

# Flexslice Architecture **EtherCAT**

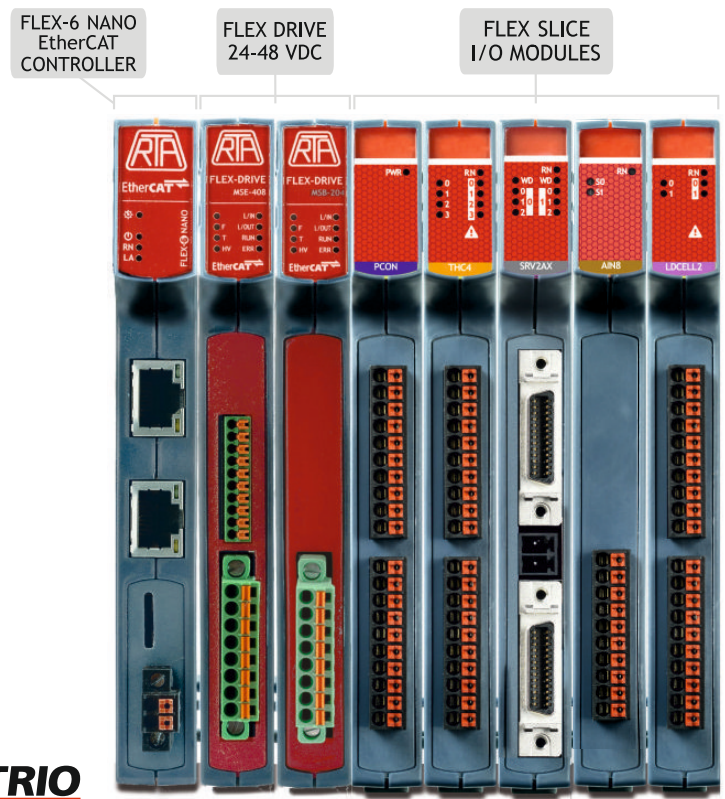
## INTRODUCTION

Flexslice architecture is a flexible solution for a wide range of motion control applications in most industrial fields. It is an articulated system allowing the complete process of programming, functioning and monitoring of up to 128 axes of stepper, servo and linear motors, based on the most common protocols.

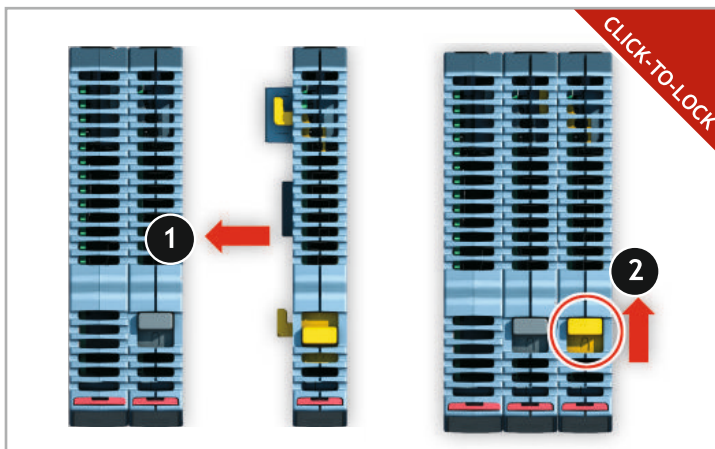
It is an intelligent system originally designed by TRIO Motion Technologies, where R.T.A. EtherCAT drives fit perfectly, developing a powerful and ultra-compact solution.

## HIGHLIGHTS

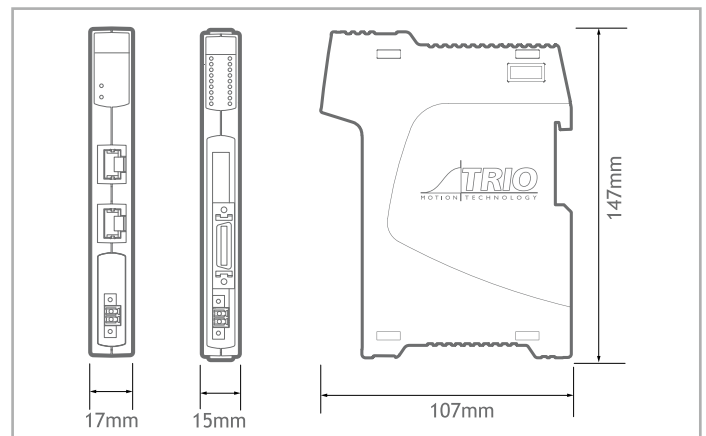
- Scalable and expandable system
- Easy parameter configuration
- Perfect matching with R.T.A. Flex-Drive EtherCAT stepping motor drive.
- Power supply:
  - for controller and Coupler: 24 VDC
  - for Flex-Drive: 24-48 VDC
  - for all Modules: via internal EBus
- Up to 128 axes controlled
- EtherCAT cycle times down to 125 µs
- Wide selection of digital and analog I/O modules designed for precise positioning of stepper and servo motors.
- Secure remote monitoring through VPN
- DIN-rail mounted



## FAST & EASY ASSEMBLY



## MECHANICAL DIMENSIONS



## LOGIC MODULES



### Flex-6 Nano EtherCAT Motion Coordinator

- EBus output current: 2500 mA
- Power supply requirement: 24 VDC
- EtherCAT Connection: RJ45
- Protocol: EtherCAT Master
- Cycle Time as Low as 125us
- Modes of Operation: CSP, CSV and CST
- Communication: Modbus/TCP



### P366: EtherCAT Coupler

- EBus output current: 2500 mA
- Power supply requirement: 24 VDC
- EtherCAT Connection: RJ45
- Protocol: EtherCAT Slave
- Data rate 100 Mbit/s
- Network Cable: CAT 6

## POWER MODULES



### RTA Flex-Drive EtherCAT MSE 408 Model

- EBus module current consumption: 350 mA max + Encoder (85 mA max)
- Power supply requirement: 24-48 VDC
- $I_{NP}$  (Peak value): 4 A
- Sensor Feedback: ENCODER or OPEN LOOP



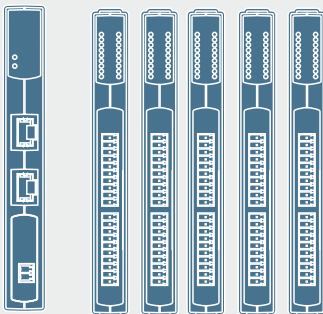
### RTA Flex-Drive EtherCAT MSB 204 Model

- EBus module current consumption: 350 mA max
- Power supply requirement: 24-48 VDC
- $I_{NP}$  (Peak value): 2.5 A
- Sensor Feedback: OPEN LOOP

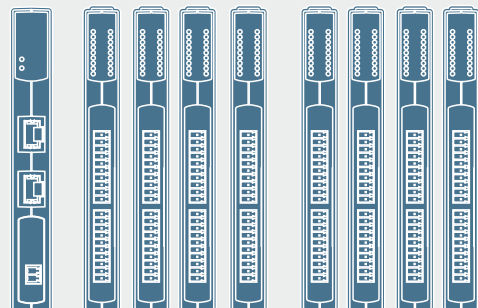
The configuration of a Flex-Drive Architecture can be defined considering that the **total sum** of the **EBus current consumption** of every included module should be lower than the Ebus output current of Flex-6-Nano Motion Coordinator or P366 EtherCAT coupler (**2500 mA**).

## SOME EXAMPLES OF FLEXSLICE ARCHITECTURES

**1** FLEX-6 NANO or **1** COUPLER  
**+** **UP TO 5** FLEX-DRIVE MSE 408



**1** FLEX-6 NANO or **1** COUPLER  
**+** **UP TO 4** FLEX-DRIVE MSE 408  
**+** **4** DIGITAL I/Os or **2** ANALOG I/Os



*Please refer to R.T.A. Technical support in case of doubts about specific layouts.*

# FLEX-DRIVE Series Drives

## EtherCAT®

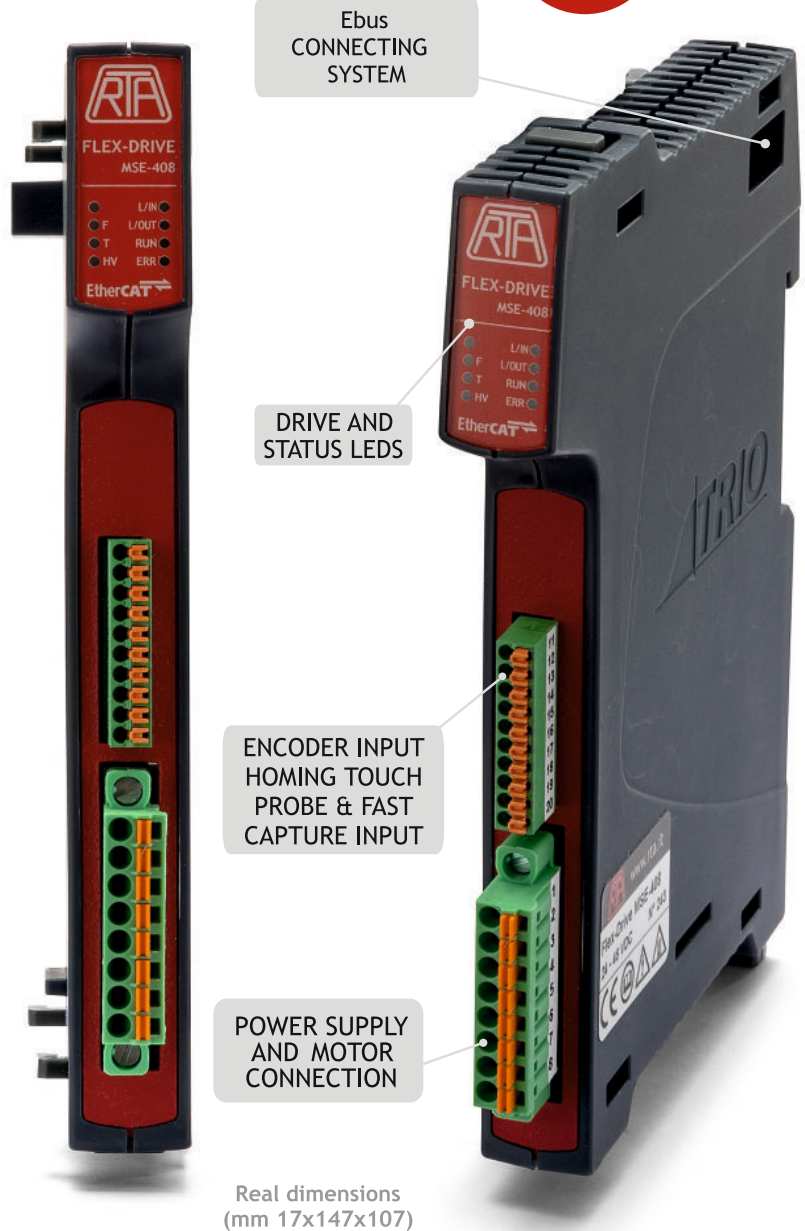
### INTRODUCTION

- FLEX-DRIVE allows connection with any stepper motor up to Nema 24 (60 mm) with or without encoder feedback, supporting PP, CSP, CSV and Homing mode of operation.
- MSE 408 model is equipped with one configurable fast capture input, suitable for Touch Probe, proximity or free use.
- Easy setup: no need of programming software, all settings are made through EtherCAT network.
- Separated power supply for logic circuit and motor power.

### MAIN EtherCAT® FEATURES

- Modes of operation: PP, PV, Homing, CSP and CSV.
- Wide range of motor phase current setting and motor current overboost (120%).
- Different variety of HOMING operation modes.
- Encoder feedback and support of different resolution.
- Touch Probe function available.
- Limit switches management.
- Auto-sync function available featuring a closed loop positioning.

3<sup>rd</sup>  
FIRMWARE  
GENERATION



Please refer to [download.rta.it](http://download.rta.it)  
for technical specifications

AUTO  
SYNC  
FUNCTION

FLEX-DRIVE



SCAN THE QR CODES TO WATCH  
TWO VIDEOS ON FLEX-DRIVE  
AND AUTO-SYNC FUNCTION

AUTO-SYNC



# Flexslice Modules

## P362: Power Connect



The P362 Flexslice Power Connect provides a solution for simple and convenient wiring of 3 wire sensor power and return wires. The pins of the 2 x single-row push-in connectors are joined together to form 2 isolated banks of commoned connections. With 0V connected to the lower connector and 24V to the upper connector, the LED gives an indication that power is on.

- EBus Module current consumption: 0mA
- Power supply requirement: 24V (+/-20%) DC
- Max connector current: 4A

## P367: Thermocouple



The P367 Flexslice Thermocouple module has 4 thermocouple inputs, each digitised to a resolution of 16 bit. The 4 thermocouple inputs are brought out to a single row push-in connector. A second single row push-in connector has 4 relay outputs for control of a heater or other switched load.

- EBus Module current consumption: 160mA max
- Power supply: via the EBUS
- Number of Inputs: 4
- Thermocouple types: J, K, T, E
- Resolution: 16 bit
- Number of Outputs: 4
- Output type: Normally open (NO)
- Load type: Resistive, inductive and capacitive
- Max. Output Voltage: 24V
- Max Output Current: 100mA

## P368: RTD Module



The P368 Flexslice RTD module has 4 resistance temperature detector (RTD) inputs, each digitised to a resolution of 16 bit. The 4 RTD inputs are brought out to a single row push-in connector. A second single row push-in connector has 4 relay outputs for control of a heater or other switched load.

- EBus Module current consumption: 160mA max
- Power supply: via the EBUS
- Number of Inputs: 4
- RTD types Resolution: 16 bit
- Number of Outputs: 4
- Output type: Normally open (NO)
- Load type Resistive, inductive and capacitive
- Max. Output Voltage: 24V
- Max Output Current: 100mA

## P369: Load Cell Module



The P369 Flexslice Load Cell module has 2 load cell inputs, each digitised to a resolution of 16 bit. The 2 load cell inputs are brought out to a single row push-in connector. A second single row push-in connector has 4 relay outputs for control of a switched load.

- EBus Module current consumption: 160mA max
- Power supply: via the EBUS
- Number of Inputs: 2
- Load Cell types: 4 wire
- Resolution: 16 bit
- Number of Outputs: 4
- Output type: Normally open (NO)
- Load type Resistive, inductive and capacitive
- Max. Output Voltage: 24V
- Max Output Current: 100mA

## 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.

- EBus Module current consumption: 110mA max
- Power supply: via the EBUS
- Power supply requirement: 24V (+/-20%) DC
- Number of Digital Outputs: 16 (2 banks of 8)
- 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
- 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.

- EBus Module current consumption: 110mA max
- Power supply: via the EBUS
- Power supply requirement: 24V (+/-20%) DC
- Number of Digital Inputs: 16 (2 banks of 8)
- Load type: Resistive, inductive and capacitive
- "ON" Voltage Threshold: 11.2V typ
- "OFF" Voltage Threshold: 10.2V typ
- Input current: 3.5mA typ
- Input filter Cut-off (RC network): 18KHz

## P374: Analog 2 Servo Axes



The P374 Flexslice Analogue 2 Servo Axes module allows up to 2 servo motors, connected to a control system. It supports incrementale encoder inputs. If configured for stepper/pulse output an axis can be pulse+direction or quadrature simulated encoder output. Each MDR connector supports all the signals for full closed loop control of a servo axis.

- EBus Module current consumption: 180mA max
- Power Supply: via the EBUS
- Power Supply 24V (+/-20%) DC @ 100mA
- Max Axes: 2 (software configurable)
- Max Enc Rate: 8M Edges/s encoder count
- Max Step Rate: 8MHz pulse count
- Step/Pulse Width: Wave
- Enc/Step Input/Output: RS422
- DAC Voltage Output: 2 x 12bit +/-10V
- Registration inputs: 4 x 24V Isolated PNP
- WDOG Output: 2 x Normally open (NO)
- WDOG Max. Output Voltage: 24V
- WDOG Max Output Current: 100mA
- Field Programmable: Yes

## P378: 8 Analog 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.

- EBus Module current consumption: 200mA max
- Power Supply: via the EBUS
- Signal voltage: -10...+10V; 0...+10V
- Signal current: +/-5mA max
- Resolution: 12 bit
- Output impedance: 16 ohm
- Number of Analogue Outputs: 8

## P379: 8 Analog 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.

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

Please refer to R.T.A. Technical Support for architectures layouts and Flexslice modules features.



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