

# EtherCAT<sup>®</sup> Devices Supported by EDGE<sup>®</sup> Connect CNCs

Application Note

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# ***Introduction***

The following information is provided to Hypertherm channel partners for reference only, to help you select an EtherCAT component that is supported by EDGE Connect/T/TC CNCs.

The information represents what Hypertherm has tested in our labs and can verify is compatible with EDGE Connect CNCs. Other equipment may work, but we do not support equipment that we have not tested and verified.



This document is updated regularly. If you do not see a supplier or component of interest, please contact your Hypertherm sales representative or Hypertherm application engineer.



Work in partnership with your drive manufacturer to select and configure the drives for your cutting system. Refer to your drive manufacturer's drive documentation for technical information about the drives.

# ***Supported I/O modules***

## **Before you begin**

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- The tables on the pages that follow contain the I/O modules that Phoenix supports. These tables do not give all the requirements from the I/O module manufacturer. Please refer to the manufacturer's design guide for more information.
- Make sure that you can remove power, including control (logic) power, from all I/O modules. Refer to your I/O module manufacturer's documentation for more information.
- Many drive amplifiers have I/O available for use. More I/O modules may be necessary with different numbers and styles of I/O.

# Beckhoff

Series	Model	Description
E Series	EL1012	EtherCAT Terminal, 2-channel digital input, 24 VDC, 10 $\mu$ s
	EL1014	EtherCAT Terminal, 4-channel digital input, 24 VDC, 10 $\mu$ s
	EL1018	EtherCAT Terminal, 8-channel digital input, 24 VDC, 10 $\mu$ s
	EL1804	EtherCAT Terminal, 4-channel digital input, 24 VDC, 3 ms, 3-wire connection
	EL1808	EtherCAT Terminal, 8-channel digital input, 24 VDC, 3 ms, 2-wire connection
	EL1809	EtherCAT Terminal, 16-channel digital input, 24 VDC, 3 ms
	EL2002	EtherCAT Terminal, 2-channel digital output, 24 VDC, 0.5 A
	EL2004	EtherCAT Terminal, 4-channel digital output, 24 VDC, 0.5 A
	EL2008	EtherCAT Terminal, 8-channel digital output, 24 VDC, 0.5 A
	EL2622*	EtherCAT Terminal, 2-channel relay output, 230 VAC, 30 VDC, 5 A, without power contacts
	EL2809	EtherCAT Terminal, 16-channel digital output, 24 VDC, 0.5 A
	EL3001	EtherCAT Terminal, 1-channel analog input, voltage, $\pm 10$ V, 12 bit, single-ended
	EL3002	EtherCAT Terminal, 2-channel analog input, voltage, $\pm 10$ V, 12 bit, single-ended
	EL3004	EtherCAT Terminal, 4-channel analog input, voltage, $\pm 10$ V, 12 bit, single-ended
	EL3008	EtherCAT Terminal, 8-channel analog input, voltage, $\pm 10$ V, 12 bit, single-ended
	EL4004	EtherCAT Terminal, 4-channel analog output, voltage, 0...10 V, 12 bit
	EL6601*	EtherCAT Terminal, 1-port communication interface, Ethernet switch port
	EL6614*	EtherCAT Terminal, 4-port communication interface, Ethernet switch port
	EL9110	Potential supply terminal, 24 VDC
	EK1100	EtherCAT coupler
	EK1110	EtherCAT extension
	EK1814	EtherCAT coupler with integrated digital inputs/outputs (4-channel digital input and 4-channel digital output)

\*These modules are used to support an additional system component, such as a printer.

# Wago

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For proper data transfer, a bus end module is required at the end of the field bus node.

Series	Model	Description
750	750-400	2-channel digital input, 24 VDC, 3 ms
	750-430	8-channel digital input, 24 VDC, 3 ms
	750-1405	16-channel digital input, 24 VDC, 3 ms
	750-501	2-channel digital output, 24 VDC, 0.5 A
	750-530	8-channel digital output, 24 VDC, 0.5 A
	750-1504	16-channel digital output, 24 VDC, 0.5 A
	750-459	4-channel analog input, 0 VDC –10 VDC, single-ended
	750-559	4-channel analog output, 0VDC –10 VDC
	750-600	End module
	750-627	Bus extension end module
	750-628	Bus extension coupler module
	750-354	Fieldbus coupler EtherCAT

**Supported I/O modules**

## ***Supported drives***

### **NOTICE**



- Make sure you can remove power, including control (logic) power, from all drives. Refer to your drive manufacturer's drive documentation for more information.
- Mixing of different brands of drives in one system is not supported.
- All drives must support and be configured for a 1 ms update rate.
- All drives must be set up as linear axes.
- Many drive amplifiers have I/O available for use. The need for additional I/O depends on the total number of I/O and the I/O style required. For a list of supported I/O modules, see Supported I/O modules on page 6.

## Bosch Rexroth

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Series	Model	Firmware	Notes
IndraDrive C	HCS02.1E-W0XXX	MPE-18v20 — MPE-20v16	The Generation 2 control section and an optional ET card are necessary. Inputs and outputs supported for each drive amplifier <ul style="list-style-type: none"> <li>▪ Digital: 7 inputs, 1 output</li> <li>▪ Analog: 1 input, 0 outputs</li> </ul>
IndraDrive Cs	HCS01.1E-W0XXX	MPB-20v24 — MPE-20v16	The basic version is supported. Inputs and outputs supported for each drive amplifier <ul style="list-style-type: none"> <li>▪ Digital: 7 inputs, 1 output</li> <li>▪ Analog: 1 input, 0 outputs</li> </ul>
IndraDrive Cs Economy	HCS01.1E-W0XXX	MPE-20V24 or newer <b>ONLY</b>	The basic version is supported. Inputs and outputs supported for each drive amplifier <ul style="list-style-type: none"> <li>▪ Digital: 7 inputs, 1 output</li> <li>▪ Analog: 1 input, 0 outputs</li> </ul>

For more information about Bosch drive setup and parameters, see the *Bosch Rexroth EtherCAT® Drives Supported by EDGE® Connect/T/TC CNCs* Application Note (809600).

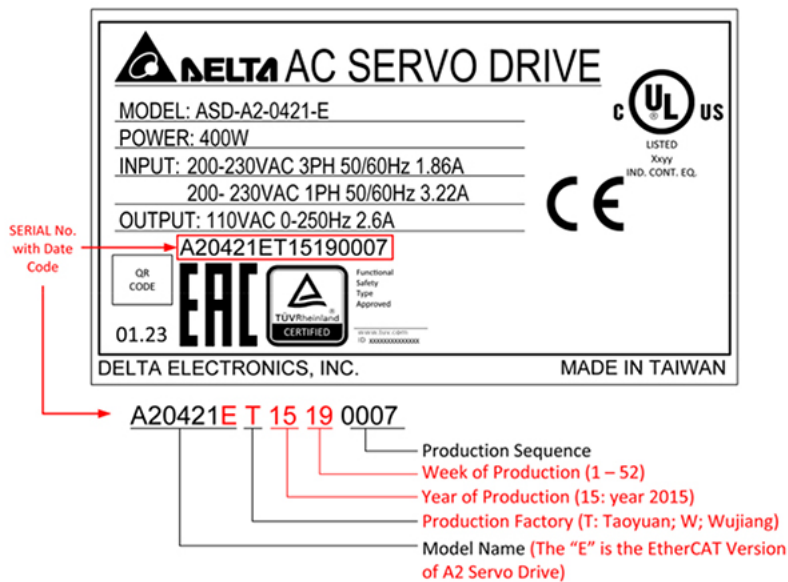
# Delta

Series	Model	Firmware	Notes
ASDA-A2	ASDA-A2-E	1.643.366 and newer. Required for using parameters to change motor direction.	<ul style="list-style-type: none"> <li>Use firmware for ASDA drives only.</li> <li>7 digital inputs per drive amplifier are supported.</li> <li>CNC control of the drive's digital outputs is not supported.</li> <li>Only use drives manufactured after April 20, 2018 with cutting systems in environments with potential high frequency. Refer to <i>Figure 1</i> below for information about the date code.</li> </ul>
ASDA-B3	ASD-B3-XXXX-E	1.643.366 and newer.	<ul style="list-style-type: none"> <li>Use firmware for ASDA drives only.</li> <li>4 digital inputs per drive amplifier are supported.</li> <li>CNC control of the drive's digital outputs is not supported.</li> </ul>
ASDA-B3A	ASD-B3A-XXXX-E	1.643.366 and newer.	



Delta has made improvements to drives manufactured after April 20, 2018 to make newer drives more robust to EMI and RF. The manufacture date can be identified by the date code on the drive. The date code should be greater than 1816 (18 is the code for 2018 and 16 is the code for week 16). Refer to *Figure 1*.

**Figure 1** – Delta drive data plate example



For more information about Delta drive setup and parameters, see the *Delta EtherCAT® Drives Supported by EDGE® Connect/TTC CNCs* Application Note (809770).

## Kollmorgen

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Series	Model	Firmware	Notes
AKD®	AKD-PXXXXX-NBEC-XXXX	V_01-14-00-002 and newer	<ul style="list-style-type: none"> <li>■ Use firmware for NBEC drives only.</li> <li>■ Inputs and outputs supported for each drive amplifier               <ul style="list-style-type: none"> <li>□ Digital: 7 inputs, 2 outputs</li> <li>□ Analog: 1 input, 1 output</li> </ul> </li> </ul>
	AKD-PXXXXX-NBCC-XXXX	V_01-14-00-002 and newer	<ul style="list-style-type: none"> <li>■ Use firmware for NBCC drives only.</li> <li>■ Inputs and outputs supported for each drive amplifier               <ul style="list-style-type: none"> <li>□ Digital: 7 inputs, 2 outputs</li> <li>□ Analog: 1 input, 1 output</li> </ul> </li> </ul>

For more information about Kollmorgen drive setup and parameters, refer to the *Kollmorgen EtherCAT® Drives Supported by EDGE® Connect/T/TC CNCs Application Note (809590)*. Technical documentation is available at [www.hypertherm.com/docs](http://www.hypertherm.com/docs).

## Leadshine

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Series	Model	Firmware	Notes
EL8-EC AC Servo Drive Series	EL8-EC400F	3.0 or newer.	<ul style="list-style-type: none"> <li>■ Use firmware for Leadshine drives only.</li> <li>■ Inputs and outputs supported for each drive amplifier:               <ul style="list-style-type: none"> <li>□ Digital: 8 inputs, 3 outputs</li> <li>□ Analog: 1 input</li> </ul> </li> </ul>

For more information about Leadshine drive setup and parameters, refer to the *Leadshine EtherCAT® Drives Supported by EDGE® Connect/IT/TC CNCs Application Note* (10084073). Technical documentation is available at [www.hypertherm.com/docs](http://www.hypertherm.com/docs).

## Mitsubishi

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Series	Model	Firmware	Notes
MR-J4	All MR-J4 models	Amplifier: BCD-B46W500 B1H EtherCAT module: 1.10.01	<ul style="list-style-type: none"> <li>■ J3 motors <b>ONLY</b>.</li> <li>■ P06 (electronic gear numerator) is not supported.</li> <li>■ No I/O is supported on the drive amplifier. An I/O module on the EtherCAT network is required.</li> </ul>
MR-J4	All MR-J4 models	Amplifier: BCD-B46W500 B1H EtherCAT module: 2.00.03	<ul style="list-style-type: none"> <li>■ J4 and J3 motors.</li> <li>■ P06 (electronic gear numerator) is not supported.</li> <li>■ No I/O is supported on the drive amplifier. An I/O module on the EtherCAT network is required.</li> </ul>

For a list of supported I/O modules, see Supported I/O modules on page 6.

For more information about Mitsubishi drives and motors, setup, and parameters, see the *Mitsubishi EtherCAT® Drives Supported by EDGE® Connect/IT/TC CNCs* Application Note (809750).

## Panasonic

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Series	Model	Firmware	Notes
Minas-A5B	See <i>Supported A5B drives listed alphabetically</i> on page 16 for a list of supported drives.	1.01	5 digital inputs and 1 Digital Output are supported.
Minas-A6B	MADLN01BE MADLN11BE MADLN05BE MADLN15BE MBDLN21BE MBDLN25BE MCDLN31BE MCDLN35BE MDDLN45BE MDDLN55BE MEDLN83BE MEDLN93BE MFDLNA3BE MFDLNB3BE	1.01	5 digital inputs and 1 Digital Output are supported.

For more information about Panasonic drive setup and parameters, see the *Panasonic EtherCAT® Drives Supported by EDGE® Connect/T/TC CNCs* Application Note (809760).

## Supported A5B drives listed alphabetically

MADHT1105B01	MBDHT2110BA1	MDDHT2412B91	MEDHT7364B91	MGDHTB4A2B01
MADHT1105B91	MBDHT2110BL1	MDDHT2412BA1	MEDHT7364BA1	MGDHTB4A2B91
MADHT1105BA1	MBDHT2510B01	MDDHT2412BL1	MEDHT7364BL1	MGDHTB4A2BA1
MADHT1105BD1	MBDHT2510B91	MDDHT3420B01	MFDHT5440B01	MGDHTB4A2BL1
MADHT1105BL1	MBDHT2510BA1	MDDHT3420B91	MFDHT5440B91	MGDHTC3B4B01
MADHT1107B01	MBDHT2510BL1	MDDHT3420BA1	MFDHT5440BA1	MGDHTC3B4B91
MADHT1107B91	MCDHT3120B01	MDDHT3420BL1	MFDHT5440BL1	MGDHTC3B4BA1
MADHT1107BA1	MCDHT3120B91	MDDHT3530B01	MFDHTA390B01	MGDHTC3B4BL1
MADHT1107BL1	MCDHT3120BA1	MDDHT3530B91	MFDHTA390B91	MHDHTB4A2B01
MADHT1505B01	MCDHT3120BL1	MDDHT3530BA1	MFDHTA390BA1	MHDHTB4A2B91
MADHT1505B91	MCDHT3520B01	MDDHT3530BL1	MFDHTA390BL1	MHDHTB4A2BA1
MADHT1505BA1	MCDHT3520B91	MDDHT5540B91	MFDHTA464B01	MHDHTB4A2BL1
MADHT1505BL1	MCDHT3520BA1	MDDHT5540BA1	MFDHTA464B91	MHDHTC3B4B01
MADHT1507B01	MCDHT3520BL1	MDDHT5540BL1	MFDHTA464BA1	MHDHTC3B4B91
MADHT1507B91	MDDHT2407B01	MEDHT4430B01	MFDHTA464BL1	MHDHTC3B4BL1
MADHT1507BA1	MDDHT2407B91	MEDHT4430B91	MFDHTB3A2B01	
MADHT1507BL1	MDDHT2407BA1	MEDHT4430BA1	MFDHTB3A2B91	
MBDHT2110B01	MDDHT2407BL1	MEDHT4430BL1	MFDHTB3A2BA1	
MBDHT2110B91	MDDHT2412B01	MEDHT7364B01	MFDHTB3A2BL1	

## Yaskawa

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Series	Model	Firmware	Notes
Sigma-5	SGDV	<ul style="list-style-type: none"> <li>■ 5.0</li> <li>■ 5.04</li> <li>■ 6.00</li> </ul>	<ul style="list-style-type: none"> <li>■ Analog input is not supported on the drive. An I/O module on the EtherCAT network is required.</li> </ul>
Sigma-7	SGD7S	<ul style="list-style-type: none"> <li>■ 0023</li> </ul>	<ul style="list-style-type: none"> <li>■ 12 Digital Inputs and 3 Digital Outputs are supported.</li> </ul>
Sigma-X	SGDXS	<ul style="list-style-type: none"> <li>■ 000F</li> </ul>	<ul style="list-style-type: none"> <li>■ 7 Digital Inputs and 2 Digital Outputs are supported.</li> </ul>

For more information about Yaskawa drive setup and parameters, see the *Yaskawa EtherCAT® Drives Supported by EDGE® Connect/T/TC CNCs Application Note (809910)*.



For a list of supported I/O modules, see *Supported I/O modules* on page 5.