**Features**

- Use with Trio or 3rd Party EtherCAT Masters
- High performance, flexible topology and simple configuration.
- Bus cycle time synchronised with Motion Coordinator Servo Period.
- Bus coupler module with 2 x RJ45 Ethernet ports for EtherCAT connection.
- EtherCAT protocol remains fully intact down to individual modules using the E-bus system.
- I/O functions tightly synchronised to motion using EtherCAT distributed clocks.
- Automatic mapping to the Motion Coordinator I/O system.
- DIN rail mounted.
- Multiple practical push-in connector options – No break outs required.
- Clip-together design with 'quick release' locks for mechanical integrity.
- User labelling facility
- Machine builder custom functionality options

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The EtherCAT Flexslice System is designed to let you do more! It offers fast flexible expansion for motion applications and can be used with Trio or 3rd Party Masters.

Trio’s Flexslice input/output modules provide a robust, high speed and flexible solution for both motion control and general automation. EtherCAT cycle times down to 250µsecs are supported and the bus coupler uses EBUS technology to bring all the sub-modules on to the EtherCAT network with no degradation in performance.

The Flexslice system makes available a selection of digital and analogue I/O terminals as well as motion modules with pulse + direction outputs designed for precise positioning of stepper and servo motors via suitable drive technology.

The digital I/O modules have high-speed functionality. In addition, analogue modules and axis modules may be fitted to make a superbly tailored system that can be placed remotely from the master if needed.

All Flexslice modules support automatic addressing with the master to automatically detect and configure the modules on startup. The bus coupler supports up to 16 input/output modules which have a positive mechanical lock and bus connector, making a reliable EBUS connection through the backplane. The complete assembly can be DIN rail mounted.

The Flexslice system begins with the coupler.

The coupler is connected to the network via the upper Ethernet interface. The lower RJ45 socket may be used to connect further EtherCAT devices in the same strand.

In the EtherCAT network, the P366 coupler can be installed in any position in the Ethernet string, making it suitable for operation close to the master or at a remote position.

To help with identification, each Flexslice module incorporates a handy removable tab that can be written on. It simply slides in and out of a slot at the top of each module.

The robust metal chassis provides a good earth from the PCB of each module to the DIN rail to reduce noise and dissipate heat.

The positive “click-to-lock” mechanism firmly clamps Flexslice modules to each other to form a Flexslice station. Simply push each module together and slide the quick release locks into position.

Up to 16 Flexslice Modules are supported per P366 EtherCAT Coupler. Extra stations can be added to the network using the second EtherCAT port.

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The field programmable FPGA allows customisation of the functionality of some Flexslice Modules using Motion Perfect v4. The program can be “locked-down” creating a unique function for a machine builder which protects the functionality from being copied.

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### P366: ETHERCAT COUPLER

The P366 Flexslice EtherCAT Coupler connects EtherCAT with the EtherCAT slices. One station consists of a P366 Coupler and up to 16 Flexslice EtherCAT modules. The Coupler converts the passing telegrams from Ethernet 100BASE-T to EBUS signal format.

- **Power supply requirement**: 24V DC, 0.8A min for full system
- **EtherCAT Connection**: RJ45
- **Protocol**: EtherCAT
- **Data rate**: 100 Mbit/s
- **Dimensions (mm)**: 17.2w x 147h x 107d
- **Weight**: 160 g
- **Network Cable**: CAT5e min
- **Compliance**: RoHS, CE and UL

### PRODUCT CODES:
- P366 Flexslice EtherCAT Coupler
- P371 Flexslice 16-Out PNP
- P372 Flexslice 16-In PNP
- P375 Flexslice Flex 3-Axis
- P376 Flexslice 16-Out NPN
- P377 Flexslice 16-In NPN
- P378 Flexslice 8 Analogue Outputs
- P379 Flexslice 8 Analogue Inputs
- P367 Flexslice Thermocouple *
- P373 Flexslice 8-In 8-Out *
- P374 Flexslice Analogue 2 Servo Axes *

* Coming soon

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### P371: 16-OUT PNP

The P371 digital output Flexslice connects the binary control signals from the Motion Coordinator to the machine’s output devices at 24V DC. All 16 outputs are current sourcing (PNP) type and have electrical isolation. Outputs and power connection are via 2 x single-row push-in connectors. The Flexslice module indicates the output signal states via LEDs.

- **Module current consumption (EBUS 5V)**: 110mA max
- **Number of Digital Outputs**: 16 (2 banks of 8)
- **Power supply requirement**: 24V (+/-20%) DC
- **Load type**: Resistive, inductive and capacitive
- **"ON" time**: 110us (10% to 90%)
- **"OFF" time**: 210us (90% to 10%)
- **Max. Output current**: 0.5A per channel
- **Max. Output current**: 4A per bank of 8 Outputs
- **Short-Circuit Protection**: 1.4A typ per output
- **Over voltage Protection**: Yes
- **Reverse Voltage Protection**: Yes

### P372: 16-IN PNP

The P372 digital input Flexslice connects 24V DC signals from devices on the machine to the binary control registers in the Motion Coordinator. All 16 inputs are current sinking (PNP) type and have electrical isolation. Inputs and power connection are via 2 x single-row push-in connectors. The Flexslice module indicates the input signal states via LEDs.

- **Module current consumption (EBUS 5V)**: 100mA max
- **Number of Digital Inputs**: 16 (2 banks of 8)
- **Power supply requirement**: 24V (+/-20%) DC
- **"ON" Voltage threshold**: 11.2V typ
- **"OFF" Voltage threshold**: 10.2V typ
- **Input current**: 3.5mA typ
- **Input filter Cut-off (RC network)**: 18KHz

### P375: FLEX 3-AXIS

The P375 Flex 3 Axis Module allows up to 3 stepper motors or encoders to be connected to a control system. It supports incremental orSSI, BiSS, Endat or Tamagawa absolute encoders. If configured for stepper / pulse output an axis can be pulse+direction or quadrature simulated encoder output. A single MDR connector provides a reliable shielded 26 way connector for high speed signals. The P375 is compatible with most high-resolution microstep drives.

- **Max Step Rate**: 8MHz pulse count
- **Step / Pulse Width**: Pulse Control or Square Wave
- **Max Enc Rate**: 8MHz encoder count
- **Module current consumption (EBUS 5V)**: 150mA max
- **Field Programmable**: Yes
- **Step/Enc Port**: MDR Connector 0...5V
- **Max Axes**: 3 (software configurable)
- **WDOG Output**: Yes

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For Trio or 3rd Party EtherCAT Masters
P376: 16-OUT NPN

The P376 digital output Flexslice connects the binary control signals from the Motion Coordinator to the machine’s output devices, such as relays, contactors, valves, lamps etc. at 24V dc. All 16 outputs are current sinking (NPN) type and have electrical isolation. Outputs and power connection are via 2 x single-row push-in connectors. The Flexslice module indicates the output signal states via LEDs.

- Module current consumption (EBUS 5V): 110mA max
- Number of Digital Outputs: 16 (2 banks of 8)
- Power supply requirement: 24V (+/-20%) DC
- Load type: Resistive, inductive and capacitive
- "ON" time: 75us (90% to 10%)
- "OFF" time: 105us (10% to 90%)
- Max. Output current: 0.5A per channel
- Max. Output current per bank of 8 Outputs: 4A
- Short−Circuit Protection: 3A typ per output
- Over voltage Protection: Yes
- Reverse Voltage Protection: Yes

P377: 16-IN NPN

The P377 digital input Flexslice connects 24V dc signals from devices on the machine to the binary control registers in the Motion Coordinator. All 16 inputs are current sourcing (NPN) type and have electrical isolation. Inputs and power connection are via 2 x single-row push-in connectors. The Flexslice module indicates the input signal states via LEDs.

- Module current consumption (EBUS 5V): 100mA max
- Number of Digital Inputs: 16 (2 banks of 8)
- Power supply requirement: 24V (+/-20%) DC
- "ON" Voltage threshold: 13.7V typ
- "OFF" Voltage threshold: 14.6V typ
- Input current: 3.5mA
- Input filter Cut-off (RC network): 18KHz

P378: 8 ANALOGUE OUTPUTS

The P378 Flexslice 8 Analogue Output module has eight programmable voltage range output terminals, each digitised to a resolution of 12 bit. The 8 single ended outputs have a common 0V potential and are brought out to a single push-in connector.

- Power Supply via the EBUS
- Module current consumption (EBUS 5V): 200mA max
- Signal voltage: -10…+10V; 0…+10V
- Signal current: +/-6mA max
- Resolution: 12 bit
- Output impedance: 0.5ohm
- Number of Analogue Outputs: 8

P379: 8 ANALOGUE INPUTS

The P379 Flexslice 8 Analogue Input module has eight programmable voltage range input terminals, each digitised to a resolution of 12 bit. The 8 single ended inputs have a common 0V potential and are brought out to a single row push-in connector.

- Power Supply via the EBUS
- Module current consumption (EBUS 5V): 160mA max
- Signal voltage: -10…+10V; 0…+10V
- Signal current: 0…20mA
- Resolution: 12 bit
- Overvoltage protection: ±25V
- Number of Inputs: 8

ALL FLEXSLICE MODULES

- Connectors: Push-in
- Cable length (max): 30m
- Dimensions (mm): 15w x 147h x 107d
- Weight: 145g
- EtherCAT refresh cycle: ≥ 125us
- Isolation: 1KV
- Compliance: RoHS, CE and UL

OVERALL DIMENSIONS

- Connectors: Push-in
- Cable length (max): 30m
- Dimensions (mm): 15w x 147h x 107d
- Weight: 145g
- EtherCAT refresh cycle: ≥ 125us
- Isolation: 1KV
- Compliance: RoHS, CE and UL

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Preliminary specifications may change without notice