSTAR help system. [KS-1553]

- Add parameters and properties to get the moving direction of an axis. [KS-1620]
  - RT, Win32, .NET API: mcPowerOnPositive, mcPowerOnNegative in **MC\_AxisParameter**.
  - .NET Class: **PowerOnPositive, PowerOnNegative**.
- Add **GetServoVelPid** and **GetServoTorPid** (RT and Win32), **GetVelocityPid** and **GetTorquePid** (.NET API) to read all PID settings without changing the control mode. [KS-1639]
- Add 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]
- Add **MC\_CamInfo** and **MC\_CamSimulate** (RT and Win32), **CamInfo** and **CamSimulate** (.NET API), **RepetitionCount**, **RowIndex**, and **SlaveTargetPosition** (.NET Class) to get the state of the slave axis in cam and simulate the cam result. [KS-1646]
- Add a 5th degree polynomial interpolation for cam. See the **MC\_CamInterpolationType** type. [KS-1647]
- In .NET Class, in the Subsystem Class, add **UpdateConfiguration** to read the values of all the KINGSTAR settings. [KS-1649]
- Add **GetConfiguredServoCount** and **GetConfiguredIoCount** (RT and Win32), **ServoAmplifier.GetConfiguredCount** and **IOModule.GetConfigureCount** (.NET API) to get the number of simulated axes and I/O modules. [KS-1652]
- Allow users to select a different ESI file for the same device. See the **CouplerProtocol** type. [KS-1664]
- Add Write your first KINGSTAR program to KINGSTAR Motion samples.



# Updates

- Support PDO Assignment for I/O modules in KINGSTAR ESI Import Tool. [KS-528]
- Allow **Position** and **Distance**'s continuous update in single-axis motion. [KS-742]
- Tuning Console
  - The full configuration of devices can be exported to a `.hpp` file. [KS-1162]
  - Move the existing Axis Testing feature to the **Tune** page. [KS-1399]
  - When certain values are changed in the **Configure**, **Test**, and **Tune** page, the changed items will be marked. **Send** is used to apply new values and **Read** is to get the old values. [KS-1571]
  - Supports DC Master Shift. [KS-1615]
- Support TouchProbe with simulated drives. [KS-1269]
- Add the error message to the following scenario: When reading or writing the digital input or output of a servo drive, the digital input/output object is not in PDO or the servo drive's input/output access is not enabled. [KS-1270]
- An error doesn't occur if the sensor settings are applied to a digital input that doesn't exist. [KS-1308]
- **MC\_TouchProbe** and **MC\_DigitalCamSwitch** have no PDO protection, which is to check whether the data these functions use is available in the PDO. [KS-1313]
- Support RTX64 3.7. [KS-1347]
- Add the parameter **configurationFile** to the .NET Class Subsystem constructor to take a KS configuration file as parameter. .NET Class API > **Subsystem Class** > **Subsystem Constructor**. [KS-1352]
- Update the list of network interface cards. Only the cards that are workable and stable are kept in the list. [KS-1379]
- Reduce the Write MOP lines in the log when MOP is enabled (**EnableSynchronizedControlMode** is enabled) but fails. [KS-1465]

- Increase the timeout of FoE because firmware download may take 2 minutes. [KS-1468]
- When the Following Error bit of the servo drive is TRUE, KINGSTAR is sending a warning instead of an alarm. The axis can keep working without being interrupted by the alarm. [KS-1503]
- KINGSTAR LogicLab
  - A simulated motion library has been built for SimuLab. Users can test their programs in the simulation mode. [KS-1516]
  - The BasicSample is removed when KINGSTAR LogicLab is uninstalled. [KS-1597]
- Replace the loops with equations to calculate the deceleration distance, because loops can hold up CPU time. [KS-1534]
- Enable DC Master Shift in the KINGSTAR Demo. [KS-1616]
- Support large cam tables. [KS-1633]
- The SDO error log in KINGSTAR Analysis Console can now display the error name. The failing object will be displayed if KINGSTAR Fieldbus can't start due to CoE init. [KS-1645]
- Synchronize PLC Fast Task with EtherCAT. [KS-1706]
- The **Motion Sample** replaces the MFC Sample.

## Fixes

- Motion commands may not receive the last moving direction of the previous command. [KS-777]
- If KINGSTAR LogicLab is installed for the first time, a message may appear to notify you that `AIOPCUAServer.exe` stops working. [KS-945]
- Acceleration and deceleration exist simultaneously in the last cycles of **MC\_MoveContinuousAbsolute**. [KS-977]
- Under certain circumstances axis accelerates and decelerates repeatedly at last cycles. [KS-979]

- **MC\_MoveAbsolute** may not complete and repeatedly move the axis back and forth. [KS-1144]
- The servo drive is vibrating and out of control when it is switched between the CSP and CST modes. [KS-1165]
- **RestartSlave** may not be able to switch SanyoDenki RS2-H back to the Op state. [KS-1168]
- **MC\_MoveContinuousAbsolute** and **MC\_MoveContinuousRelative**'s dec profiles are not continuous. [KS-1182]
- Uninstalling KINGSTAR SDK removes KINGSTAR Runtime's system environment variables. [KS-1210]
- Two KINGSTAR Demos exist in the SDK Samples folder. [KS-1217]
- Files of Motion SDK samples are read only. [KS-1258]
- 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's Done should be TRUE, but it is FALSE. [KS-1266]
- When large Jerk is input, **MC\_MoveContinuous** functions may fail to ramp up to **EndVelocity** even the distance is enough. [KS-1267]
- The discontinuity of velocity may exist when using **MC\_MoveContinuous** functions if the start velocity is larger than the **Velocity** parameter. [KS-1271]
- If the touch probe objects are not in PDO, an error should occur when you send **MC\_TouchProbe** in which servo drive's touch probe is enabled, but no error occurs. [KS-1272]
- **MC\_ReadDigitalInput**'s **InputNumber** can be negative. [KS-1274]
- KINGSTAR Demo will crash if the axes are already enabled. [KS-1294]
- **MC\_MoveContinuousAbsolute** and **MC\_MoveContinuousRelative** sometimes speed up to **EndVelocity** and keep using it. The **Velocity** is never reached. [KS-1295]

- KINGSTAR Demo and Tuning Console can't connect to the KINGSTAR Subsystem again if other application kills the KINGSTAR Subsystem process. [KS-1302]
- Baud is not editable in Beckhoff EL6751 CANopen. [KS-1307]
- The new sensor settings should only be applied when the sensor exists in the PDO. [KS-1316]
- The memory size continues to increase when using **GetServoStatus** in Win32 API and Labview. [KS-1355]
- Exiting .NET Sample (`WpfApplication.exe`) leads to RT-TCP/IP Stack's shutdown. [KS-1364]
- **MC\_MoveVelocity**'s deceleration, if too large, can't decrease with the velocity, while the velocity is decreasing to zero. [KS-1391]
- When the axis is accelerating, if you send **MC\_MoveVelocity**, in which the **Velocity** is 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]
- While **MC\_MoveVelocity** is running, it can't reverse the axis during deceleration when the velocity is zero. [KS-1398]
- The velocity of the axis doesn't change with the acceleration after you send **MC\_MoveAbsolute**, in which the **Velocity** is higher than the current velocity of the axis. [KS-1435]
- The velocity of the axis doesn't 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]
- Acceleration and deceleration exist simultaneously in **MC\_MoveContinuousAbsolute** or **MC\_MoveContinuousRelative**. [KS-1448]
- The delay of the Explicit ID reading is misplaced so the reading fails on slower slaves. [KS-1462]
- The PDO assignment of an I/O module doesn't detect and handle the complete access flags. [KS-1463]

- The PDO assignment of an I/O module and Modular Device Profile (MDP) logic generate Init commands and they conflict with each other. PDO assignment shouldn't generate these commands for MDP devices. [KS-1464]
- Simulated axes don't move well in the faster EtherCAT cycles. [KS-1495]
- If you use a Motion Card function to change the maximum application velocity and the motion profile is DelayInSeconds, when the command is sent, the new max velocity will be used to calculate the acc/dec/jerk, resulting a bad profile or causing the computer to stop responding. [KS-1517]
- In .NET API, **PLCopen.Log** is unable to record an I/O input. The **Busy** output is always FALSE and the input value is not written to the shared memory. [KS-1535]
- **MC\_MoveVelocity** doesn't control the axis after **InVelocity** is TRUE if there is no buffered motion command. [KS-1541]
- The calculation errors of the Ramp mode for the cam movement occur after a period of time. [KS-1599]

# Get support

KINGSTAR offers a number of support options for KINGSTAR users, including third-party, online and phone support.

## Third-party support

If you are a customer who purchased a KINGSTAR product through a third-party reseller, contact the reseller for support.

## Online support

The KINGSTAR Customer Support web page is located at:

<http://kingstar.com/support/>

The KINGSTAR support web pages provide electronic access to the latest product releases, documentation, and release notes. You can access the online support ticketing system to submit issues or questions.

## Before calling technical support

Please have the following information ready before calling KINGSTAR Technical Support:

### The version number of your RTX64 and KINGSTAR software

To obtain the RTX64 version number:

1. Click **Start > RTX64 3.7 Runtime > Control Panel**.
2. In the **RTX64 3.7 Control Panel**, record **Version** shown in the **Runtime Information** area.

To obtain the KINGSTAR version number:

1. In **Windows Explorer**, browse to `C:\Program Files\IntervalZero\KINGSTAR\bin`.
2. click the `ksm64.rtdll` file, and right-click the same file again.

3. On the shortcut menu, click **Properties**.
4. In the **ksm64.rtdll Properties** dialog box, click the **Details** tab, and record **Product version**.

## Phone support

For technical support related to installing and using KINGSTAR, please call technical support at this number:

+886-2-2556-8117

Hours are Monday – Friday from 9:30 to 17:30, UTC+08:00, excluding holidays.