



**Motion Control Systems**



# STEPPING MOTOR DRIVES CATALOGUE



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## R.T.A. GROUP



R.T.A. - HEADQUARTERS



R.T.A. DEUTSCHLAND

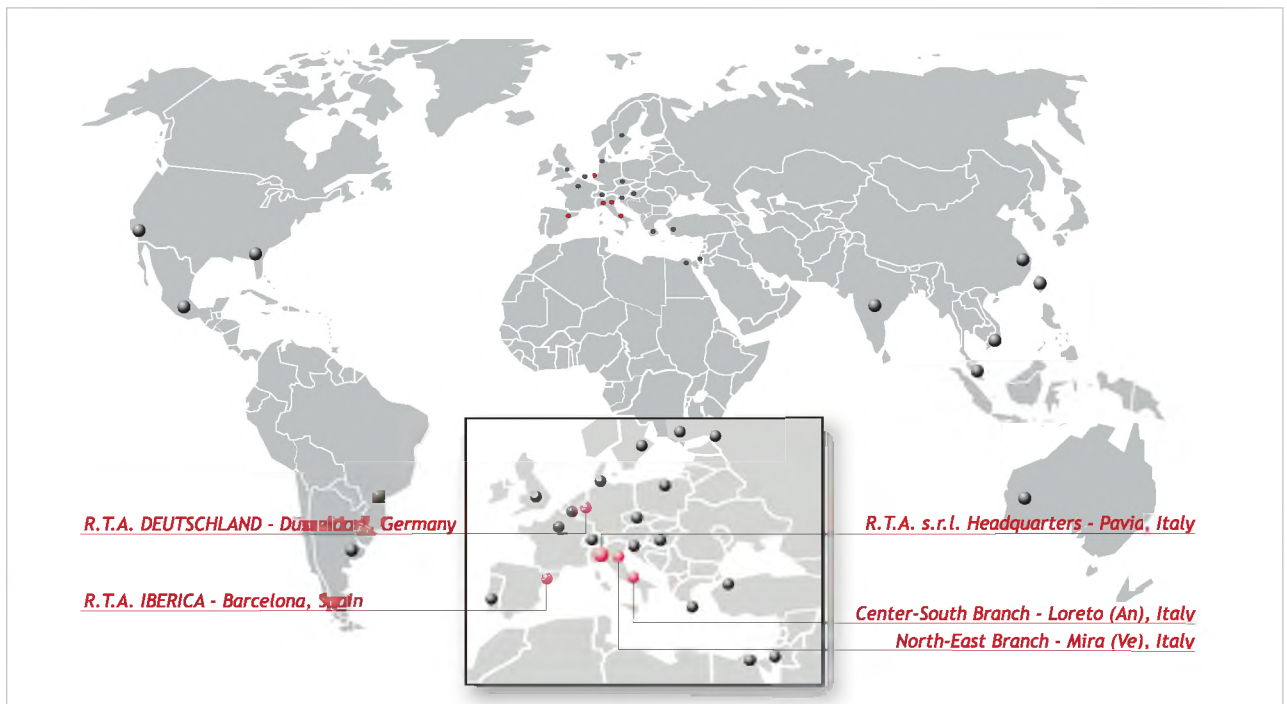


R.T.A. IBERICA

- 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.

- A wide selection of stepping motor drives available online
- 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.



## THE ADVANTAGES OF STEPPING SYSTEMS

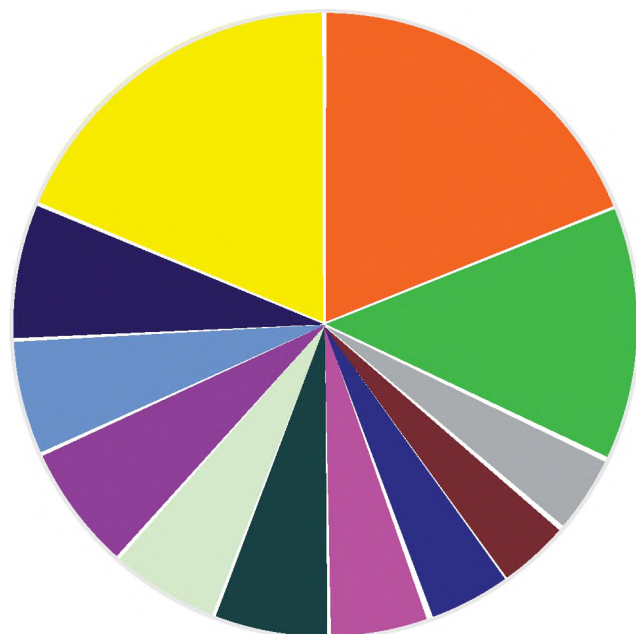
- Full-digital functioning, both in open-loop and in closed-loop.
- Ultimate performances and precision, merged with easy use and small dimensions.
- High reliability and life expectancy, even in harsh environments.
- Low acoustic noise; optimized and stabilized thermal behaviour.

## R.T.A. KEY BENEFITS

- 6 main drives typologies, with more than 60 different products able to meet any kind of application need.
- Great quality and reliability, highly recognized in the field and guaranteed by a Quality Assurance System certified under the UNI EN ISO 9001:2008 (TUV-50-100-2153).
- Ease of use, combined with great simplicity in the setup phase.
- Excellent pre and post sales support through qualified staff and strict corporate procedures.
- A track record of over 30 years in stepping drives design & production.

## TYPICAL APPLICATIONS

- PACKAGING & PRINTING MACHINES
- METAL WORKING, MACHINE TOOLS, CNC MACHINES & 3D PRINTERS
- INDUSTRIAL AUTOMATION
- MEDICAL MACHINES
- TEXTILE MACHINES
- CERAMIC MACHINES
- PAPER PROCESSING MACHINES
- WOODWORKING MACHINES
- LEATHER WORKING MACHINES
- MEASUREMENT INSTRUMENTS
- OFFICE AUTOMATION
- VARIOUS



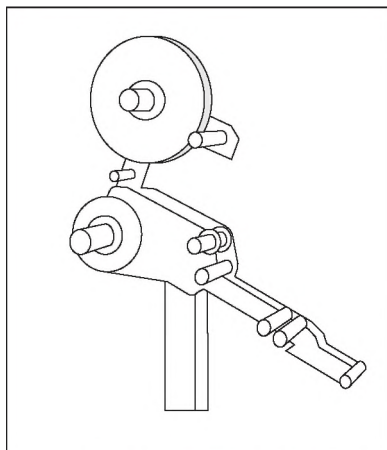
## APPLICATION EXAMPLES

### Typical application examples:

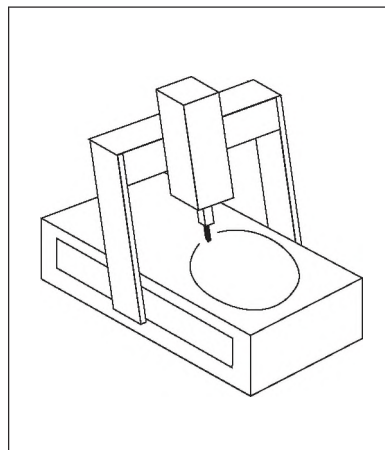
- XY tables, tool changing systems
- Pallets storage, pick and place systems and robots
- Transport, internal movement and orientation systems
- Synchronous and follow-up systems
- Pointing and alignment systems, both angular and linear
- Remote adjustment, remote controls, limit-switch positioning and adjustable reference points
- Change of format systems
- Measurement instruments
- Conveyor belts.

### Most common machines typologies:

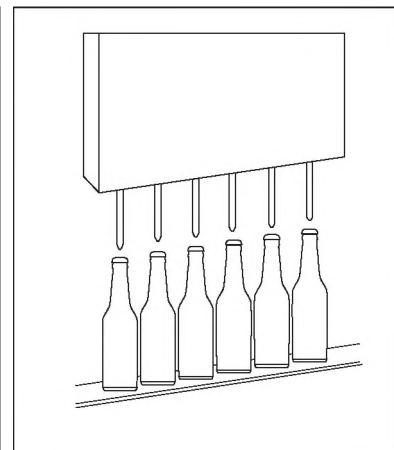
- Packaging and labeling machines, angular and linear
- Packaging and dosing of powders and liquids
- Cutting machines for plastics, metals, wood, ceramics, glass, stone and leather
- Woodworking, metal working, PVC working machines
- Biomedical, analysis and laboratory instruments
- Screen-printing, pad-printing, converting machines
- Bending and metals forming machines
- 2D and 3D printing systems
- Paper processing machines
- Pumps and valves.



LABELING MACHINES



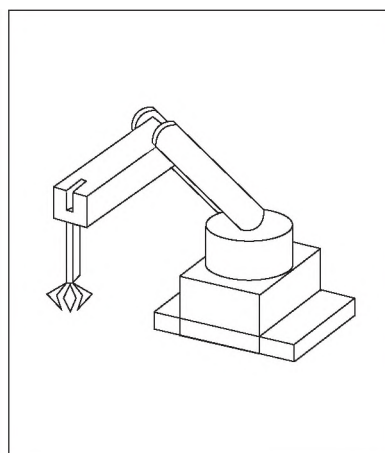
ROUTER SYSTEMS



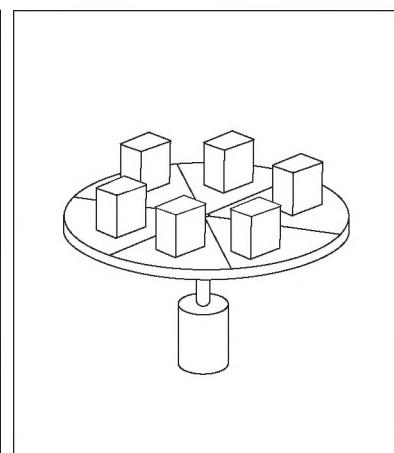
DOSING MACHINES



CONVEYOR BELTS



ROBOTS








MACHINE TOOLS

WHICH VERSION IS RIGHT FOR YOUR APPLICATION?

STEP & DIRECTION  ADVANCED  ANALOG INPUT 

PROGRAMMABLE  CANopen  EtherCAT 

DRIVE TYPE OVERVIEW

R.T.A. STEPPING MOTOR DRIVES		DRIVE TYPE				
		 STEP & DIRECTION	 STEP & DIRECTION ADVANCED	 ANALOG INPUT	 PROGRAMMABLE	 EtherCAT
BSD	02 - 02.V		■			
	02 - 02.V	■				
CSD	04 - 04.V	■				
	92 - 94	■				
	J4			■	■	
A-CSD	02 - 02.V		■			
	04 - 04.V		■			
	92 - 94		■			
NDC	04 - 04.V	■				
	06 - 06.V	■				
	94 - 96	■				
A-NDC	04 - 04.V		■			
	06 - 06.V		■			
	94 - 96		■			
ADW	04 - 04.V			■		
	06 - 06.V			■		
HGD	02 - 05	■				
SAC	25 - 26	■				
	A3 - A4	■				
PLUS	B3 - B4 - B7	■				
	E3 - E4	■				
	K4 - K5				■	
	L5				■	
	J5			■	■	
PLUS ET	A3				■	
	B3				■	
X-PLUS	B4	■				
	B4.1		■			
X-PLUS ET	B4				■	
X-MIND*	B4 - B6	■				
	K4 - K6				■	
HI-MOD*	B	■				
	E - A					■
EUROCARD	GMD - GMH	■				

\*Please note that X-MIND B4, X-MIND-B6 and HI-MOD B, E & A are UL certified. See internal pages for more details.

## PRODUCT SERIES OVERVIEW

SERIES DRIVE	MODELS	DRIVE TYPE*	VOLTAGE RANGE (V)	CURRENT RANGE (A)	DIMENSIONS (mm)	SUGGESTED MOTORS (Flange size)	
	BSD	02, 02.V	AD	24-48 DC	0.7 - 2.2	Card 78 x 68 x 21	NEMA 11 NEMA 17 NEMA 23 60 mm
	CSD	02, 04 02.V, 04.V	SD, PM AI	24-48 DC	0.7 - 4.4	Card 92 x 85 x 23	
92, 94 J4		Box 90 x 99 x 21 90 x 99 x 30					
	A-CSD	02, 04 02.V, 04.V	AD	24-48 DC	0.7 - 4.4	Card 92 x 85 x 23	
92, 94		Box 90 x 99 x 21					
	NDC	04, 06 04.V, 06.V	SD	24-75 DC	0.6 - 6.0	Card 101 x 94 x 25	NEMA 17 NEMA 23 60 mm NEMA 34
94, 96		Box 110 x 108 x 34					
	A-NDC	04, 06 04.V, 06.V	AD	24-85 DC	0.6 - 6.0	Card 101 x 94 x 25	
94, 96		Box 110 x 108 x 34					
	ADW	04, 06 04.V, 06.V	AI	24-75 DC	0.65 - 6.0	Card 122 x 94 x 25	
	HGD	02, 05	SD	24-75 DC	0.75 - 6.0	Card 70 x 70 x 25	NEMA 17 NEMA 23 60 mm NEMA 34
	SAC	25, 26	SD	24-50 AC	1.7 - 6.0	Card 101 x 125 x 35	
	PLUS	A3, A4	SD, PM AI	39-140 DC	1.9 - 10.0	Box 152 x 129 x 46	
B3, B4, B7 K4, K5 E3, E4 L5 J5		28-100 AC					
	PLUS ET	A3	ET	39-85 DC	1.9 - 6.0	Box 152 x 129 x 46	NEMA 23 60 mm NEMA 34
B3		28-62 AC					
	X-PLUS	B4 B4.1	SD, AD	110-230 AC power supply directly from the main	2.4 - 4.0	152 x 129 x 46	NEMA 34 (with rating for high voltage)
	X-PLUS ET	B4	ET	110-230 AC power supply directly from the main	2.4 - 4.0	Box 169 x 129 x 46	NEMA 34 (with rating for high voltage)
	X-MIND	B4, B6 K4, K6	SD, PM	110-230 AC power supply directly from the main	2.3 - 6.0	Box 180 x 173 x 53	NEMA 34 - NEMA 42 (with rating for high voltage)
	HI-MOD	B, E, A	SD, CO	32-75 DC	--	--	--
	EUROCARD	GMD, GMH	SD	55-190 DC	1.6 - 12.0	Card 100 x 160 x 51	NEMA 23 60 mm NEMA 34

**\*DRIVE TYPE:**

**SD** = STEP & DIRECTION

**PM** = PROGRAMMABLE

**AD** = STEP & DIRECTION *ADVANCED*

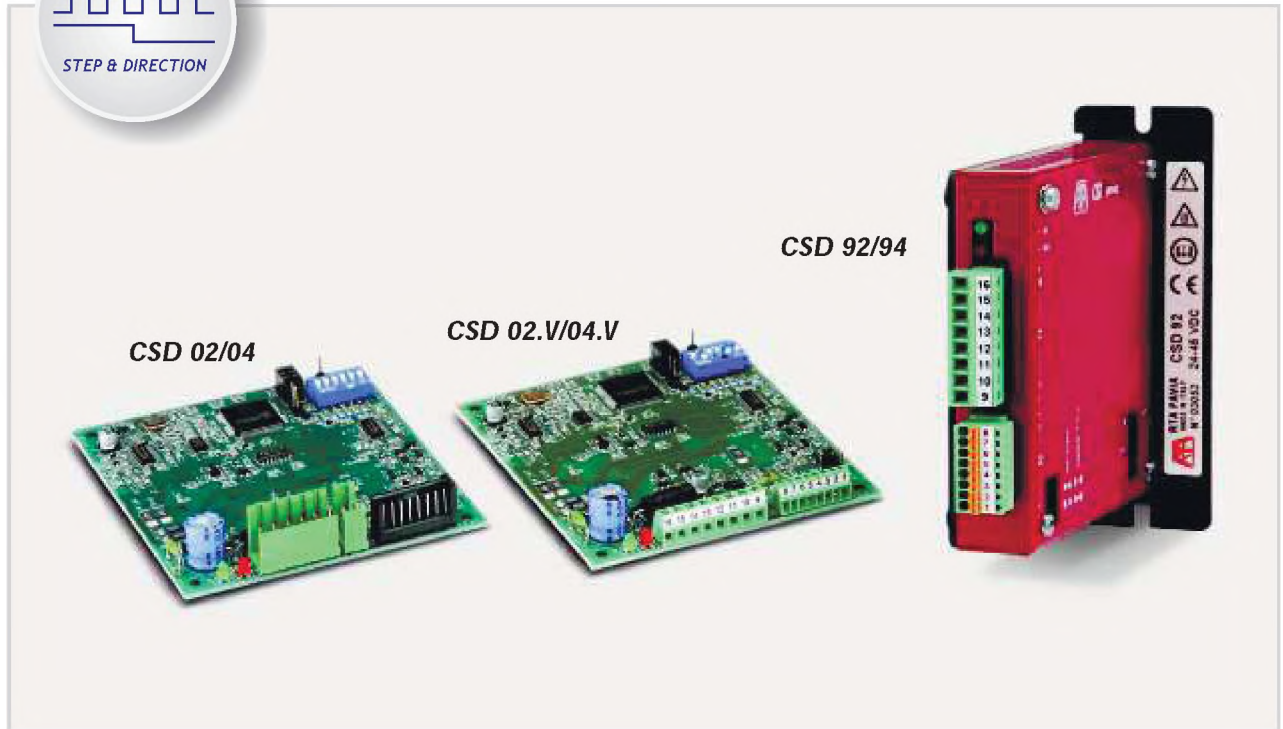
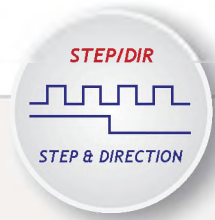
**ET** = EtherCAT

**AI** = ANALOG INPUT

**CO** = CANopen



# CSD Series Drives



## INTRODUCTION

- Series of ministepped bipolar chopper drives, suitable for driving medium-low power two-phase stepping motors, with four, six or eight terminals.
- Highly compact, easy to use and cost effective solution. This system is designed for easy mounting inside a metallic electrical cabinet.
- Target: low power applications without special configuration requirement, but needing high precision, smoothness of movement and low acoustic noise.

## HIGHLIGHTS

- Microstepping function up to 3.200 step/rev.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- Separated connectors for logic signals and power connections.
- Pull-up and pull-down input signals ease interfacing with the most commonly used control systems.

Series	Model	V <sub>DC</sub> range (Volt)	I <sub>NP</sub> min. [Peak value] (Amp)	I <sub>NP</sub> max. [Peak value] (Amp)	Dimensions (mm)
CSD	02 - 02.V*	24 to 48	0.7	2.4	92x85x22
CSD	04 - 04.V*	24 to 48	2.6	4.4	92x85x23
CSD	92	24 to 48	0.7	2.4	99x90x21
CSD	94	24 to 48	2.6	4.4	99x90x21

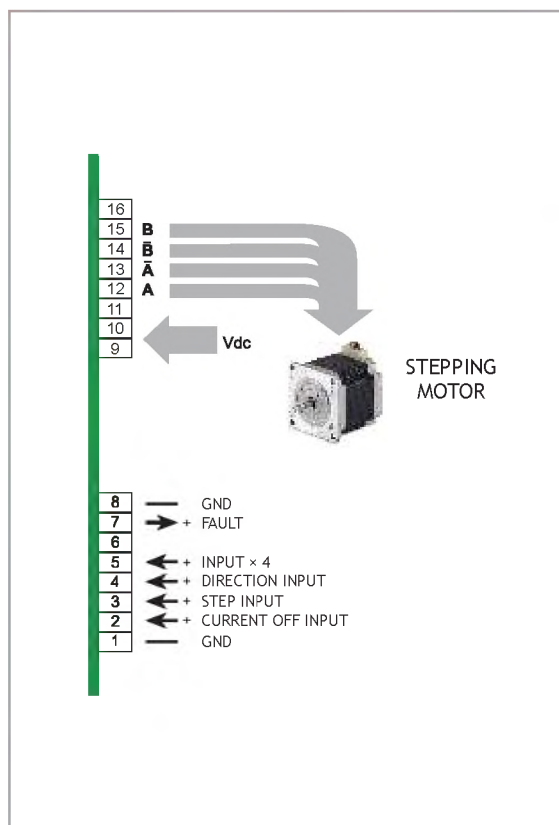
\* CSD 02.V and CSD 04.V versions are equipped with screw-type connectors.

## TECHNICAL FEATURES

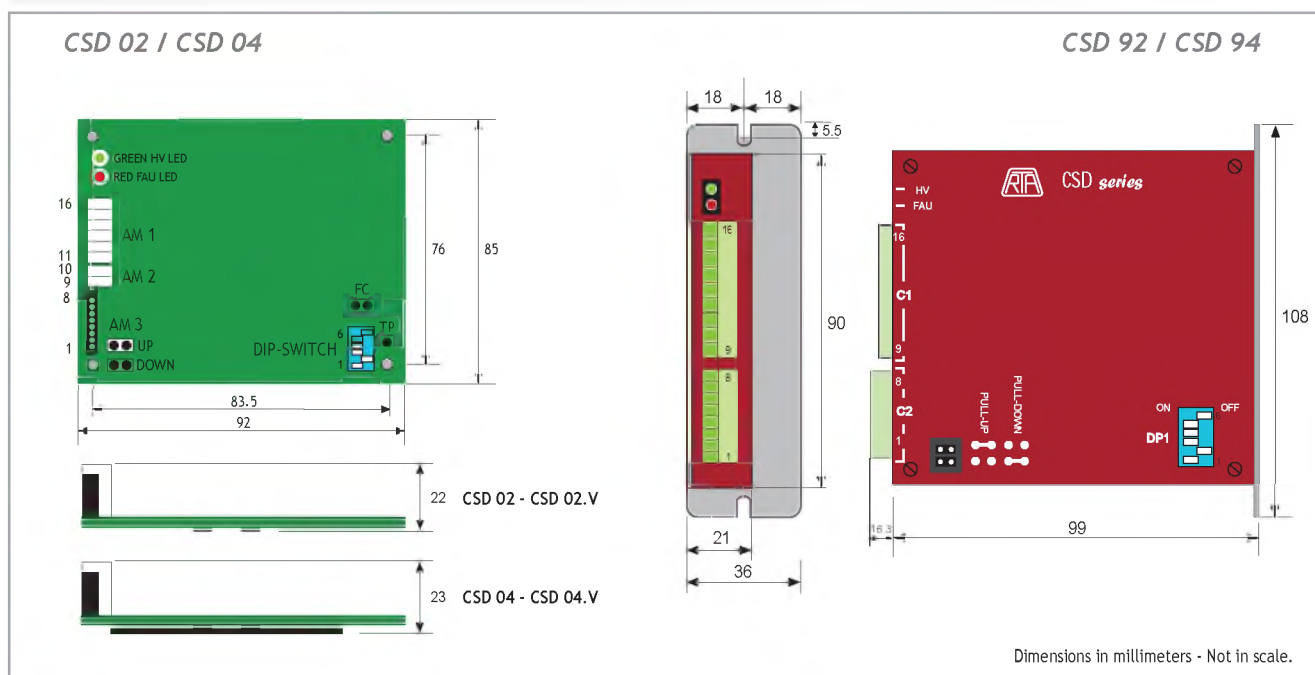
- Range of operating voltages: 24-48 V<sub>DC</sub>.
- Range of current: 0.7-4.4 Amp. Setting up to eight possible values by means of dip-switches.
- Microstepping: 400, 800, 1.600 and 3.200 steps /revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection with thermal sensor.
- Possibility to set Pull-UP or Pull-Down inputs.
- Possibility to switch off motor current with an external logic signal.
- High efficiency CHOPPER with MOSFET final stage output.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- Version: boxed/open frame, equipped with crimp-type or screw-type connectors.
- Maximum compactness.
- Warranty: 24 months.



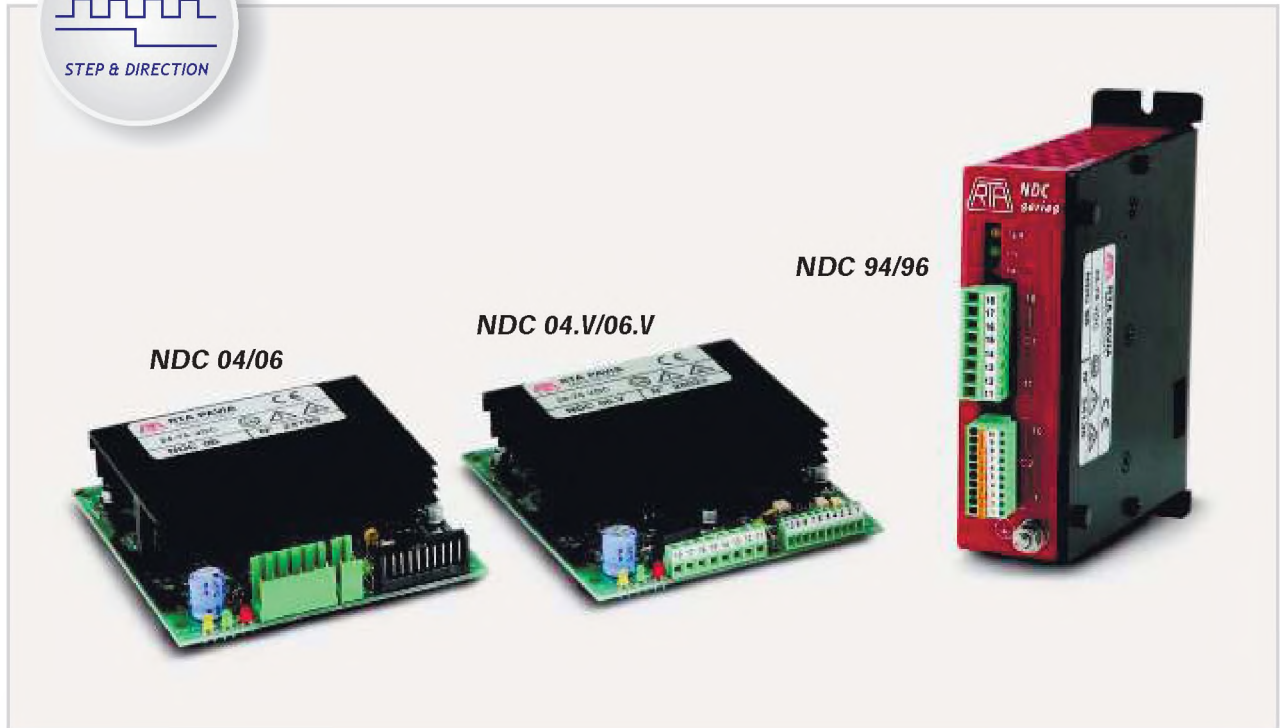
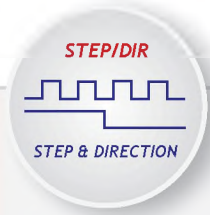
## POWER AND LOGIC CONNECTIONS



## MECHANICAL DIMENSIONS



# NDC Series Drives



## INTRODUCTION

- Series of ministepped bipolar chopper drives, suitable for driving medium power two-phase stepping motors, with four, six or eight terminals.
- Compact, easy to use and cost effective solution. This system is designed for easy mounting inside a metallic electrical cabinet.
- Target: medium and medium-low power applications without special configuration requirement, but needing great dynamic performance, high reliability, low acoustic noise and mechanic vibrations reduction.

## HIGHLIGHTS

- Microstepping function up to 4.000 step/rev.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- Separated connectors for logic signals and power connections.
- Optoisolated and differential input and output signals ease interfacing with the most commonly used control systems.

Series	Model	V <sub>DC</sub> range (Volt)	I <sub>NP</sub> min. [Peak value] (Amp)	I <sub>NP</sub> max. [Peak value] (Amp)	Dimensions (mm)
NDC	04 - 04.V*	24 to 75	0.6	2.0	101x94x25
NDC	06 - 06.V*	24 to 75	1.9	6.0	101x94x25
NDC	94	24 to 75	0.6	2.0	110x108x34
NDC	96	24 to 75	1.9	6.0	110x108x34

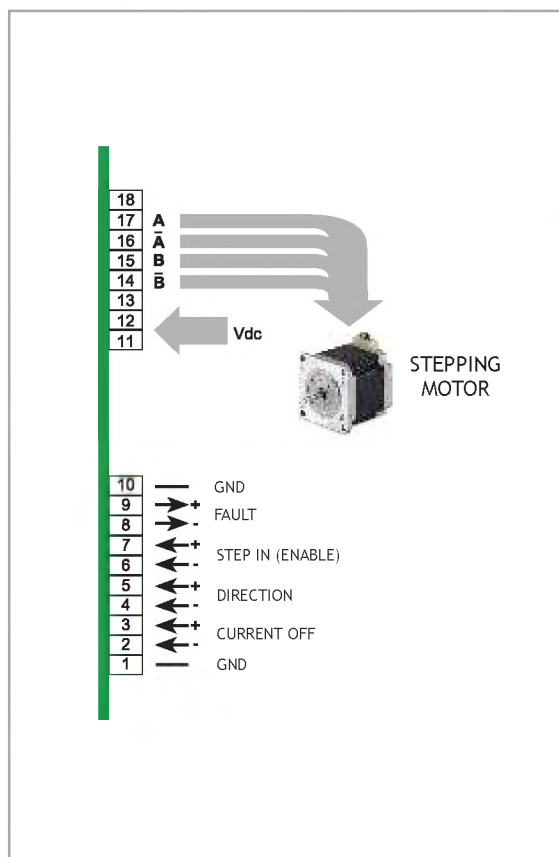
\* NDC 04.V and NDC 06.V versions are equipped with screw-type connectors.

## TECHNICAL FEATURES

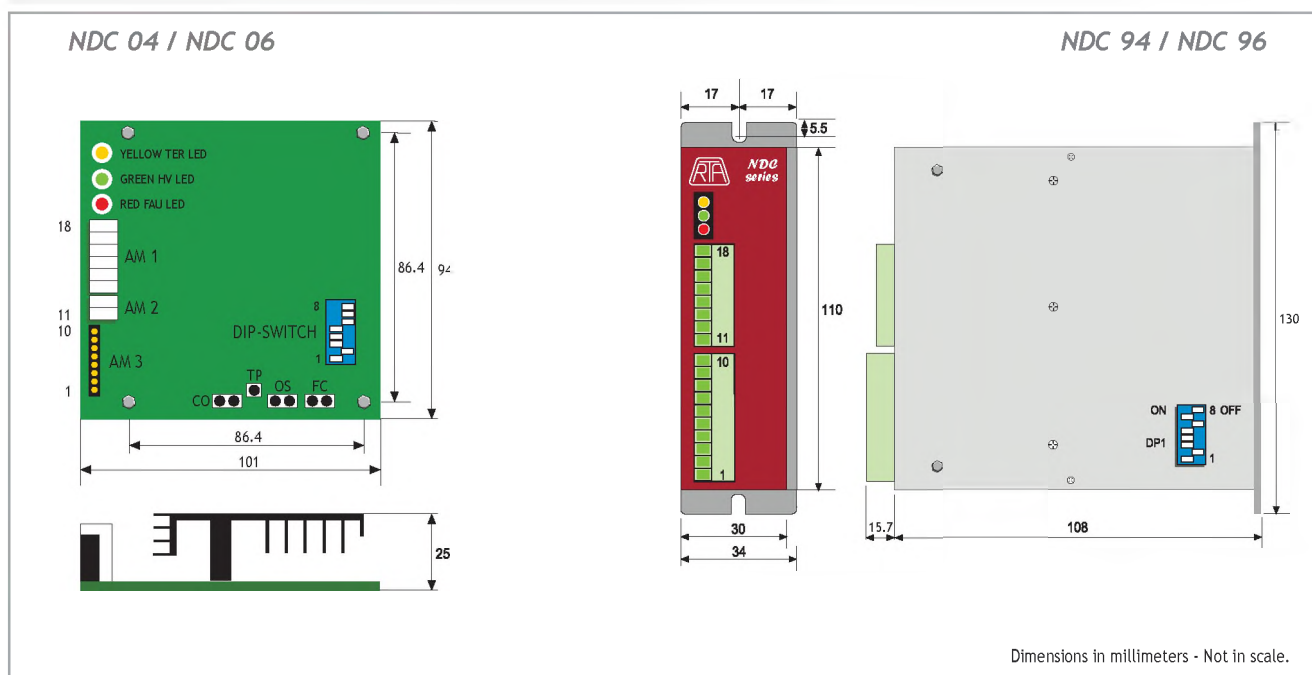
- Range of operating voltages: 24-75 V<sub>DC</sub>.
- Range of current: 0.6-6.0 Amp. Setting up to eight possible values by means of dip-switches.
- Microstepping: 400, 800, 1.600, 3.200 and 500, 1.000, 2.000, 4.000 steps /revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection with thermal sensor.
- Optoinsulated inputs compatible with differential control signals.
- Possibility to switch off motor current with an external logic signal.
- High efficiency CHOPPER with MOSFET final stage output.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- Available a version with built-in oscillator, with speed range from 14 to 450 rpm. Setting by means of dip-switches.
- Version: boxed/open frame, equipped with crimp-type or screw-type connectors.
- Maximum compactness.
- Warranty: 24 months.



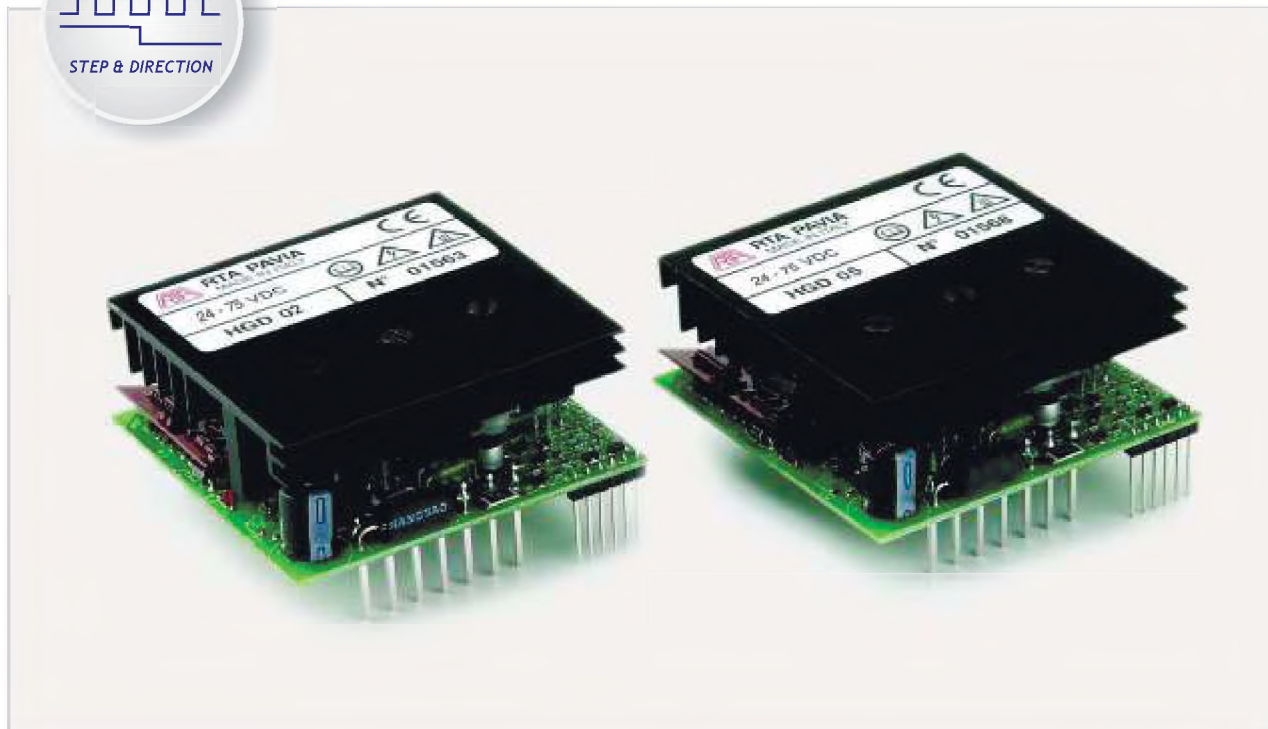
## POWER AND LOGIC CONNECTIONS



## MECHANICAL DIMENSIONS



# HGD Series Drives



## INTRODUCTION

- Series of ministepped bipolar chopper drives, suitable for driving medium power two-phase stepping motors, with four, six or eight terminals.
- Highly compact (70×70×25 mm), easy to use and cost effective solution. This system is designed to be soldered to a PCB.
- Target: medium and medium-low power applications requiring increase in performance compared to self-built or integrated circuits combined with an improvement of reliability and durability.

## HIGHLIGHTS

- Microstepping function up to 3.200 step/rev.
- Separated solder type connectors for logic signals and power connections.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- Standard input and output signals ease interfacing with the most commonly used control systems and ensure high noise immunity.

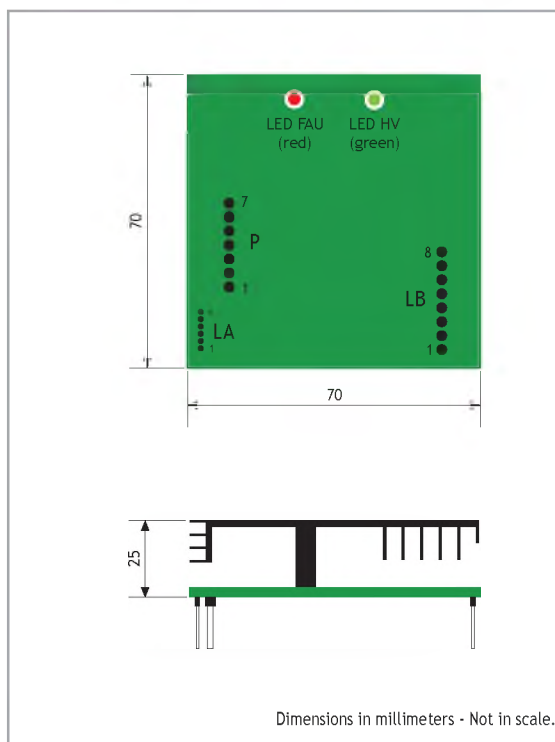
Series	Model	V <sub>DC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
HGD	02	24 to 75	0.75	2.0	70x70x25
HGD	05	24 to 75	2.25	6.0	70x70x25

## TECHNICAL FEATURES

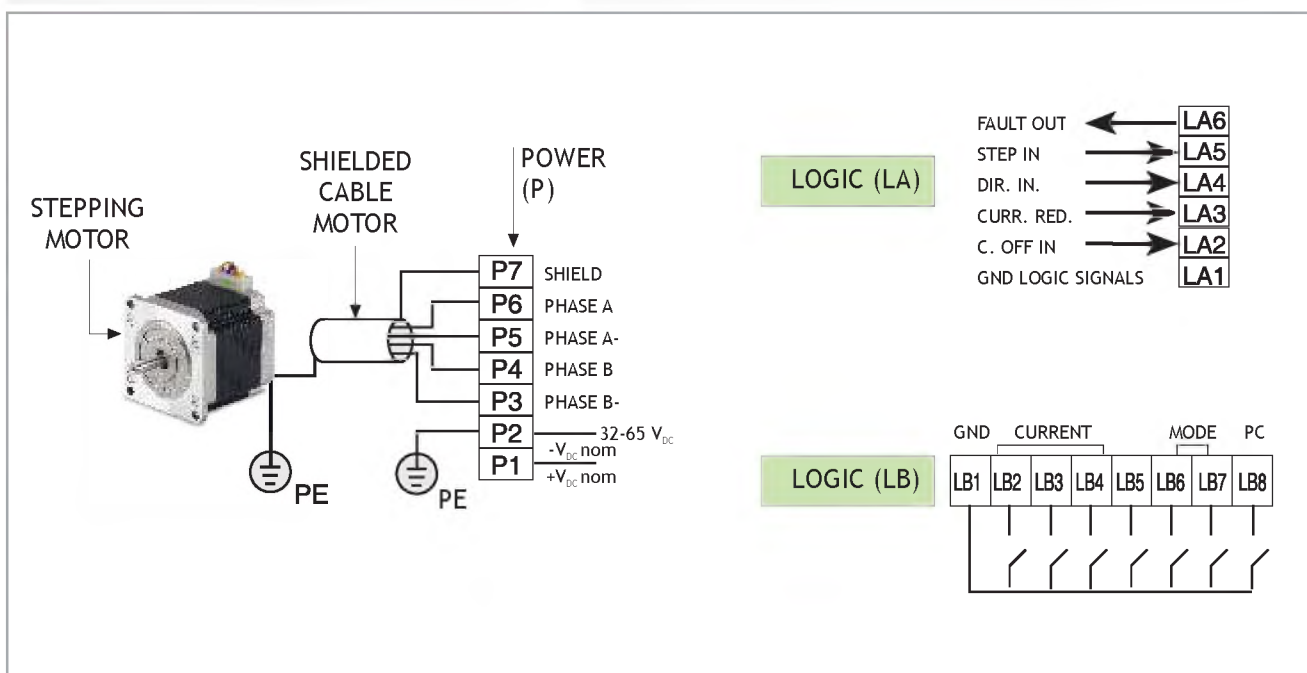
- Range of operating voltages: 24-75 V<sub>DC</sub>.  
Operation with a single external supply voltage.
- Range of current: 0.75-6.0 Amp. Setting up to six possible values by means of hardware connections.
- Microstepping: 400, 800, 1.600 and 3.200 steps /revolution. Setting by means of hardware connections.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Possibility to reduce motor current with an external logic signal.
- High efficiency CHOPPER with MOSFET final stage output.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- Warranty: 24 months.



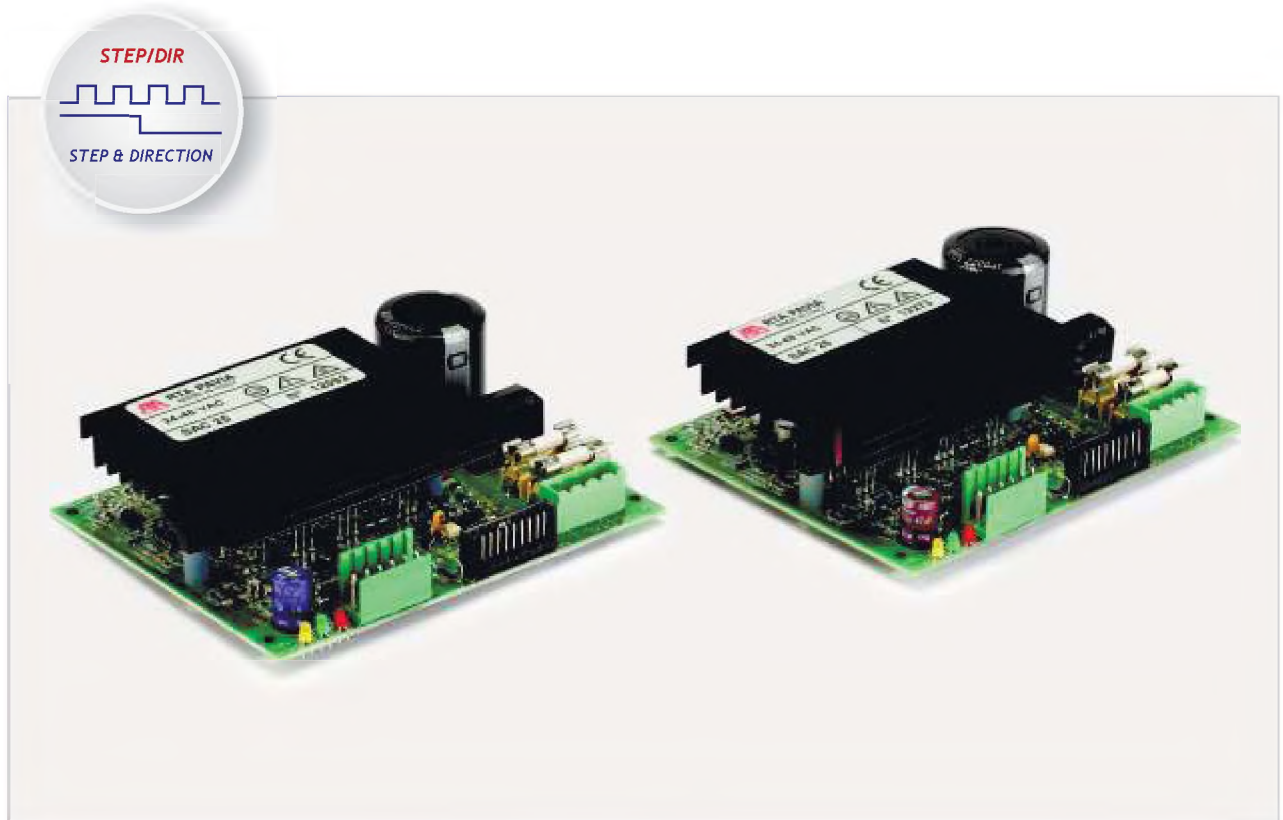
## MECHANICAL DIMENSIONS



## POWER AND LOGIC CONNECTIONS



# SAC Series Drives



## INTRODUCTION

- Series of ministepped bipolar chopper drives, suitable for driving medium power two-phase stepping motors, with four, six or eight terminals.
- Compact, easy to use and cost effective solution. This system is designed for easy mounting inside a metallic electrical cabinet.
- Equipped with power supply and particularly suitable for stand-alone applications (AC input).
- Target: medium and medium-low power applications without special configuration requirement, but needing great dynamic performance, high reliability, low acoustic noise and mechanic vibrations reduction.

## HIGHLIGHTS

- Microstepping function up to 4.000 step/rev.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- Separated connectors for logic signals and power connections.
- Optoisolated and differential input and output signals ease interfacing with the most commonly used control systems.

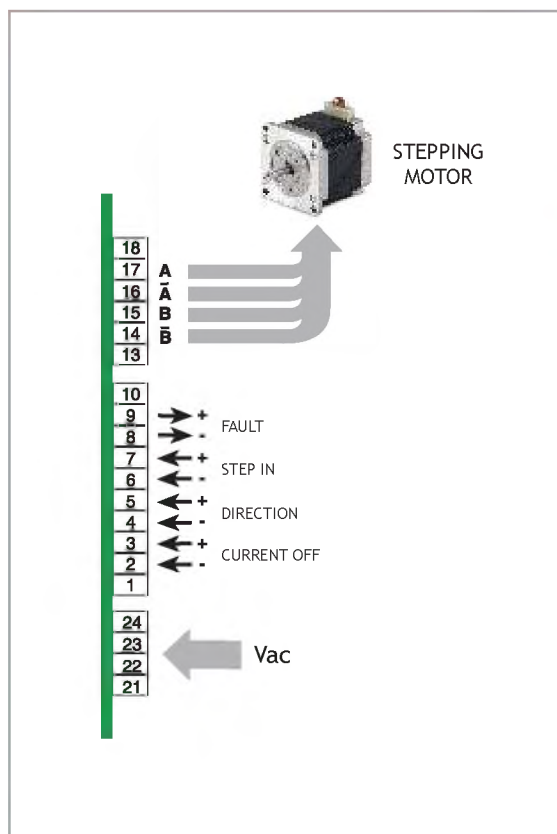
Series	Model	V <sub>AC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
SAC	25	24 to 50	1.7	3.0	101x125x35
SAC	26	24 to 50	3.4	6.0	101x125x35

## TECHNICAL FEATURES

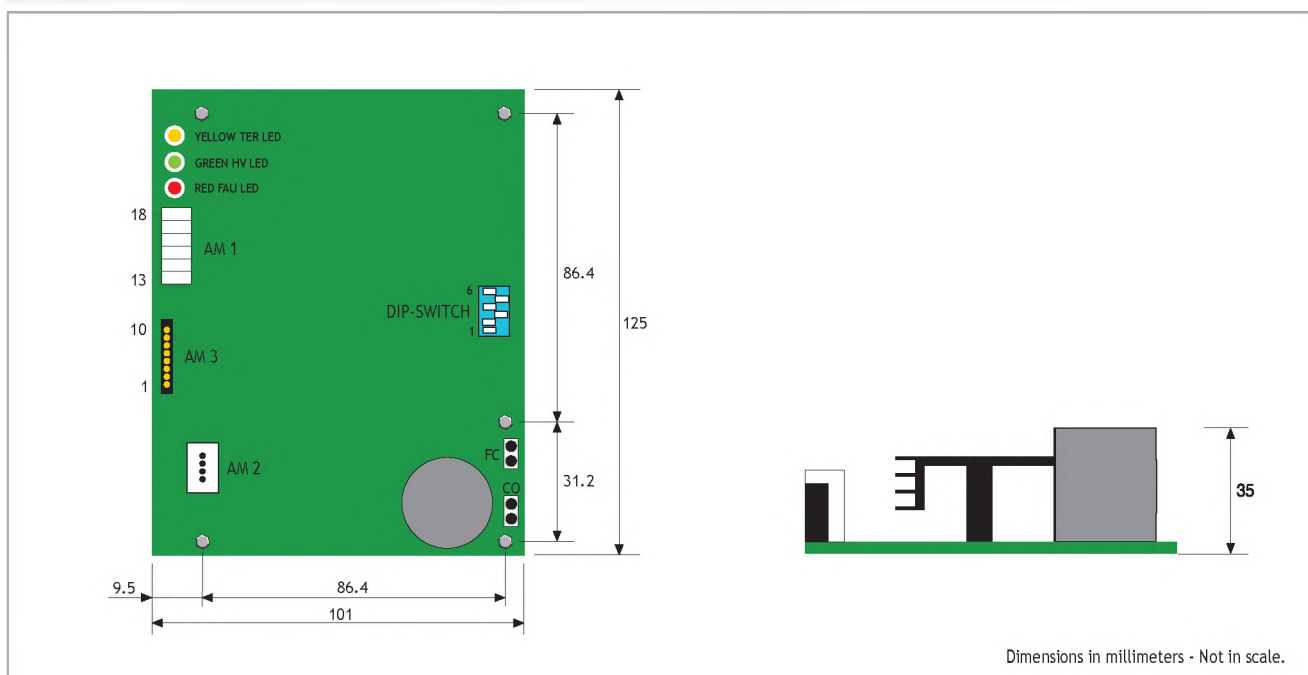
- Range of operating voltages: 24-50 V<sub>AC</sub>.
- Range of current: 1,7-6,0 Amp. Setting up to four possible values by means of dip-switches.
- Microstepping: 400, 800, 1.600, 3.200 and 500, 1.000, 2.000, 4.000 steps /revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection with thermal sensor.
- Optoinsulated inputs compatible with differential control signals.
- Possibility to switch off motor current with an external logic signal.
- Operation with a single external supply voltage.
- High efficiency CHOPPER with MOSFET final stage output.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- Warranty: 24 months.



## POWER AND LOGIC CONNECTIONS



## MECHANICAL DIMENSIONS





# PLUS A/B Series Drives

STEPIDIR



STEP &amp; DIRECTION

## INTRODUCTION

- Stepping motor drives series with Step & Direction interface suitable for driving two-phase stepping motors, with four, six or eight terminals based on the following versions:
  - PLUS A3 and PLUS A4:** with DC power supply (39-140 V<sub>DC</sub>)
  - PLUS B3, PLUS B4 and PLUS B7:** with AC power supply (28-100 V<sub>AC</sub>)
- Compact, easy to use and cost effective solution. This system is designed for mounting inside a metallic electrical cabinet. Suitable for wall mounting.
- Target: medium and medium-high power applications requiring great dynamic performance, high reliability, low acoustic noise and mechanic vibrations reduction.

## HIGHLIGHTS

- Microstepping function up to 4.000 step/rev.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- External fans not needed: ideal both for mounting inside a metallic electrical cabinet and for stand-alone applications.
- Operation with built-in oscillator with speed range from 14 to 450 rpm setting by means of dip-switches.



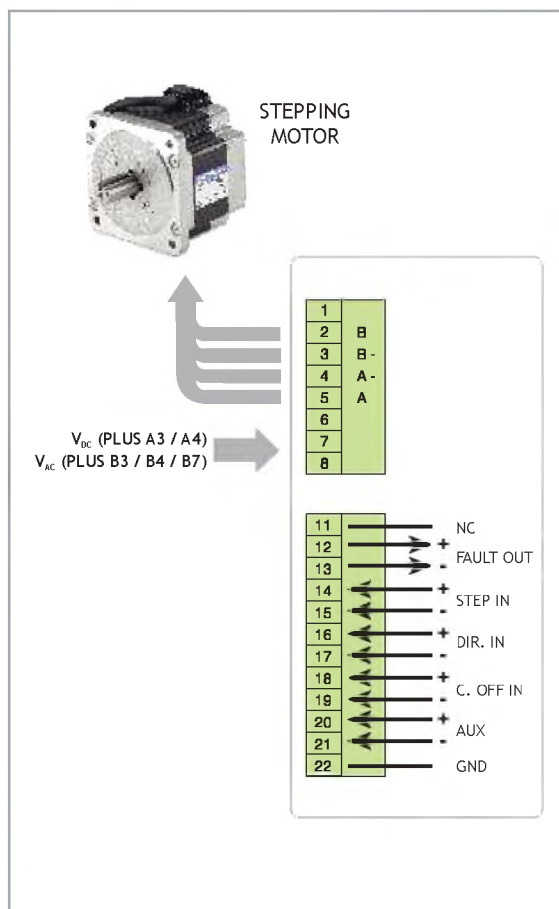
Series	Model	V <sub>AC</sub> range (Volt)	V <sub>DC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
PLUS	A3		39 to 85	2.4	8.0	152x129x46
PLUS	A4		77 to 140	1.9	6.0	152x129x46
PLUS	B3	28 to 62		2.4	8.0	152x129x46
PLUS	B4	55 to 100		1.9	6.0	152x129x46
PLUS	B7	28 to 62		3.0	10.0	152x129x46

## TECHNICAL FEATURES

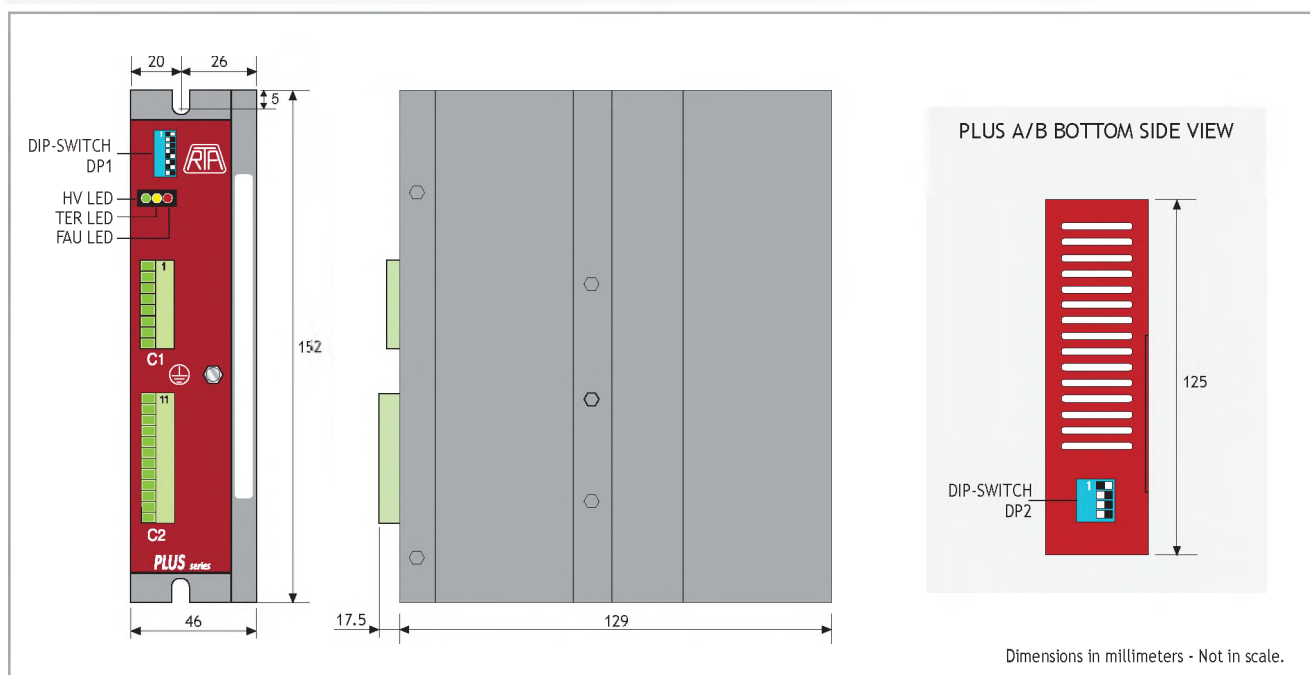
- Range of operating voltages: 39-140 V<sub>DC</sub> (PLUS A3 and PLUS A4) and 28-100 V<sub>AC</sub> (PLUS B3, PLUS B4 and PLUS B7).
- Range of current: 1.9-10.0 Amp. Setting up to eight possible values by means of dip-switches.
- Microstepping: 400, 800, 1.600, 3.200 and 500, 1.000, 2.000, 4.000 steps /revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overheating protection with thermal sensor.
- Optoinsulated inputs compatible with differential control signals.
- Possibility to switch off motor current with an external logic signal.
- High efficiency CHOPPER with MOSFET final stage output.
- Operation with built-in oscillator with speed range from 14 to 450 rpm setting by means of dip-switch.
- Alarm memory by use of yellow blinking led.
- Version: boxed, equipped with crimp-type connectors. Maximum compactness.
- Warranty: 24 months.



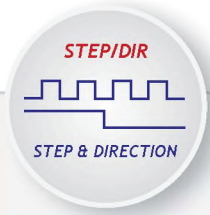
## POWER AND LOGIC CONNECTIONS



## MECHANICAL DIMENSIONS



# PLUS E Series Drives



## INTRODUCTION

- Stepping motor drives series with Step & Direction interface suitable for driving two-phase stepping motors, with four, six or eight terminals .
- Optimized for driving R.T.A. EM series stepping motors with encoder (86 mm and 60 mm flange sizes).
- Target: applications requiring EM stepping motors. Control in a standard way ("OPEN LOOP") but also give an alarm in case of loss of synchronism ("CLOSED LOOP").

## HIGHLIGHTS

- Microstepping function up to 4.000 step/rev.
- Setting of the sensitivity of the loss of synchronism alarm system.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- External fans not needed: ideal both for mounting inside a metallic electrical cabinet and for stand-alone applications.

Series	Model	V <sub>AC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
PLUS	E3	28 to 62	2.4	8.0	152x129x46
PLUS	E4	55 to 100	1.9	6.0	152x129x46

## TECHNICAL FEATURES

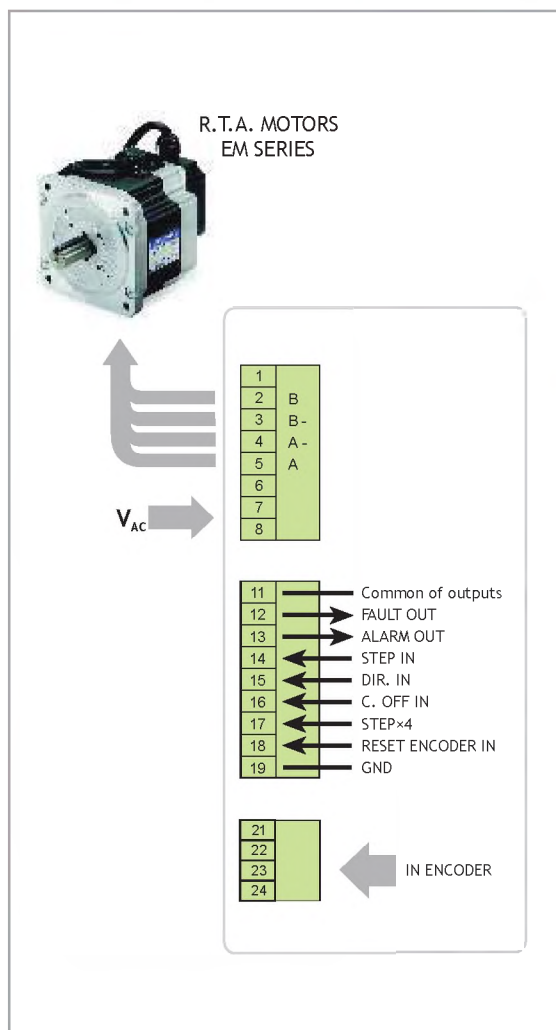
- Range of operating voltages: 28-100 V<sub>AC</sub>.
- Range of current: 1.9-8.0 Amp. Setting up to eight possible values by means of dip-switches.
- Microstepping: 400, 800, 1.600, 3.200 and 500, 1.000, 2.000, 4.000 steps /revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overheating protection with thermal sensor.
- High efficiency CHOPPER with MOSFET final stage output.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed
- Alarm memory by use of yellow blinking led.
- Version: boxed, equipped with crimp-type connectors. Maximum compactness.
- Warranty: 24 months.



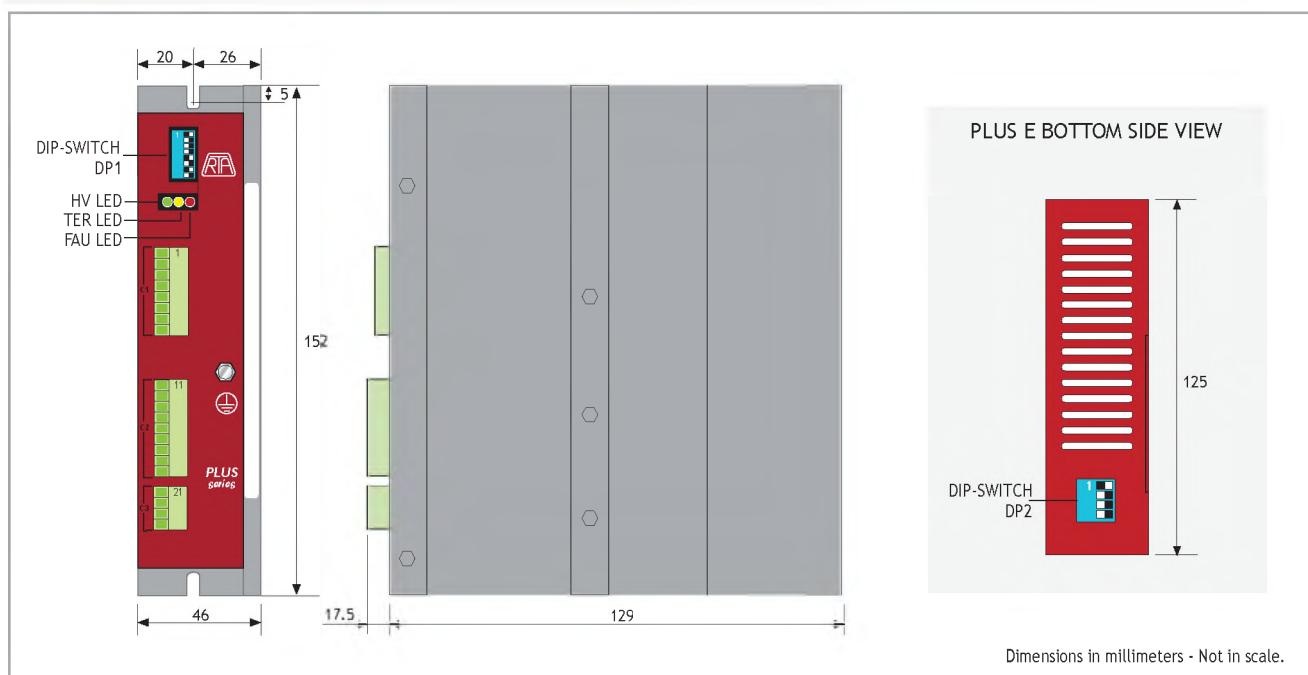
## MOTOR LOSS OF SYNCHRONISM CONTROL FUNCTION

- Input for the connection of the R.T.A. motors EM series encoder (NEMA 34 and 60 mm flange size).
- Output for the loss of synchronism alarm.
- Setting, by means of dip-switch, of the sensitivity of the loss of synchronism alarm system.

## POWER AND LOGIC CONNECTIONS



## MECHANICAL DIMENSIONS



# X-PLUS B Series Drives

## INTRODUCTION

- Stepping motor drives series with Step & Direction interface and direct input from the main AC power supply (from 110 V<sub>AC</sub> to 230 V<sub>AC</sub>).
- The drive is equipped with an internal rectifier able to transfer more than 330 V<sub>DC</sub> (230 V<sub>AC</sub>) to the motor, in order to ensure the maximum power for the application as well as a significant cost saving on transformer and rectifier, together with the related cabling.
- Target: advanced application requiring great dynamic performance, high reliability and simplified power supply.

## HIGHLIGHTS

- Microstepping function up to 4.000 step/rev.
- Connection directly to the main AC supply (110 to 230 V<sub>AC</sub>) normally avoiding the need for a transformer.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- External fans not needed: ideal both for mounting inside a metallic electrical cabinet and for stand-alone applications.
- Optoinsulated and differential input and output signals ease interfacing with the most commonly used control systems and ensure high noise immunity.
- Coupling with stepping motors rated for high voltage and equivalent or bigger than NEMA 34 is mandatory.



**ONE OF THE MOST COMPACT DRIVES WITH POWER INPUT DIRECTLY FROM THE MAIN AC SUPPLY (110 - 230 VAC)**

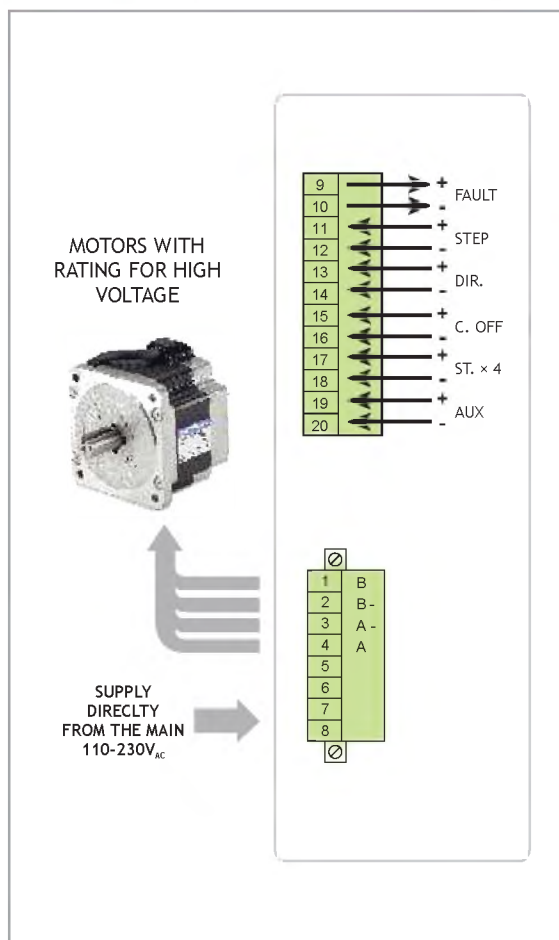
Series	Model	V <sub>AC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
X-PLUS	B4	110 to 230 +/- 15%	2.4	4.0	152x129x46

## TECHNICAL FEATURES

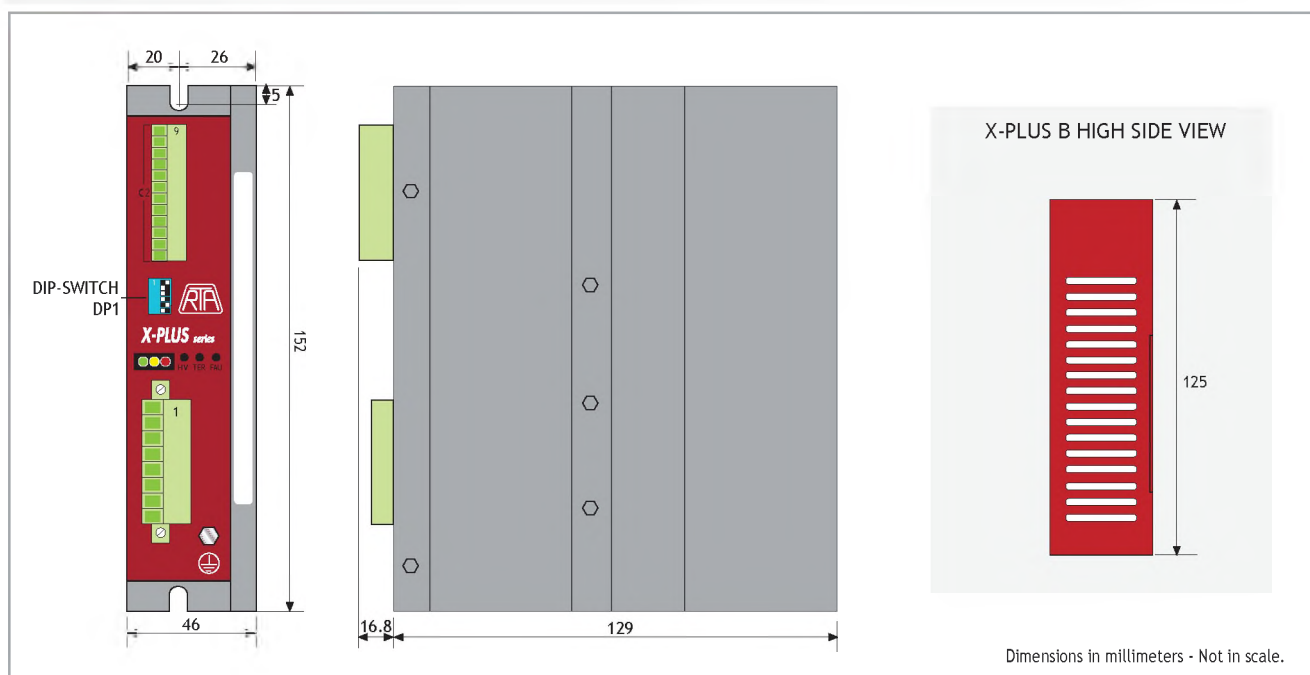
- Range of operating voltages: 110-230 V<sub>AC</sub>.
- Range of current: 2.4-4.0 Amp. Setting up to four possible values by means of dip-switches.
- Microstepping: 400, 800, 1.600, 3.200 and 500, 1.000, 2.000, 4.000 steps /revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Optoinsulated inputs compatible with differential control signals.
- Possibility to switch off motor current with an external logic signal.
- High efficiency CHOPPER with IGBT final stage output.
- Electronic resonance damping circuit to ensure acoustic noise and mechanic vibrations reduction at low and medium speed.
- Alarm memory by use of yellow blinking led.
- External fans not needed.
- Coupling with stepping motors rated for high voltage and equivalent or bigger than NEMA 34 is mandatory.
- Version: boxed, equipped with crimp-type connectors. Maximum compactness.
- Warranty: 24 months.



## POWER AND LOGIC CONNECTIONS




## MECHANICAL DIMENSIONS



# X-MIND B Series Drives

## INTRODUCTION

- Stepping motor drives series with Step & Direction interface and direct input from the main AC power supply (from 110 V<sub>AC</sub> to 230 V<sub>AC</sub>).
- The drive is equipped with an internal rectifier able to transfer more than 330 V<sub>DC</sub> (230 V<sub>AC</sub>) to the motor, to ensure the maximum power for the application as well as a significant cost saving on transformer and rectifier, together with the related cabling activity.
- Target: advanced application requiring great dynamic performance, high reliability and simplified power supply.
- UL/CSA certified. 


## HIGHLIGHTS

- Microstepping function up to 4.000 step/rev.
- Connection directly to the main AC supply (110 to 230 V<sub>AC</sub>) normally avoiding the need for a transformer.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- External fans not needed: ideal both for mounting inside a metallic electrical cabinet and for stand-alone applications.
- Optoinsulated and differential input and output signals ease interfacing with the most commonly used control systems and ensure high noise immunity.
- Coupling with stepping motors rated for high voltage and equivalent or bigger than NEMA 34 is mandatory.



FILE NUMBER: E306454

STEPIDIR  
STEP & DIRECTION



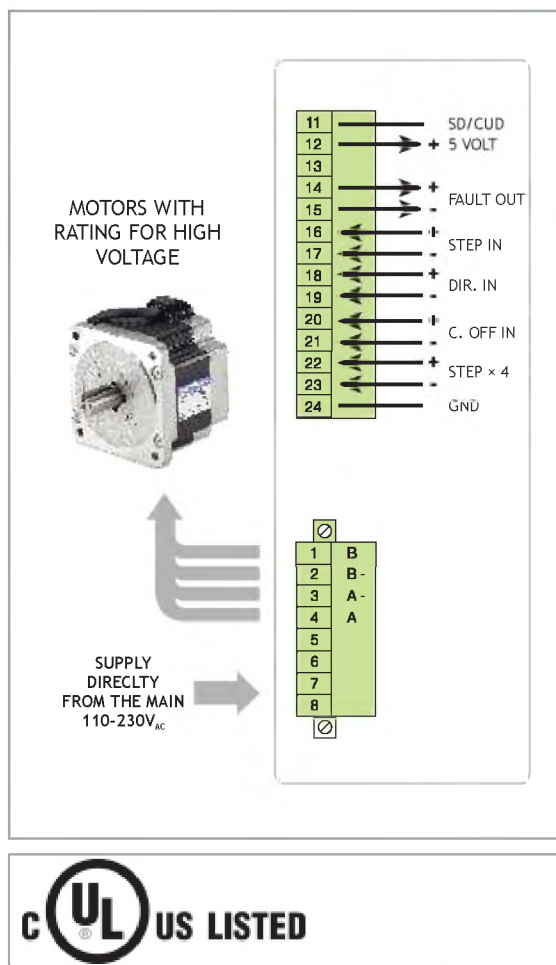

Series	Model	V <sub>AC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
X-MIND	B4	110 to 230 +/- 15%	2.3	4.0	180x173x53
X-MIND	B6	110 to 230 +/- 15%	3.4	6.0	180x173x53

## TECHNICAL FEATURES

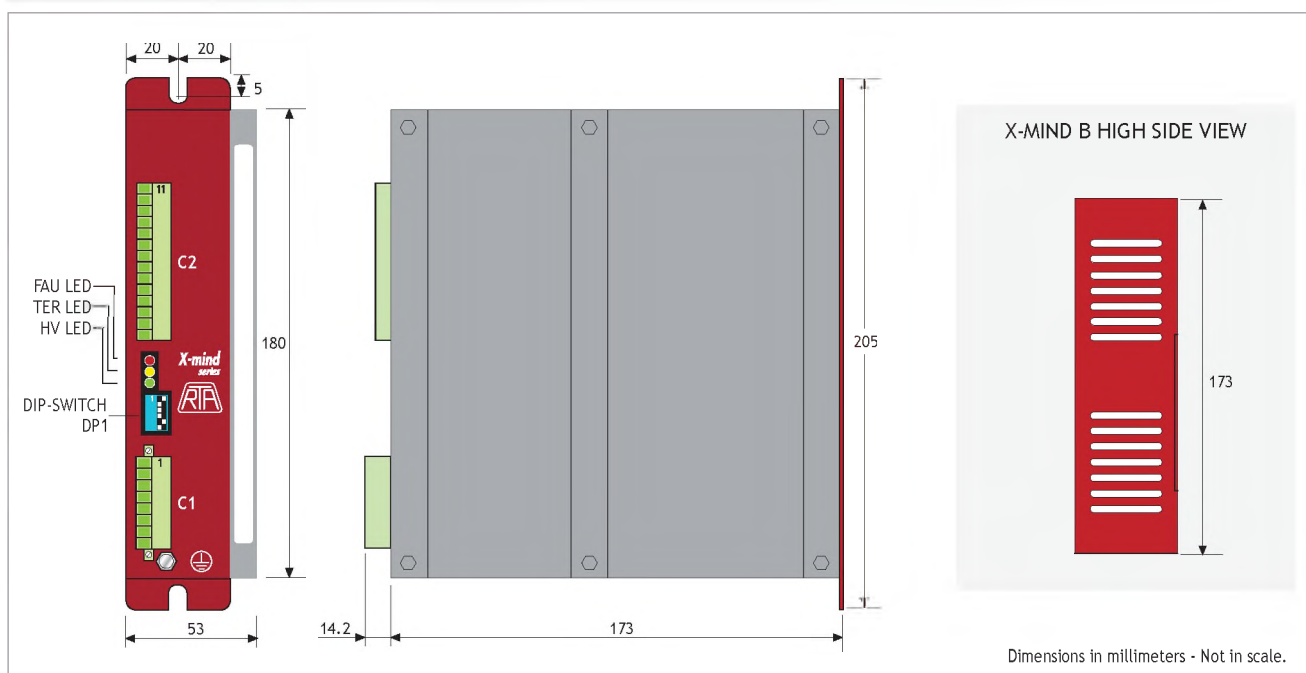
- Range of operating voltages: 110-230 V<sub>AC</sub>.
- Range of current: 2.3-6.0 Amp. Setting up to eight possible values by means of dip-switches.
- Microstepping: 400, 800, 1.600, 3.200 and 500, 1.000, 2.000, 4.000 steps /revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overheating protection with thermal sensor.
- Optoinsulated inputs compatible with differential control signals.
- Possibility to switch off motor current with an external logic signal.
- High efficiency CHOPPER with IGBT final stage output.
- Electronic resonance damping circuit to ensure acoustic noise and mechanic vibrations reduction at low and medium speed.
- External fans not needed.
- Coupling with stepping motors rated for high voltage and equivalent or bigger than NEMA 34 is mandatory.
- Version: boxed, equipped with crimp-type connectors. Maximum compactness.
- UL/CSA certified.
- Warranty: 24 months.



## POWER AND LOGIC CONNECTIONS



## MECHANICAL DIMENSIONS





# Combo Unit: **HI-MOD B**



## INTRODUCTION

- Series of stepper motors with integrated ministep bipolar chopper drives equipped with STEP & DIRECTION interface.
- Compact system housed in a metallic box mounted on motor body, minimizing dimensions and optimizing wiring and mounting easiness.
- Target: distributed electronics applications requiring great dynamic performance, high reliability and compactness.
- UL/CSA certified.

## HIGHLIGHTS

- Microstepping function up to 4.000 step/rev.
- Communication by means of STEP & DIRECTION interface.
- Electronic resonance damping circuit to ensure acoustic noise and mechanic vibrations reduction at low speed.
- Available with three motor sizes NEMA 34 - □ 86 mm. (1, 2 and 3 stack). It is ideal for distributed electronics applications.

FILE NUMBER: E355001

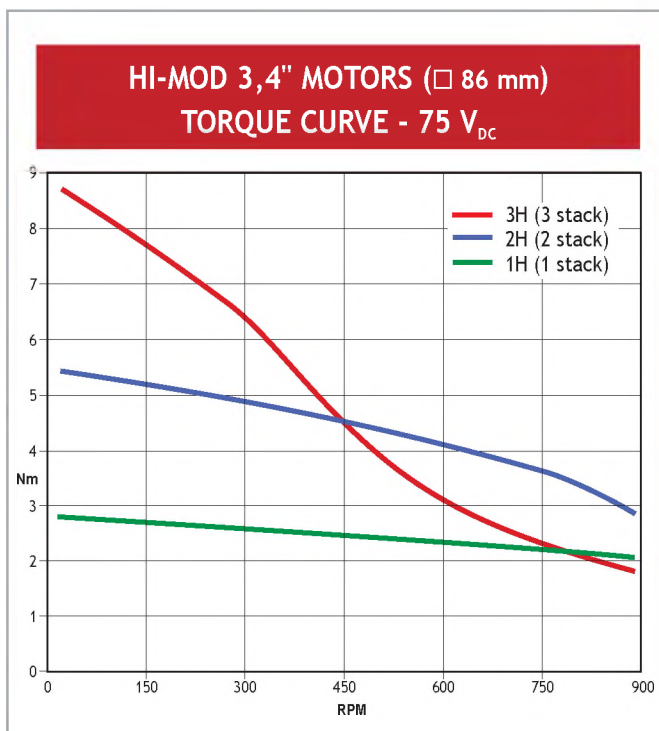


### HI-MOD X<sub>1</sub> - X<sub>2</sub> - X<sub>3</sub> - X<sub>4</sub> - X<sub>5</sub> - n

X <sub>1</sub> = Electronic features	X <sub>2</sub> X <sub>3</sub> X <sub>4</sub> X <sub>5</sub> = Motor type and power	n = Release software
B: STEP & DIRECTION	X <sub>2</sub> = Maximum power X <sub>3</sub> = Mechanical hardware identification X <sub>4</sub> = Motor type X <sub>5</sub> = Motor current	0 ÷ 9

## TECHNICAL FEATURES

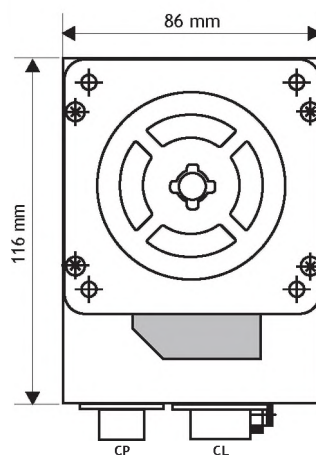
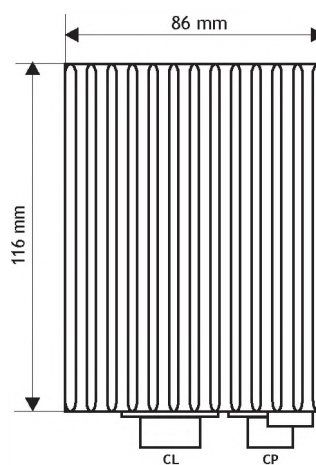
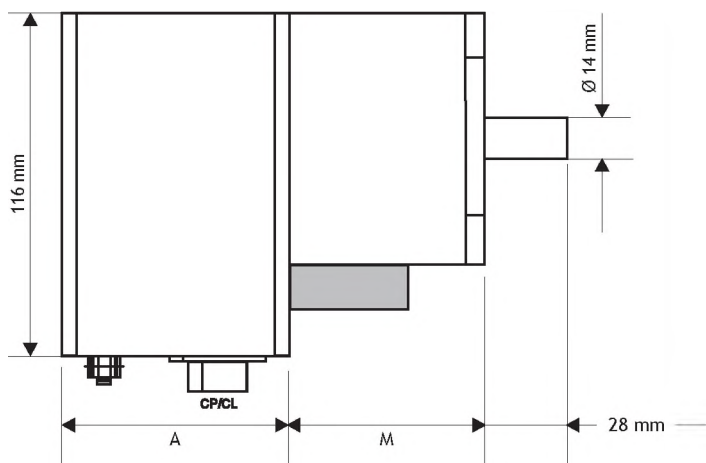
- Range of operating voltages: 32-75 V<sub>DC</sub>.
- Microstepping: 400, 800, 1.600, 3.200 and 500, 1.000, 2.000, 4.000 steps /revolution. Setting by means of a rotatory dip-switch.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Electronic resonance damping circuit to ensure acoustic noise and mechanic vibrations reduction at low speed.
- Optoinsulated inputs and outputs.
- High efficiency CHOPPER with MOSFET final stage output.
- UL/CSA certified.



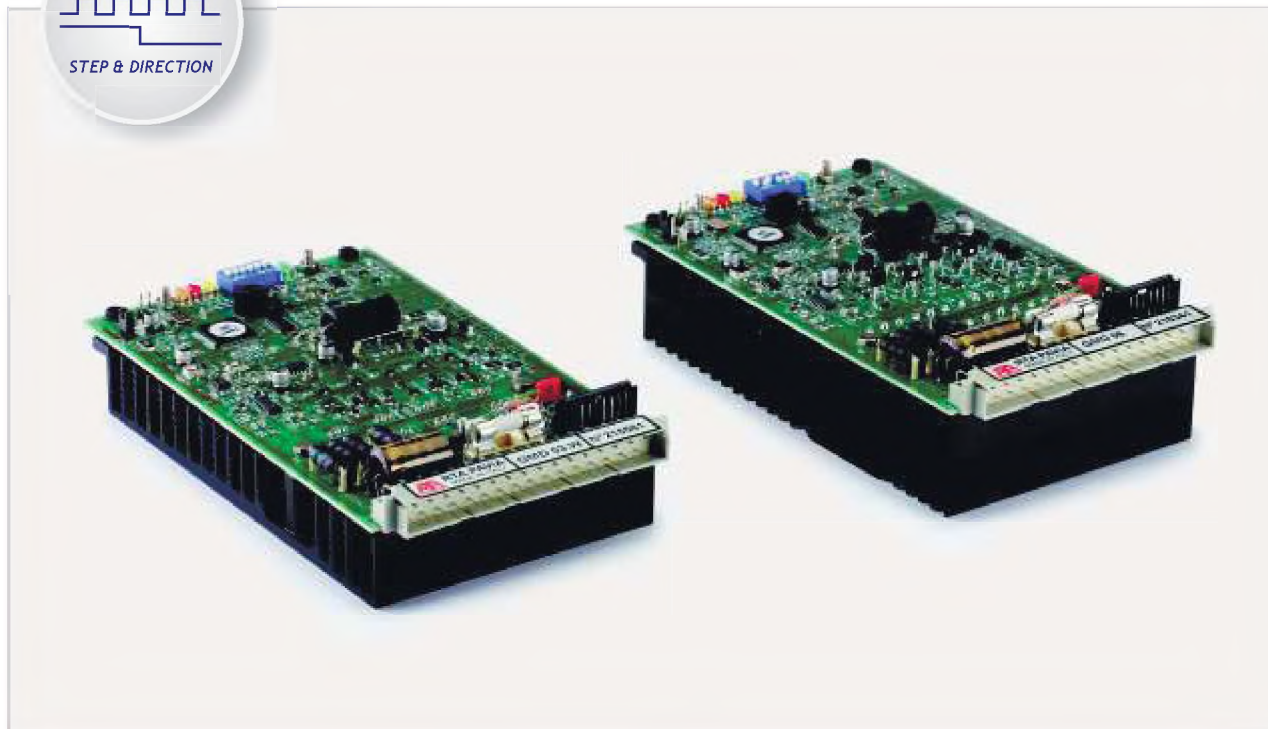
## MECHANICAL DIMENSIONS

Model	A Length (mm)
HI-MOD B	78.0

Type	M Length (mm)
1H	66.0
2H	96.5
3H	127.0



# Eurocard: **GMD - GMH**



## INTRODUCTION

- Stepping motor drives series with Step & Direction interface and realized with SMD technology in single EUROCARD format card (100x160 mm).
- System backward-compatible with the previous series (with PTH technology) equipped with a 32 pole, DIN 41612 form D connector. Drives designed to be assembled inside a RACK complete with motherboard.
- Target: multi-axes applications requiring backward-compatibility with the previous series.

## HIGHLIGHTS

- Mechanical, electric and applicative backward-compatibility with the previous series drives.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- Standard input and output signals facilitate the interface with the most common control systems.
- Particular care dedicated to obtain top performance and low power losses for both the card and the motor, limiting the need for forced ventilation.

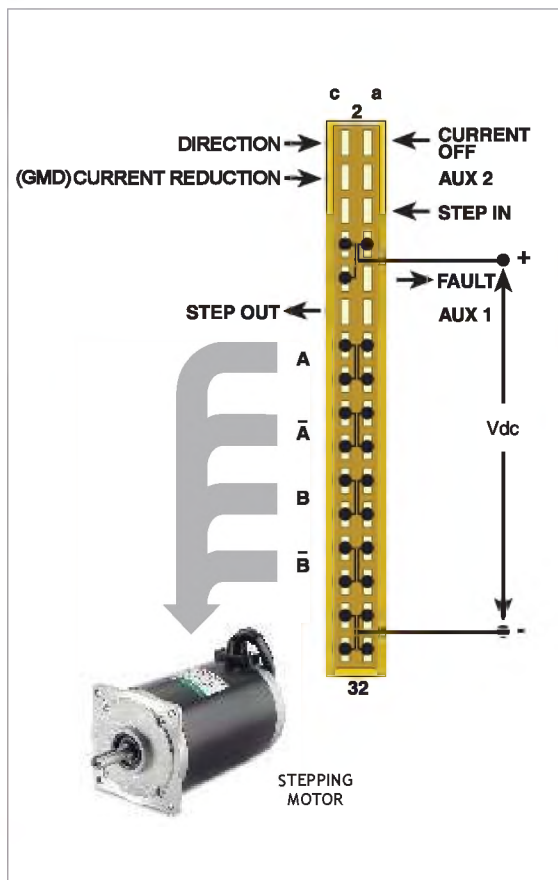
Series	Model	V <sub>DC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
GMD	02	55 to 85	1.6	6.0	100x160x45
GMD	03	55 to 85	4.0	10.0	100x160x45
GMD	04	95 to 140	5.0	12.0	100x160x51
GMD	06	160 to 190	5.0	12.0	100x160x51
GMH	05	55 to 85	1.6	3.0	100x160x30
GMH	06	55 to 85	3.5	6.0	100x160x30
GMH	07	55 to 85	7.0	12.0	100x160x45
GMH	09	100 to 180	7.0	12.0	100x160x51

## TECHNICAL FEATURES

- Range of operating voltage: 55-190 V<sub>DC</sub> (GMD series) and 55-180 V<sub>DC</sub> (GMH series).
- Range of current: 1.6-12 Amp.
  - Setting up to eight possible values by means of dip-switches (GMD series).
  - Setting up to four possible values by means of dip-switches (GMH series).
- Microstepping: 200, 400 or 800 steps /revolution (GMD series).  
 Microstepping: 400, 800, 1600, 3200 and 500, 1000, 2000, 4000 steps /revolution (GMH series).  
 Setting by means of dip- switches.
- Automatic current reduction at motor standstill.
- Possibility to switch off motor current with an external logic signal.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overheating protection.
- Operation with a single external power supply.
- Electronic resonance damping facility.
- Two separated and co-working electronic circuits to ensure acoustic noise and mechanical vibration reduction at low and medium speed.
- Warranty: 24 months.

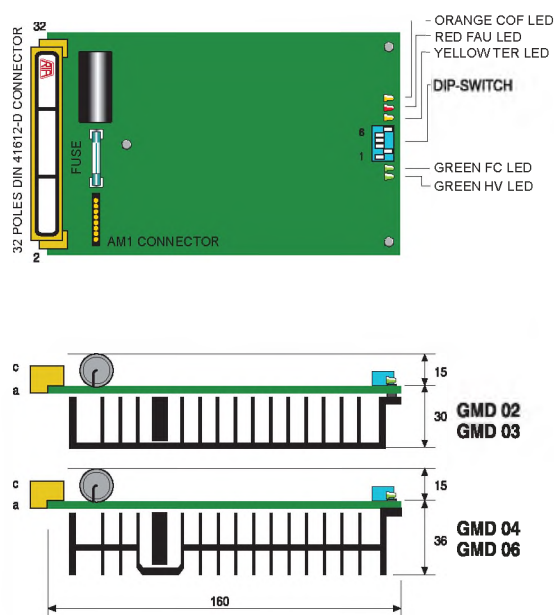


## POWER AND LOGIC CONNECTIONS

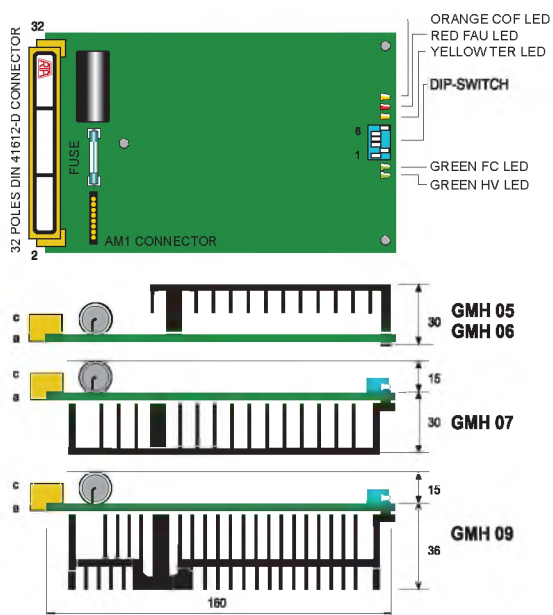


## MECHANICAL DIMENSIONS

### GMD SERIES

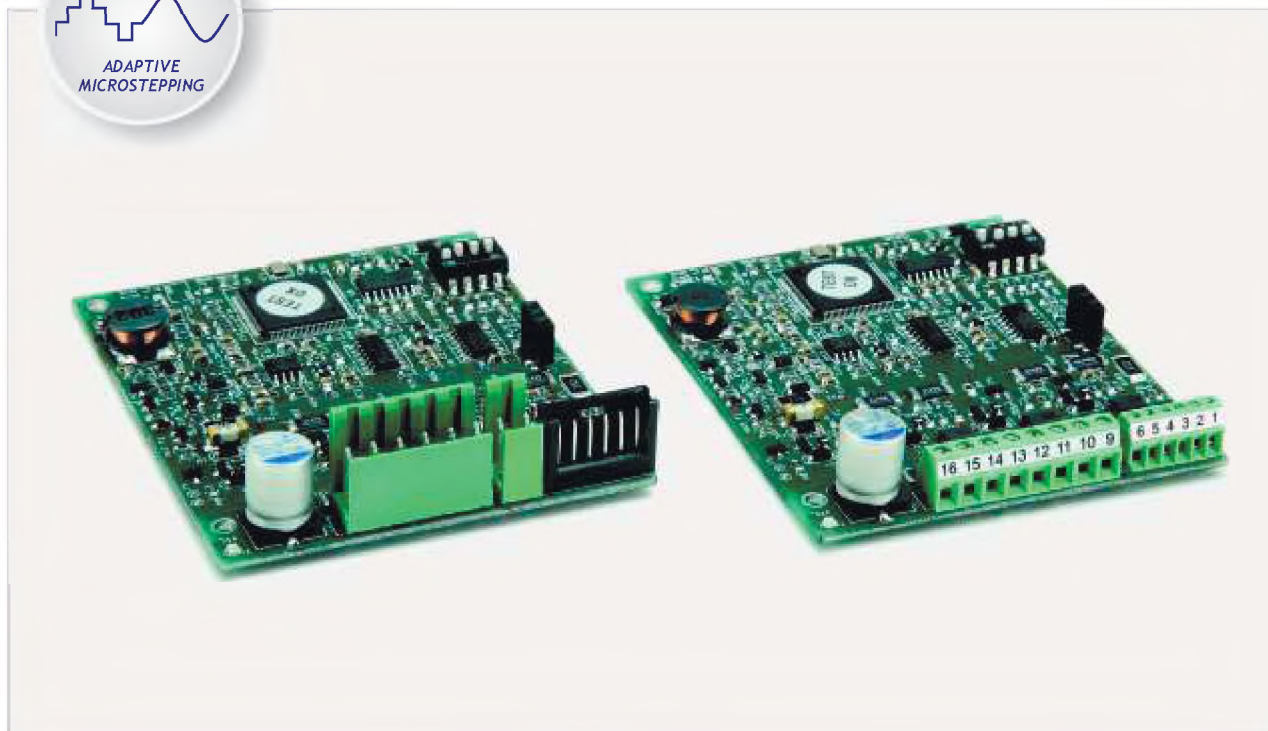


### GMH SERIES



Dimensions in millimeters - Not in scale.

# BSD Series Drives



## INTRODUCTION

- New series of microstep stepping motor drives specifically developed for small and mid-size stepping motors.
- Ultra-compact and optimized design to reduce space and cost, combined with *Adaptive Microstepping* technology ensuring noise and vibration suppression.
- Target: simple and effective motion control solutions requiring low power, high precision, smoothness of movement and low acoustic noise.
- Ideal solution to replace integrated circuits and self-made, low power drives. The perfect choice for small routers, medical, 3D printers and all types of compact machines.

## HIGHLIGHTS

- Full digital microstepping drive.
- Adaptive microstepping up to 3.200 step/rev.
- Intelligent management of the current profile that achieves good results in terms of smoothness of movement, low noise and vibration control.
- A highly sophisticated control system, preserving anyhow the traditional ease of use of R.T.A. drives.

Series	Model	V <sub>DC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
BSD	02 - 02.V*	24 to 48	0.7	2.2	78x68x21

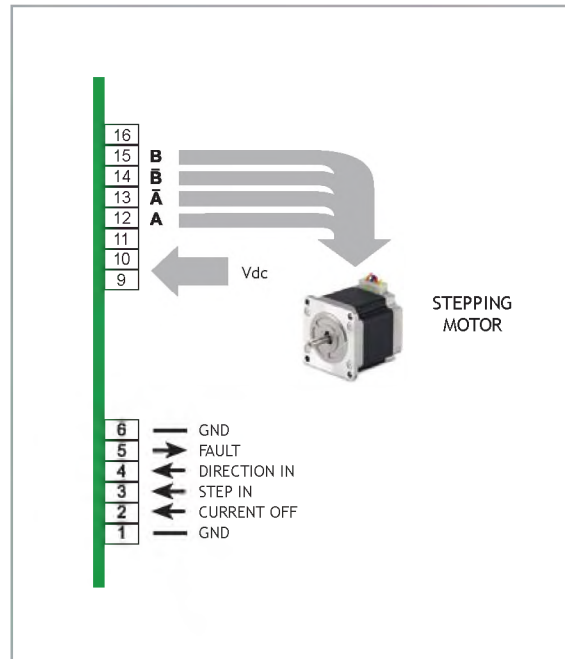
\* BSD 02.V version is equipped with screw-type connectors.

## TECHNICAL FEATURES

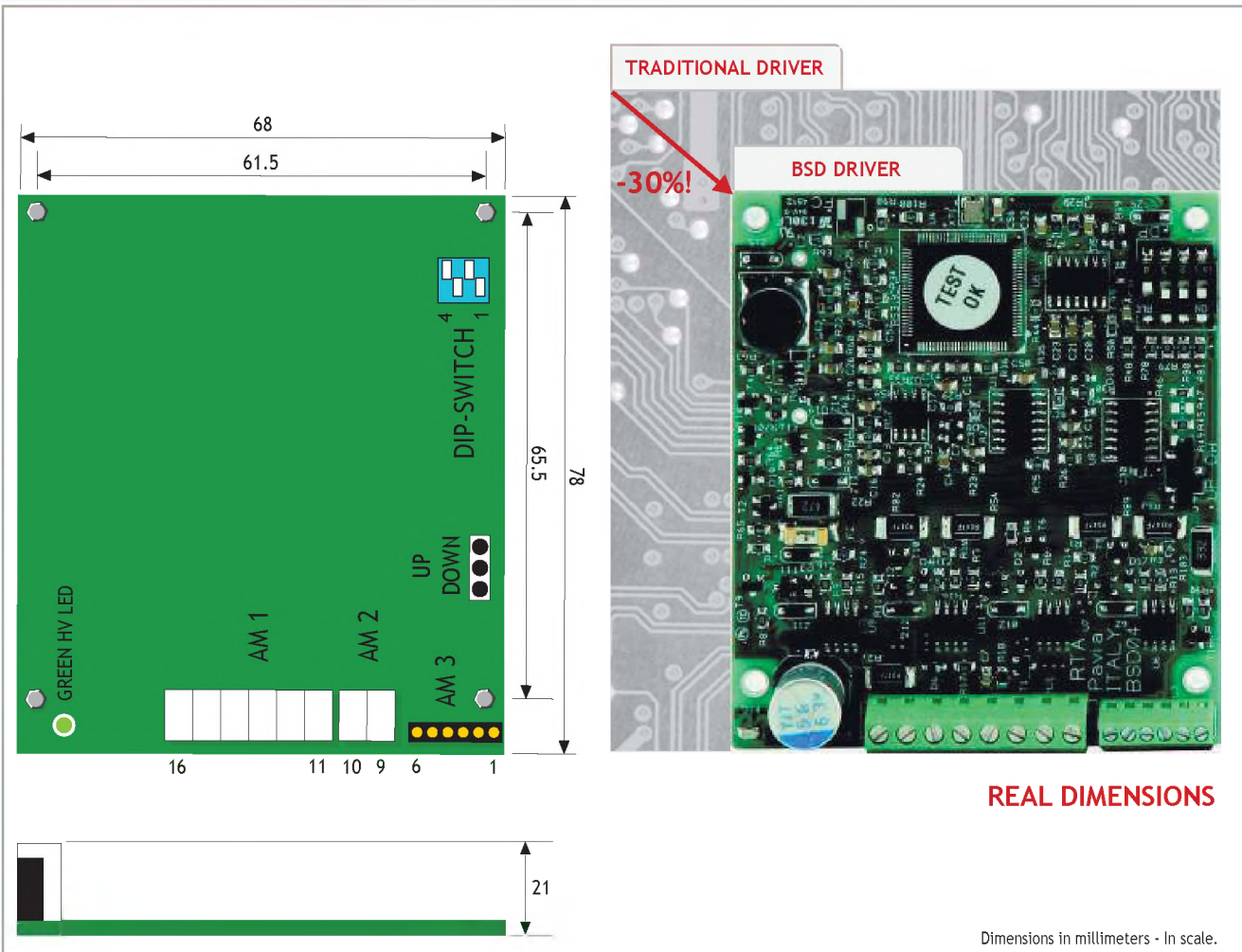
- Range of operating voltage: 24-48 V<sub>DC</sub>.
- Range of current: 0.7-2.2 Amp. Setting up to four possible values by means of dip-switches.
- Microstepping: 400, 800, 1.600 and 3.200 steps/revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Management of the current profile setting by means of a dip-switch.
- Protections:
  - Protection against under-voltage.
  - Protection against a short-circuit at motor outputs.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available version: open frame, crimp-type/screw-type connectors.
- Maximum compactness.
- Warranty: 24 months.



## POWER AND LOGIC CONNECTIONS



## MECHANICAL DIMENSIONS



### REAL DIMENSIONS

Dimensions in millimeters - In scale.

# A-CSD Series Drives



A-CSD 02/04



A-CSD 02.V/04.V



A-CSD 92/94



## INTRODUCTION

- New series of bipolar microstep stepping motor drives, specifically developed for applications sensitive to acoustic noise and vibration.
- Significant evolution of the CSD series, preserving backward mechanical, electrical and applicative compatibility.
- Target: advanced applications requiring high precision, smoothness of movement and low acoustic noise.

## HIGHLIGHTS

- Full digital microstepping drive.
- Adaptive microstepping up to a 3.200 step/rev.
- Intelligent management of the current profile that achieves good results in terms of smoothness of movement, low noise and vibration control.
- A highly sophisticated control system, preserving anyhow the traditional ease of use of R.T.A. drives.

Series	Model	V <sub>DC</sub> range (Volt)	I <sub>NP</sub> min. [Peak value] (Amp)	I <sub>NP</sub> max. [Peak value] (Amp)	Dimensions (mm)
A-CSD	02 - 02.V*	24 to 48	0.7	2.4	92x85x22
A-CSD	04 - 04.V*	24 to 48	2.6	4.4	92x85x23
A-CSD	92	24 to 48	0.7	2.4	99x90x21
A-CSD	94	24 to 48	2.6	4.4	99x90x21

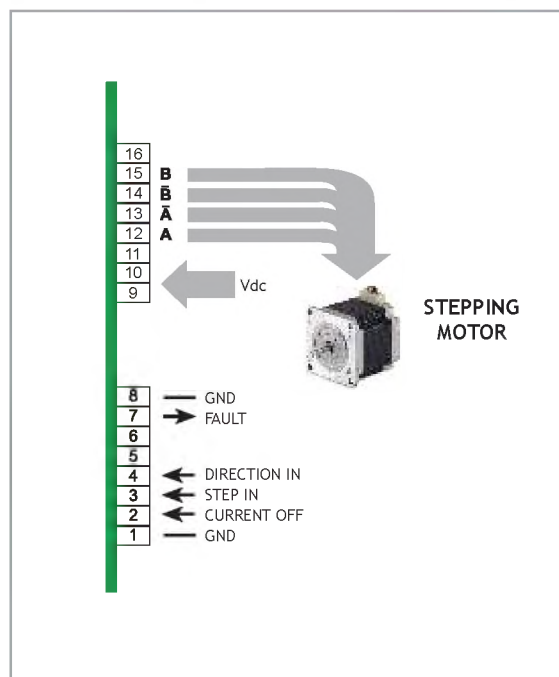
\* A-CSD 02.V and A-CSD 04.V versions are equipped with screw-type connectors.

## TECHNICAL FEATURES

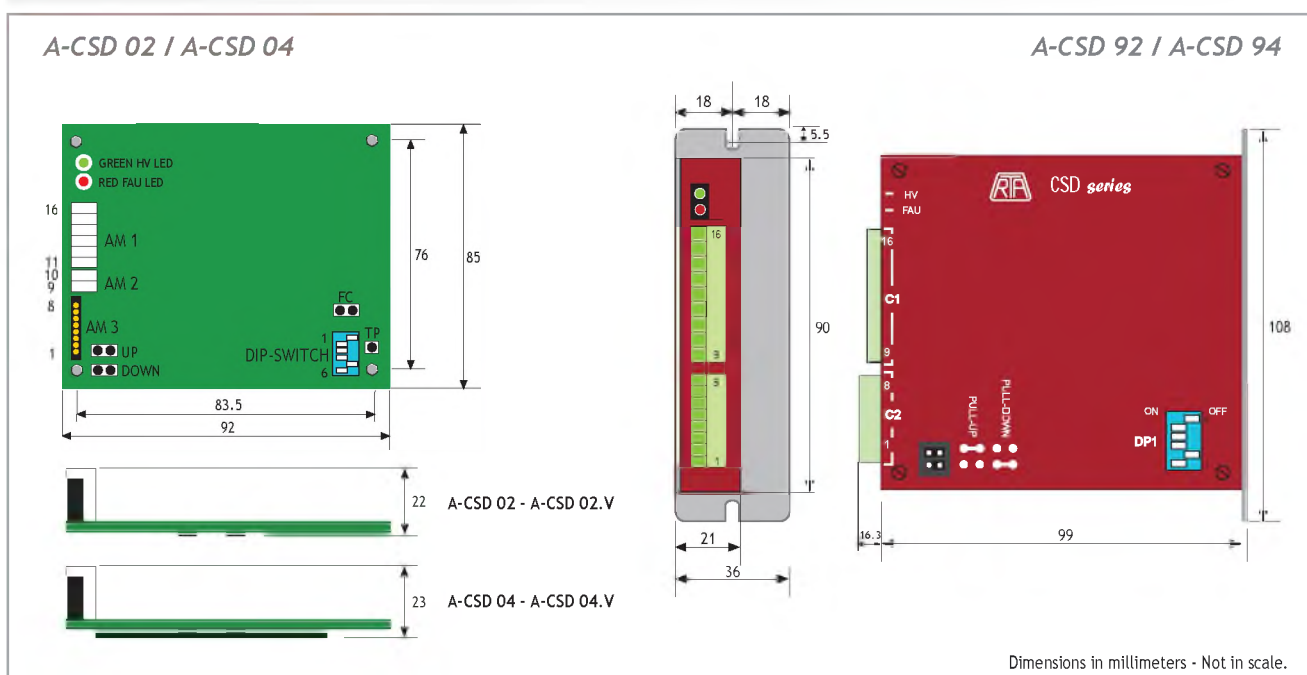
- Range of operating voltage: 24-48 V<sub>DC</sub>.
- Range of current: 0.7-4.4 Amp. Setting up to eight possible values by means of dip-switches.
- Microstepping: 400, 800, 1.600 and 3.200 steps/revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Management of the current profile setting by means of a dip-switch.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection with thermal sensor.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available versions: boxed/open frame, crimp-type/screw-type connectors. Maximum compactness.
- Warranty: 24 months.



## POWER AND LOGIC CONNECTIONS

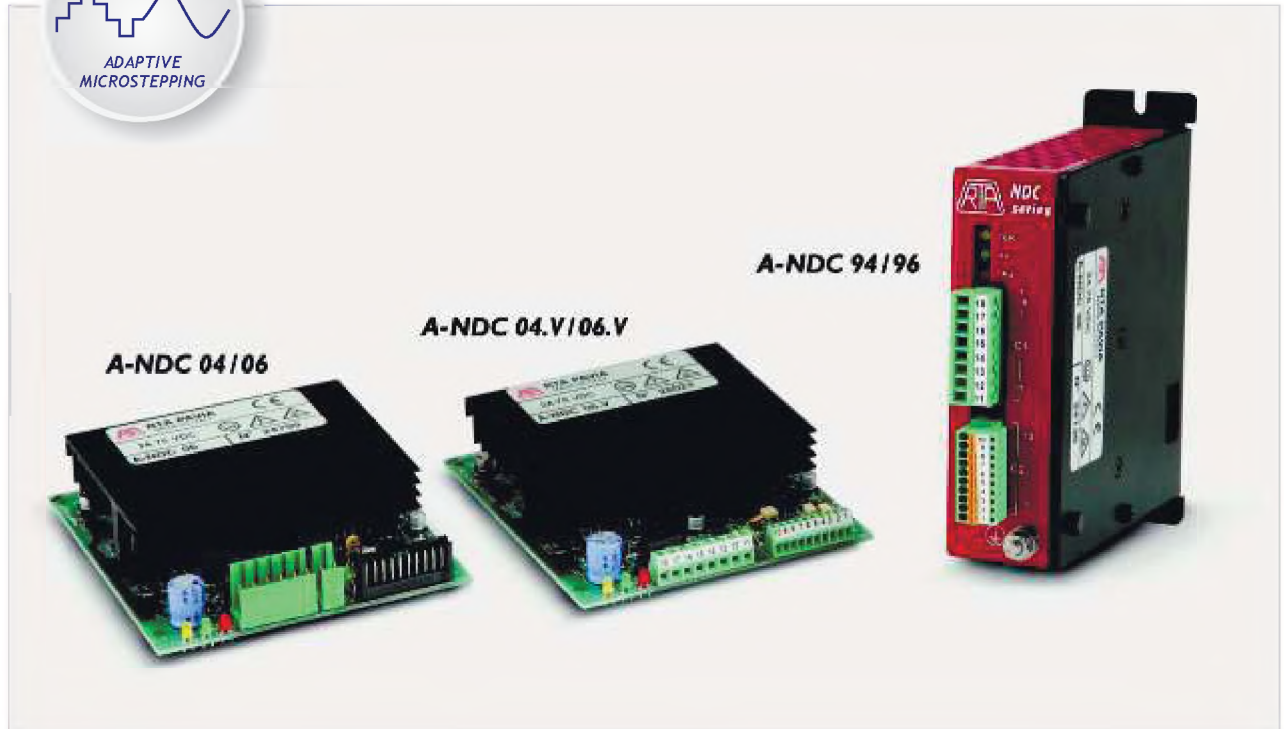


## MECHANICAL DIMENSIONS





# A-NDC Series Drives



## INTRODUCTION

- New series of bipolar microstep stepping motor drives, specifically developed for applications sensitive to acoustic noise and vibration.
- Significant evolution of the NDC series, preserving backward mechanical, electrical and applicative compatibility.
- Target: advanced applications requiring high precision, smoothness of movement and low acoustic noise.

## HIGHLIGHTS

- Full digital microstepping drive.
- Adaptive microstepping up to a 12.800 step/rev (1/64).
- Intelligent management of the current profile that achieves good results in terms of smoothness of movement, low noise and vibration control.
- A highly sophisticated control system, preserving anyhow the traditional ease of use of R.T.A. drives.

Series	Model	V <sub>DC</sub> range (Volt)	I <sub>NP</sub> min. [Peak value] (Amp)	I <sub>NP</sub> max. [Peak value] (Amp)	Dimensions (mm)
A-NDC	04 - 04.V*	24 to 85	0.6	2.0	101x94x25
A-NDC	06 - 06.V*	24 to 85	1.9	6.0	101x94x25
A-NDC	94	24 to 85	0.6	2.0	110x108x34
A-NDC	96	24 to 85	1.9	6.0	110x108x34

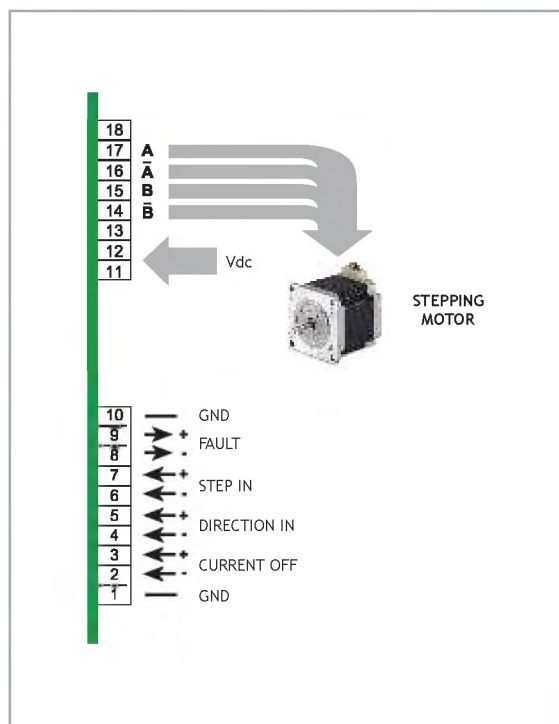
\* A-NDC 04.V and A-NDC 06.V versions are equipped with screw-type connectors.

## TECHNICAL FEATURES

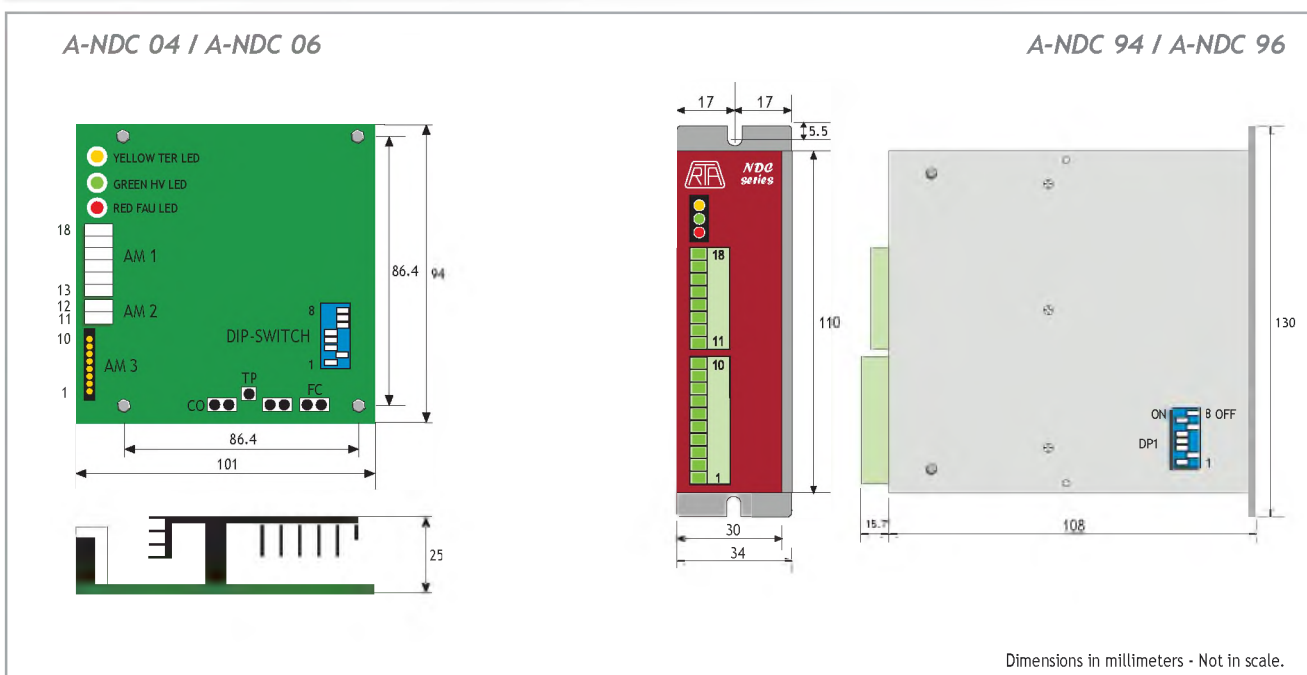
- Range of operating voltage: 24-85 V<sub>dc</sub>.
- Range of current: 0.6-6 Amp. Setting up to eight possible values by means of dip-switches.
- Microstepping: 400, 800, 1.600, 3.200, 6.400 and 12.800 steps/revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Management of the current profile setting by means of a dip-switch.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection with thermal sensor.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available versions: boxed/open frame, crimp-type/screw-type connectors. Maximum compactness.
- Optoinsulated inputs to ensure best EM noise immunity.
- Warranty: 24 months.



## POWER AND LOGIC CONNECTIONS



## MECHANICAL DIMENSIONS



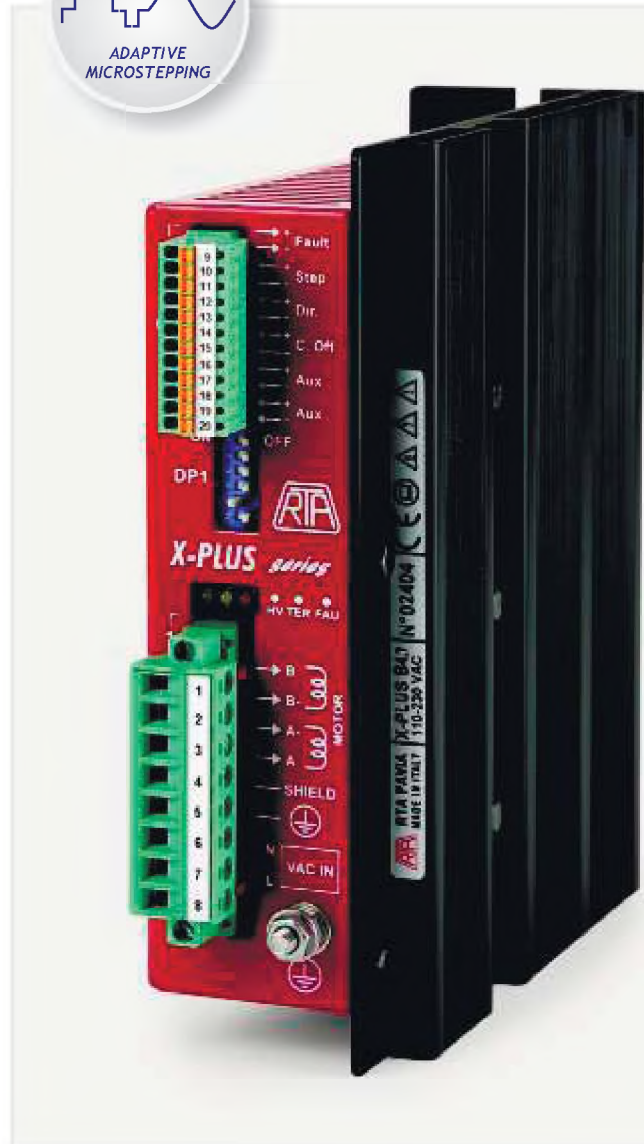
# X-PLUS B4.1 Series Drives

## INTRODUCTION

- New series bipolar microstep stepping motor drive with power input directly from the main AC supply (110 V<sub>AC</sub> to 230 V<sub>AC</sub>), specifically developed for applications requiring high performance with reduced acoustic noise and low vibrations.
- Target: advanced applications requiring high precision, low noise and smoothness of movement.
- The perfect choice for combining high power and low acoustic noise.

## HIGHLIGHTS

- Full digital microstepping drive.
- Adaptive microstepping up to 3,200 step/rev.
- Intelligent management of the current profile that achieves good results in terms of smoothness of movement, low noise and vibration control.
- A highly sophisticated control system, preserving anyhow the traditional ease of use of R.T.A. drives.



**ONE OF THE MOST COMPACT DRIVES WITH POWER INPUT DIRECTLY FROM THE MAIN AC SUPPLY (110 - 230 VAC)**

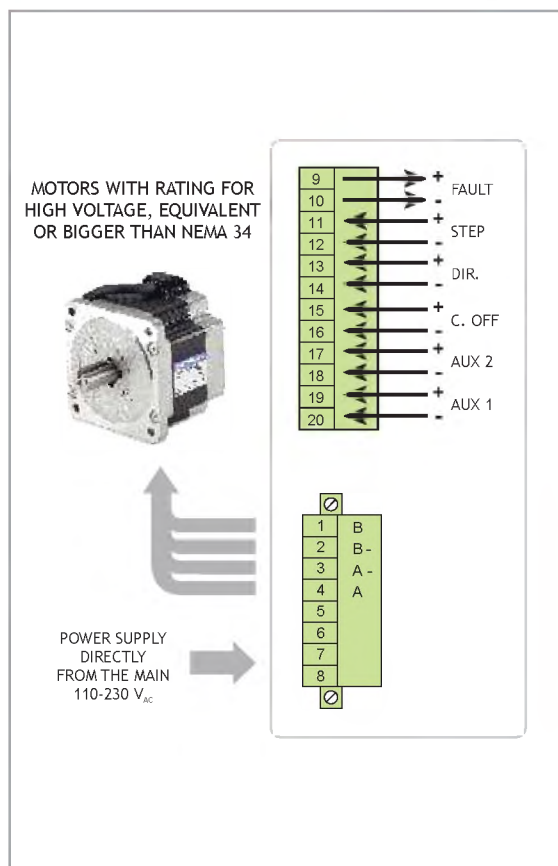
Series	Model	V <sub>AC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
X-PLUS	B4.1	110 to 230 +/- 15%	2.4	4.0	152x129x46

## TECHNICAL FEATURES

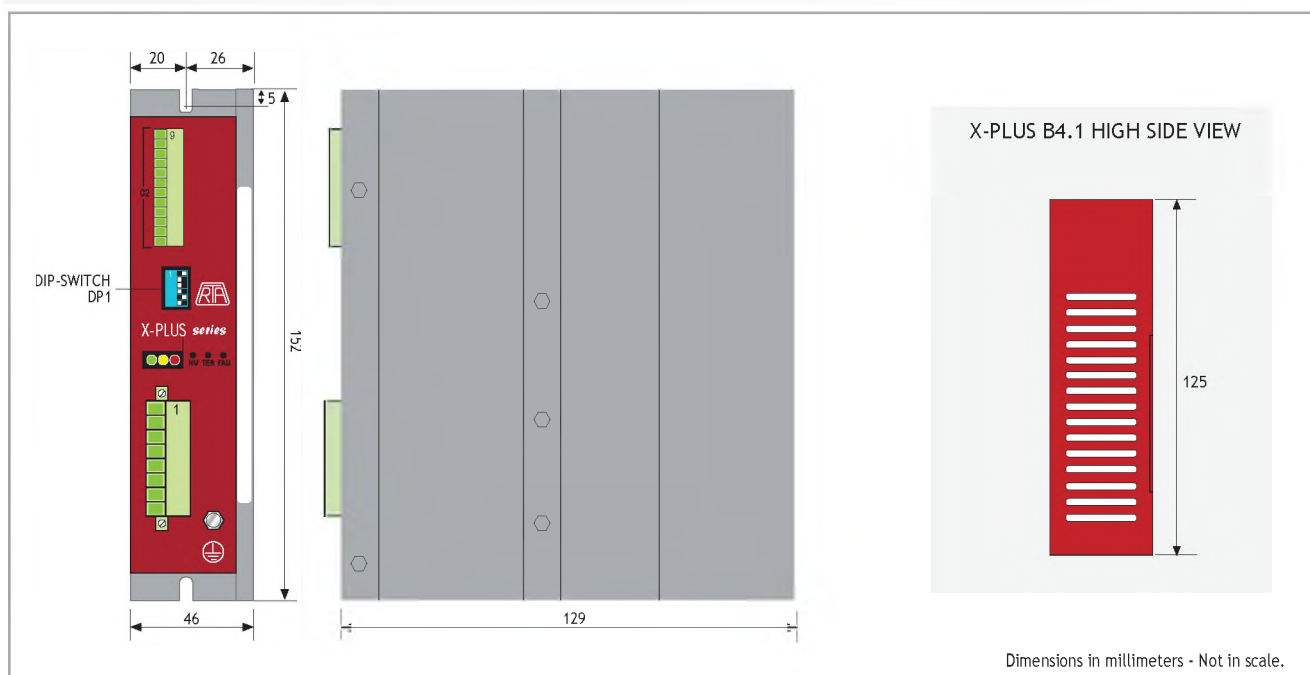
- Range of operating voltage: 110-230 V<sub>AC</sub>.
- Range of current: 2.4-4 Amp. Setting up to four possible values by means of dip-switches.
- Microstepping: 400, 800, 1,600 and 3,200 steps/revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Management of the current profile setting by means of a dip-switch.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection with thermal sensor.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available in boxed version with plug-in connectors. Maximum compactness.
- Optoinsulated inputs to ensure best EM noise immunity.
- External fans not needed.
- Coupling with stepping motors rated for high voltage and equivalent or bigger than NEMA 34 is mandatory.
- Warranty: 24 months.



## POWER AND LOGIC CONNECTIONS



## MECHANICAL DIMENSIONS



# ADW Series Drives



## INTRODUCTION

- ADW is the new R.T.A. electronic drive designed for all applications where accurate SPEED CONTROL is needed.
- The motor velocity can be regulated in 3 ways:
  - Analog voltage input
  - External potentiometer
  - Internal speed settings
- The extended ADW power range (24-75 V<sub>DC</sub>, 0.65 - 6.0 Amps) and its versatility (4 Modes of Operation) allow to access to a wide variety of application fields.

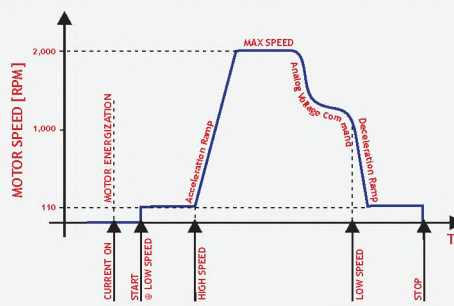
## HIGHLIGHTS

- Any speed-regulated applications with variable or pre-set velocity setting.
- Conveyors:
  - Single belt transport
  - Multi belt transport with high precision position/speed synchronization.
- Jog or adjustment movements.

### MODES OF OPERATION

- |                   |                     |
|-------------------|---------------------|
| 1 RUN MODE        | 3 CW/CCW (JOG)      |
| 2 START/STOP MODE | 4 LIMIT SWITCH MODE |

EXAMPLE OF AN APPLICATION MOTION PROFILE

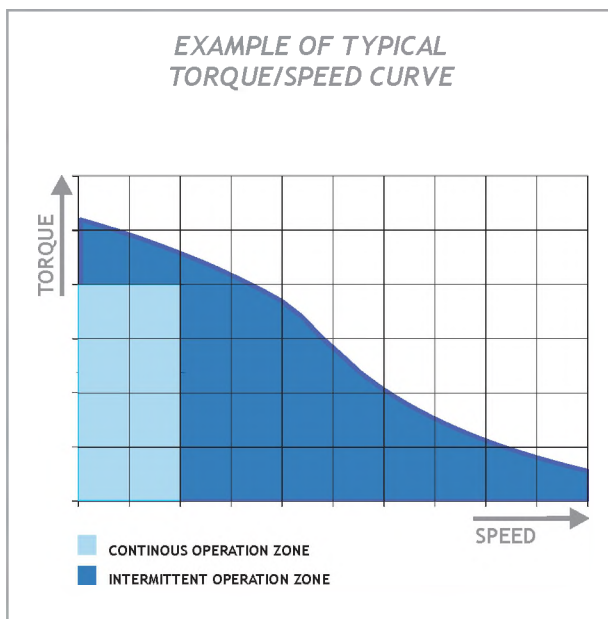


Series	Model	V <sub>DC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
ADW	04 - 04.V*	24 to 75	0.65	2.0	122x94x25
ADW	06 - 06.V*	24 to 75	1.9	6.0	122x94x25

\* ADW 04.V and ADW 06.V versions are equipped with screw-type connectors.

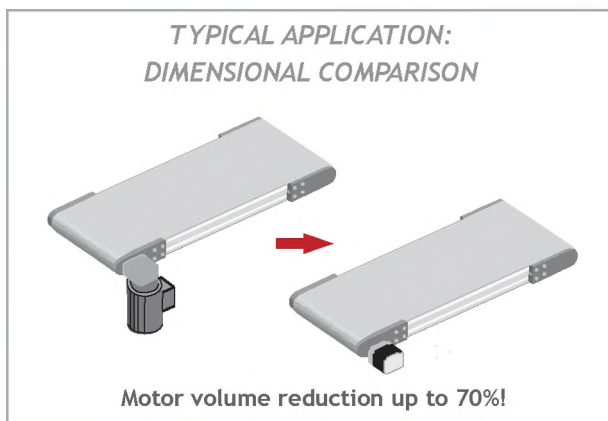
## TECHNICAL FEATURES

- Range of operating voltage: 24-75 V<sub>dc</sub>.
- Range of current: 0.65-6 Amp. Easy setting of values by means of dip-switches.
- Wide speed range: 0.8 rpm to 2,000 rpm. Continuous operation zone up to approx 400 rpm, depending on motor choice.
- 64 internally selectable preset speed.
- 0-5Vdc or 0-10Vdc selectable analog command range.
- Low & High-speed motion profile.
- Adjustable internal acceleration/deceleration ramp.
- Voltage source for potentiometer available at connector.
- “Auto-stop” function.
- All opto-insulated digital inputs.
- Sync-out for multi-Axis synchronization.
- Over-voltage, short-circuit and thermal protection.
- Warranty: 24 months.

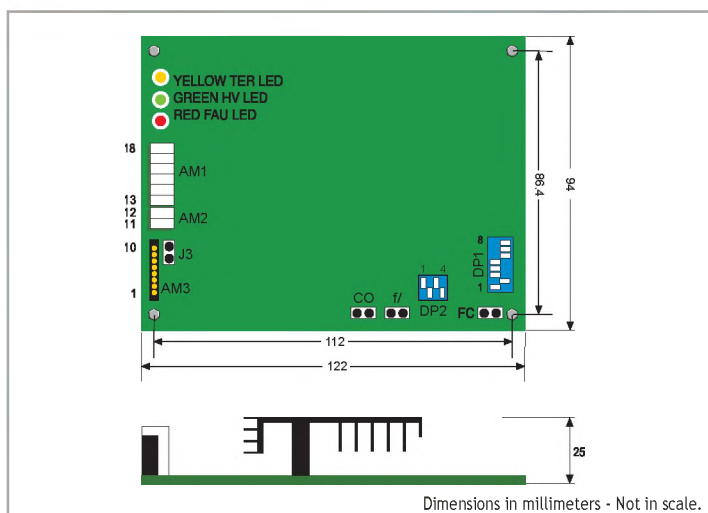


## BENEFITS VS. CONVENTIONAL INVERTERS + AC MOTORS + WORM GEARBOX SETUP.

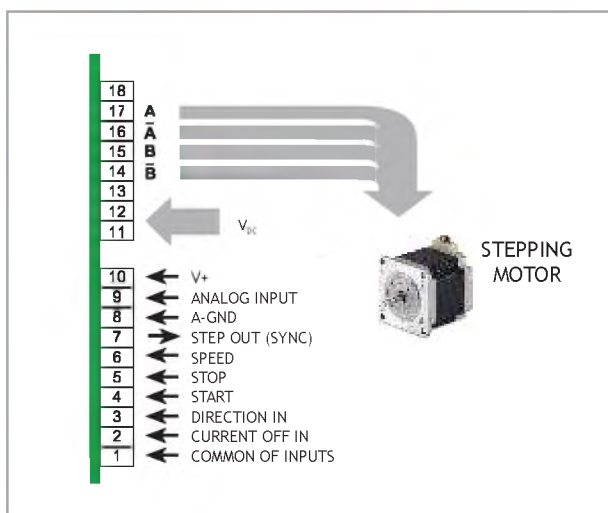
- Broader and more accurate speed range [0.8 rpm to 2,000 rpm].
- Zero-deviation motor speed control at any speed. [motor speed is not affected by variable factors like load, inertia or friction].
- The motors automatically act as brake at zero speed.
- Easy multi-axis synchronization in Position and Speed.
- No need of worm gearbox due to the high-torque at low rotation speed range [0-400 rpm].
- Smaller dimension: overall size < 1/3 compared with traditional AC Asynchronous sets.
- Lower weight.



## MECHANICAL DIMENSIONS



## POWER AND LOGIC CONNECTIONS



# CSD J Series Drives



## INTRODUCTION

- Series of ministepped bipolar chopper drives with an on-board programmable motion controller that can be used:
  - for the interfacing, through RS485 serial line, with a central control system
  - as an independent unit.
- Presence of a dedicated analog input for the setting of motor target speed.
- Target: low-power applications needing a programmable motion controller with small size motors.

## HIGHLIGHTS

- Microstepping function up to 4.000 step/rev.
- Setting of the motor target speed sampled at the beginning of the motion sequence (before motor starts running).
- Programmable motion controller allowing the connection up to 48 drives on a single serial line.
- External fans not needed: ideal both for mounting inside a metallic electrical cabinet and for stand-alone applications.

Series	Model	V <sub>DC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
CSD	J4	24 to 48	2.6	4.4	90x99x30

## TECHNICAL FEATURES

- Range of operating voltage: 24-48 V<sub>DC</sub>.
- Range of current: 2.6-4.4 Amp. Setting up to four possible values by means of a serial line.
- Microstepping: 400, 800, 1.600, 3.200 and 500, 1.000, 2.000, 4.000 steps/revolution. Setting by means of a serial line.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection with thermal sensor.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- Optoinsulated inputs compatible with Pull-Up or Pull-Down command signals.
- Version: boxed, equipped with crimp-type connectors. Maximum compactness.
- Warranty: 24 months.

## ANALOG INPUT TO CONTROL MOTOR SPEED

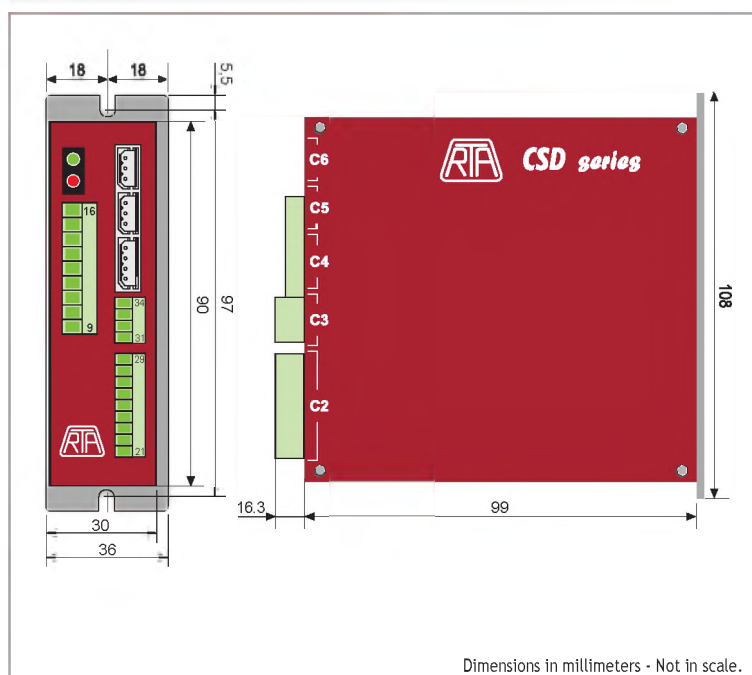
- Target speed setting by means of analog input sampled at the beginning of the motion sequence (before motor starts running).
- Input setting: 0-5 V<sub>DC</sub> or 0-10 V<sub>DC</sub>
- Frequency range:
  - 3000 Hz- 48000 Hz (with ramp)
  - 0 Hz-4100 Hz or 0 Hz-510 Hz (without ramp)
- Possibility of matching with potentiometers of 2.2 KOhm.

## PROGRAMMABLE MOTION CONTROLLER

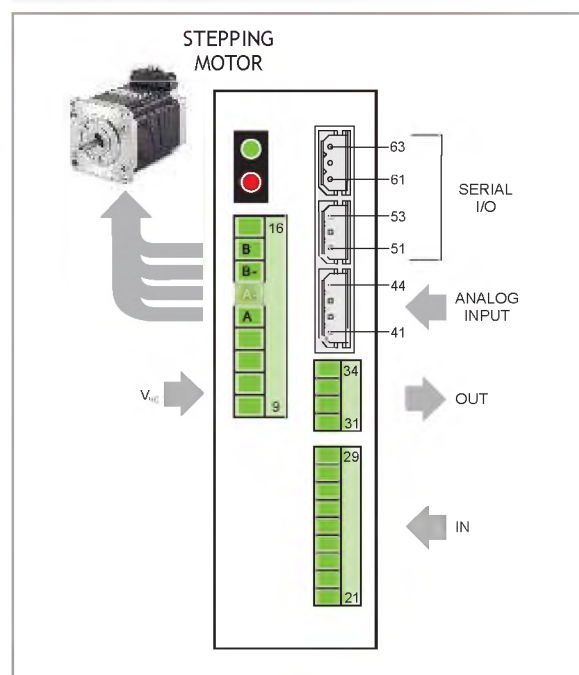
- Communication through RS485 serial line; up to 48 drives can be connected on a single serial line. One instruction can be broadcasted to all drives.
- Various types of available instructions, as for example: indexed run with ramp, free run with ramp, indexed run without ramp, run with a programmable braking distance, zero research. Space can be programmed in relative or absolute mode (linear or circular).
- Number of steps for indexed ramp up to  $\pm 8.338.607$  in relative or absolute mode, speed from 1 to 24.000 Hz in standard resolution and from 1 to 48.000 Hz in high resolution, ramp times from 16 to 1440 msec.
- Availability of instructions to develop motion programs as, for example: conditional jump, time delay, program block and recovery, I/O management, FOR NEXT loop.
- Possibility to control the execution of 8 previously stored motion programs through hardware inputs. Accordingly, the drive can be used in stand-alone applications, without serial connection.
- 8 inputs and 3 outputs, all optically insulated. Among them 1 input and 1 output are freely programmable.
- Memory of 128 instructions kept also at drive switched-off and three run time instructions.
- A utility working in Windows® is available in order to ease motion programs development by the user.



## MECHANICAL DIMENSIONS

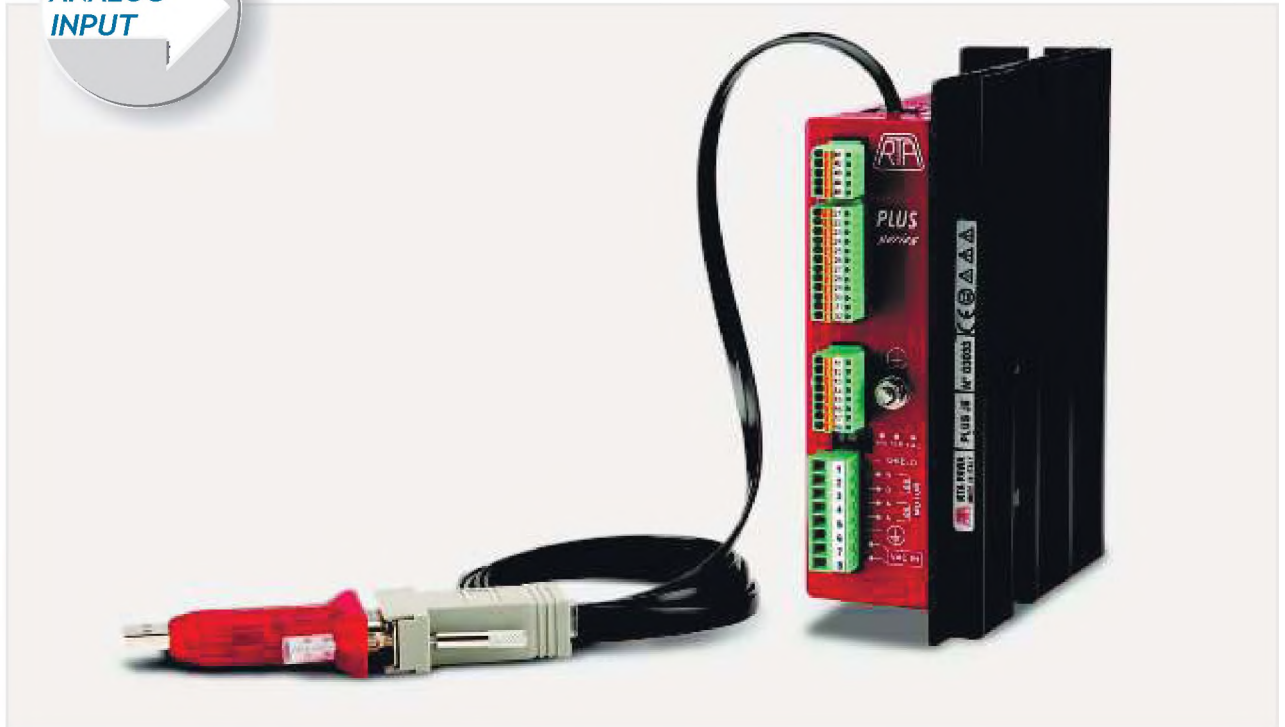


## POWER AND LOGIC CONNECTIONS





# PLUS J Series Drives



## INTRODUCTION

- Series of ministepped bipolar chopper drives with an on-board programmable motion controller that can be used:
  - for the interfacing, through RS485 serial line, with a central control system
  - as an independent unit.
- Presence of a dedicated analog input for the setting of motor target speed.
- Target: medium power applications needing AC power supply and a programmable motion controller.

## HIGHLIGHTS

- Microstepping function up to 4.000 step/rev.
- Setting of the motor target speed sampled at the beginning of the motion sequence (before motor starts running).
- Programmable motion controller allowing connection up to 48 drives on a single serial line.
- External fans not needed: ideal both for mounting inside a metallic electrical cabinet and for stand-alone applications.

Series	Model	V <sub>AC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
PLUS	J5	28 to 62	4.4	8.0	152x129x46

## TECHNICAL FEATURES

- Range of operating voltage: 28-62 V<sub>AC</sub>.
- Range of current: 4.4-8.0 Amp. Setting up to four possible values by means of a serial line.
- Microstepping: 400, 800, 1.600, 3.200 and 500, 1.000, 2.000, 4.000 steps/revolution. Setting by means of a serial line.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- Optoinsulated inputs compatible with Pull-Up or Pull-Down command signals.
- External fans not needed.
- Version: boxed, equipped with crimp-type connectors. Maximum compactness.
- Warranty: 24 months.

## ANALOG INPUT TO CONTROL MOTOR SPEED

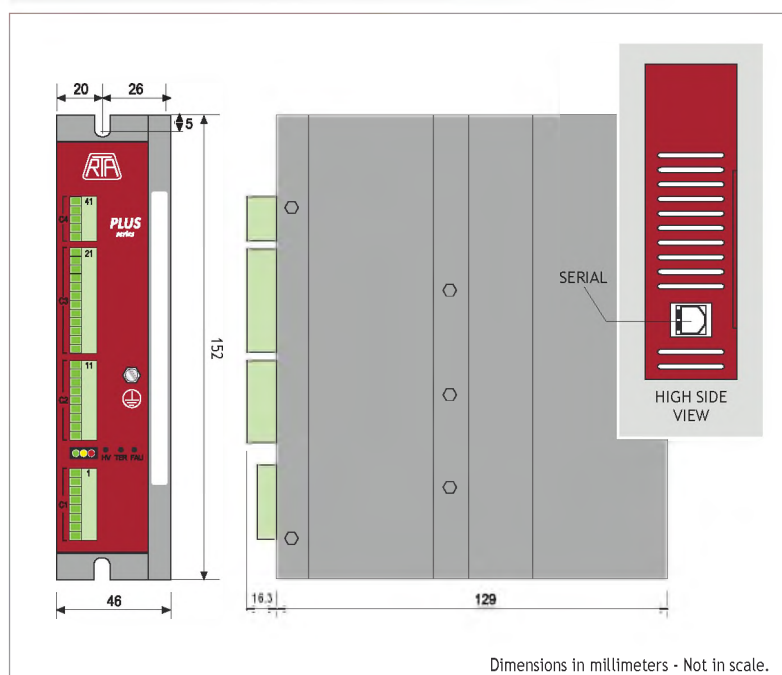
- Target speed setting by means of analog input sampled at the beginning of the motion sequence (before motor starts running).
- Input setting: 0-5 V<sub>DC</sub> or 0-10 V<sub>DC</sub>
- Frequency range:
  - 3000 Hz- 48000 Hz (with ramp)
  - 0 Hz-4100 Hz or 0 Hz-510 Hz (without ramp)
- Possibility of matching with potentiometers of 2.2 KOhm.

## PROGRAMMABLE MOTION CONTROLLER

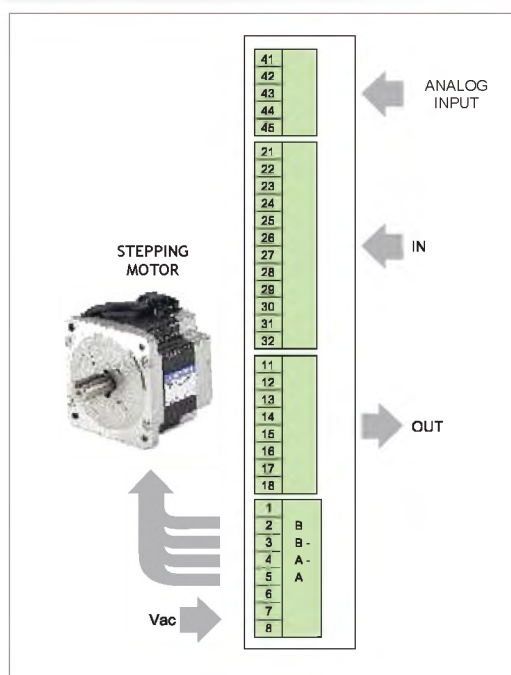
- Communication through RS485 serial line; up to 48 drives can be connected on a single serial line. One instruction can be broadcasted to all drives.
- Various types of available instructions, as for example: indexed run with ramp, free run with ramp, indexed run without ramp, run with a programmable braking distance, zero research. Space can be programmed in relative or absolute mode (linear or circular).
- Number of steps for indexed ramp up to  $\pm 8.338.607$  in relative or absolute mode, speed from 1 to 24.000 Hz in standard resolution and from 1 to 48.000 Hz in high resolution, ramp times from 16 to 1440 msec.
- Availability of instructions to develop motion programs as, for example: conditional jump, time delay, program block and recovery, I/O management, FOR NEXT loop.
- Possibility to control the execution of 16 previously stored motion programs through hardware inputs. Accordingly, the drive can be used in stand-alone applications, without serial connection.
- 11 inputs and 6 outputs, all optically insulated. Among them 3 inputs and 4 outputs are freely programmable.
- Memory of 128 instructions kept also at drive switched-off and three run time instructions.
- A utility working in Windows® is available in order to ease motion programs development by the user.
- Alarm memory by use of yellow blinking led.



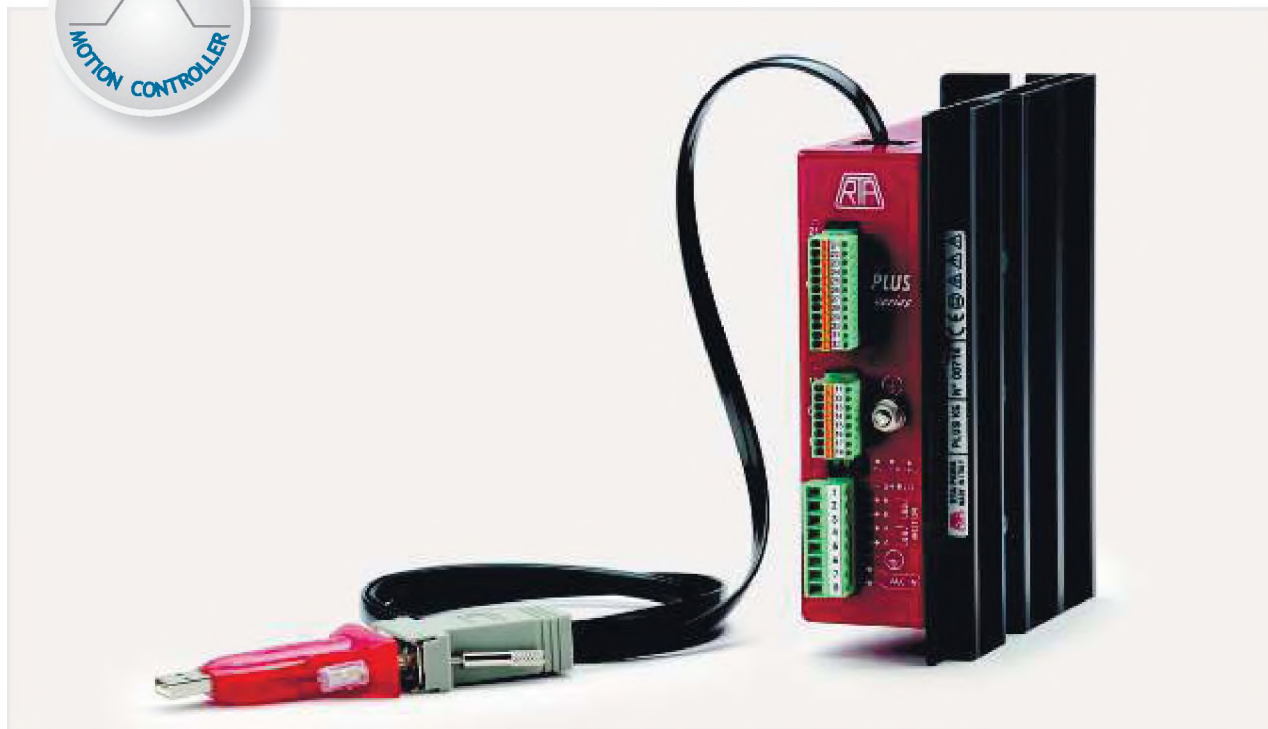
## MECHANICAL DIMENSIONS



## POWER AND LOGIC CONNECTIONS



# PLUS K Series Drives



## INTRODUCTION

- Series of ministep bipolar chopper drives with an on-board programmable motion controller that can be used:
  - for the interfacing, through RS485 serial line, with a central control system
  - as an independent unit.
- Compact system equipped with dedicated instructions optimized for advanced motion control applications.
- Target: medium power applications needing AC power supply and a programmable motion controller.

## HIGHLIGHTS

- Microstepping function up to 4.000 step/rev.
- Communication through RS485 serial line.
- Programmable motion controller allowing connection up to 48 drives on a single serial line.
- External fans not needed: ideal both for mounting inside a metallic electrical cabinet and for stand-alone applications.

Series	Model	$V_{AC}$ range (Volt)	$I_{NP}$ min. (Peak value) (Amp)	$I_{NP}$ max. (Peak value) (Amp)	Dimensions (mm)
PLUS	K4	55 to 100	3.4	6.0	152x129x46
PLUS	K5	28 to 62	4.4	8.0	152x129x46

## TECHNICAL FEATURES

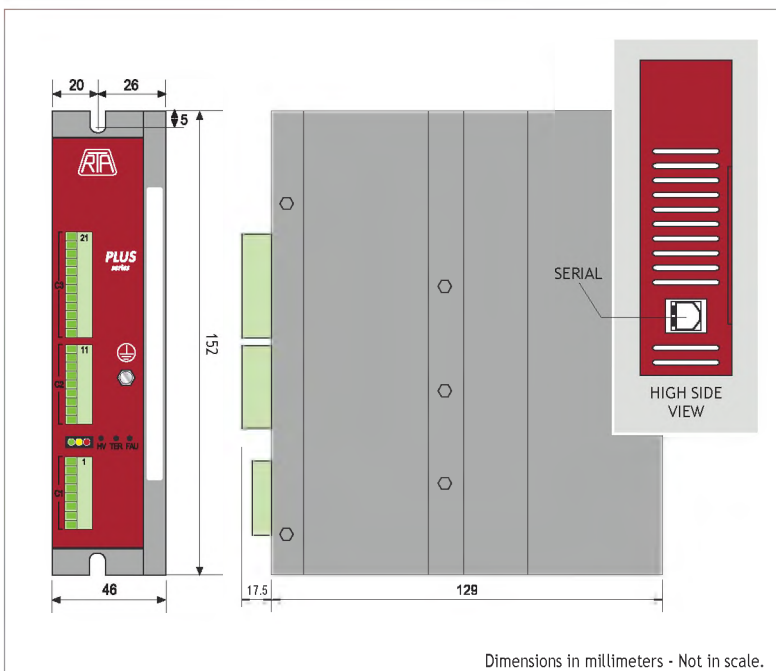
- Range of operating voltage: 28-100 V<sub>ac</sub>.
- Range of current: 3.4-8.0 Amp. Setting up to four possible values by means of a serial line.
- Microstepping: 400, 800, 1.600, 3.200 and 500, 1.000, 2.000, 4.000 steps/revolution. Setting by means of a serial line.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- Optoinsulated inputs.
- External fans not needed.
- Version: boxed, equipped with crimp-type connectors. Maximum compactness.
- Warranty: 24 months.



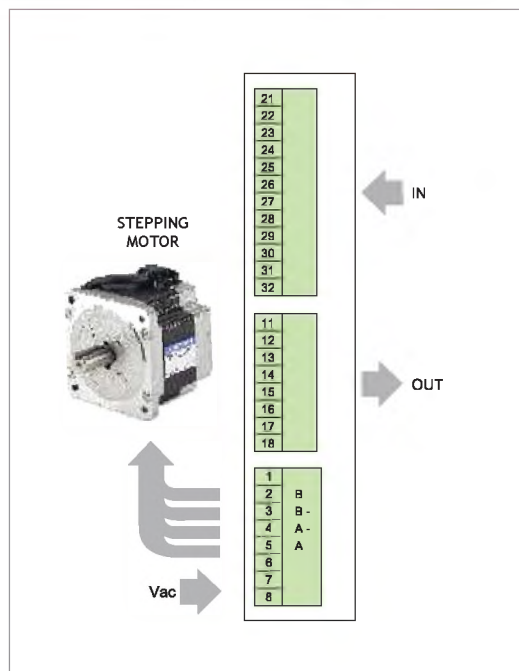
## PROGRAMMABLE MOTION CONTROLLER

- Communication through RS485 serial line; up to 48 drives can be connected on a single serial line. One instruction can be broadcasted to all drives.
- Various types of available instructions, as for example: indexed run with ramp, free run with ramp, indexed run without ramp, run with a programmable braking distance, zero research. Space can be programmed in relative or absolute mode (linear or circular).
- Number of steps for indexed ramp up to  $\pm 8.338.607$  in relative or absolute mode, speed from 1 to 24.000 Hz in standard and increased resolution, ramp times from 16 to 1440 msec.
- Availability of instructions to develop motion programs as, for example: conditional jump, time delay, program block and recovery, I/O management, FOR NEXT loop.
- Possibility to control the execution of 16 previously stored motion programs through hardware inputs. Accordingly, the drive can be used in stand-alone applications, without serial connection.
- 11 inputs and 6 outputs, all optically insulated. Among them 3 inputs and 4 outputs are freely programmable.
- Memory of 128 instructions kept also at drive switched-off and three run time instructions.
- A utility working in Windows® is available in order to ease motion programs development by the user.
- Alarm memory by use of yellow blinking led.

## MECHANICAL DIMENSIONS



## POWER AND LOGIC CONNECTIONS



# PLUS L Series Drives



MOTOR LOSS OF SYNCHRONISM  
CONTROL FUNCTION  
("CLOSED LOOP")



## INTRODUCTION

- Series of ministep bipolar chopper drives with an on-board programmable motion controller that can be used:
  - for the interfacing, through RS485 serial line, with a central control system
  - as an independent unit.
- Optimized for driving R.T.A. EM series stepping motors with encoder (86 mm and 60 mm flange sizes).
- Target: applications requiring a programmable motion controller and EM stepping motors. Control in a standard way ("OPEN LOOP") but also give an alarm in case of loss of synchronism ("CLOSED LOOP").

## HIGHLIGHTS

- Microstepping function up to 4.000 step/rev.
- Communication through RS485 serial line.
- Programmable motion controller allowing connection up to 48 drives on a single serial line.
- Setting of the sensitivity of the loss of synchronism alarm system.
- External fans not needed: ideal both for mounting inside a metallic electrical cabinet and for stand-alone applications.

Series	Model	V <sub>AC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
PLUS	L5	28 to 62	4.4	8.0	152x129x46

## TECHNICAL FEATURES

- Range of operating voltage: 28-62 V<sub>AC</sub>.
- Range of current: 4.4-8.0 Amp. Setting up to four possible values by means of a serial line.
- Microstepping: 400, 800, 1.600, 3.200 and 500, 1.000, 2.000, 4.000 steps/revolution. Setting by means of a serial line.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- External fans not needed.
- Version: boxed, equipped with crimp-type connectors. Maximum compactness.
- Warranty: 24 months.



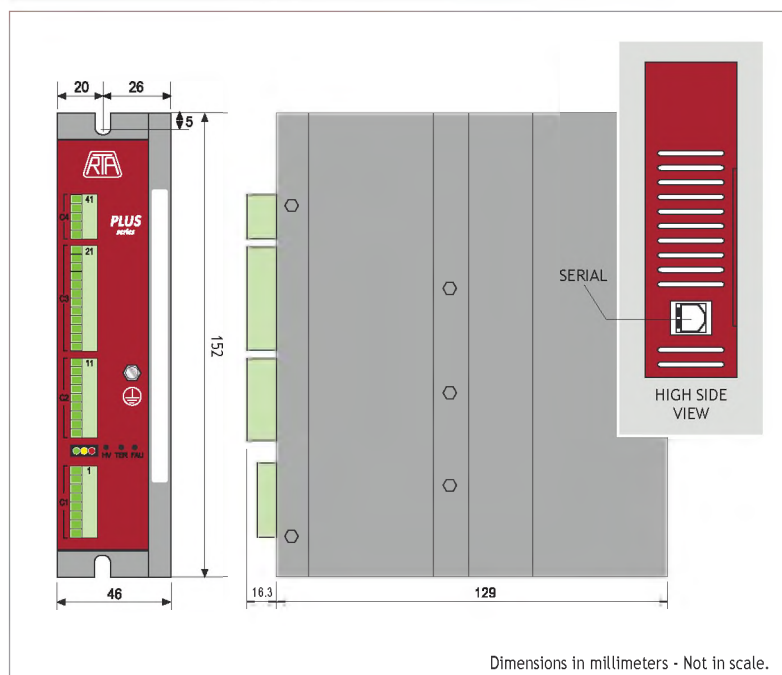
## MOTOR LOSS OF SYNCHRONISM CONTROL FUNCTION

- Input for the connection of the R.T.A. motors EM series encoder (NEMA 34 and 60 mm flange size).
- Output for the loss of synchronism alarm.
- Setting, by means of RS485, of the sensitivity of the loss of synchronism alarm system.

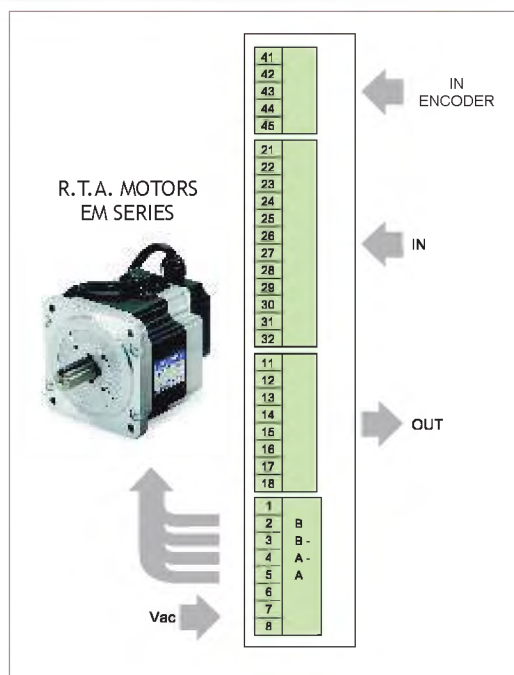
## PROGRAMMABLE MOTION CONTROLLER

- Communication through RS485 serial line; up to 48 drives can be connected on a single serial line. One instruction can be broadcasted to all drives.
- Various types of available instructions, as for example: indexed run with ramp, free run with ramp, indexed run without ramp, run with a programmable braking distance, zero research. Space can be programmed in relative or absolute mode (linear or circular).
- Number of steps for indexed ramp up to  $\pm 8.338.607$  in relative or absolute mode, speed from 1 to 24.000 Hz in standard and increased resolution, ramp times from 16 to 1440 msec.
- Availability of instructions to develop motion programs as, for example: conditional jump, time delay, program block and recovery, I/O management, FOR NEXT loop.
- Possibility to control the execution of 16 previously stored motion programs through hardware inputs. Accordingly, the drive can be used in stand-alone applications, without serial connection.
- 11 inputs and 6 outputs, all optically insulated. Among them 3 inputs and 4 outputs are freely programmable.
- Memory of 128 instructions kept also at drive switched-off and three run time instructions.
- A utility working in Windows® is available in order to ease motion programs development by the user.
- Alarm memory by use of yellow blinking led.

## MECHANICAL DIMENSIONS



## POWER AND LOGIC CONNECTIONS



# X-MIND K Series Drives



## INTRODUCTION

- Series of minstep bipolar chopper drives with direct input from the main AC power supply (110-230 VAC) and an on-board programmable motion controller that can be used:
  - for the interfacing, through RS485 serial line, with a central control system
  - as an independent unit.
- Compact system equipped with dedicated instructions optimized for advanced motion control applications.
- Target: advanced applications requiring direct input from the main power supply and a programmable motion controller.

## HIGHLIGHTS

- Microstepping function up to 4.000 step/rev.
- Communication through RS485 serial line.
- Programmable motion controller allowing connection up to 48 drives on a single serial line.
- External fans not needed: ideal both for mounting inside a metallic electrical cabinet and for stand-alone applications.

Series	Model	V <sub>AC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
X-MIND	K4	110 to 230 +/-15%	2.3	4.0	180x173x53
X-MIND	K6	110 to 230 +/-15%	3.4	6.0	180x173x53

## TECHNICAL FEATURES

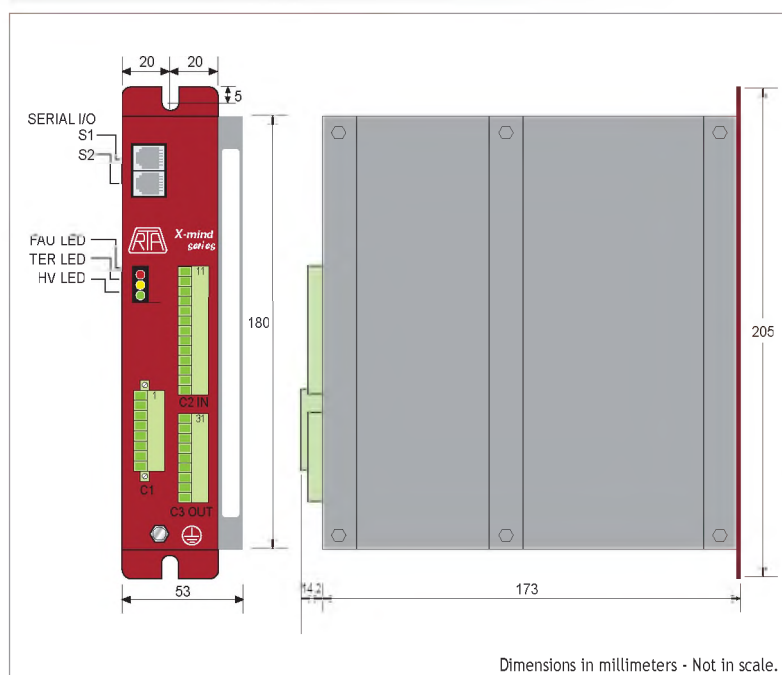
- Range of operating voltage: 110-230 V<sub>AC</sub>.
- Range of current: 2.3-6.0 Amp. Setting up to four possible values by means of a serial line.
- Microstepping: 400, 800, 1.600, 3.200 and 500, 1.000, 2.000, 4.000 steps/revolution. Setting by means of a serial line.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- External fans not needed.
- Coupling with stepping motors rated for high voltage and equivalent or bigger than NEMA 34 is mandatory.
- Version: boxed, equipped with crimp-type connectors. Maximum compactness.
- Warranty: 24 months.



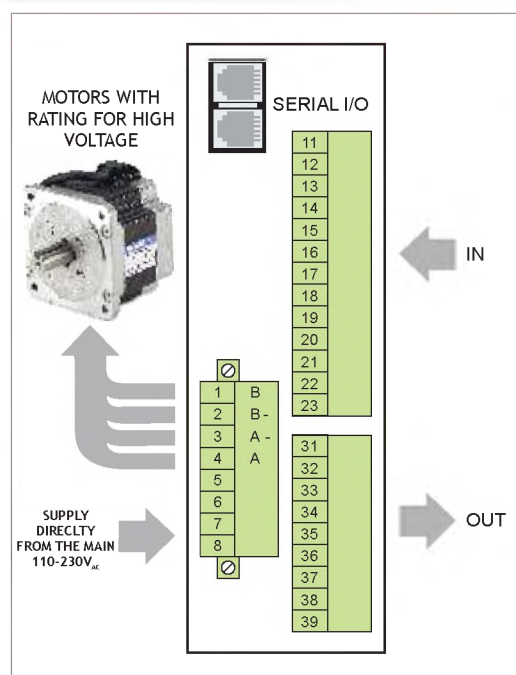
## PROGRAMMABLE MOTION CONTROLLER

- Communication through RS485 serial line; up to 48 drives can be connected on a single serial line. One instruction can be broadcasted to all drives.
- Various types of available instructions, as for example: indexed run with ramp, free run with ramp, indexed run without ramp, run with a programmable braking distance, zero research. Space can be programmed in relative or absolute mode (linear or circular).
- Number of steps for indexed ramp up to  $\pm 8.338.607$  in relative or absolute mode, speed from 1 to 24.000 Hz in standard and increased resolution, ramp times from 16 to 1440 msec.
- Availability of instructions to develop motion programs as, for example: conditional jump, time delay, program block and recovery, I/O management, FOR NEXT loop.
- Possibility to control the execution of 16 previously stored motion programs through hardware inputs. Accordingly, the drive can be used in stand-alone applications, without serial connection.
- 11 inputs and 6 outputs, all optically insulated. Among them 3 inputs and 4 outputs are freely programmable.
- Memory of 128 instructions kept also at drive switched-off and three run time instructions.
- A utility working in Windows® is available in order to ease motion programs development by the user.

## MECHANICAL DIMENSIONS



## POWER AND LOGIC CONNECTIONS





# PLUS ET Series Drives

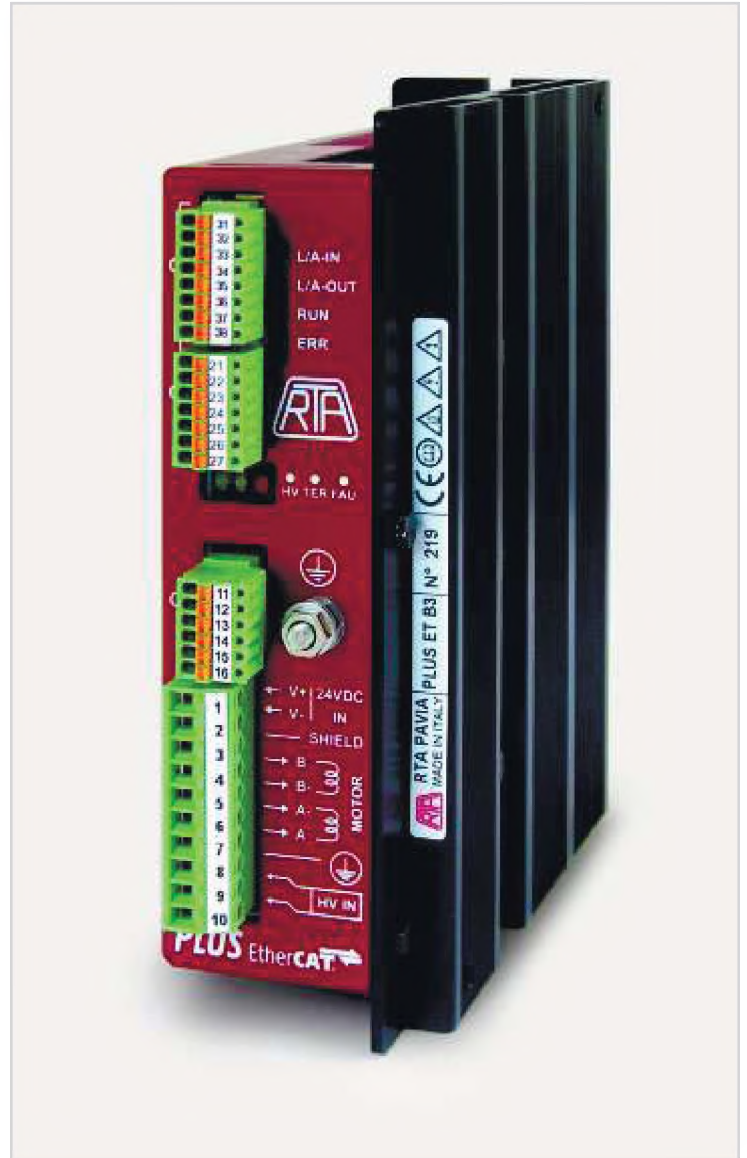
## EtherCAT®

### INTRODUCTION

- New series of stepping motor drives with EtherCAT interface, based on the following versions:
  - PLUS ET A3: with DC power supply (39-85 V<sub>DC</sub>)
  - PLUS ET B3: with AC power supply (28-62 V<sub>AC</sub>):
- Drives optimized for coupling with SANYO DENKI stepping motors, fitted with encoder.
- Compact system, developed to offer a wide variety of integrated functions and optimized for the most demanding motion control applications.

### HIGHLIGHTS

- Communication by means of EtherCAT interface.
- Modes of operation: PROFILE POSITION and CSP.
- Full digital microstepping drive.
- Wide range of stepping motors to be coupled with: holding torque up to 9.2 Nm and flange size up to 86 mm.
- Extremely compact size.
- A highly sophisticated operation system, preserving anyhow the traditional ease of use of R.T.A. drives.



Series	Model	V <sub>AC</sub> range (Volt)	V <sub>DC</sub> range (Volt)	I nom. (Amp)	Dimensions (mm)
PLUS ET	A3		39 to 85	6.0	152x129x46
PLUS ET	B3	28 to 62		6.0	152x129x46

## TECHNICAL FEATURES

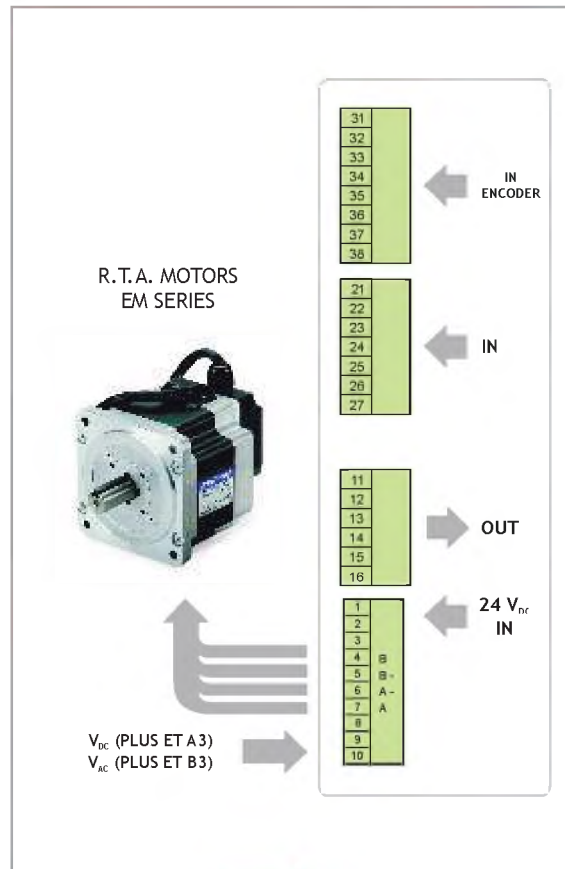
- Range of operating voltage: 39-85 V<sub>DC</sub> (PLUS ET A3) and 28-62 V<sub>AC</sub> (PLUS ET B3).
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available in boxed version with plug-in connectors. Maximum compactness.
- Optoinsulated auxiliary and programmable inputs and outputs.
- External fans not needed.
- Warranty: 24 months.



## SETTING BY MEANS OF EtherCAT<sup>®</sup> INTERFACE

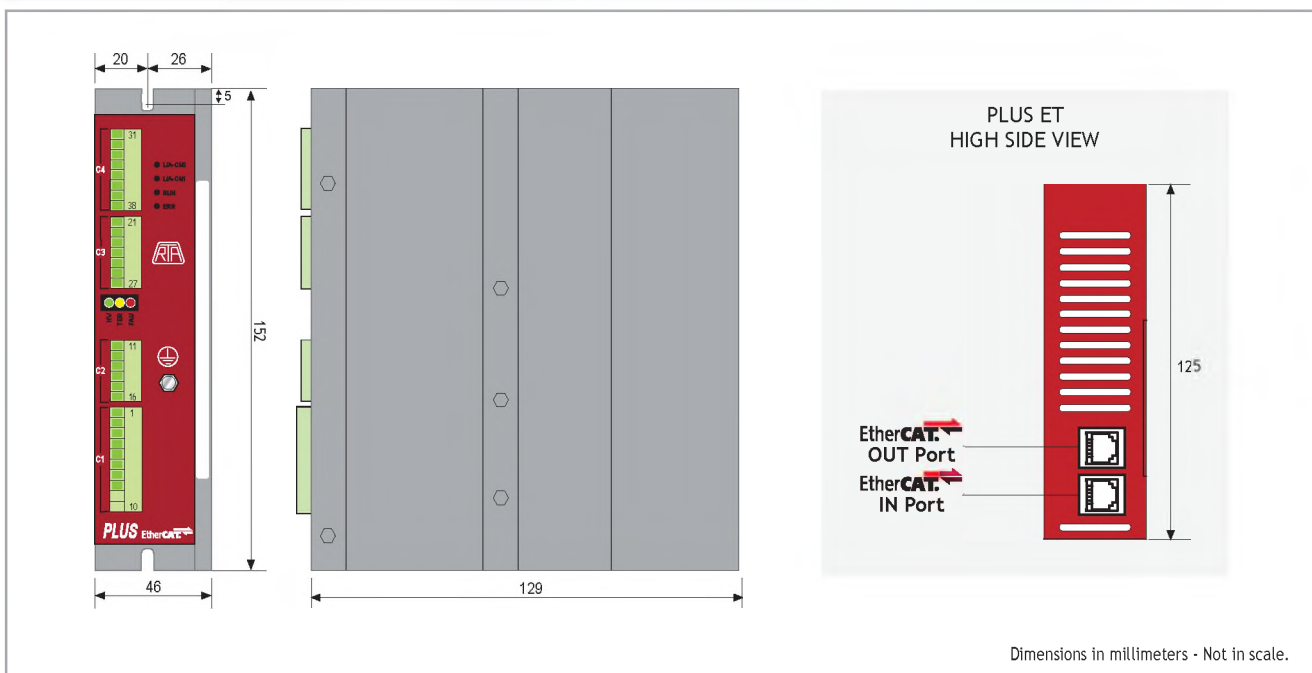
- Wide range of motor phase current setting.
- Motor current overboost.
- Intelligent management of the current profile.
- Communication by means of EtherCAT (CoE) interface.
- Modes of operation: PROFILE POSITION and CSP.
- Different variety of HOMING operation modes.
- Encoder feedback.

## POWER AND LOGIC CONNECTIONS



**EtherCAT<sup>®</sup>**

## MECHANICAL DIMENSIONS



# X-PLUS ET Series Drives

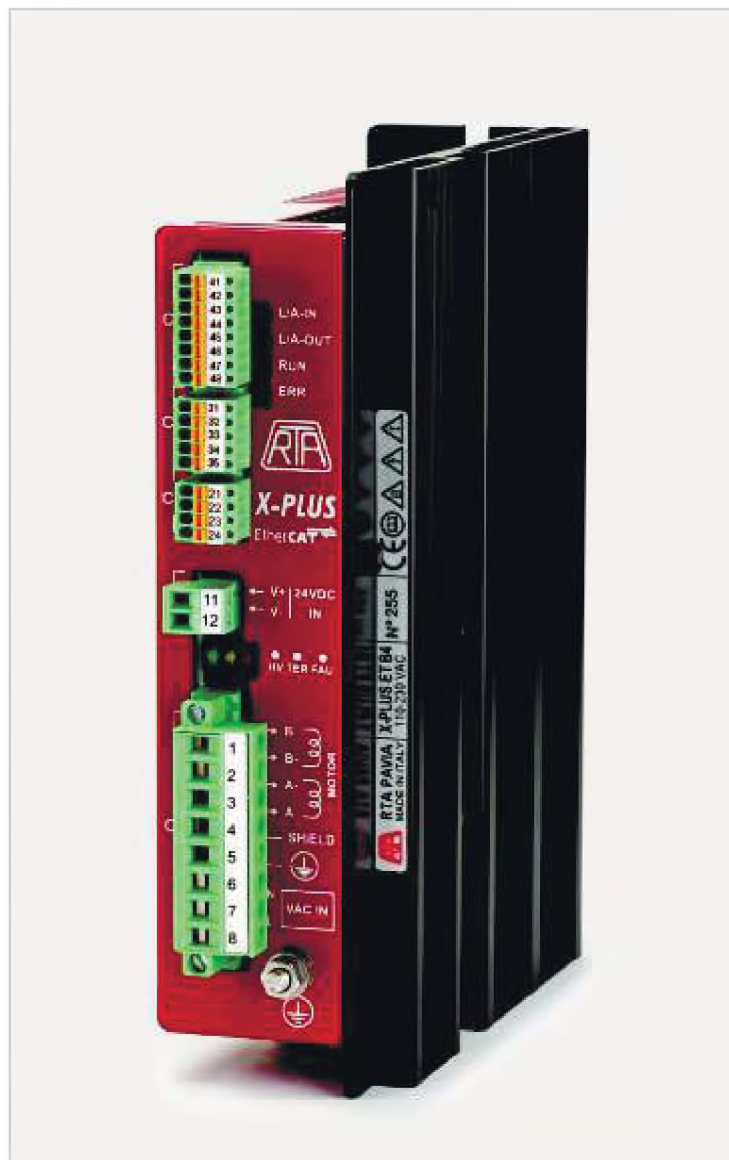
## EtherCAT®

### INTRODUCTION

- New series of stepping motor drives with EtherCAT interface and direct input from the main AC power supply (from 110 V<sub>AC</sub> to 230 V<sub>AC</sub>).
- Optimized for coupling with SANYO DENKI stepping motors, fitted with encoder.
- Possibility to be connected directly from the main (from 110 V<sub>AC</sub> to 230 V<sub>AC</sub>), saving on transformer use.
- High performance in terms of power and able to further increase the application potential.

### HIGHLIGHTS

- Communication by means of EtherCAT interface.
- Modes of operation: PROFILE POSITION and CSP.
- Full digital microstepping drive.
- Wide range of SANYO DENKI stepping motors to be coupled with: holding torque up to 9,2 Nm and flange size up to 86 mm.
- Extremely compact size.
- A highly sophisticated operation system, preserving anyhow the traditional ease of use of R.T.A. drives.



Series	Model	V <sub>AC</sub> range (Volt)	I nom. (Amp)	Dimensions (mm)
X-PLUS ET	B4	110 to 230 +/- 15%	4.0	169x129x46

## TECHNICAL FEATURES

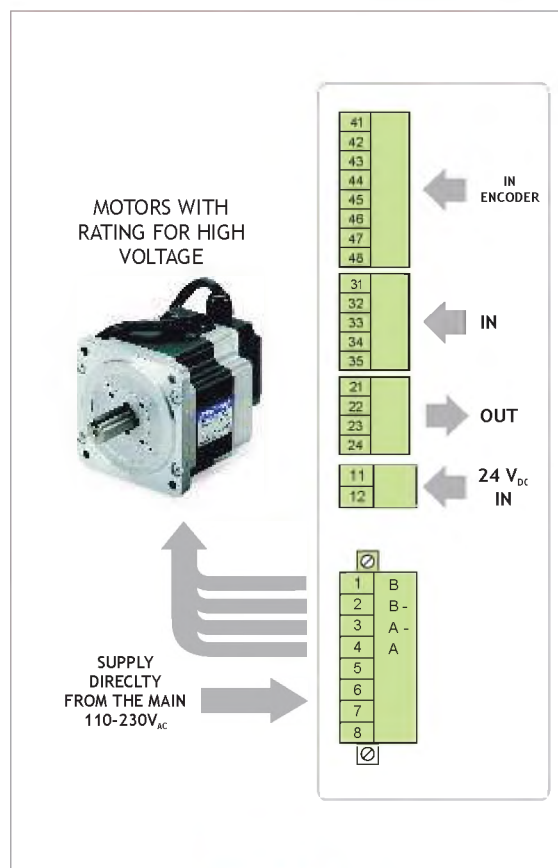
- Range of operating voltages: 110-230 V<sub>AC</sub>.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available in boxed version with plug-in connectors. Maximum compactness.
- Optoinsulated auxiliary and programmable inputs and outputs.
- External fans not needed.
- Warranty: 24 months.



## SETTING BY MEANS OF EtherCAT<sup>®</sup> INTERFACE

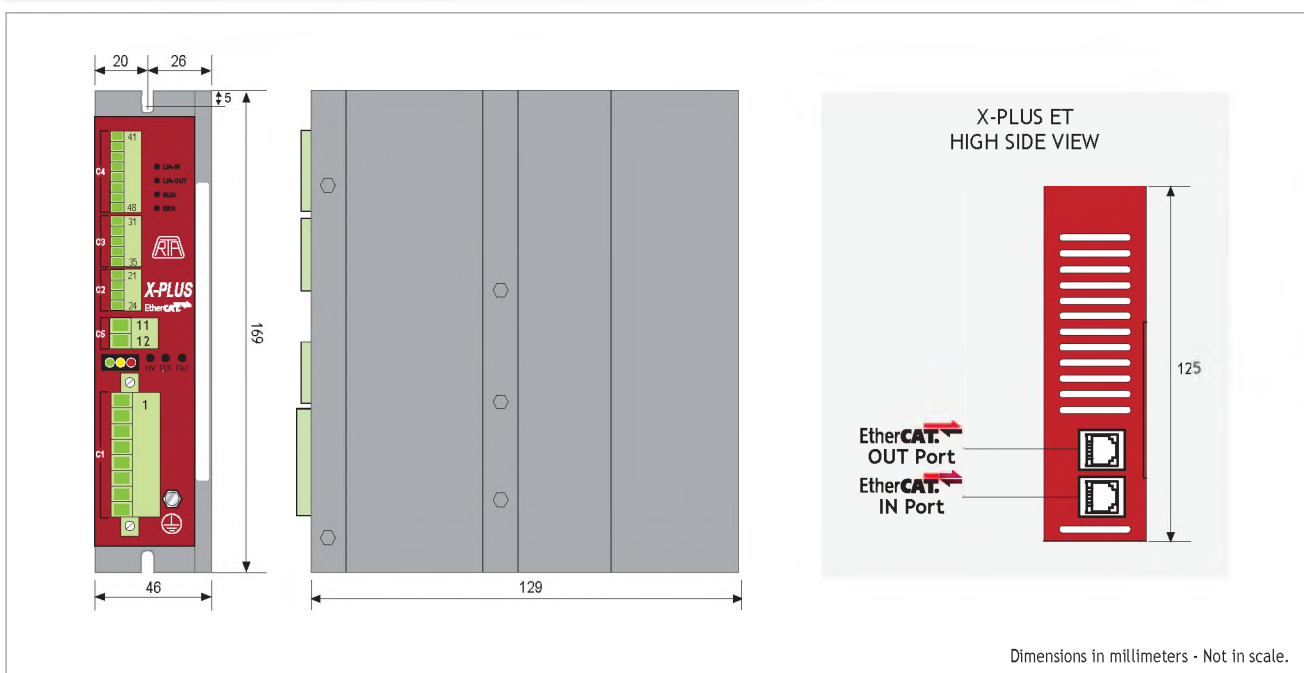
- Wide range of motor phase current setting.
- Motor current overboost .
- Intelligent management of the current profile.
- Communication by means of EtherCAT (CoE) interface.
- Modes of operation: PROFILE POSITION and CSP.
- Different variety of HOMING operation modes.
- Encoder feedback.

## POWER AND LOGIC CONNECTIONS



**EtherCAT<sup>®</sup>**

## MECHANICAL DIMENSIONS



# Combo Unit: **HI-MOD A/E**

**CANopen**



## INTRODUCTION

- Series of stepper motors with integrated ministepped bipolar chopper drives equipped with programmable motion controller. Setting by means of CANopen interface. It is based on the following versions:
  - HI-MODE with Incremental Encoder
  - HI-MODA with Multi-Turn Absolute Encoder
- Compact system housed in a metallic box mounted on motor body, minimizing dimensions and optimizing wiring and mounting easiness.
- Target: advanced applications requiring the detection of motor loss of synchronism or stall by means of encoder and programmable motion controller setting by means of CANopen interface.
- UL/CSA certified.

FILE NUMBER: E355001



## HIGHLIGHTS

- Microstepping function up to 3.200 step/rev.
- Communication by means of CANopen interface.
- Command to execute runs with position control to set: distance, direction, speed and acceleration.
- Command to execute zero research (HOMING).
- Possibility to detect motor loss of synchronism or stall and position error by means of Incremental Encoder (HI-MODE) or high resolution Multi-Turn Absolute Encoder (HI-MODA).
- The system does not need back-up battery to keep the information when shut down (HI-MODA).

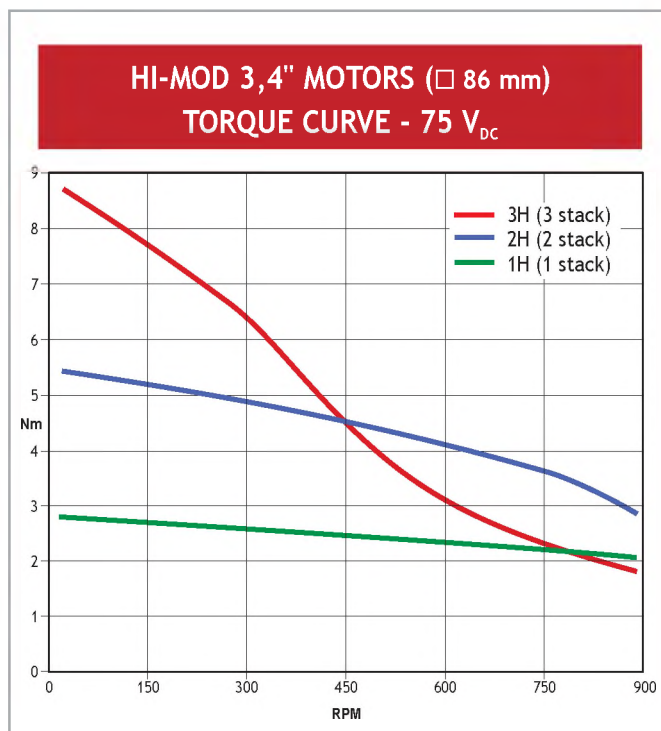
**CANopen**

HI-MOD  $X_1 - X_2 - X_3 - X_4 - X_5 - n$

$X_1$ = Electronic features	$X_2 X_3 X_4 X_5$ = Motor type and power	$n$ = Release software
E: CANopen - Incremental Encoder A: CANopen - Multi-Turn Absolute Encoder	$X_2$ = Maximum power $X_3$ = Mechanical hardware identification $X_4$ = Motor type $X_5$ = Motor current	0 ÷ 9

## TECHNICAL FEATURES

- Range of operating voltages: 32-75 V<sub>DC</sub>.
- Microstepping: 400, 800, 1.600 and 3.200 steps /rev. Setting by means of CANopen interface.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Electronic resonance damping circuit to ensure acoustic noise and mechanic vibrations reduction.
- Command to execute runs with position control to set: distance, direction, speed and acceleration.
- Command to execute zero research (HOMING).
- Possibility to detect motor loss of synchronism or stall and position error by means of Incremental Encoder(HI-MOD E) or high resolution Multi-Turn Absolute Encoder (HI-MODA).
- The system does not need back-up battery to keep the information when shut down (HI-MODA).
- UL/CSA certified.



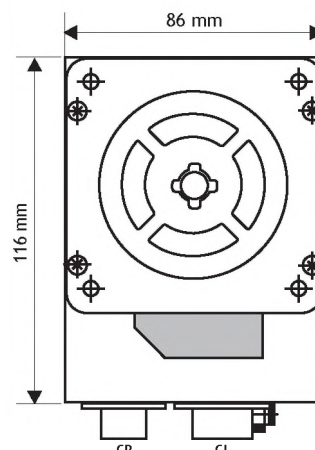
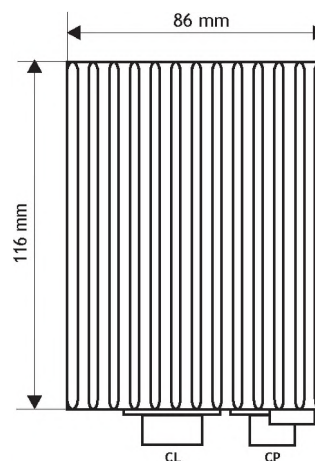
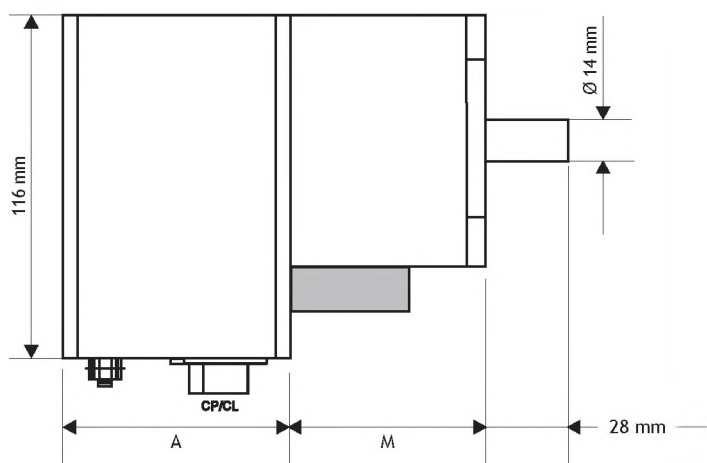
**CAUS**

## MECHANICAL DIMENSIONS

Model	A Length (mm)
HI-MOD E, HI-MOD A	78.0

Type	M Length (mm)
1H	66.0
2H	96.5
3H	127.0



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