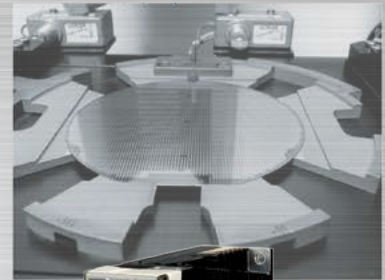


Motion Control of Up to 64 axes in One Unit



Motion Control Unit **NEW**
EtherCAT type
AFP7MC□EC

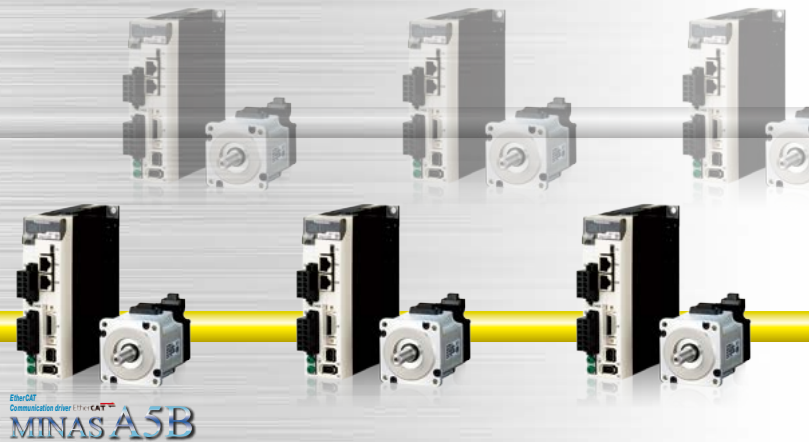
EtherCAT
Communication driver EtherCAT
MINAS A5B



A Single FP7 Motion Control Unit can Control 64 It is Now Easier to Perform Multiple axial Control.



Motion Control Unit
EtherCAT* type
AFP7MC□EC



Furthermore,

- Up to 32 synchronous groups!
(32 groups of 2 axes to 2 groups of 32 axes)
- Industry's fastest class with 0.5 ms* control cycle

*16 axes (2-axis interpolation × 8 groups). Our company created send/receive allocation.

*EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Supported Servo Motors Panasonic MINAS A5B Series



High Performance

- Frequency response: **2,300 Hz**
- Supports network communication "**EtherCAT**".
- Transmission speed: **100 Mbps**
- Real-time auto tuning function and anti-vibration filters are available.
- Supports commercially available LAN cables*.

*Shielded twisted pair cables (CAT5e and higher)

Motor Miniaturization

- New construction method developed. Also, miniaturized through new motor core design.
- MSME type motors 750 W or less support max. rotational speed of 6000 r/min.
- IP65 and IP67 rating (Motor)
- Compliance with international safety standards
- EU directive, UL and CSA standards, Korea Certification Mark (KC) and IEC safety I/F model available.

Driver line-up

Drive power supply	Motor rated output (Because there is the case that is different from the part number in the table by the motor, please check the combination in the catalog of the A5 series always.)					
	50 W	100 W	200 W	400 W	750 W	1 to 1.5 kW
Single phase 100 to 120 V AC	MADH T1105 B**	MADH T1107 B**	MBDH T2110 B**	MCDH T3120 B**	-	-
Single / 3-phase 200 to 240 V AC	MADH T1505 B**	MADH T1507 B**	MBDH T2510 B**	MCDH T3520 B**	MDDH T3530 B**	MDDH T5540 B**
	2 kW	3 kW	4 to 5 kW	7.5 kW	11 to 15 kW	
3-phase 200 to 230 V AC	MEDH T7364 B**	MFDH TA390 B**	MFDH TB3A2 B**	MGDH TC3B4 B**	MHDH TC3B4 B**	

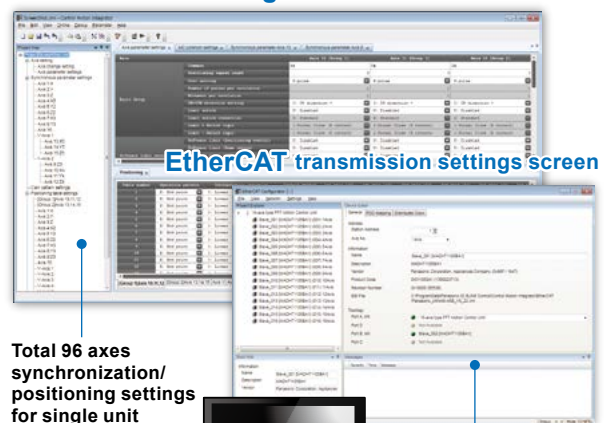
The following will be inserted for the ** placeholders.

A1: For rotary motor 01 or 21: For rotary motor + safety circuit I/F
L1: For linear motor 91: For linear motor + safety circuit I/F

Easy support of motion settings and test runs using dedicated software tool (Control Motion Integrator).

Control Motion Integrator facilitates setting of EtherCAT transmission settings and parameters such as the unit's motion control parameter. Tool can be run during tests, so operation can be easily checked during startup.

Control Motion Integrator



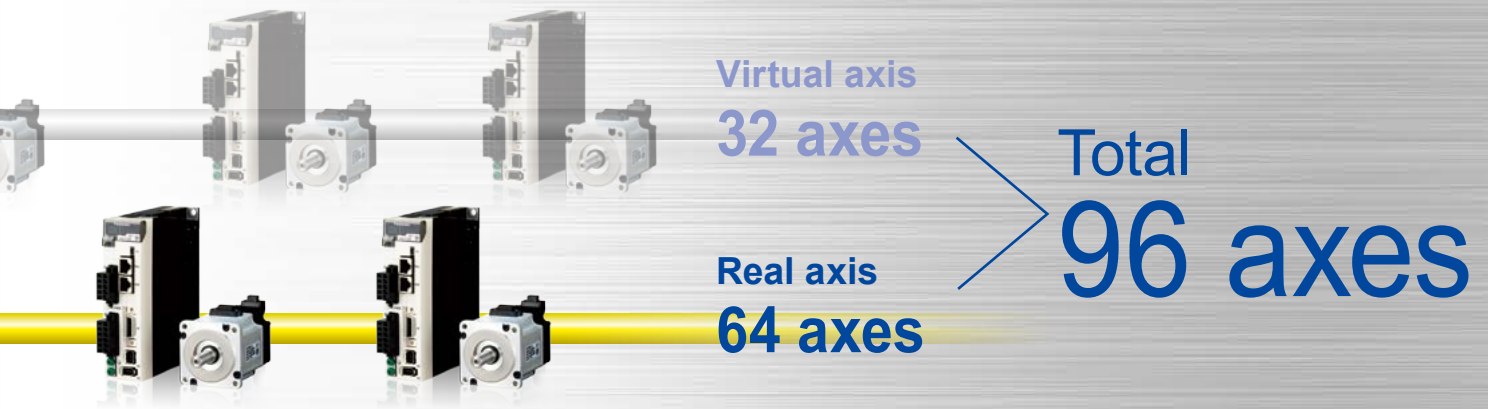
EtherCAT transmission settings screen

Total 96 axes synchronization/positioning settings for single unit

Installation complete of A5B ESI file



axes of MINAS A5B and 32 Virtual axes.



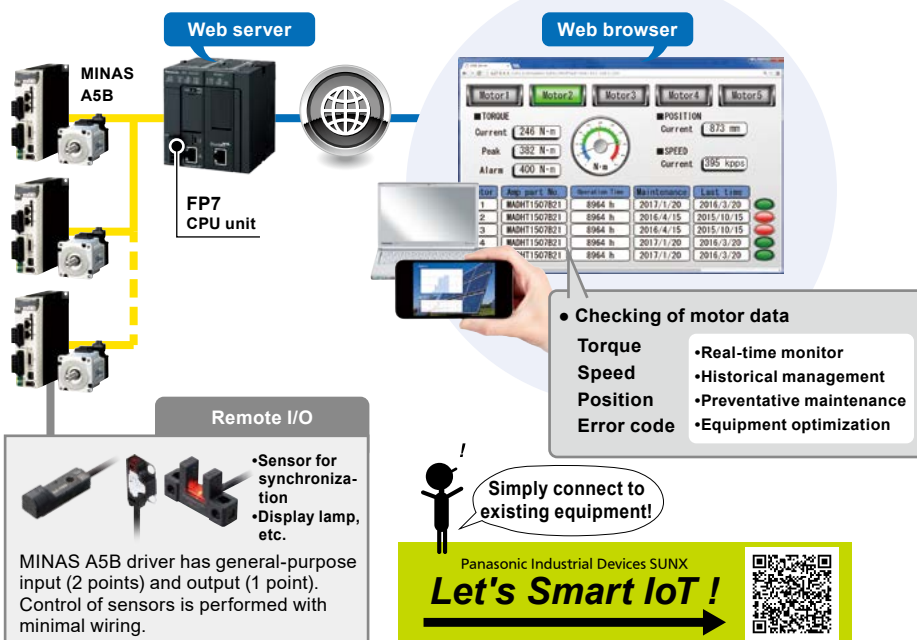
- Control system: Cyclic position control
- Positioning table: 1,000 tables/axis

Number of axis	Control cycle	Number of axis		Part No.
		Real axis	Virtual axis	
16	0.5 ms	16	8	AFP7MC16EC
32	1 ms	32	16	AFP7MC32EC
64	2 ms	64	32	AFP7MC64EC

*One CPU unit can be expanded with up to 14 motion control units.
However, number of expanded units is limited by the power supply used and the ambient temperature.

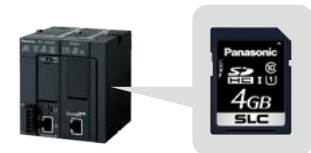
Operational status of motor is remotely monitored. More powerful preventative maintenance and historical management.

Through use of Web server function on **FP7** CPU unit, remote monitoring is possible of things such as torque, speed and position of the motor. Also, with inclusion of peripheral sensor, total operation monitoring is achieved.



Smooth debugging at startup.

Unit equipped with SD memory card
Communications log can be analyzed at startup which makes debugging easy.



*When logging during operation, be aware of communication lags on the EtherCAT side when data is being written.

*Please use the Ethernet function built-in type CPU units (AFP7CPS□E, AFP7CPS□ES).

Product types

Motion control units

Product name	Number of axis		Part No.
	Real axis	Virtual axis	
FP7 Motion Control Unit EtherCAT type	16	8	AFP7MC16EC
	32	16	AFP7MC32EC
	64	32	AFP7MC64EC

*EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Motion control setting tools

Product name	Descriptions	Part No.
Motion control setting tool Control Motion Integrator	Windows version. Downloadable free of charge from our website. Please purchase Key unit separately.	AFPSMTEN
Control Motion Integrator Key unit	License key for Control Motion Integrator . 1 license. For USB port. Please purchase Control Motion Integrator if you use it after 60 days since installing it.	AFPSMTKEY

•Key unit
AFPSMTKEY



Specifications

Item	16 axes type	32 axes type	64 axes type
Connected slave	Panasonic AC servo motor A5B series		
Number of control axes	Real axis: 16 axes Virtual axis: 8 axes	Real axis: 32 axes Virtual axis: 16 axes	Real axis: 64 axes Virtual axis: 32 axes
Control cycle	0.5 ms	1 ms	2 ms
Interpolation control	2-axis linear interpolation, 2-axis circular interpolation, 3-axis linear interpolation and 3-axis spiral interpolation		
Number of occupied I/O points	Input: 16 points, Output: 16 points		

Automatic operation		Item	16 axes type	32 axes type	64 axes type
Automatic operation	Positioning control (CSP)	Position specification method	Absolute (specified absolute position), Increment (specified relative position)		
		Position specified unit	pulse µm (select a minimum instruction unit of 0.1 µm or 1 µm) inch (select a minimum instruction unit of 0.00001 inch or 0.0001 inch) degree (select a minimum instruction unit of 0.1 degree or 1 degree)		
		Position reference range	pulse: -2,147,483,648 to 2,147,483,647 pulse µm (0.1 µm): -214,748,364.8 to 214,748,364.7 µm µm (1 µm): -2,147,483,648 to 2,147,483,647 µm inch (0.00001 inch): -21,474,836.48 to 21,474,836.47 inch inch (0.0001 inch): -214,748,364.8 to 214,748,364.7 inch degree (0.1 degree): -214,748,364.8 to 214,748,364.7 degree degree (1 degree): -2,147,483,648 to 2,147,483,647 degree		
		Speed reference range	pulse: 1 to 32,767,000 pps µm: 1 to 32,767,000 µm/sec. inch: 0.001 to 32,767,000 inch/sec. degree: 0.001 to 32,767,000 rev/sec.		
	Acceleration/ deceleration type	Linear acceleration/deceleration, S-shaped acceleration/deceleration			
	Acceleration/ deceleration time	0 to 10,000 ms (adjustable in 1 ms increments)			
	Number of positioning tables	Each axis: 1,000 points			
	Control method	Independent	PTP control (E point control, C point control), CP control (P point control), Speed control (J point control)		
		2-axis interpolation	Linear interpolation	E point, P point and C point controls: Specify synthesis speed or major axis speed	
			Circular interpolation	E point, P point and C point controls: Center point or passing point	
3-axis interpolation		Linear interpolation	E point, P point and C point controls: Specify synthesis speed or major axis speed		
	Spiral interpolation	E point, P point and C point controls: Center point or passing point			
Other function	Dwell time	0 to 32,767 ms (adjustable in 1 ms increments)			

Item		16 axes type	32 axes type	64 axes type	
Manual operation	JOG/ inching operation	Speed reference range	pulse: 1 to 32,767,000 pps µm: 1 to 32,767,000 µm/sec. inch: 0.001 to 32,767,000 inch/sec. degree: 0.001 to 32,767,000 rev/sec.		
		Acceleration/ deceleration type	Linear acceleration/deceleration, S-shaped acceleration/deceleration		
		Acceleration/ deceleration time	0 to 10,000 ms (adjustable in 1 ms increments)		
	Home return	Speed reference range	pulse: 1 to 32,767,000 pps µm: 1 to 32,767,000 µm/sec. inch: 0.001 to 32,767,000 inch/sec. degree: 0.001 to 32,767,000 rev/sec.		
		Acceleration/ deceleration type	Linear acceleration/deceleration, S-shaped acceleration/deceleration		
		Acceleration/ deceleration time	0 to 10,000 ms (adjustable in 1 ms increments)		
Return methods	DOG method (4 types), Limit method (2 types), Data set method, Z phase method, Stop-on-contact method (2 types)				
Stop function	Deceleration stop	Deceleration time	Axis operation mode startup time of activated axis		
	Emergency stop	Deceleration time	0 to 10,000 ms (adjustable in 1 ms increments)		
	Limit stop	Deceleration time	0 to 10,000 ms (adjustable in 1 ms increments)		
	Error stop	Deceleration time	0 to 10,000 ms (adjustable in 1 ms increments)		
	System stop	Deceleration time	Immediate stop (1 ms), all axes stop		
Synchronous operation function	Synchronous basic setting	Master axis	Selection possible of real axis and virtual axis		
		Slave axis	Max. 8 axes/master	Max. 16 axes/master	Max. 32 axes/master
	Electronic gear function	Operation setting	Gear ratio setting		
		Operation method	Direct method, Acceleration/deceleration method		
	Electronic clutch function	Clutch ON trigger	Contact input		
		Clutch method	Direct method, Linear slide method		
Electronic cam function	Cam curve	Select from 20 types Multiple curves can be specified within a phase (0 to 100 %).			
	Resolution	1024, 2048, 4096, 8192, 16384, 32768			
	Number of cam patterns	16 to 64 (Depends on resolution)	32 to 128 (Depends on resolution)	64 to 256 (Depends on resolution)	
Other specifications	Software limit function	Set range	pulse: -2,147,483,648 to 2,147,483,647 pulse µm (0.1 µm): -214,748,364.8 to 214,748,364.7 µm µm (1 µm): -2,147,483,648 to 2,147,483,647 µm inch (0.00001 inch): -21,474,836.48 to 21,474,836.47 inch inch (0.0001 inch): -214,748,364.8 to 214,748,364.7 inch degree (0.1 degree): -214,748,364.8 to 214,748,364.7 degree degree (1 degree): -2,147,483,648 to 2,147,483,647 degree		
		Monitor judgment	Torque judgment	Torque judgment Selection possible of active/non-active and error/warning 0.0 to ±500.0 %	
	Actual speed judgment	Actual speed judgment	Actual speed judgment Selection possible of active/non-active and error/warning 0.0 to ±5,000 rpm		
		Backup	Parameters and positioning data are saved to flash memory (battery free)		
	<ul style="list-style-type: none"> Limit input CWL, CCWL monitor and proximity (DOG) monitor General-purpose input: 5 points, General-purpose output: 1 point (I/O from AMP) Auxiliary output contact and auxiliary output cord 				
Current consumption (at 24 V DC)		180 mA approx.			
Weight		150 g approx.			