



Motion Control Systems



**STEPPING MOTORS
CATALOGUE**

SANYO DENKI **SANMOTION**
STEPPING SYSTEMS

STEPPING MOTORS catalogue

SANYO DENKI

SANMOTION
STEPPING SYSTEMS



Warning / Attenzione

- The sole purpose of this catalogue is as a general introduction to our products, in order to allow an orientation as well as a choice among them. Detailed information concerning limitations and installation/utilization procedures are described in the manuals relating to each product. It is therefore essential to strictly refer to these enclosed technical manuals for a correct use, in accordance with current standards.
- All those products for which a specific obligation is required, as per law regulation in force in the European Community countries, bear the EC marking stating they are in accordance with the related directives.
- All products are classed as components foreseen to be integrated in a more complex machine or installation by a professional assembler, expert in the field of motor drives and in their related problems. Only a professional assembler can install and put in service this component. The necessary installation recommendations are included in the technical manuals.
- R.T.A. reserves the right to modify the products at any time and without prior notice (including, but not limited to, characteristics, availability and prices).
- *Unico scopo di questo catalogo è una presentazione generale dei prodotti atta a consentire un orientamento e una scelta tra gli stessi. Informazioni precise e dettagliate in merito alle limitazioni e modalità di installazione ed uso sono riportate nei manuali tecnici relativi ai singoli prodotti. Pertanto, per un loro uso corretto e conforme alle normative in vigore, è indispensabile fare riferimento a tali manuali tecnici.*
- *Tutti quei prodotti per i quali vi è obbligo specifico, ai sensi delle disposizioni di legge vigenti nei paesi della Comunità Europea, recano la marcatura CE attestante la conformità alle direttive che li riguardano.*
- *Tutti i prodotti riportati nel catalogo sono componenti atti ad essere integrati in apparecchiature o macchine più complesse. La loro installazione e messa in servizio deve essere fatta da un assemblatore professionale competente nel settore degli azionamenti per motori e delle loro problematiche. Le necessarie prescrizioni e indicazioni per la installazione sono incluse nei manuali tecnici.*
- *R.T.A. si riserva il diritto di apportare modifiche ai prodotti (inclusendo, senza limitazione alcuna, caratteristiche, disponibilità e prezzi) in qualsiasi momento e senza preavviso.*

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R.T.A. GROUP



R.T.A. - HEADQUARTERS



R.T.A. DEUTSCHLAND

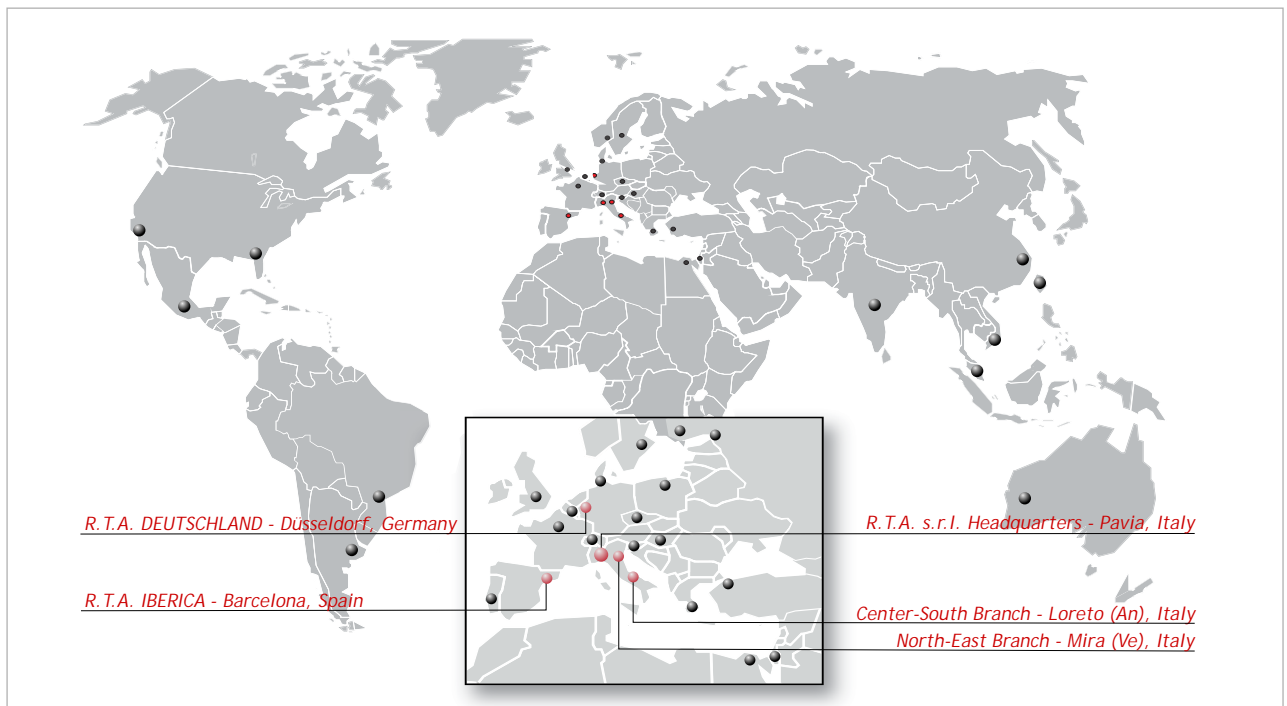


R.T.A. IBERICA

- R.T.A. Group is a leading network of companies in the motion control industry. It is number one in Italy in the stepping systems market and number three in Europe in the stepping motor drives segment.
[Source: IMS Research 2012]
- The Group is based on three operational companies: the headquarters, R.T.A. s.r.l. (ITALY), founded in 1976, R.T.A. Deutschland GmbH (GERMANY), founded in 2001 and R.T.A. IBERICA - Motion Control Systems S.L. (SPAIN), founded in 2008.
- R.T.A. has been producing stepping motor drives since 1976: since then more than 750.000 stepping motor drives have been sold in Italy and in more than 39 countries worldwide.
- Production and sales process quality is guaranteed by a Quality Assurance System certified under the UNI EN ISO 9001 (TUV-50 100 2153) Norm.
- Over time, R.T.A. product line has been enriched through the creation of a partnership with SANYO DENKI, a leading Japanese company producing stepping motors, brushless systems and fans. The Group has been its Italian sole distributor since 1989, while distributorship has been granted in 2001 for Germany and in 2008 for Spain.

R.T.A. WORLDWIDE

- Since its origins, the Group has always had a strong commitment for international business; that was the reason leading to the decision of opening direct branches in Germany and Spain.
- R.T.A. is also active worldwide through a wide network of distributors, composed by 29 companies operating in more than 39 countries.



R&D, PRODUCTION AND WAREHOUSE

R&D AND FIELD APPLICATION



- More than 30-years experience in the motion control industry
- 6 engineers fully dedicated to R&D
- 3 full-time field application engineers

STEPPING MOTOR DRIVES PRODUCTION



- More than 40.000 stepping motor drives produced yearly
- More than 750.000 drives sold since 1976
- Computerized testing line: every single drive is tested twice, by two different operators, guaranteeing a very high reliability
- Warranty: 24 months

INDUSTRIAL STRENGTH



- Wide warehouse of SANYO DENKI products:
 - more than 50.000 stepping motors
 - more than 3.000 AC servosystems
 - more than 5.000 cooling fans
- Very short time-to-market: 97% of orders is processed within one week from order.

Website: www.almahirmachinery.com



- A wide selection of stepping motor drives available.
- SANYO DENKI stepping motors with flange size from 28 mm up to 106 mm and with holding torque from 12.5 Ncm to 2460 Ncm
- SANYO DENKI cooling fans with frame size from 36 mm to 172 mm.



MAIN PRODUCTION SITES



Kangawa Works (Japan)



Subic Works (Philippines)

■ Total Production capacity: 310,000 stepping motors/month

■ Main Factories:

- Kangawa (Japan) Works since 2009
- Subic (Philippines) Works since 2000



SANYO DENKI BENEFITS



■ High Reliability & Quality

- Sound experience in manufacturing since 1959
- ISO 9001 & 14001 certification
- Strong vertical integration and focus on process control

■ Factory Support & Flexibility

- Large production volume: 310 000 motors/month
- Machine based assembling
- Through process control & quality checks

■ Technology Center

- SANYO DENKI'S main product research and development facility
- More than 300 Engineers
- Since 1997



Acoustic radio wave anechoic chamber



Laboratories



Production line



Design rooms

SANYO DENKI & R.T.A. STEPPING MOTORS OVERVIEW

■ SANYO DENKI experience and skills collected in over 80 years of activity in the motion control sector and R.T.A.'S 30 years of activity are able to offer a wide range of motors characterized by high performances:

- high quality and reliability
- low acoustic noise
- excellent thermal performance
- very large stock of motors, always available in our warehouse

■ *Le competenze di SANYO DENKI accumulate in oltre 80 anni di attività nel settore del motion control unite all'esperienza trentennale di R.T.A. hanno permesso di selezionare una vasta gamma di motori caratterizzati da alte prestazioni:*

- *alta qualità ed affidabilità*
- *bassa rumorosità acustica*
- *ottima performance da un punto di vista termico*
- *consistente stock di motori sempre disponibili a magazzino*

□ 28mm ————— FLANGE SIZE ————— □ 106.4mm



12.5 Ncm ————— HOLDING TORQUE ————— 2460 Ncm

R.T.A. PRODUCT LINES: STEPPING MOTORS & STEPPING MOTORS WITH ENCODER

■ STEPPING MOTORS

- **STANDARD, H & SH SERIES:**
Motors with flange size from 1.1" (NEMA 11) up to 4.2" (NEMA 42) with holding torque from 12.5 Ncm to 24.6 Nm.
- **SM SERIES:**
Motors with flange size 3.4" (NEMA 34), at high torque (from 3.6 Nm to 9.2 Nm).

■ MOTORI PASSO PASSO

- **SERIE H, SH & STANDARD:**
Motori con flangia da 1.1" (NEMA 11) fino a 4.2" (NEMA 42) con coppie di tenuta da 12.5 Ncm a 24.6 Nm.
- **SERIE SM:**
Motori con flangia 3.4" (NEMA 34), ad alta intensità di coppia (da 3.6 Nm a 9.2 Nm).

■ STEPPING MOTORS WITH ENCODER

- Motors with flange size: 42, 56, 60 & 85.5 mm, holding torque from 0.5 Nm to 9.2 Nm.
- Standard encoder resolution: 400 cycles per revolution (CPR). Also available upon request 500 & 1000 CPR.

■ MOTORI PASSO PASSO CON ENCODER

- Motori con flangia: 42, 56, 60 & 85.5 mm, coppie erogabili da 0.5 Nm a 9.2 Nm.
- Risoluzione standard encoder: 400 cicli/giro. Disponibile anche su richiesta con risoluzione da 500 & 1000 cicli/giro.

STANDARD, H & SH SERIES



- High performance in terms of torque and power.
 - High torque/inertia ratios.
 - Low acoustic noise.
 - Limited vibrations generated by the motor body.
 - Extremely performing thermal behaviour.
 - Optimized construction for a better exploitation of the advantages in terms of precision and noiselessness offered by microstepping drives.
 - H and STANDARD stepping motors include: terminal box and IP55 protection degree models.
- *Elevate prestazioni in termini di coppia e di potenza.*
 - *Elevati rapporti coppia/inerzia.*
 - *Bassa rumorosità acustica.*
 - *Limitate vibrazioni generate dal corpo motore.*
 - *Ottime performance da un punto di vista termico.*
 - *Costruzione ottimizzata per meglio sfruttare i vantaggi in termini di precisione e silenziosità offerti da azionamenti ad alto frazionamento di passo.*
 - *Tra i nostri prodotti disponibili: modello con terminal box e grado di protezione IP55.*

SM SERIES



- The best performance in terms of torque and power.
 - Optimized for usage with drives with any type of power supply, also directly from the main (230 VAC).
 - Insulation voltage 250 VAC.
 - Class F insulation.
 - Optimized thermal and acoustic efficiency.
 - Shaft with 14 mm diameter: robust and able to bear high radial loads.
 - UL and CSA marking.
- *Prestazioni ancora più elevate in termini di coppia e di potenza.*
 - *Costruzione ottimizzata per l'utilizzo con qualsiasi tipo di alimentazione, anche diretta da rete (230 VAC).*
 - *Tensione di isolamento 250 VAC.*
 - *Classe di isolamento F.*
 - *Rendimento termico ed acustico ulteriormente ottimizzato.*
 - *Albero di diametro 14 mm in grado di sostenere elevati carichi radiali.*
 - *Marchatura UL e CSA.*

SPECIAL REQUIREMENTS & ACCESSORIES



- Versions in IP65 available
Versioni in IP65 disponibili



- Versions with brake available
Versioni con freno disponibili



- Gearboxes available
Riduttori disponibili

(contact R.T.A. for more details / *contattare R.T.A per maggiori dettagli*)

MOTORS WITH ENCODER OVERVIEW



- All based on SANYO DENKI stepping motors
- Flange size: 42, 56, 60 & 85.5 mm
- Holding torque: from 0.5 to 9.0 Nm
- Standard signal: DIFFERENTIAL (SINGLE-ENDED version available)

- *Tutti gli encoder sono assemblati su motori passo passo SANYO DENKI*
- *Flangia: 42, 56, 60 & 85.5 mm*
- *Coppie erogabili: da 0.5 a 9.0 Nm*
- *Segnale di uscita: DIFFERENZIALE (Versione SINGLE-ENDED disponibile)*



- High flexibility in coupling with R.T.A. drives
- All motors with encoder are mounted and tested by R.T.A., following rigorous standards in accordance with R.T.A. best practices developed over more than 30 years of activity.

- *Massima versatilità nell'accoppiamento a driver R.T.A.*
- *Tutti i motori con encoder sono montati e testati da R.T.A., seguendo rigorose norme in conformità con le migliori pratiche sviluppate da R.T.A. in più di 30 anni di attività.*

ENCODER FEATURES



- Standard encoder resolution: 400 CPR (also available upon request 500 & 1000 CPR)
- Standard signal: DIFFERENTIAL (SINGLE-ENDED version available)
- INDEX versions available upon request

- *Risoluzione standard encoder: 400 cicli/giro (disponibili anche su richiesta 500 & 1000 cicli/giro)*
- *Segnale di uscita : DIFFERENZIALE (Versione SINGLE-ENDED disponibile)*
- *Disponibili su richiesta versioni con tacca di zero (INDEX)*



Stepping motors table of contents

H, SH, SM & STANDARD Series SANYO DENKI Stepping Motors	HOLDING TORQUE COPPIA DI TENUTA (Ncm.)	FLANGE SIZE DIMENSIONI FLANGIA (mm.)	LENGTH LUNGHEZZA (mm.)	CURRENT CORRENTE (Amp)	TECHNICAL DATA DATI TECNICI (page/pagina)	VERSION WITH ENCODER VERSIONE CON ENCODER
SIZE 1.1" - □ 28 mm.						
SH2285-5271	14.5	□ 28	51.5	0.70*	12	
SIZE 1.7" - □ 42 mm.						
103-546-55500	12.5	□ 42	32.5	0.20	13	
103-546-5342	19	□ 42	32.5	0.42*	14	
103-547-52500 (103-547-52300)	25	□ 42	36.5	0.70*	15	
103-H5208-0483	42	□ 42	39.0	0.90*	16	
103-H5210-4240	51	□ 42	48.0	1.00	17	
103-H5210-4541 (103-H5210-4512)	51	□ 42	48.0	2.00	18	■ Pag.60
SIZE 50 mm. - □ 50 mm.						
103-H6701-0140 (103-H6701-0113)	38	□ 50	39.8	0.70*	19	
103-H6703-0440	68	□ 50	51.3	1.40*	20	
SIZE 2.2" - □ 56 mm.						
103-H7121-0440	49	□ 56	41.8	1.50*	21	
103-H7123-0140	110	□ 56	53.8	0.70*	22	
103-H7123-0440	110	□ 56	53.8	1.50	23	
103-H7123-5040 (103-H7123-5010)	85	□ 56	53.8	2.00	24	
103-H7123-0740 (103-H7123-0710)	110	□ 56	53.8	2.20*	25	
103-H7123-1749 (103-H7123-1711)	110	□ 56	53.8	4.00	26	■ Pag.61
103-H7126-0140	165	□ 56	75.8	0.75*	27	
103-H7126-0740 (103-H7126-0710)	165	□ 56	75.8	2.20*	28	
103-H7126-1740 (103-H7126-1710)	165	□ 56	75.8	4.00	29	■ Pag.62
103-H7126-6640 (103-H7126-6610)	165	□ 56	75.8	5.60	30	
SIZE 60 mm. - □ 60 mm.						
103-H7823-0740	300	□ 60	85.8	2.20*	31	
103-H7823-1740 (103-H7823-1714)	300	□ 60	85.8	4.00	32	■ Pag.63
SIZE 3.4" - Ø 85.8 mm.						
103-845-6741 (103-845-6711)	510	Ø 85.8	130.0	9.50	33	
103-845-67S1	510	Ø 85.8	133.0	9.50	34	
103-845-67S41	510	Ø 85.8	153.0	9.50	35	
103-H8221-6241 (103-H8221-6211)	300	Ø 85.8	62.0	6.00	36	
103-H8221-62S41	300	Ø 85.8	82.9	6.00	37	
103-H8222-6340 (103-H8222-6310)	560	Ø 85.8	92.2	6.00	38	
103-H8223-6540 (103-H8223-6510)	790	Ø 85.8	125.9	9.00	39	
SIZE 3.4" - □ 85.5 mm.						
SM 2861-5055 (SM 2861-5025)	360	□ 85.5	66.0	2.00	40	■ Pag.67
SM 2861-5255 (SM 2861-5225)	360	□ 85.5	66.0	6.00	41	■ Pag.64
SM 2862-5055	700	□ 85.5	96.5	2.00	42	
SM 2862-5155 (SM 2862-5125)	700	□ 85.5	96.5	4.00	43	■ Pag.68
SM 2862-5156	700	□ 85.5	128.4	4.00	44	
SM 2862-5255 (SM 2862-5225)	700	□ 85.5	96.5	6.00	45	■ Pag.65
SM 2863-5155 (SM 2863-5126)	920	□ 85.5	127.0	4.00	46	■ Pag.69
SM 2863-5255 (SM 2863-5225)	920	□ 85.5	127.0	6.00	47	■ Pag.66
SIZE 4.2" - □ 106.4 mm.						
103-8932-6451 (103-8932-6421)	1330	□ 106.4	186.9	12.70	48	
103-8960-6551	2060	□ 106.4	245.0	14.10	49	
103-H89222-6341 (103-H89222-6311)	1620	□ 106.4	163.0	6.00	50	
103-H89222-6541	1620	□ 106.4	163.0	10.00	51	
103-H89223-6341 (103-H89223-6311)	2460	□ 106.4	221.0	6.00	52	
103-H89223-6641 (103-H89223-6611)	2460	□ 106.4	221.0	12.00	53	

NOTE: Codes between brackets refer to double shaft models.
NOTA: i codici tra parentesi si riferiscono ai modelli bialbero.

*Bipolar series connection.
*Collegamento bipolare serie.

SUGGESTED MOTOR/DRIVE COUPLING

- The following tables show suggested motor/drive coupling between SANYO DENKI stepping motors and R. T.A. Drives.
 - R.T.A. suggests contacting its commercial personnel to verify and validate the optimal motor / drive coupling.
 - PLUS E, PLUS L, PLUS ET and X-PLUS ET series drives require coupling with R.T.A. EM series motors. Ask R. T.A. for details.
 - The motors with a lower current than that provided by our drives, are not present in the following table.
- Nelle tabelle seguenti sono indicati gli accoppiamenti motore/serie di azionamenti consigliati da R. T.A.*
 - R.T.A. consiglia di contattare il proprio personale commerciale per verificare e validare l'ottimale accoppiamento fra motore e azionamento.*
 - Gli azionamenti serie PLUS E, PLUS L, PLUS ET e X-PLUS ET prevedono l'accoppiamento con motori serie EM. Contattare R. T.A. per ulteriori dettagli.*
 - I motori che hanno una corrente inferiore a quella contemplata dai nostri azionamenti, non sono presenti nella tabella sottostante.*

H, SH, SM & STANDARD Series SANYO DENKI Stepping Motors Motori passo-passo SANYO DENKI serie H, SH, SM e Standard	R.T.A. Drives / Azionamenti R. T.A. *													
	BSD	CSD	CSD J	A-CSD	NDC	A-NDC	ADW	HGD	PLUSA/B	PLUS K	PLUS J	X-PLUS B	X-MIND B	X-MIND K
SIZE 1.1" - □ 28 mm.														
SH2285-5271	■	■		■	■	■		■						
SIZE 1.7" - □ 42 mm.														
103-H5208-0483	■	■		■	■	■		■						
103-H5210-4240	■	■		■	■	■	■	■						
103-H5210-4541 (103-H5210-4512)	■	■		■	■	■		■						
SIZE 50 mm. - □ 50 mm.														
103-H6701-0140 (103-H6701-0113)	■	■		■	■	■		■						
103-H6703-0440	■	■		■	■	■		■						
SIZE 2.2" - □ 56 mm.														
103-H7121-0440	■	■		■	■	■		■						
103-H7123-0140	■	■		■	■	■		■						
103-H7123-0440	■	■		■	■	■		■						
103-H7123-5040 (103-H7123-5010)	■	■		■	■	■		■						
103-H7123-0740 (103-H7123-0710)	■	■		■	■	■	■	■						
103-H7123-1749 (103-H7123-1711)		■	■	■	■	■	■	■	■	■	■			
103-H7126-0140	■	■		■	■	■		■						
103-H7126-0740 (103-H7126-0710)	■	■		■	■	■	■	■						
103-H7126-1740 (103-H7126-1710)		■	■	■	■	■	■	■	■	■	■			
103-H7126-6640 (103-H7126-6610)		■	■	■	■	■	■	■	■	■	■			
SIZE 60 mm. - □ 60 mm.														
103-H7823-0740	■						■							
103-H7823-1740 (103-H7823-1714)		■	■	■	■	■	■	■	■	■	■			
SIZE 3.4" - Ø 85.8 mm.														
103-845-6741 (103-845-6711)									■	■				
103-845-67S1									■	■				
103-845-67S41									■	■				
103-H8221-6241 (103-H8221-6211)					■	■		■	■	■	■			
103-H8221-62S41					■	■		■	■	■	■			
103-H8222-6340 (103-H8222-6310)					■	■		■	■	■	■			
103-H8223-6540 (103-H8223-6510)									■	■				
SIZE 3.4" - □ 85.5 mm.														
SM 2861-5055 (SM 2861-5025)												■	■	■
SM 2861-5255 (SM 2861-5225)					■	■	■	■	■	■	■			
SM 2862-5055												■	■	■
SM 2862-5155 (SM 2862-5125)												■	■	■
SM 2862-5156												■	■	■
SM 2862-5255 (SM 2862-5225)					■	■	■	■	■	■	■			
SM 2863-5155 (SM 2863-5126)												■	■	■
SM 2863-5255 (SM 2863-5225)					■	■	■	■	■	■	■			
SIZE 4.2" - □ 106.4 mm.														
103-H89222-6341 (103-H89222-6311)									■	■	■		■	■
103-H89223-6341 (103-H89223-6311)									■	■	■		■	■

NOTE: Codes between brackets refer to double shaft models.
NOTA: i codici tra parentesi si riferiscono ai modelli bialbero.

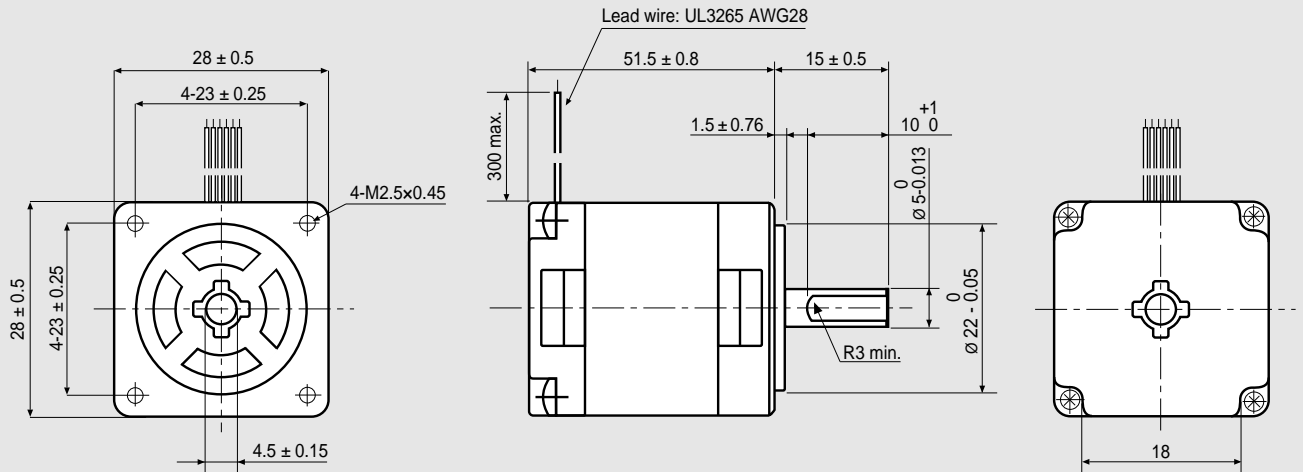
*For more info, please refer to www.rta.it
*Per ulteriori informazioni, si veda www.rta.it



SH2285-5271

SANYO DENKI
SANMOTION

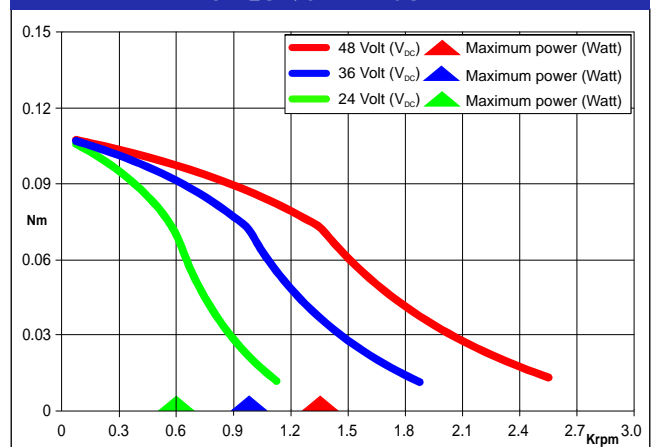
Dimensions (Unit:mm)



FEATURES

MODEL	SH2285-5271	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT (Amp)	0.7 ^(*)	
UNIPOLAR CURRENT (Amp)	1.0	
RESISTANCE (Ohm)	4.1	
INDUCTANCE (mH)	1.9	
BIPOLAR HOLDING TORQUE (Ncm)	14.5	
UNIPOLAR HOLDING TORQUE (Ncm)	11.5	
ROTOR INERTIA ($\text{Kgm}^2 \times 10^{-7}$)	22	
THEORETICAL ACCELERATION ($\text{rad} \times \text{sec}^{-2}$)	66000	
BACK E.M.F. (V/Krpm)	15	
MASS (Kg)	0.2	
LEADS CODE	IV	

TORQUE/SPEED CURVE

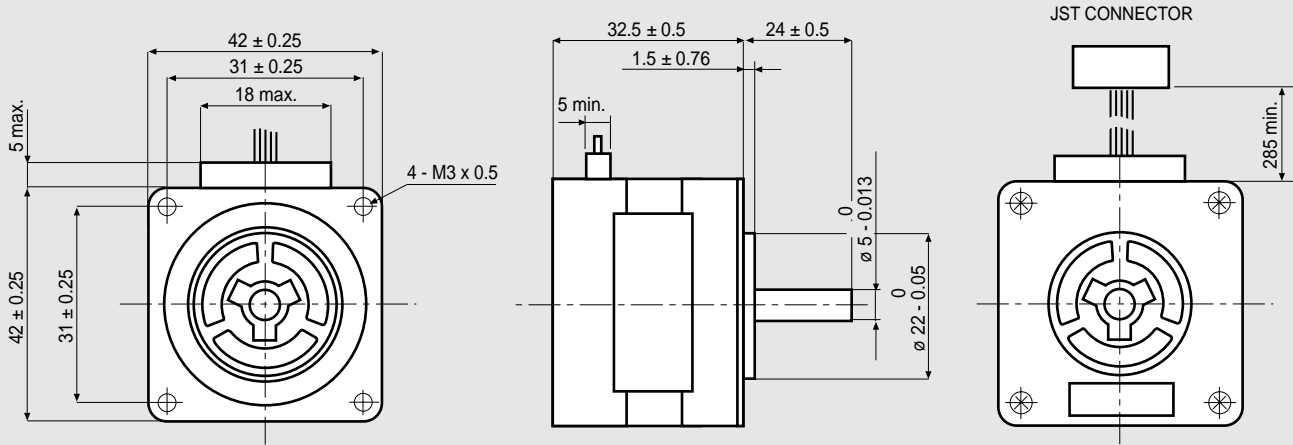


(*)Bipolar series connection.
(*)Collegamento bipolare serie.



Suggested R.T.A. driver: BSD Series, CSD/A-CSD Series, NDC/A-NDC Series, HGD Series.

Dimensions (Unit:mm)

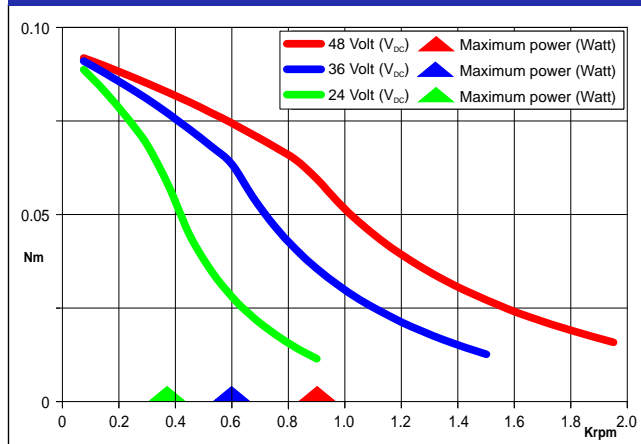


MOTOR CONNECTOR IS JST mod. EHR-4A/
EHR-6 at 4 / 6 POLES FEMALE.
FOR CONNECTION USE JST mod. B4B-EH-A/
B6B-EH-A MALE CONNECTOR.

FEATURES

MODEL	103-546-55500
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT (Amp)	0.2
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	37.5
INDUCTANCE (mH)	52
BIPOLAR HOLDING TORQUE (Ncm)	12.5
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA ($\text{Kgm}^2 \times 10^{-7}$)	20
THEORETICAL ACCELERATION ($\text{rad} \times \text{sec}^{-2}$)	63000
BACK E.M.F. (V/Krpm)	47
MASS (Kg)	0.2
LEADS CODE	V

TORQUE/SPEED CURVE

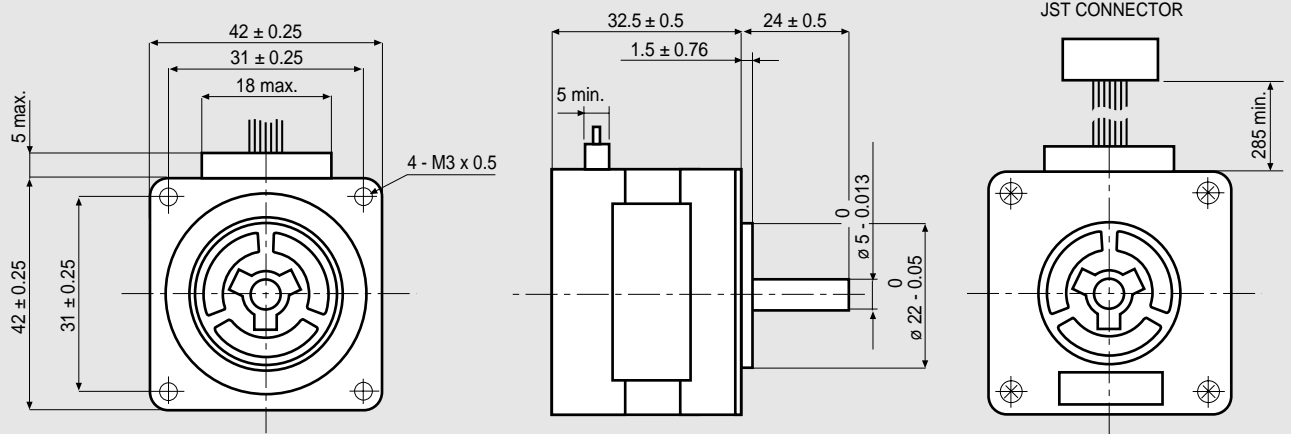


R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)



Suggested driver: contact R.T.A.

Dimensions (Unit:mm)

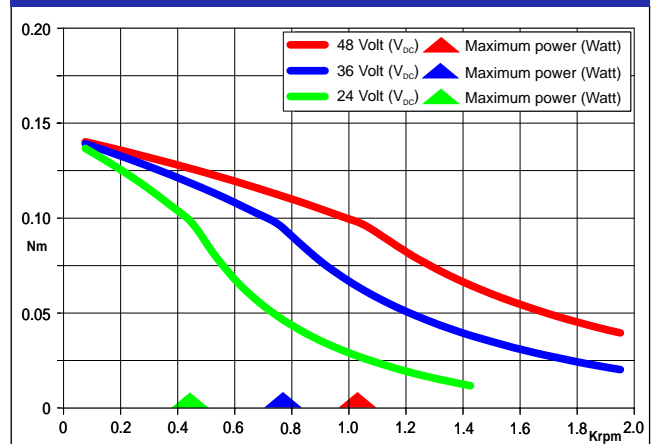


MOTOR CONNECTOR IS JST mod. EHR-4A/
EHR-6 at 4 / 6 POLES FEMALE.
FOR CONNECTION USE JST mod. B4B-EH-A/
B6B-EH-A MALE CONNECTOR.

FEATURES

MODEL	103-546-5342	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT (Amp)	0.42 ^(*)	
UNIPOLAR CURRENT (Amp)	0.6	
RESISTANCE (Ohm)	6.7	
INDUCTANCE (mH)	5.4	
BIPOLAR HOLDING TORQUE (Ncm)	19	
UNIPOLAR HOLDING TORQUE (Ncm)	14.5	
ROTOR INERTIA (Kg ^m ² x 10 ⁻⁷)	30	
THEORETICAL ACCELERATION (rad x sec. ⁻²)	63000	
BACK E.M.F. (V/Krpm)	18	
MASS (Kg)	0.2	
LEADS CODE	IV	

TORQUE/SPEED CURVE

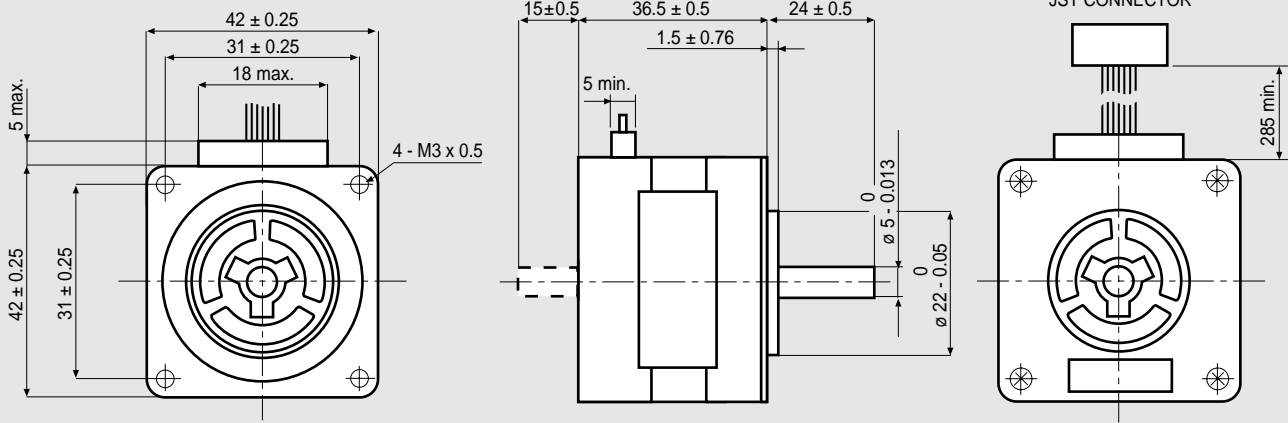


^(*)Bipolar series connection.
^(*)Collegamento bipolare serie.



Suggested driver: contact R.T.A.

Dimensions (Unit:mm)



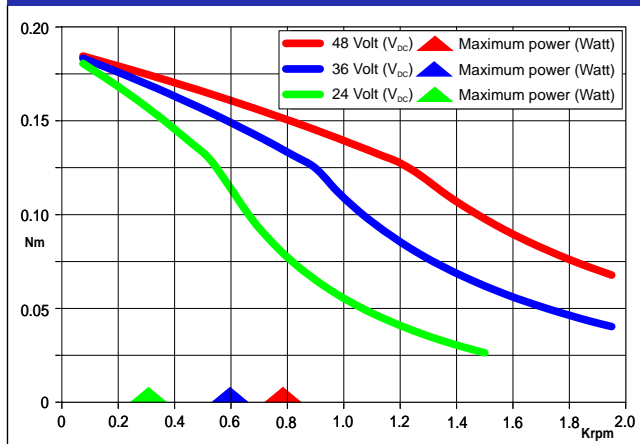
MOTOR CONNECTOR IS JST mod. EHR-4A/
EHR-6 at 4 / 6 POLES FEMALE.
FOR CONNECTION USE JST mod. B4B-EH-A/
B6B-EH-A MALE CONNECTOR.

FEATURES

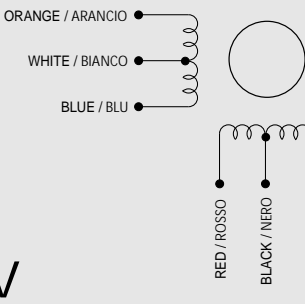
MODEL	103-547-52500 (103-547-52300)	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT	(Amp)	0.7 ^(*)
UNIPOLAR CURRENT	(Amp)	1.0
RESISTANCE	(Ohm)	3.15
INDUCTANCE	(mH)	3
BIPOLAR HOLDING TORQUE	(Ncm)	25
UNIPOLAR HOLDING TORQUE	(Ncm)	19
ROTOR INERTIA	(Kgm ² x 10 ⁻⁷)	43
THEORETICAL ACCELERATION	(rad x sec. ⁻²)	59000
BACK E.M.F.	(V/Krpm)	14
MASS	(Kg)	0.24
LEADS CODE	IV	

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE



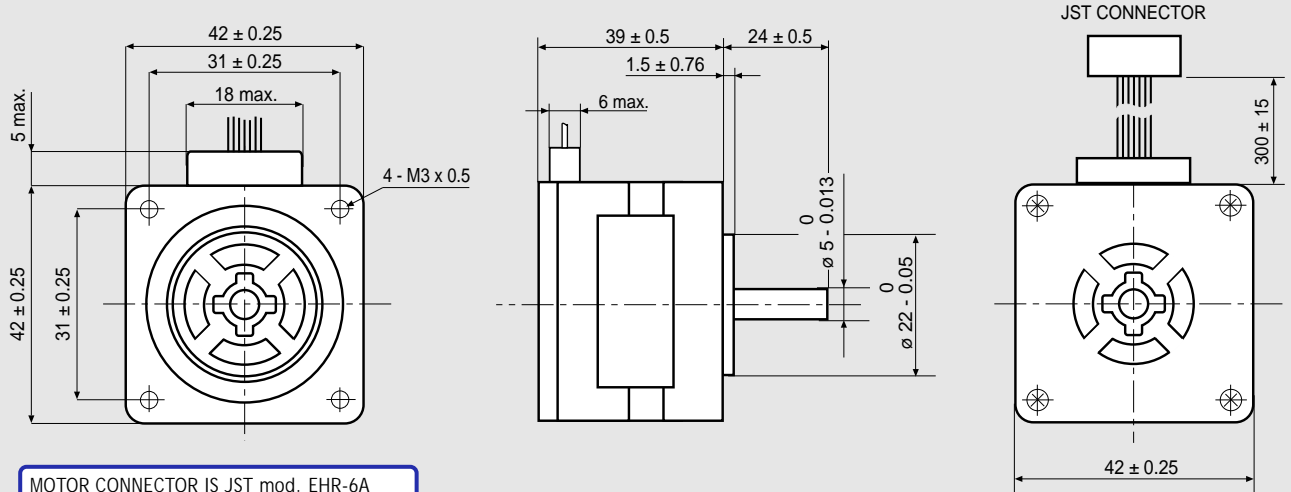
^(*)Bipolar series connection.
^(*)Collegamento bipolare serie.



IV

Suggested driver: contact R.T.A.

Dimensions (Unit:mm)

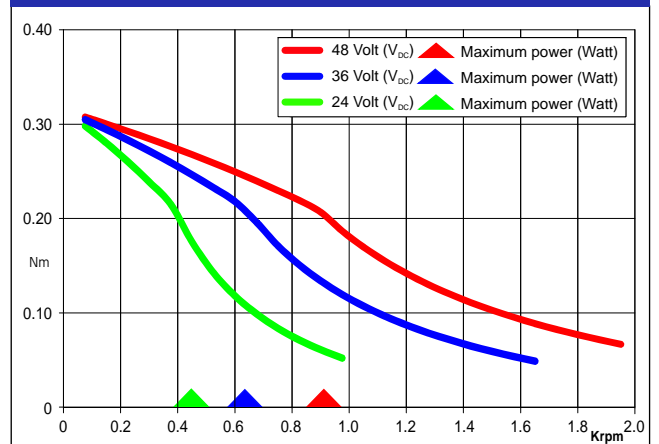


MOTOR CONNECTOR IS JST mod. EHR-6A
6 POLES FEMALE.
FOR CONNECTION USE JST
mod. B6B-EH-A MALE CONNECTOR.

FEATURES

MODEL	103-H5208-0483	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT	(Amp)	0.9 ^(*)
UNIPOLAR CURRENT	(Amp)	1.2
RESISTANCE	(Ohm)	2.9
INDUCTANCE	(mH)	3.4
BIPOLAR HOLDING TORQUE	(Ncm)	42
UNIPOLAR HOLDING TORQUE	(Ncm)	30
ROTOR INERTIA	(Kg ^m ² x 10 ⁻⁷)	56
THEORETICAL ACCELERATION	(rad x sec. ⁻²)	71000
BACK E.M.F.	(V/Krpm)	19
MASS	(Kg)	0.27
LEADS CODE	IV	

TORQUE/SPEED CURVE



^(*)Bipolar series connection.

^(*)Collegamento bipolare serie.

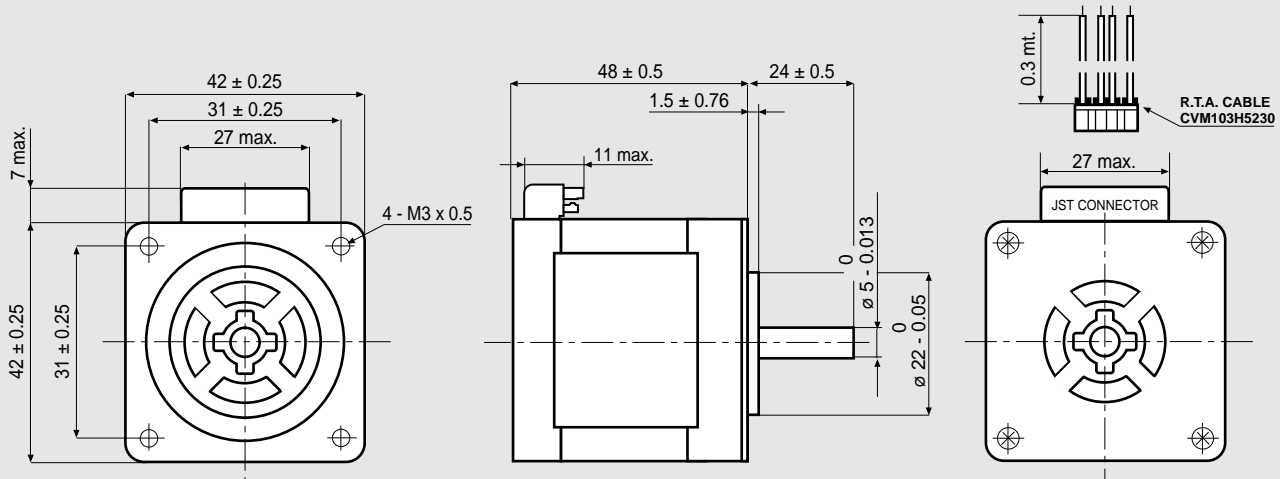


Suggested R.T.A. driver: BSD Series, CSD/A-CSD Series, NDC/A-NDC Series, HGD Series.

103-H5210-4240

SANYO DENKI
SANMOTION

Dimensions (Unit:mm)

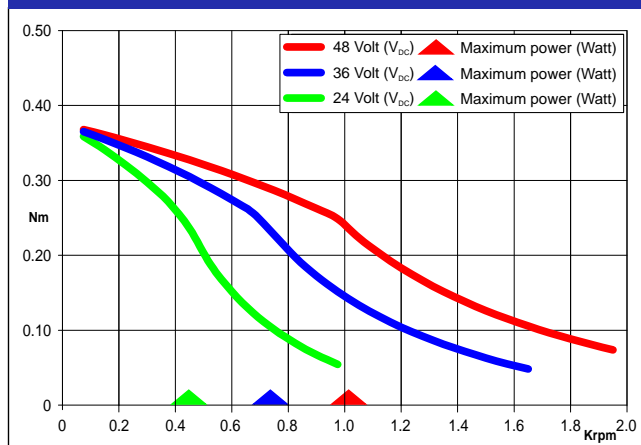


MOTOR CONNECTOR IS JST mod. B6B-EH K 6 POLES MALE.
FOR CONNECTION USE JST mod. EHR-6 FEMALE CONNECTOR AND
mod. SEH-001 T-P0.6 CONTACTS.
NOTE: 103-H5210-4240 MOTORS NEED CVM103H5230 R. T.A. CABLES.
CONTACT R. T.A. FOR FURTHER DETAILS.

FEATURES

MODEL	103-H5210-4240
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT (Amp)	1.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	4.8
INDUCTANCE (mH)	9.5
BIPOLAR HOLDING TORQUE (Ncm)	51
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA ($\text{Kgm}^2 \times 10^{-7}$)	74
THEORETICAL ACCELERATION ($\text{rad} \times \text{sec}^{-2}$)	69000
BACK E.M.F. (V/Krpm)	14
MASS (Kg)	0.35
LEADS CODE	V

TORQUE/SPEED CURVE



R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)

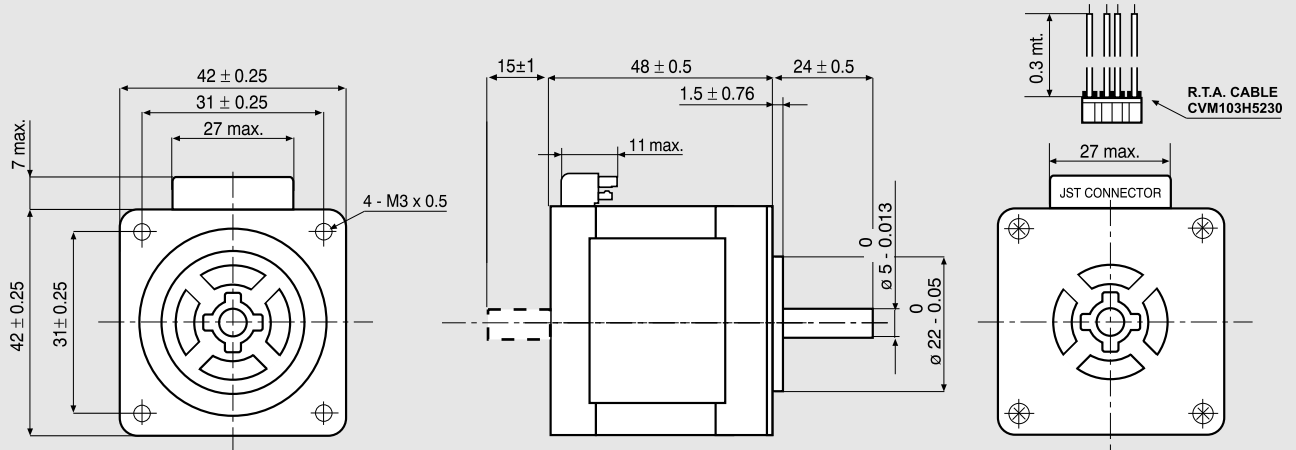


Suggested R.T.A. driver: BSD Series, CSD/A-CSD Series, NDC/A-NDC Series, ADW Series, HGD Series.

103-H5210-4541

SANYO DENKI
SANMOTION

Dimensions (Unit:mm)



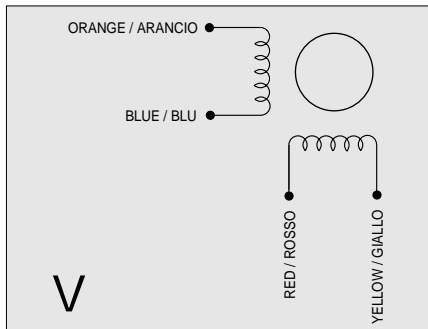
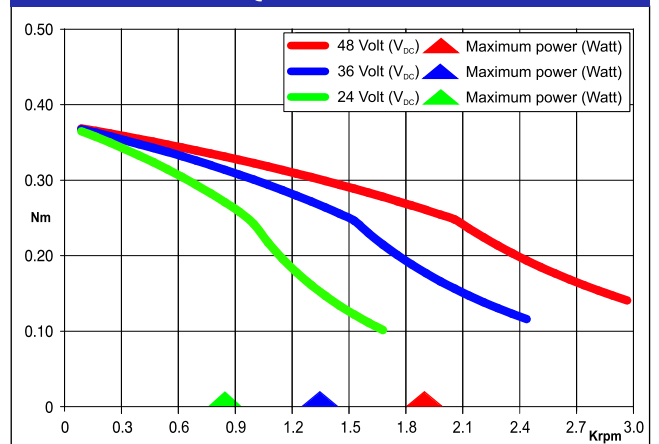
MOTOR CONNECTOR IS JST mod. B6B-EH K 6 POLES MALE.
FOR CONNECTION USE JST mod. EHR-6 FEMALE CONNECTOR AND
mod. SEH-001 T-P0.6 CONTACTS.
NOTE: 103-H5210-4541/4512 MOTORS NEED CVM103H5230 R.T.A.
CABLES. CONTACT R.T.A. FOR FURTHER DETAILS.

FEATURES

MODEL	103-H5210-4541 (103-H5210-4512)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	2.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	1.25
INDUCTANCE (mH)	2.4
BIPOLAR HOLDING TORQUE (Ncm)	51
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kg ^m 2 x 10 ⁻⁷)	74
THEORETICAL ACCELERATION (rad x sec. ⁻²)	69000
BACK E.M.F. (V/Krpm)	25
MASS (Kg)	0.35
LEADS CODE	V

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE

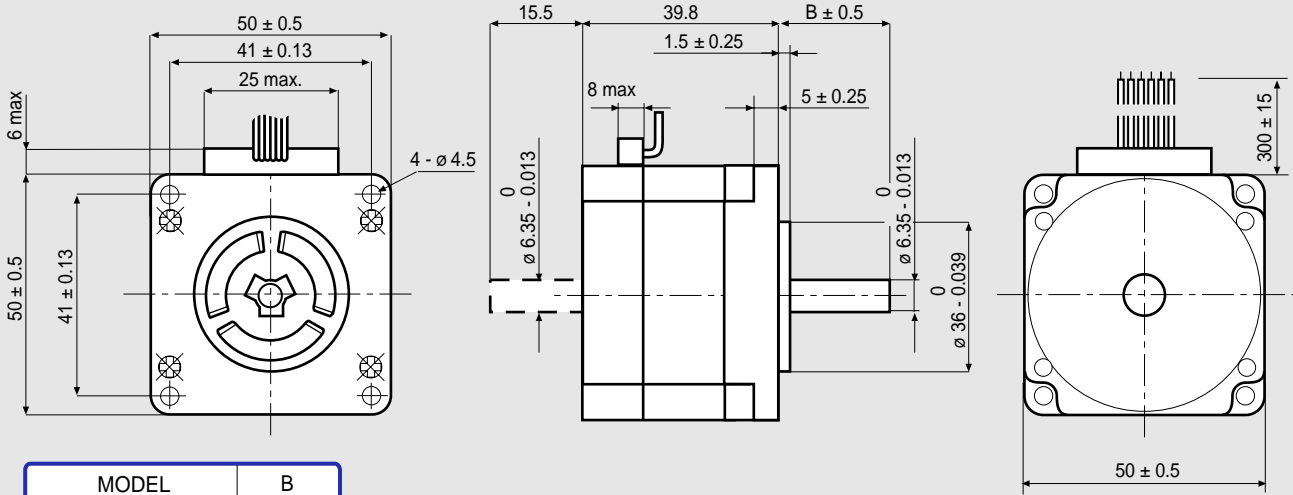


Suggested R.T.A. driver: BSD Series, CSD/A-CSD Series, NDC/A-NDC Series, HGD Series.

103-H6701-0140

SANYO DENKI
SANMOTION

Dimensions (Unit:mm)



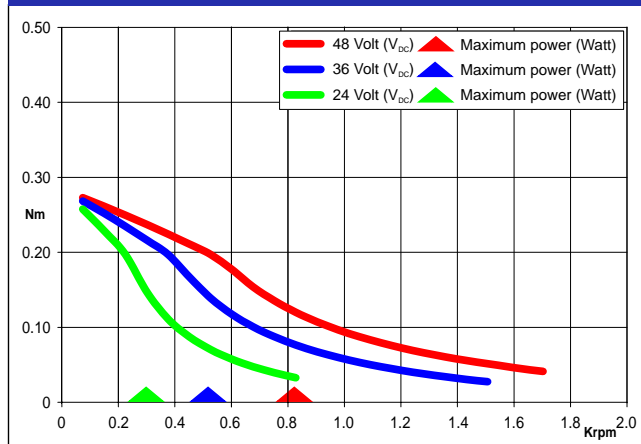
MODEL	B
103 - H6701 - 0140	20.6
103 - H6701 - 0113	28

FEATURES

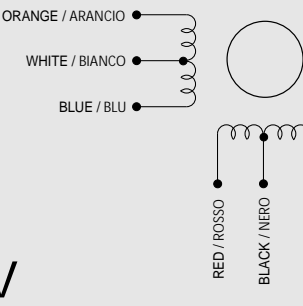
MODEL	103-H6701-0140 (103-H6701-0113)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	0.7 ^(*)
UNIPOLAR CURRENT (Amp)	1.0
RESISTANCE (Ohm)	4.3
INDUCTANCE (mH)	6.8
BIPOLAR HOLDING TORQUE (Ncm)	38
UNIPOLAR HOLDING TORQUE (Ncm)	28
ROTOR INERTIA (Kg ^m 2 x 10 ⁻⁷)	57
THEORETICAL ACCELERATION (rad x sec. ⁻²)	66000
BACK E.M.F. (V/Krpm)	20
MASS (Kg)	0.35
LEADS CODE	IV

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE

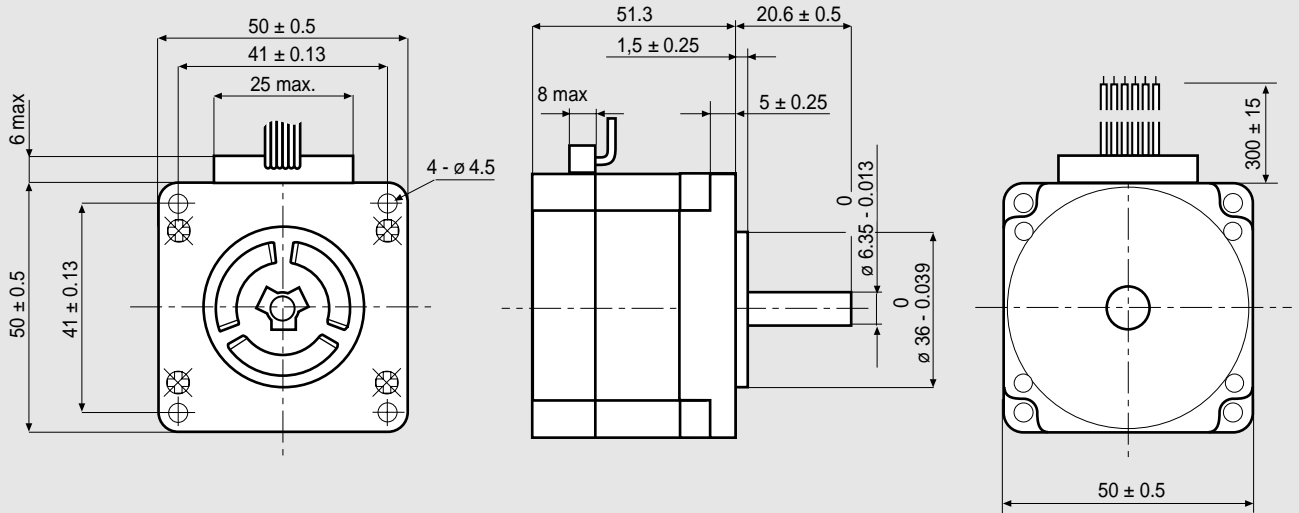


^(*)Bipolar series connection.
^(*)Collegamento bipolare serie.



Suggested R.T.A. driver: BSD Series, CSD/A-CSD Series, NDC/A-NDC Series, HGD Series.

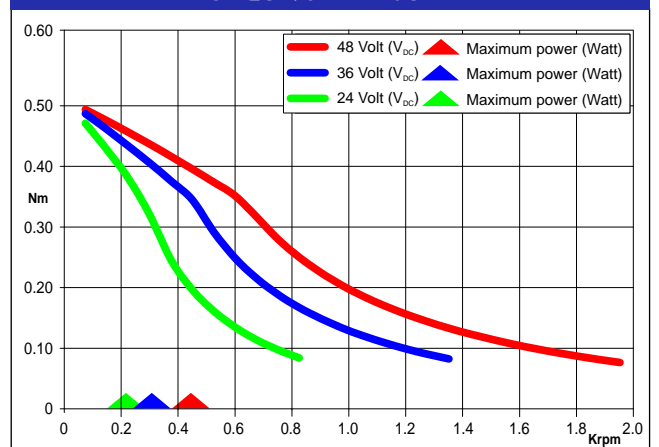
Dimensions (Unit:mm)



FEATURES

MODEL	103-H6703-0440	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT (Amp)	1.4 ^(*)	
UNIPOLAR CURRENT (Amp)	2.0	
RESISTANCE (Ohm)	1.6	
INDUCTANCE (mH)	3.2	
BIPOLAR HOLDING TORQUE (Ncm)	68	
UNIPOLAR HOLDING TORQUE (Ncm)	49	
ROTOR INERTIA ($\text{Kgm}^2 \times 10^{-7}$)	118	
THEORETICAL ACCELERATION ($\text{rad} \times \text{sec.}^{-2}$)	58000	
BACK E.M.F. (V/Krpm)	17.5	
MASS (Kg)	0.5	
LEADS CODE	IV	

TORQUE/SPEED CURVE



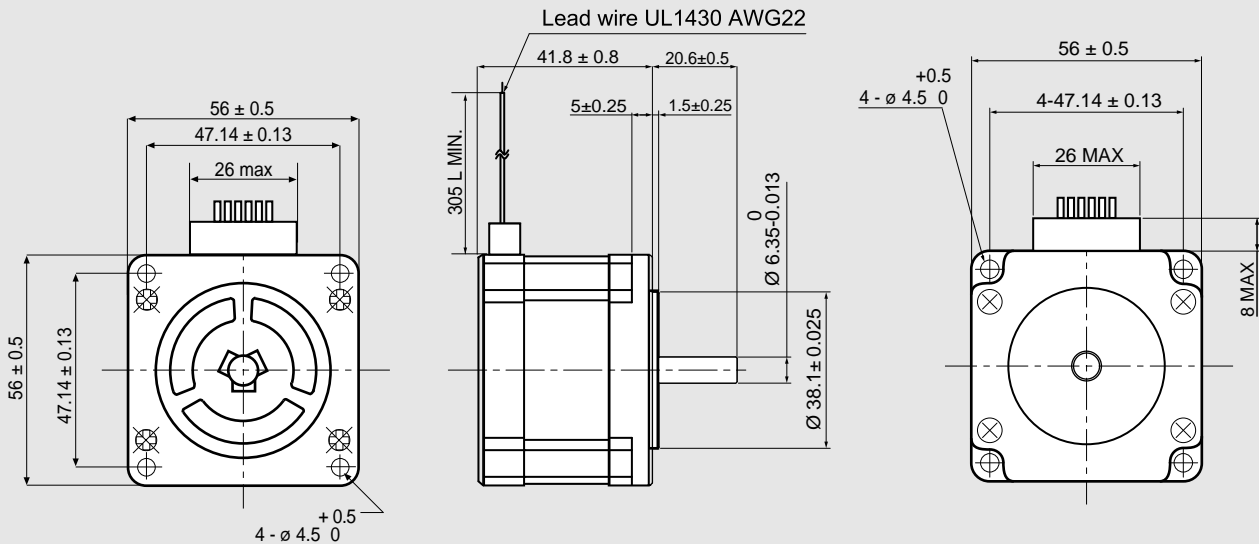
^(*)Bipolar series connection.

^(*)Collegamento bipolare serie.



Suggested R.T.A. driver: BSD Series, CSD/A-CSD Series, NDC/A-NDC Series, HGD Series.

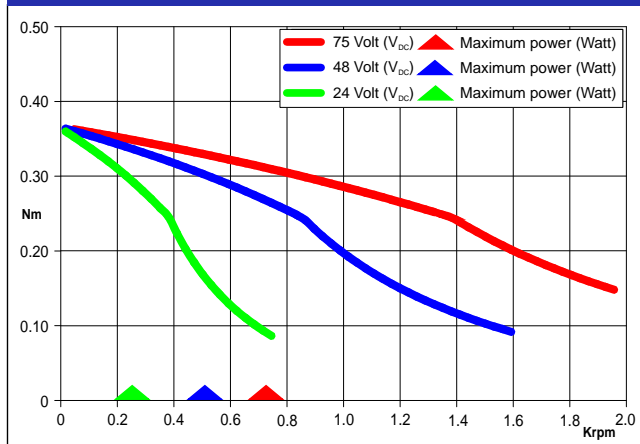
Dimensions (Unit:mm)



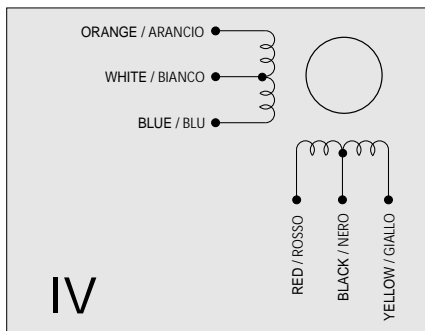
FEATURES

MODEL	103-H7121-0440	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT	(Amp)	1.5 ^(*)
UNIPOLAR CURRENT	(Amp)	2.0
RESISTANCE	(Ohm)	1.25
INDUCTANCE	(mH)	1.9
BIPOLAR HOLDING TORQUE	(Ncm)	49
UNIPOLAR HOLDING TORQUE	(Ncm)	39
ROTOR INERTIA	(Kg $m^2 \times 10^{-7}$)	100
THEORETICAL ACCELERATION	(rad x sec. ⁻²)	50000
BACK E.M.F.	(V/Krpm)	20
MASS	(Kg)	0.47
LEADS CODE	IV	

TORQUE/SPEED CURVE

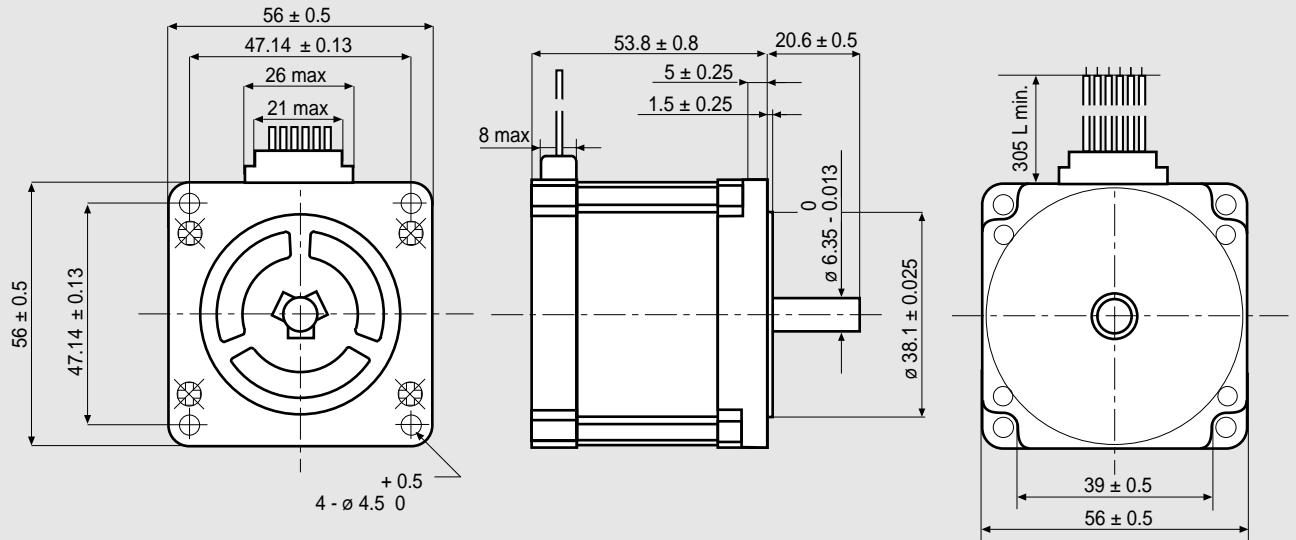


^(*)Bipolar series connection.
^(*)Collegamento bipolare serie.



Suggested R.T.A. driver: BSD Series, CSD/A-CSD Series, NDC/A-NDC Series, HGD Series.

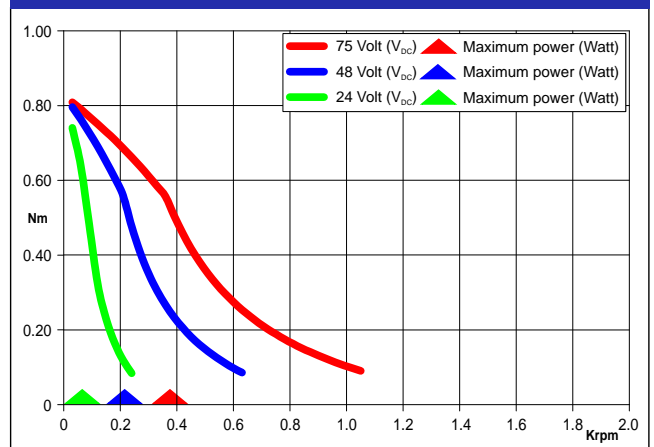
Dimensions (Unit:mm)



FEATURES

MODEL	103-H7123-0140	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT	(Amp)	$0.7^{(*)}$
UNIPOLAR CURRENT	(Amp)	1.0
RESISTANCE	(Ohm)	6.7
INDUCTANCE	(mH)	15
BIPOLAR HOLDING TORQUE	(Ncm)	110
UNIPOLAR HOLDING TORQUE	(Ncm)	85
ROTOR INERTIA	($\text{Kgm}^2 \times 10^{-7}$)	210
THEORETICAL ACCELERATION	($\text{rad} \times \text{sec}^{-2}$)	50000
BACK E.M.F.	(V/Krpm)	60
MASS	(Kg)	0.65
LEADS CODE	IV	

TORQUE/SPEED CURVE

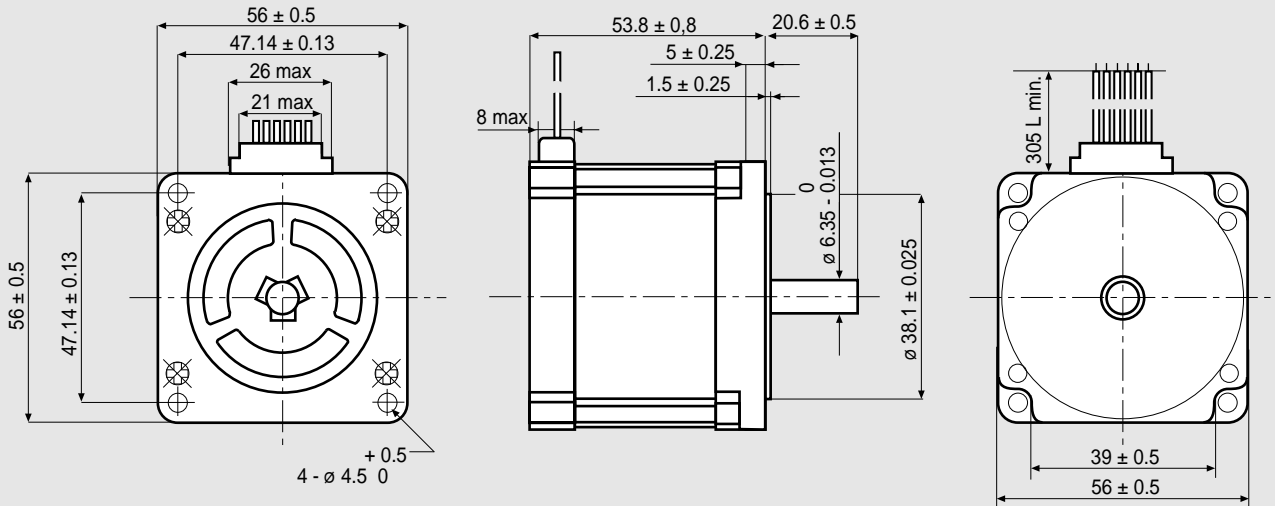


(*)Bipolar series connection.
(*)Collegamento bipolare serie.



Suggested R.T.A. driver: BSD Series, CSD/A-CSD Series, NDC/A-NDC Series, HGD Series.

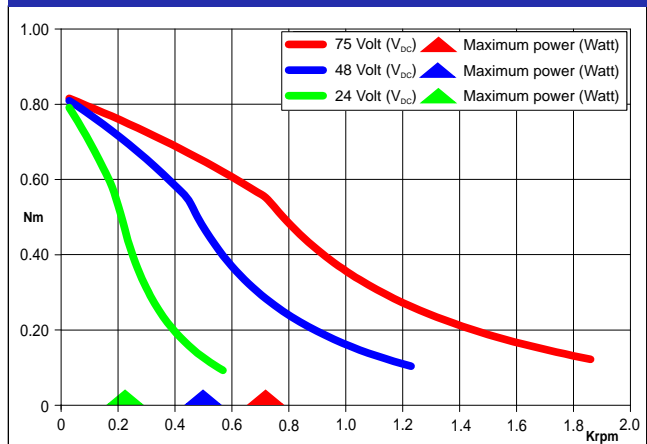
Dimensions (Unit:mm)



FEATURES

MODEL	103-H7123-0440	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT	(Amp)	1.5 ^(*)
UNIPOLAR CURRENT	(Amp)	2.0
RESISTANCE	(Ohm)	1.6
INDUCTANCE	(mH)	3.8
BIPOLAR HOLDING TORQUE	(Ncm)	110
UNIPOLAR HOLDING TORQUE	(Ncm)	85
ROTOR INERTIA	(Kgm ² x 10 ⁻⁷)	210
THEORETICAL ACCELERATION	(rad x sec. ⁻²)	50000
BACK E.M.F.	(V/Krpm)	31
MASS	(Kg)	0.65
LEADS CODE	IV	

TORQUE/SPEED CURVE



(*)Bipolar series connection.
(*) Collegamento bipolare serie.

ORANGE / ARANCIO

WHITE / BIANCO

BLUE / BLU

RED / ROSSO

BLACK / NERO

YELLOW / GIALLO

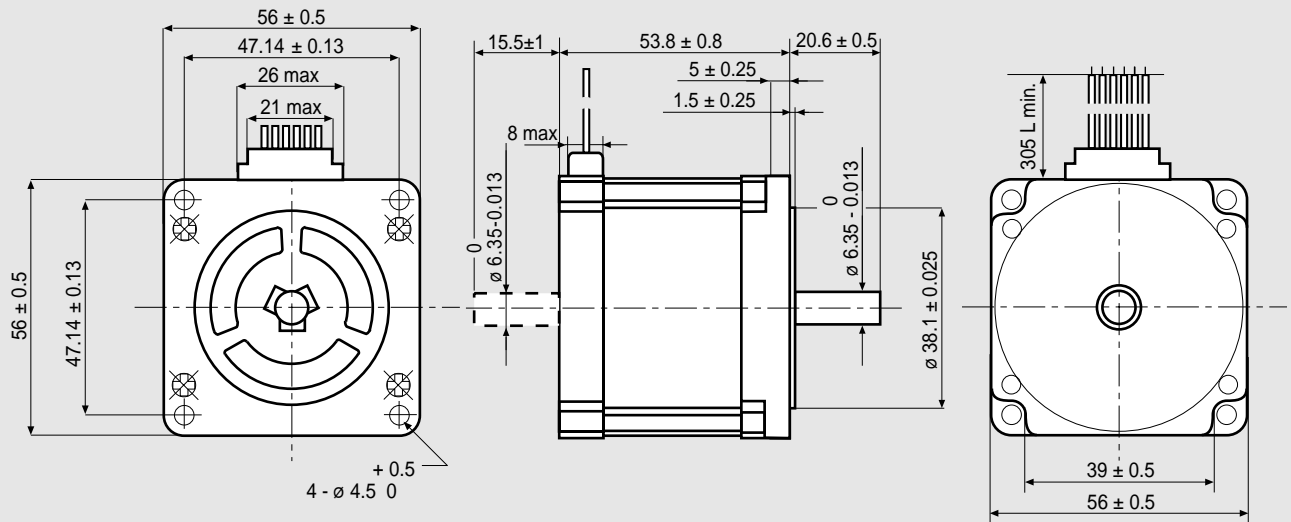
IV

Suggested R.T.A. driver: BSD Series, CSD/A-CSD Series, NDC/A-NDC Series, HGD Series.

103-H7123-5040

SANYODENKI
SANMOTION

Dimensions (Unit:mm)

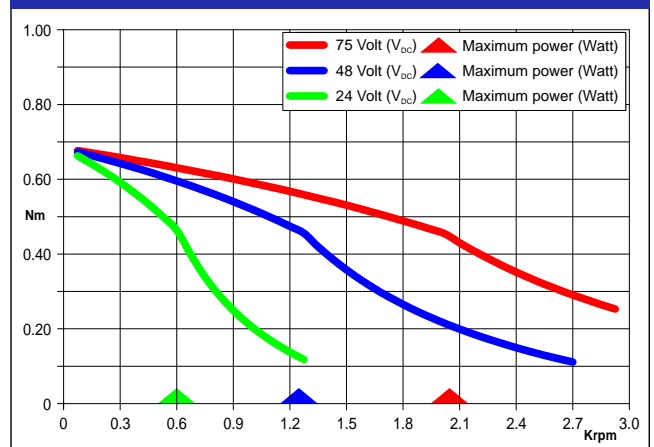


FEATURES

MODEL	103-H7123-5040 (103-H7123-5010)
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT (Amp)	2.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	0.8
INDUCTANCE (mH)	3.8
BIPOLAR HOLDING TORQUE (Ncm)	85
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA ($\text{Kgm}^2 \times 10^{-7}$)	210
THEORETICAL ACCELERATION ($\text{rad} \times \text{sec}^{-2}$)	38500
BACK E.M.F. (V/Krpm)	31
MASS (Kg)	0.65
LEADS CODE	V

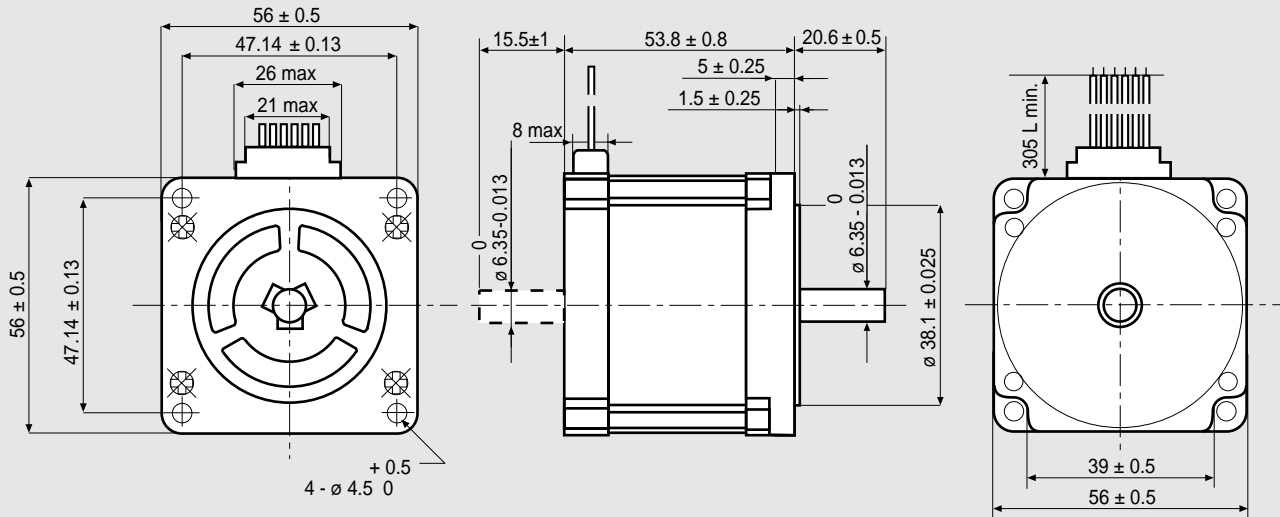
Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE



Suggested R.T.A. driver: BSD Series, CSD/A-CSD Series, NDC/A-NDC Series, HGD Series.

Dimensions (Unit:mm)

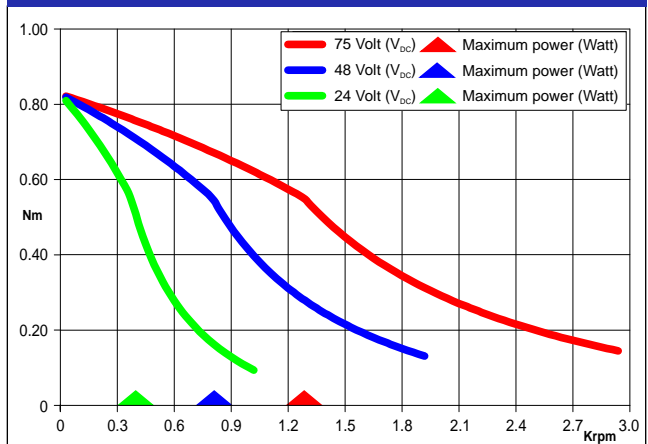


FEATURES

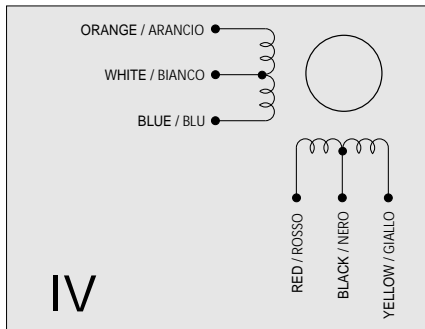
MODEL	103-H7123-0740 (103-H7123-0710)	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT	(Amp)	2.2 ^(*)
UNIPOLAR CURRENT	(Amp)	3.0
RESISTANCE	(Ohm)	0.77
INDUCTANCE	(mH)	1.6
BIPOLAR HOLDING TORQUE	(Ncm)	110
UNIPOLAR HOLDING TORQUE	(Ncm)	85
ROTOR INERTIA	(Kgm ² x 10 ⁻⁷)	210
THEORETICAL ACCELERATION	(rad x sec. ⁻²)	50000
BACK E.M.F.	(V/Krpm)	20
MASS	(Kg)	0.65
LEADS CODE	IV	

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE



(*) Bipolar series connection.
(*) Collegamento bipolare serie.

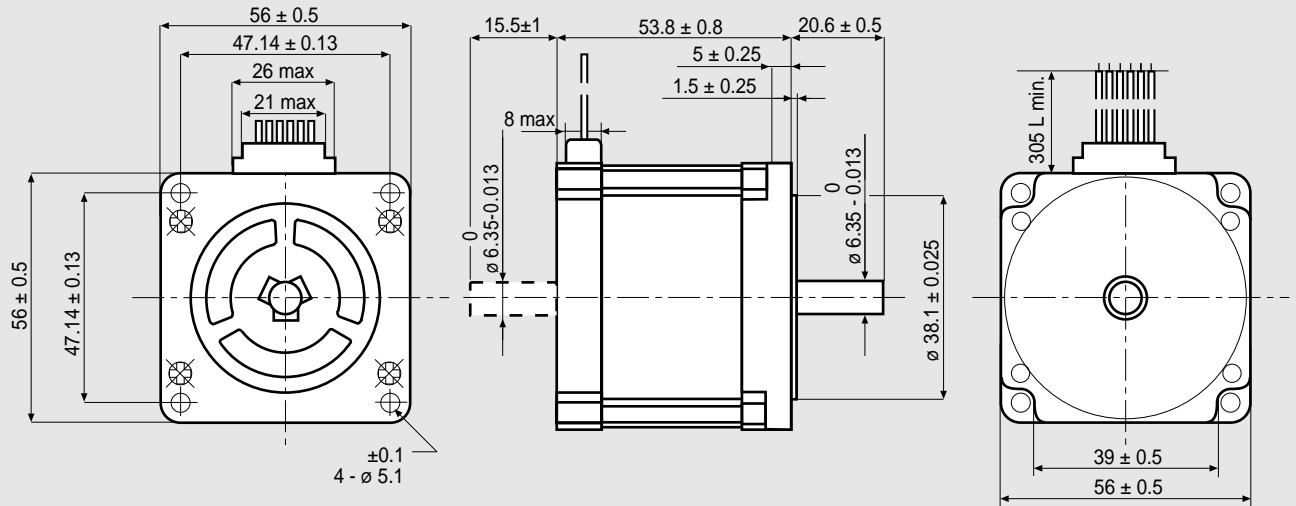


Suggested R.T.A. driver: BSD Series, CSD/A-CSD Series, NDC/A-NDC Series, ADW Series, HGD Series.

103-H7123-1749

SANYODENKI
SANMOTION

Dimensions (Unit:mm)

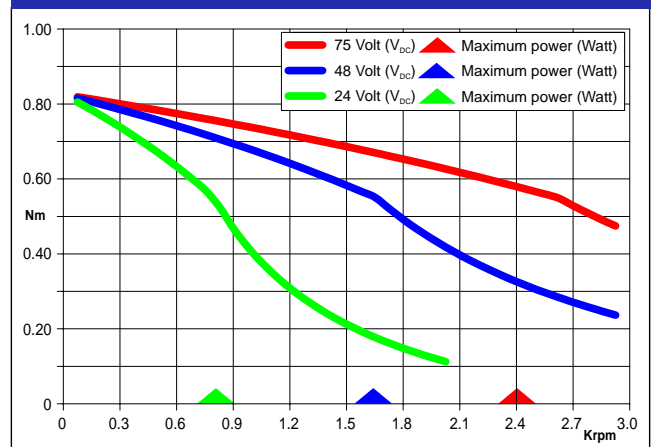


FEATURES

MODEL	103-H7123-1749 (103-H7123-1711)
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT (Amp)	4.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	0.41
INDUCTANCE (mH)	1.6
BIPOLAR HOLDING TORQUE (Ncm)	110
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA ($\text{Kgm}^2 \times 10^{-7}$)	210
THEORETICAL ACCELERATION ($\text{rad} \times \text{sec}^{-2}$)	50000
BACK E.M.F. (V/Krpm)	20
MASS (Kg)	0.65
LEADS CODE	V

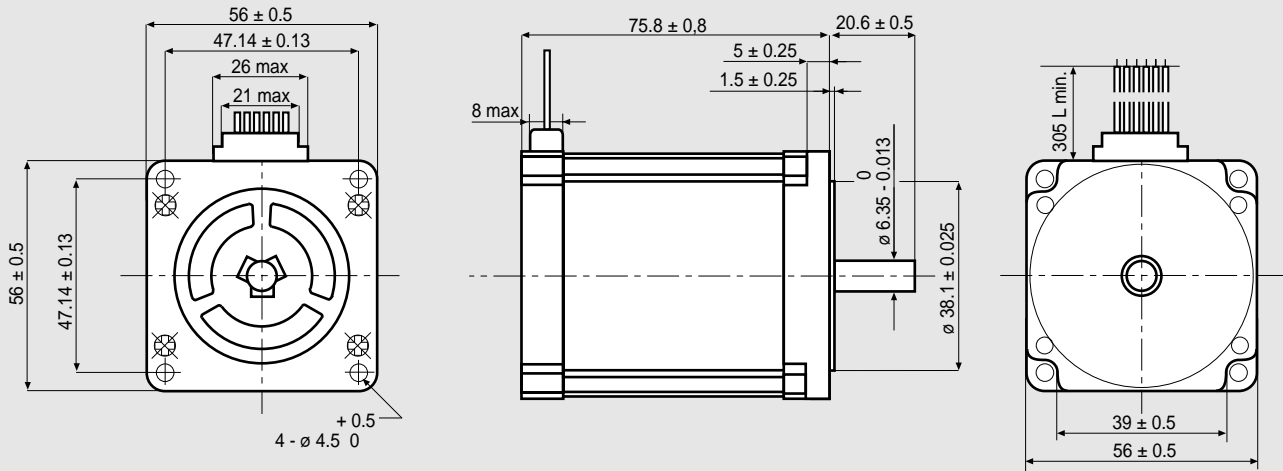
Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE



Suggested R.T.A. driver: CSD/CSD J/A-CSD Series, NDC/A-NDC Series, ADW Series, HGD Series, PLUS Series.

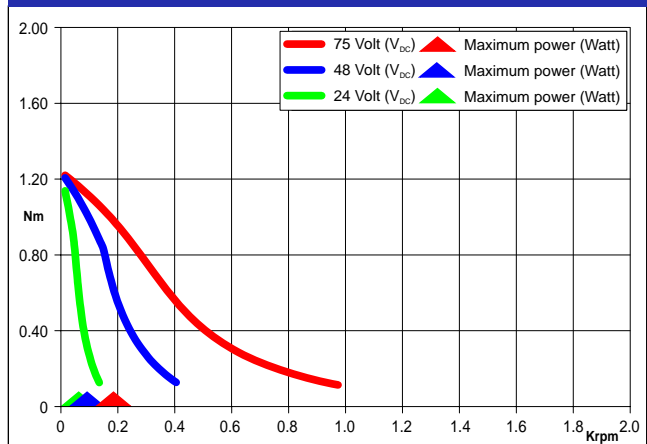
Dimensions (Unit:mm)



FEATURES

MODEL	103-H7126-0140	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT	(Amp)	$0.75^{(*)}$
UNIPOLAR CURRENT	(Amp)	1.0
RESISTANCE	(Ohm)	8.6
INDUCTANCE	(mH)	19
BIPOLAR HOLDING TORQUE	(Ncm)	165
UNIPOLAR HOLDING TORQUE	(Ncm)	130
ROTOR INERTIA	($\text{Kgm}^2 \times 10^{-7}$)	360
THEORETICAL ACCELERATION	($\text{rad} \times \text{sec}^{-2}$)	45800
BACK E.M.F.	(V/Krpm)	92
MASS	(Kg)	1
LEADS CODE	IV	

TORQUE/SPEED CURVE



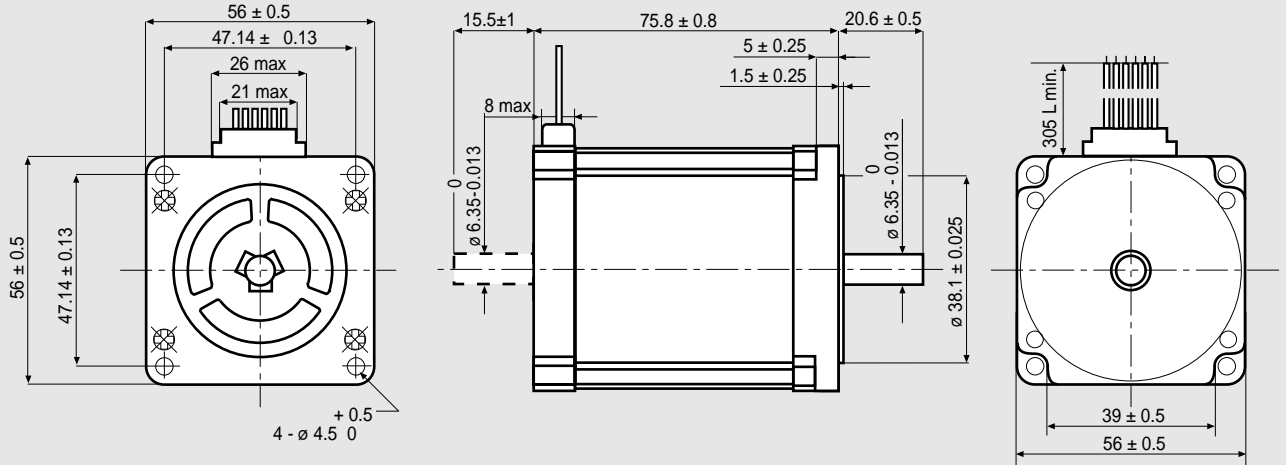
^(*)Bipolar series connection.
^(*)Collegamento bipolare serie.

R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO.,Ltd (JAPAN)



Suggested R.T.A. driver: BSD Series, CSD/A-CSD Series, NDC/A-NDC Series, HGD Series.

Dimensions (Unit:mm)

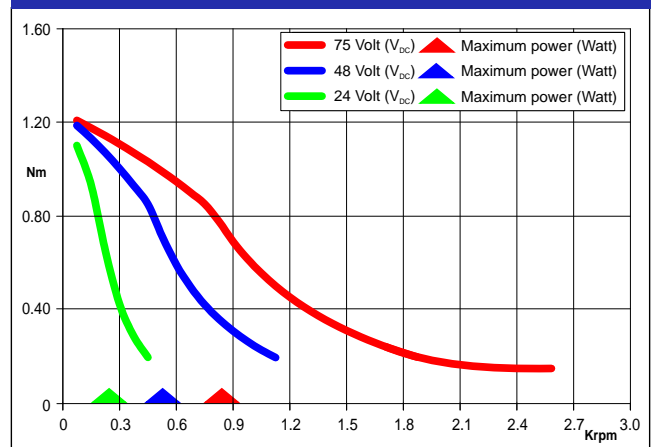


FEATURES

MODEL	103-H7126-0740 (103-H7126-0710)	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT (Amp)	2.2 ^(*)	
UNIPOLAR CURRENT (Amp)	3	
RESISTANCE (Ohm)	0.9	
INDUCTANCE (mH)	2.2	
BIPOLAR HOLDING TORQUE (Ncm)	165	
UNIPOLAR HOLDING TORQUE (Ncm)	130	
ROTOR INERTIA ($\text{Kgm}^2 \times 10^{-7}$)	360	
THEORETICAL ACCELERATION ($\text{rad} \times \text{sec}^{-2}$)	45800	
BACK E.M.F. (V/Krpm)	31	
MASS (Kg)	1	
LEADS CODE	IV	

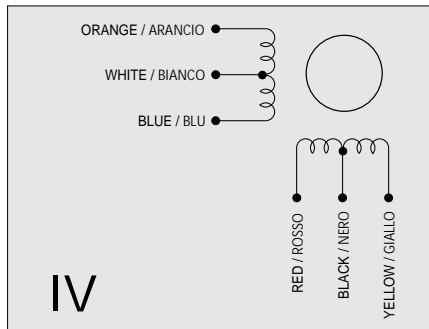
Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE



^(*)Bipolar series connection.

^(*)Collegamento bipolare serie.

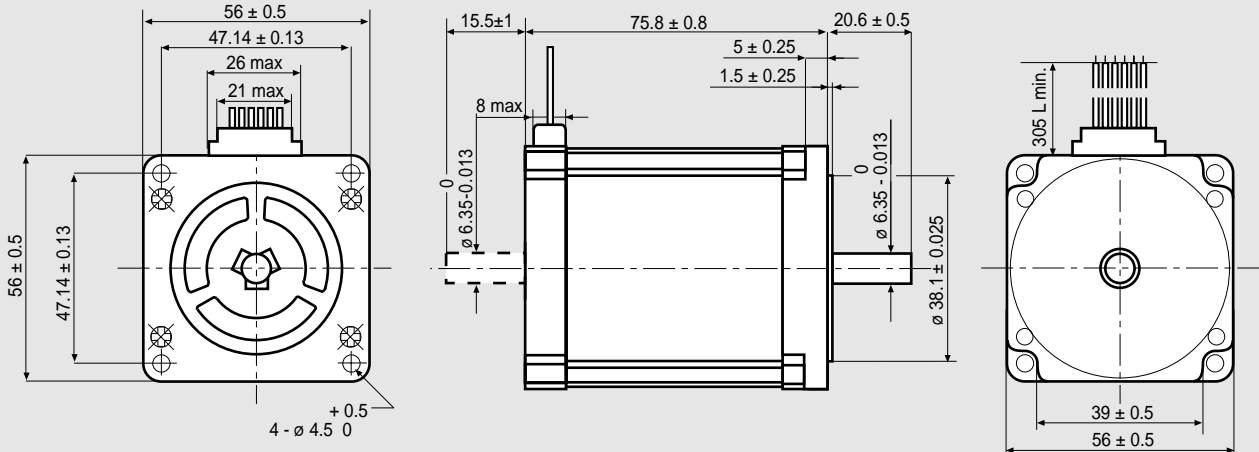


Suggested R.T.A. driver: BSD Series, CSD/A-CSD Series, NDC/A-NDC Series, ADW Series, HGD Series.

103-H7126-1740

SANYO DENKI
SANMOTION

Dimensions (Unit:mm)

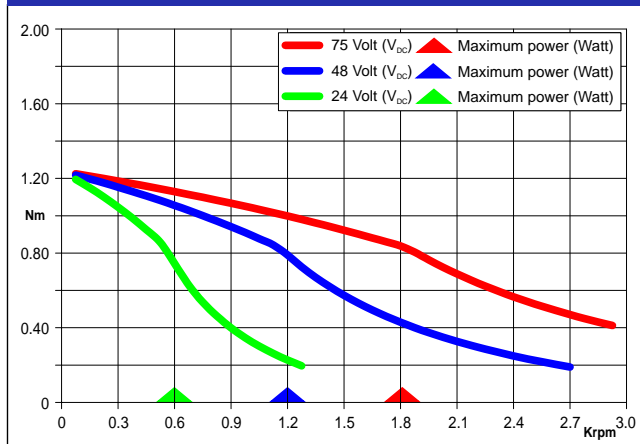


FEATURES

MODEL	103-H7126-1740 (103-H7126-1710)
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT (Amp)	4.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	0.48
INDUCTANCE (mH)	2.2
BIPOLAR HOLDING TORQUE (Ncm)	165
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA ($\text{Kg} \cdot \text{m}^2 \times 10^{-7}$)	360
THEORETICAL ACCELERATION ($\text{rad} \times \text{sec}^{-2}$)	45800
BACK E.M.F. (V/Krpm)	31
MASS (Kg)	1
LEADS CODE	V

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE



R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)

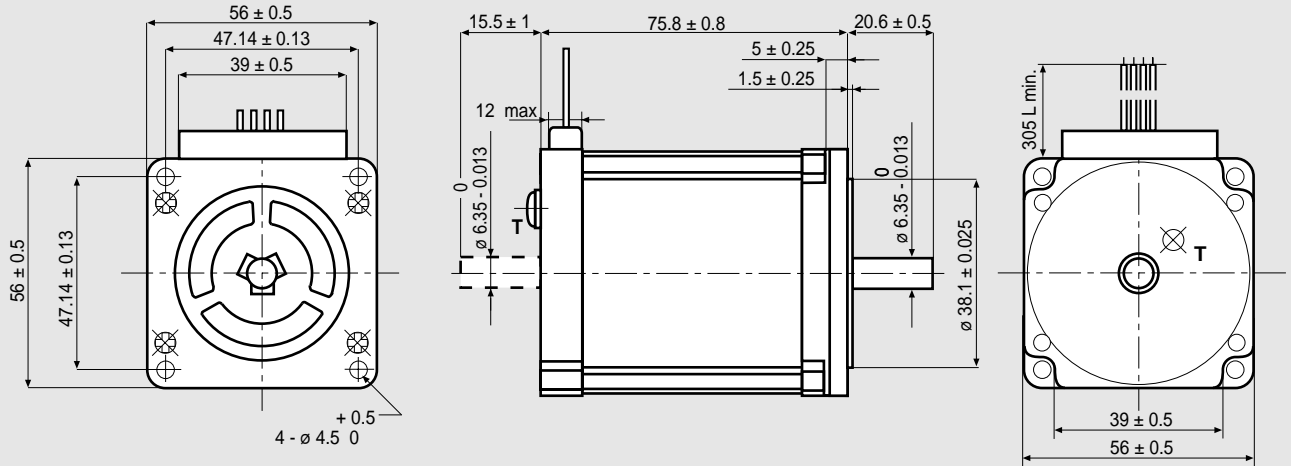


Suggested R. T. A. driver: CSD/CSD J/A-CSD Series, NDC/A-NDC Series, ADW Series, HGD Series, PLUS Series.

103-H7126-6640

SANYODENKI
SANMOTION

Dimensions (Unit:mm)



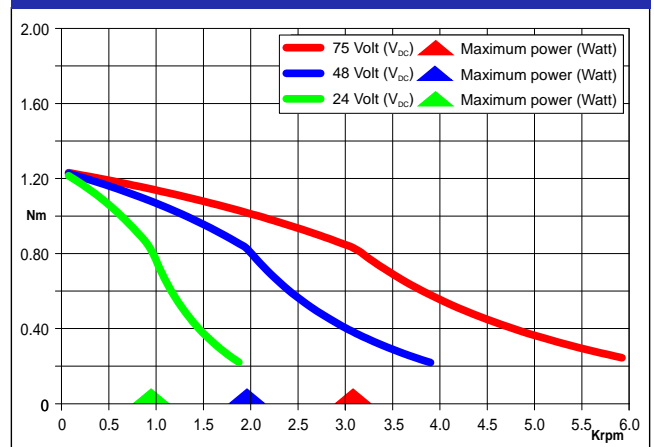
T IS THE EARTH TERMINAL

FEATURES

MODEL	103-H7126-6640 (103-H7126-6610)
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT (Amp)	5.6
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	0.3
INDUCTANCE (mH)	0.85
BIPOLAR HOLDING TORQUE (Ncm)	165
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA ($\text{Kgm}^2 \times 10^{-7}$)	360
THEORETICAL ACCELERATION ($\text{rad} \times \text{sec}^{-2}$)	45800
BACK E.M.F. (V/Krpm)	23
MASS (Kg)	1
PROTECTION DEGREE	IP43
LEADS CODE	V

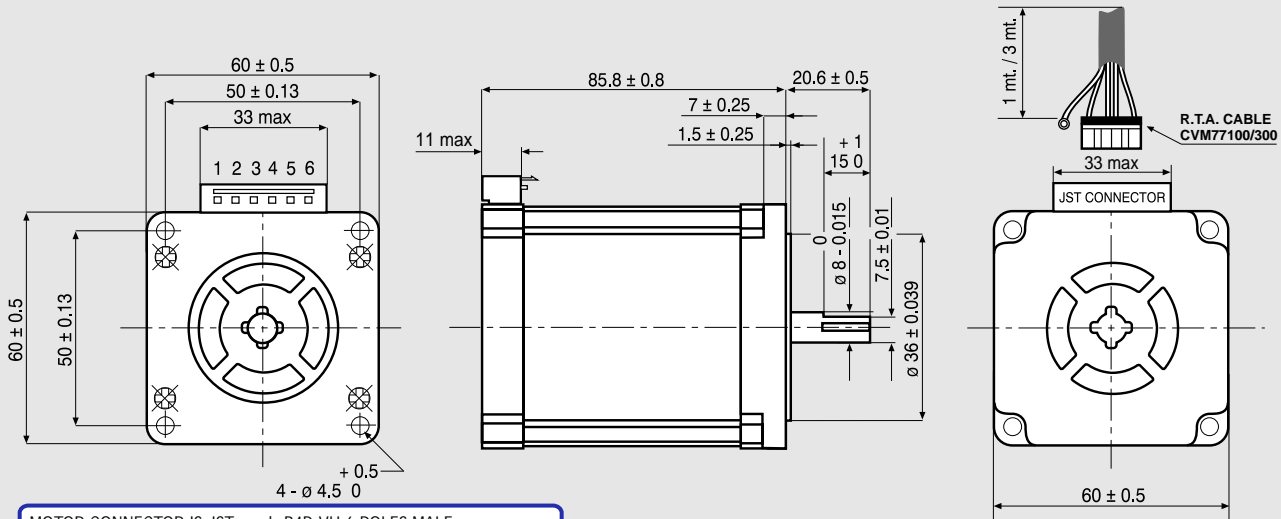
Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE



Suggested R.T.A. driver: NDC/A-NDC Series, ADW Series, HGD Series, PLUS Series.

Dimensions (Unit:mm)

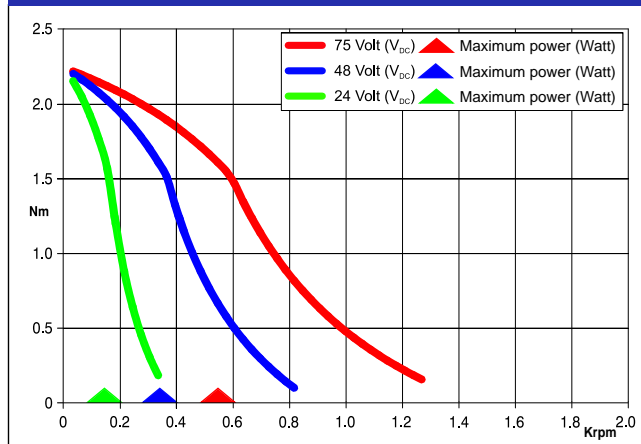


MOTOR CONNECTOR IS JST mod. B4P-VH 6 POLES MALE.
FOR CONNECTION USE JST mod. VHR-6N FEMALE CONNECTOR AND
mod. SVH-21 T-P1.1 CONTACTS.
NOTE: 103-H7823-0740 MOTORS NEED CVM77100 AND CVM77300
R.T.A. CABLES. CONTACT R.T.A. FOR FURTHER DETAILS.

FEATURES

MODEL	103-H7823-0740
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	2.2 ^(*)
UNIPOLAR CURRENT (Amp)	3.0
RESISTANCE (Ohm)	1.25
INDUCTANCE (mH)	2.4
BIPOLAR HOLDING TORQUE (Ncm)	300
UNIPOLAR HOLDING TORQUE (Ncm)	240
ROTOR INERTIA (Kgm ² × 10 ⁻⁷)	840
THEORETICAL ACCELERATION (rad × sec. ⁻²)	35700
BACK E.M.F. (V/Krpm)	55
MASS (Kg)	1.4
LEADS CODE	IV

TORQUE/SPEED CURVE



^(*)Bipolar series connection.
^(*)Collegamento bipolare serie.

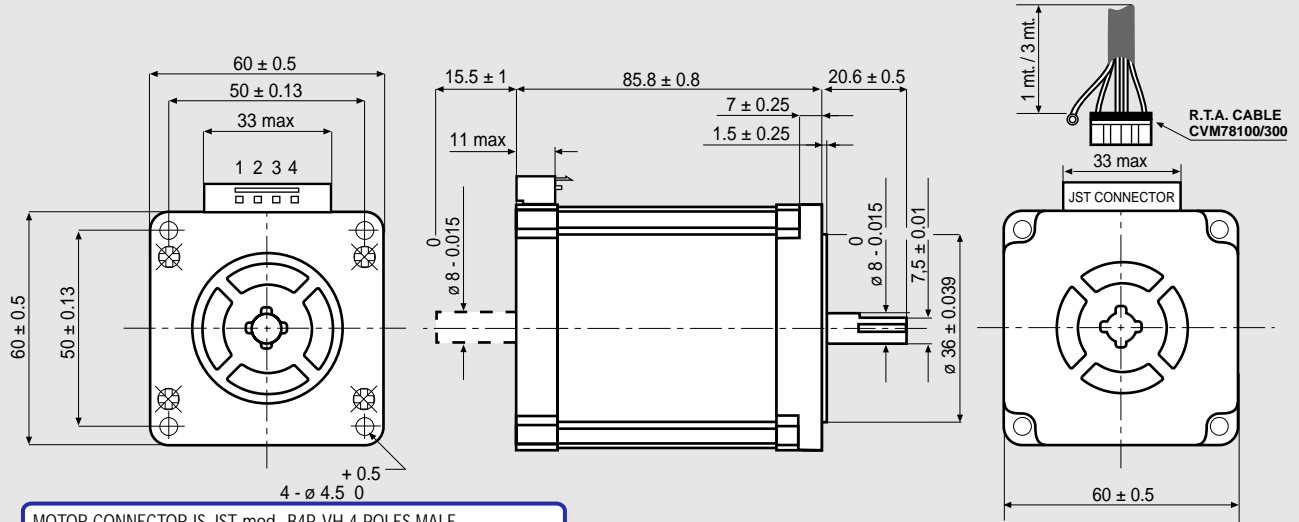


Suggested R.T.A. driver: BSD Series, ADW Series.

103-H7823-1740

SANYO DENKI
SANMOTION

Dimensions (Unit:mm)



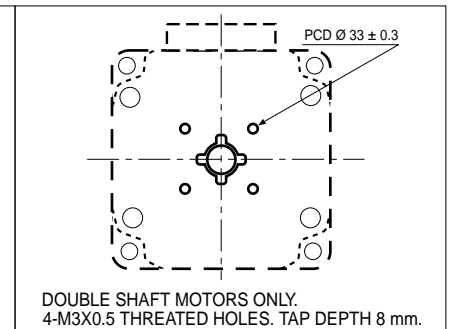
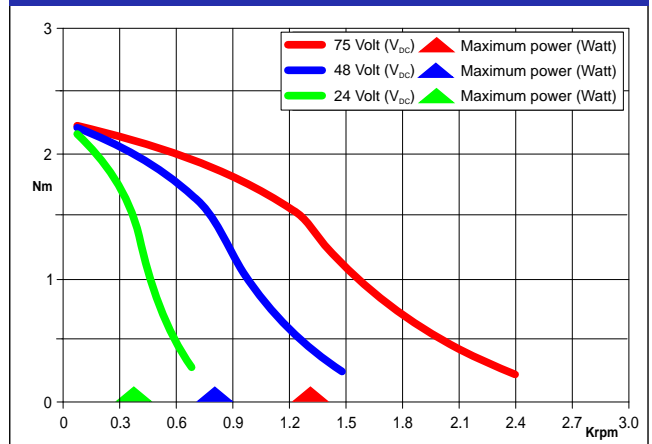
MOTOR CONNECTOR IS JST mod. B4P-VH 4 POLES MALE.
FOR CONNECTION USE JST mod. VHR-4N FEMALE CONNECTOR AND
mod. SVH-21 T-P1.1 CONTACTS.
NOTE: 103-H7823-1740 MOTORS NEED CVM78100 AND CVM78300
R.T.A. CABLES. CONTACT R.T.A. FOR FURTHER DETAILS.

FEATURES

MODEL	103-H7823-1740 (103-H7823-1714)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	4.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	0.65
INDUCTANCE (mH)	2.4
BIPOLAR HOLDING TORQUE (Ncm)	300
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kgm ² × 10 ⁻⁷)	840
THEORETICAL ACCELERATION (rad × sec. ⁻²)	35700
BACK E.M.F. (V/Krpm)	75
MASS (Kg)	1.4
LEADS CODE	V

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE



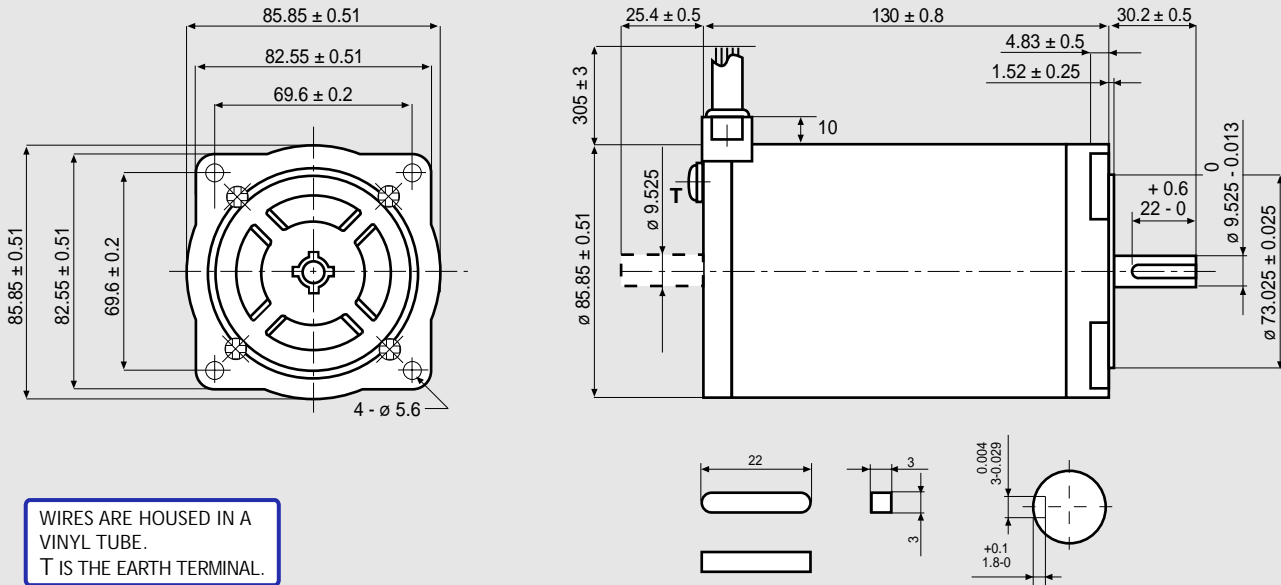
DOUBLE SHAFT MOTORS ONLY.
4-M3X0.5 THREADED HOLES. TAP DEPTH 8 mm.

Suggested R.T.A. driver: CSD/CSD J/A-CSD Series, NDC/A-NDC Series, ADW Series, HGD Series, PLUS Series.

103-845-6741

SANYO DENKI
SANMOTION

Dimensions (Unit:mm)

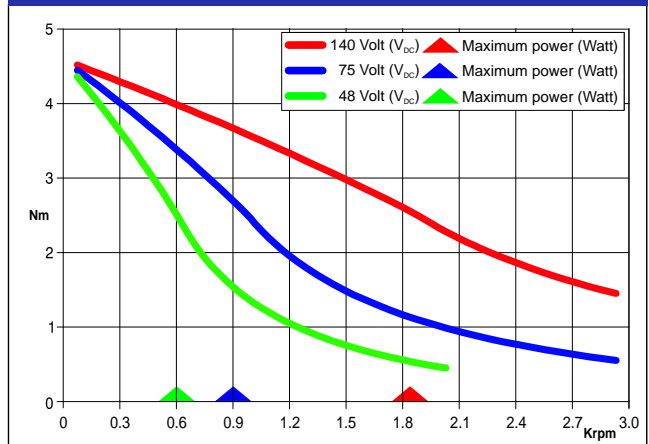


FEATURES

MODEL	103-845-6741 (103-845-6711)	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT	(Amp)	9.5
UNIPOLAR CURRENT	(Amp)	6.7
RESISTANCE	(Ohm)	0.45
INDUCTANCE	(mH)	2.0
BIPOLAR HOLDING TORQUE	(Ncm)	510
UNIPOLAR HOLDING TORQUE	(Ncm)	410
ROTOR INERTIA	(Kgm ² x 10 ⁻⁷)	1550
THEORETICAL ACCELERATION	(rad x sec. ⁻²)	32900
BACK E.M.F.	(V/Krpm)	46
MASS	(Kg)	3.6
PROTECTION DEGREE	IP43	
LEADS CODE	II	

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE



R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)

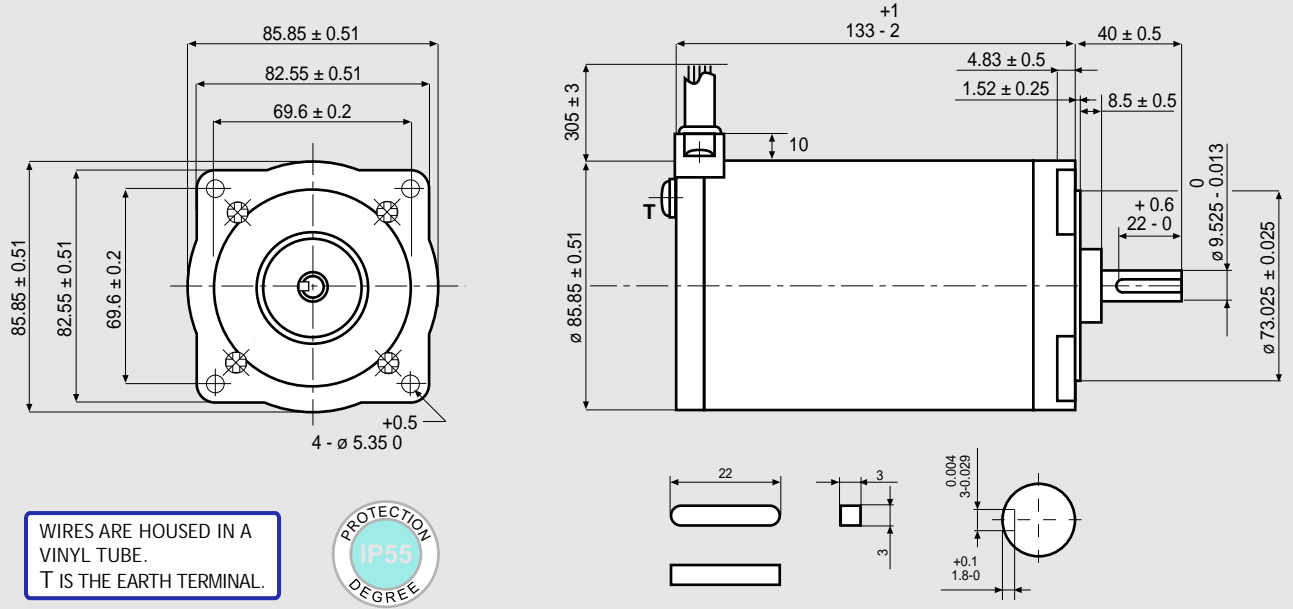


Suggested R.T.A. driver: PLUS Series.

103-845-67S1

SANYO DENKI
SANMOTION

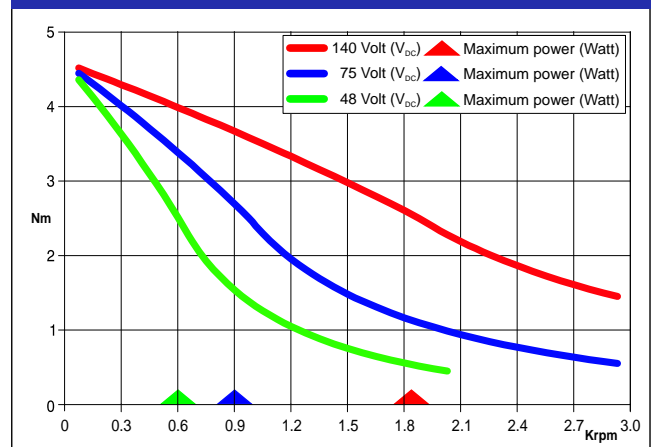
Dimensions (Unit:mm)



FEATURES

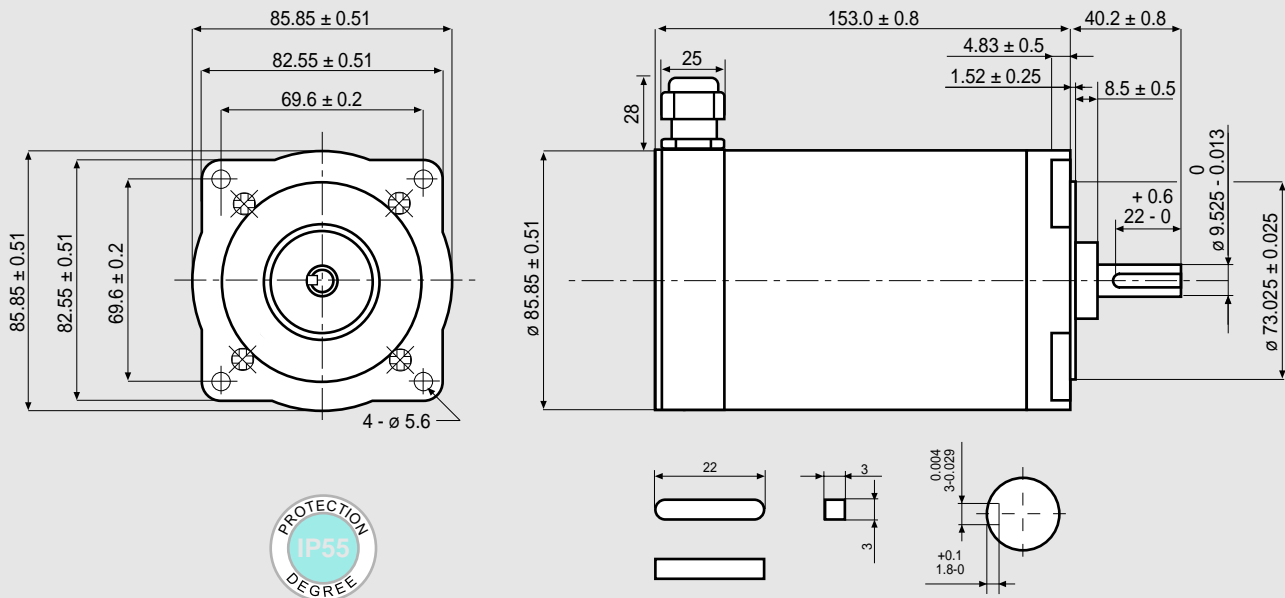
MODEL	103-845-67S1
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	9.5
UNIPOLAR CURRENT (Amp)	6.7
RESISTANCE (Ohm)	0.45
INDUCTANCE (mH)	2.0
BIPOLAR HOLDING TORQUE (Ncm)	510
UNIPOLAR HOLDING TORQUE (Ncm)	410
ROTOR INERTIA (Kgm ² × 10 ⁻⁷)	1550
THEORETICAL ACCELERATION (rad × sec. ⁻²)	32900
BACK E.M.F. (V/Krpm)	46
MASS (Kg)	3.6
PROTECTION DEGREE	IP55
LEADS CODE	II

TORQUE/SPEED CURVE



Suggested R.T.A. driver: PLUS Series.

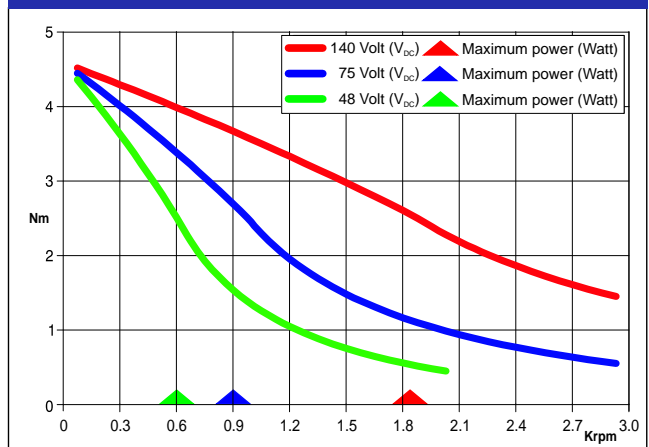
Dimensions (Unit:mm)



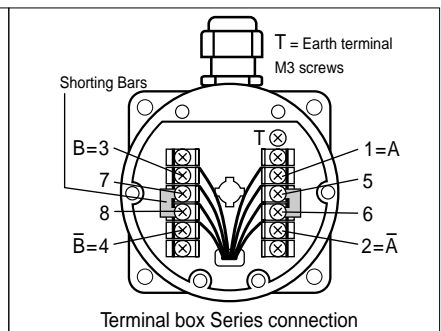
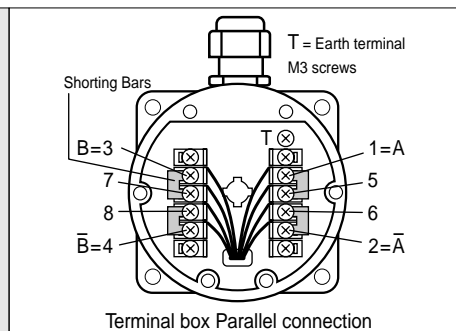
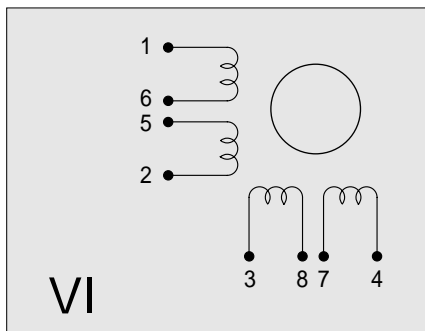
FEATURES

MODEL	103-845-67S41	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT	(Amp)	9.5
UNIPOLAR CURRENT	(Amp)	6.7
RESISTANCE	(Ohm)	0.45
INDUCTANCE	(mH)	2.0
BIPOLAR HOLDING TORQUE	(Ncm)	510
UNIPOLAR HOLDING TORQUE	(Ncm)	410
ROTOR INERTIA	(Kgm ² x 10 ⁻⁷)	1550
THEORETICAL ACCELERATION	(rad x sec. ⁻²)	32900
BACK E.M.F.	(V/Krpm)	46
MASS	(Kg)	3.9
PROTECTION DEGREE	IP55	
LEADS CODE	VI	

TORQUE/SPEED CURVE



R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)

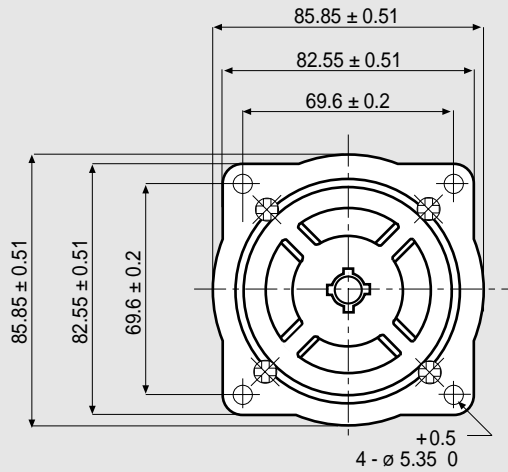


Suggested R.T.A. driver: PLUS Series.

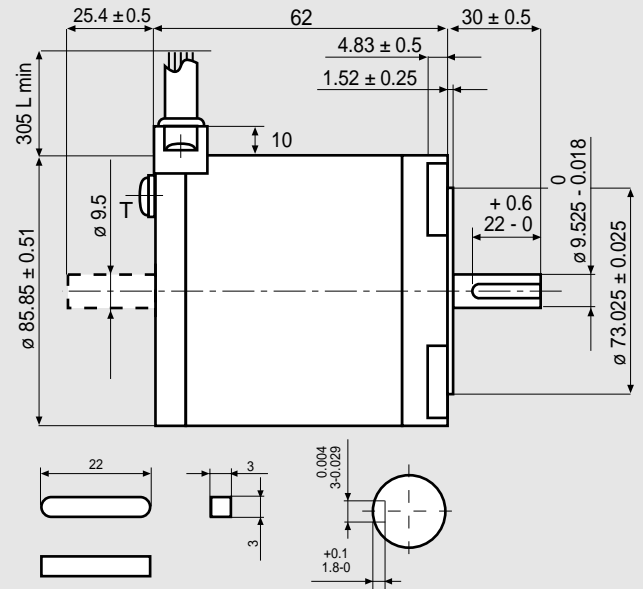
103-H8221-6241

SANYO DENKI
SANMOTION

Dimensions (Unit:mm)



WIRES ARE HOUSED IN A VINYL TUBE.
T IS THE EARTH TERMINAL.

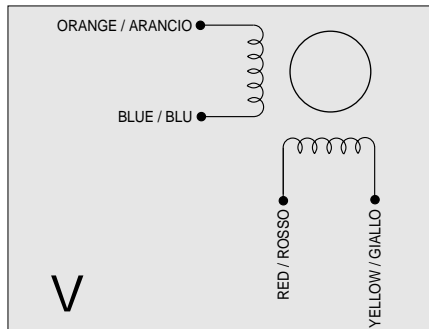
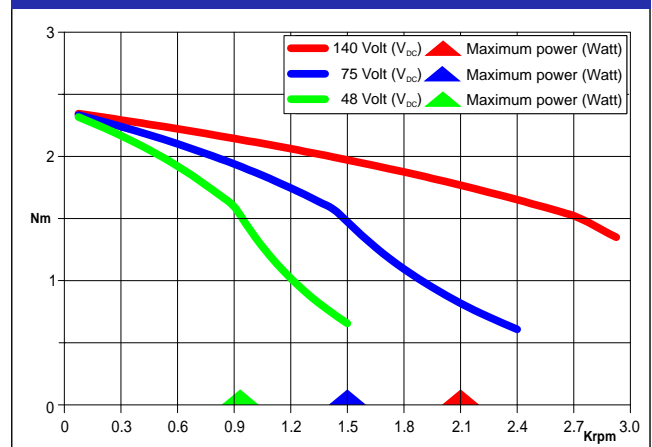


FEATURES

MODEL	103-H8221-6241 (103-H8221-6211)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	6.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	0.3
INDUCTANCE (mH)	1.65
BIPOLAR HOLDING TORQUE (Ncm)	300
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kgm ² × 10 ⁻⁷)	1450
THEORETICAL ACCELERATION (rad × sec. ⁻²)	20600
BACK E.M.F. (V/Krpm)	50
MASS (Kg)	1.5
PROTECTION DEGREE	IP43
LEADS CODE	V

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE

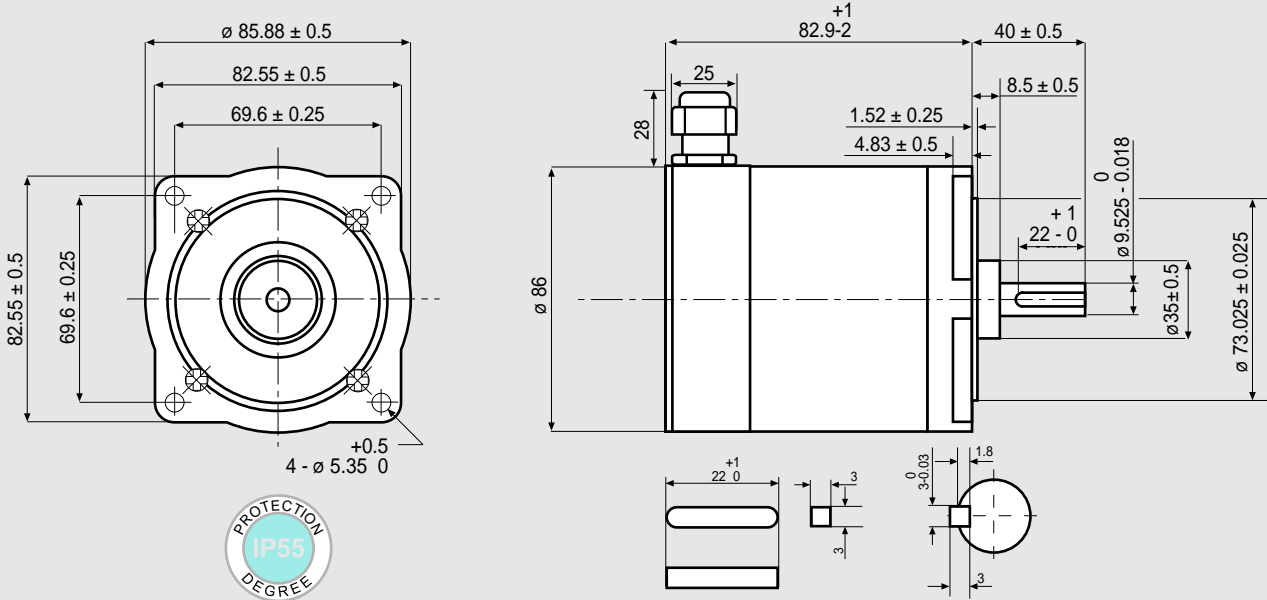


Suggested R.T.A. driver: NDC/A-NDC Series, HGD Series, PLUS Series.

103-H8221-62S41

SANYO DENKI
SANMOTION

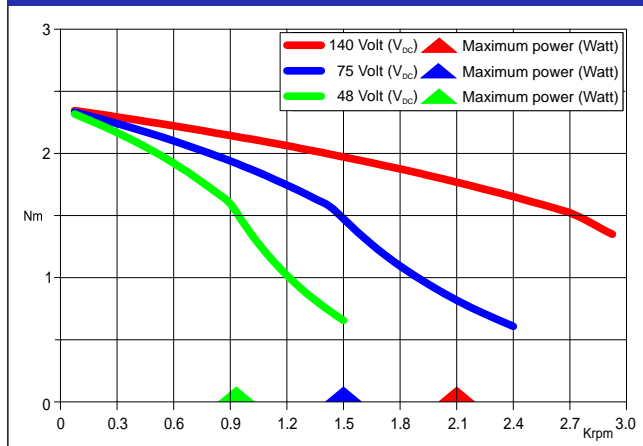
Dimensions (Unit:mm)



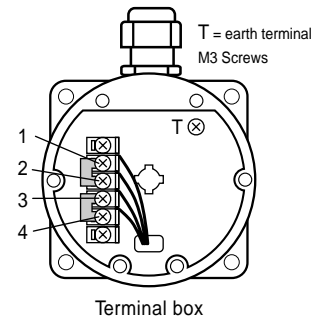
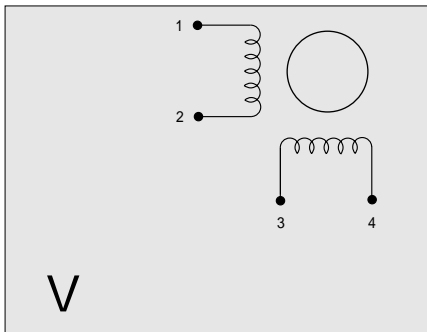
FEATURES

MODEL	103-H8221-62S41	
BASIC STEP ANGLE		$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT	(Amp)	6.0
UNIPOLAR CURRENT	(Amp)	
RESISTANCE	(Ohm)	0.3
INDUCTANCE	(mH)	1.65
BIPOLAR HOLDING TORQUE	(Ncm)	300
UNIPOLAR HOLDING TORQUE	(Ncm)	
ROTOR INERTIA	(Kgm ² x 10 ⁻⁷)	1450
THEORETICAL ACCELERATION	(rad x sec. ⁻²)	20600
BACK E.M.F.	(V/Krpm)	50
MASS	(Kg)	1.75
PROTECTION DEGREE		IP55
LEADS CODE		V

TORQUE/SPEED CURVE



R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)

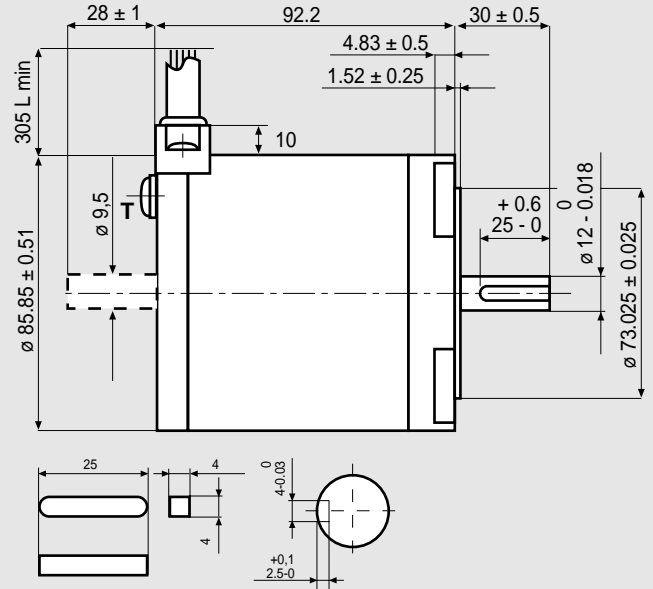
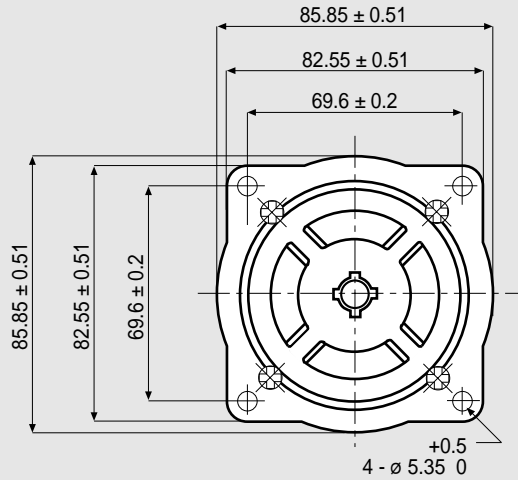


Suggested R.T.A. driver: NDC/A-NDC Series, HGD Series, PLUS Series.

103-H8222-6340

SANYO DENKI
SANMOTION

Dimensions (Unit:mm)



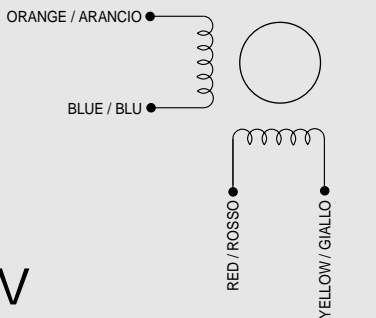
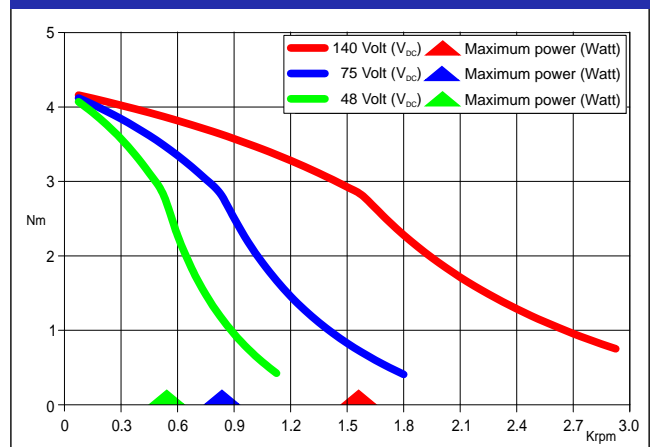
WIRES ARE HOUSED IN A VINYL TUBE.
T IS THE EARTH TERMINAL.

FEATURES

MODEL	103-H8222-6340 (103-H8222-6310)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	6.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	0.35
INDUCTANCE (mH)	2.7
BIPOLAR HOLDING TORQUE (Ncm)	560
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kgm ² × 10 ⁻⁷)	2900
THEORETICAL ACCELERATION (rad × sec. ⁻²)	19300
BACK E.M.F. (V/Krpm)	93
MASS (Kg)	2.5
PROTECTION DEGREE	IP43
LEADS CODE	V

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE

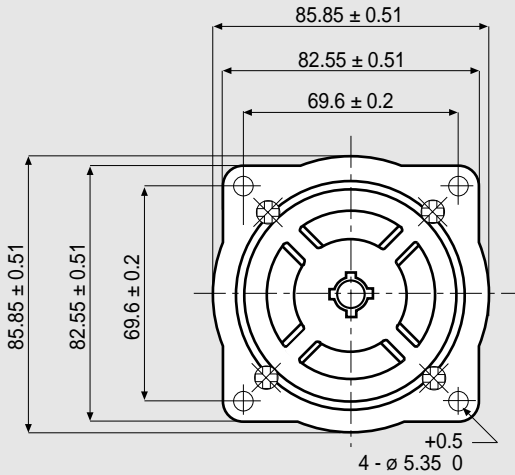


Suggested R.T.A. driver: NDC/A-NDC Series, HGD Series, PLUS Series.

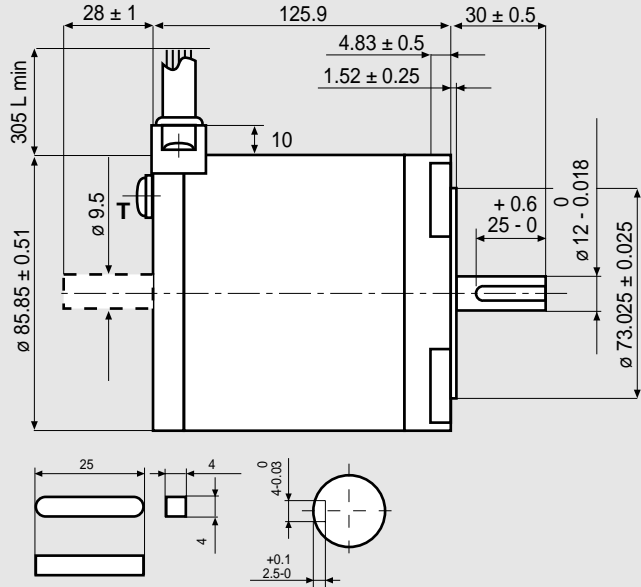
103-H8223-6540

SANYO DENKI
SANMOTION

Dimensions (Unit:mm)



WIRES ARE HOUSED IN A VINYL TUBE.
T IS THE EARTH TERMINAL.

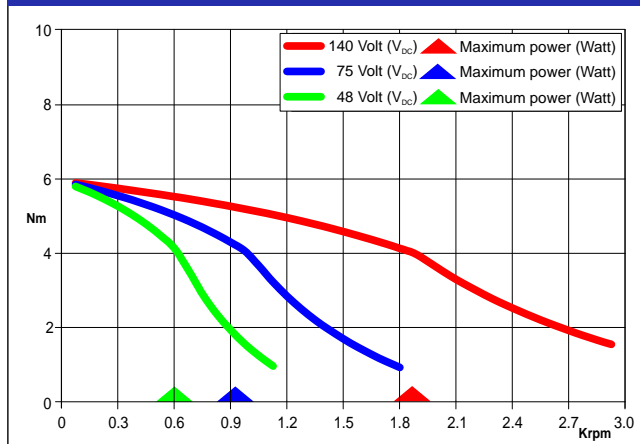


FEATURES

MODEL	103-H8223-6540 (103-H8223-6510)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	9.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	0.2
INDUCTANCE (mH)	1.4
BIPOLAR HOLDING TORQUE (Ncm)	790
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kgm ² x 10 ⁻⁷)	4350
THEORETICAL ACCELERATION (rad x sec. ⁻²)	18200
BACK E.M.F. (V/Krpm)	88
MASS (Kg)	3.5
PROTECTION DEGREE	IP43
LEADS CODE	V

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE



R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)

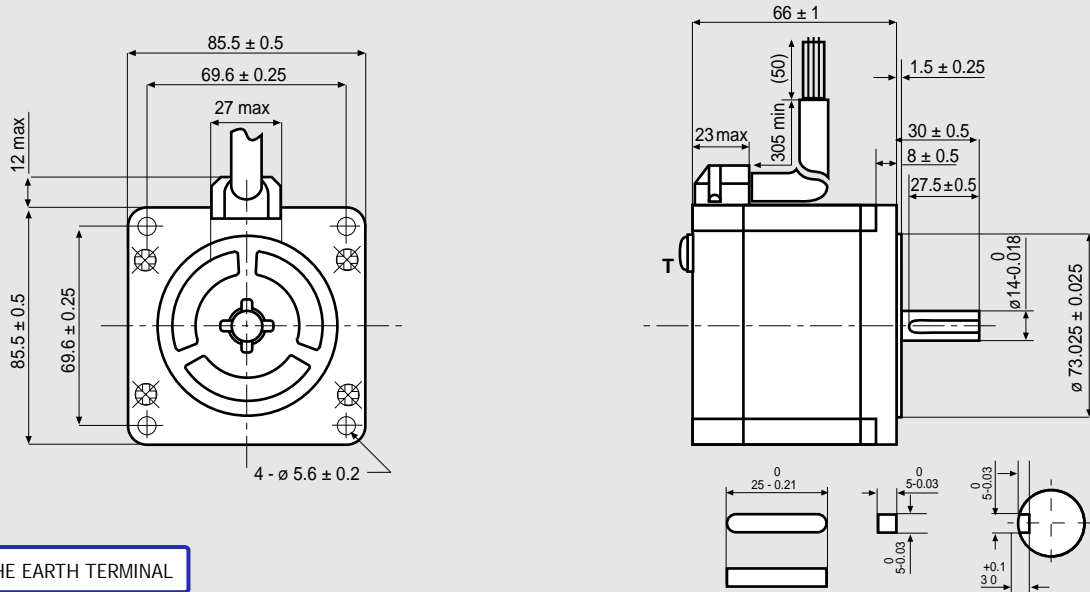


Suggested R.T.A. driver: PLUS Series.

SM 2861-5055

SANYO DENKI
SANMOTION

Dimensions (Unit:mm)



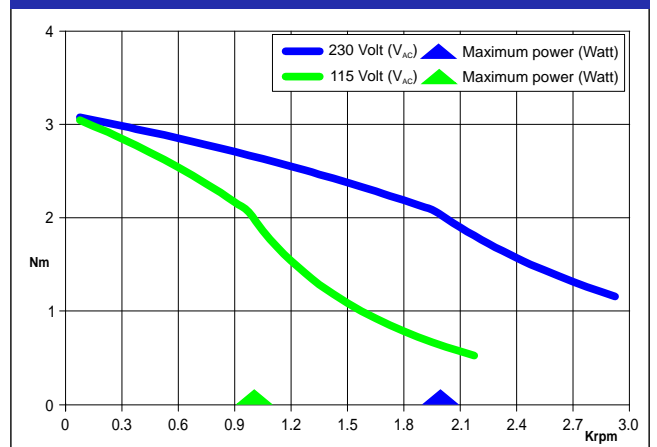
T IS THE EARTH TERMINAL

FEATURES

MODEL	SM 2861-5055 (SM 2861-5025)	
BASIC STEP ANGLE		$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT	(Amp)	2.0
RESISTANCE	(Ohm)	2.2
INDUCTANCE	(mH)	15
BIPOLAR HOLDING TORQUE	(Ncm)	360
ROTOR INERTIA	(Kgm ² x 10 ⁻⁷)	1480
THEORETICAL ACCELERATION	(rad x sec. ⁻²)	24300
BACK E.M.F.	(V/Krpm)	180
MASS	(Kg)	1.7
INTERNATIONAL STANDARDS		UL, CSA
INSULATION VOLTAGE	(V)	250 V _{AC} (350 V _{DC})
PROTECTION DEGREE		IP43-F
LEADS CODE		V

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE



STEPPING MOTORS

MOTORS WITH ENCODER



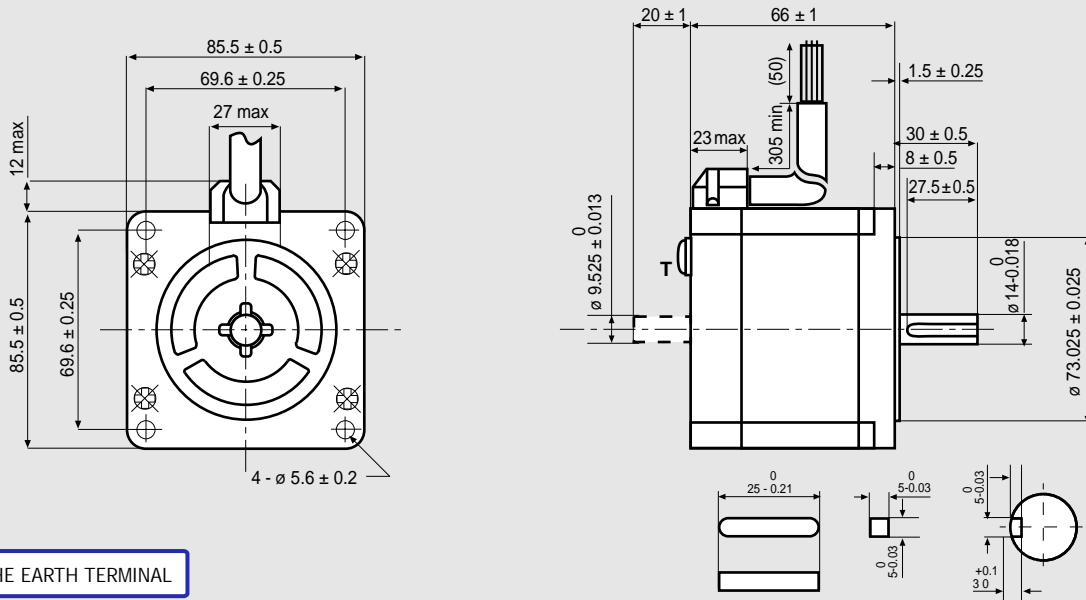
Suggested R.T.A. driver: X-PLUS B Series, X-MIND Series.

R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)

SM 2861-5255

SANYO DENKI
SANMOTION

Dimensions (Unit:mm)

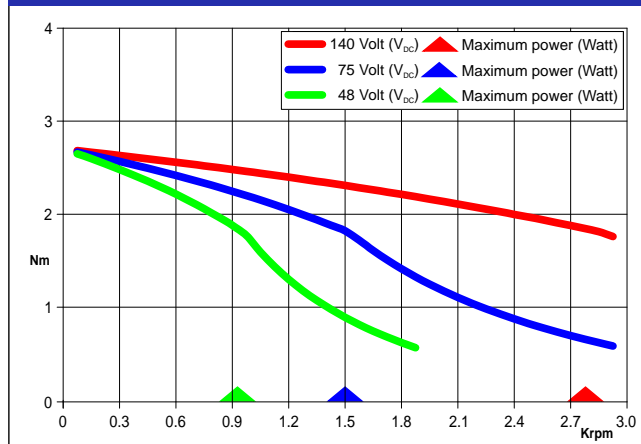


FEATURES

MODEL	SM 2861-5255 (SM 2861-5225)	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT	(Amp)	6.0
RESISTANCE	(Ohm)	0.29
INDUCTANCE	(mH)	1.7
BIPOLAR HOLDING TORQUE	(Ncm)	360
ROTOR INERTIA	(Kgm ² x 10 ⁻⁷)	1480
THEORETICAL ACCELERATION	(rad x sec. ⁻²)	24300
BACK E.M.F.	(V/Krpm)	60
MASS	(Kg)	1.7
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 V _{AC} (350 V _{DC})
PROTECTION DEGREE	IP43-F	
LEADS CODE	V	

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE



R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)

ORANGE / ARANCIO ●

BLUE / BLU ●

RED / ROSSO ●

YELLOW / GIALLO ●

V

C **RU** US

PCD Ø 34.2 ± 0.4

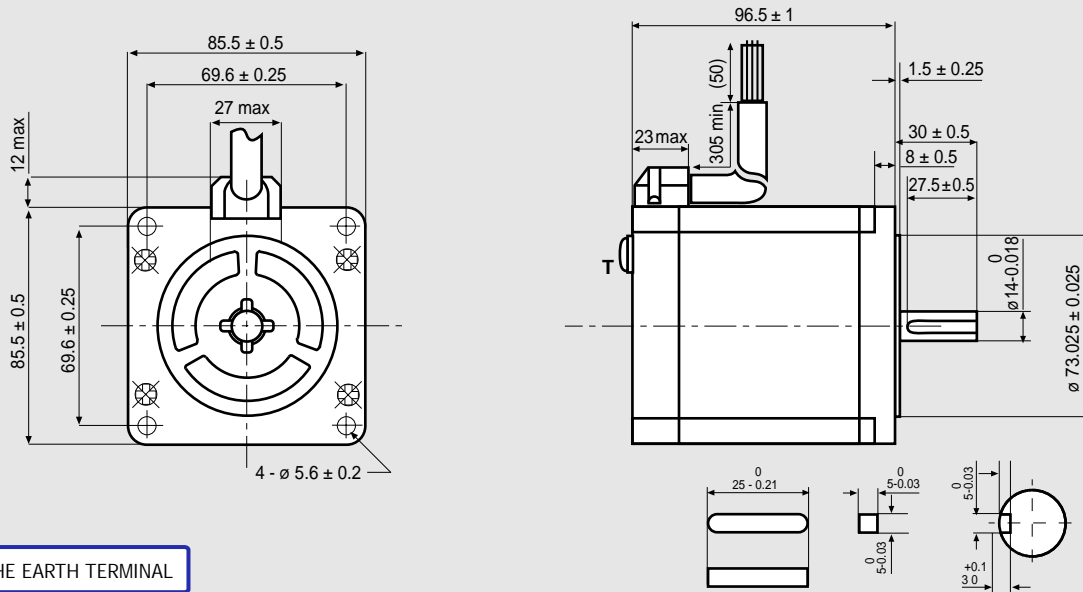
DOUBLE SHAFT MOTORS ONLY.
4 X M4 THREADED HOLES. TAP DEPTH 4.5 mm.

Suggested R.T.A. driver: NDC/A-NDC Series, ADW Series, HGD Series, PLUS Series.

SM 2862-5055

SANYO DENKI
SANMOTION

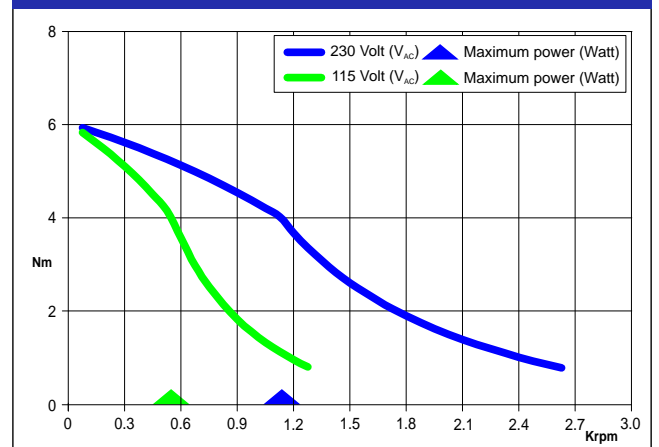
Dimensions (Unit:mm)



FEATURES

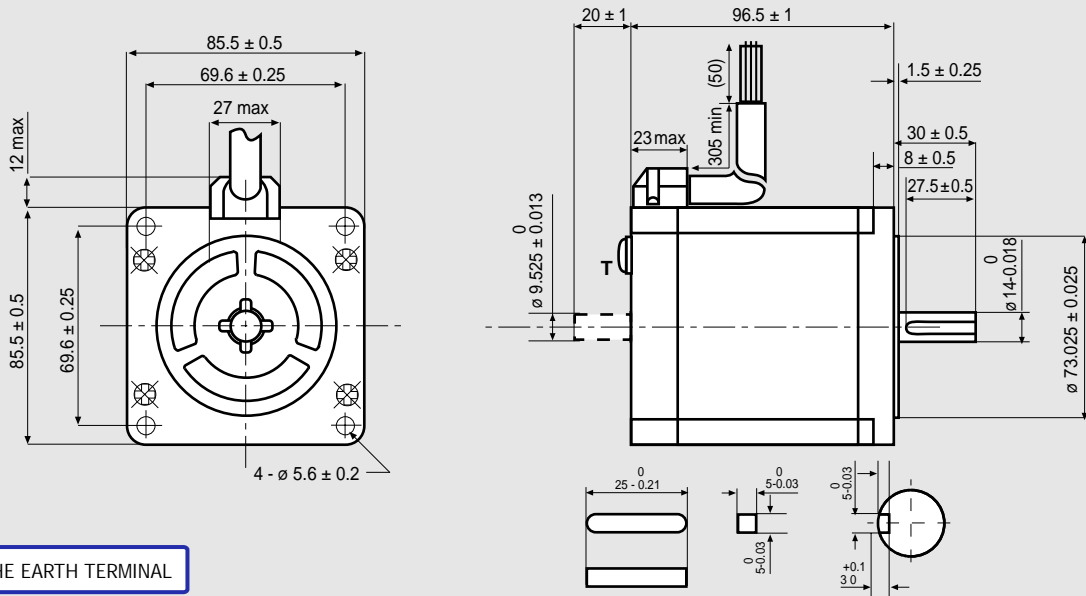
MODEL	SM 2862-5055	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT	(Amp)	2.0
RESISTANCE	(Ohm)	3.2
INDUCTANCE	(mH)	25
BIPOLAR HOLDING TORQUE	(Ncm)	700
ROTOR INERTIA	(Kg $m^2 \times 10^{-7}$)	3000
THEORETICAL ACCELERATION	(rad x sec. $^{-2}$)	23300
BACK E.M.F.	(V/Krpm)	350
MASS	(Kg)	2.9
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 V _{AC} (350 V _{DC})
PROTECTION DEGREE	IP43-F	
LEADS CODE	V	

TORQUE/SPEED CURVE



Suggested R.T.A. driver: X-PLUS B Series, X-MIND Series.

Dimensions (Unit:mm)



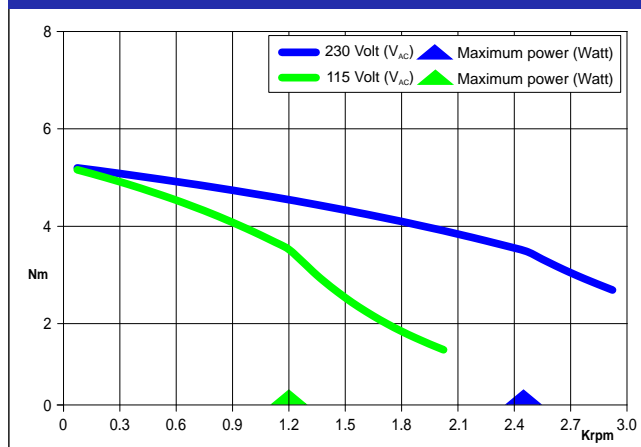
T IS THE EARTH TERMINAL

FEATURES

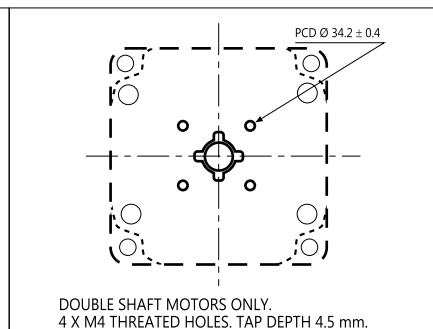
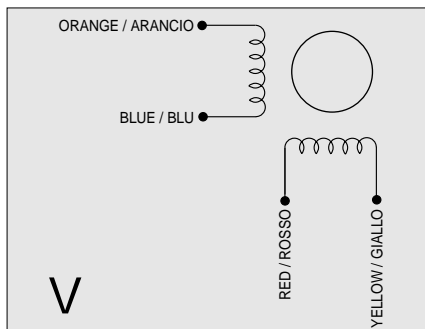
MODEL	SM 2862-5155 (SM 2862-5125)	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT	(Amp)	4.0
RESISTANCE	(Ohm)	0.83
INDUCTANCE	(mH)	6.4
BIPOLAR HOLDING TORQUE	(Ncm)	700
ROTOR INERTIA	(Kgm ² x 10 ⁻⁷)	3000
THEORETICAL ACCELERATION	(rad x sec. ⁻²)	23300
BACK E.M.F.	(V/Krpm)	175
MASS	(Kg)	2.9
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 V _{AC} (350 V _{DC})
PROTECTION DEGREE	IP43-F	
LEADS CODE	V	

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE



R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)

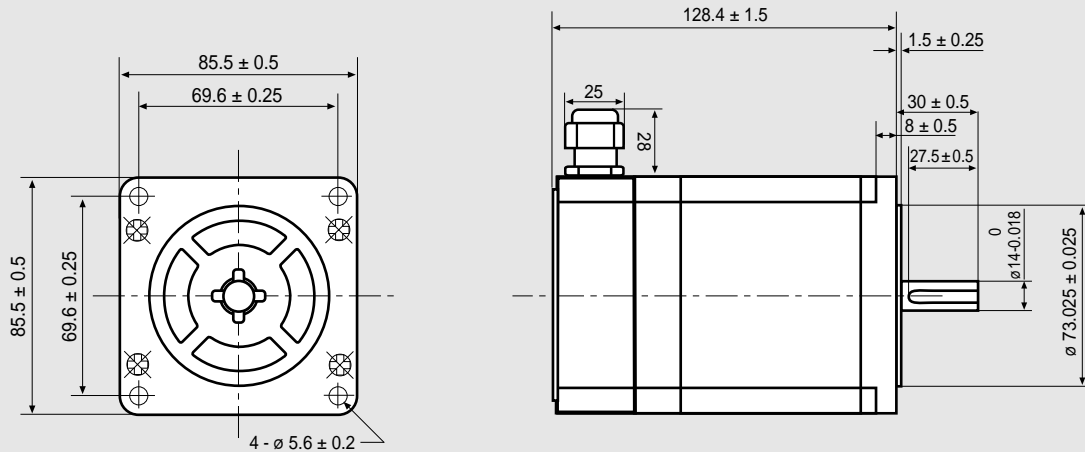


Suggested R.T.A. driver: X-PLUS B Series, X-MIND Series.

SM 2862-5156

SANYO DENKI
SANMOTION

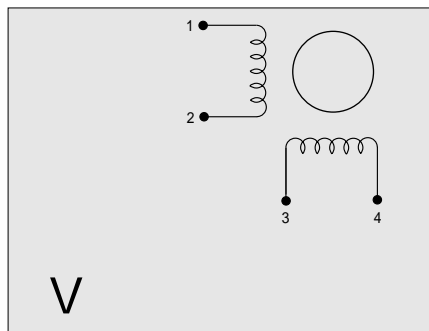
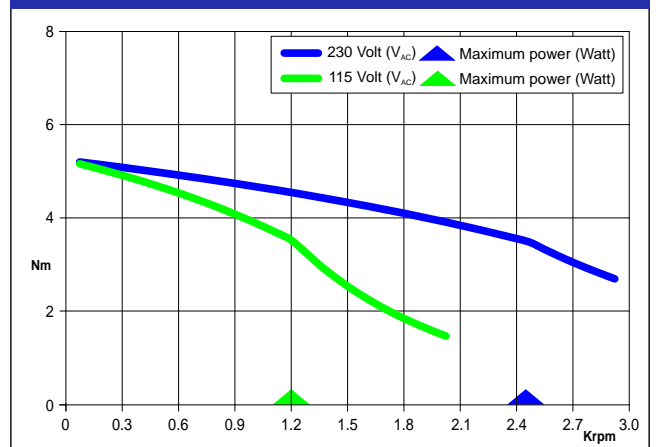
Dimensions (Unit:mm)



FEATURES

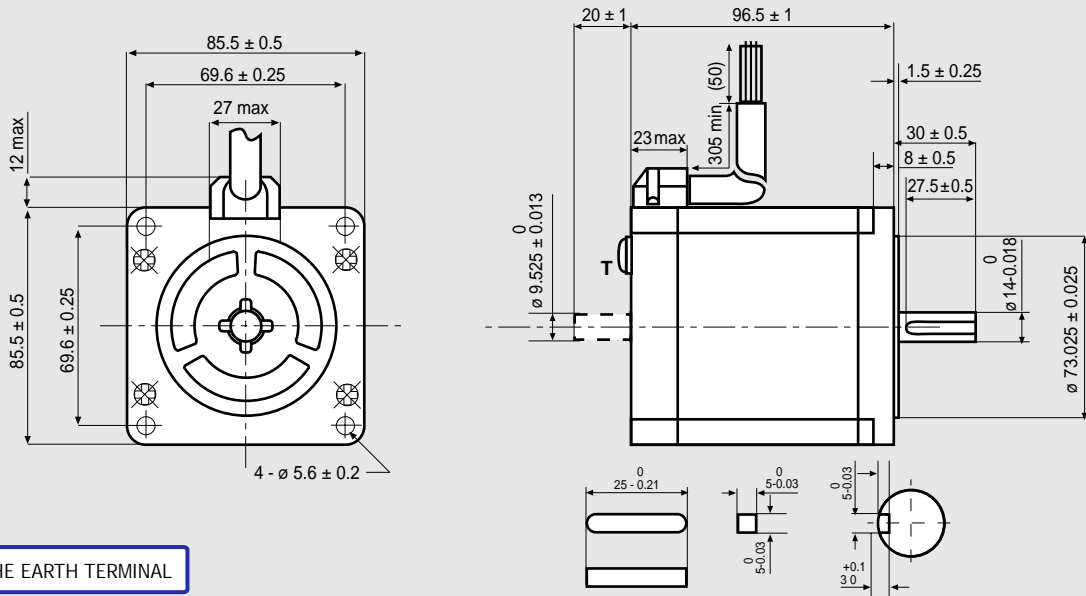
MODEL	SM 2862-5156	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT	(Amp)	4.0
RESISTANCE	(Ohm)	0.83
INDUCTANCE	(mH)	6.4
BIPOLAR HOLDING TORQUE	(Ncm)	700
ROTOR INERTIA	(Kgm ² x 10 ⁻⁷)	3000
THEORETICAL ACCELERATION	(rad x sec. ⁻²)	23300
BACK E.M.F.	(V/Krpm)	175
MASS	(Kg)	2.9
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 V _{AC} (350 V _{DC})
PROTECTION DEGREE	IP43-F	
LEADS CODE	V	

TORQUE/SPEED CURVE



Suggested R.T.A. driver: X-PLUS B Series, X-MIND Series.

Dimensions (Unit:mm)

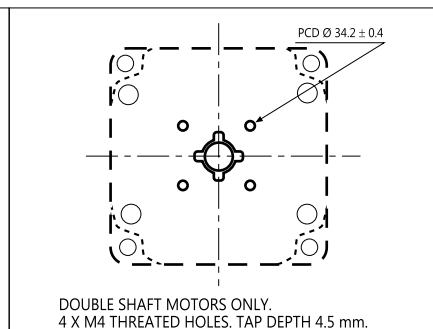
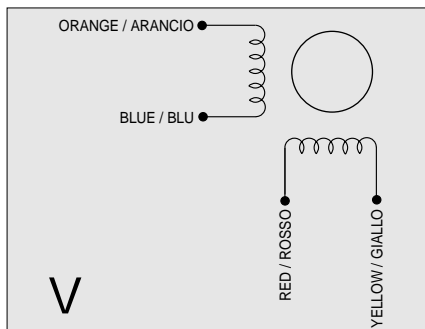
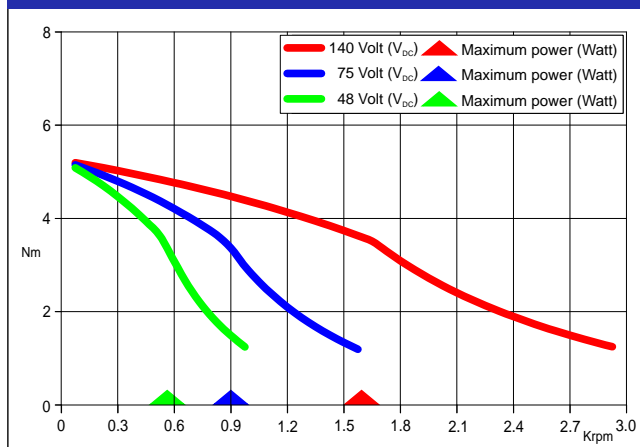


FEATURES

MODEL	SM 2862-5255 (SM 2862-5225)	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT	(Amp)	6.0
RESISTANCE	(Ohm)	0.36
INDUCTANCE	(mH)	2.8
BIPOLAR HOLDING TORQUE	(Ncm)	700
ROTOR INERTIA	(Kgm ² x 10 ⁻⁷)	3000
THEORETICAL ACCELERATION	(rad x sec. ⁻²)	23300
BACK E.M.F.	(V/Krpm)	120
MASS	(Kg)	2.9
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 V _{AC} (350 V _{DC})
PROTECTION DEGREE	IP43-F	
LEADS CODE	V	

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE

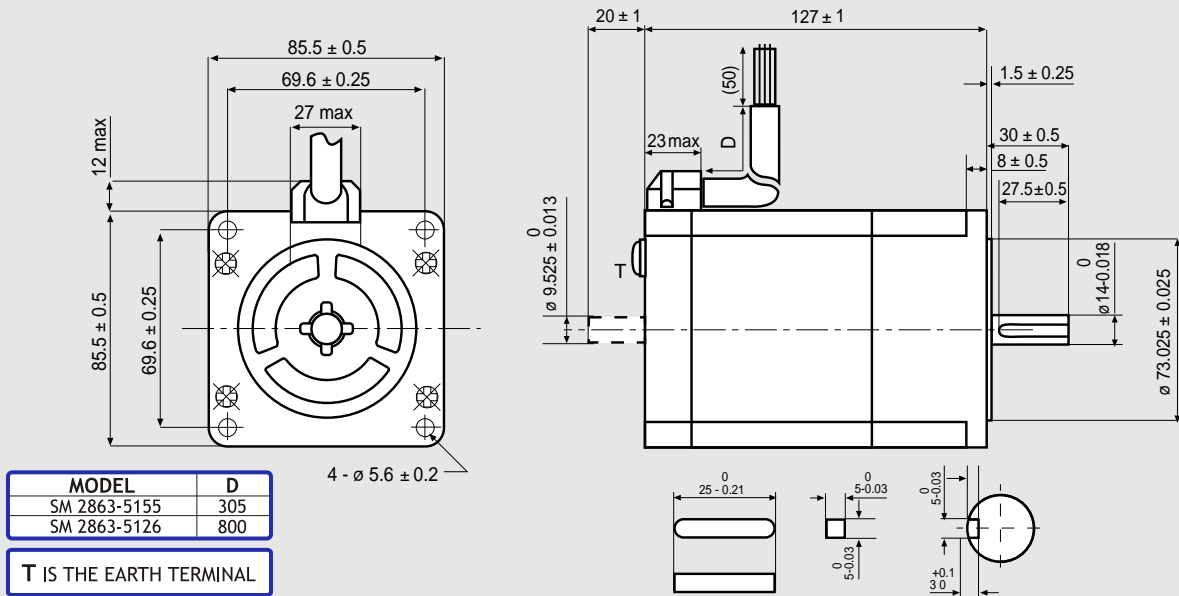


Suggested R.T.A. driver: NDC/A-NDC Series, ADW Series, HGD Series, PLUS Series.

SM 2863-5155

SANYO DENKI
SANMOTION

Dimensions (Unit:mm)

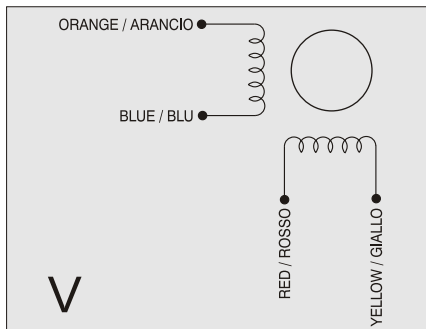
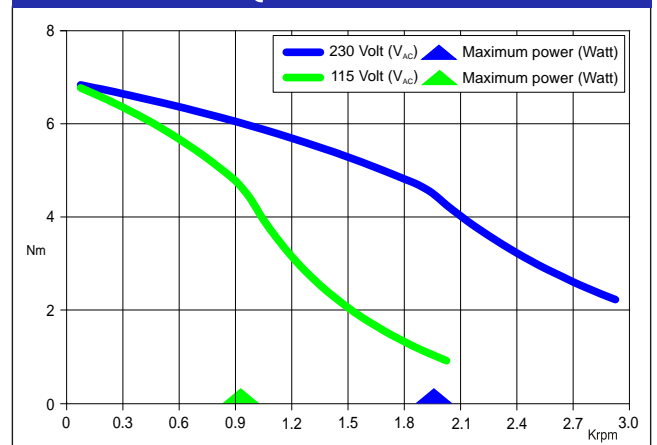


FEATURES

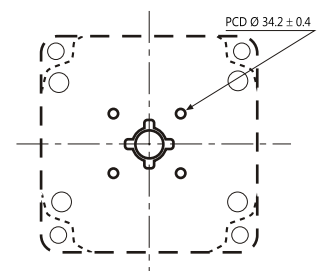
MODEL	SM 2863-5155 (SM 2863-5126)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	4.0
RESISTANCE (Ohm)	1.0
INDUCTANCE (mH)	7.9
BIPOLAR HOLDING TORQUE (Ncm)	920
ROTOR INERTIA (Kg m ² × 10 ⁻⁷)	4500
THEORETICAL ACCELERATION (rad × sec. ⁻²)	20500
BACK E.M.F. (V/Krpm)	241
MASS (Kg)	4
INTERNATIONAL STANDARDS	UL, CSA
INSULATION VOLTAGE (V)	250 V _{AC} (350 V _{DC})
PROTECTION DEGREE	IP43-F
LEADS CODE	V

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE



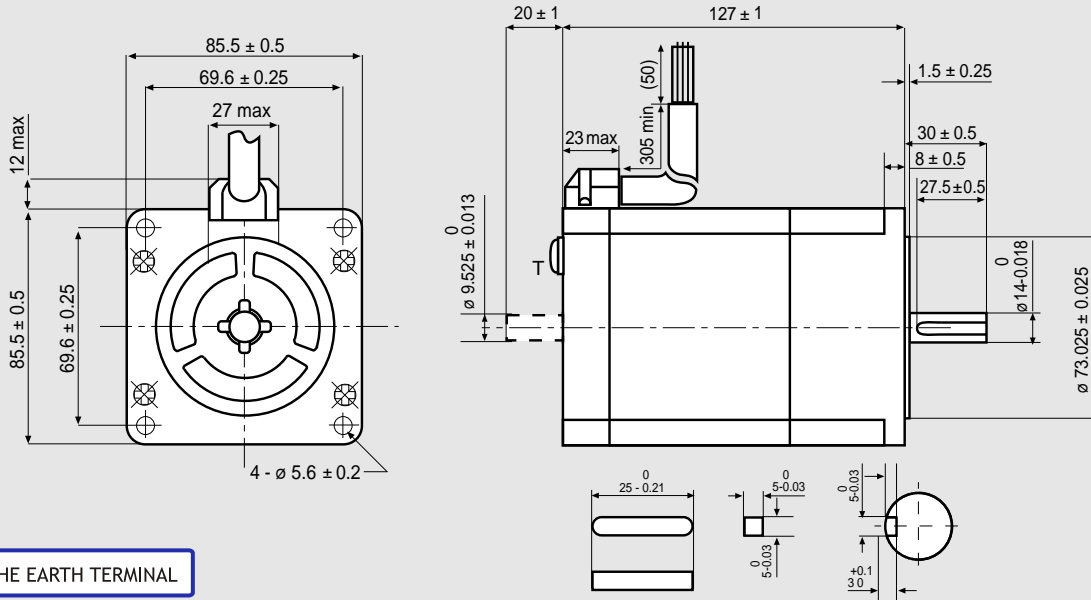
CE
UL
US



DOUBLE SHAFT MOTORS ONLY.
4 X M4 THREADED HOLES. TAP DEPTH 4.5 mm.

Suggested R.T.A. driver: X-PLUS B Series, X-MIND Series.

Dimensions (Unit:mm)

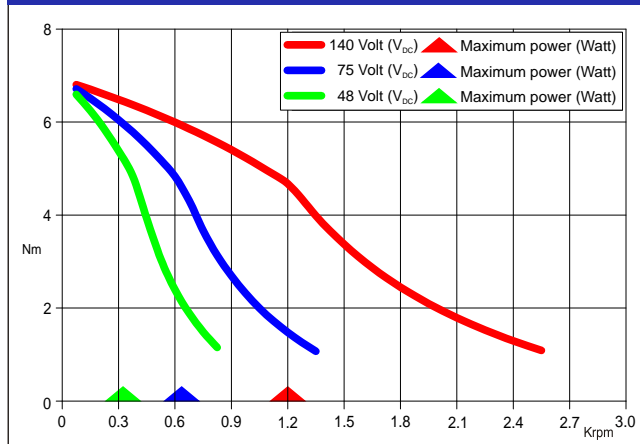


FEATURES

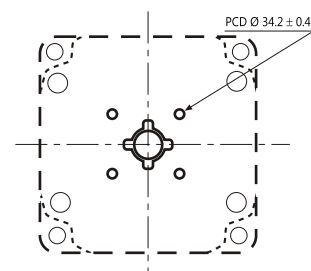
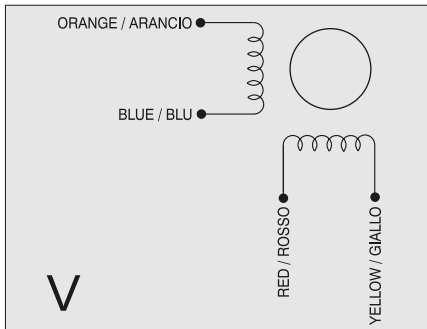
MODEL	SM 2863-5255 (SM 2863-5225)	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT	(Amp)	6.0
RESISTANCE	(Ohm)	0.46
INDUCTANCE	(mH)	3.8
BIPOLAR HOLDING TORQUE	(Ncm)	920
ROTOR INERTIA	(Kgm ² x 10 ⁻⁷)	4500
THEORETICAL ACCELERATION	(rad x sec. ⁻²)	20500
BACK E.M.F.	(V/Krpm)	161
MASS	(Kg)	4
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 V _{AC} (350 V _{DC})
PROTECTION DEGREE	IP43-F	
LEADS CODE	V	

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE



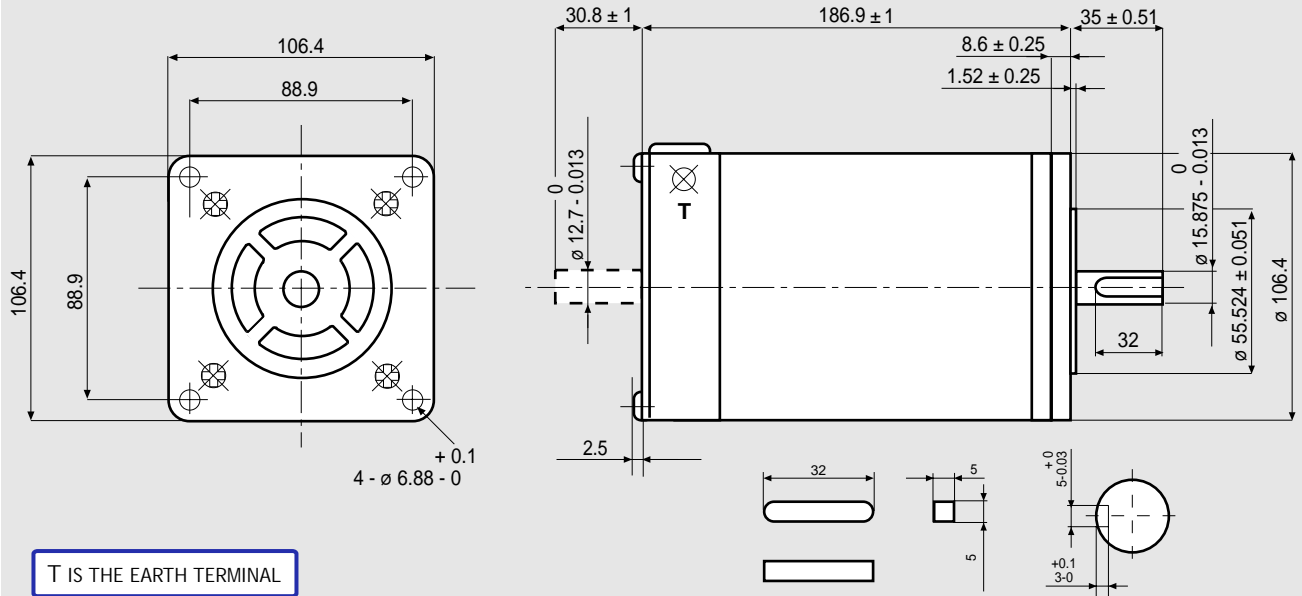
R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)



DOUBLE SHAFT MOTORS ONLY.
4 X M4 THREADED HOLES. TAP DEPTH 4.5 mm.

Suggested R.T.A. driver: NDC/A-NDC Series, ADW Series, HGD Series, PLUS Series.

Dimensions (Unit:mm)

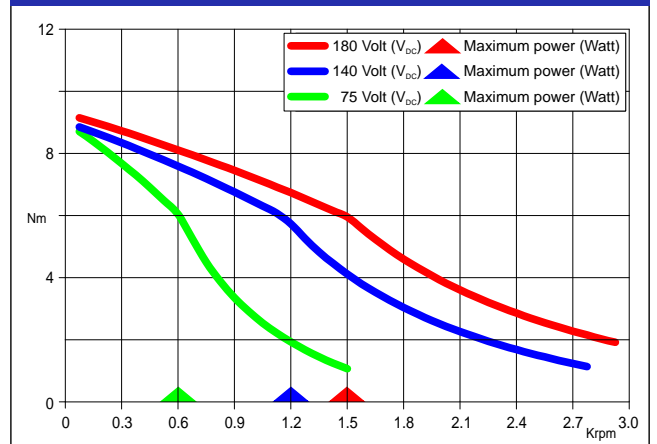


FEATURES

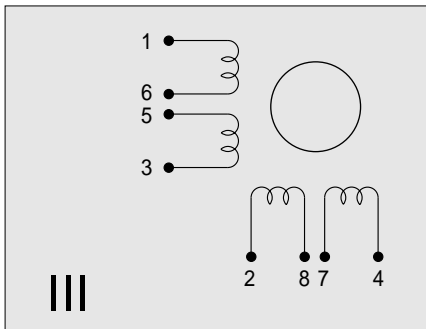
MODEL	103-8932-6451 (103-8932-6421)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	12.7
UNIPOLAR CURRENT (Amp)	9.0
RESISTANCE (Ohm)	0.28
INDUCTANCE (mH)	2.4
BIPOLAR HOLDING TORQUE (Ncm)	1330
UNIPOLAR HOLDING TORQUE (Ncm)	1020
ROTOR INERTIA (Kgm ² × 10 ⁻⁷)	8000
THEORETICAL ACCELERATION (rad × sec. ⁻²)	16500
BACK E.M.F. (V/Krpm)	85
MASS (Kg)	7.0
PROTECTION DEGREE	IP43
LEADS CODE	III

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

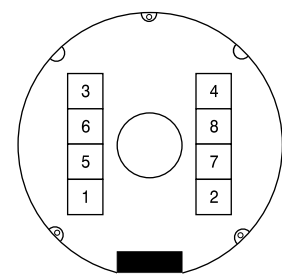
TORQUE/SPEED CURVE



R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)

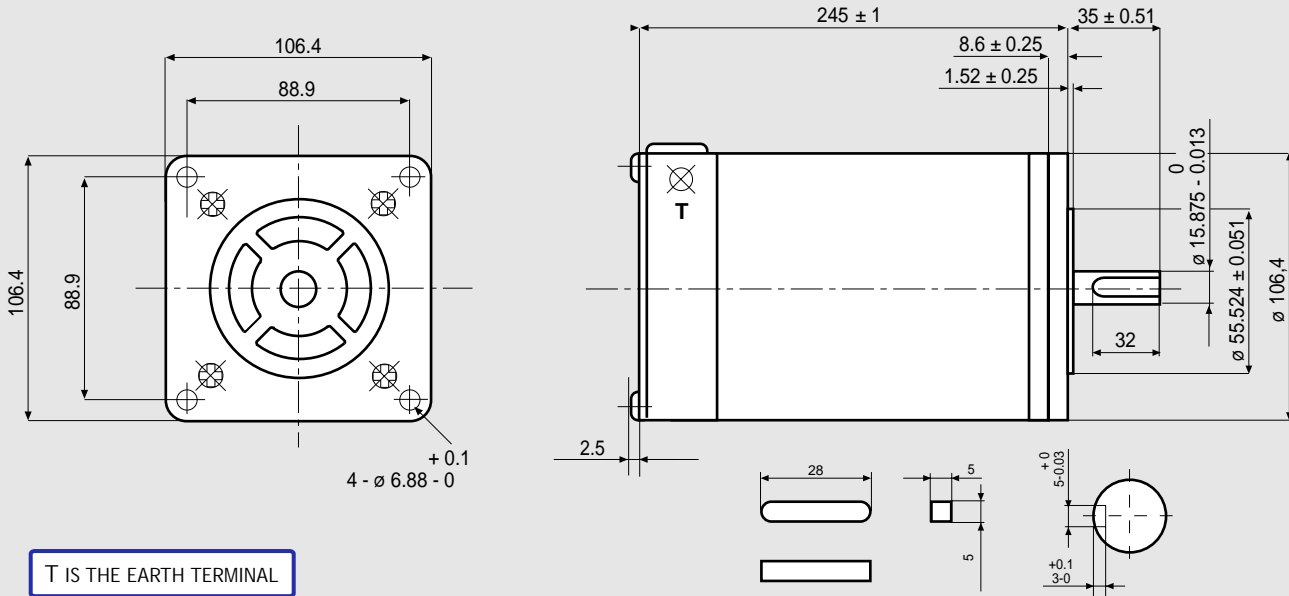


Terminal box - Internal view



Suggested R.T.A. driver: contact R.T.A.

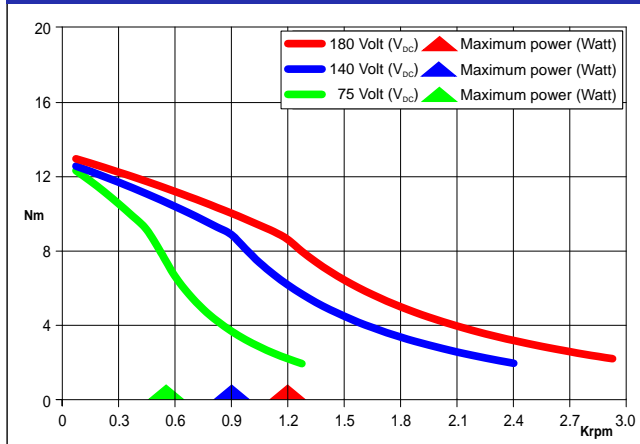
Dimensions (Unit:mm)



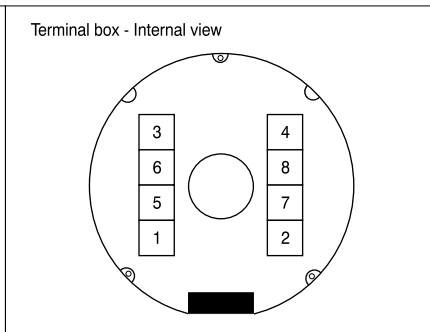
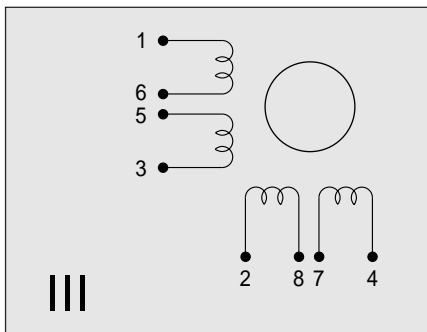
FEATURES

MODEL	103-8960-6551
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	14.1
UNIPOLAR CURRENT (Amp)	10
RESISTANCE (Ohm)	0.28
INDUCTANCE (mH)	3.0
BIPOLAR HOLDING TORQUE (Ncm)	2060
UNIPOLAR HOLDING TORQUE (Ncm)	1580
ROTOR INERTIA (Kgm ² × 10 ⁻⁷)	11500
THEORETICAL ACCELERATION (rad × sec. ⁻²)	17900
BACK E.M.F. (V/Krpm)	120
MASS (Kg)	10.5
PROTECTION DEGREE	IP43
LEADS CODE	III

TORQUE/SPEED CURVE



R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO.,LTD (JAPAN)

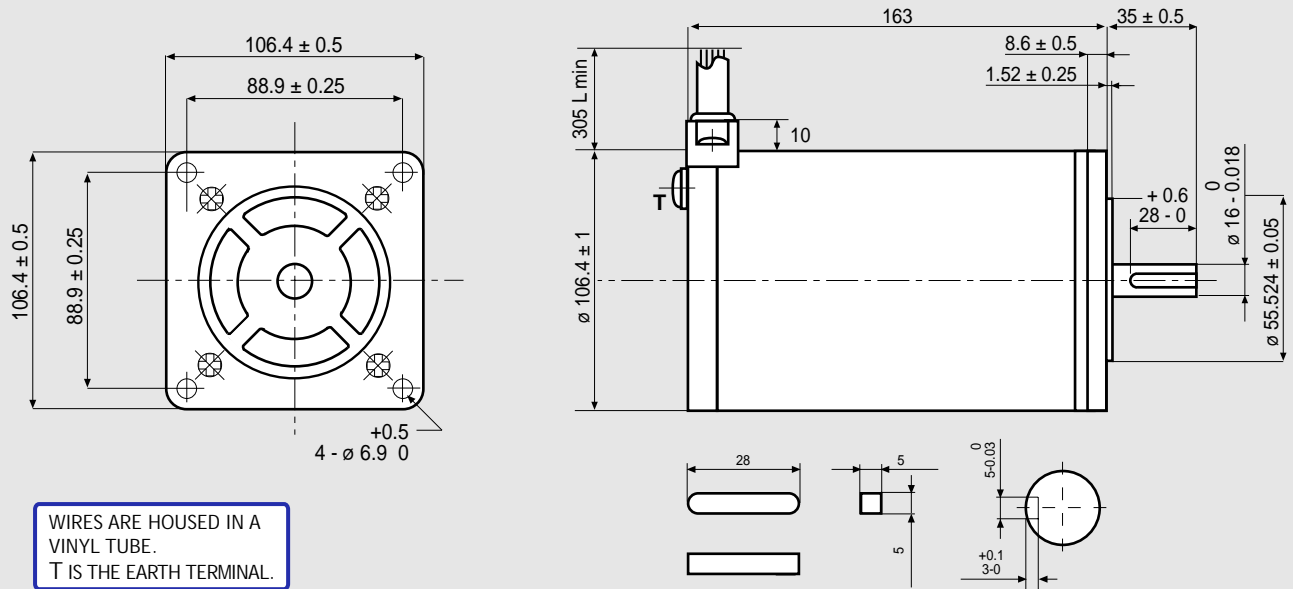


Suggested R.T.A. driver: contact R.T.A.

103-H89222-6341

SANYO DENKI
SANMOTION

Dimensions (Unit:mm)

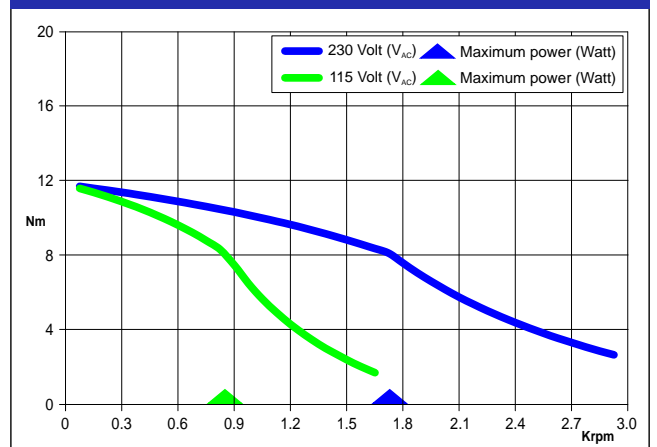


FEATURES

MODEL	103-H89222-6341 (103-H89222-6311)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	6.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	0.45
INDUCTANCE (mH)	5.4
BIPOLAR HOLDING TORQUE (Ncm)	1620
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kgm ² × 10 ⁻⁷)	14650
THEORETICAL ACCELERATION (rad × sec. ⁻²)	11100
BACK E.M.F. (V/Krpm)	270
MASS (Kg)	7
PROTECTION DEGREE	IP43
LEADS CODE	V

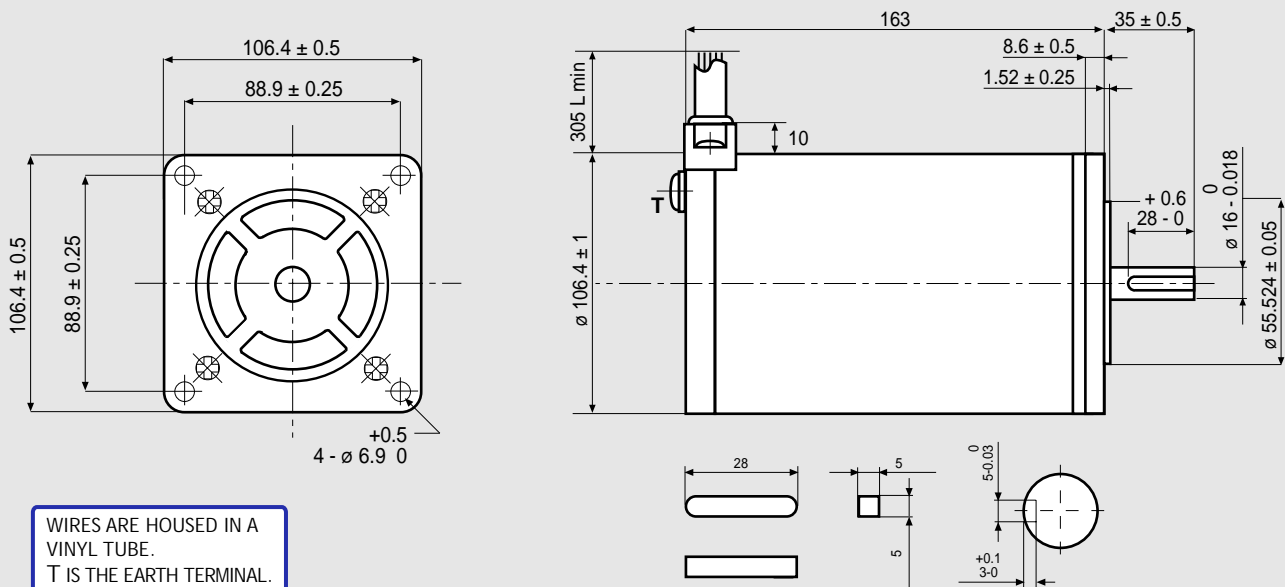
Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE



Suggested R.T.A. driver: PLUS Series, X-MIND Series.

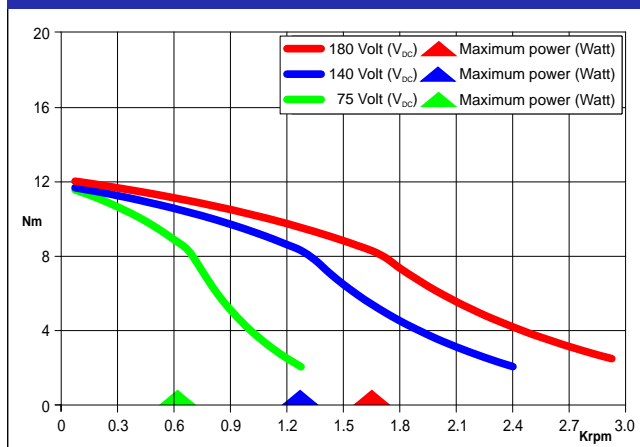
Dimensions (Unit:mm)



FEATURES

MODEL	103-H89222-6541
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	10
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	0.16
INDUCTANCE (mH)	1.9
BIPOLAR HOLDING TORQUE (Ncm)	1620
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kgm ² x 10 ⁻⁷)	14650
THEORETICAL ACCELERATION (rad x sec. ⁻²)	11100
BACK E.M.F. (V/Krpm)	162
MASS (Kg)	7
PROTECTION DEGREE	IP43
LEADS CODE	V

TORQUE/SPEED CURVE



R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)

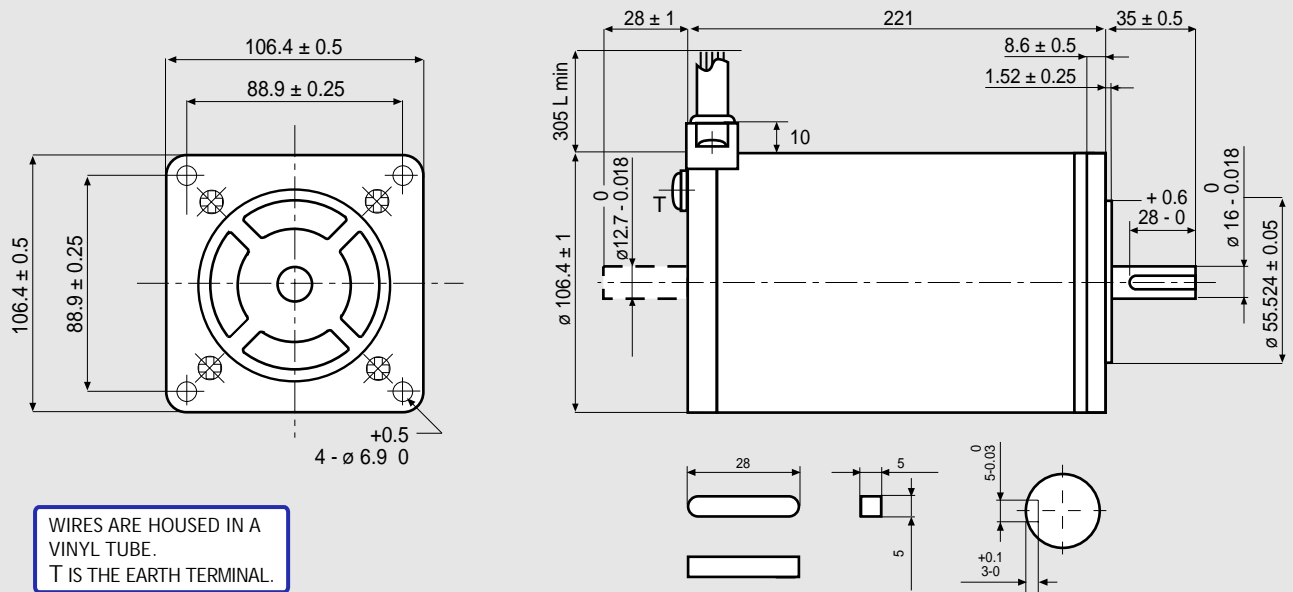


Suggested R.T.A. driver: contact R.T.A.

103-H89223-6341

SANYO DENKI
SANMOTION

Dimensions (Unit:mm)

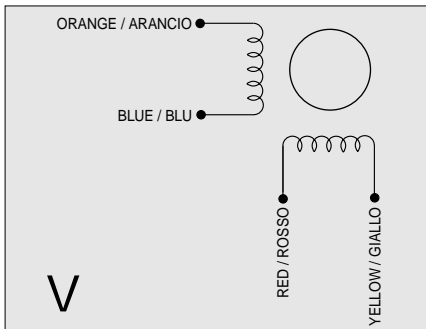
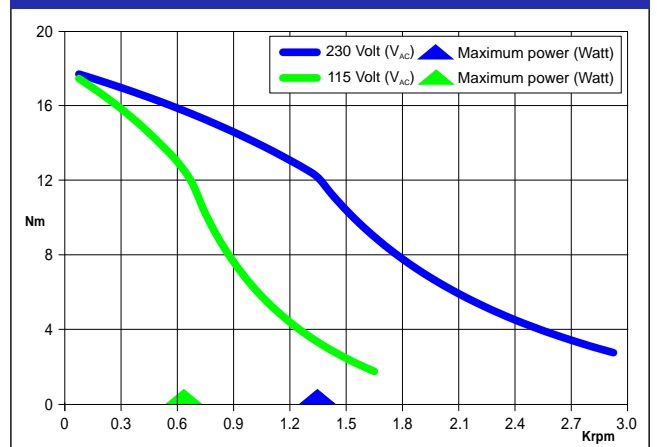


FEATURES

MODEL	103-H89223-6341 (103-H89223-6311)	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT (Amp)	6.0	
UNIPOLAR CURRENT (Amp)	6.0	
RESISTANCE (Ohm)	0.63	
INDUCTANCE (mH)	8.0	
BIPOLAR HOLDING TORQUE (Ncm)	2460	
UNIPOLAR HOLDING TORQUE (Ncm)	2460	
ROTOR INERTIA (Kgm ² × 10 ⁻⁷)	22000	
THEORETICAL ACCELERATION (rad × sec. ⁻²)	11100	
BACK E.M.F. (V/Krpm)	410	
MASS (Kg)	10	
PROTECTION DEGREE	IP43	
LEADS CODE	V	

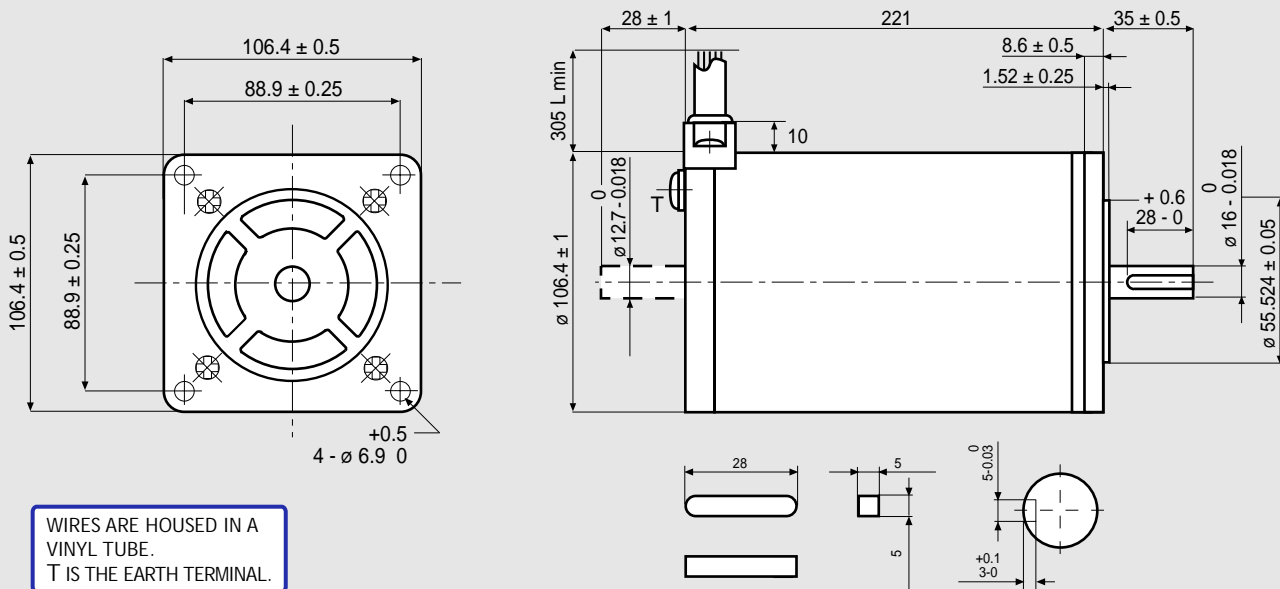
Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE



Suggested R.T.A. driver: PLUS Series, X-MIND Series.

Dimensions (Unit:mm)

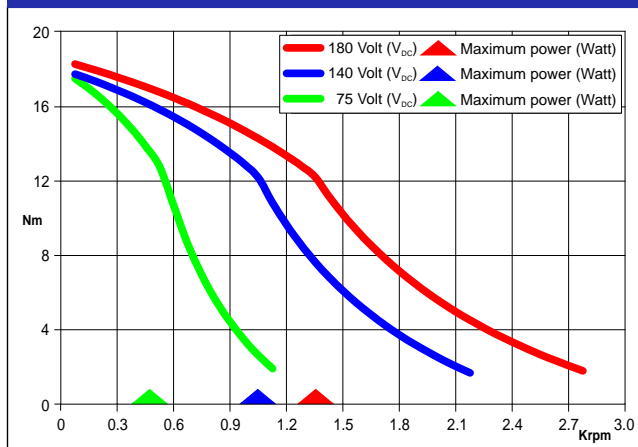


FEATURES

MODEL	103-H89223-6641 (103-H89223-6611)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	12.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	0.16
INDUCTANCE (mH)	2.0
BIPOLAR HOLDING TORQUE (Ncm)	2460
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kg ^m ² x 10 ⁻⁷)	22000
THEORETICAL ACCELERATION (rad x sec. ⁻²)	11100
BACK E.M.F. (V/Krpm)	205
MASS (Kg)	10
PROTECTION DEGREE	IP43
LEADS CODE	V

Codes between brackets refer to double shaft models.
Le sigle fra parentesi si riferiscono ai modelli bialbero.

TORQUE/SPEED CURVE

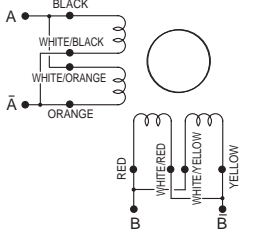
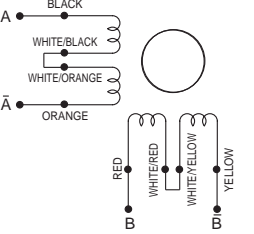
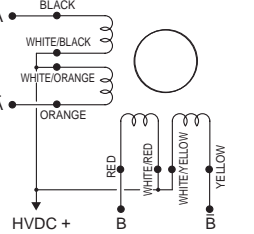
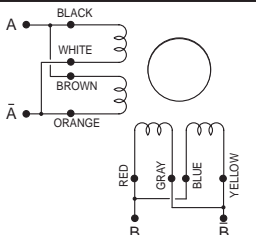
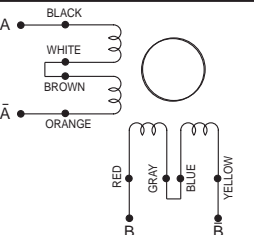
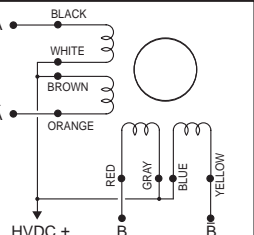
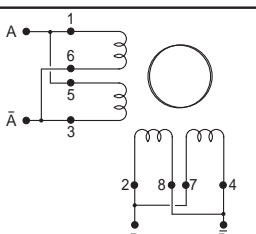
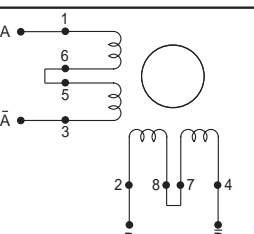
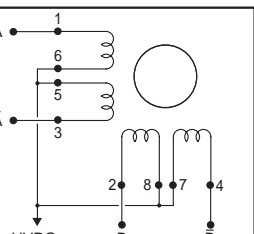
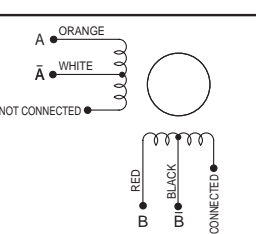
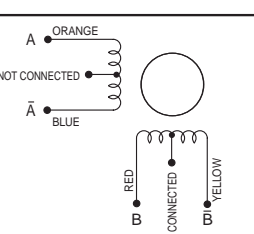
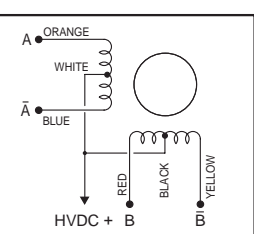
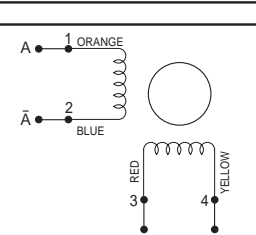
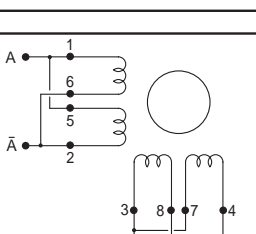
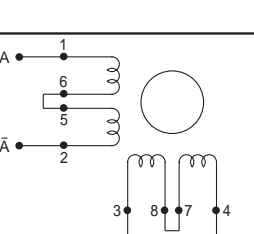


R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO.,LTD (JAPAN)



Suggested R.T.A. driver: contact R.T.A.

Connection schematics of R.T.A. drives with SANYO DENKI motors

LEADS CODE CODICE TERMINALI	PARALLEL BIPOLAR CONNECTION COLLEGAMENTO BIPOLARE PARALLELO	SERIES BIPOLAR CONNECTION COLLEGAMENTO BIPOLARE SERIE	UNIPOLAR CONNECTION COLLEGAMENTO UNIPOLEARE
I			
II			
III			
IV			
V			
VI			

CONVERSION FACTORS

LENGTH 1 mm = 3.937×10^{-2} inch

MASS 1 Kg = 2.205 x lb force

INERTIA 10^7 g cm² = 1 Kg m² = 5.467×10^4 oz in² = 3.417×10^3 lb in²

TORQUE 1 Nm = 1.416×10^2 oz in = 0.738 ft lb = 8.85 in lb
1 Ncm = 1.416 oz in = 7.38×10^{-3} ft lb = 8.85×10^{-2} in lb

POWER 1 KW = 1.34 hp
1 W = 1.34×10^{-3} hp



Stepping motors with Encoder

STEPPING MOTORS WITH ENCODER TABLE OF CONTENTS



STEPPING MOTORS WITH ENCODER (EM series motors)	SANYO DENKI MOTOR CODE CODICE MOTORE SANYO DENKI	HOLDING TORQUE COPPIA DI TENUITA' (Ncm.)	FLANGE SIZE DIMENSIONI FLANGIA (mm.)	LENGTH LUNGHEZZA (mm.)	CURRENT CORRENTE (Amp)	TECHNICAL DATA DATI TECNICI (page/pagina)
SIZE 1.7" - □ 42 mm.						
 EM 1H2H-04D0	103-H5210-4512	51	□ 42	48.0	2.0	60
SIZE 2.2" - □ 56 mm.						
 EM 2H1M-04D0	103-H7123-1711	110	□ 56	53.8	4.0	61
 EM 2H2M-04D0	103-H7126-1710	165	□ 56	75.8	4.0	62
SIZE 60 mm. - □ 60 mm.						
 EM 6H2M-04D0	103-H7823-1714	300	□ 60	85.8	4.0	63
SIZE 3.4" - □ 85,5 mm.						
 EM 3F1H-04D0	SM 2861-5225	360	□ 85.5	66.0	6.0	64
 EM 3F2H-04D0	SM 2862-5225	700	□ 85.5	96.5	6.0	65
 EM 3F3H-04D0	SM 2863-5225	920	□ 85.5	127.0	6.0	66
 EM 3F1L-04D0	SM 2861-5025	360	□ 85.5	66.0	2.0	67
 EM 3F2M-04D0	SM 2862-5125	700	□ 85.5	96.5	4.0	68
 EM 3F3M-14D0	SM 2863-5126	920	□ 85.5	127.0	4.0	69

SUGGESTED MOTOR WITH ENCODER/DRIVE COUPLING

- The following tables show suggested motor with encoder/drive coupling between SANYO DENKI stepping motors with encoder and R.T.A. Drives.
- R.T.A. suggests contacting its commercial personnel to verify and validate the optimal motor / drive coupling.

- Nelle tabelle seguenti sono indicati gli accoppiamenti motore con encoder/serie di azionamenti consigliati da R.T.A.
- R.T.A. consiglia di contattare il proprio personale commerciale per verificare e validare l'ottimale accoppiamento fra motore e azionamento.

STEPPING MOTORS WITH ENCODER / DRIVE COUPLING - ENCODER MANAGED BY CONTROL SYSTEM

STEPPING MOTORS WITH ENCODER (EM series motors)	R.T.A. Drives / Azionamenti R.T.A. *													
	BSD	CSD	CSD J	A-CSD	NDC	A-NDC	ADW	HGD	PLUS A/B	PLUS K	PLUS J	X-PLUS B	X-MIND B	X-MIND K
SIZE 1.7" - □ 42 mm.														
EM 1H2H-04D0	■	■		■	■	■	■	■						
SIZE 2.2" - □ 56 mm.														
EM 2H1M-04D0		■	■	■	■	■	■	■	■	■	■			
EM 2H2M-04D0		■	■	■	■	■	■	■	■	■	■			
SIZE 60 mm. - □ 60 mm.														
EM 6H2M-04D0		■	■	■	■	■	■	■	■	■	■			
SIZE 3.4" - □ 85,5 mm.														
EM 3F1H-04D0					■	■	■	■	■	■	■			
EM 3F2H-04D0					■	■	■	■	■	■	■			
EM 3F3H-04D0					■	■	■	■	■	■	■			
EM 3F1L-04D0												■	■	■
EM 3F2M-04D0												■	■	■
EM 3F3M-14D0												■	■	■

STEPPING MOTORS WITH ENCODER / DRIVE COUPLING - ENCODER MANAGED BY R.T.A. DRIVE

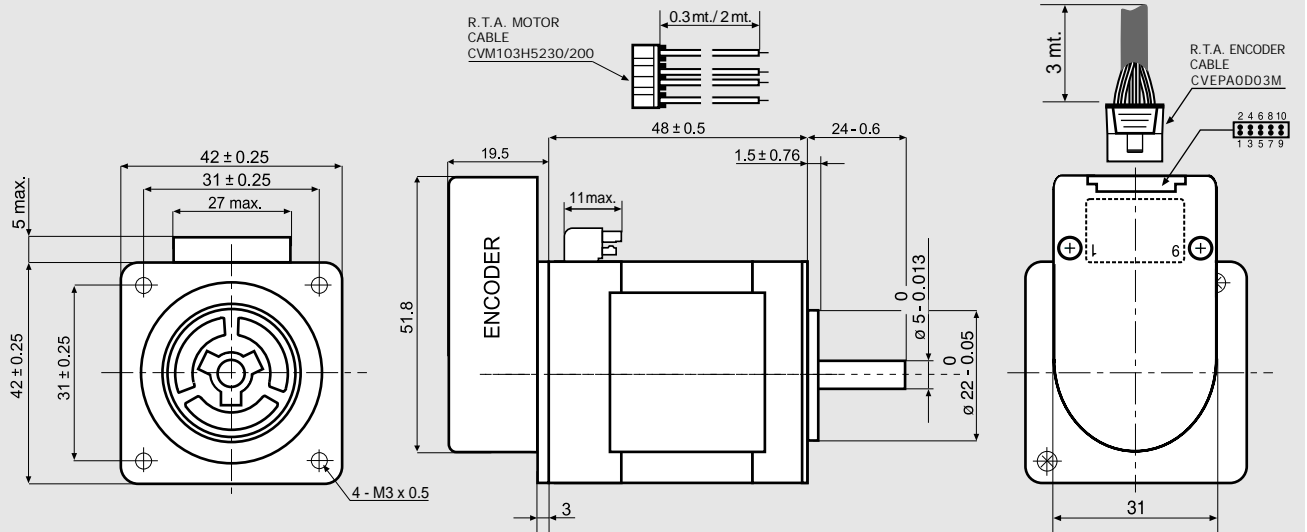
STEPPING MOTORS WITH ENCODER (EM series motors)	R.T.A. Drives / Azionamenti R.T.A. *			
	Standard signal : DIFFERENTIAL		Standard signal : SINGLE ENDED	
	PLUS ET series	X-PLUS ET series	PLUS E series	PLUS L series
SIZE 2.2" - □ 56 mm.				
EM 2H1M-04D0 (04S0)	■		■	■
EM 2H2M-04D0 (04S0)	■		■	■
SIZE 60 mm. - □ 60 mm.				
EM 6H2M-04D0 (04S0)	■		■	■
SIZE 3.4" - □ 85,5 mm.				
EM 3F1H-04D0 (04S0)	■		■	■
EM 3F2H-04D0 (04S0)	■		■	■
EM 3F3H-04D0 (04S0)	■		■	■
EM 3F1L-04D0		■		
EM 3F2M-04D0		■		
EM 3F3M-14D0		■		

NOTE: Codes between brackets refer to models with SINGLE ENDED standard signal.
 NOTA: Le sigle fra parentesi si riferiscono ai modelli con segnale di uscita SINGLE ENDED.

*For more info, please refer to www.rta.it
 *Per ulteriori informazioni, si veda www.rta.it

EM 1H2H-04D0

Dimensions (Unit:mm)



SANYO DENKI MOTOR FEATURES

MODEL	EM 1H2H-04D0	
SANYO DENKI MOTOR CODE	103-H5210-4512	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(Amp)	2.0
RESISTANCE	(Ohm)	1.25
INDUCTANCE	(mH)	2.4
BIPOLAR HOLDING TORQUE	(Ncm)	51
ROTOR INERTIA	(Kg ^m × 10 ⁻⁷)	74
THEORETICAL ACCELERATION	(rad × sec. ⁻²)	69000
BACK E.M.F.	(V/Krpm)	14
MASS	(Kg)	0.35
LEADS CODE	V	

103-H5210-4512 MOTOR NEEDS CVM103H5230 OR CVM103H52200 R.T.A. CABLES. CONTACT R.T.A. FOR FURTHER DETAILS.

ENCODER FEATURES

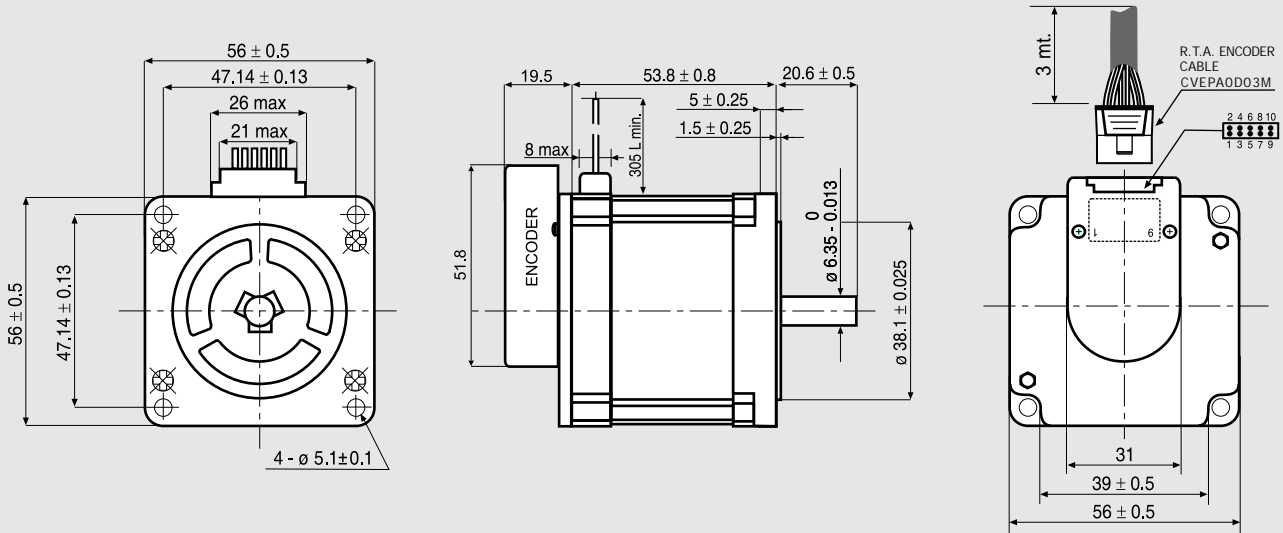
POWER SUPPLY VOLTAGE	(Volt)	5 V _{DC} ± 5%
CURRENT CONSUMPTION	(mAmp)	50
HIGH LEVEL OUTPUT	(Volt)	3.5 (TIP) - 2.4 (MIN) (I _{MAX} =10 mA)
LOW LEVEL OUTPUT	(Volt)	0.2 (TIP) - 0.4 (MAX) (I _{MAX} =10 mA)
OUTPUT SIGNAL	Differential (SINGLE ENDED version available)	
RESOLUTION	400 cycles per revolution (500 & 1000 CPR version available)	
MAXIMUM FREQUENCY	(KHz)	100
INDEX VERSION	Available upon request	

ENCODER NEEDS CVEPA0D03M R.T.A. CABLE. CONTACT R.T.A. FOR FURTHER DETAILS.

		ENCODER PIN-OUTS				
V	ORANGE / ARANCIO		PIN	DESCRIPTION	PIN	DESCRIPTION
	BLUE / BLU		1	NO CONNECTION	6	CHANNEL A+
	RED / ROSSO	2	+ DC (5 V)	7	CHANNEL B-	
	YELLOW / GIALLO	3	GROUND	8	CHANNEL B+	
		4	NO CONNECTION	9	NO CONNECTION	
		5	CHANNEL A-	10	NO CONNECTION	

EM 2H1M-04D0

Dimensions (Unit:mm)



SANYO DENKI MOTOR FEATURES

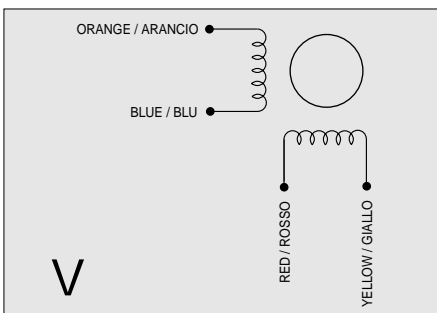
MODEL	EM 2H1M-04D0	
SANYO DENKI MOTOR CODE	103-H7123-1711	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(Amp)	4.0
RESISTANCE	(Ohm)	0.41
INDUCTANCE	(mH)	1.6
BIPOLAR HOLDING TORQUE	(Ncm)	110
ROTOR INERTIA	(Kg ^m × 10 ⁻⁷)	210
THEORETICAL ACCELERATION	(rad × sec. ⁻²)	50000
BACK E.M.F.	(V/Krpm)	20
MASS	(Kg)	0.65
LEADS CODE	V	

R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)

ENCODER FEATURES

POWER SUPPLY VOLTAGE	(Volt)	5 V _{DC} ± 5%
CURRENT CONSUMPTION	(mAmp)	50
HIGH LEVEL OUTPUT	(Volt)	3.5 (TIP) - 2.4 (MIN) (I _{MAX} =10 mA)
LOW LEVEL OUTPUT	(Volt)	0.2 (TIP) - 0.4 (MAX) (I _{MAX} =10 mA)
OUTPUT SIGNAL	Differential (SINGLE ENDED version available)	
RESOLUTION	400 cycles per revolution (500 & 1000 CPR version available)	
MAXIMUM FREQUENCY	(KHz)	100
INDEX VERSION	Available upon request	

ENCODER NEEDS CVEPA0D03M R.T.A. CABLE. CONTACT R.T.A. FOR FURTHER DETAILS.



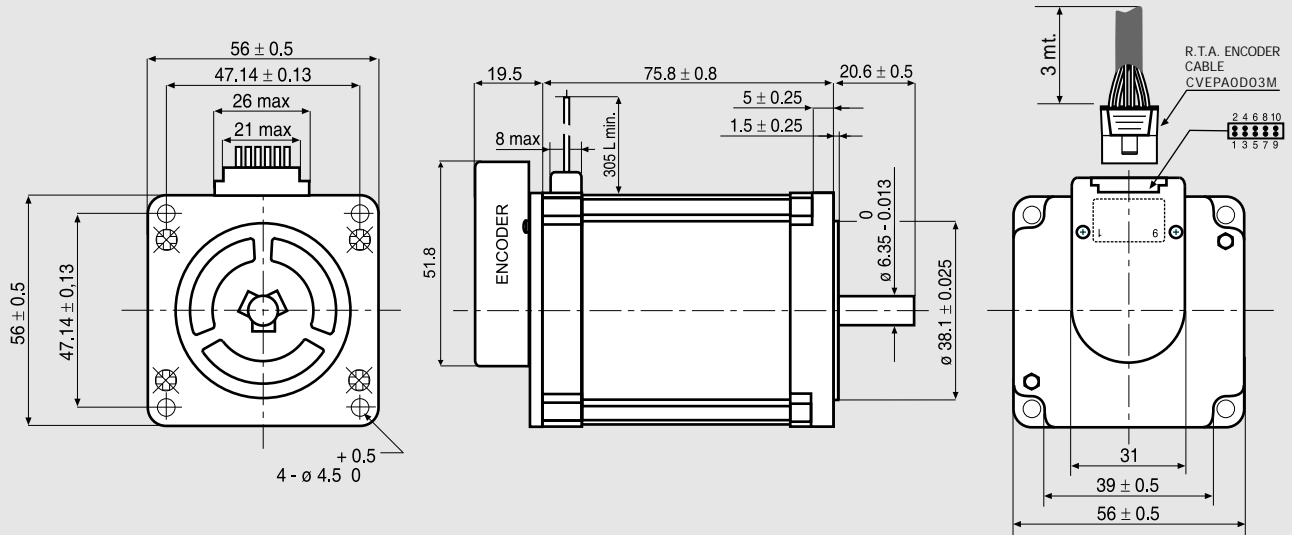
ENCODER PIN-OUTS

PIN	DESCRIPTION
1	NO CONNECTION
2	+ DC (5 V)
3	GROUND
4	NO CONNECTION
5	CHANNEL A-

PIN	DESCRIPTION
6	CHANNEL A+
7	CHANNEL B-
8	CHANNEL B+
9	NO CONNECTION
10	NO CONNECTION

EM 2H2M-04D0

Dimensions (Unit:mm)



SANYO DENKI MOTOR FEATURES

MODEL	EM 2H2M-04D0	
SANYO DENKI MOTOR CODE	103-H7126-1710	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLEAR PARALLEL CURRENT	(Amp)	4.0
RESISTANCE	(Ohm)	0.48
INDUCTANCE	(mH)	2.2
BIPOLEAR HOLDING TORQUE	(Ncm)	165
ROTOR INERTIA	(Kg ^m × 10 ⁻⁷)	360
THEORETICAL ACCELERATION	(rad × sec. ⁻²)	45800
BACK E.M.F.	(V/Krpm)	31
MASS	(Kg)	1.0
LEADS CODE	V	

ENCODER FEATURES

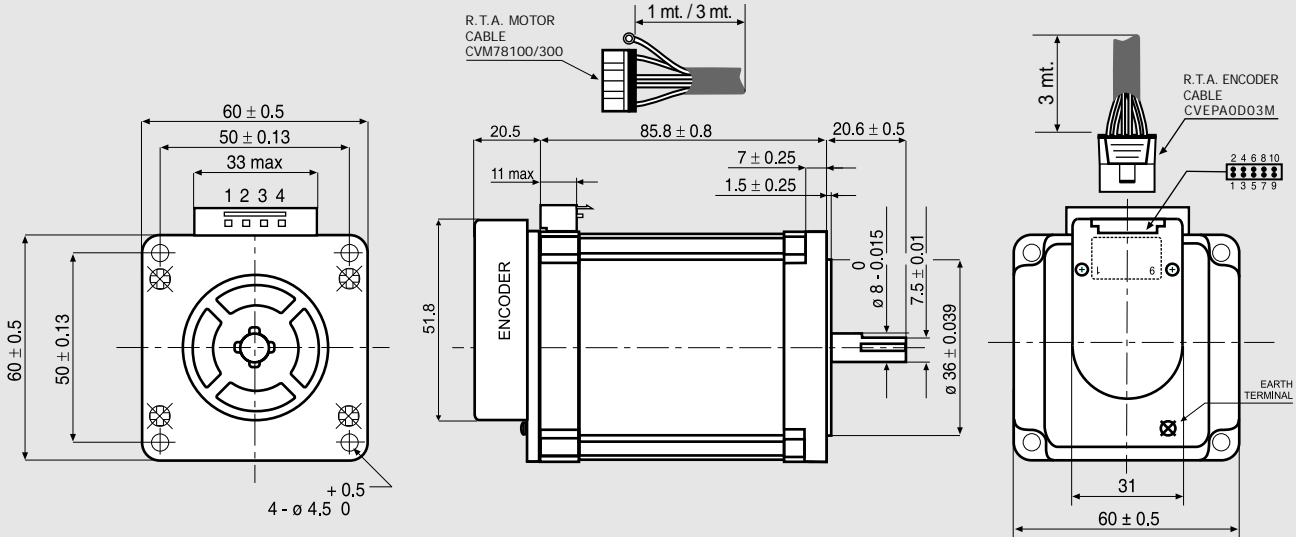
POWER SUPPLY VOLTAGE	(Volt)	5 V _{DC} ± 5%
CURRENT CONSUMPTION	(mAmp)	50
HIGH LEVEL OUTPUT	(Volt)	3.5 (TIP) - 2.4 (MIN) (I _{max} =10 mA)
LOW LEVEL OUTPUT	(Volt)	0.2 (TIP) - 0.4 (MAX) (I _{max} =10 mA)
OUTPUT SIGNAL	Differential (SINGLE ENDED version available)	
RESOLUTION	400 cycles per revolution (500 & 1000 CPR version available)	
MAXIMUM FREQUENCY	(KHz)	100
INDEX VERSION	Available upon request	

ENCODER NEEDS CVEPA0D03M R.T.A. CABLE. CONTACT R.T.A. FOR FURTHER DETAILS.

ENCODER PIN-OUTS																							
	<table border="1"> <thead> <tr> <th>PIN</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>NO CONNECTION</td> </tr> <tr> <td>2</td> <td>+ DC (5 V)</td> </tr> <tr> <td>3</td> <td>GROUND</td> </tr> <tr> <td>4</td> <td>NO CONNECTION</td> </tr> <tr> <td>5</td> <td>CHANNEL A-</td> </tr> <tr> <td>6</td> <td>CHANNEL A+</td> </tr> <tr> <td>7</td> <td>CHANNEL B-</td> </tr> <tr> <td>8</td> <td>CHANNEL B+</td> </tr> <tr> <td>9</td> <td>NO CONNECTION</td> </tr> <tr> <td>10</td> <td>NO CONNECTION</td> </tr> </tbody> </table>	PIN	DESCRIPTION	1	NO CONNECTION	2	+ DC (5 V)	3	GROUND	4	NO CONNECTION	5	CHANNEL A-	6	CHANNEL A+	7	CHANNEL B-	8	CHANNEL B+	9	NO CONNECTION	10	NO CONNECTION
PIN	DESCRIPTION																						
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2	+ DC (5 V)																						
3	GROUND																						
4	NO CONNECTION																						
5	CHANNEL A-																						
6	CHANNEL A+																						
7	CHANNEL B-																						
8	CHANNEL B+																						
9	NO CONNECTION																						
10	NO CONNECTION																						

EM 6H2M-04D0

Dimensions (Unit:mm)



SANYO DENKI MOTOR FEATURES

MODEL	EM 6H2M-04D0	
SANYO DENKI MOTOR CODE	103-H7823-1714	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(Amp)	4.0
RESISTANCE	(Ohm)	0.65
INDUCTANCE	(mH)	2.4
BIPOLAR HOLDING TORQUE	(Ncm)	300
ROTOR INERTIA	(Kg ^m × 10 ⁻³)	840
THEORETICAL ACCELERATION	(rad × sec. ⁻²)	35700
BACK E.M.F.	(V/Krpm)	75
MASS	(Kg)	1.4
LEADS CODE	V	

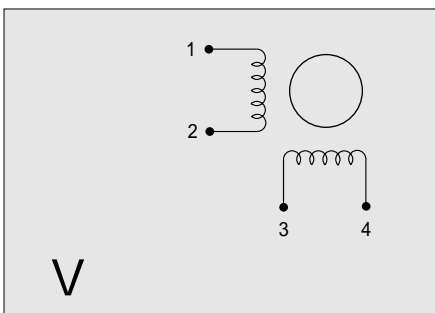
103-H7823-1714 MOTOR NEEDS CVM78/100 OR CVM78/300 R.T.A. CABLES. CONTACT R.T.A. FOR FURTHER DETAILS.

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ENCODER FEATURES

POWER SUPPLY VOLTAGE	(Volt)	5 V _{DC} ± 5%
CURRENT CONSUMPTION	(mAmp)	50
HIGH LEVEL OUTPUT	(Volt)	3.5 (TIP) - 2.4 (MIN) (I _{MAX} =10 mA)
LOW LEVEL OUTPUT	(Volt)	0.2 (TIP) - 0.4 (MAX) (I _{MAX} =10 mA)
OUTPUT SIGNAL	Differential (SINGLE ENDED version available)	
RESOLUTION	400 cycles per revolution (500 & 1000 CPR version available)	
MAXIMUM FREQUENCY	(KHz)	100
INDEX VERSION	Available upon request	

ENCODER NEEDS CVEPA0D03M R.T.A. CABLE. CONTACT R.T.A. FOR FURTHER DETAILS.

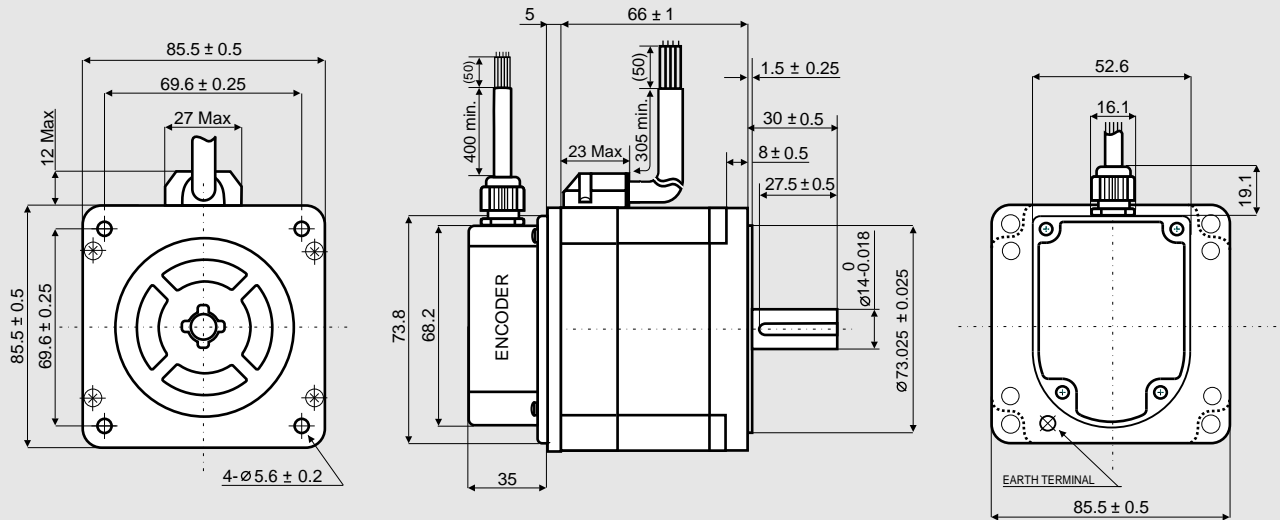


ENCODER PIN-OUTS

PIN	DESCRIPTION	PIN	DESCRIPTION
1	NO CONNECTION	6	CHANNEL A+
2	+ DC (5 V)	7	CHANNEL B-
3	GROUND	8	CHANNEL B+
4	NO CONNECTION	9	NO CONNECTION
5	CHANNEL A-	10	NO CONNECTION

EM 3F1H-04D0

Dimensions (Unit:mm)



SANYO DENKI MOTOR FEATURES

MODEL	EM 3F1H-04D0	
SANYO DENKI MOTOR CODE	SM 2861-5225	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(Amp)	6.0
RESISTANCE	(Ohm)	0.29
INDUCTANCE	(mH)	1.7
BIPOLAR HOLDING TORQUE	(Ncm)	360
ROTOR INERTIA	(Kg ^m × 10 ⁻⁷)	1480
THEORETICAL ACCELERATION	(rad × sec. ⁻²)	24300
BACK E.M.F.	(V/Krpm)	60
MASS	(Kg)	1.7
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS	IP43 - F	
LEADS CODE	V	

ENCODER FEATURES

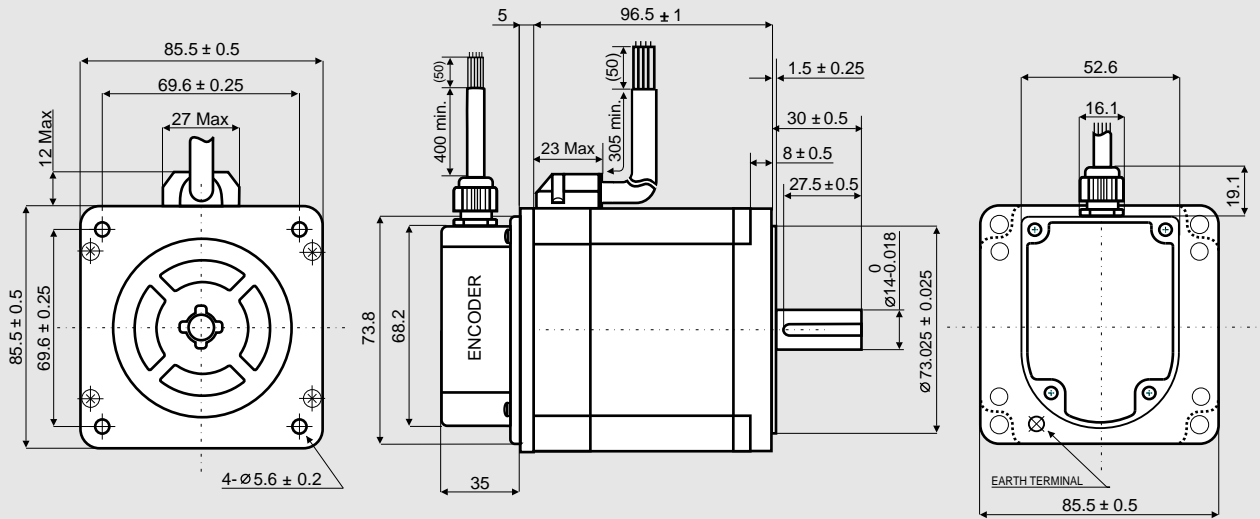
POWER SUPPLY VOLTAGE	(Volt)	5 V _{DC} ± 5%
CURRENT CONSUMPTION	(mAmp)	40
HIGH LEVEL OUTPUT	(Volt)	3.4 (TIP) - 2.4 (MIN) (I _{MAX} =20 mA)
LOW LEVEL OUTPUT	(Volt)	0.2 (TIP) - 0.4 (MAX) (I _{MAX} =20 mA)
OUTPUT SIGNAL	Differential (SINGLE ENDED version available)	
RESOLUTION	400 cycles per revolution (500 & 1000 CPR version available)	
MAXIMUM FREQUENCY	(KHz)	60
INDEX VERSION	Available upon request	

SHAFT

LEADS COLOR	ENCODER
BROWN	CHANNEL A-
BLUE	CHANNEL A+
PURPLE	CHANNEL B-
GREEN	CHANNEL B+
BLACK	GND (0 V)
RED	+ DC (5 V)
SHIELD	

EM 3F2H-04D0

Dimensions (Unit:mm)



SANYO DENKI MOTOR FEATURES

MODEL	EM 3F2H-04D0	
SANYO DENKI MOTOR CODE	SM 2862-5225	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(Amp)	6.0
RESISTANCE	(Ohm)	0.36
INDUCTANCE	(mH)	2.8
BIPOLAR HOLDING TORQUE	(Ncm)	700
ROTOR INERTIA	(Kgm ² × 10 ⁻⁷)	3000
THEORETICAL ACCELERATION	(rad × sec. ⁻²)	23300
BACK E.M.F.	(V/Krpm)	120
MASS	(Kg)	2.9
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS	IP43 - F	
LEADS CODE	V	

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ENCODER FEATURES

POWER SUPPLY VOLTAGE	(Volt)	5 V _{DC} ± 5%
CURRENT CONSUMPTION	(mAmp)	40
HIGH LEVEL OUTPUT	(Volt)	3.4 (TIP) - 2.4 (MIN) (I _{MAX} =20 mA)
LOW LEVEL OUTPUT	(Volt)	0.2 (TIP) - 0.4 (MAX) (I _{MAX} =20 mA)
OUTPUT SIGNAL	Differential (SINGLE ENDED version available)	
RESOLUTION	400 cycles per revolution (500 & 1000 CPR version available)	
MAXIMUM FREQUENCY	(KHz)	60
INDEX VERSION	Available upon request	

ORANGE / ARANCIO

BLUE / BLU

RED / ROSSO

YELLOW / GIALLO

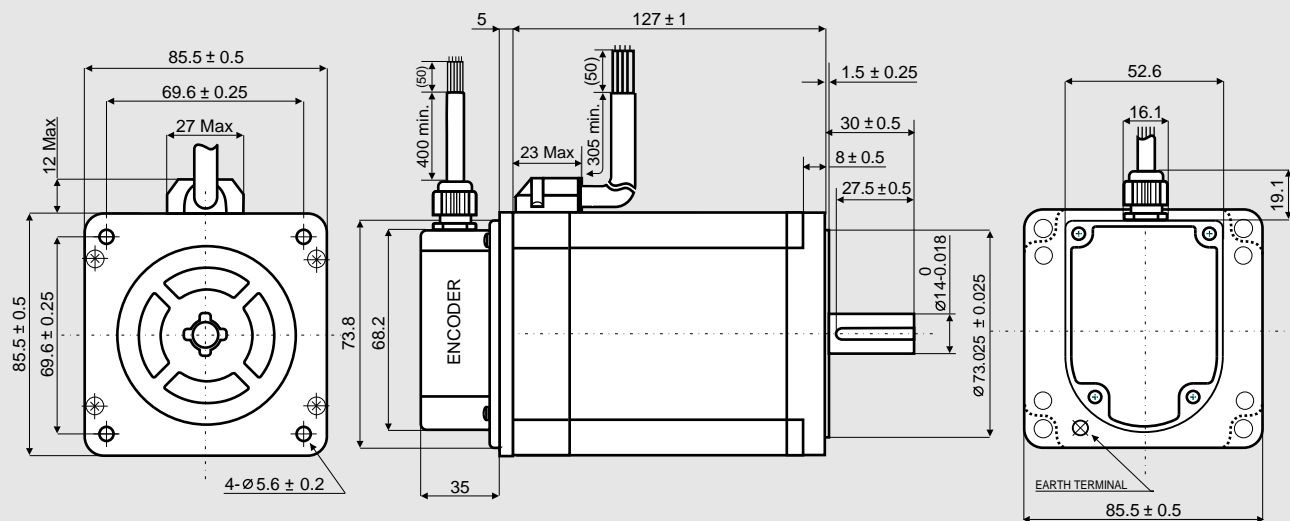
V

SHAFT

LEADS COLOR	ENCODER
BROWN	CHANNEL A-
BLUE	CHANNEL A+
PURPLE	CHANNEL B-
GREEN	CHANNEL B+
BLACK	GND (0 V)
RED	+ DC (5 V)
SHIELD	

EM 3F3H-04D0

Dimensions (Unit:mm)



SANYO DENKI MOTOR FEATURES

MODEL	EM 3F3H-04D0	
SANYO DENKI MOTOR CODE	SM 2863-5225	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(Amp)	6.0
RESISTANCE	(Ohm)	0.46
INDUCTANCE	(mH)	3.8
BIPOLAR HOLDING TORQUE	(Ncm)	920
ROTOR INERTIA	(Kg ^m × 10 ⁻⁷)	4500
THEORETICAL ACCELERATION	(rad × sec. ⁻²)	20500
BACK E.M.F.	(V/Krpm)	161
MASS	(Kg)	4.0
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS	IP43 - F	
LEADS CODE	V	

R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)

ENCODER FEATURES

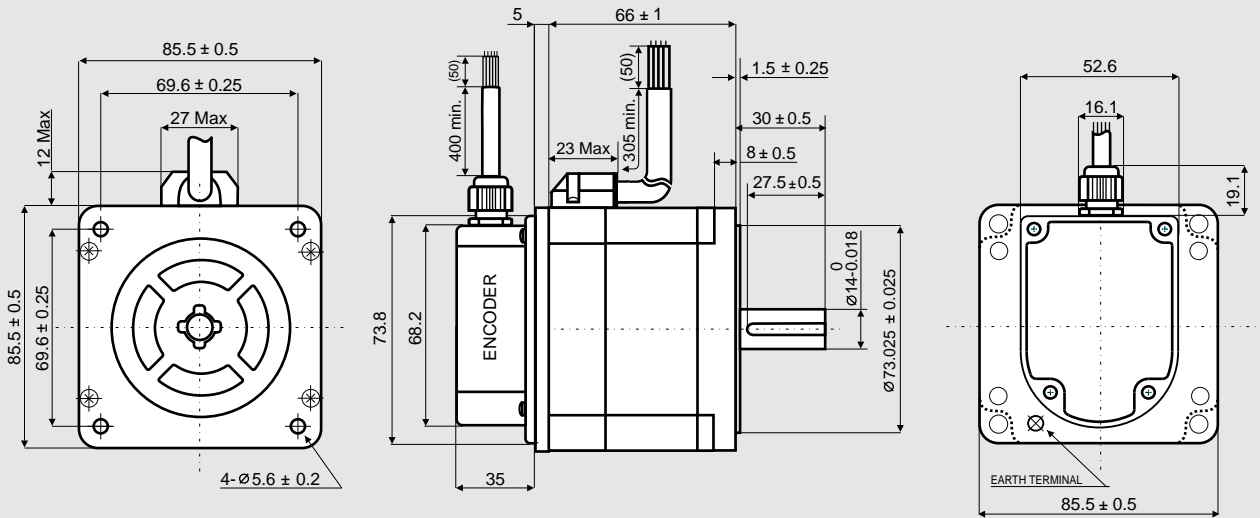
POWER SUPPLY VOLTAGE	(Volt)	5 V _{DC} ± 5%
CURRENT CONSUMPTION	(mAmp)	40
HIGH LEVEL OUTPUT	(Volt)	3.4 (TIP) - 2.4 (MIN) (I _{MAX} =20 mA)
LOW LEVEL OUTPUT	(Volt)	0.2 (TIP) - 0.4 (MAX) (I _{MAX} =20 mA)
OUTPUT SIGNAL	Differential (SINGLE ENDED version available)	
RESOLUTION	400 cycles per revolution (500 & 1000 CPR version available)	
MAXIMUM FREQUENCY	(KHz)	60
INDEX VERSION	Available upon request	

SHAFT

LEADS COLOR	ENCODER
BROWN	CHANNEL A-
BLUE	CHANNEL A+
PURPLE	CHANNEL B-
GREEN	CHANNEL B+
BLACK	GND (0 V)
RED	+ DC (5 V)
SHIELD	

EM 3F1L-04D0

Dimensions (Unit:mm)



SANYO DENKI MOTOR FEATURES

MODEL	EM 3F1L-04D0	
SANYO DENKI MOTOR CODE	SM 2861-5025	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(Amp)	2.0
RESISTANCE	(Ohm)	2.2
INDUCTANCE	(mH)	15
BIPOLAR HOLDING TORQUE	(Ncm)	360
ROTOR INERTIA	(Kgm ² × 10 ⁻⁷)	1480
THEORETICAL ACCELERATION	(rad × sec. ⁻²)	24300
BACK E.M.F.	(V/Krpm)	180
MASS	(Kg)	1.7
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS	IP43 - F	
LEADS CODE	V	

R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)

ENCODER FEATURES

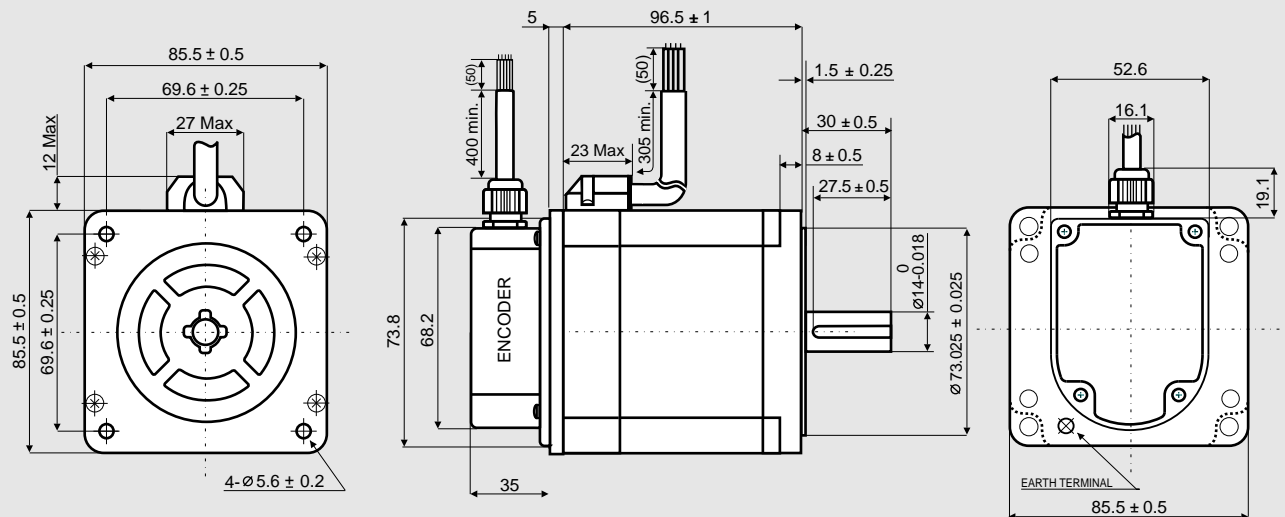
POWER SUPPLY VOLTAGE	(Volt)	5 V _{DC} ± 5%
CURRENT CONSUMPTION	(mAmp)	40
HIGH LEVEL OUTPUT	(Volt)	3.4 (TIP) - 2.4 (MIN) (I _{MAX} =20 mA)
LOW LEVEL OUTPUT	(Volt)	0.2 (TIP) - 0.4 (MAX) (I _{MAX} =20 mA)
OUTPUT SIGNAL	Differential (SINGLE ENDED version available)	
RESOLUTION	400 cycles per revolution (500 & 1000 CPR version available)	
MAXIMUM FREQUENCY	(KHz)	60
INDEX VERSION	Available upon request	

SHAFT

LEADS COLOR	ENCODER
BROWN	CHANNEL A-
BLUE	CHANNEL A+
PURPLE	CHANNEL B-
GREEN	CHANNEL B+
BLACK	GND (0 V)
RED	+ DC (5 V)
SHIELD	

EM 3F2M-04D0

Dimensions (Unit:mm)



SANYO DENKI MOTOR FEATURES

MODEL	EM 3F2M-04D0	
SANYO DENKI MOTOR CODE	SM 2862-5125	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(Amp)	4.0
RESISTANCE	(Ohm)	0.83
INDUCTANCE	(mH)	6.4
BIPOLAR HOLDING TORQUE	(Ncm)	700
ROTOR INERTIA	(Kg ^m × 10 ⁻⁷)	3000
THEORETICAL ACCELERATION	(rad × sec. ⁻²)	23300
BACK E.M.F.	(V/Krpm)	175
MASS	(Kg)	2.9
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS	IP43 - F	
LEADS CODE	V	

ENCODER FEATURES

POWER SUPPLY VOLTAGE	(Volt)	5 V _{DC} ± 5%
CURRENT CONSUMPTION	(mAmp)	40
HIGH LEVEL OUTPUT	(Volt)	3.4 (TIP) - 2.4 (MIN) (I _{MAX} =20 mA)
LOW LEVEL OUTPUT	(Volt)	0.2 (TIP) - 0.4 (MAX) (I _{MAX} =20 mA)
OUTPUT SIGNAL	Differential (SINGLE ENDED version available)	
RESOLUTION	400 cycles per revolution (500 & 1000 CPR version available)	
MAXIMUM FREQUENCY	(KHz)	60
INDEX VERSION	Available upon request	

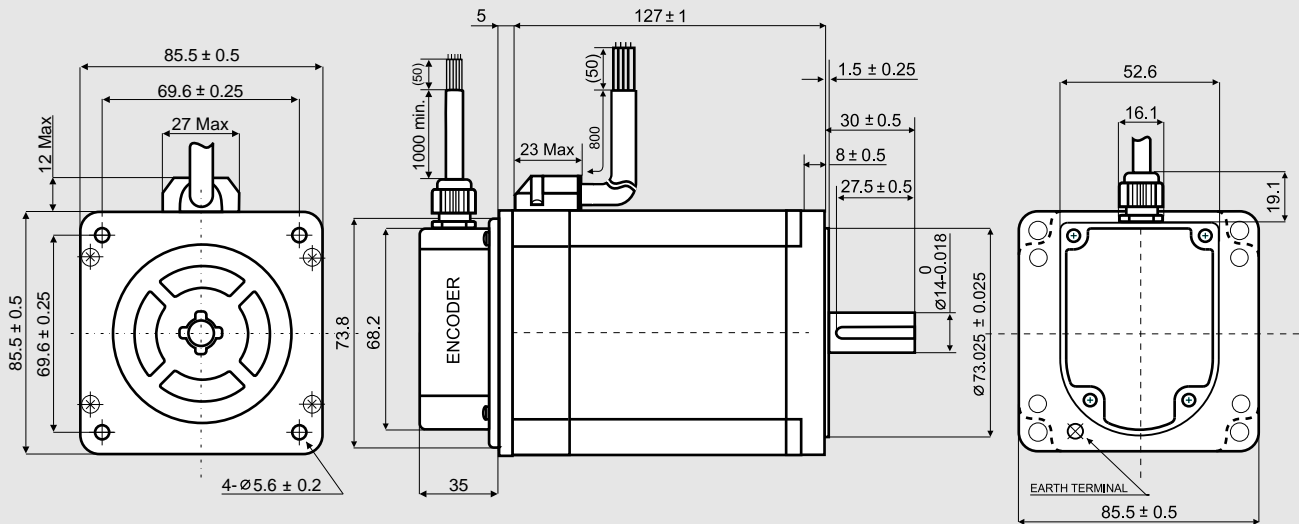
SHAFT

LEADS COLOR	ENCODER
BROWN	CHANNEL A-
BLUE	CHANNEL A+
PURPLE	CHANNEL B-
GREEN	CHANNEL B+
BLACK	GND (0 V)
RED	+ DC (5 V)
SHIELD	

R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)

EM 3F3M-14D0

Dimensions (Unit:mm)



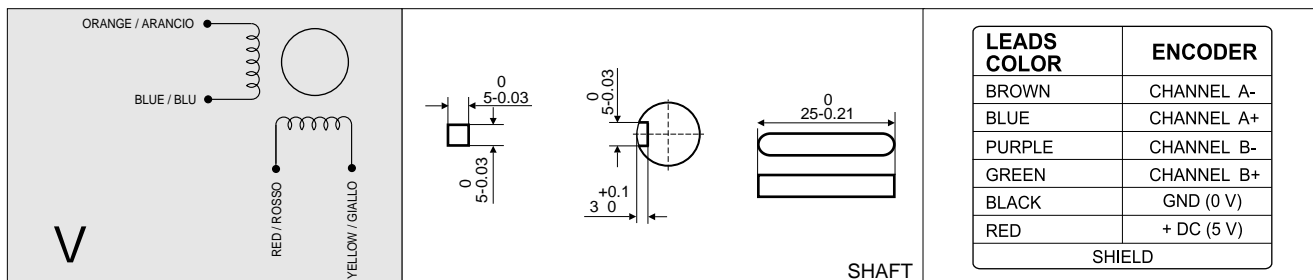
SANYO DENKI MOTOR FEATURES

MODEL	EM 3F3M-14D0
SANYO DENKI MOTOR CODE	SM 2863-5126
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR PARALLEL CURRENT (Amp)	4.0
RESISTANCE (Ohm)	1.0
INDUCTANCE (mH)	7.9
BIPOLAR HOLDING TORQUE (Ncm)	920
ROTOR INERTIA (Kgm ² × 10 ⁻⁴)	4500
THEORETICAL ACCELERATION (rad × sec. ⁻²)	20500
BACK E.M.F. (V/Krpm)	241
MASS (Kg)	4.0
INTERNATIONAL STANDARDS	UL, CSA
INSULATION VOLTAGE (V)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS	IP43 - F
LEADS CODE	V

R.T.A. s.r.l. PAVIA (ITALY) SANYO DENKI CO., Ltd (JAPAN)

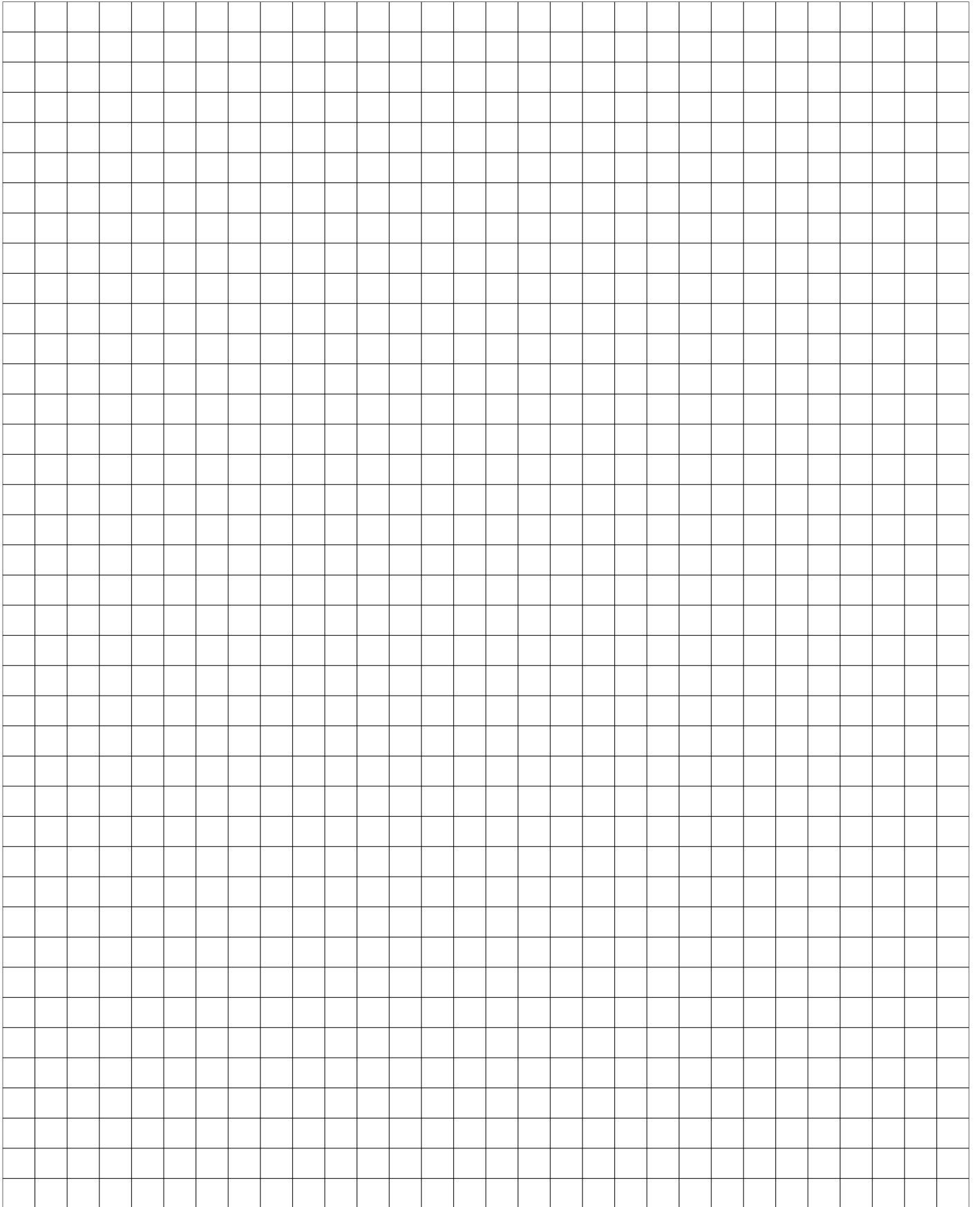
ENCODER FEATURES

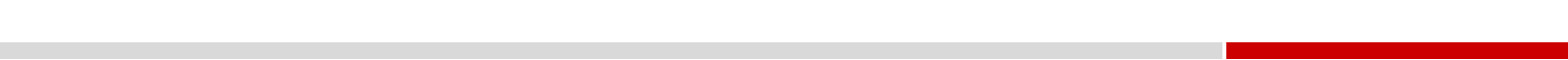
POWER SUPPLY VOLTAGE (Volt)	5 V _{DC} ± 5%
CURRENT CONSUMPTION (mAmp)	40
HIGH LEVEL OUTPUT (Volt)	3.4 (TIP) - 2.4 (MIN) (I _{MAX} =20 mA)
LOW LEVEL OUTPUT (Volt)	0.2 (TIP) - 0.4 (MAX) (I _{MAX} =20 mA)
OUTPUT SIGNAL	Differential (SINGLE ENDED version available)
RESOLUTION	400 cycles per revolution (500 & 1000 CPR version available)
MAXIMUM FREQUENCY (KHz)	60
INDEX VERSION	Available upon request



LEADS COLOR	ENCODER
BROWN	CHANNEL A-
BLUE	CHANNEL A+
PURPLE	CHANNEL B-
GREEN	CHANNEL B+
BLACK	GND (0 V)
RED	+ DC (5 V)
SHIELD	

■ NOTES





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