

Function comparative table for Motion Control IC MCX series.

● : Functioned

		MCX501 1-Axis Motor Control IC	MCX302 2-Axes Motor Control IC	MCX312 2-Axes Motor Control IC with interpolation	MCX304 4-Axes Motor Control IC	MCX314As 4-Axes Motor Control IC with interpolation	MCX314AL 4-Axes Motor Control IC with interpolation
	Release data	2011/10	2001/10	2001/1	2002/1	2003/12	2007/7
	Control axis	1	2	2	4	4	4
CPU interface	Data bus	8/16bit *1	8/16bit	8/16bit	8/16bit *2	8/16bit	8/16bit
Interpolation	Circular interpolation (Maximum speed: 4Mpps)			● (24bit)		● (32bit)	● (32bit) *3
	Linear interpolation (Maximum speed: 4Mpps)			● (24bit)		● (32bit)	● (32bit) *3
	Bit pattern interpolation (Maximum speed: 4Mpps)			●		●	● *3
	Continuous interpolation (Maximum speed: 2Mpps)			●		●	● *3
	Multichip linear interpolation			●			
Drive speed curve	Maximum drive speed (When CLK is 16MHz.)	8Mpps *4	4Mpps	4Mpps	4Mpps	4Mpps	4Mpps *3
	Speed range	Range-free	Speed multiple (1~500)	Speed multiple (1~500)	Speed multiple (1~500)	Speed multiple (1~500)	Speed multiple (1~500)
	Constant speed drive	●	●	●	●	●	●
	Trapezoidal acceleration/deceleration drive	●	●	●	●	●	●
	S-curve acceleration/deceleration drive	●	●	●	●	●	●
	Non-symmetrical trapezoidal drive	●	●	●	●	●	●
	Non-symmetrical automatic deceleration drive	●	●	●	●	●	●
	Non-symmetrical S-curve acceleration/deceleration drive	●				●	●
Position control	Logical Position Counter/Bit length for output pulse	32bit	32bit	32bit	32bit	32bit	32bit
	Real Position Counter/Bit length for encoder input	32bit	32bit	32bit	32bit	32bit	32bit
	Position Compare Register Number/Axes	4	2	2	2	2	2
	Software limit/deceleration stop	●	●	●	●	●	●
	Software limit/instant stop	●					
	Variable ring for position counter *5	●	●	●	●	●	●
	Clearing real position counter by Z-phase input	●	●	●	●	●	●
	Real position counter increase/decrease inversion	●	●	●	●	●	●
Synchronous action	The function that performs a specified action such as starting or stopping of driving when an activation factor (provocative) occurs within each axis, between two axes, or with a device outside of IC by linking with a provocative.	● (4sets)				● (1set)	● (1set)
Automatic home search	The function that automatically executes a home search sequence, which comprises high-speed near home search → low-speed home search → encoder Z-phase search → deviation counter clear output → offset drive → position counter clear.	●	●		●	●	●
External drive operation	Fixed/continuous pulse output, manual pulsar	●	●	●	●	●	●
Servo motor signal	In-position, alarm input	●	●	●	●	●	●
	Deviation counter output (Pulse width can be set.)	●	●	●	●	●	●
General Input/Output	Input pin number/Axes () indicates shared signals. *6	17 (17)	6 (4)	6 (4)	7 (7)	8 (8)	8 (8)
	Output pin number/Axes () indicates shared signals *6	8 (8)	8 (8)	8 (8)	4 (4)	8 (4)	8 (4)
Input signal integral type filter	Filter time constant	16step	8step	8step	8step	8step	8step
Other functions	Speed change during driving	●	●	●	●	●	●
	Changing of output pulse number during driving	● *7	●	●	●	●	●
	Triangle form prevention of speed curve	●	●	●	●	●	●
	Multi-purpose register *8	32bit × 4pcs					
	Split pulse*9	●					
	Timer function *10	●					
	Pulse output pin switchable	●				●	●
Electrical characteristic	Temperature range for operation	-40~+85°C	0~+85°C	0~+85°C	0~+85°C	0~+85°C	-40~+85°C
	Clock pulse	16MHz (standard) 20MHz (maximum)	16MHz	16MHz	16MHz	16MHz	16MHz (standard) 32MHz (maximum)
	Power voltage	+3.3V±10%	+5V±5%	+5V±5%	+5V±5%	+5V±5%	+3.3V±10%
	Maximum consumption current (When CLK is 16MHz)	44mA	50mA	50mA	67mA	112mA	30mA
Package Plastic QFP	Pin number	64	100	100	100	144	144
	Pin pitch	0.5mm	0.65mm	0.65mm	0.65mm	0.5mm	0.5mm
	Dimension	10 × 10 × 1.0mm	14 × 20 × 2.7mm	14 × 20 × 2.7mm	14 × 20 × 2.7mm	20 × 20 × 1.4mm	20 × 20 × 1.4mm
	Maximum dimension	12 × 12mm	17.8 × 23.8mm	17.8 × 23.8mm	17.8 × 23.8mm	22 × 22mm	22 × 22mm
RoHS Compliant		●	●	●	●	●	●

*1 Since the signal lines of D15~8 are used with general input signals, when use them in 16bit, the number of general input signal is smaller which can be used.

*2 Since the signal lines of D15~8 are used with general input signals, when user use them in 16bit, the number of general input signal is smaller which can be used.

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- *3 For MCX314AL, the maximum speed is 8Mpps when CLK is 32MHz.
- *4 Maximum speed is 10Mpps, when CLK is 20MHz.
- *5 The function which can be set any value to the ring counter value for the position control of the rotation axis.
- *6 Since these signals use the same terminal with the other functions, when use the other functions, the number of general input/output signal is smaller which can be used.
- *7 This function can be operated for relative position driving and counter relative position driving in the same direction.
- *8 Use for the comparisons of the current position, current speed and saving the data.
- *9 The function that outputs pulses synchronizing with drive pulse in the specified intervals during driving.
It can be set split length, pulse width and numbers.
- *10 Settable the range of 1~2,147,483,647 μ sec.