

# Technical Note

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## Junma Amplifier Comparisons

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**Applicable Products:  
SJDE**



<b>Product:</b> SJDE	<b>Doc#:</b> TN.Junma.01
<b>Title:</b> Junma Amplifier Comparisons	

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## Overview

This document briefly describes the differences between the “new” Junma Amplifier (part ending in -OY), and the “old” Junma Amplifier. Further in-depth details could not be obtained at the time of this publication. Motor differences are not discussed in this document. JunmaWin changes are not further discussed in this document (some features have been added to JunmaWin).

## Hardware

Hardware is identical other than the part number (on the front of the amplifier and the label).

For example:

- Frequency input the same range
- Color is (expected to be) the same
- Connectors are the same

## New Junma Amplifier Functions

- Support for 100V input
- New control functions:
  - Torque limit
  - Changeable servomotor rotation direction
  - Position complete signal & width setting
- Utility functions (Fn\*\*\*):
  - Alarm history display
  - JOG operation
    - JOG Speed
    - Soft Start Acceleration Time
    - Soft Start Deceleration Time
  - Origin search
  - Clearing alarm history
  - Write prohibited setting
  - Software version display
  - Alarm reset
- Tuning-less function performance improvement
  - *See section below for more details*
- Electric gear ratio function
  - Electric gear ratio is changeable with the digital operator or PC.





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- Pn20E, Pn210 is always displayed regardless of the setting Pn21B.0.
- Status Monitor functions
  - Status monitor function (Un\*\*\*) is available.
    - Feedback Speed
    - Speed Reference
    - Internal Torque Reference
    - Rotation Angle 1
    - Rotation Angle 2 (Electric Angle)
    - Input Signal Monitor
    - Output Signal Monitor
    - Pulse Reference Speed
    - Potion error counter
    - Accurate Load ratio
    - Pulse reference counter
    - Feedback pulse counter
- Alarm list and warning list are supported
  - *See sections below for more details*





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## Tuning-less function performance improvement

The range of the “Tuning-less Tuning Level” is expanded for the performance improvement of the tuning-less function.

### Related Parameter

User Parameter		Contents	Setting Range	Unit	Factory Setting	Control Power Reset
No	Bit					
Pn170		Tuning-less Function Related Switch	—	0000H–1F01H	0700H	Not Required
0		Tuning-less Function Selection				
	0	Uses the setting of rotary switch (FIL) of the reference filter setting.				
	1	Uses the setting of Pn170.2 & Pn170.3				
1		Reserved (Do not change.)				
2	0–F	Tuning-less Tuning Level				
3	0–1	Tuning-less Load Level				

## Tuning-less Tuning Level

Level set by Parameter Pn170.2

Tuning-less tuning Level	Kp [1/s]	Command Filter [ms]	Aprox. Settling time
15*	Kp=80 level		
14*	Kp=75 level		
13*	Kp=70 level		
12*	Kp=65 level		
11*	Kp=60 level		
10*	Kp=55 level		
9*	Kp=50 level		
8*	Kp=45 level		
7	40	18.0	100–200ms
6	40	23.0	110–220ms
5	40	28.0	130–260ms
4	40	33.0	150–300ms
3	40	38.0	170–340ms
2	30	40.0	200–400ms
1	20	31.0	250–500ms
0	10	58.0	500–1000ms

Level set by reference filter SW (FIL)

Reference filter(FIL)setting	Kp [1/s]	Command Filter [ms]	Aprox. Settling time
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
0	40	18.0	100–200ms
1	40	23.0	110–220ms
2	40	28.0	130–260ms
3	40	33.0	150–300ms
4	40	38.0	170–340ms
5	30	40.0	200–400ms
6	20	31.0	250–500ms
7	10	58.0	500–1000ms

\*The gain setting and the settling time are being examined.

(The upper limit is Kp=80 1/s.)





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## Tuning-less Load Level

### Specification of Tuning-less Load Level

Tuning-less tuning Level (Pn170.2)	K <sub>p</sub> [1/s]	Allowable Load moment of inertia ratio	
		Pn170.3 =0 (Pn103=0%)	Pn170.3 =1 (Pn103=100%)
15	K <sub>p</sub> =80 level	0-500%	100-1000%
14	K <sub>p</sub> =75 level		
13	K <sub>p</sub> =70 level		
12	K <sub>p</sub> =65 level		
11	K <sub>p</sub> =60 level		
10	K <sub>p</sub> =55 level		
9	K <sub>p</sub> =50 level		
8	K <sub>p</sub> =45 level	0-1000%	100-1000%
7	40		
6	40		
5	40		
4	40		
3	40		
2	30		
1	20		
0	10		

Note: The allowable load moment of inertia ratio is limited depending on the amplifier capacity:

- 100W: 9.5 times
- 200W: 7.2 times
- 400W: 7.1 times
- 750W: 6.4 times





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## Alarm list

Alarm	ALARM LED	Alarm Code	Alarm	Alarm Reset
Normal	ALM 1 <input type="checkbox"/> ALM 2 <input type="checkbox"/> ALM 3 <input type="checkbox"/>	—		
Speed error	ALM 1 <input checked="" type="checkbox"/> ALM 2 <input type="checkbox"/> ALM 3 <input type="checkbox"/>	A.510	Over speed	Possible
		A.d00	Position error pulse overflow	Possible
Overload	ALM 1 <input type="checkbox"/> ALM 2 <input checked="" type="checkbox"/> ALM 3 <input type="checkbox"/>	A.710	Overload: High-load	Possible
		A.720	Overload: Low-load)	Possible
		A.730	DB Overload	Possible
		A.7AA	Abnormal board temperature A.710 ( )	Possible
Encoder error	ALM 1 <input checked="" type="checkbox"/> ALM 2 <input checked="" type="checkbox"/> ALM 3 <input type="checkbox"/>	A.C10	Servo Run Away	Possible
		A.C20	Phase detection error	Not Possible
		A.C50	Pole detection error	Not Possible
		A.C90	Encoder amplitude error)	Not Possible
	A.C91	Encoder acceleration error		
Voltage error	ALM 1 <input type="checkbox"/> ALM 2 <input type="checkbox"/> ALM 3 <input checked="" type="checkbox"/>	A.400	Over Voltage	Possible
		A.410	Under Voltage	Possible
Over current	ALM 1 <input checked="" type="checkbox"/> ALM 2 <input type="checkbox"/> ALM 3 <input checked="" type="checkbox"/>	A.100	Over current	Not Possible
Servopack built-in fan stopped	ALM 1 <input type="checkbox"/> ALM 2 <input checked="" type="checkbox"/> ALM 3 <input checked="" type="checkbox"/>	A.7Ab	Servopack built-in fan Stopped error	Not Possible
System error	ALM 1 <input checked="" type="checkbox"/> ALM 2 <input checked="" type="checkbox"/> ALM 3 <input checked="" type="checkbox"/>	A.020	Parameter check sum error1	Not Possible
		A.021	System parameter checksum error1	Not Possible
		A.022	System parameter checksum error2	Not Possible
		A.023	Parameter password error3	Not Possible
		A.030	Main circuit detector error	Possible
		A.040	Parameter setting error 1	Not Possible
		A.b33	Current detection error	Not Possible
		A.bF0	System alarm 0	Not Possible
		A.bF1	System alarm 1	Not Possible
		A.bF2	System alarm 2	Not Possible
		A.bF3	System alarm 3	Not Possible
		A.bF4	System alarm 4	Not Possible





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## Warning list

Warning	ALARM LED	Warning Code	
Servo set up warning · Reference pulse setting rotary switch change · Parameter change	<p>(Flashing)</p>	A.941	Parameters that require control power reset is changed.
		A.94E	PULSE SW is changed.
		This warning is not displayed during alarm condition	
Overload warning	ALM 1 <input type="checkbox"/> ALM 2 <input type="checkbox"/> ALM 3 <input type="checkbox"/>	A.910	Overload warning

