

REFERENCE SPECIFICATIONS

M/S

MODEL AC Servo Motor (□25 DC48 V)
MMMA□ABF1A (20 bit absolute encoder)

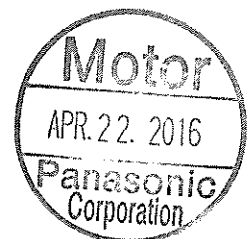
Issued on Apr.21.2016

Changed on . . .

Motor Business Unit, Electromechanical Control Business Division,
Automotive & Industrial Systems Company, Panasonic Corporation

7-1-1 Morofuku, Daito-City, Osaka 574-0044, Japan

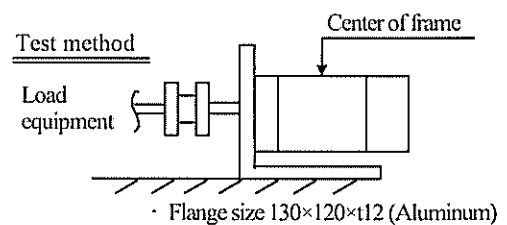
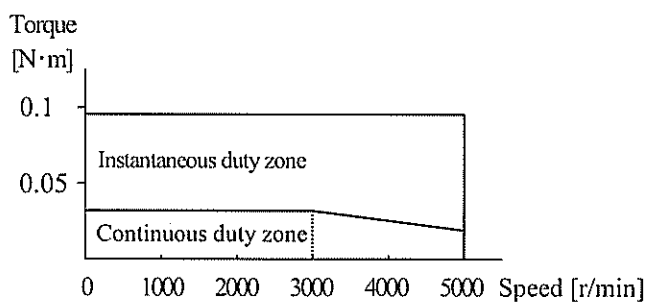
Checked	Checked	Designed
<i>Y. Kira</i>	<i>S. Nishie</i>	<i>M. Miyazaki</i>



AC Servo Motor Specification

Motor model		MMMA1ABF1A (Without brake)		
Rated output	W	10		
Rating	%	100		
Number of poles		6		
Rated speed	r/min	3000		
Max. speed	r/min	5000		
Rated torque	N·m	0.032		
Max. torque	N·m	0.095		
Rated current	A(rms)	(1.3)		
Rotor inertia	$\times 10^{-4}$ kg·m ²	0.0019		
Electrical time constant	ms	(0.29)		
Mechanical time constant	ms	1.5		
Power rate	kW/s	5.3		
Momentary max. current	A(o-p)	(5.5)		
Demagnetization current	A(o-p)	8.3		
Voltage constant per phase	$\times 10^{-3}$ V(rms)/min ⁻¹	0.99 \pm 10 %		
Excitation voltage constant	$\times 10^{-3}$ V(o-p)/min ⁻¹	2.1 \pm 10 %		
Torque constant	N·m/A(rms)	0.028 \pm 10 %		
	N·m/A(o-p)	0.020 \pm 10 %		
Phase resistance	Ω	2.1 \pm 7 %		
Phase inductance	mH	(0.62)		* Center value
Thermal class		130(B)		
Vibration class		V-15		
Paint color		Without paint		Plastic part : Gray
Mass	kg	(0.12)		
Structure		Totally-enclosed self-cooled type		Without oil seal
Supply voltage	V _{DC}	48		

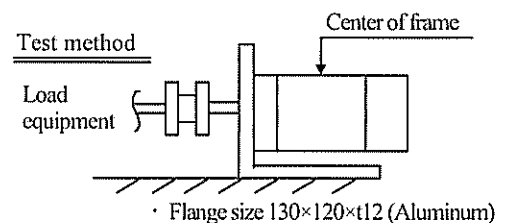
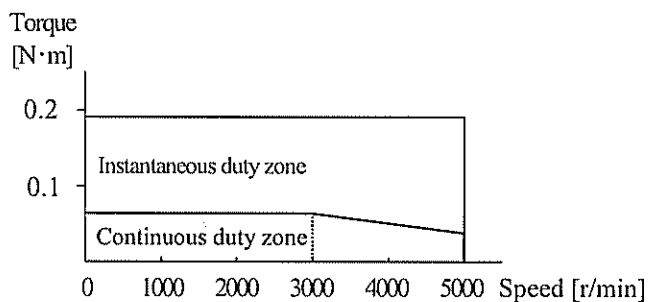
- This specification is guaranteed after combining and adjusting with the amplifier. (Representative value at 20 °C)
- Rated torque is the result that have been considered dispersions of motor specification under our measurement method.
- This motor is not a waterproof construction. (IP40)
- Set the temperature of center of frame to 65 °C or less. (When ambient temperature is 40 °C)
- Speed - Torque characteristic (Representative value)
Amplifier power supply voltage : at DC 48 V



AC Servo Motor Specification

Motor model		MMMA2ABF1A (Without brake)	
Rated output	W	20	
Rating	%	100	
Number of poles		6	
Rated speed	r/min	3000	
Max. speed	r/min	5000	
Rated torque	N·m	0.064	
Max. torque	N·m	0.191	
Rated current	A(rms)	(2.1)	
Rotor inertia	$\times 10^{-4}$ kg·m ²	0.0033	
Electrical time constant	ms	(0.31)	
Mechanical time constant	ms	1.1	
Power rate	kW/s	12.3	
Momentary max. current	A(o-p)	(8.9)	
Demagnetization current	A(o-p)	13.4	
Voltage constant per phase	$\times 10^{-3}$ V(rms)/min ⁻¹	1.2 \pm 10 %	
Excitation voltage constant	$\times 10^{-3}$ V(o-p)/min ⁻¹	2.6 \pm 10 %	
Torque constant	N·m/A(rms)	0.035 \pm 10 %	
	N·m/A(o-p)	0.025 \pm 10 %	
Phase resistance	Ω	1.4 \pm 7 %	
Phase inductance	mH	(0.45)	* Center value
Thermal class		130(B)	
Vibration class		V-15	
Paint color		Without paint	Plastic part :Gray
Mass	kg	(0.15)	
Structure		Totally-enclosed self-cooled type	Without oil seal
Supply voltage	V _{DC}	48	

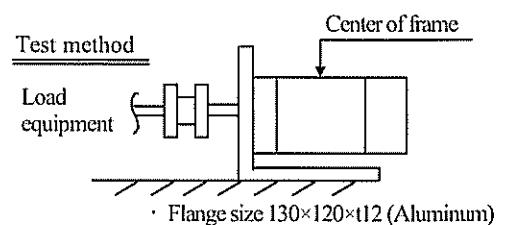
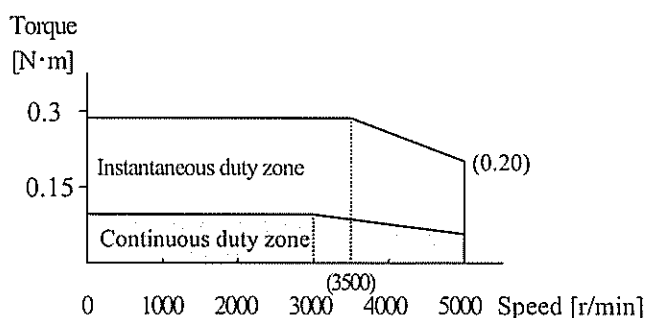
- This specification is guaranteed after combining and adjusting with the amplifier. (Representative value at 20 °C)
- Rated torque is the result that have been considered dispersions of motor specification under our measurement method.
- This motor is not a waterproof construction. (IP40)
- Set the temperature of center of frame to 75 °C or less. (When ambient temperature is 40 °C)
- Speed - Torque characteristic (Representative value)
Amplifier power supply voltage : at DC 48 V



AC Servo Motor Specification

Motor model		MMMA3ABF1A (Without brake)	
Rated output	W	30	
Rating	%	100	
Number of poles		6	
Rated speed	r/min	3000	
Max. speed	r/min	5000	
Rated torque	N·m	0.095	
Max. torque	N·m	0.286	
Rated current	A(rms)	(2.2)	
Rotor inertia	$\times 10^{-4}$ kg·m ²	0.0047	
Electrical time constant	ms	(0.35)	
Mechanical time constant	ms	0.87	
Power rate	kW/s	19.4	
Momentary max. current	A(o-p)	(9.3)	
Demagnetization current	A(o-p)	14	
Voltage constant per phase	$\times 10^{-3}$ V(rms)/min ⁻¹	1.6 \pm 10 %	
Excitation voltage constant	$\times 10^{-3}$ V(o-p)/min ⁻¹	3.5 \pm 10 %	
Torque constant	N·m/A(rms)	0.047 \pm 10 %	
	N·m/A(o-p)	0.033 \pm 10 %	
Phase resistance	Ω	1.4 \pm 7 %	
Phase inductance	mH	(0.49)	* Center value
Thermal class		130(B)	
Vibration class		V-15	
Paint color		Without paint	Plastic part : Gray
Mass	kg	(0.18)	
Structure		Totally-enclosed self-cooled type	Without oil seal
Supply voltage	V _{DC}	48	

- This specification is guaranteed after combining and adjusting with the amplifier. (Representative value at 20 °C)
- Rated torque is the result that have been considered dispersions of motor specification under our measurement method.
- This motor is not a waterproof construction. (IP40)
- Set the temperature of center of frame to 85 °C or less. (When ambient temperature is 40 °C)
- Speed - Torque characteristic (Representative value)
Amplifier power supply voltage : at DC 48 V



Do NOT scale the drawings.
instead rely on the dimensions
and their definitions

Opponent connector (No belongings)

Motor connector (AMP)

Cap : 172159-1
Socket: 170362-1
or 170366-1

Detector connector (AMP)

Cap : 172161-1
Socket: 170361-1
or 170365-1

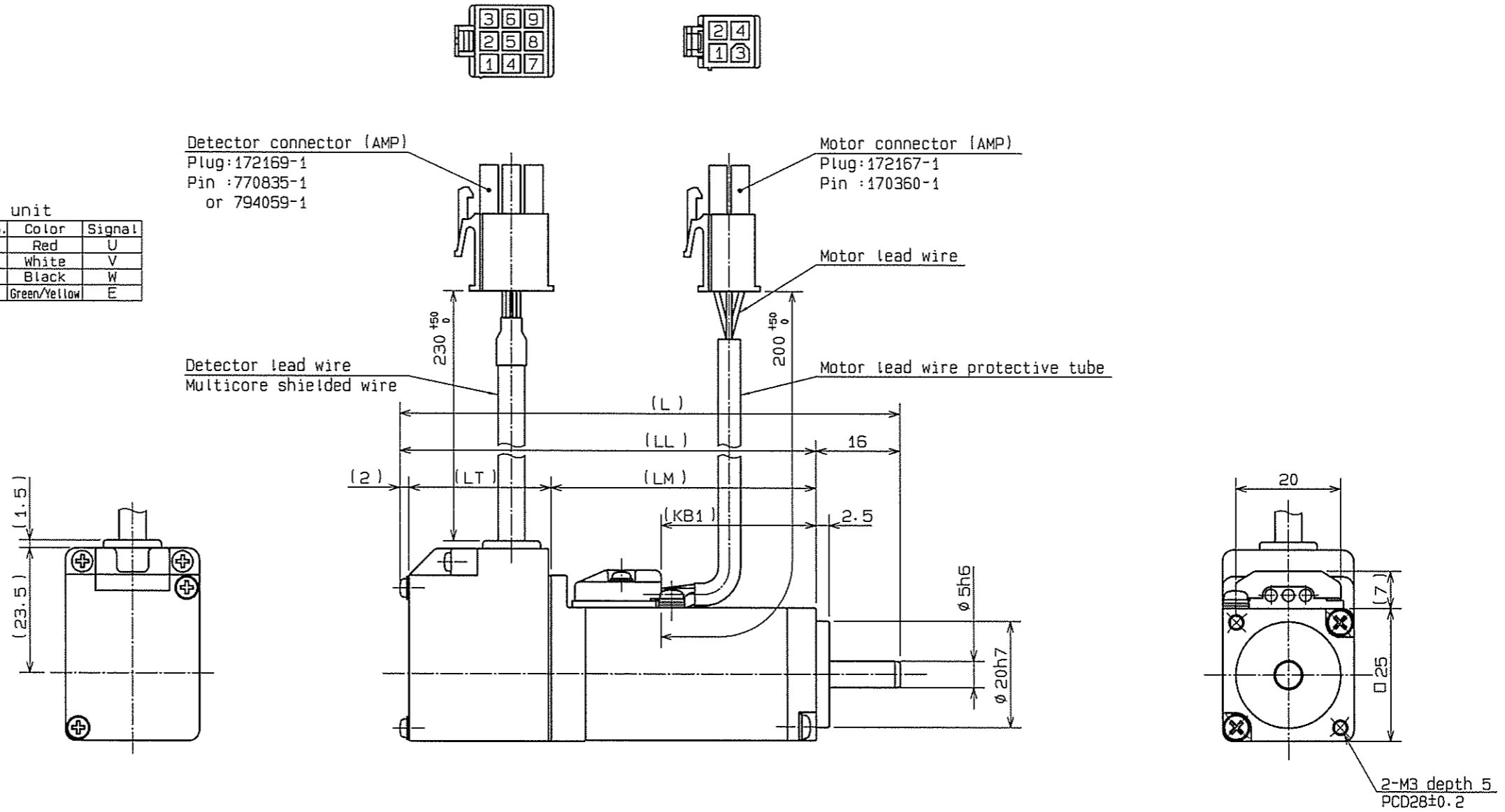
Rotary encoder unit

PIN No.	Color	Signal
1	Red	BAT +
2	Pink	BAT -
3	Shield	FG
4	Sky blue	PS (SD)
5	Violet	PS (SD)
6	—	NC
7	White	E5 V
8	Black	E0 V
9	—	NC

※Absolute encoder
20 bit

Motor unit

PIN No.	Color	Signal
1	Red	U
2	White	V
3	Black	W
4	Green/Yellow	E



Model	Output (W)	L	LL	LM	LT	KB1
MMA1ABF1A	10	76	60	31	27	10
MMA2ABF1A	20	86	70	41	27	20
MMA3ABF1A	30	96	80	51	27	30

- NOTES 1. The assembling precision conforms to the Japan Machine Tool Association Standard (MAS402-1981). (TIR value)
 ·Shaft end runout: 0.03 (shaft exit middle)
 ·Squareness of flange face to shaft: 0.08 (∅28)
 ·Eccentricity of flange fitting outside diameter to shaft: 0.06 (middle of spigot)
2. A motor is mounted in a field with flatness of 0.05 mm or less.
 3. The screwed depth of motor mounting bolt is less than 5 mm.
 4. Make sure that the cables are not subjected to stresses due to external bending forces or self-weight at the cable outlets or connections.

CLASS E
SVM
TRACE MIYAZAKI 2016/04/21

Scale	Panasonic Corporation			Agreement	Model	MMA□ABF1A
free	3rd Angle System	Unit:mm			Name	OUTLINE DRAWING
Designed	Drawn	Checked	Checked	Checked	No.	SX-DSV0310301
MIYAZAKI	MIYAZAKI	Nishio		Kira		
2016/04/21	2016/04/21	2016/4/21		2016/4/21		