

# Ezi-Motion Network

New Proposals to Respond to Various Motion Networks

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- Connect to Real Time Field Network
- Connect to Various Network with Motion Gateway
- I/O Control by PLC
- Simple I/O Control by Switch



# Ezi-Motion Network

Control by Connection with Various High Level Systems such as PC, PLC and Embedded System

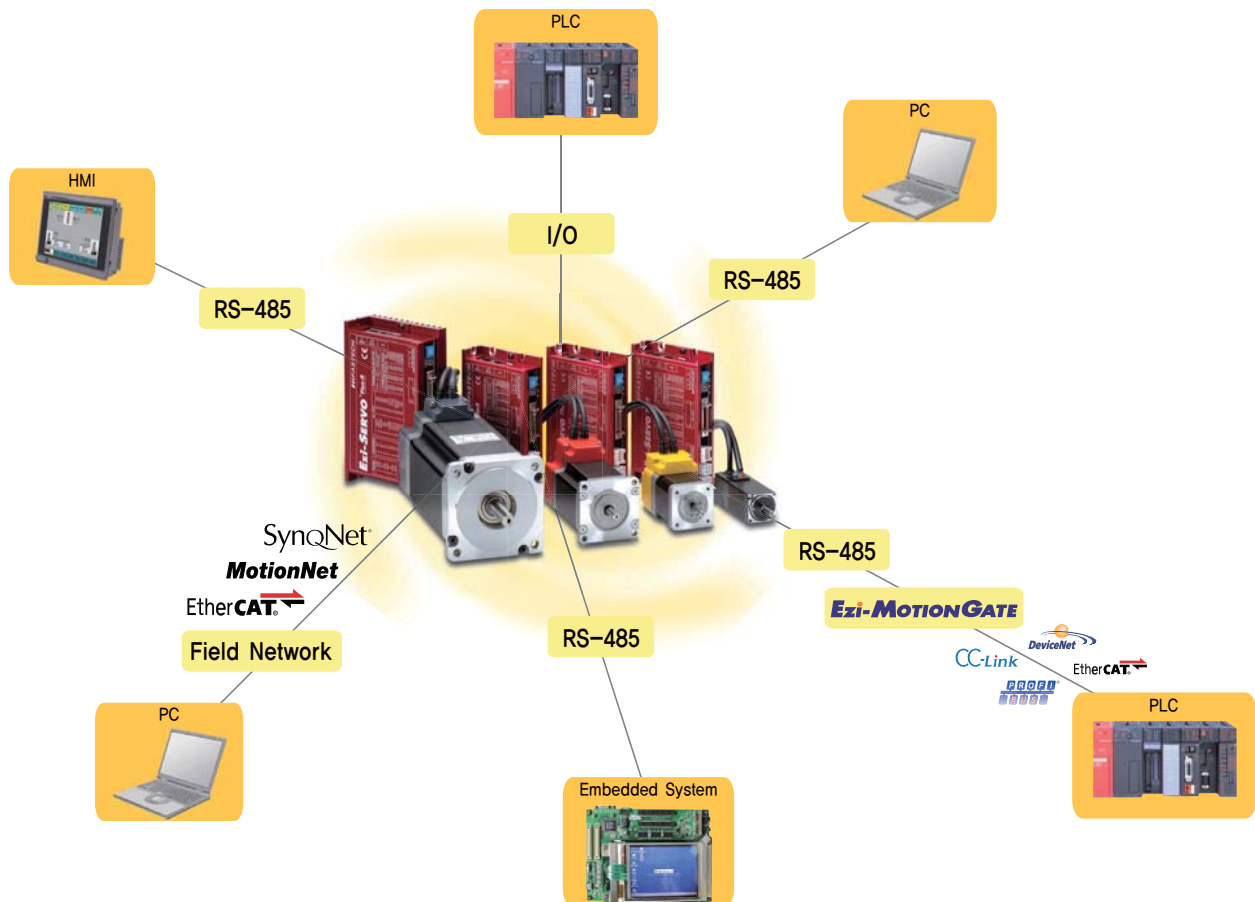
Ezi-MotionNetwork Categorized 3 Types of Products

- Motion Control by I/O Control as PLC and by RS-485 Network,
- Motion Control by Ezi-MotionGate for Field Networks (CC-Link, PROFIBUS-DPV1, DeviceNet)
- Motion Control by Real Time Network (SynQNet, MotionNet)

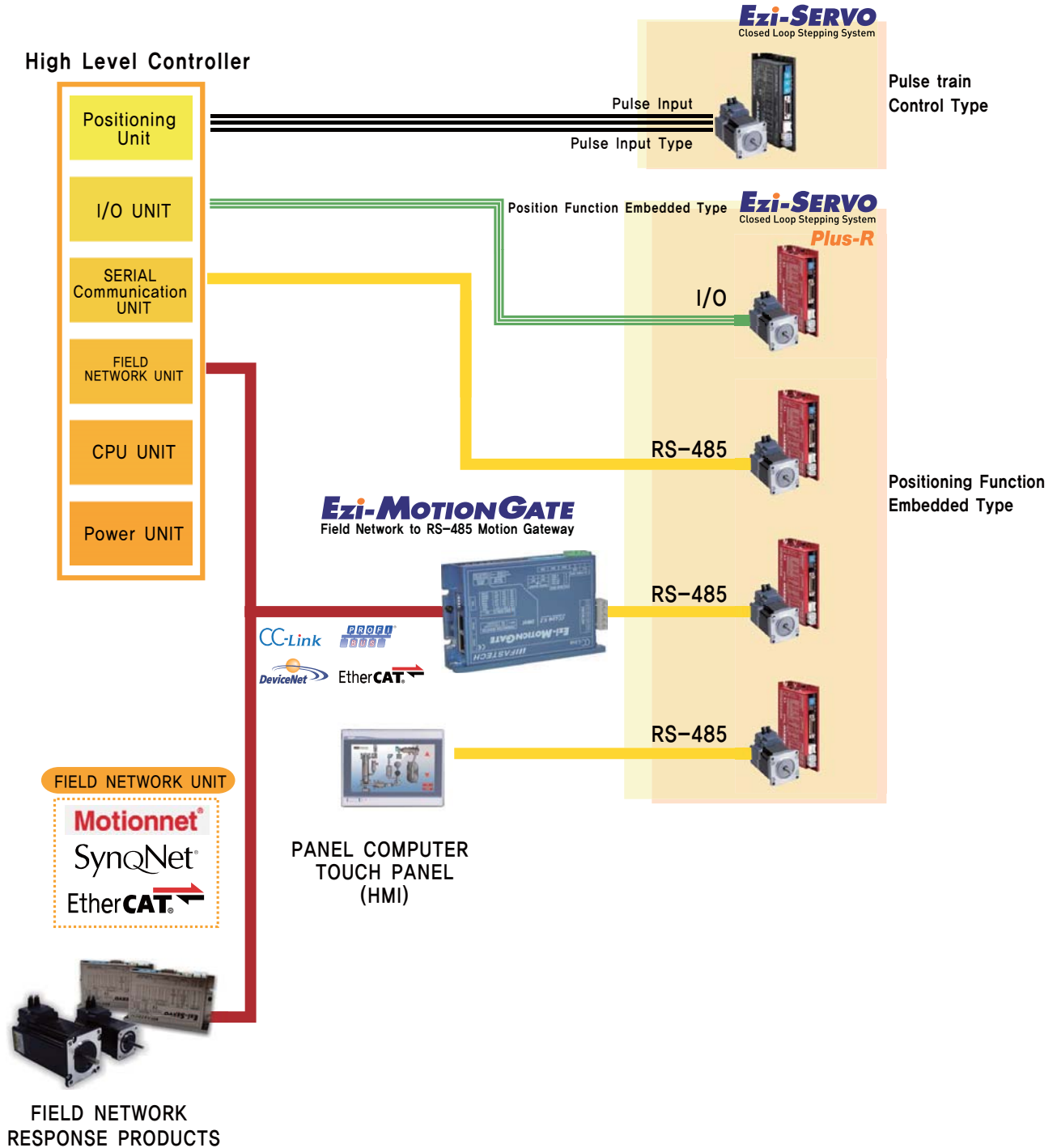
Ezi-MotionNetwork enables simple connection and control. Therefore it can shorten lead time for designing machine with reduction of cost and wiring.

## Advantages of Ezi-MotionNetwork

- Cost Reduction
- Time Shortening
- Wiring Reduction
- Manpower Reduction



 Respond to Various high Level of Controller System Structure



# I/O Control

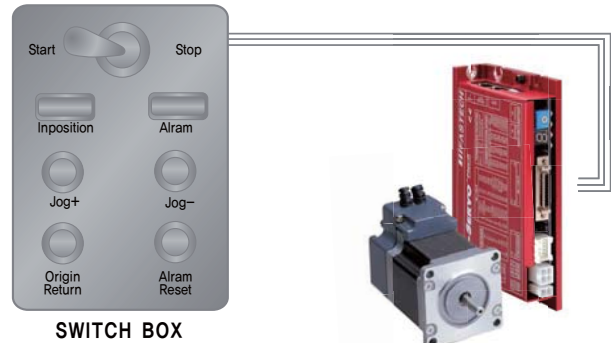
## Ezi-Motion Network \_1

### ■ I/O Control by Switch

Position table function embedded drive enables start/stop of motor with sending motion data to drive by switch signal, simple I/O motion control is capable without high level controller like PLC.

Simple Control

Low Cost Design



## Ezi-Motion Network \_2

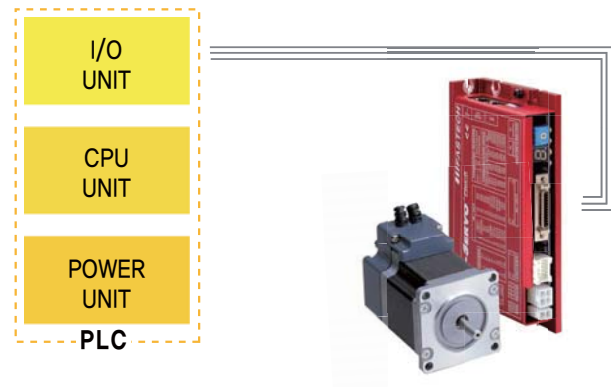
### ■ I/O Control from PLC (Non-using of Positioning Unit)

Possible to operate drive by PLC I/O unit under PLC operation system, No need to systemize PLC positioning unit (Pulse generation module) and it enables minimization of system.

Simple Control

Space Minimization

Low Cost Design



## Ezi-Motion Network \_3

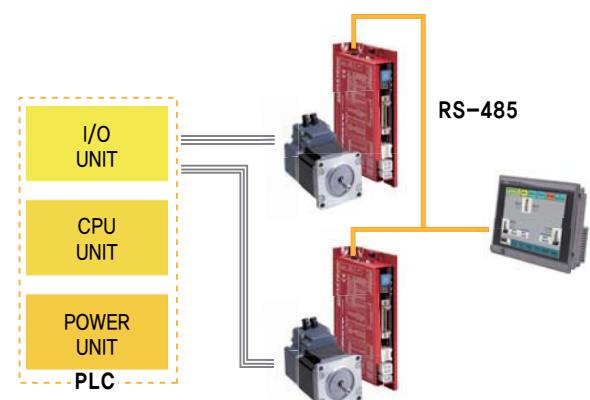
### ■ I/O Control from PLC, Changes Speed and Amount of Movement by HMI

Usually execute motion command by PLC I/O, with using HMI supports RS-485, can change operation date as position and velocity information, Also can indicate monitoring and Alarm

\* Human Machine Interface

Simple Control

Enables Small lot Batch Applications



# RS-485 Communication Control

## Ezi-Motion Network \_4

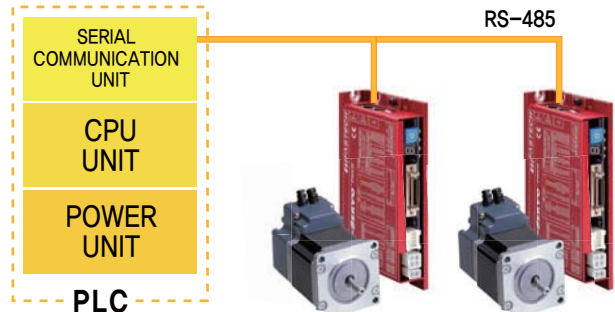
### ■ RS-485 Control by PLC

Verification of motion command and operation data by RS-485 communication. Able to connect to Max. 16 drives at 1 channel of communication unit of PLC's serial communication and set parameters. Also there is broadcast function to enable synchronized Start for connected all of drives.

Simple Control

Wiring Reduction

Respond to Most of Serial Communication Units



## Ezi-Motion Network \_5

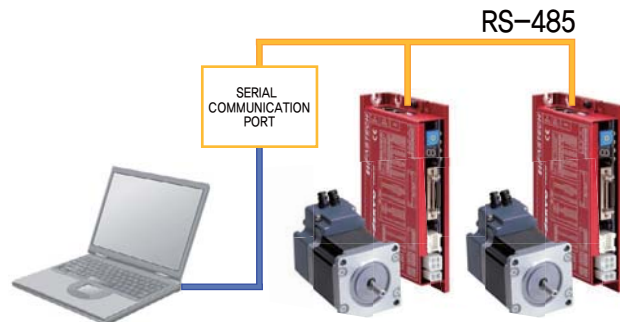
### ■ RS-485 Control by PC

From PC serial communication port (COM), RS-485 communication enables motion command, verification of operation data, parameter setting. Max. 16 drives can be connected at one port

Simple Control

Wiring Reduction

Provide Motion Library (DLL)



## Ezi-Motion Network \_6

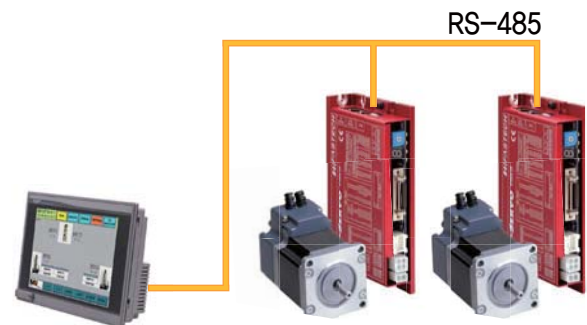
### ■ Monitoring and Execute Motion Command by HMI

RS-485 communication enables direct connection control with HMI. Enable to execute setting of operation status, parameter, check alarm status and position table run without PLC.

Simple Control

Wiring Reduction

System Minimization



## Ezi-Motion Network \_7

### ■ Control from Embedded System

Available to control drives with communication library based Standard C opened at Embedded System. Can realize minimization of system and creative UI with only application of necessary functions from whole command supportable communication library.

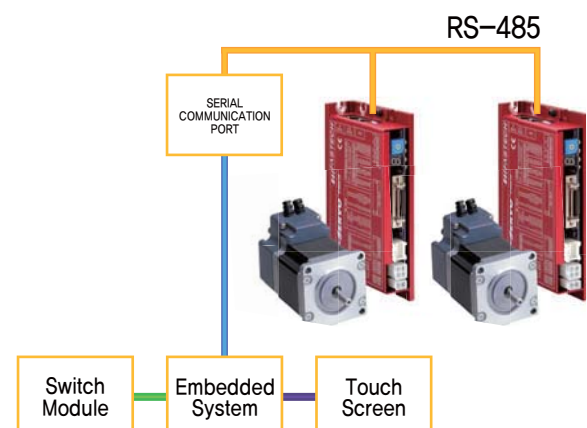
\* User Interface

Simple Control

Wiring Reduction

System Minimization

USER Interface Control



# MOTIONGATE CONTROL

## Ezi-Motion Network \_8

### ■ Control by MOTIONGATE

Respond to various field networks with Ezi-MotionGate and can check motion command, parameter setting, status information and alarm information from each one of network. Ezi-Motiongate allows customer to shorten timing of system design because Ezi-Motiongate is very flexible to each different networks what customer prefers to use.

- Processing minimization of high level controller (Master Device) for Multi-Axes control.
- Handle commands by I/O type of bit control
- Available to install various type of drives

### ■ Supportable Field Network

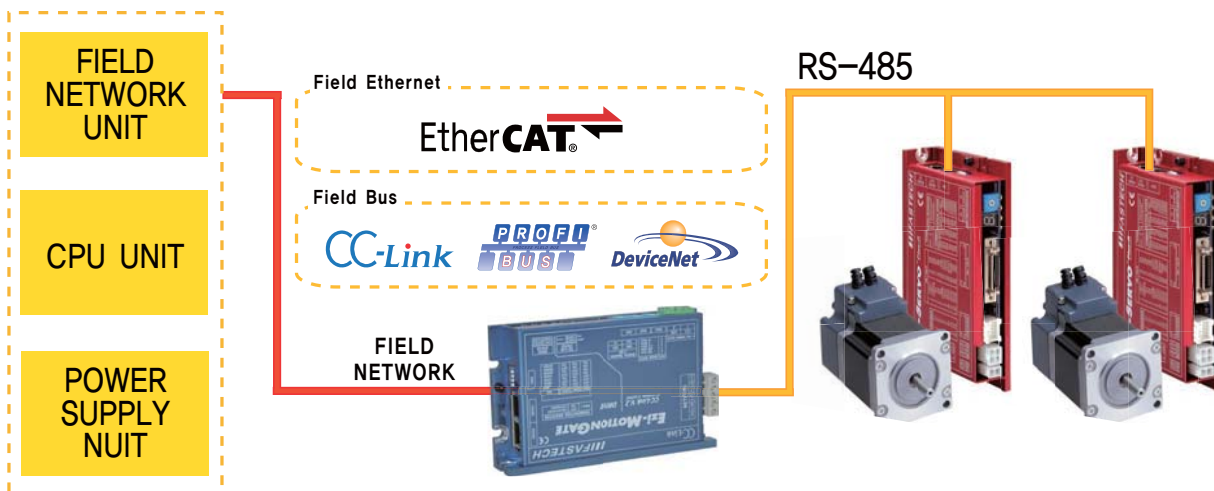
- CC-Link supports Max, 13 Axes
- PROFIBUS-DPV1 supports Max, 9 Axes
- DeviceNet supports Max, 16 Axes
- EtherCAT supports Max, 16 Axes

Simple Control

Wiring Reduction

System Minimization

Low Cost Multi-Axes Control



\* Ezi-Motiongate system will be expanded to support more type of field networks as EtherNet/IP, PROFINET, Mechatrolink II, Mechatrolink III and SERCOS III



# Ezi-MOTIONGATE

Field Network to RS-485 Motion Gateway

## Ezi-MOTIONGATE CC-Link



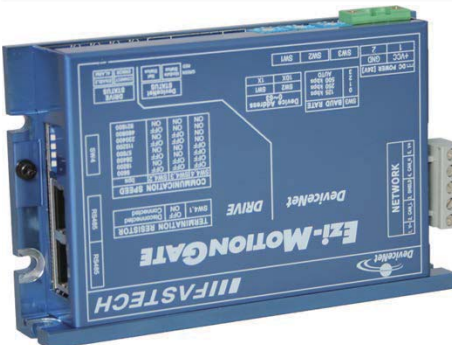
Ezi-MOTIONGATE CC-LINK is motion gateway device to be connected with CC-Link network from Mitsubishi PLC. It supports Max. 13 Axes for Ezi-SERVO Plus R, Ezi-STEP Plus R, Ezi-SERVO Plus R MINI, Ezi-SERVO ALL and others can be connected by Ezi-MotionNetwork.

## Ezi-MOTIONGATE PROFIBUS



Ezi-MOTIONGATE PROFIBUS-DPV1 is motion gateway device to be connected with PROFIBUS network from Siemens PLC, Mitsubishi PLC and LS PLC. It supports Max. 9 Axes for Ezi-SERVO Plus R, Ezi-STEP Plus R, Ezi-SERVO Plus R MINI, Ezi-SERVO ALL and others can be connected by Ezi-MotionNetwork.

## Ezi-MOTIONGATE DeviceNet



Ezi-MOTIONGATE DeviceNet is motion gateway device to be connected with DeviceNet network from Rockwell/Allen-Bradley PLC, Mitsubishi PLC and LS PLC. It supports Max. 16 Axes for Ezi-SERVO Plus R, Ezi-STEP Plus R, Ezi-SERVO Plus R MINI, Ezi-SERVO ALL and others can be connected by Ezi-MotionNetwork.

## Ezi-MOTIONGATE EtherCAT

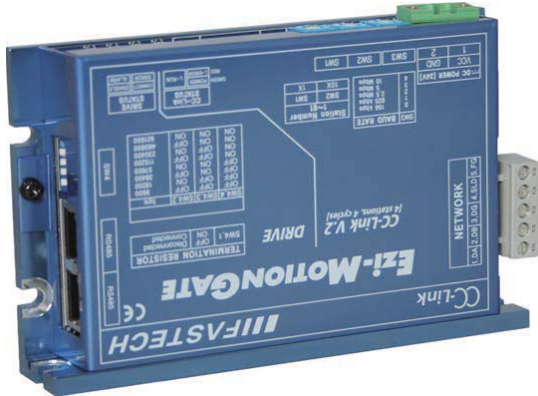


Ezi-Motiongate EtherCAT is Motion Gateway Device that is designed to link TwinCAT PLC, Omron PLC and Industrial PC using EtherCAT protocol to our product such as Ezi-SERVO Plus R, Ezi-STEP Plus R, Ezi-SERVO Plus R MINI, Ezi-STEP Plus R MINI, Ezi-SERVO ALL through EtherCAT protocol. Ezi-Motiongate EtherCAT can support maximum 16 Axes at the same time.

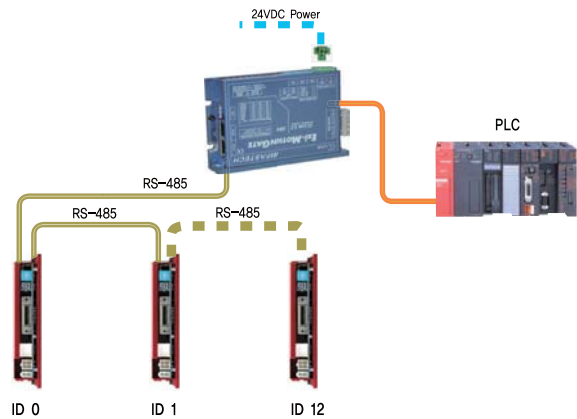
# Ezi-MOTIONGATE CC-Link

## CC-Link to RS-485 Motion Gateway

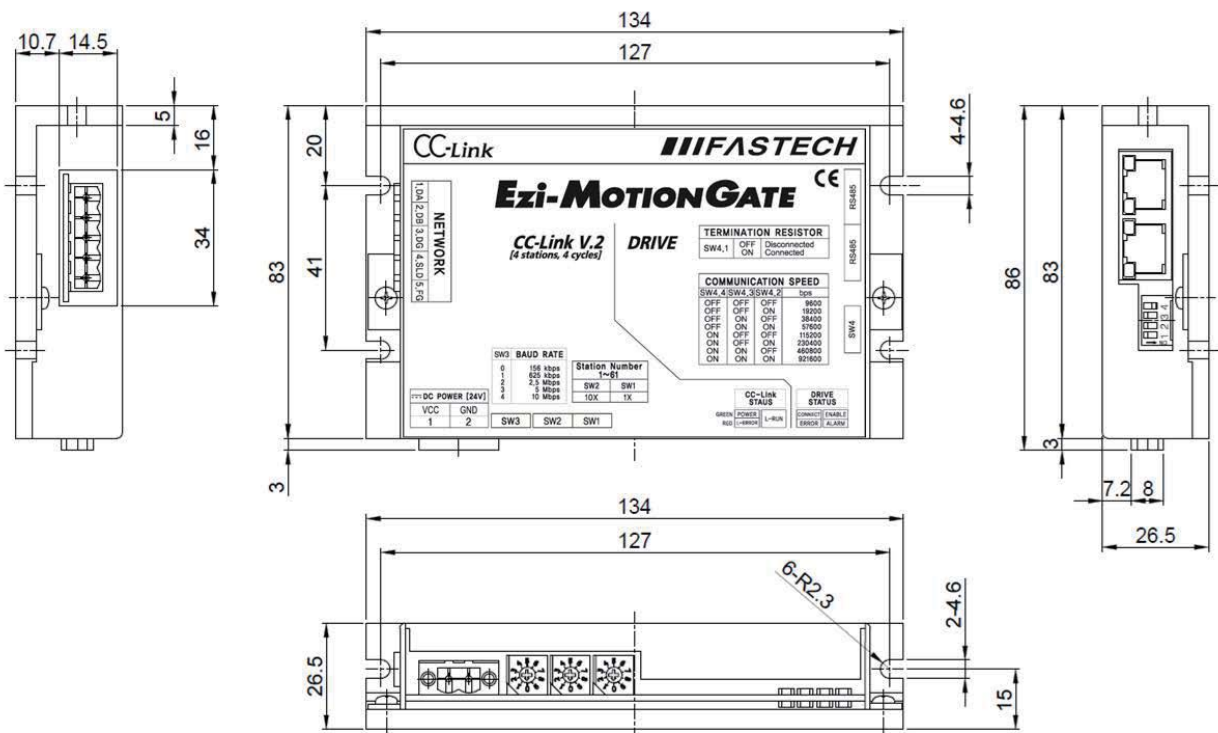
### Ezi-MOTIONGATE CC-Link



Ezi-MOTIONGATE CC-LINK is motion gateway device to be connected with CC-Link network from Mitsubishi PLC. It supports Max. 13 Axes for Ezi-SERVO Plus R, Ezi-STEP Plus R, Ezi-SERVO Plus R MINI, Ezi-SERVO ALL and others can be connected by Ezi-MotionNetwork.



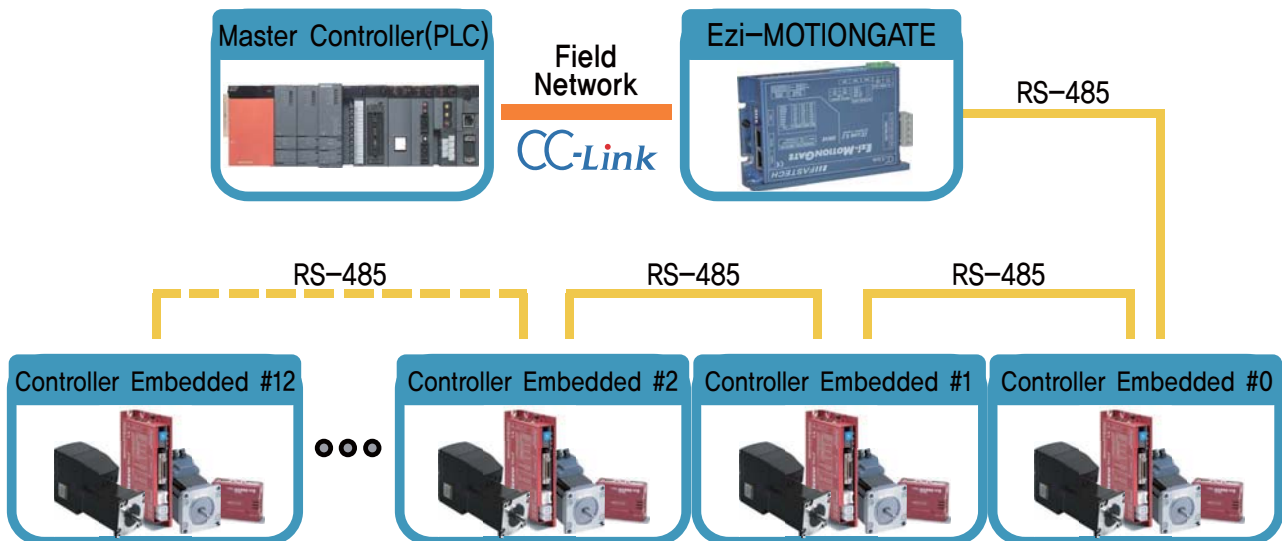
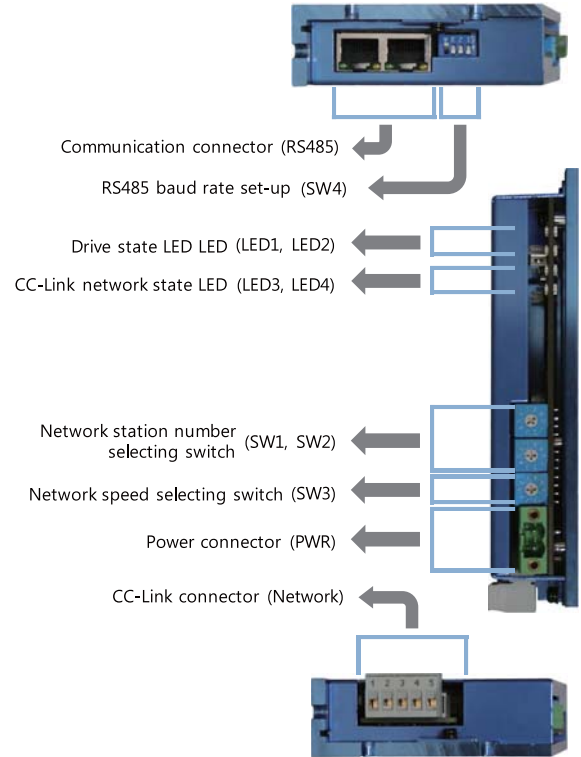
### Ezi-MOTIONGATE CC-Link Dimension





# Ezi-MOTIONGATE CC-Link Specification

Network Type		CC-Link Ver.2
Network Baud-rate	156kbps / 625kbps / 2.5Mbps / 5Mbps / 10Mbps	
Network Node Type	Remote device station	
Occupation station	4 Station	
Expansion cyclic	4x	
Maximum Axis	13-Axis	
occupation station Point / Register	448 point / 64 word	
Maximum MOTIONGATE (CC-Link)	16 Gateway	
Operating Condition	Ambient Temperature	In Use : 0~55°C In Storage : -20~70°C
	Humidity	In Use : 35~85°C (Non-Condensing) In Storage : -10~90°C (Non-Condensing)
	Vib. Resist	0.5G
Function	Select Switch	Set network station No., Set network Baud-Rate
	LED Display	LED display based on industrial network standard as check network status, abnormal connection with master, Servo-On status of drive, alarm generation status of drive
Special Function	Jog Control	4-Speed step, Speed ratio
	Step Move Control	4-Step distance
	Communication Function	Ezi-STEP Plus-R, Ezi-SERVO Plus-R series



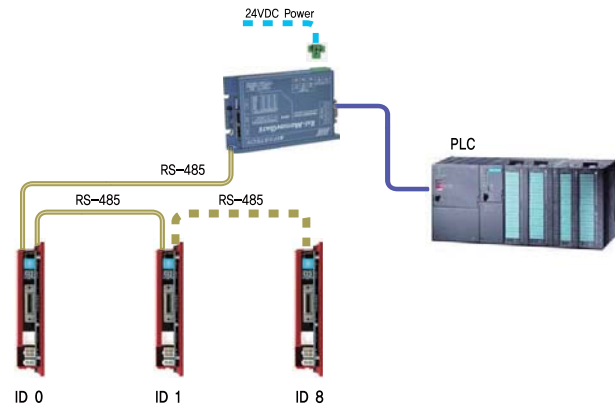
# Ezi-MOTIONGATE PROFI

PROFIBUS-DP to RS-485 Motion Gateway

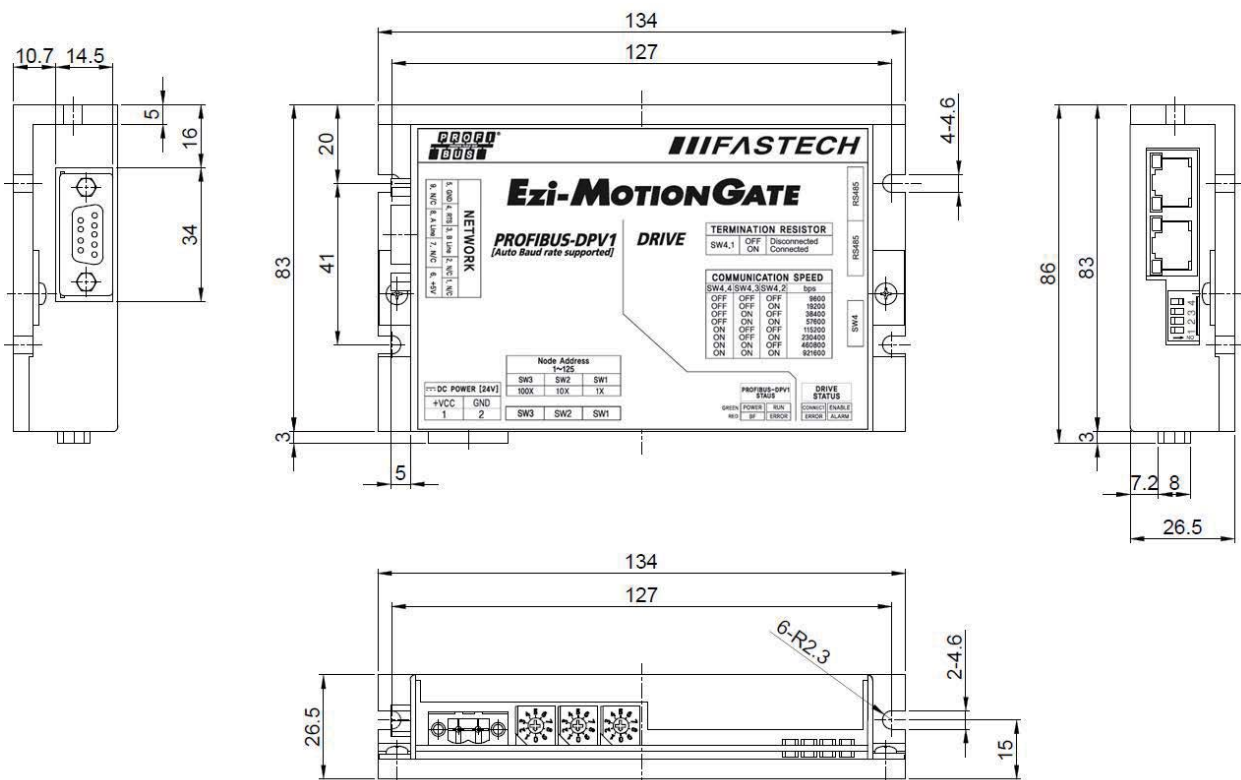
## Ezi-MOTIONGATE PROFI



Ezi-MOTIONGATE PROFIBUS-DP1 is motion gateway device to be connected with PROFIBUS network from Siemens PLC, Mitsubishi PLC and LS PLC. It supports Max. 9 Axes for Ezi-SERVO Plus R, Ezi-STEP Plus R, Ezi-SERVO Plus R MINI, Ezi-SERVO ALL and others can be connected by Ezi-MotionNetwork.

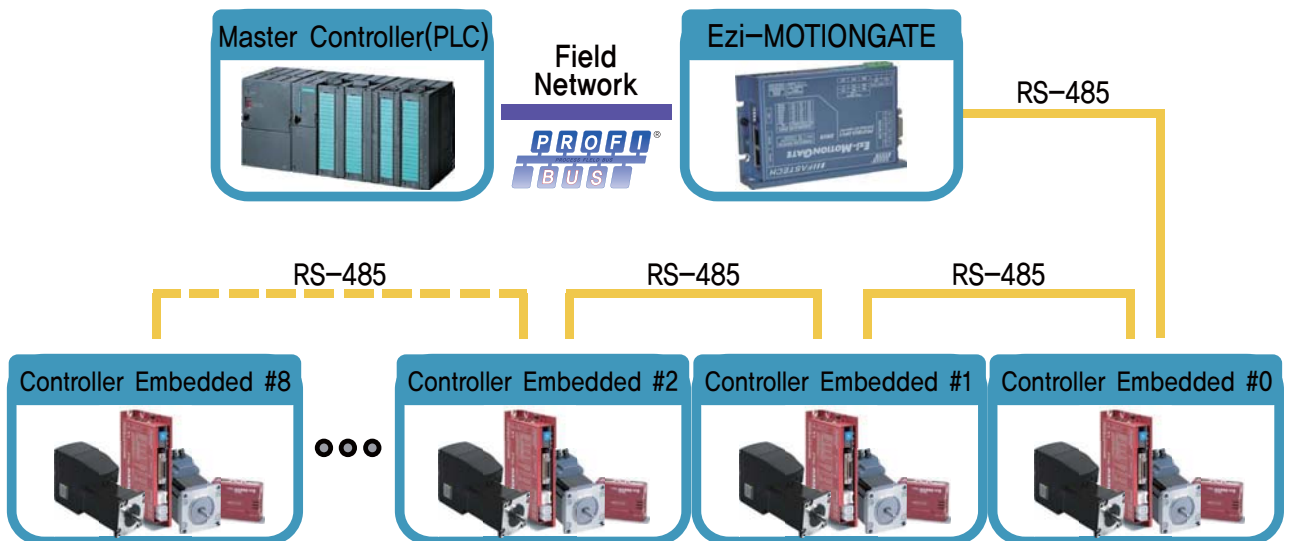
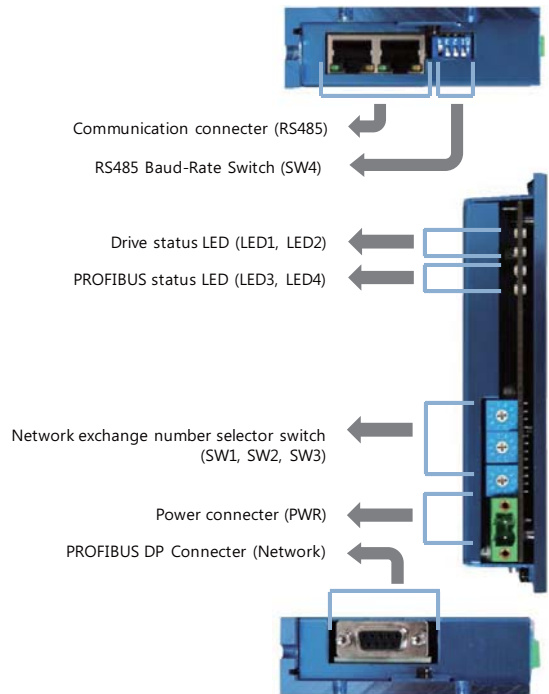


## Ezi-MOTIONGATE PROFI Dimension



# Ezi-MOTIONGATE Specification

Network Type		PROFIBUS-DPV1
Network Baud-rate		9,6kbps / 19,2kbps / 93,75kbps / 187,5kbps / 0,5Mbps / 1,5Mbps / 12Mbps
		Auto Baud-Rate
Network Node Type		Slave device station
Maximum Axis		9-Axis
Occupation Station Point / Register		72 byte / 72 byte(When 9 Axes drives connected)
Maximum MOTIONGATE (PROFIBUS-DPV1)		125 Gateway
Operating Condition	Ambient Temperature	In Use : 0~55°C In Storage : -20~70°C
	Humidity	In Use : 35~85°C (Non-Condensing) In Storage : -10~90°C (Non-Condensing)
	Vib. Resist	0,5G
Function	Select Switch	Set nNetwork station No., set network Baud-Rate
	LED Display	LED display based on industrial network standard as check network status, abnormal connection with master, Servo-On status of drive, alarm generation status of drive
Special Function	Jog Control	4-Speed step, Speed ratio
	Step Move Control	4-Step distance
	Communication Function	Ezi-STEP Plus R, Ezi-SERVO Plus R series

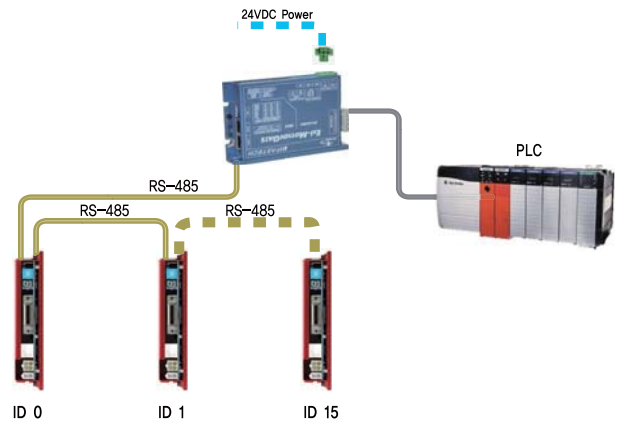


# Ezi-MOTIONGATE DeviceNet

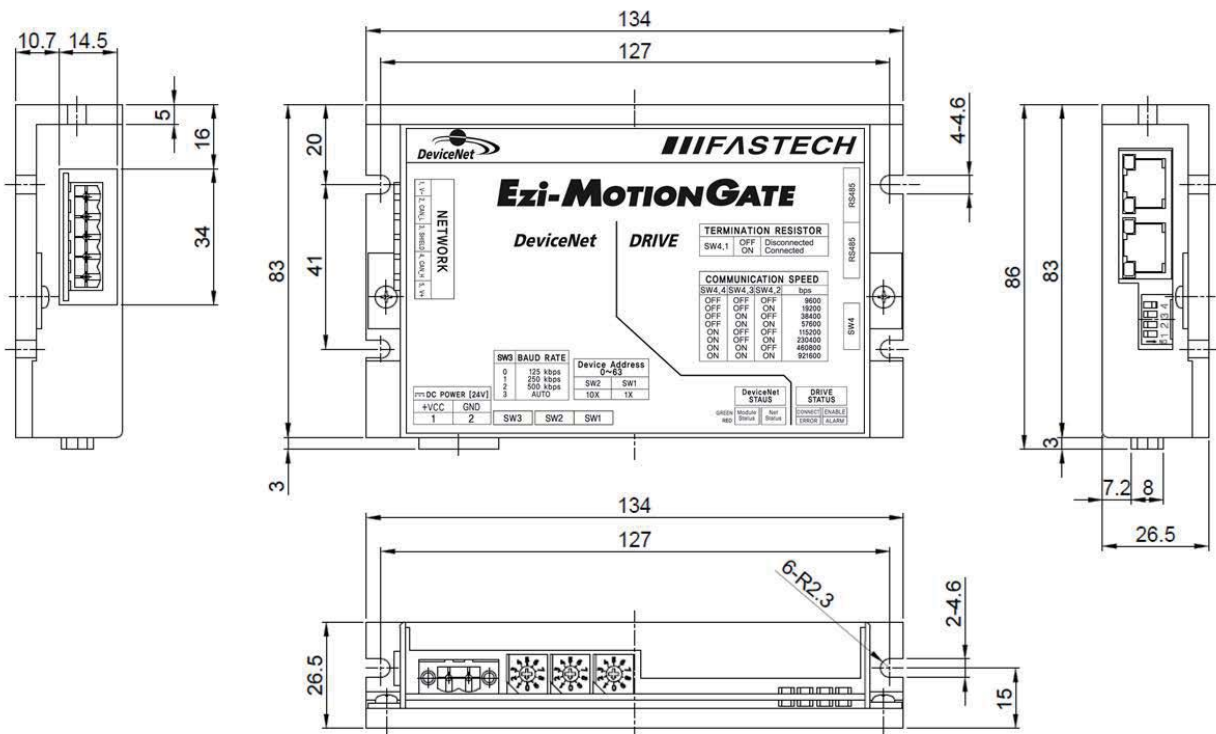
## DeviceNet to RS-485 Motion Gateway



Ezi-MOTIONGATE DeviceNet is motion gateway device to be connected with DeviceNet network from Rockwell/Allen-Bradley PLC, Mitsubishi PLC and LS PLC. It supports Max. 16 Axes for Ezi-SERVO Plus R, Ezi-STEP Plus R, Ezi-SERVO Plus R MINI, Ezi-SERVO ALL and others can be connected by Ezi-MotionNetwork.

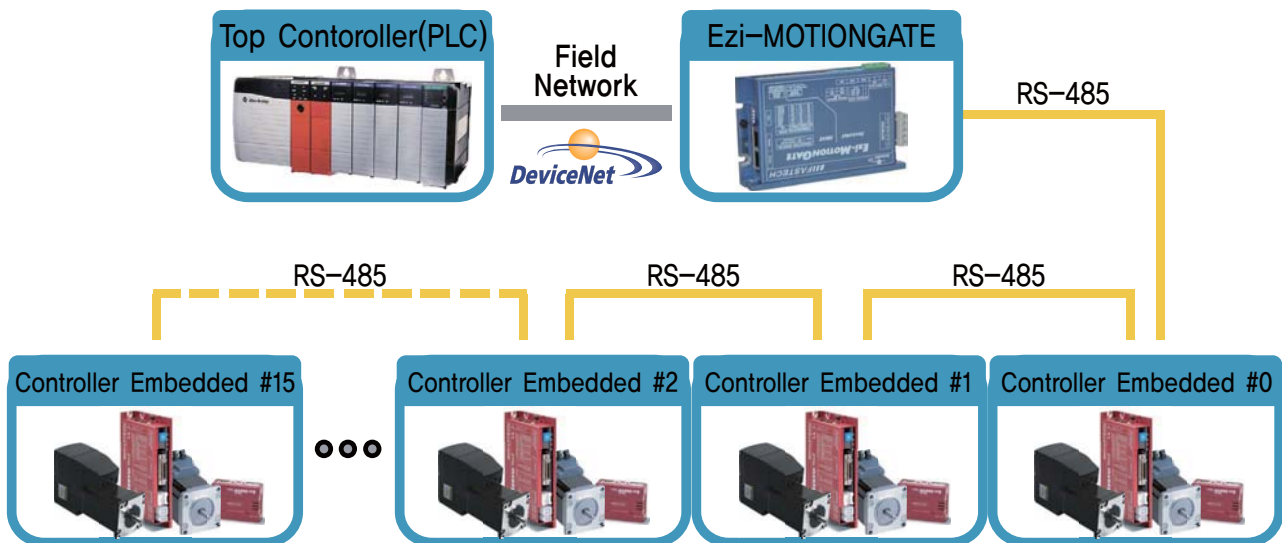
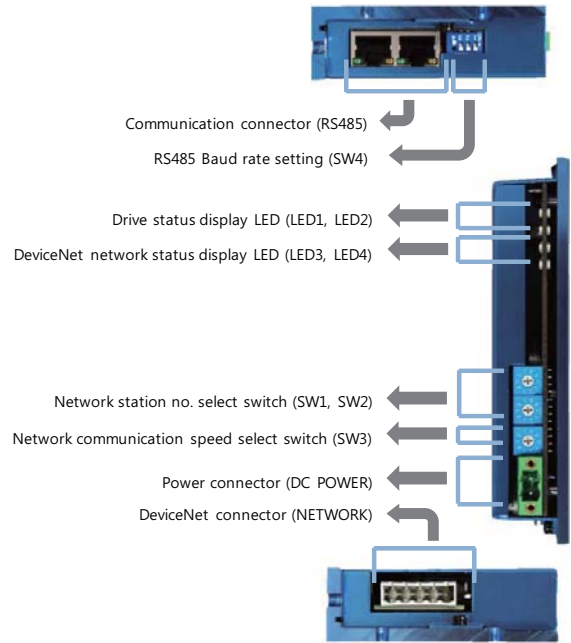


# Ezi-MOTIONGATE DeviceNet Dimension



**Ezi-MOTIONGATE** DeviceNet Specification

Network Type		DeviceNet
Network Baud-rate		125kbps / 150kbps / 500kbps
Network Node Type		Slave device station
Maximum Axis		16-Axes
Occupied Station Output / Input		128 byte / 128 byte (64 word / 64 word)
Maximum MOTIONGATE (DeviceNet)		64 Gateway
Operating Condition	Ambient Temperature	In Use : 0~55°C In Storage : -20~70°C
	Humidity	In Use : 35~85°C (Non-Condensing) In Storage : -10~90°C (Non-Condensing)
	Vib. Resist.	0,5G
Function	Select Switch	Set network station No., Set network Baud-Rate
	LED Display	LED display based on industrial network standard as check network status, abnormal connection with master, Servo-On status of drive, alarm generation status of drive
Special Function	Jog Control	4-Speed step, Speed ratio
	Step Move Control	4-Step distance
	Communication Function	Ezi-STEP Plus R, Ezi-SERVO Plus R series





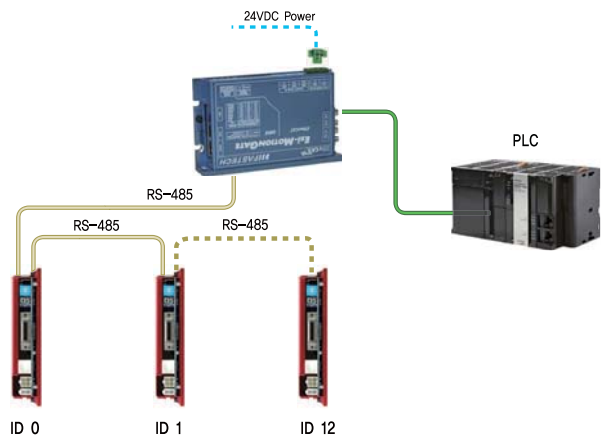
# Ezi-MOTIONGATE EtherCAT<sup>®</sup>

## EtherCAT to RS-485 Motion Gateway

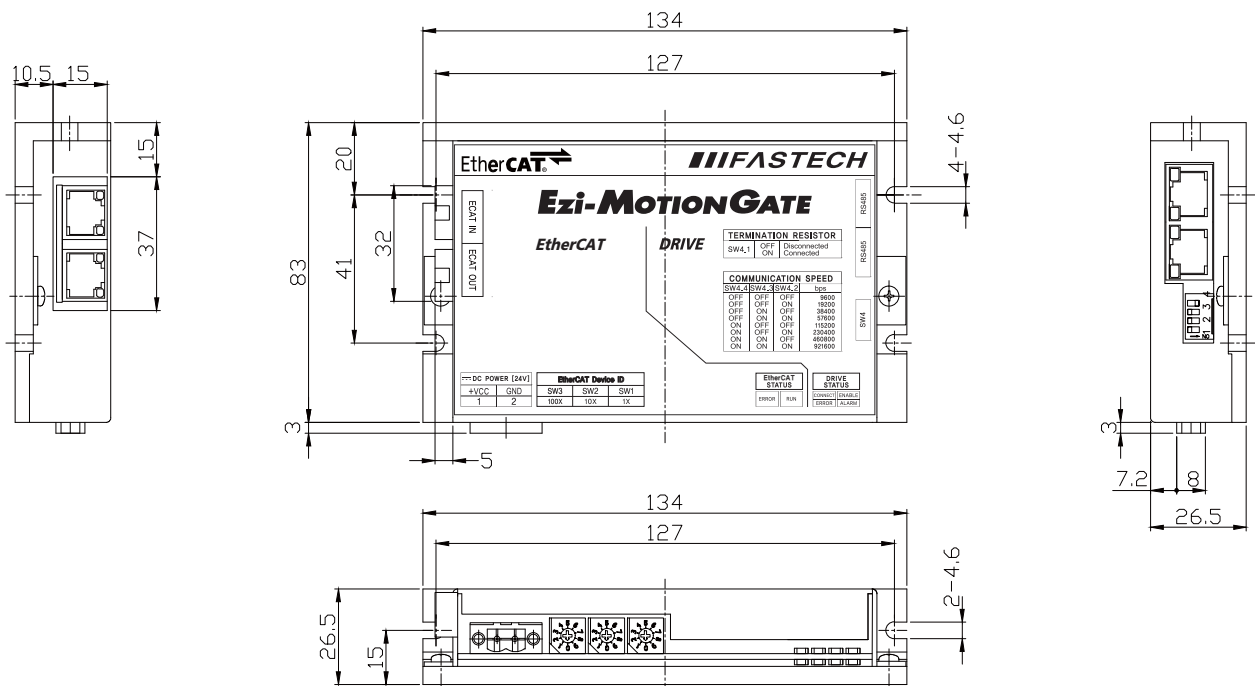
# Ezi-MOTIONGATE EtherCAT<sup>®</sup>



Ezi-Motiongate EtherCAT is Motion Gateway Device that is designed to link TwinCAT PLC, Omron PLC and Industrial PC using EtherCAT protocol to our product such as Ezi-SERVO Plus R, Ezi-STEP Plus R, Ezi-SERVO Plus R MINI, Ezi-STEP Plus R MINI, Ezi-SERVO ALL through EtherCAT protocol. Ezi-Motiongate EtherCAT can support maximum 16 Axes at the same time.

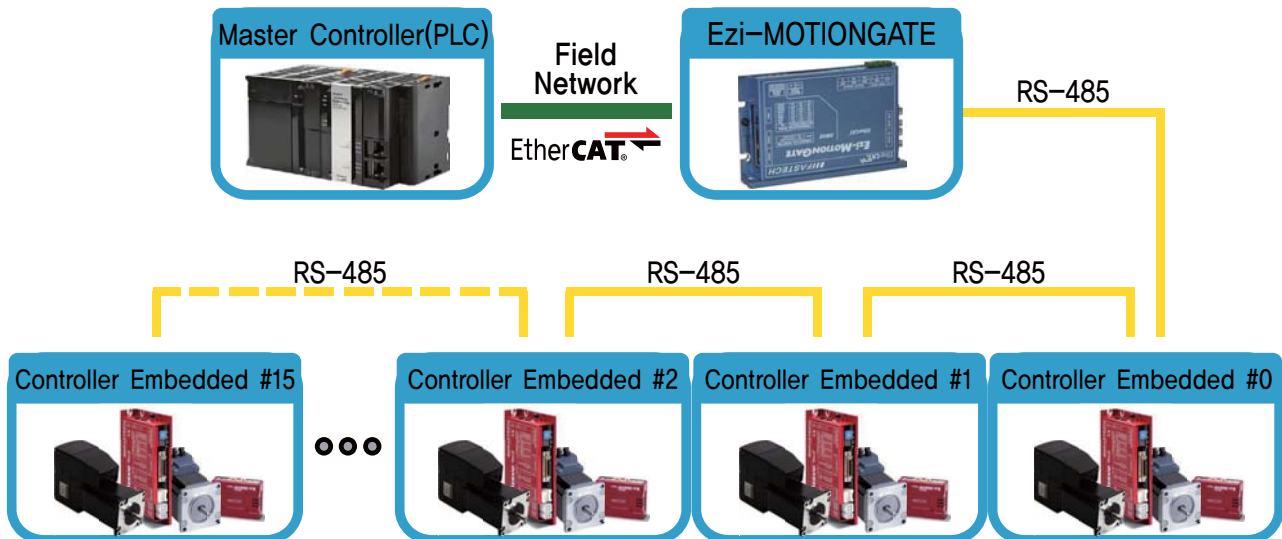
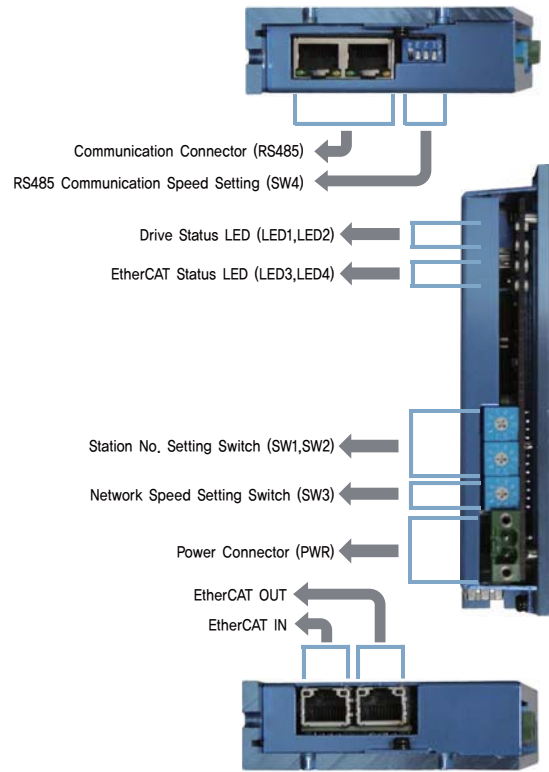


# Ezi-MOTIONGATE EtherCAT<sup>®</sup> Dimension



# Ezi-MOTIONGATE EtherCAT<sup>®</sup> Specification

Network Standard		EtherCAT [IEC 61158-6]
Physical Layer		Ethernet – 100 Base
Size of Data		IN : 128 byte OUT : 128 byte
ECAT Device ID		When setting by switch : 1~999 When setting by master : 1~65,535
Maximum Axis		16-Axis
Maximum MOTIONGATE (EtherCAT)		65,535 Gateway (Depends on master ability)
Operating Condition	Ambient Temperature	In use : 0~55°C In Storage : -27~70°C
	Humidity	In Use : 35~85°C (Non-Condensing) In Storage : -10~90°C(Non-Condensing)
	Vib. Resist	0.5G
Function	Select Switch	Station No(Station no.) setting, network Baud-Rate setting
	LED Display	LED display defined in the industrial networks standard including network status, master connection error, Servo On status of drive, alarm status of drive
Special Function	Jog Control	4-Speed step, Speed ratio
	Step Move Control	4-Step distance
	Communication Function	Ezi-STEP Plus-R, Ezi-SERVO Plus-R series



# Ezi-Motion Network Type

Introduce product line-up respond to Ezi-MotionNetwork

## Ezi-SERVO<sup>®</sup> Plus-R



Innovative closed loop stepping motor control system with an integrated Motion Control. The integrated Motion Controller can be linked up to 16 axes and can be operated from a PC through RS-485 communication. All of the motion conditions are set through the integrated network and saved in flash ROM as a parameter. FASTECH Motion Library (DLL) is provided for programming under Windows 2000/XP. A maximum of 256 positions can be saved in flash ROM memory.

- Intergrated Controller
- Closed Loop System
- High Resolution (10000, 20000 and 32000PPR)
- Fast Response
- Position Table
- No Gain Tuning / No Hunting

## Ezi-SERVO<sup>®</sup> Plus-R MINI



Compact and miniaturized closed loop stepping motor, drive and controller system which utilizes a high resolution encoder to update the motor position every 25 micro-seconds. The integrated Motion Controller can be linked up to 16 axes and can be operated from a PC through RS-485 communication. All of the motion conditions are set through the integrated network and saved in flash ROM as a parameter. FASTECH Motion Library(DLL) is provided for programming under Windows 2000/XP. A maximum of 64 positions can be saved in flash ROM memory

- Miniaturized Compact Size
- Position Table
- No Gain Tuning / No Hunting
- High Resolution (4000, 10000, 16000, 20000 and 32000PPR)
- Embedded Controller
- Closed Loop System
- Fast Response

## Ezi-STEP<sup>®</sup> Plus-R



Innovative, open loop stepping motor and motion control system which is suitable for low cost applications. A maximum of 16 axes can be operated from a PC through RS-485 communication and it can be connected to Ezi-SERVO<sup>®</sup> Plus-R, as well. All of the motion conditions are set through the network and are saved in flash ROM as a parameter. The Motion Library(DLL) is provided for programming under Windows 2000/XP. A maximum of 256 positions can be saved in flash ROM memory.

- Intergrated Controller
- Position Table
- Micro Stepping
- Sensorless Stall Detection
- Software Damping
- Run / Stop Signal Output

## Ezi-STEP<sup>®</sup> Plus-R MINI



A maximum of 16 axis can be operated from a PC through RS-485 communications. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter. Motion Library(DLL) is provided for programming under Windows 2000/XP.

- network Based Motion Control
- Position Table Function
- Microstep and Filtering
- Sensorless Stal | Detection
- Drive Output Signal Monitoring
- Software Damping
- Improvement of High-Speed Driving

# Ezi-Motion Network Type

## Ezi-SERVO<sup>®</sup> ALL



Innovative integrated stepping motor, drive and controller system in one robust package! A high resolution encoder updates the motor position every 25 micro-seconds to the integrated drive. The integrated Motion Controller can be linked up to 16axes and can be operated from a PC through RS-485 communication. All of the motion conditions are set through the integrated network and saved in flash ROM as a parameter. FASTECH Motion Library (DLL) is provided for programming under Windows 2000/XP. A maximum of 64 positions can be saved in flash ROM memory.

- Motor + Encoder + Drive + Controller + Network
- Embedded Controller
- Closed Loop System
- High Resolution (10000, 20000 PPR) / Fast Response
- Position Table
- No Gain Tuning / No Hunting

## Ezi-SERVO<sup>®</sup> ABS ALL



Innovative integrated stepping motor, drive and controller system in one robust package with high resolution of absolute encoder (single turn-262,144/rev and multi turn-4, 096/rev) so it enables to know the previous location even power supply of driver shuts off. Basic functions and specifications are same as Ezi-SERVO-ALL.

- Motor+Absolute Encoder+Drive+Controller+Network
- Closed Loop System
- Single turn-262,144/rev and Multi turn-4,096/rev high resolution of Absolute Encoder.
- IP65 Rating
- Fast Response
- No Hunting
- No Gain Tuning
- High Torque

## Ezi-STEP<sup>®</sup> ALL

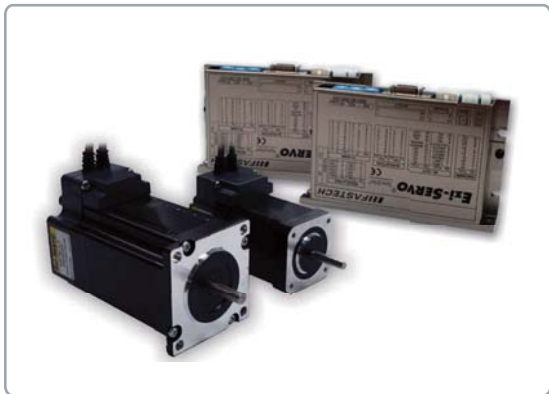


High speed precision microstep drive, controller and stepping motor integrated into one robust package, Ezi-STEP<sup>®</sup> ALL is unique due to its new control scheme based on a built in high performance DSP(Digital Signal Processor) and software. The onboard controller eliminates costly support systems and can easily digitally network up to 16 axis together to a host controller or operate stand alone.

- Motor + Drive + Controller + Network
- Embedded Controller
- Micro Stepping
- Sensorless Stall Detection
- Software Damping
- Run / Stop Signal Output

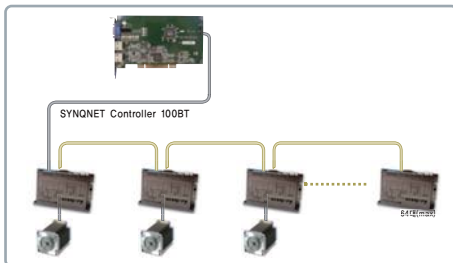
# Ezi-SERVO<sup>®</sup> SynqNet<sup>®</sup>

Closed Loop Stepping System



Ezi-SERVO SYNQNET Series is combination package enables synchronized real time control system between Fastech's Closed Loop Stepping Motor Drive/Controller system and KOLLMORGEN's 100BT basis motion controller, I/O Module and custom devices

## SynqNet

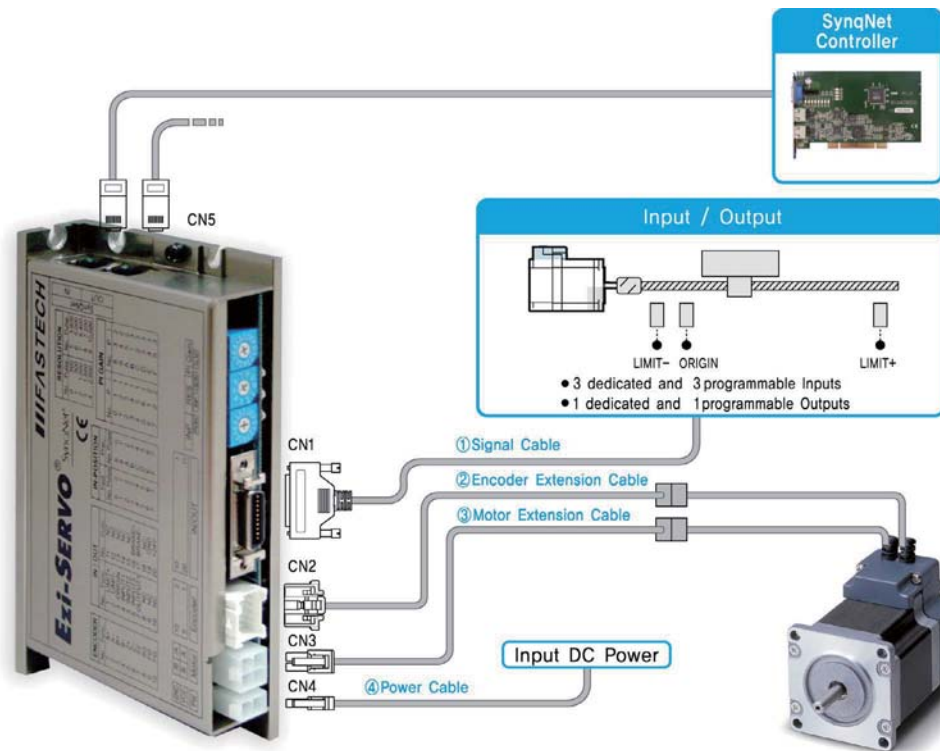


Launched in 2001, SynqNet is a digital machine control network specifically designed to meet the flexibility, performance, and safety requirements of today's demanding machine control applications. Built on a 100BT physical Layer, SynqNet provides a synchronous real-time connection between motion controllers, servo drives, stepper drives, I/O modules and custom devices. SynqNet is a high performance network technology designed to simplify machine development and lower the cost of in-field support and upgrade. SynqNet continues to be the fastest interoperable motion and I/O network available on the market today. As of September 2008, SynqNet networks control over 400,000 axes of motion on a variety of high performance motion applications worldwide

## SynqNet Specifications

- Network bandwidth for servo updates up to 48 kHz
- Supports up to 64 nodes with 64 axes
- Over 16,000 bits of digital I/O and 1,000 points of analog I/O
- Real-time diagnostics over SynqNet
- "Self-healing" fault tolerant operation using ring topology
- HotReplace™ feature allows the replacement of nodes without shutting down the network.
- Remote diagnostics of motor drive performance
- Remote drive configuration and setup
- Remote upgrade of drive firmware features
- Support for multiple feedback, dual-loop servo control, compensation tables
- Automatic network configuration and integrity check
- Cabling over 100 meters between each node
- Electrical isolation for robust noise immunity
- Open, field-proven silicon (100baseT physical layer)





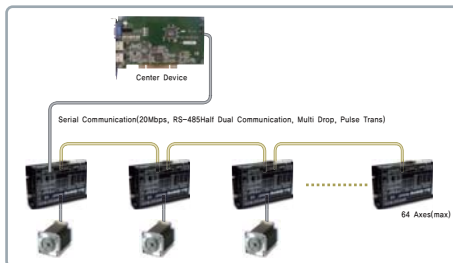
## Ezi-SERVO SYNQNET Specifications

Motor Model	EzM-20 series	EzM-25 series	EzM-28 series	EzM-35 series	EzM-42 series	EzM-56 series	EzM-60 series	EzM-71 series
Driver Model	EzS-SN-20 series	EzS-SN-25 series	EzS-SN-28 series	EzS-SN-35 series	EzS-SN-42 series	EzS-SN-56 series	EzS-SN-60 series	EzS-SN-71 series
Input Voltage	24VDC $\pm$ 10%							
Control Method	Closed loop control with 32bit DSP							
Multi Axes Drive	String and ring, dual string network topology based Max. 64 Axes operation							
Current Consumption	Max 500mA (Except motor current)							
Operating Condition	Ambient Temperature	In Use : 0~50°C In Storage : -20~70°C						
	Humidity	In Use : 35~85% (Non-Condensing) In Storage : 10~90% (Non-Condensing)						
	Vib, Resist.	0,5G						
Function	Rotation Speed	0~3,000rpm						
	Resolution(P/R)	4,000/Rev, Encoder model : 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 4,000 10,000/Rev, Encoder model : 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000/Rev, Encoder model : 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 20,000/Rev, Encoder model : 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 32,000/Rev, Encoder model : 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 32,000						
	Protection Functions	Over current, Over speed, Position tracking error, Over load, Over temperature, Over regenerated voltage, Motor connect error, Encoder connect error, Motor voltage error, In-Position error, System error, ROM error, Input voltage error, Position overflow error						
	LED Display	Power status, Alarm status, In-Position status, Servo On status						
	In-Position Selection	0~15 (Selectable by parameter)						
	Position Gain Selection	0~15 (Selectable by parameter)						
I/O Signal	Input Signal	3 Default Input (LIMIT+, LIMIT-, ORIGIN), 3 Available Input (Photo-coupler input)						
	Output Signal	1 Available output (Photo-coupler output), Brake signal						
Communication Interface	100BT Communication with SYNQNET controller							
Position Control	Incremental mode / Absolute mode							
MPI Version	Over MPI 4.0 version							
GUI	User interface program within windows							
Software	Motion library (DLL) for windows 2000/XP							



Ezi-SERVO MotionNet Series is combination package between Fastech's Closed Loop Stepping Motor Drive/Controller system and NPM's high speed serial communication control system.

## Motionnet



Ezi-SERVO MotionNet is total distribution system with 20Mbps communication speed of serial communication to enable I/O control, Motor control, High speed of CPU Emulation, even remote message communication which are required in the FA market, I/O Control of cyclic communication executes always 4 bytes of data transfer with 15.1usec (max) and during execution, 256byte (max) can communicate over the data fit such as motor control or LSI control data. Communication time can be calculated by a predetermined formula and ensure real-time required in the FA market field.

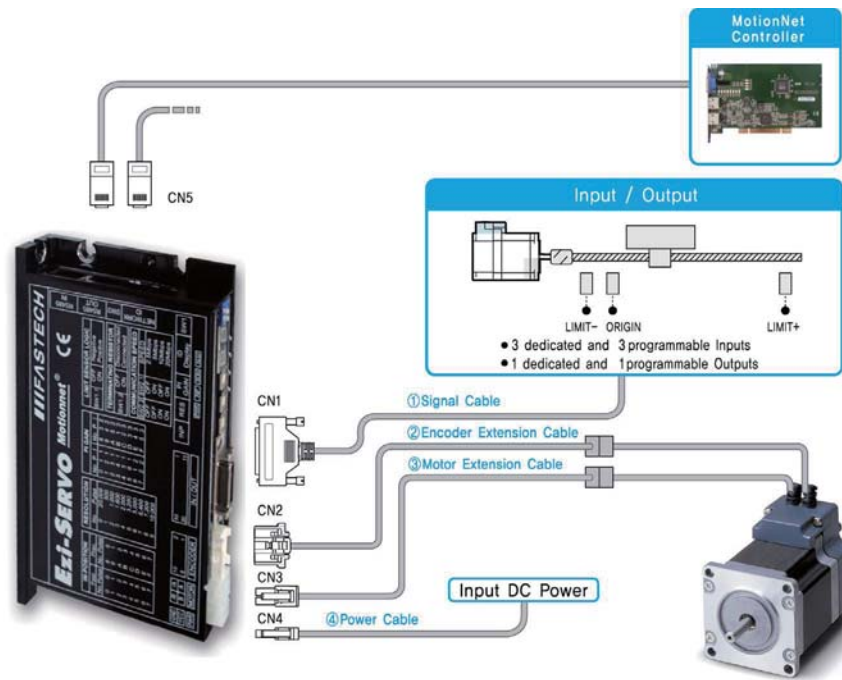
## Motionnet communication Specifications

- Communication : speed Max, 20 Mbps
- Speed lowering : When use 64 axes, transfer cycle (cyclic communication) is Max, 0.97msec (transfer speed 20Mbps, in case of using recommended 50Meter long cable)
- Accessible Axes : Max 64sets/Line (with 64 sets, 256Axes/Line)
- Access method : Multi drop access by Ethernet cable
- Type of Serial communication
  - 1) System communication
 

With Motionnet line polls, able to check number of local device access, number of device, type of device and status of port assignment of I/O.
  - 2)Cyclic communication
 

The device number of the device to start communication with a small order when it reaches the largest number of devices, again returned to the small device to communicate. It always automatically cycle as one cycle turn and it activates communication. In case of G9003 I/O Port control (Main status, Common purpose of I/O) can be conducted as this cyclic communication.
  - 3)Data Communication
 

Use to read and write data of device Write data on FIFO of center device and release commands, this commands intervene between transmission and reception of cyclic communication and it is automatic transmission and reception Device of motion command, register control command is done by data communication.
- Sense communication Error : Detection of Communication error from CRC Code addition on serial communication frame.



## Ezi-SERVO Motionnet Specifications

Motor Model	MNET-EzM-20 series	MNET-EzM-25 series	MNET-EzM-28 series	MNET-EzM-35 series	MNET-EzM-42 series	MNET-EzM-56 series	MNET-EzM-60 series	MNET-EzM-71 series
Driver Model	MNET-EzS-PD-20 series	MNET-EzS-PD-25 series	MNET-EzS-PD-28 series	MNET-EzS-PD-35 series	MNET-EzS-PD-42 series	MNET-EzS-PD-56 series	MNET-EzS-PD-60 series	MNET-EzS-PD-71 series
Input Voltage	24VDC $\pm 10\%$							
Control Method	Closed loop control with 32bit DSP							
Multi Axes Drive	Maximum 64 Axes through Daisy-Chain							
Current Consumption	Max 500mA (Except motor current)							
Operating Condition	Ambient Temperature	In Use : 0~50°C In Storage : -20~70°C						
	Humidity	In Use : 35~85% (Non-Condensing) In Storage : 10~90% (Non-Condensing)						
	Vib, Resist.	0,5G						
Function	Rotation Speed	0~3,000rpm						
	Resolution(P/R)	4,000/Rev, Encoder model : 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 4,000 10,000/Rev, Encoder model : 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000/Rev, Encoder model : 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 20,000/Rev, Encoder model : 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 32,000/Rev, Encoder model : 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 32,000						
	Protection Functions	Over current, Over speed, Position tracking error, Over load, Over temperature, Over regenerated voltage, Motor connect error, Encoder connect error, Motor voltage error, In-Position error, System error, ROM error, Input voltage error, Position overflow error						
	LED Display	Power status, Alarm status, In-Position status, Servo On status						
	In-Position Selection	0~15 (Selectable by parameter)						
	Position Gain Selection	0~15 (Selectable by parameter)						
I/O Signal	Input Signal	LIMIT+, LIMIT-, ORIGIN, E-STOP and totally 10 inputs available (Photo-coupler input)						
	Output Signal	Compare out, Alarm out, Inposition out, Brake signal and totally 6 outputs available (Photo-coupler input)						
Communication Interface	The RS-485 serial communication with PC Transmission speed : 9,600 ~ 921,600bps							
Position Control	Incremental mode / Absolute mode Date range : -134,217,727, to +134,217,727pulse, Operating speed : Max, 3,000rpm							
MPI Version	Origin sensor, Z phase, $\pm$ Limit sensor, Torque and totally 11 modes							
GUI	User interface program within windows							
Software	Motion library (DLL) for windows 2000/XP							



**FASTECH Co., Ltd.**

Rm #1202, Bucheon Technopark 401 Dong, Yakde-a-dong,  
Wonmi-Gu, Bucheon-si, Gyeonggi-do, Rep. Of Korea (Zip)420-734  
TEL : 82-32-234-6300,6301 FAX : 82-32-234-6302  
E-mail : [daniel@fastech.co.kr](mailto:daniel@fastech.co.kr) website: [www.fastech.co.kr](http://www.fastech.co.kr)