

TRAJEXIA

Total Freedom in Motion Control

CONTROL

CHOOSE

PERFORM

DESIGN

CREATE



» Freedom to communicate

» You decide

» Freedom to design



THE ADVANCED MOTION CONTROLLER THAT PUTS YOU IN CONTROL

Trajexia is Omron's new motion platform that offers you the performance of a dedicated motion system, the ease of use you get from an automation specialist and the peace of mind you get from a global player. Trajexia puts you in full control to create the best machines today and... tomorrow.

Freedom to design

Freedom to communicate

Besides a built-in port with EtherNet/IP that provides connectivity meeting today's and foreseeable future communication standards, Trajexia also includes interfaces to popular field buses such as PROFIBUS-DP, DeviceNet and CANopen.

Freedom to control

Trajexia offers perfect control of up to 64 axes with a minimum system cycle time. Each axis can be programmed using linear and circular interpolation, electronic CAMs and gears. And its powerful motion instruction set makes programming intuitive and easy.

Freedom to build

You can select from a wide choice of best-in-class rotary and linear motors, inverters, vision systems and I/O in a single EtherCAT network.

And the system is scalable from 2 axes up to 64 axes and with 64 inverters & I/O modules.



Trajexia stand-alone



trajexia
you decide

Linear Motor



Accurax G5 servo system



MX2 inverter



Xpectia FZM1 vision system



SmartSlice I/O

EtherCAT



To third party controller

CANopen

DeviceNet

PROFIBUS



CJ2 PLC series



Remote access for programming/ monitoring



Freedom to choose

Perfect motion control

The stand-alone Trajexia controller TJ2-MC64 together with an EtherCAT master TJ2-ECT provides a significant improvement in machine performance and accuracy allowing you to run your machines faster. Control of up to 64 axes with advanced motion functions including registration, linear and circular interpolation, electronic cams, gearboxes and kinematics - such as Delta and SCARA* robots - with the best performance and all via simple motion commands.

* SCARA is under development.
Contact Technical Support for transformation availability.

Scalability

Free choice from 4 to 64 axes. It is provided by the 3 versions of EtherCAT master units: 4, 16 and 64 axes.



POWER SUPPLY

MOTION CONTROLLER

ETHERCAT MASTER

Direct connectivity via Ethernet

Trajexia's Ethernet built-in port provides direct and fast connectivity to PLCs and HMIs while providing full access to the axes over the EtherCAT network.

Serial Port

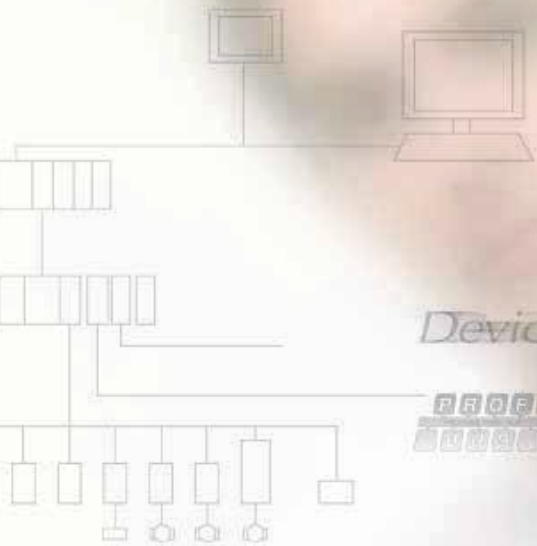
A serial port provides direct connectivity with Omron PLCs, HMIs or any other field device.

Local I/Os

Freely-configurable embedded I/Os in the controller enable you to perfectly tailor Trajexia to your machine design.

One Machine Network

Support for servo, inverter, vision system and distributed I/O in a single EtherCAT network.



DeviceNet



MECHATROLINK-II MASTER

MECHATROLINK-II Master

The new stand-alone Trajexia controller TJ2-MC64 offers backward compatibility with the existing MECHATROLINK-II master units.

CANOPEN UNIT



PROFIBUS SLAVE



DeviceNet SLAVE



FLEXIBLE AXIS MODULE

END COVER



Actual size

Profibus-DP, DeviceNet and CANopen

Standardised on Profibus, DeviceNet or CANopen? That's no problem. Trajexia offers these interfaces on request plus many more possibilities.

Flexible Axis module

The Flexible Axis module allows full control of two actuators via an analogue output or pulse train. The module supports the main absolute encoder protocols allowing the connection of an external encoder to the system.

Freedom to create

Intuitive and powerful engineering

Trajexia's intuitive and easy programming tool, based on the Motion Basic instruction set, includes dedicated commands for linking axes, e-cams, e-gearboxes etc. What's more, multitasking capability provides total freedom in application design.

Design simplicity

Handling from 2 to 64 axes, the system's scalability provides you with a single application for several versions of your machine.

Keep your know-how safe

Trajexia's sophisticated encryption method guarantees complete protection and confidentiality for your valuable know-how.

Advanced tools

Trajexia's advanced debugging tools, including trace and oscilloscope functions, ensure efficient operation and minimum downtime.

Automatic recognition of devices

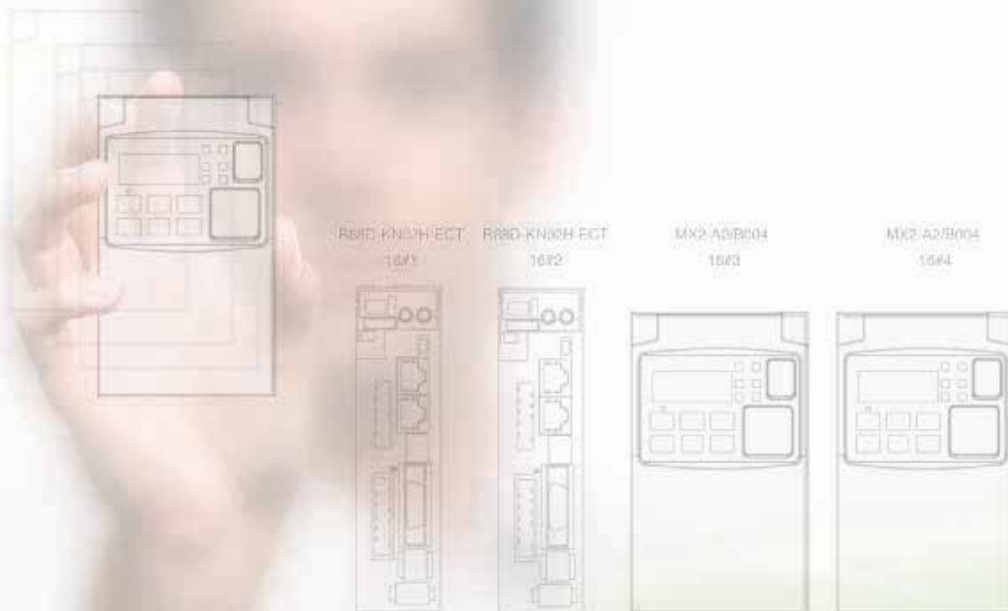
The servos, inverters and I/Os connected to the EtherCAT network are automatically identified and configured, allowing you to set up your system in minutes.

Full access to devices from one connection

The parameters and functions inside the drives on the EtherCAT are fully accessible from the Ethernet connection.

Remote access

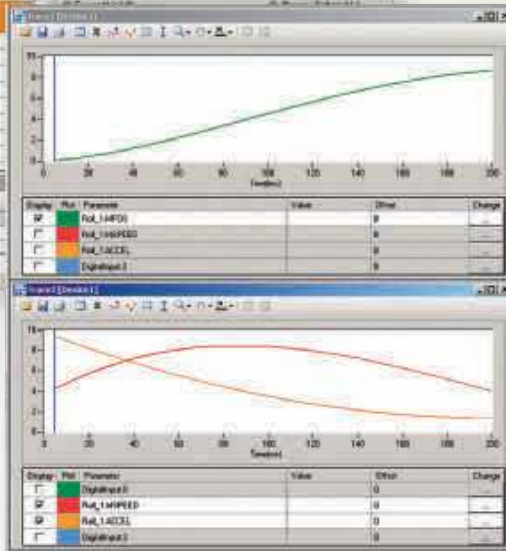
Trajexia's smart architecture allows explicit messaging over Ethernet and through EtherCAT to provide full transparency down to the actuator level, and making remote access possible.



The screenshot shows the Trajexia Studio interface. On the left is a 'Solution Explorer' tree with folders like 'Global Data', 'Axis Parameters', 'Constants', 'IO', 'CAM Tables', 'VR Memory', 'Table Memory', 'Programs', and 'Axes'. The main workspace displays a table of parameters for 'PW_24-120-MC4'.

Address	Name	Value	Unit	Type	Description
12	T20MCD			Digital Input	
13	T20MCD			Digital Input	
14	T20MCD			Digital Input	
15	T20MCD			Digital Input	
16	T20MCD			Digital Input	
17	T20MCD			Digital Input	
18	T20MCD			Digital Input	
19	T20MCD			Digital Input	
20	T20MCD			Digital Input	
21	T20MCD			Digital Input	
22	T20MCD			Digital Input	
23	T20MCD			Digital Input	
24	T20MCD			Digital Input	
25	T20MCD			Digital Input	
26	T20MCD			Digital Input	

Below the table is a 'Watch' window showing variables like 'VREF' and 'VREF1' with their current values and types.

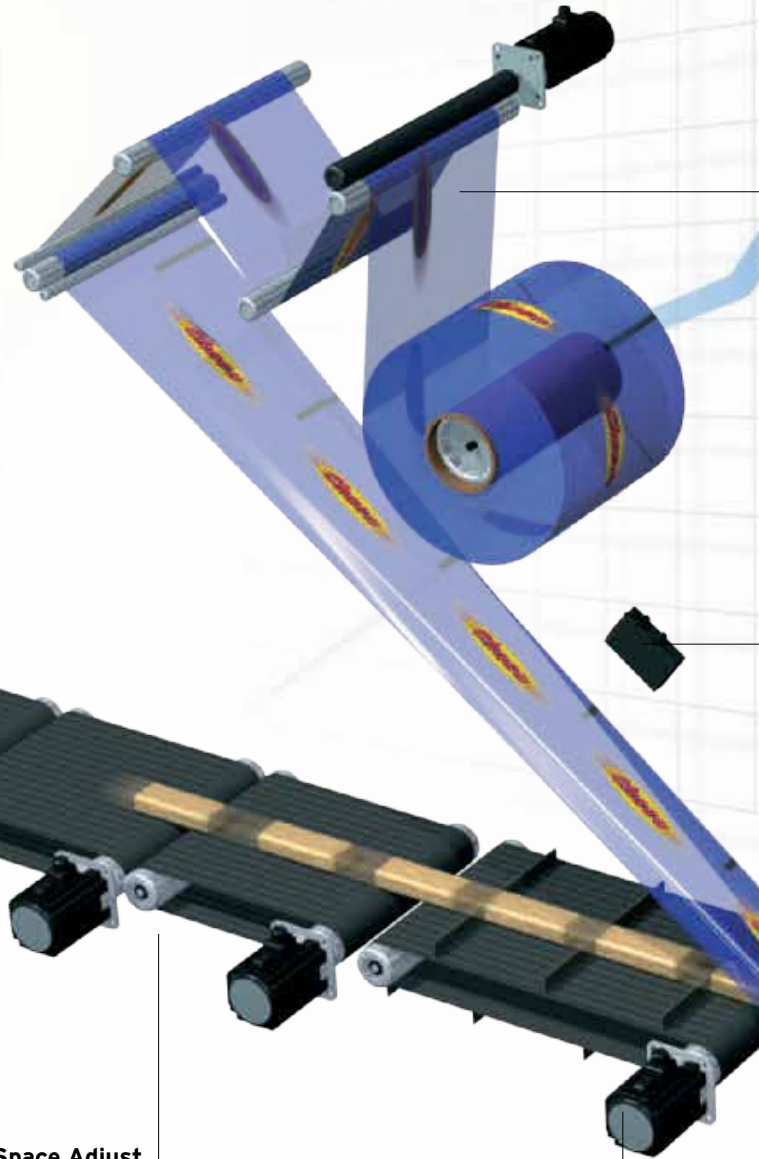


This screenshot shows a different view of the Trajexia Studio interface, focusing on the 'Axes' and 'I/O' components. The 'Solution Explorer' tree shows folders like 'Global Data', 'Axis Parameters', 'Constants', 'IO', 'CAM Tables', 'VR Memory', 'Table Memory', 'Programs', and 'Axes'. Under 'Axes', there are entries for 'R01: ECT16', 'R02: ECT16', 'R03: ECT16', 'R04: ECT16', 'R05: ECT16', 'R06: ECT16', 'R07: ECT16', 'R08: ECT16', 'R09: ECT16', 'R10: ECT16', 'R11: ECT16', 'R12: ECT16', 'R13: ECT16', 'R14: ECT16', 'R15: ECT16', 'R16: ECT16', 'R17: ECT16', 'R18: ECT16', 'R19: ECT16', 'R20: ECT16', 'R21: ECT16', 'R22: ECT16', 'R23: ECT16', 'R24: ECT16', 'R25: ECT16', 'R26: ECT16', 'R27: ECT16', 'R28: ECT16', 'R29: ECT16', 'R30: ECT16', 'R31: ECT16', 'R32: ECT16', 'R33: ECT16', 'R34: ECT16', 'R35: ECT16', 'R36: ECT16', 'R37: ECT16', 'R38: ECT16', 'R39: ECT16', 'R40: ECT16', 'R41: ECT16', 'R42: ECT16', 'R43: ECT16', 'R44: ECT16', 'R45: ECT16', 'R46: ECT16', 'R47: ECT16', 'R48: ECT16', 'R49: ECT16', 'R50: ECT16', 'R51: ECT16', 'R52: ECT16', 'R53: ECT16', 'R54: ECT16', 'R55: ECT16', 'R56: ECT16', 'R57: ECT16', 'R58: ECT16', 'R59: ECT16', 'R60: ECT16', 'R61: ECT16', 'R62: ECT16', 'R63: ECT16', 'R64: ECT16', 'R65: ECT16', 'R66: ECT16', 'R67: ECT16', 'R68: ECT16', 'R69: ECT16', 'R70: ECT16', 'R71: ECT16', 'R72: ECT16', 'R73: ECT16', 'R74: ECT16', 'R75: ECT16', 'R76: ECT16', 'R77: ECT16', 'R78: ECT16', 'R79: ECT16', 'R80: ECT16', 'R81: ECT16', 'R82: ECT16', 'R83: ECT16', 'R84: ECT16', 'R85: ECT16', 'R86: ECT16', 'R87: ECT16', 'R88: ECT16', 'R89: ECT16', 'R90: ECT16', 'R91: ECT16', 'R92: ECT16', 'R93: ECT16', 'R94: ECT16', 'R95: ECT16', 'R96: ECT16', 'R97: ECT16', 'R98: ECT16', 'R99: ECT16', 'R100: ECT16'.



Freedom to perform

Trajexia offers best-in-class motion devices for producing the best automation solutions for today and tomorrow...



Product Infeed

Speed controlled conveyor provides product from the upstream process.

Space Adjust

Product rate and space between products is synchronised with the lug chain.

Infeed Lug Chain

The product is placed precisely on the forming area. This axis acts as a master and is the reference for all machine movements.

Perfect control of 64 axes

Controlling all 64 axes with a minimum system cycle time and with the use of 64 bit integer, Trajexia TJ2 ensures the fastest operation at the highest accuracy.

Real multi-tasking

Trajexia is a real multi-tasking controller capable of running up to 22 tasks simultaneously.

Ethernet optimised for machine control

EtherCAT is an Ethernet based network optimised for machine control with unrivalled performance.

With the distributed clock system, all servos in an EtherCAT application can be synchronised within a microsecond tolerance.



Film Unwind

Film tension is kept constant for right product forming and sealing.

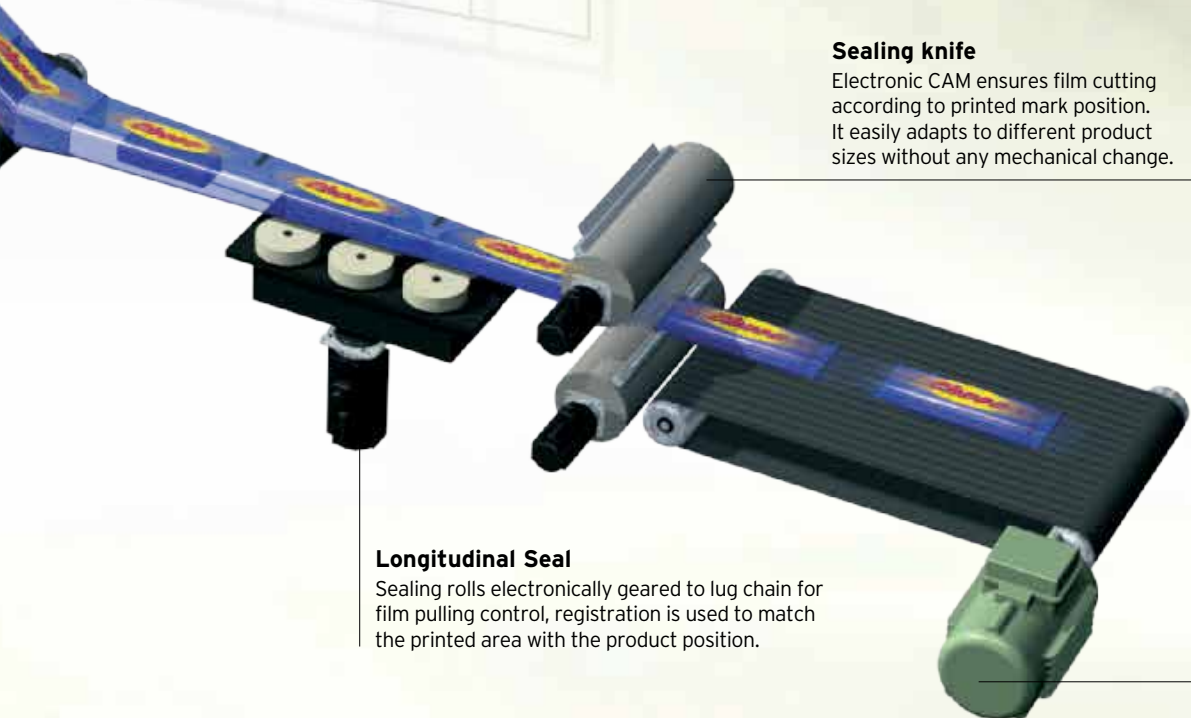
Fast registration Input

Real time position registration provides the information to correct and synchronise movements according to printed marks.



Sealing knife

Electronic CAM ensures film cutting according to printed mark position. It easily adapts to different product sizes without any mechanical change.



Longitudinal Seal

Sealing rolls electronically geared to lug chain for film pulling control, registration is used to match the printed area with the product position.

Outfeed conveyor

Inverters can easily be integrated for speed controlled axes.

Servo drives with accurate motion control

Accurax G5 is a compact size servo drive with EtherCAT connectivity built-in.

It offers a wide range of linear and rotary servo motors

One Machine Network

Support for servo, inverter, vision system and I/O in a single EtherCAT network.

Trajexia stand-alone

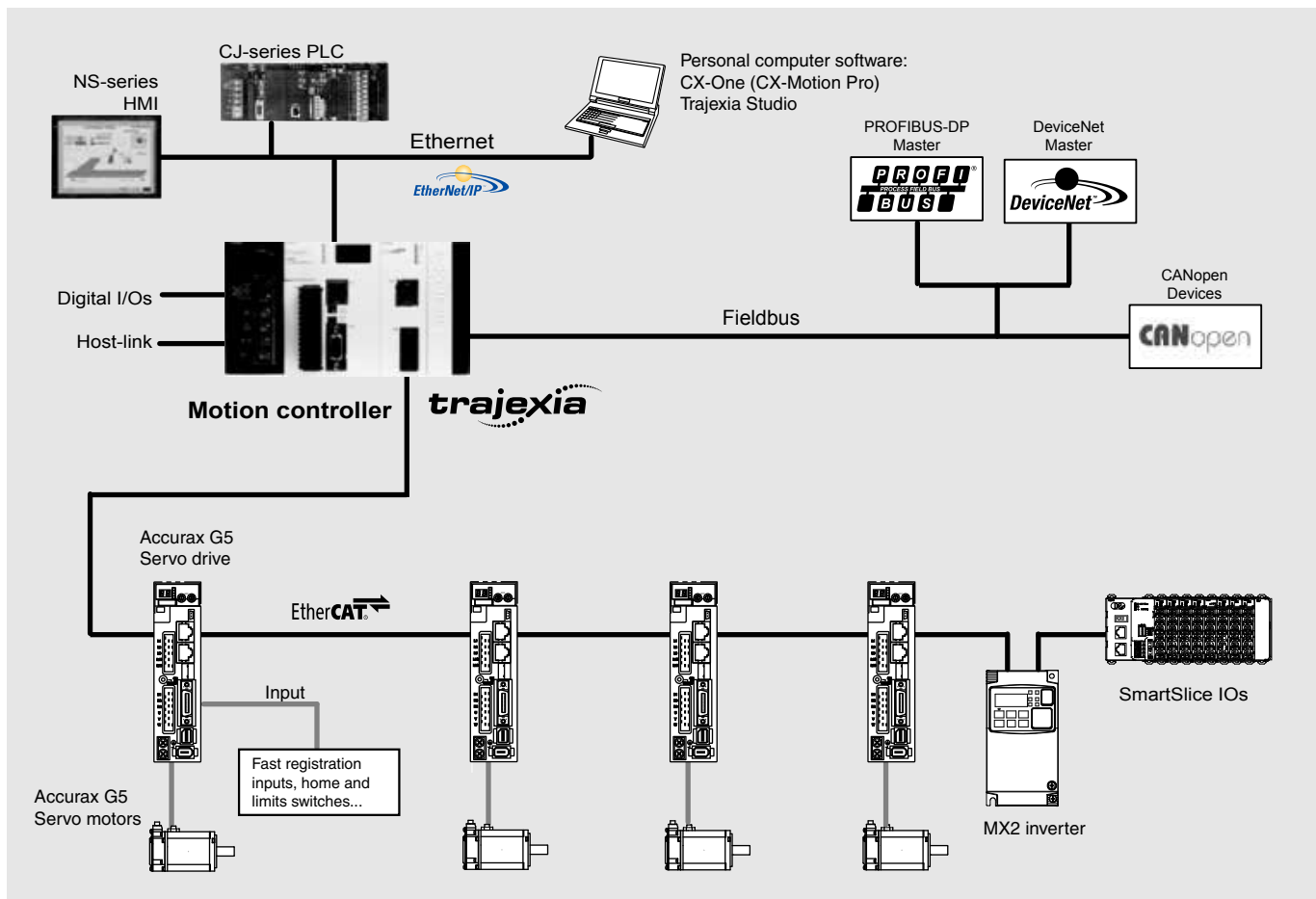
Trajexia motion controller

Stand-alone advanced motion controller over EtherCAT

- Perfect motion control of up to 64 axes. Scalability with EtherCAT masters for 4, 16 and 64 axes.
- Supports position, speed and torque control
- Multi-tasking controller capable of running up to 22 tasks simultaneously
- Advanced motion control such as linear, circular, helical or spherical interpolation, electronic cams and gearboxes via simple motion commands.
- Control of servos, inverters, vision systems and distributed I/Os over a single EtherCAT network
- Support for EtherNet/IP communications
- Advanced debugging tools including data trace and oscilloscope functions
- Open communication: Serial and EtherNet/IP built-in, PROFIBUS-DP, DeviceNet and CANopen



System configuration



Specifications

Trajexia general specifications

Item	Details
Model	TJ□
Ambient operating temperature	0 to 55°C
Ambient operating humidity	10 to 90%RH
Ambient storage temperature	-20 to 70°C
Ambient storage humidity	90% max. (with no condensation)
Atmosphere	No corrosive gases
Vibration resistance	10 to 57 Hz: (0.075 mm amplitude) 57 to 100 Hz Acceleration: 9,8 m/s ² , in X, Y and Z directions for 80 minutes.
Shock resistance	143 m/s ² , 3 times each X, Y and Z directions.
Insulation resistance	20 MOhm
Dielectric strength	500 Volt
Protective structure	IP20
International standards	CE, EN 61131-2, cULus, Lloyds, RoHS compliant

Trajexia motion control units

Item	Details	
Model	TJ2-MC64 TJ1-MC16 TJ1-MC04	
Number of axes	64 16 4 (+1 using TJ1-FL02 unit)	
Number of inverters and I/O modules	Up to 64 (Inverters in position, speed or torque mode) 8 maximum (Inverters in position, speed or torque mode) 8 maximum (Max. 4 Inverters in position mode)	
Motion bus	Number of EtherCAT master units ^{*1} 1 EtherCAT master is allowed per controller (see below TJ2-ECT64/ECT16/ECT04 for detailed info) not supported	
	Number of ML2 master units Up to 4 MECHATROLINK-II master units per controller (see below TJ1-ML16/ML04 for detailed info)	
Cycle time	Selectable 0.25 ms, 0.5 ms, 1 ms or 2 ms Selectable 0.5 ms, 1 ms or 2 ms	
Programming language	BASIC-like motion language	
Multi-tasking	Up to 22 tasks running simultaneously Up to 14 tasks running simultaneously	
Built-in digital I/O	16 inputs and 8 outputs, for general purpose	
Measurement units	User definable	
Available memory for user programs	8 MB 500 KB	
Data storage capacity	Up to 32 MB Flash data storage Up to 2 MB Flash data storage	
Saving program data, motion controller	Flash-ROM SRAM with battery backup and Flash-ROM	
Saving program data, personal computer	Via CX-Motion Pro/Trajexia Studio software	
Communication ports	1 Ethernet port and 2 serial ports	
Firmware update	Via CX-Motion Pro/Trajexia Studio software	
Ethernet port	Electrical characteristics Conform to IEEE 802.3 (100BaseT)	
	Connector RJ45 Ethernet connector	
	Transmission protocol Modbus TCP slave TELNET FINS server and client	
	EtherNet/IP slave not supported	
Serial port	Electrical characteristics Conform 1 port to RS232C and 1 port to RS485/RS422A (selectable by switch)	
	Connector SUB-D9 connector (Counterpart included in the package)	
	Synchronization Start-stop synchronization (asynchronous)	
	Baud rate 1200 / 2400 / 4800 / 9600 / 19200 / 38400 bps	
	Transmission format	Databit length (7 or 8 bit)
		Stop bit (1 or 2 bit)
		Parity bit (Even/Odd/None)
	Transmission mode Point-to-multipoint (1:N)	
	Transmission protocol	RS-232C (1:1) Host Link master protocol, Host Link slave protocol, ASCII general-purpose, Modbus RTU slave
		RS-485 (1:N) RS-422A (1:N) Host Link master protocol, Host Link slave protocol, ASCII general-purpose, Modbus RTU slave
	Galvanic isolation	RS422A port
	Communication buffers	254 bytes
Flow control	None	
Terminator	Yes, selectable by switch	
Cable length	15 m for RS232 and 500 meter for RS422/485	

*1. The EtherCAT master unit cannot be used in combination with a MECHATROLINK master unit when using TJ2-MC64 motion controller unit with firmware 2.0132.

Trajexia EtherCAT master units

Item	Specifications		
Model	TJ2-ECT64	TJ2-ECT16	TJ2-ECT04
Controlled devices with EtherCAT interface	Accurax G5 servo drive, MX2 inverter and SmartSlice IOs		
Electrical characteristics	Conform to Ethernet (IEEE 802.3), 100Base Tx		
Communications port	1 EtherCAT communication connector (to connect the EtherCAT twisted-pair cable)		
Transmission speed	100 Mbps		
Topology	Daisy chain, line or drop line		
Communications media	STP Category 5		
Communication cycle	0.5 ms, 1 ms or 2 ms		
Stations slave types ^{*1}	Servo drives (axis) Frequency inverters (axis) I/O modules (devices)		
Number of axes per master / Cycle time ^{*2}	Max.64 axes/2 ms	Max. 16 axes/2 ms	Max. 4 axes/2 ms
	Max.32 axes/1 ms	Max. 16 axes/1 ms	Max. 4 axes/1 ms
	Max. 16 axes/0.5 ms	Max. 16 axes/0.5 ms	Max. 4 axes/0.5 ms
Transmission distance	Up to 100 meters between nodes		
Auxiliary I/Os	8 fast registration inputs		

*1. The TJ2-MC64 CPU supports a total of 1024 digital I/O points and 36 analogue I/O points.

*2. The number of axes per master/ cycle time is currently (TJ2-MC64 motion controller with firmware 2.01.32) limited to:

- Max. 32 axes @ 2ms
- Max. 16 axes @ 1 ms
- Max. 8 axes @ 0.5 ms

Trajexia MECHATROLINK-II master units

Item	Specifications	
Model	TJ1-ML16	TJ1-ML04
Controlled devices with MECHATROLINK-II interface	Accurax G5, G-Series, MX2 inverter and SmartSlice IOs	
Electrical characteristics	Conforms to MECHATROLINK standard	
Communication ports	1 MECHATROLINK-II master	
Transmission speed	10 Mbps	
Communication cycle	0.5 ms, 1 ms or 2 ms	
Stations slave types	Axes or servo drives Frequency inverters I/O modules	
Number of stations per master / Cycle time	Max.16 Stations/2 ms	Max. 4 Stations/2 ms
	Max. 8 Stations/1 ms	Max. 4 Stations/1 ms
Transmission distance	Max. 50 meters without using repeater	

Trajexia PROFIBUS slave unit

Items	Specifications
Model	TJ1-PRT
PROFIBUS standard	Conforms to PROFIBUS-DP standard EN50170 (DP-V0)
Communication ports	1 PROFIBUS-DP slave
Transmission speed	9.6, 19.2, 45.45, 93.75, 187.5, 500, 1500, 3000, 6000 and 12000 kbps
Node numbers	0 to 99
I/O size	0 to 122 words (16 bit), configurable, for both directions
Galvanic isolation	Yes

Trajexia DeviceNet slave unit

Items	Specifications
Model	TJ1-DRT
DeviceNet standard	Conforms to DeviceNet standard of CIP edition 1
Communication ports	1 DeviceNet slave
Transmission speed	125, 250 and 500 Kbps, auto-detect
Node numbers	0 to 63
I/O size	0 to 32 words (16 bit), configurable, for both directions
Galvanic isolation	Yes

Trajexia CANopen unit

Items	Specifications
Model	TJ1-CORT
Electrical Characteristics	Conforms to CAN 2.0 B
Communication ports	1 CANopen
Transmission speed	20, 50, 125 and 500 Kbps
Implemented CiA Standards	DS301, DS302
PDO Support	8 TPDO and 8 RPDO
PDO Mapping	Each PDO can be mapped into TJ1-MC16/04 VR, table, analogue and digital IO. BASIC commands assign mapping and start address ^{*1}
CANopen slave configuration	Any SDO message can be sent using BASIC during start-up and operation
CANopen network states	CANopen network can be set to pre-operational and operational using BASIC
CANopen slave emergencies	Available using BASIC command
Galvanic isolation	Yes

*1. The TJ1-MC16/04 CPUs support a total of 256 digital I/O points and 36 analogue I/O points. The TJ2-MC64 CPU supports a total of 1024 digital I/O points and 36 analogue I/O points.

Trajexia flexible axis unit

Items		Specifications
Model		TJ1-FL02
Number of axes		2. Every axis has 1 analog output, 1 encoder in/out -software configurable - and several digital I/O
Control methods (independent per axis)		±10 V analogue output + encoder input (closed loop) Line driver AB output Stepper pulse output in closed loop or pulse train output in open loop
Encoder	Encoder protocols	Abs SSI 200 kHz, Abs EnDat 1 MHz, Abs Tamagawa and Incremental Line driver AB
	Encoder Input maximum frequency	6 MHz
	Encoder/pulse output max. frequency	2 MHz
Auxiliary I/Os		2 fast registration inputs, 2 definable inputs, 2 enable output, 4 position switch outputs or axes reset
Galvanic isolation		Yes

SmartSlice EtherCAT interface unit

Item	Specifications
Model	GRT1-ECT
Electrical characteristics	Conform to Ethernet (IEEE 802.3), 100Base-TX
Communication cycle	0.25 ms min.
Power supply	24 VDC
Number of connectable Slices	Up to 64 slices with a maximum amount of 128 bytes ^{*1}
IO mapping	Automatic analogue and digital IO mapping into TJ2-MC64 CPU
Slice unit configuration	Not supported
Supported slice units	See ordering information section

*1. The TJ2-MC64 CPU supports a total of 1024 digital I/O points and 36 analogue I/O points.

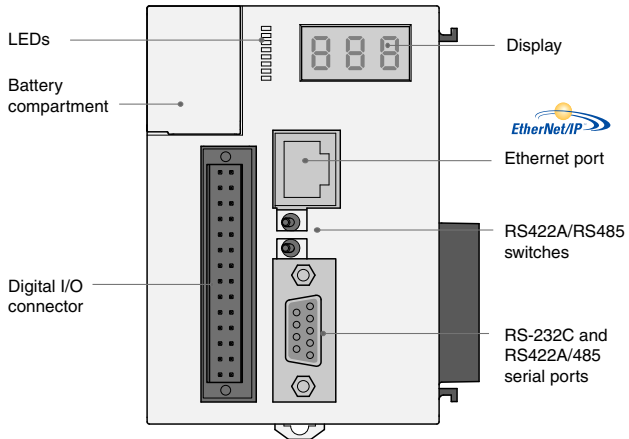
SmartSlice MECHATROLINK-II interface unit

Item	Specifications
Model	GRT1-ML2
Electrical characteristics	Conform to MECHATROLINK standard
Communication cycle	0.5, 1 or 2 ms
Power supply	24 VDC
Number of connectable Slices	Up to 64 slices with a maximum amount of 128 bytes ^{*1}
IO mapping	Automatic analogue and digital IO mapping into TJ1-MC16/04 and TJ2-MC64 CPUs
Slice unit configuration	Not supported
Supported slice units	See ordering information section

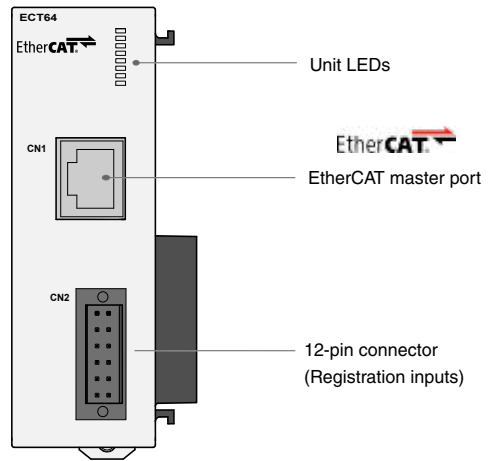
*1. The TJ1-MC16/04 CPUs support a total of 256 digital I/O points and 36 analogue I/O points.
The TJ2-MC64 CPU supports a total of 1024 digital I/O points and 36 analogue I/O points.

Nomenclature

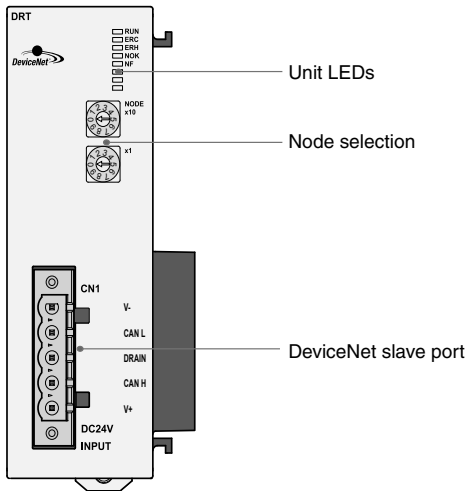
Trajexia motion controller unit - TJ2-MC64, TJ1MC-16/04



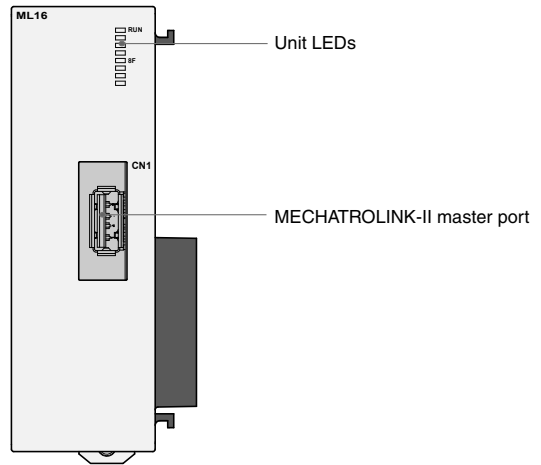
Trajexia EtherCAT master unit - TJ2-ECT04/16/64



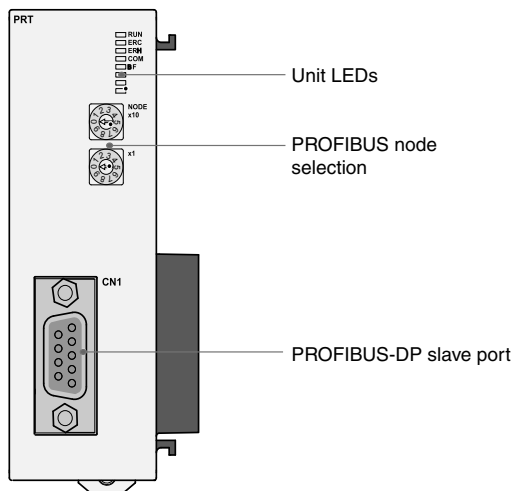
Trajexia DeviceNet slave unit - TJ1-DRT



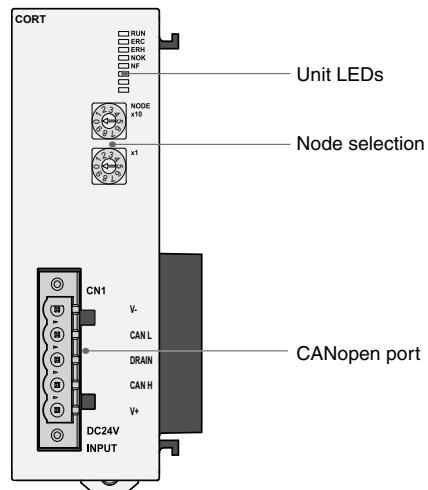
Trajexia MECHATROLINK-II master unit - TJ1-ML16/04



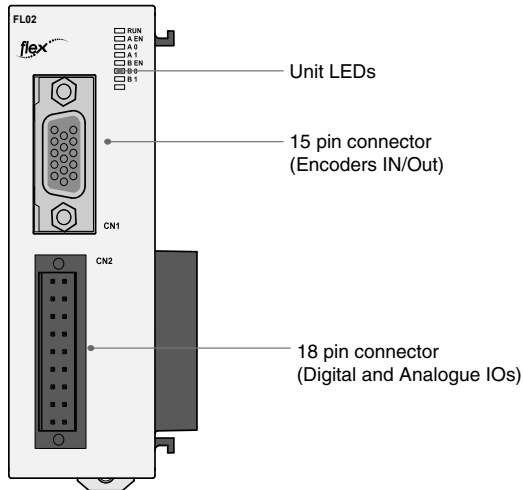
Trajexia PROFIBUS-DP unit - TJ1-PRT



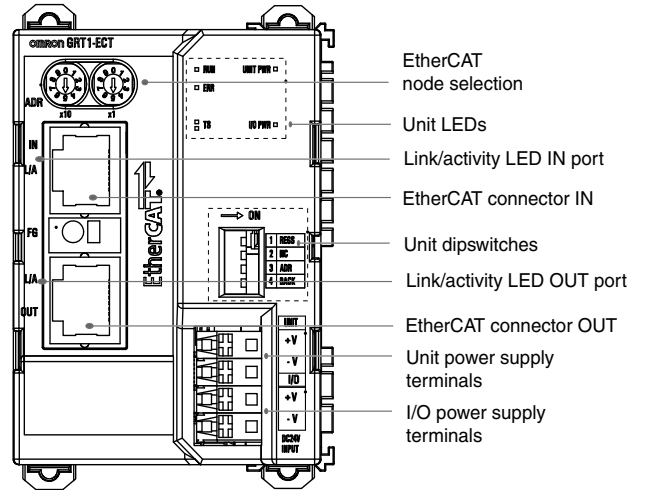
Trajexia CANopen unit - TJ1-CORT



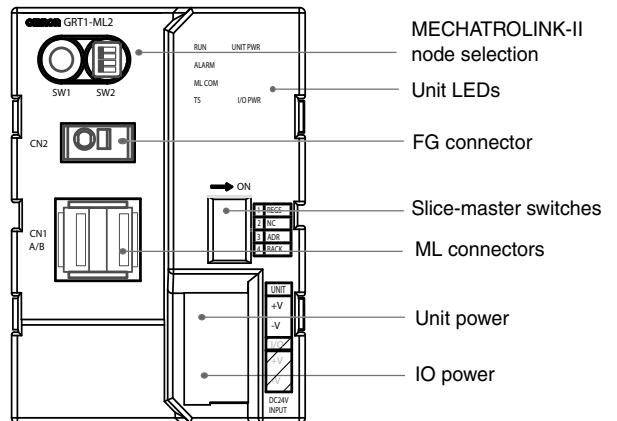
Trajexia Flex axis unit - TJ1-FL02



SmartSlice EtherCAT interface unit - GRT1-ECT

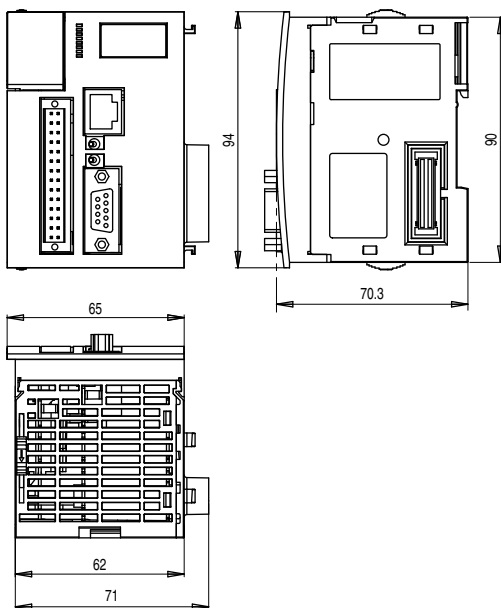


SmartSlice MECHATROLINK-II interf. unit - GRT1-ML2

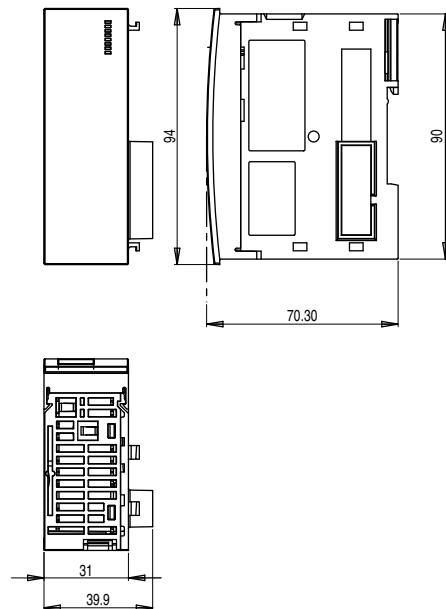


Dimensions

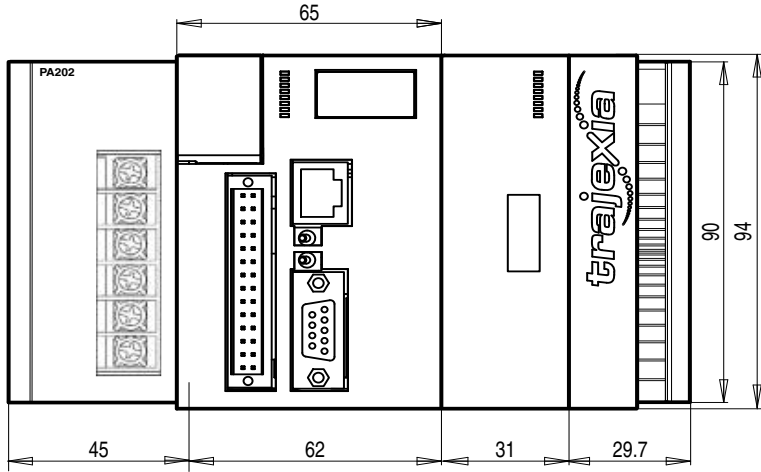
Trajexia motion controller - TJ2-MC64, TJ1-MC16/04



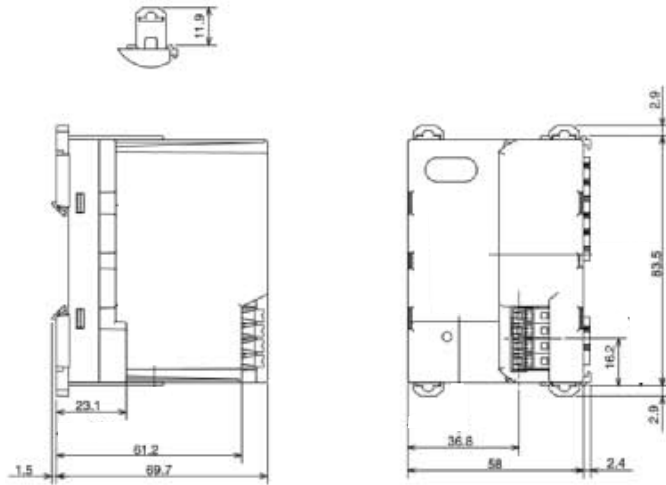
Trajexia units - TJ1-ML16/04, -PRT, -DRT, -CORT, -FL02, TJ2-ECT64/16/04



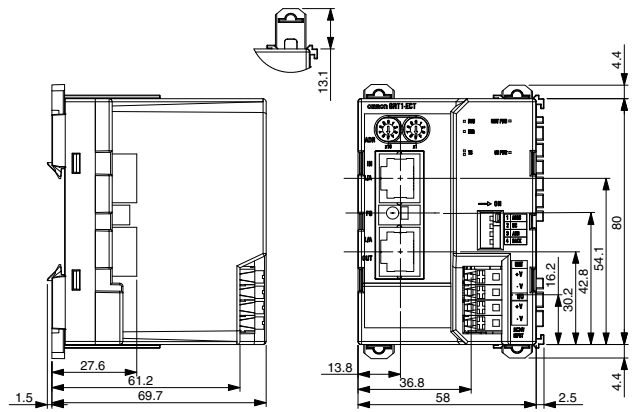
Trajexia system - CJ1W-PA202 + TJ1-MC16 + one module + TJ1-TER



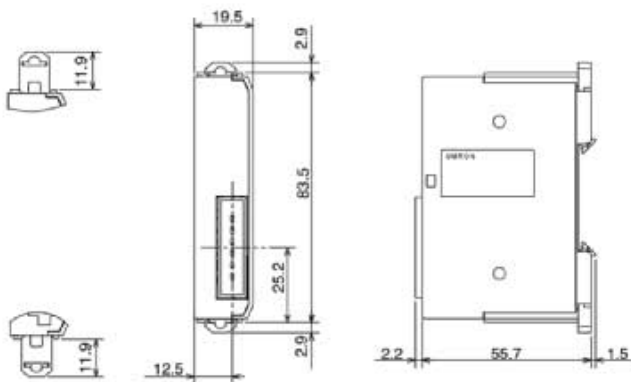
SmartSlice interface unit - GRT1-ML2



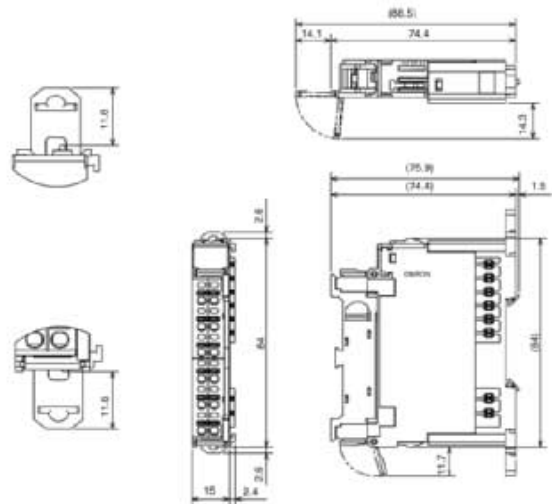
SmartSlice interface unit - GRT1-ECT



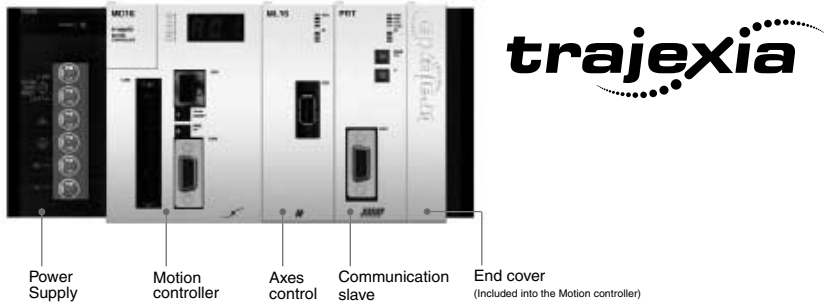
SmartSlice end unit - GRT1-END



SmartSlice I/O units - GRT1-



Ordering information



Trajexia motion controller

Name	Model
Trajexia motion controller Unit, up to 64 axes. (Trajexia end cover unit TJ1-TER is included)	TJ2-MC64
Trajexia motion controller unit, up to 16 axes. (Trajexia end cover unit TJ1-TER is included)	TJ1-MC16
Trajexia motion controller unit, up to 4 axes. (Trajexia end cover unit TJ1-TER is included)	TJ1-MC04
Power supply for Trajexia system, 100-240 VAC	CJ1W-PA202
Power supply for Trajexia system, 24 VDC	CJ1W-PD022

Trajexia - axes control modules

Name	Model
Trajexia EtherCAT master unit (up to 64 servo drives) ^{*1}	TJ2-ECT64
Trajexia EtherCAT master unit (up to 16 servo drives)	TJ2-ECT16
Trajexia EtherCAT master unit (up to 4 servo drives)	TJ2-ECT04
Trajexia MECHATROLINK-II master unit (up to 16 stations)	TJ1-ML16
Trajexia MECHATROLINK-II master unit (up to 4 stations)	TJ1-ML04
Trajexia flexible axis unit (for 2 stations)	TJ1-FL02

*1. The number of servo drives is currently limited to 32 when using TJ2-MC64 motion controller with firmware 2.0132.
Note: The TJ1-ML04 and TJ1-ML16 supported by the TJ2-MC64 motion controller are V2 (Version 2) and lot number equal or above Lot. No.091019 (YMMDD).

Trajexia - communication modules

Name	Model
Trajexia DevicNet slave unit	TJ1-DRT
Trajexia PROFIBUS-DP slave unit	TJ1-PRT
Trajexia CANopen unit	TJ1-CORT

EtherCAT - related devices

Servo system & frequency inverters

Name	Model	
Accurax G5 servo drive EtherCAT built-in	R88D-KN□□□-ECT	
MX2 inverter with EtherCAT option board	Frequency inverter	3G3MX2-A□
	EtherCAT option board	3G3AX-MX2-ECT

Note: Refer to servo systems and frequency inverter sections for detailed specs and ordering information

SmartSlice IOs system

Function	Specification	Model
SmartSlice Interface unit	SmartSlice EtherCAT interface unit	GRT1-ECT
End plate, one unit required per bus interface		GRT1-END
4 NPN inputs	24 VDC, 6 mA, 3-wire connection	GRT1-ID4
4 PNP inputs	24 VDC, 6 mA, 3-wire connection	GRT1-ID4-1
8 NPN inputs	24 VDC, 4 mA, 1-wire connection + 4xG	GRT1-ID8
8 PNP inputs	24 VDC, 4 mA, 1-wire connection + 4xV	GRT1-ID8-1
4 AC inputs	110 VAC, 2-wire connection	GRT1-IA4-1
4 AC inputs	230 VAC, 2-wire connection	GRT1-IA4-2
4 NPN outputs	24 VDC, 500 mA, 2-wire connection	GRT1-OD4
4 PNP outputs	24 VDC, 500 mA, 2-wire connection	GRT1-OD4-1
4 PNP outputs with short-circuit protection	24 VDC, 500 mA, 3-wire connection	GRT1-OD4G-1
4 PNP outputs with short-circuit protection	24 VDC, 2 A, 2-wire connection	GRT1-OD4G-3
8 NPN outputs	24 VDC, 500 mA, 1-wire connection + 4xV	GRT1-OD8
8 PNP outputs	24 VDC, 500 mA, 1-wire connection + 4xG	GRT1-OD8-1
8 PNP outputs with short-circuit protection	24 VDC, 500 mA, 1-wire connection + 4xG	GRT1-OD8G-1
2 relay outputs	240 VAC, 2 A, normally-open contacts	GRT1-ROS2
2 analogue inputs, current/voltage	±10 V, 0-10 V, 0-5 V, 1-5 V, 0-20 mA, 4-20 mA	GRT1-AD2
2 analogue outputs, voltage	± 10 V, 0-10 V, 0-5 V, 1-5 V	GRT1-DA2V
2 analogue outputs, current	0-20 mA, 4-20 mA	GRT1-DA2C
2 Pt100 inputs	Pt100, 2-wire or 3-wire connection	GRT1-TS2P
2 Pt1000 inputs	Pt1000, 2-wire or 3-wire connection	GRT1-TS2K
2 Thermocouple inputs	Types B, E, J, K, N, R, S, T, U, W, PL2, with cold junction compensation	GRT1-TS2T

Note: Refer to Automation systems catalogue for detailed specs and accessories information

GX-Series I/O Blocks

Name	Specification	Model
16 NPN inputs	24 VDC, 6 mA, 1-wire connection, expandable	GX-ID1611
16 PNP inputs	24 VDC, 6 mA, 1-wire connection, expandable	GX-ID1621
16 NPN outputs	24 VDC, 500 mA, 1-wire connection, expandable	GX-OD1611
16 PNP outputs	24 VDC, 500 mA, 1-wire connection, expandable	GX-OD1621
8 inputs and 8 outputs, NPN	24 VDC, 6 mA input, 500 mA output, 1-wire connection	GX-MD1611
8 inputs and 8 outputs, PNP	24 VDC, 6 mA input, 500 mA output, 1-wire connection	GX-MD1621
16 NPN inputs	24 VDC, 6 mA, 3-wire connection	GX-ID1612
16 PNP inputs	24 VDC, 6 mA, 3-wire connection	GX-ID1622
16 NPN outputs	24 VDC, 500 mA, 3-wire connection	GX-OD1612
16 PNP outputs	24 VDC, 500 mA, 3-wire connection	GX-OD1622
8 inputs and 8 outputs, NPN	24 VDC, 6 mA input, 500 mA output, 3-wire connection	GX-MD1612
8 inputs and 8 outputs, PNP	24 VDC, 6 mA input, 500 mA output, 3-wire connection	GX-MD1622
16 relay outputs	250 VAC, 2 A, 1-wire connection, expandable	GX-OC1601
4 analogue inputs, current/voltage	±10 V, 0-10 V, 0-5 V, 1-5 V, 4-20 mA	GX-AD0471
2 analogue outputs, current/voltage	±10 V, 0-10 V, 0-5 V, 1-5 V, 4-20 mA	GX-DA0271
2 encoder open collector inputs	500 kHz Open collector input	GX-EC0211
2 encoder line-driver inputs	4 MHz Line driver input	GX-EC0241

Note: The GX-Series I/O blocks are only supported by the T2-MC64 motion controller and with official firmware release above 2.0132.

Vision system

Name	Specification	Model
Vision system with EtherCAT interface	NPN	FZM1-350-ECT
	PNP	FZM1-355-ECT
Smart camera with EtherCAT interface	NPN/ Color camera	FQ-MS120-ECT
	NPN/ Monochrome camera	FQ-MS120-M-ECT
	PNP/ Color camera	FQ-MS125-ECT
	PNP/ Monochrome camera	FQ-MS125-M-ECT

Note: The vision systems are only supported by the T2-MC64 motion controller and with official firmware release above 2.0132.

MECHATROLINK-II - related devices

Servo system & frequency inverters

Name	Specification	Model
Accurax G5 servo drive ML-II built-in		R88D-KN□□□-ML2
G-Series servo drive ML-II built-in		R88D-GN□□□H-ML2
MX2 inverter with MECHATROLINK-II option board	Frequency inverter	3G3MX2-A□
	ML2 option board	3G3AX-MX2-MRT

Note: Refer to servo systems and frequency inverter sections for detailed specs and ordering information

SmartSlice IOs system

Function	Specification	Model
SmartSlice Interface unit	SmartSlice MECHATROLINK-II interface unit	GRT1-ML2 ^{*1}
End plate, one unit required per bus interface		GRT1-END
4 NPN inputs	24 VDC, 6 mA, 3-wire connection	GRT1-ID4
4 PNP inputs	24 VDC, 6 mA, 3-wire connection	GRT1-ID4-1
8 NPN inputs	24 VDC, 4 mA, 1-wire connection + 4xG	GRT1-ID8
8 PNP inputs	24 VDC, 4 mA, 1-wire connection + 4xV	GRT1-ID8-1
4 AC inputs	110 VAC, 2-wire connection	GRT1-IA4-1
4 AC inputs	230 VAC, 2-wire connection	GRT1-IA4-2
4 NPN outputs	24 VDC, 500 mA, 2-wire connection	GRT1-OD4
4 PNP outputs	24 VDC, 500 mA, 2-wire connection	GRT1-OD4-1
4 PNP outputs with short-circuit protection	24 VDC, 500 mA, 3-wire connection	GRT1-OD4G-1
4 PNP outputs with short-circuit protection	24 VDC, 2 A, 2-wire connection	GRT1-OD4G-3
8 NPN outputs	24 VDC, 500 mA, 1-wire connection + 4xV	GRT1-OD8
8 PNP outputs	24 VDC, 500 mA, 1-wire connection + 4xG	GRT1-OD8-1
8 PNP outputs with short-circuit protection	24 VDC, 500 mA, 1-wire connection + 4xG	GRT1-OD8G-1
2 relay outputs	240 VAC, 2 A, normally-open contacts	GRT1-ROS2
2 analogue inputs, current/voltage	±10 V, 0-10 V, 0-5 V, 1-5 V, 0-20 mA, 4-20 mA	GRT1-AD2
2 analogue outputs, voltage	± 10 V, 0-10 V, 0-5 V, 1-5 V	GRT1-DA2V
2 analogue outputs, current	0-20 mA, 4-20 mA	GRT1-DA2C
2 Pt100 inputs	Pt100, 2-wire or 3-wire connection	GRT1-TS2P
2 Pt1000 inputs	Pt1000, 2-wire or 3-wire connection	GRT1-TS2K
2 Thermocouple inputs	Types B, E, J, K, N, R, S, T, U, W, PL2, with cold junction compensation	GRT1-TS2T

*1. The GRT1-ML2 supports the GRT1-IA4-1, GRT1-IA4-2, GRT1-OD4G-3, GRT1-TS2P, GRT1-TS2K and GRT1-TS2T slice units only in combination with TJ2-MC64 motion controller. They are not supported in combination with TJ1-MC16/04.

Refer to Automation systems catalogue for detailed specs and accessories information

MECHATROLINK-II cables

Name	Remarks	Model
MECHATROLINK-II cables	0.5 meter	JEPMC-W6003-A5
	1 meter	JEPMC-W6003-01
	3 meters	JEPMC-W6003-03
	5 meters	JEPMC-W6003-05
	10 meters	JEPMC-W6003-10
	20 meters	JEPMC-W6003-20
	30 meters	JEPMC-W6003-30
MECHATROLINK-II terminator	Terminating resistor	JEPMC-W6022
MECHATROLINK-II repeater	Network repeater	JEPMC-REP2000

Computer software

Specifications	Model
CX-Motion Pro V1.3.3 or higher	CX-One
Trajexia Studio ^{*1} V1.3.3 or higher	TJ1-Studio

*1. When the Trajexia Studio software is included in CX-One, then it is called CX-Motion Pro.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
 To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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