

SPiiPlusES

High Performance Multi-Axis EtherCAT® Controller & DS402 Multi-Axis EtherCAT® Drive Node



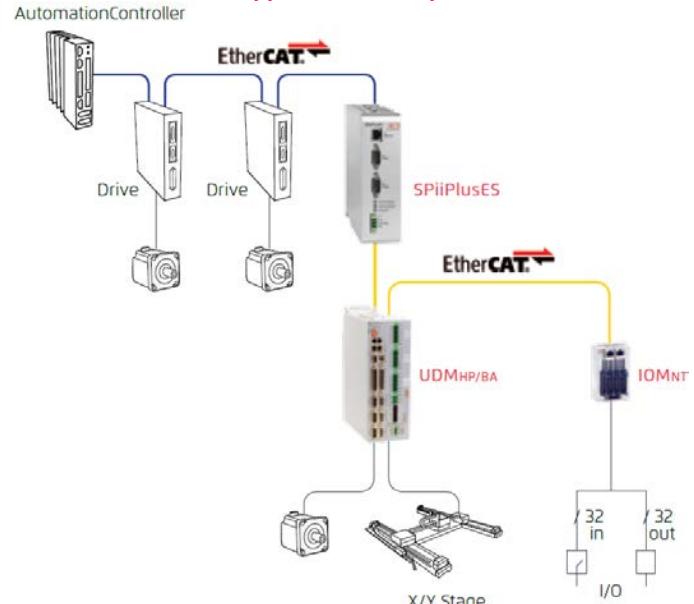
SPiiPlusES as a DS402 Multi-Axis EtherCAT Drive Node

- > Can be managed by any EtherCAT Automation Controller
- > Up to 8 axes utilizing standard DS402 CoE drive commands
- > Up to 64 axes utilizing manufacturer's specific CoE drive commands
- > Distributed clock
- > Up to 5kHz EtherCAT cycle rate

SPiiPlusES as an EtherCAT Master

- > Identical to SPiiPlusEC, powerful EtherCAT Motion Controller
- > Up to 64 axes and many I/Os
- > Up to 5kHz EtherCAT cycle rates
- > **NetworkBoost™** for cable failure detection and recovery
- > Can be synchronized to the distributed clock of the external network

Application Example



The SPiiPlusES is a high performance programmable motion controller and EtherCAT Master that can be connected as a node to any EtherCAT network utilizing the standard DS402 CAN Over EtherCAT (CoE) protocol.

To the external EtherCAT Master it looks like a highly programmable multi-Axis motor drive.

The SPiiPlusES expands the capability of any EtherCAT Automation Controller to manage up to 64 axes and thousands of I/O utilizing ACS EtherCAT sub-network. With up to 8 drives/axes, standard DS402 commands are used. For additional drives/axes, up to 64, DS402 manufacturer's specific commands are used. It supports distributed clock and the ability to synchronize the two EtherCAT networks. Any application in the fields of Semiconductors, Laser micro-machining, Electronics manufacturing, digital printing and more, that uses an EtherCAT automation controller will benefit from the unique and advanced capabilities of ACS programmable motion controller and wide range of drives to enhanced accuracy and throughput.

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Specifications

Number of Axes

As a Master: Up to 64 axes
As a Slave: Up to 64 axes, Thousands of I/O's

Motion Types

- > Multi-axis point-to-point, jog, tracking and sequential multi-point motion
- > Multi-axis segmented motion with look-ahead
- > Arbitrary path with PVT cubic interpolation
- > Third order profiles (S-curve)
- > Smooth on-the-fly change of target position or velocity
- > Inverse/Forward kinematics and coordinate transformations (at application level)
- > Master-slave with position and velocity locking (electronic gear/cam)

Programming

- > ACSPL+ powerful motion language
 - > Real-time program(s) execution
 - > Up to 64 simultaneously running programs / threads
- > NC programs (G-code)
- > C/C++, .NET and many others standard languages

Working Under SPIiPlusES EtherCAT Master

All ACS EtherCAT Network Modules

Refer to ACS web site for an updated list of modules

www.acsmotioncontrol.com/products

Non ACS Modules

ACS qualifies drives and I/O modules made by other vendors

Refer to ACS web site for an updated list of other vendor's supported modules www.acsmotioncontrol.com/downloads

Other vendor's drives supported mode is Cyclic Synchronous Position (CSP)

Additional modes are supported by some drives

Contact ACS for details: sales@acsmotioncontrol.com

Motion Processor Unit (MPU)

Processor Type: Multi-core Intel Atom CPU (model depends on controller configuration)

Quad-Core supplied to controllers with an MPU cycle rate of 4 to 5 kHz or 64 Axes.

Dual-Core is provided for all other configurations.

RAM: 1GB

Flash: 2GB

Field Upgrades

For controllers ordered from the factory with Maximum Number of Axes equal to 32 or less and Maximum MPU Cycle Rate of 2kHz (default), the following field upgrade options are available:

Maximum Number of Axes	Maximum MPU Cycle (kHz)
2	4, 5
4	4, 5
8	4, 5
16	4, 5 ¹
32	2

¹16 axes and 5 kHz (requires Dual EtherCAT Network option)

It is not possible to field upgrade a controller ordered with 32 axes or less to 64 axes.

For controllers ordered from the factory with Maximum Number of Axes equal to 64 and Maximum MPU Cycle Rate of 1kHz (default), the following field upgrade options are available:

Maximum Number of Axes	Maximum MPU Cycle (kHz)
64	2

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Ordering Options

Field	Example selection by user	Optional Values
1	08	2, 4, 8, 16, 32, 64
2	08	Equal to "Maximum number of axes"
3	08	Equal to "Maximum number of axes"
4	64	64 (FOC)
5	N	N = None F = 5 Axis Coordinated Motion D = G-Code & 5 Axis Coordinated Motion G = G-code
6	A	N = None A = 4 axes ServoBoost B = 8 axes ServoBoost C = 8+ axes (equal to Max Number of Axes) ServoBoost J = 4 axes ServoBoost & ServoBoost Plus K = 8 axes ServoBoost & ServoBoost Plus L = 8+ axes (equal to Max Number of Axes) ServoBoost & ServoBoost Plus
7	Y	N = No Y = Input Shaping L = LearningBoost C = Non-Linear Control B = LearningBoost & Input Shaping D = Input Shaping & Non-Linear Control E = LearningBoost & Non-Linear Control F = LearningBoost & Input Shaping & Non-Linear Control G = AutoFocus H = Input Shaping & AutoFocus J = LearningBoost & AutoFocus K = Non-Linear Control & AutoFocus
8	4	D = Default, 2 = 2kHz ² , 4 = 4kHz ⁴ , 5 = 5kHz ^{3,4}
9	N	N = None A = NetworkBoost B = Flexible Configuration C = NetworkBoost & Flexible Configuration D = Dual EtherCAT Network E = Dual EtherCAT Network & Flexible Configuration
10	A	D = Default A = 16 B = 32 C = 64 E = Default & Real-Time C Function Support Enabled F = 16 & Real-Time C Function Support Enabled G = 32 & Real-Time C Function Support Enabled H = 64 & Real-Time C Function Support Enabled
11	N	N = No
12	N	None(N), 1,2,...9,10(A), 11(B), 12(C), 13(D), 14(E), 15(F), 16(G)

¹Includes 3+ Axis SmoothPath and 3+ NURBS

²Only relevant for controllers with Max Number of Axes = 64

³16 axes and 5 kHz (requires Dual EtherCAT Network option)

⁴Includes MotionBoost, 2 axis SmoothPath, 2 Axis NURBS and SmoothPTP

Example: SP+ES-08080864NAY4NANN

Field	1	2	3	4	5	6	7	8	9	10	11	12
PN	SP+ES-	08	08	08	64	N	A	Y	4	N	A	N

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