MITSUBISHI

General Purpose AC SERVO

Built-in Current Position Latch Function

MELSERVO-J2-Super Series
MR-J2S-□□CP-S212

– Engineering sample specifications –

MITSUBISHI ELECTRIC CO.
NAGOYA - WORKS

Revisions		
Document version	**Descriptions**	**Date**
∗	First edition	

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1. Outline

These specifications explain the AC Servo amplifier MR-J2S-☐☐CP-S212 for LNS Inc.
Matters not explained in these specifications are the same as the standard product, so refer to the MR-J2S-CP servo amplifier technical documents.

<Functions added to or changed from standard product>

    1) Current position latch function using external input signals added
    2) Latch data read command using communication added

<Type name>

The servo amplifier type is shown below.

MR-J2S-☐☐CP-S212

Indicate these specifications.

2. Specifications

(1) Servo amplifier

1) 200VAC power input compatible

	Servo amplifier type	MR-J2S-10CP-S212	MR-J2S-20CP-S212	MR-J2S-40CP-S212	MR-J2S-60CP-S212	MR-J2S-70CP-S212
Power supply	Voltage/frequency		3-phase 200 to 230VAC, 50/60Hz or single-phase 230V, 50/60Hz			
	Tolerable voltage fluctuation	For 3-phase: 170 to 253VAC For single-phase: 207 to 253VAC				
	Tolerable frequency fluctuation	±5% or less				
Control method		Sine wave PWM control and current control method				
Protective function		Overcurrent shutdown, regeneration overvoltage shutdown, overload shutdown (electronic thermal), servomotor overheat protection, detector trouble protection, regeneration trouble protection, undervoltage/instantaneous power failure protection, overspeed protection and error excess protection				
Structure		Self-cooling open (IP00)				
Environments	Ambient temperature	0 to +55°C (without freezing), storage: −20 to +65°C				
	Humidity	90%RH or less (with no dew condensation), storage: 90%RH or less				
	Atmosphere	No corrosive gases, flammable gases, oil mist or dust in control panel				
	Altitude	1000m or less above sea level				
	Vibration	5.9m/s^2 or less				
Weight (kg)		0.7	0.7	1.1	1.1	1.7

	Servo amplifier type	MR-J2S-100CP -S212	MR-J2S-200CP -S212	MR-J2S-350CP -S212	MR-J2S-500CP -S212	MR-J2S-700CP -S212
Power supply	Voltage/frequency	3-phase 200 to 230VAC, 50/60Hz				
	Tolerable voltage fluctuation	3-phase 170 to 253VAC				
	Tolerable frequency fluctuation	±5% or less				
Control method		Sine wave PWM control and current control method				
Protective function		Overcurrent shutdown, regeneration overvoltage shutdown, overload shutdown (electronic thermal), servomotor overheat protection, detector trouble protection, regeneration trouble protection, undervoltage/instantaneous power failure protection, overspeed protection and error excess protection				
Structure		Self-cooling open (IP00)	Forced-cooling open (IP00)			
Environments	Ambient temperature	0 to +55°C (without freezing), storage: −20 to +65°C				
	Humidity	90%RH or less (with no dew condensation), storage: 90%RH or less				
	Atmosphere	No corrosive gases, flammable gases, oil mist or dust in control panel				
	Altitude	1000m or less above sea level				
	Vibration	5.9m/s^2 or less				
Weight (kg)		1.7	2.0	2.0	4.9	7.2

2) 100VAC power input compatible

	Servo amplifier type	MR-J2S-10CP1-S212	MR-J2S-20CP1-S212	MR-J2S-40CP1-S212
Power supply	Voltage/frequency	Single-phase 100 to 120VAC, 50/60Hz		
	Tolerable voltage fluctuation	Single-phase: 85 to 127VAC		
	Tolerable frequency fluctuation	±5% or less		
Control method		Sine wave PWM control and current control method		
Protective function		Overcurrent shutdown, regeneration overvoltage shutdown, overload shutdown (electronic thermal), servomotor overheat protection, detector trouble protection, regeneration trouble protection, undervoltage/instantaneous power failure protection, overspeed protection and error excess protection		
Structure		Self-cooling open (IP00)		
Environments	Ambient temperature	0 to +55°C (without freezing), storage: −20 to +65°C		
	Humidity	90%RH or less (with no dew condensation), storage: 90%RH or less		
	Atmosphere	No corrosive gases, flammable gases, oil mist or dust in control panel		
	Altitude	1000m or less above sea level		
	Vibration	5.9m/s^2 or less		
Weight (kg)		0.7	0.7	1.1

Note 1) The servomotor output value and rated speed apply for the described power voltage and frequency. These are not compensated when the power voltage drops.

3. Current Position Latch Function

(1) Explanation of current position latch function

The current position latch function can be used by assigning the "current position latch" device to the hardware pin with parameter numbers 79 to 83.

The latched current position data can be read out with the following communication commands.
- Data latched at rising edge of "current position latch" device : command "1A 00"
- Data latched at falling edge of "current position latch" device : command "1A 01"

When the power is turned ON, the "current position latch" device's rising edge data and falling edge data are both "0".

The latch data is delayed by the input filter set with parameter No. 2 (OP1).

Parameter No. 2 (OP1) setting value	Latch data delay
☐000	0.44 to 1.11 msec
☐001	1.33 to 2.00 msec
☐002	2.22 to 2.88 msec
☐003	3.11 to 3.77 msec
☐004	4.00 to 4.66 msec
☐005	4.88 to 5.55 msec

(2) List of communication commands

Read commands (Commands added to standard product)

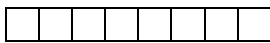| Command	Data No.	Details	Frame length
1A	00	Read data latched at rising edge of "current position latch" device	8
1A	01	Read data latched at falling edge of "current position latch" device	8

(3) Details of commands

The following commands have been added or changed with the MR-J2S-☐☐CP-S212.
Refer to the MR-J2S-☐☐CP technical documents for details on the other commands.

1) Read data at device rising edge
   The data latched at the rising edge of the "current position latch" device is read.

   Command Data No.
   1A   00
   Send data

   The data is send as a hexadecimal notation with a command pulse unit.
   The data must be converted from a hexadecimal to a decimal.
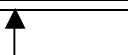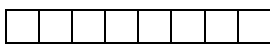   **(Example)**
   The measured length data "000186A0" is 100000[pulse] at the command end pulse unit.

2) Read data at device falling edge
   The data latched at the falling edge of the "current position latch" device is read.

   Command Data No.
   1A   01
   Send data

   The data is send as a hexadecimal notation with a command pulse unit.
   The data must be converted from a hexadecimal to a decimal.
   (Example)
   The measured length data "000186A0" is 100000[pulse] at the command end pulse unit.

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4. Parameter

(1) Parameter list

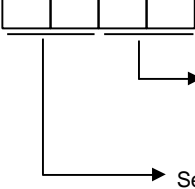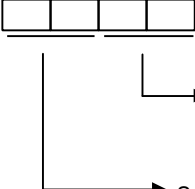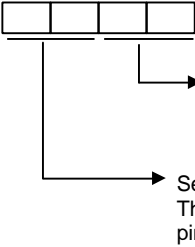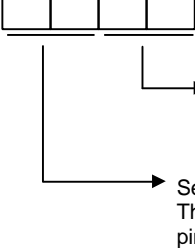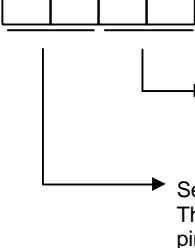| Class	No.	Abbrev.	Name and function	Default value	Unit	Remarks
Basic parameters	0	*STY	Command system/regenerative brake option selection	0000		
	1	*FTY	Feeding function selection	0000		
	2	*OP1	Function selection 1	0002		
	3	ATU	Auto tuning	0105		*1
	4	*CMX	Electronic gear numerator	1		
	5	*CDV	Electronic gear denominator	1		
	6	INP	In-position range	100	pulse	
	7	PG1	Position loop gain 1 (model position gain)	36	rad/s	*1
	8	*ZTY	Home position return type	0010		
	9	ZRF	Home position return speed	500	r/min	
	10	CRF	Creep speed	10	r/min	
	11	ZST	Home position shift distance	0	μm	
	12	CRP	Rough match output range	0	$\times 10^{SIM}$μm	
	13	JOG	Jog speed	100	r/min	
	14	STC	S-pattern acceleration/deceleration time constant	0	msec	
	15	*SNO	Station number setting	0	station	
	16	*BPS	Communication speed/communication I/F selection, alarm history clear	0000		
	17	MOD	Analog monitor output	0100		
	18	*DMD	Status display selection	0000		
	19	*BLK	Parameter block	0000		
Expansion parameters 1	20	*OP2	Function selection 2	0000		
	21	*OP3	For manufacturer setting	0000		
	22	*OP4	Function selection 4	0000		
	23	SIC	Serial communications time-out selection	0	sec	
	24	FFC	Feed forward gain	0	%	
	25	VCO	Override offset	0	mV	
	26	TPO	Torque limit offset	0	mV	
	27	*ENR	Encoder output pulses	4000		
	28	TL1	Internal torque limit 1	100	%	
	29	TL2	Internal torque limit 2	100	%	
	30	*BKC	Backlash compensation	0	pulse	
	31	MO1	MO1 offset	0	mV	
	32	MO2	MO2 offset	0	mV	
	33	MBR	Electromagnetic brake sequence output	100	msec	
	34	GD2	Ratio of load inertia moment to Servo motor inertia moment	70	0.1 times	
	35	PG2	Position loop gain 2	35	rad/s	
	36	VG1	Speed loop gain 1	177	rad/s	
	37	VG2	Speed loop gain 2	817	rad/s	
	38	VIC	Speed integral compensation	48	msec	
	39	VDC	Speed differential compensation	980		
	40	OVA	For manufacturer setting	0		
	41		For manufacturer setting	0		
	42	*ZPS	Home position return position data	0	$\times 10^{SIM}$μm	
	43	DCT	Moving distance after proximity dog	1000	$\times 10^{SIM}$μm	
	44	ZTM	Stopper type home position return stopper time	100	msec	

Note) Turn the power OFF once after changing parameters marked with an asterisk. The settings will be completed when the power is turned ON again.

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Class	No.	Abbrev.	Name and function	Default value	Unit	Remarks
Expansion parameters 1	45	ZTT	Stopper type home position return torque limit value	30	%	
	46	*LMP1	Software limit address + high	0	$\times 10^{SIM}$ μm	
	47	*LMP2	Software limit address + low	0		
	48	*LMN1	Software limit address - high	0	$\times 10^{SIM}$ μm	
	49	*LMN2	Software limit address - low	0		
	50	*LPP1	Position range output address + high	0	$\times 10^{SIM}$ μm	
	51	*LPP2	Position range output address + low	0		
	52	*LNP1	Position range output address - high	0	$\times 10^{SIM}$ μm	
	53	*LNP2	Position range output address - low	0		
Expansion parameters 2	54	*OP5	For manufacturer setting	0000		
	55	*OP6	Function selection 6	0000		
	56	*OP7	For manufacturer setting	0000		
	57	*OP8	Function selection 8	0000		
	58	*OP9	Function selection 9	0000		
	59	*OPA	Function selection A	0000		
	60	ORP	For manufacturer setting	0000		
	61	NH1	Machine resonance suppression filter 1	0000		
	62	NH2	Machine resonance suppression filter 2	0000		
	63	LPF	Low-pass filter, adaptive vibration suppression control	0000		
	64	GD2B	Ratio of load inertia moment to Servo motor inertia moment 2	70	$\times 0.1$ times	
	65	PG2B	Position control gain 2 changing ratio	100	%	
	66	VG2B	Speed control gain 2 changing ratio	100	%	
	67	VICB	Speed integral compensation changing ratio	100	%	
	68	*CDP	Gain changing selection	0000		
	69	CDS	Valid gain changeover range	10	CPD setting	
	70	CDT	Gain changeover time	1	msec	
	71	VPI	For manufacturer setting	0	pulse	
	72	VLI	For manufacturer setting	10000	r/min	
	73	ERZ	For manufacturer setting	10	rev	
	74	ER2	For manufacturer setting	10	rev	
	75	SRT	For manufacturer setting	100	r/min	
	76	TRT	For manufacturer setting	100	msec	
	77	DBT	For manufacturer setting	100	msec	
Special parameters	78	*DI0	For manufacturer setting	0000		
	79	*DI1	Input device selection 1 (CN1A-19, 8)	0009		
	80	*DI2	Input device selection 2 (CN1B-5, 7)	080A		
	81	*DI3	Input device selection 3 (CN1B-8, 9)	0706		
	82	*DI4	Input device selection 4 (CN1A-14, 15)	020B		
	83	*DI5	Input device selection 5 (CN1B-16, 17)	0504		
	84	*DI6	For manufacturer setting	0002		
	85	*DI7	For manufacturer setting	0000		
	86	*DO1	For manufacturer setting	0005		
	87	*DO2	For manufacturer setting	0D04		
	88	*DO3	For manufacturer setting	0102		
	89		For manufacturer setting	0		
	90		For manufacturer setting	0		

Note) Turn the power OFF once after changing parameters marked with an asterisk. The settings will be completed when the power is turned ON again.

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(2) Parameter details

The following parameters have been changed with the MR-J2S-□□CP-S212. All other parameters are the same as the standard product, so refer to the MR-J2S-□□CP servo amplifier technical documents.

Class	No.	Abbrev.	Name and function	Default value	Unit	Setting range
Special parameters	79	*DI1	Input device selection 1 Select the CN1A-8 and CN1A-19 pin functions Set the CN1A-8 pin function. The setting value and functions are the same as the CN1A-19 pin. Set the CN1A-19 pin function. **Note)** The parameters must be set to set the current position latch. This cannot be set with the setup software device. Change the setting by setting parameter No. 19 to "000E". The details of this parameter will be updated if the device is set with the setup software.	0009		0000h to 1F1Fh
	80	*DI2	Input device selection 2 Select the CN1B-5 and CN1B-7 pin functions Set the CN1B-5 pin function. The setting value and functions are the same as the CN1A-19 pin. Refer to parameter No. 79. Set the CN1B-7 pin function. The setting value and functions are the same as the CN1A-19 pin. Refer to parameter No. 79. **Note)** The parameters must be set to set the current position latch. This cannot be set with the setup software device. Change the setting by setting parameter No. 19 to "000E". The details of this parameter will be updated if the device is set with the setup software.	080A		0000h to 1F1Fh

Within parameter No. 79:

Setting value	Input function	Setting value	Input function
00	No function assigned	10	Internal torque limit selection
01	Forced stop	11	Proportional control
02	Servo ON	12	Temporary stop/restart
03	Alarm reset	13	Manual pulse generator magnification 1
04	Forward run stroke	14	Manual pulse generator magnification 2
05	Reverse run stroke	15	Point table No. selection 5
06	Forward run start	16	
07	Reverse run start	17	Gain changeover selection
08	Automatic/manual selection	18	Teach
09	Near-point dog	19	Current position latch
0A	Point table No. selection 1	1A	
0B	Point table No. selection 2	1B	
0C	Point table No. selection 3	1C	
0D	Point table No. selection 4	1D	
0E	Override selection	1E	
0F	External torque limit selection	1F	

Note) Turn the power OFF once after changing parameters marked with an asterisk. The settings will be completed when the power is turned ON again.

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Class	No.	Abbrev.	Name and function	Default value	Unit	Setting range
Special parameters	81	*DI3	Input device selection 3 　Select the CN1B-8 and CN1B-9 pin functions 　　　Set the CN1B-8 pin function. 　　　The setting value and functions are the same as the CN1A-19 pin. Refer to parameter No. 79. 　　　Set the CN1B-9 pin function. 　　　The setting value and functions are the same as the CN1A-19 pin. Refer to parameter No. 79. **Note)** The parameters must be set to set the current position latch. This cannot be set with the setup software device. Change the setting by setting parameter No. 19 to "000E". The details of this parameter will be updated if the device is set with the setup software.	0706		0000h to 1F1Fh
	82	*DI4	Input device selection 4 　Select the CN1B-14 and CN1B-15 pin functions 　　　Set the CN1B-14 pin function. 　　　The setting value and functions are the same as the CN1A-19 pin. Refer to parameter No. 79. 　　　Set the CN1B-15 pin function. 　　　The setting value and functions are the same as the CN1A-19 pin. Refer to parameter No. 79. **Note)** The parameters must be set to set the current position latch. This cannot be set with the setup software device. Change the setting by setting parameter No. 19 to "000E". The details of this parameter will be updated if the device is set with the setup software.	020B		0000h to 1F1Fh
	83	*DI5	Input device selection 5 　Select the CN1B-16 and CN1B-17 pin functions 　　　Set the CN1B-16 pin function. 　　　The setting value and functions are the same as the CN1A-19 pin. Refer to parameter No. 79. 　　　Set the CN1B-17 pin function. 　　　The setting value and functions are the same as the CN1A-19 pin. Refer to parameter No. 79. **Note)** The parameters must be set to set the current position latch. This cannot be set with the setup software device. Change the setting by setting parameter No. 19 to "000E". The details of this parameter will be updated if the device is set with the setup software.	0504		0000h to 1F1Fh

Note) Turn the power OFF once after changing parameters marked with an asterisk. The settings will be completed when the power is turned ON again.