STEPPING MOTOR DRIVES catalogue

RTA

Motion Control Systems

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Warning

- 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 (depending on the products, 2006/95/CE and/or 2004/108/CE and subsequent modifications and integration).
- 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).

WHO WE ARE

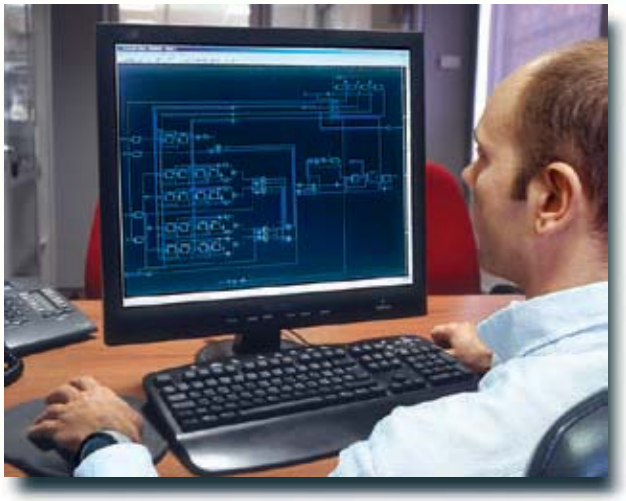
- We are a leading company in the motion control industry and we are number one in the stepper systems segment in Italy.
- We provide to our customers product solutions able to solve whatever motion control issue: we deal with our clients as technical partners and not as simple suppliers.
- We have been producing stepper motor drives since 1976: since then we have sold more than 600.000 stepper motor drives to more than 1.100 clients in Italy and abroad.
- The quality of our production and sales process is guaranteed by a Quality Assurance System certified under the UNI EN ISO 9001 (TÜV-50 100 2153) Norm.
- We have been expanding our product line through the creation of a partnership with Sanyo Denki, a leading Japanese company producing stepper motors, brushless systems and fans. Since 1989 we are their Italian exclusive distributor.

- Over time, we have been obtaining very high levels of MTBF values, thank to careful selection of the components used, burn-in techniques, accelerated ageing cycles and tough testing procedures.

AUTOMATION SYSTEMS

with Stepping Motors produced by R.T.A.

R.T.A. STEPPING MOTOR DRIVES



- Wide range of products, from 24 Vdc to 230 Vac, from 0.6 to 10 Ampere: the most appropriate drive for every stepping motor.
- High performance solutions: drives with power supply directly from main (110-230 Vac) to be connected with high voltage rated stepping motors.
- Solutions with on-board controller: programmable motion indexers, drives with synchronism loss detection function, with or without CANopen interface.
- Medium-low power solutions: drives identified by small dimensions, excellent performances and competitive prices.
- Stepping motors with integrated drive: with or without encoder, incremental or absolute.

For each stepping motor application, the R.T.A. technical and commercial support staff will support you in the most appropriate product selection. We have more than 30-years experience in the motion control industry.

HOW TO DISTINGUISH R.T.A. FROM COMPETITOR'S PRODUCTS?

- Top-level expertise in the stepping motor system applications.
- Top-level production quality standards achieved in over 30 years of experience in this field.
- Highest reliability, able to grant rejection level of less than 0.08% during first 6 months product's lifetime.
- A wide range of products, made by 7 complete product Series. We developed more than 30 models according with the most innovative hardware and software technologies and thanks to our solid experience in the motion control field.

THE ADVANTAGES OF STEPPERS

- Full-digital functioning, both in open-loop and in closed-loop.
- No wear; no maintenance need. High reliability and life expectancy.
- Ultimate performances and precision merged with easy use and small dimensions.
- Low acoustic noise; optimized and stabilized thermal behaviour.

RTA Motion Control Systems

PRODUCTS OVERVIEW

Series		Available models	Bus voltage range (VOLT)	Phase current range (AMP)	Dimensions (mm.)	Drive * type	Coupling motors (flange)
CSD		02, 04 02.V, 04.V	24-48 V_{DC}	0,7 - 4,4	Card 92 x 85 x 23	SD	• NEMA 17 • NEMA 23 • 60 mm • NEMA 34
		92, 94			Box 90 x 99 x 21		
NDC		04, 06 04.V, 06.V	24-75 V_{DC}	0,6 - 6	Card 94 x 101 x 25	SD	
		94, 96			Box 110 x 108 x 34		
HGD		02, 05	24-75 V_{DC}	0,75 - 6	Card 70 x 70 x 25	SD	
PLUS		A3, A4	39-140 V_{DC}	1,9 - 10	Box 152 x 129 x 46	SD PM LS	
		B3, B4, B7 K4, K5 E3, E4, L5	28-100 V_{AC}				
X-PLUS		B4	• POWER SUPPLY DIRECTLY FROM THE MAIN 110-230 V_{AC}	2,4 - 4	Box 152 x 129 x 46	SD	• NEMA 34 (with rating for high voltage)
X-MIND		B4, B6 K4, K6	• POWER SUPPLY DIRECTLY FROM THE MAIN 110-230 V_{AC}	2,3 - 6	Box 180 x 173 x 53	SD PM	• NEMA 34 • NEMA 42 (with rating for high voltage)
HI-MOD		B, E A	32-75 V_{DC}	--	--	SD PM LS	--

* **Drive type** - **SD**: Step/Dir - **PM**: Programmable motor controller - **LS**: Motor loss of syncronism control function.

APPLICATION EXAMPLES

Some application examples, considering the peculiarities of motion systems with stepping motors realised by **R.T.A.**, will illustrate their potentials:

- XY tables.
- Pallets storage and pick and place systems.
- Robots and servocontrols in operating machines.
- Transport and internal movement systems.
- Biomedical, analysis and laboratory instruments.
- Machines and systems for packaging, dosing, labelling and printing.
- Synchronous and follow-up systems.
- Orientation, pointing and alignment systems both angular and linear.
- Remote adjustments, remote controls, limit-switch positioning and adjustable reference points.
- Wood, aluminium, PVC working machines.
- Silk-screen machines.

CSD Series Drives

GENERAL DESCRIPTION

CSD is the name of a series of ministep bipolar chopper drives, suitable for driving medium-low power two-phase stepping motors, with four, six or eight terminals.
They are offered in two versions:

- ***CSD 02/04***: open frame drives in 92 x 85 x 23 mm format.
- ***CSD 92/94***: drives housed in a metallic box, 90 x 99 x 21 mm format.

CSD series drives are equipped with separated connectors for logic signals and power connections. They are designed for easy mounting inside a metallic electrical cabinet.

The ministep operation, connected with a further electronic resonance damping facility, ensures excellent operating smoothness and low acoustic noise.

Pull-up and pull-down input signals ease interfacing with the most commonly used control systems.

CSD 92 / 94

CSD 02 / 04

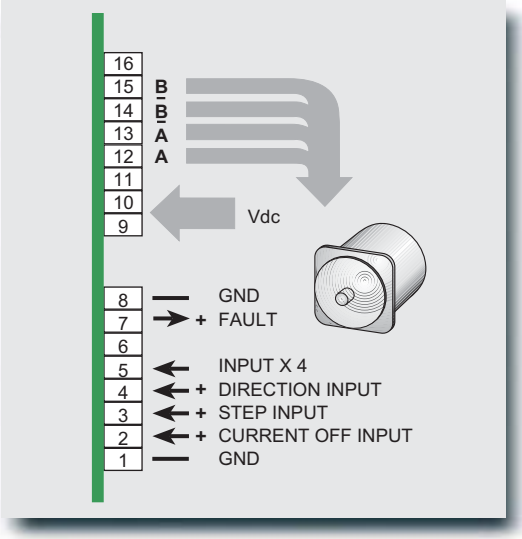
CSD 02.V / 04.V

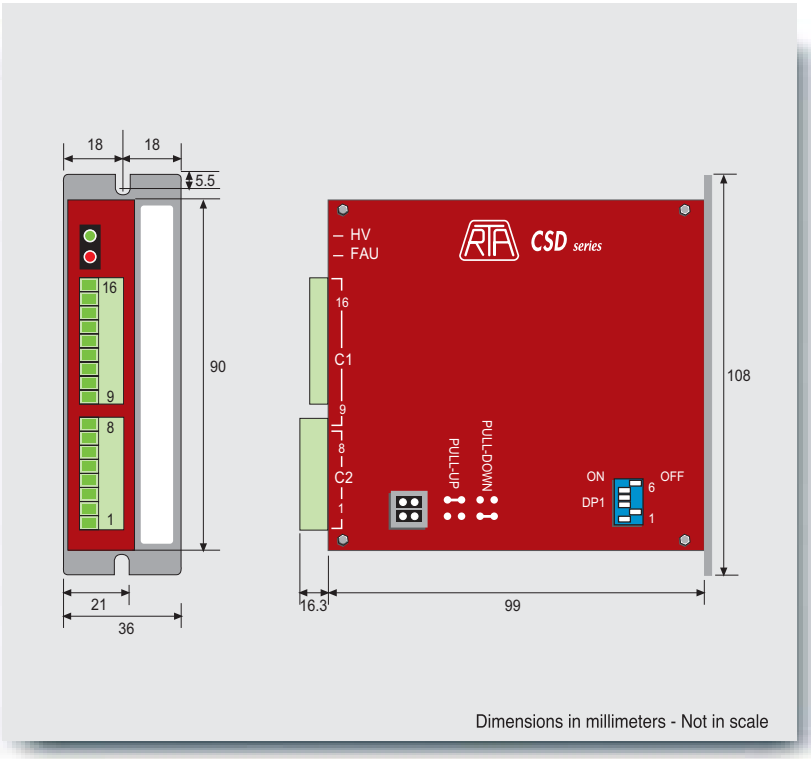
TECHNICAL FEATURES

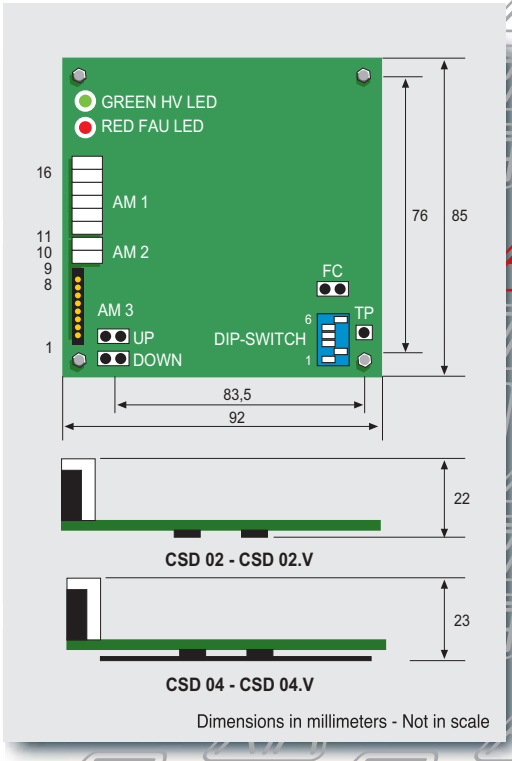
- Range of operation voltages from 24 to 48 V_{DC}. Operation with a single external supply voltage.
- Motor phase current setting by means of a DIP-SWITCH. Up to eight possible values, between **I_{NF} min.** and **I_{NF} max.** can be set.
- Operation at 400, 800, 1600, 3200 steps/revolution.
- Automatic current reduction at motor standstill.
- Protection against short circuit at motor outputs, under-voltage and over-voltage and overtemperature protection with thermal sensor.
- Pull-up or Pull-down inputs can be set.
- Two versions are available: with quick connection, crimp-type, or screw-type connectors.
- 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.
- Compact, easy to use and cost effective solution.

Model	V_{DC} range	I_{NF} min. (Peak value)	I_{NF} max. (Peak value)	Dimensions
	(VOLT)	*(AMP)*	*(AMP)*	*(mm.)*
CSD 02 (CSD 02.V)*	*24 to 48*	*0.7*	*2.4*	*92x85x22*
CSD 04 (CSD 04.V)*	*24 to 48*	*2.6*	*4.4*	*92x85x23*
CSD 92	*24 to 48*	*0.7*	*2.4*	*90x99x21*
CSD 94	*24 to 48*	*2.6*	*4.4*	*90x99x21*

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







NDC *Series Drives*

GENERAL DESCRIPTION

NDC is the name of a series of ministep bipolar chopper drives, suitable for driving medium-low power two-phase stepping motors, with four, six or eight terminals.

They are offered in two versions:

- ***NDC 04/06*:** open frame drives in 101 x 94 x 25 mm format.
- ***NDC 94/96*:** drives housed in a metallic box, 110 x 108 x 34 mm format.

NDC series drives are equipped with separated connectors for logic signals and power connections. They are designed for easy mounting inside a metal electrical cabinet.

The ministep operation, connected with a further electronic resonance damping facility, ensures excellent operating smoothness and low acoustic noise.

Optoinsulated and differential input and output signals ease interfacing with the most commonly used control systems and ensure high noise immunity.

NDC 94 / 96

NDC 04.V / 06.V

NDC 04 / 06

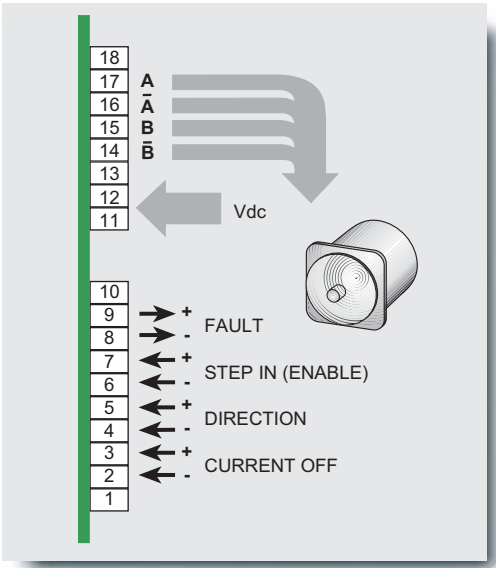
Motion Control Systems

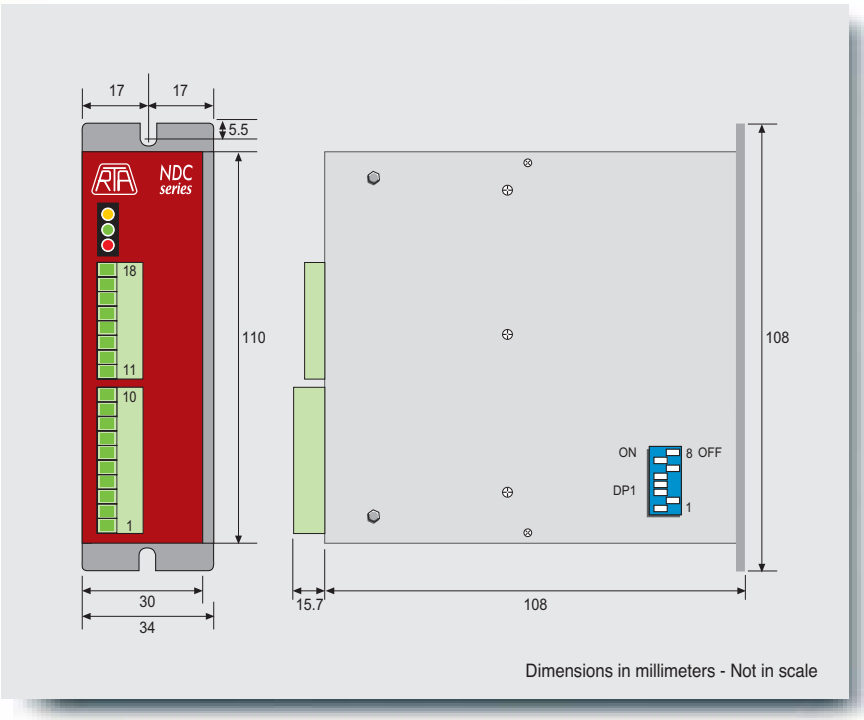
TECHNICAL FEATURES

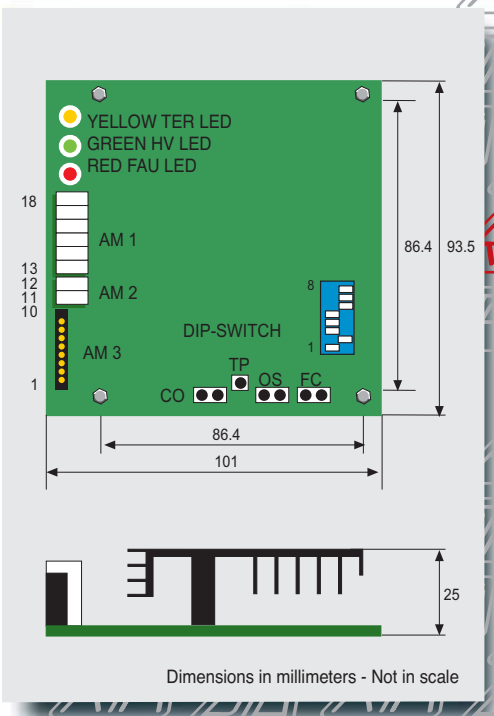
- Extended range of operation voltages from 24 to 75 V_{DC}. Operation with a single external supply voltage.
- Motor phase current setting by means of a DIP-SWITCH. Up to eight possible values, between **I_{NF} min.** and **I_{NF} max.** can be set.
- Operation at 400, 800, 1600, 3200 and 500, 1000, 2000, 4000 steps/revolution.
- Automatic current reduction at motor standstill.
- Protection against short circuit at motor outputs, under-voltage and over-voltage.
- Overtemperature protection with thermal sensor.
- Optoinsulated inputs compatible with differential control signals.
- Two versions are available: with quick connection, crimp-type, or screw-type connectors.
- 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.
- Available a version with built-in oscillator, with speed range from 14 to 450 rpm setting by means of DIP-SWITCH.

Model	V_{DC} range	I_{NF} min. (Peak value)	I_{NF} max. (Peak value)	Dimensions
	(VOLT)	*(AMP)*	*(AMP)*	*(mm.)*
NDC 04 (NDC 04.V)*	*24 to 75*	*0.6*	*2.0*	*101x94x25*
NDC 06 (NDC 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.







HGD *Series Drives*

GENERAL DESCRIPTION

HGD 02 and ***05*** are bipolar chopper drives, suitable for driving medium-low power two-phase stepping motors, with four, six or eight terminals.

These drives are realized in 70 x 70 mm format and are equipped with separated solder type connectors for logic signals and for power connections. They are designed for easy soldering and mounting on customer realized PCB.

HGD 02 and ***05*** are intended to give a high torque and high speed alternative choice to IC drives with higher reliability.

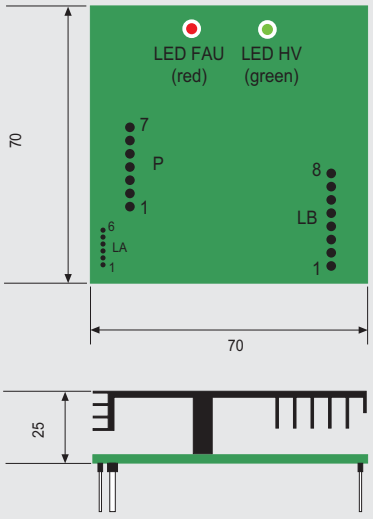
The wide range of voltages, current and resolution available ensures an easy use in any application.

Standard input and output signals ease interfacing with the most commongly used control systems and ensure high noise immunity.

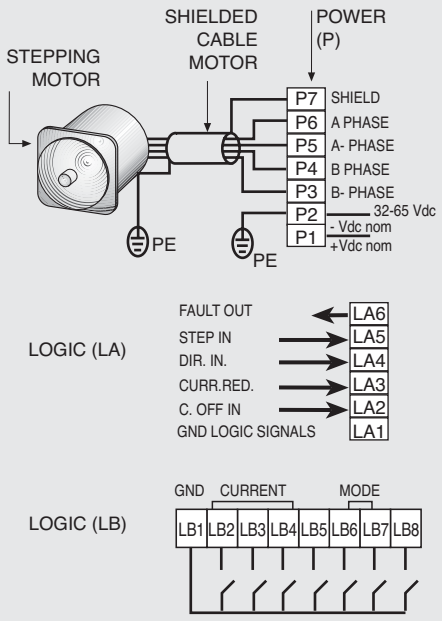
TECHNICAL FEATURES

- Wide range of operation voltages from 24 to 75 V_{DC}. Operation with a single external supply voltage.
- Motor phase current setting by means of hardware connections. Up to six possible equidistant values between **I_{NF} min.** and **I_{NF} max.** can be set.
- Operation at 400, 800, 1600 and 3200 steps/revolution, setting by means of hardware connections.
- Automatic current reduction at motor standstill.
- Protection against a short-circuit at motor outputs.
- Protection against under-voltage and over-voltage.
- Overheating protection.
- Possibility to reduce motor current with and external logic signal.
- High efficiency CHOPPER with MOSFET final stage output.
- Electronic damping facility for acoustic noise and mechanical vibrations reduction at low and medium speed.

Model	V_{DC} range	I_{NF} min. (Peak value)	I_{NF} max. (Peak value)	Dimensions
	(VOLT)	*(AMP)*	*(AMP)*	*(mm.)*
HGD 02	*24 to 75*	*0.75*	*2.0*	*70x70x25*
HGD 05	*24 to 75*	*2.3*	*6.0*	*70x70x25*



Dimensions in millimeters - Not in scale



PLUS A / B *Series Drives*

GENERAL DESCRIPTION

PLUS A and ***PLUS B*** are series of ministep bipolar chopper drives, suitable for driving two-phase stepping motors with four, six or eight terminals.

PLUS A (39-140 V_{DC}) and ***PLUS B*** (28-100 V_{AC}) series drives are housed in a metallic box, 152 x 129 x 46 mm format, suitable for wall mounting.

They do not need external fans: accordingly, they are ideal both for mounting inside a metallic electrical cabinet and for stand-alone applications.

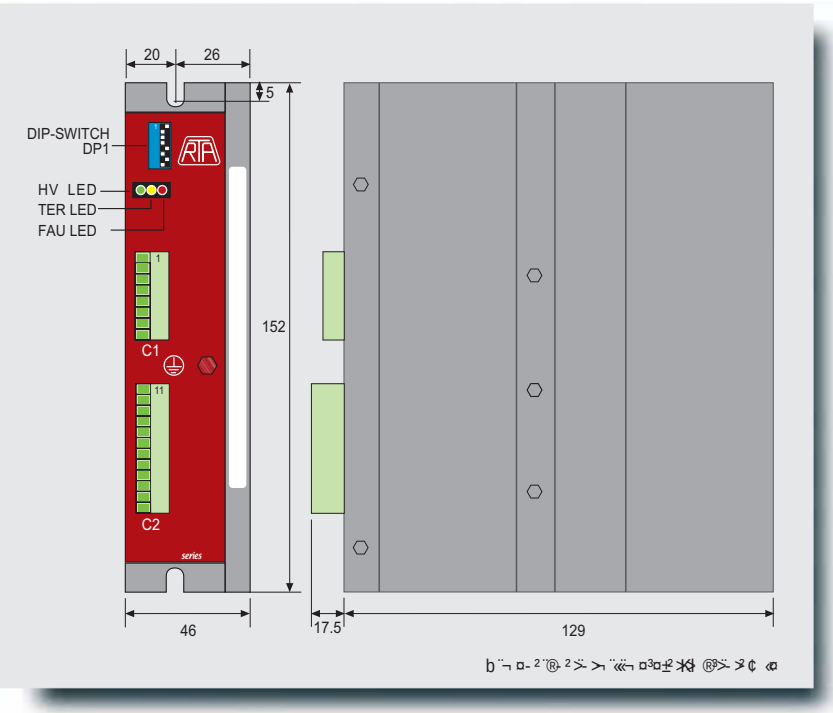
The wide range of available current/voltage values optimizes the use of ***PLUS A*** and ***PLUS B*** series drives with a wide variety of stepping motors and in a large number of applications.

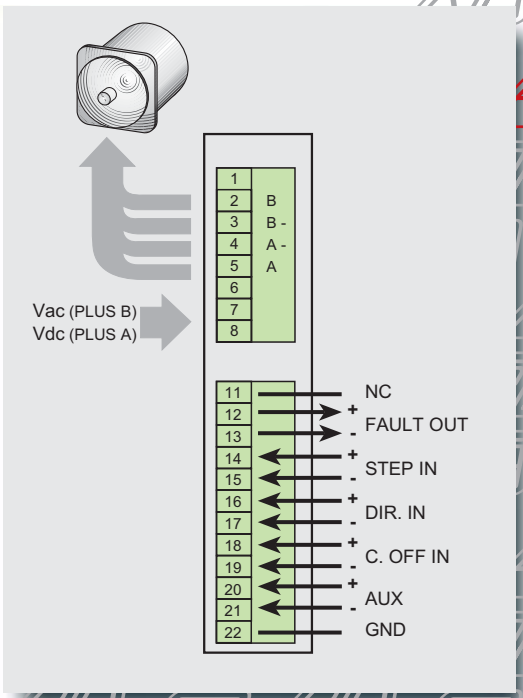
Motion Control Systems

TECHNICAL FEATURES

- Wide range of operating voltages (in AC and DC) and motor phase currents setting. Up to 8 possible equidistant values between I_{NF} **min.** and I_{NF} **max.** can be set by means of DIP-SWITCH.
- Operation at 400, 800, 1600, 3200 and 500, 1000, 2000, 4000 steps/revolution.
- Automatic current reduction at motor standstill.
- Protection against a short circuit at motor outputs.
- Protection against under-voltage and over-voltage.
- Overheating protection with thermal sensor.
- Optically insulated inputs compatible with differential control signals.
- Possibility to reduce motor current with an external logic signal.
- High efficiency CHOPPER with MOSFET final stage output.
- Electronic resonance damping circuit to ensure acoustic noise and mechanical vibrations reduction at low and medium speed.
- 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.

Model	V_{AC} range	V_{DC} range	I_{NF} min. (Peak value)	I_{NF} max. (Peak value)	Dimensions
	(VOLT)	*(VOLT)*	*(AMP)*	*(AMP)*	*(mm.)*
PLUS A3		*39 to 85*	*2.4*	*8*	*152x129x46*
PLUS A4		*77 to 140*	*1.9*	*6*	*152x129x46*
PLUS B3	*28 to 62*		*2.4*	*8*	*152x129x46*
PLUS B4	*50 to 100*		*1.9*	*6*	*152x129x46*
PLUS B7	*28 to 62*		*3*	*10*	*152x129x46*





PLUS K *Series Drives*

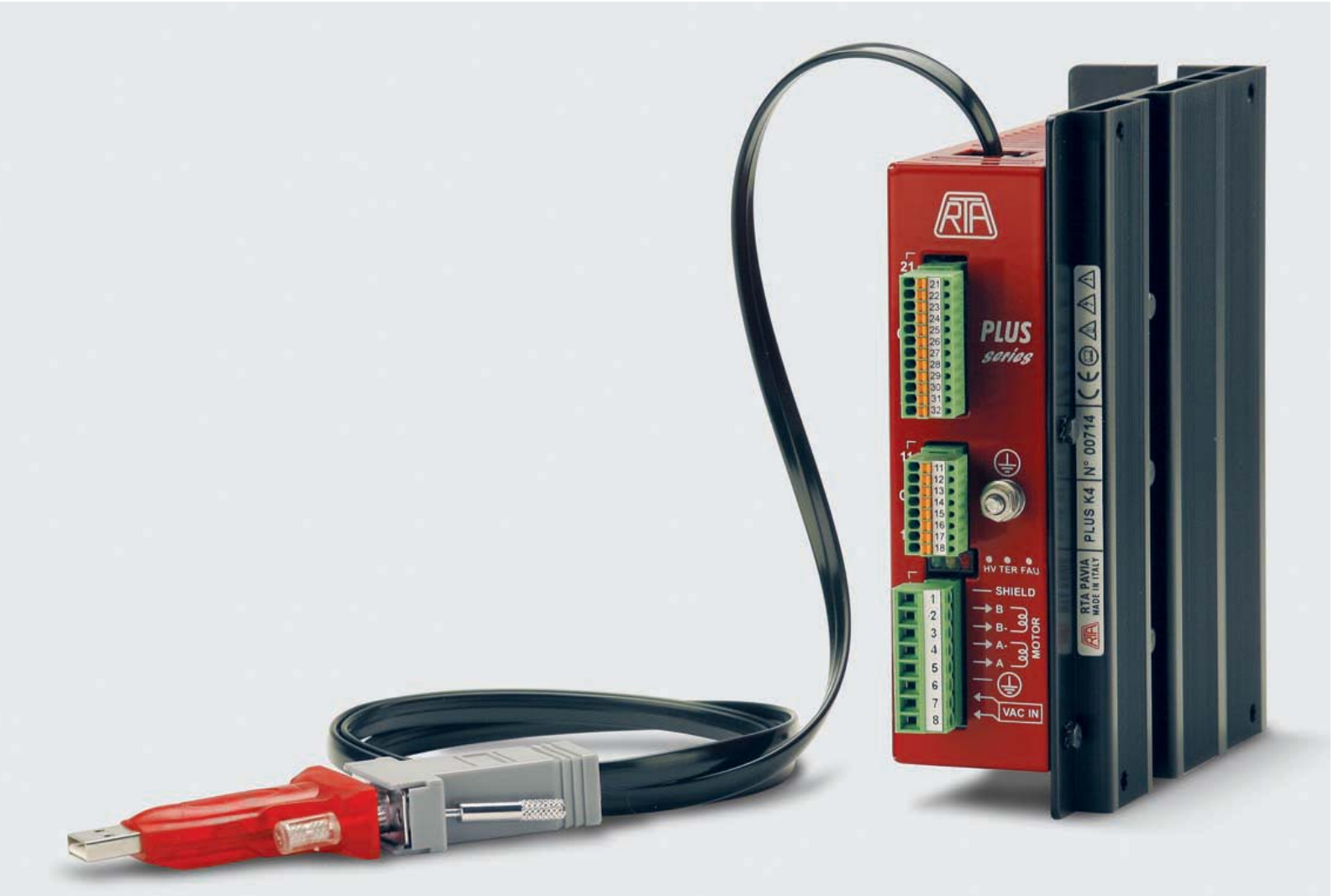
GENERAL DESCRIPTION

PLUS K is the name of a 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.

PLUS K series drives are housed in a metallic box, 152 x 129 x 46 mm format, suitable for wall mounting. They do not need external fans: accordingly, they are ideal both for mounting inside a metallic electrical cabinet and for stand-alone applications.

A broad range of available current/voltage values, specific instructions set and the availability of programmable inputs and outputs optimize the use of ***PLUS K*** series drives with a wide variety of stepping motors and in a large number of applications.



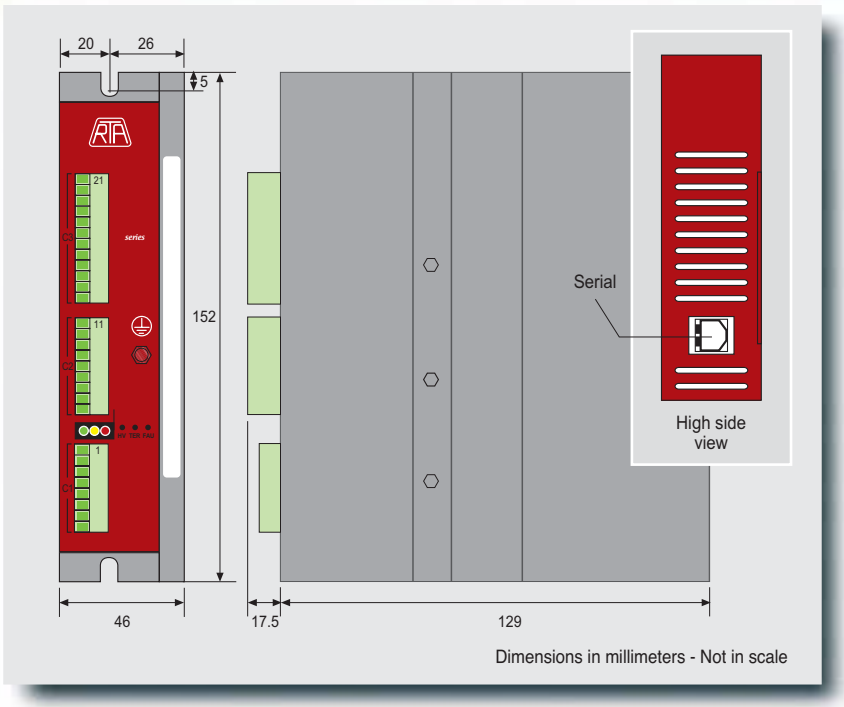
TECHNICAL FEATURES

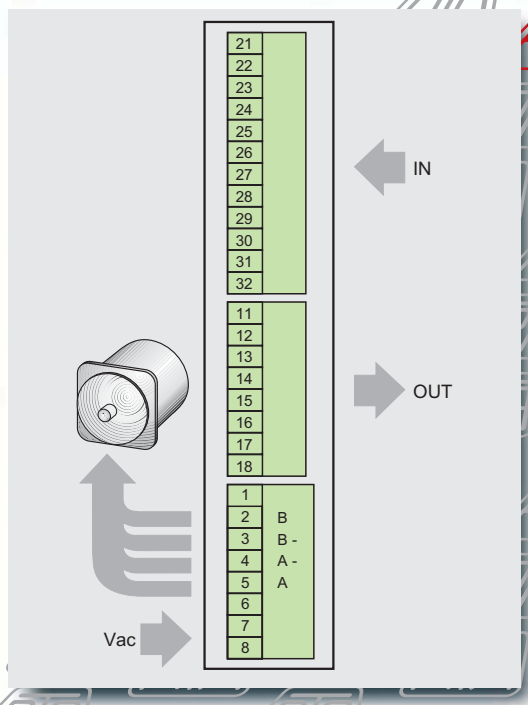
- Wide range of operating voltages (in AC) and motor phase current setting. Up to 4 possible equidistant values, between **I_{NF} min.** and **I_{NF} m**, can be set by means of a serial line.
- Operation at 400, 800, 1600, 3200 and 500, 1000, 2000, 4000 steps/revolution set by means of serial line.
- Electronic resonance damping circuit to ensure acoustic noise and mechanical vibrations reduction at low and medium speed.

PROGRAMMABLE MOTOR CONTROLLER FEATURES

- 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.
- 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.
- 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 ± 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.
- 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.

Model	V_{AC} range	I_{NF} min. (Peak values)	I_{NF} max. (Peak values)	Dimensions
	(VOLT)	*(AMP)*	*(AMP)*	*(mm.)*
PLUS K4	*55 to 100*	*3.4*	*6*	*152x129x46*
PLUS K5	*28 to 62*	*4.4*	*8*	*152x129x46*





PLUS E *Series Drives*

GENERAL DESCRIPTION

PLUS E is the name of a series of ministep bipolar chopper drives intended for driving R.T.A. EM series stepping motors with encoder (86 mm and 60 mm flange sizes).

PLUS E series drives can control EM stepping motors in a standard way (”OPEN LOOP”) but also give an alarm in case of loss of syncronism (”CLOSED LOOP”).

The drives are housed in a metallic box, 152 x 129 x 46 mm format, suitable for wall mounting. They do not need external fans: accordingly, they are ideal for mounting inside a metallic electrical cabinet as well as for stand-alone applications.

MOTOR LOSS OF SYNCRONISM CONTROL FUNCTION (”CLOSED LOOP”)

RTA Motion Control Systems

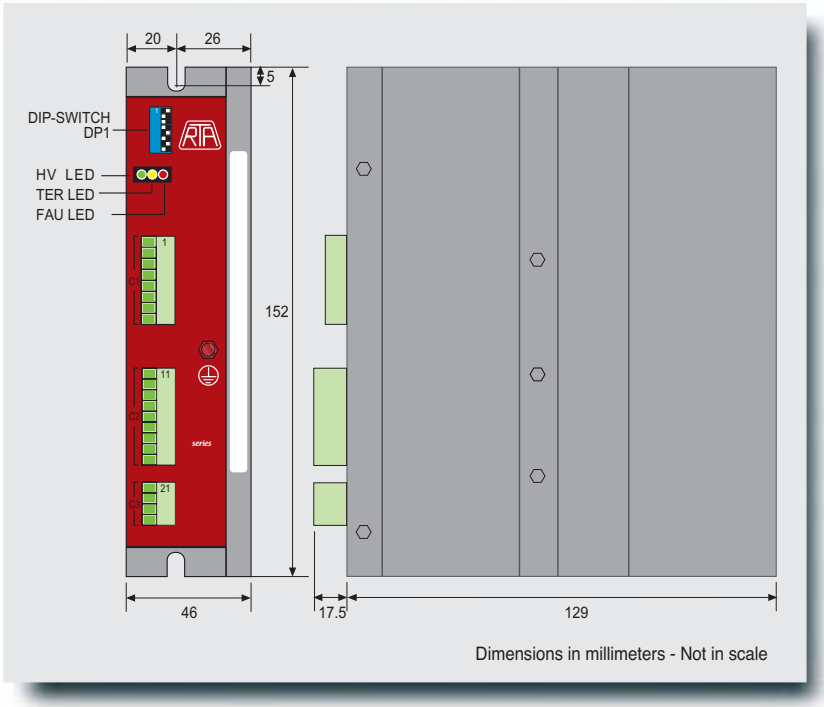
TECHNICAL FEATURES

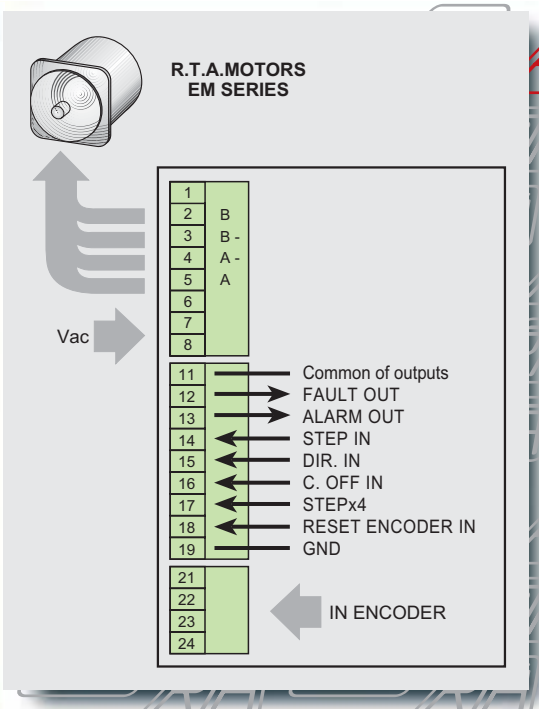
- Wide range of operating voltages (in AC) and motor phase currents setting. Up to eight possible equidistant values between I_{NF} **min.** and I_{NF} **max.** can be set by means of DIP-SWITCH.
- Operation at 400, 800, 1600, 3200 and 500, 1000, 2000, 4000 steps/revolution.
- Automatic current reduction at motor standstill and possibility to switch off motor current with an external logic signal.
- Protection against a short circuit at motor outputs and protection against under-voltage and over-voltage.
- Overheating protection with thermal sensor.
- Alarm memory by use of yellow blinking led.
- High efficiency CHOPPER with MOSFET final stage output.
- Electronic resonance damping circuit to ensure acoustic noise and mechanical vibrations reduction at low and medium speed.

MOTOR LOSS OF SYNCRONISM CONTROL FUNCTION

- Inputs for the connection of the R.T.A. motors EM series encoder (NEMA 34 and 60 mm flange sizes).
- Output for the loss of syncronism alarm.
- Setting, by means of DIP-SWITCH, of the sensitivity of the loss of syncronism alarm system.

Model	V_{AC} range	I_{NF} min. (Peak value)	I_{NF} max. (Peak value)	Dimensions
	(VOLT)	*(AMP)*	*(AMP)*	*(mm.)*
PLUS E3	*28 to 62*	*2.4*	*8*	*152x129x46*
PLUS E4	*55 to 100*	*1.9*	*6*	*152x129x46*





PLUS L *Series Drives*

GENERAL DESCRIPTION

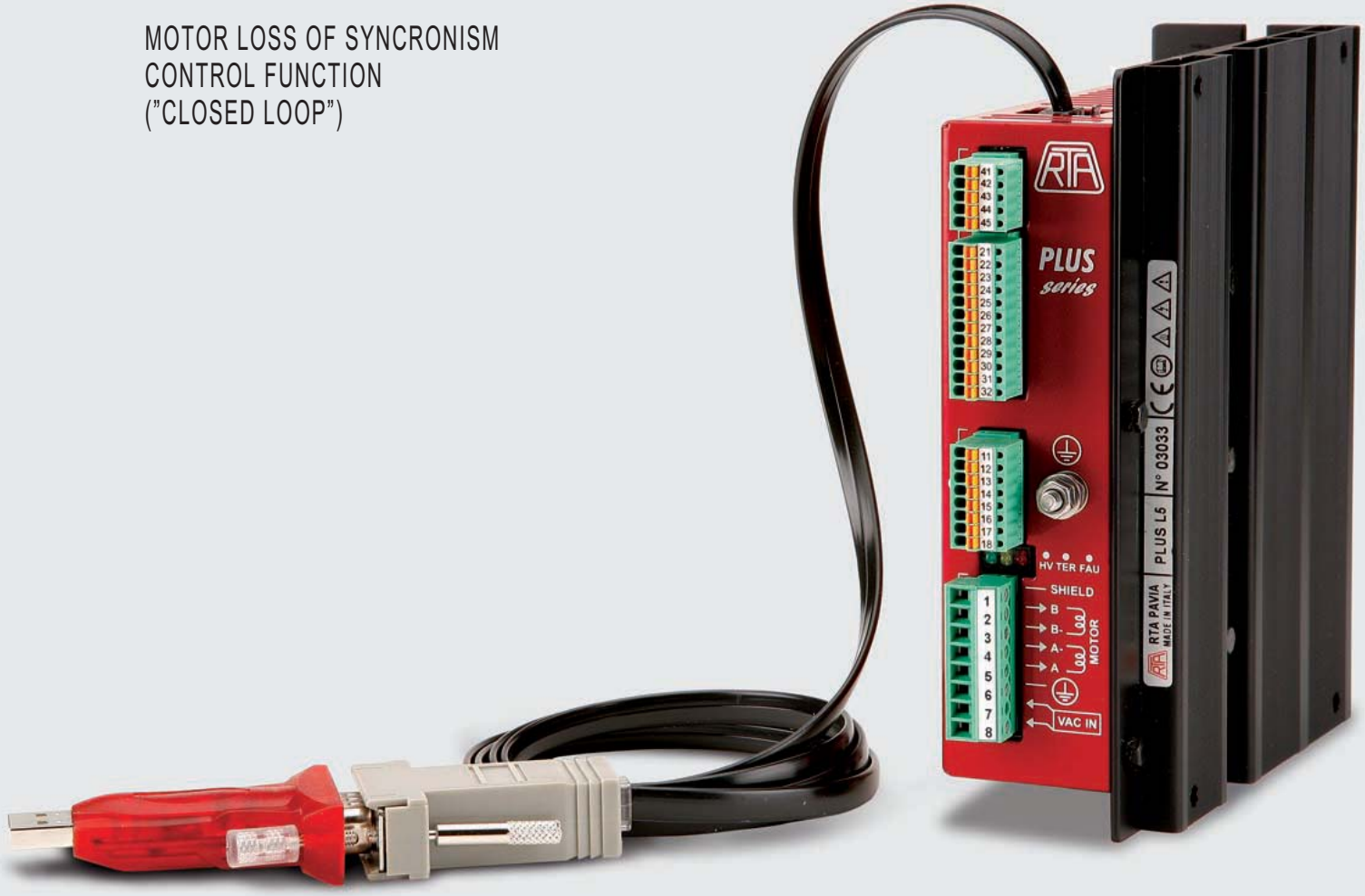
PLUS L is the name of a series of ministep bipolar chopper drives intended for driving R.T.A. EM series stepping motors with encoder (86 mm and 60 mm flange sizes). They are equipped with an on-board programmable motion controller that can be used:

- for the interfacing with a central control system (through RS485 serial line)
- as an independent unit.

PLUS L series drives can control EM stepping motors in a standard way (”OPEN LOOP”), but also give an alarm in case of loss of syncronism (”CLOSED LOOP”).

PLUS L series drives are housed in a metallic box, 152 x 129 x 46 mm format, suitable for wall mounting. They do not need external fans: accordingly, they are ideal both for mounting inside a metallic electrical cabinet and for stand-alone applications.

MOTOR LOSS OF SYNCRONISM
CONTROL FUNCTION
(”CLOSED LOOP”)



TECHNICAL FEATURES

- Wide range of operating voltages (in AC) and motor phase current setting. Up to 4 possible equidistant values, between I_{NF} **min.** and I_{NF} **max.**, can be set by means of a serial line.
- Operation at 400, 800, 1600, 3200 and 500, 1000, 2000, 4000 steps/revolution set by means of serial line.
- Electronic resonance damping circuit to ensure acoustic noise and mechanical vibrations reduction at low and medium speed.

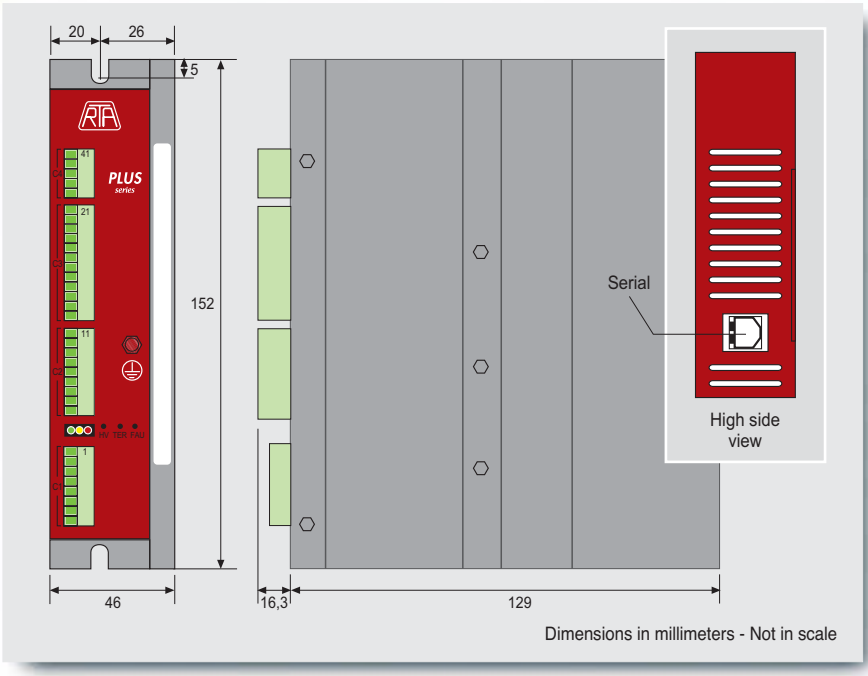
PROGRAMMABLE MOTION CONTROLLER FEATURES

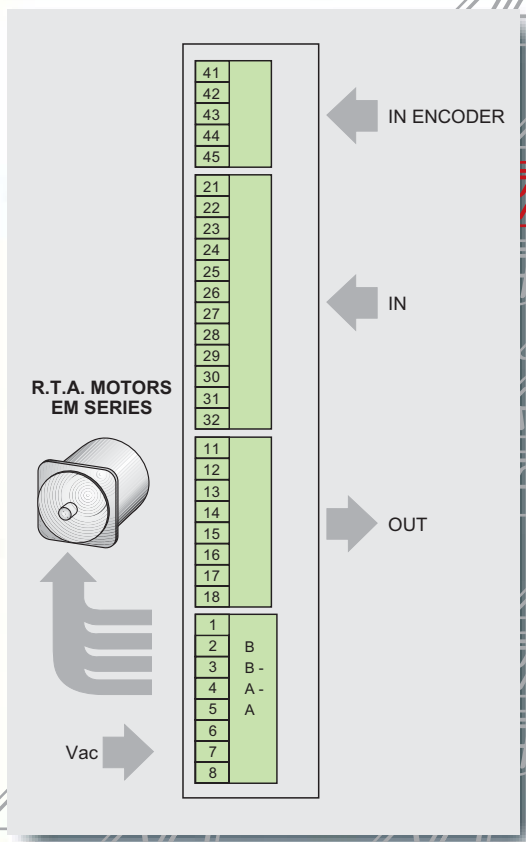
- Communication through RS485 serial line; up to 48 drives can be connected on a single serial line. One instruction can be broadcasted to all drives.
- Various types of available instructions, as for example: indexed run with ramp, free run with ramp, indexed run without ramp, run with a programmable braking distance, zero research. Space can be programmed in relative or absolute mode (linear or circular).
- Number of steps for indexed ramp up to ± 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. Possibility to control all programs previously stored or single instructions through the serial line.
- 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.

MOTOR LOSS OF SYNCRONISM CONTROL FUNCTION

- Inputs for the connection of the R.T.A. motors EM series (NEMA 34 and 60 mm flange sizes).
- Loss of syncronism alarm.
- Setting, by means of RS485, of the sensitivity of the loss of syncronism alarm system.

Model	V_{AC} range	I_{NF} min. (Peak value)	I_{NF} max. (Peak value)	Dimensions
	(VOLT)	*(AMP)*	*(AMP)*	*(mm.)*
PLUS L5	*28 to 62*	*4.4*	*8*	*152x129x46*





X-PLUS B *Drives*

GENERAL DESCRIPTION

X-PLUS B are ministep bipolar stepping drives with power input directly from the main AC supply.

X-PLUS B drives are housed in a metallic box, 152 x 129 x 46 mm format, suitable for wall mounting. They can be connected directly to the main AC supply (110 to 230 V_{AC}) normally avoiding the need for a transformer.
The wide supply range eases the use of this drive in different applications and countries.

They do not need external fans: accordingly, they are ideal both for mounting inside a metallic electrical cabinet and for stand-alone applications.

The ministep operation, connected with a further electronic resonance damping facility, ensures low acoustic noise and a reduced amount of motor mechanical vibrations.

Optically insulated and differential input/output signals ease interfacing with the most commonly used control systems and ensure high noise immunity.

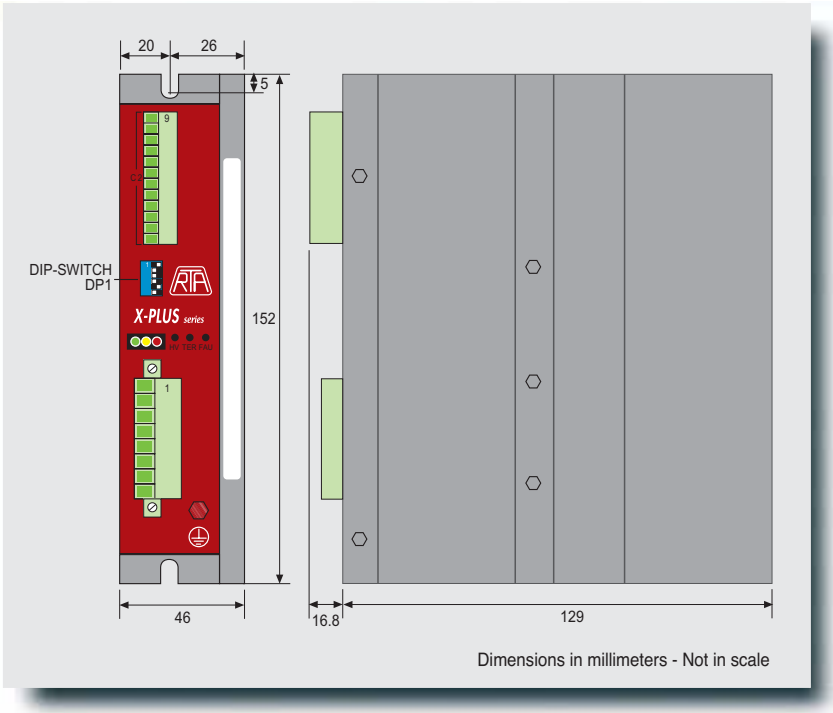
ONE OF THE MOST COMPACT DRIVES WITH POWER INPUT DIRECTLY FROM THE MAIN AC SUPPLY (110 - 230 VAC)

TECHNICAL FEATURES

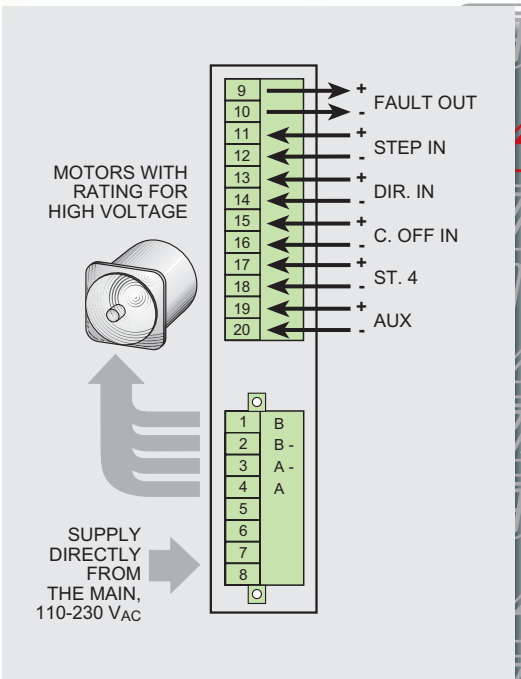
- Operation directly from the main AC supply (from 110 to 230 V_{AC}). No need of external transformer and rectifier.
- High voltage DC bus: direct rectifier from main AC supply.
- Easy motor phase current setting by means of DIP-SWITCH.
- Operation at 400, 800, 1600, 3200 and 500, 1000, 2000, 4000 steps/revolution.
- Automatic current reduction at motor standstill.
- Protection against short circuit at motor outputs.
- Protection against under-voltage and over-voltage.
- 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.
- Alarm memory by use of yellow blinking LED.
- Electronic resonance damping circuit to ensure acoustic noise and mechanical vibrations reduction at low and medium speed.

NOTE: Motors with rating for high voltage must be used in coupling with this drive.

Model	V_{AC} range	I_{NF} min. (Peak value)	I_{NF} max. (Peak value)	Dimensions
	(VOLT)	*(AMP)*	*(AMP)*	*(mm.)*
X-PLUS B4	*110 to 230 +/- 15%*	*2.4*	*4*	*152x129x46*



Dimensions in millimeters - Not in scale



X-MIND B *Series Drives*

GENERAL DESCRIPTION

X-MIND B is the name of a series of ministep bipolar drives directly from the main with AC supply, suitable for driving stepping motors.

X-MIND B series drives are housed in a metallic box, 180 x 173 x 53 mm format, suitable for wall mounting.
They can be connected directly to the main AC supply (110 to 230 V_{AC}) normally avoiding the need for a trasformer.
The wide supply range eases the use of this drive in differente applications and countries.

X-MIND B is UL CSA certified.

The ministep operation, connected with a further electronic resonance damping facility, ensures low acoustic noise and a reduced amount of motor mechanical vibrations.

Optically insulated and differential input/output signals ease interfacing with the most commonly used control systems and ensure high noise immunity.

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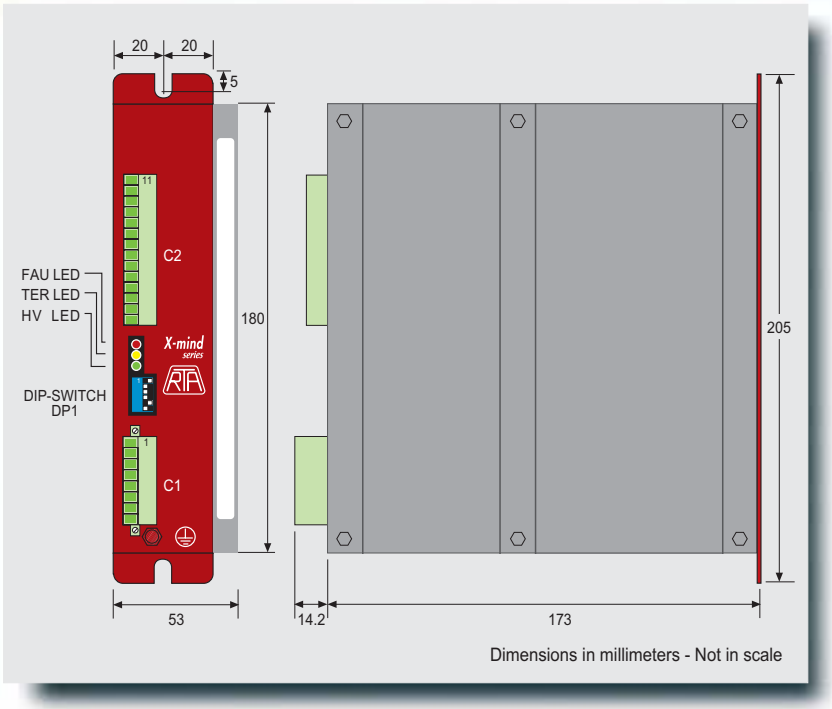
RTA Motion Control Systems

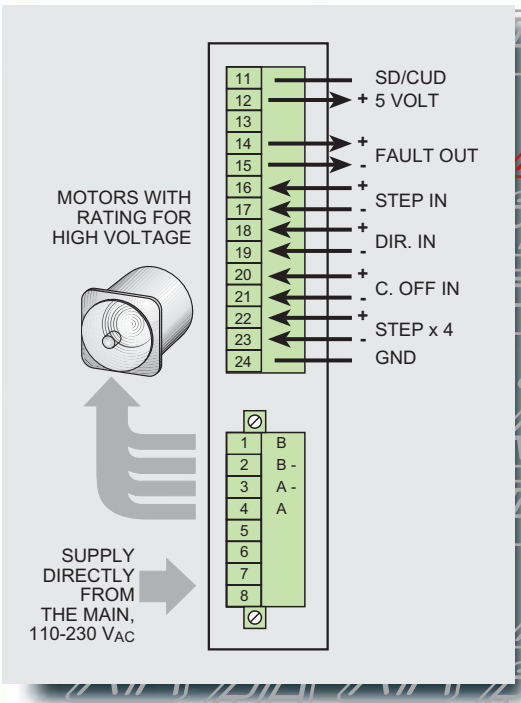
TECHNICAL FEATURES

- Operation directly from the main AC supply (from 110 to 230 V_{AC}). No need of external transformer and rectifier.
- High voltage DC bus: direct rectifier from main AC supply.
- Easy motor phase current setting by means of DIP-SWITCH.
- Operation at 400, 800, 1600, 3200 and 500, 1000, 2000, 4000 steps/revolution.
- Automatic current reduction at motor standstill.
- Protection against a short circuit at motor outputs.
- Protection against under-voltage and over-voltage.
- Overheating protection with thermal sensor.
- Optically insulated inputs compatible with differential control.
- 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 mechanical vibrations reduction at low and medium speed.
- UL/CSA certified.

NOTE: Motors with rating for high voltage must be used in coupling with this drive.

Models	V_{AC} range	I_{NF} min. (Peak value)	I_{NF} max. (Peak value)	Dimensions
	(VOLT)	*(AMP)*	*(AMP)*	*(mm.)*
X-MIND B4	*110 to 230 +/- 15%*	*2.3*	*4*	*180x173x53*
X-MIND B6	*d110 to 230 +/- 15%*	*3.4*	*6*	*180x173x53*





X-MIND K *Series Drives*

GENERAL DESCRIPTION

X-MIND K is the name of a series of ministep bipolar driveswith directly from the main AC supply. They have 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.

X-MIND K series drives are housed in a metallic box, 180 x 173 x 53 mm format, suitable for wall mounting.They can be connected directly to the main AC supply (110 to 230 V) normally avoiding the need for a transformer. The wide supply range eases drive usage in different applications and countries.

A broad range of available current/voltage values, specific instructions set and the availability of programmable inputs and outputs optimize the use of ***X-MIND K*** series drives with a wide variety of stepping motors and in a large number of applications.

Motion Control Systems

TECHNICAL FEATURES

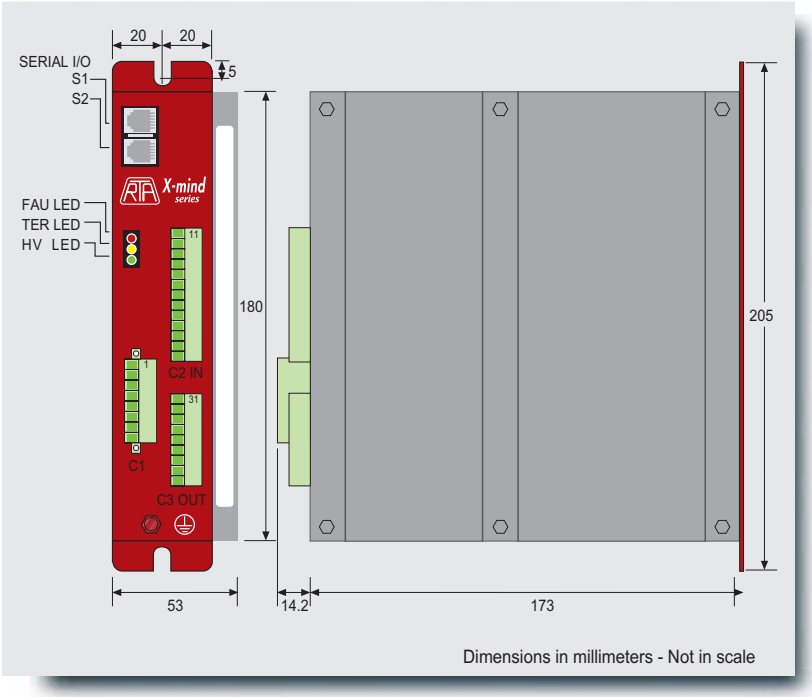
- Operation directly from the main AC supply (from 110 to 230 V_{AC}). No need of external transformer and rectifier.
- High voltage DC bus: direct rectifier from main AC supply.
- Wide range of operating voltages and motor phase currents setting. Up to 4 possible equidistant values, between **I_{NF} min.** and **I_{NF} max.**, can be set by means of a serial line.
- Operation at 400, 800, 1600, 3200 and 500, 1000, 2000, 4000 steps/revolution set by means of serial line.
- Electronic resonance damping circuit to ensure acoustic noise and mechanical vibrations reduction at low and medium speed.

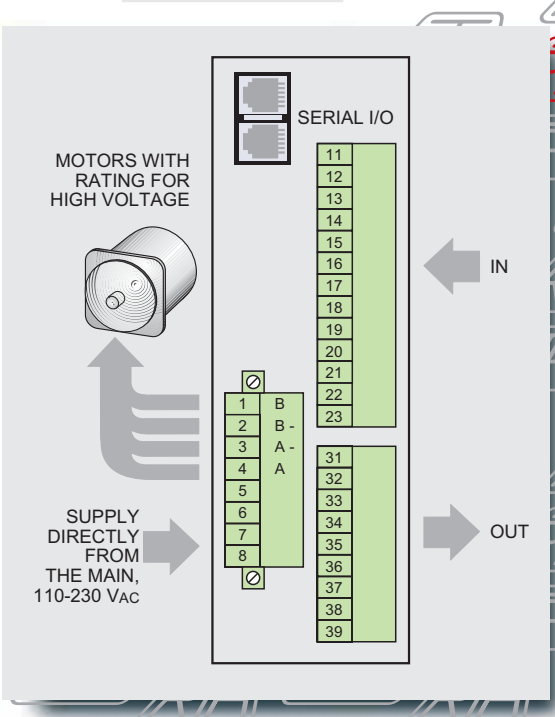
PROGRAMMABLE MOTOR CONTROLLER FEATURES

- 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.
- 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.
- 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 ± 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.
- 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.

NOTE: Motors with rating for high voltage must be used in coupling with this drive.

Model	V_{AC} range	I_{NF} min. (Peak value)	I_{NF} max. (Peak value)	Dimensions
	(VOLT)	*(AMP)*	*(AMP)*	*(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*





HI-MOD *Series Drives*

GENERAL DESCRIPTION

HI-MOD is the name of a series of stepper motors with integrated ministep bipolar chopper drives.

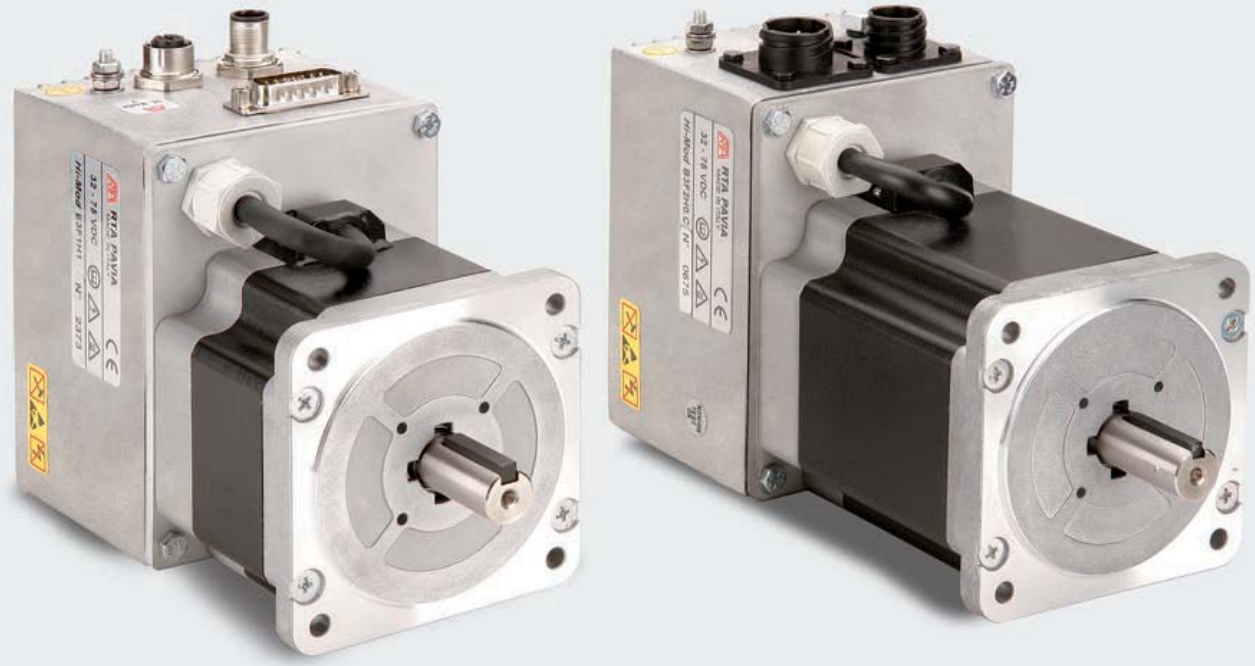
They are offered in three versions:

- **B:** STEP and DIRECTION
- **E:** CANopen - Incremental Encoder
- **A:** CANopen - Multi-Turn Absolute Encoder.

HI-MOD electronics is housed in a metallic box mounted on motor body, minimizing dimensions and optimizing wiring and mounting easiness.

HI-MOD series requires a single DC supply voltage and does not need external fans: this solution is ideal for distributed electronics applications.

A wide range of available motors and interface modes optimizes the use of ***HI-MOD*** in a large number of applications.



TECHNICAL FEATURES

- Operation with a single external (DC supply) voltage (supply range from 32 to 75 V_{DC}).
- Operation at 400, 800, 1600, 3200 steps/revolution (and 500, 1000, 2000, 4000 steps/revolution type B only).
- High efficiency CHOPPER with MOSFET final stage output.
- Electronic resonance damping circuit to ensure noise and vibrations reduction at low speed.

B Model

- STEP and DIRECTION command signals - I/O optically insulated.
- Operation mode setting by means of a rotatory DIP SWITCH.

E Model

CANopen

INCREMENTAL ENCODER

- 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.
- Possibility to detection motor loss of syncronism or stall and position error by means of Incremental Encoder.

A Model

CANopen

MULTI-TURN ABSOLUTE ENCODER

- All features like model E, with Multi-Turn Absolute Encoder at high resolution.
- Possibility to detection motor loss of syncronism or stall and position error by means of high resolution Multi-Turn Absolute Encoder.
- The system does not need buffer battery to keep the information when shut down.

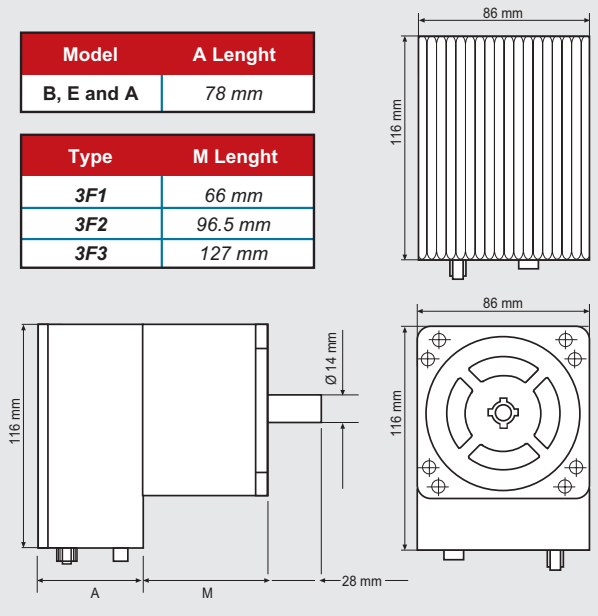
HI-MOD X - Y_1 - Y_2 - Y_3 - Y_4 - Z

X = Electronic features	*Y_1 Y_2 Y_3 Y_4 = Motor type and power*	*Z = Release number*
B: STEP and DIRECTION *E: CANopen - Incremental Encoder* *A: CANopen - Multi-Turn Absolute Encoder*	*Y_1 = Motor flange (2, 3, 4, 6)* *Y_2 = Motor type (N, H, F)* *Y_3 = Motor length (STACK 1, 2, 3)* *Y_4 = Winding type (L, M, H)*	*0 ÷ 9*

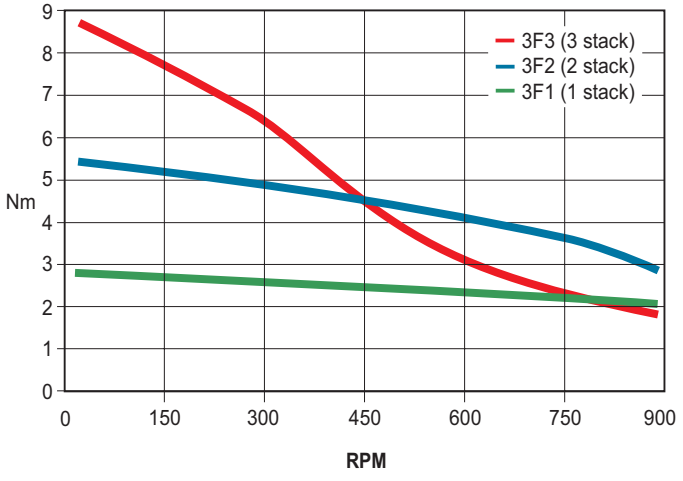
Coding example:
HI-MOD B3F2H0: STEP and DIRECTION interface, motor flange 3,4", motor F series, length 2 stacks, high speed winding, release "0"

Model	A Lenght
B, E and A	*78 mm*

Type	M Lenght
3F1	*66 mm*
3F2	*96.5 mm*
3F3	*127 mm*



HI-MOD 3,4" MOTORS TORQUE CURVE - 75 V_{DC}



PRO-MOTION *Programmers*

GENERAL DESCRIPTION

PRO MOTION is a programmable motion controller that can be used for the interfacing with a central control system or as an independent unit.

PRO MOTION programmers are optimized for the control of the systems with R.T.A. stepping or brushless motors.

They are housed in a solid metallic box IP20, 180 x 173 x 40 mm format, suitable for wall mounting.

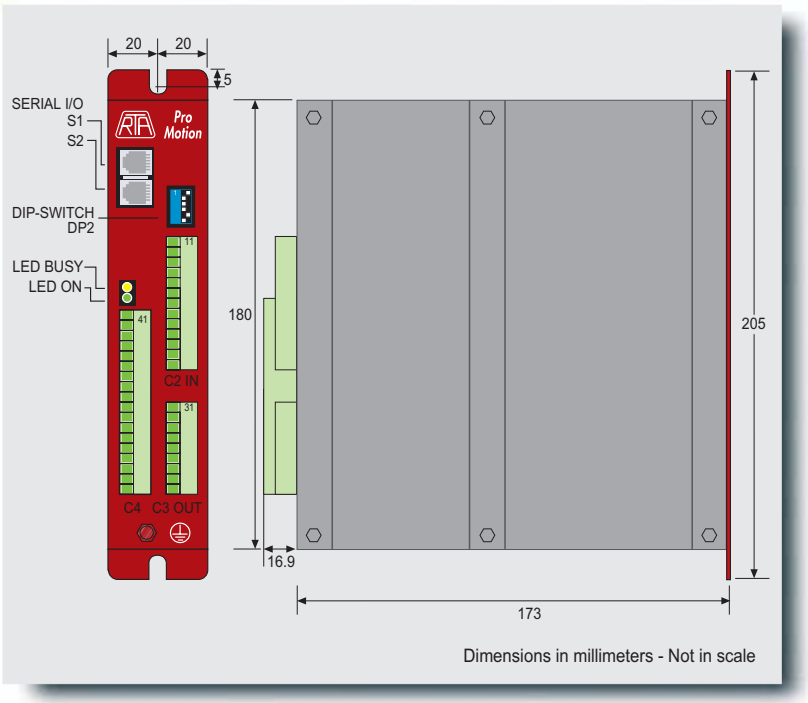
PRO MOTION programmers require a single supply voltage 24 Vdc or 24 Vac and do not need external fans: accordingly, they are ideal both for mounting inside a metal electrical cabinet and for stand-alone applications.

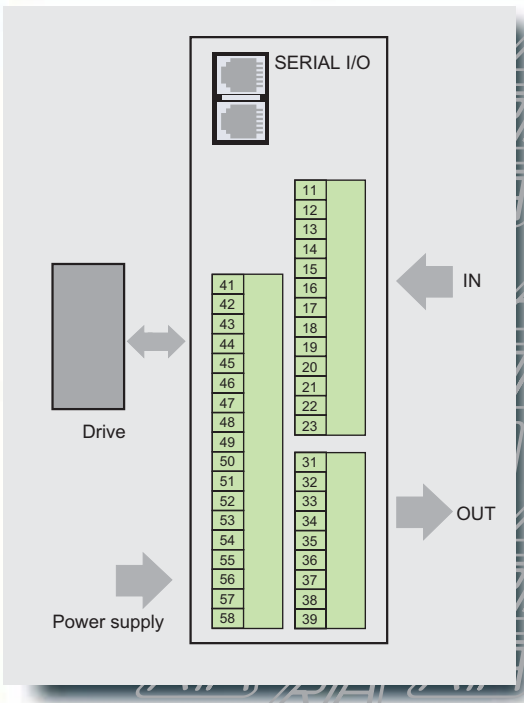
Specific instructions set and the availability of programmable inputs and outputs optimize the use of ***PRO MOTION*** programmers with a wide variety of motors and in a large number of applications.

The complete compatibility with ***PLUS K*** and ***X-MIND K*** series drives eases the realization of mixed stepping - brushless systems.

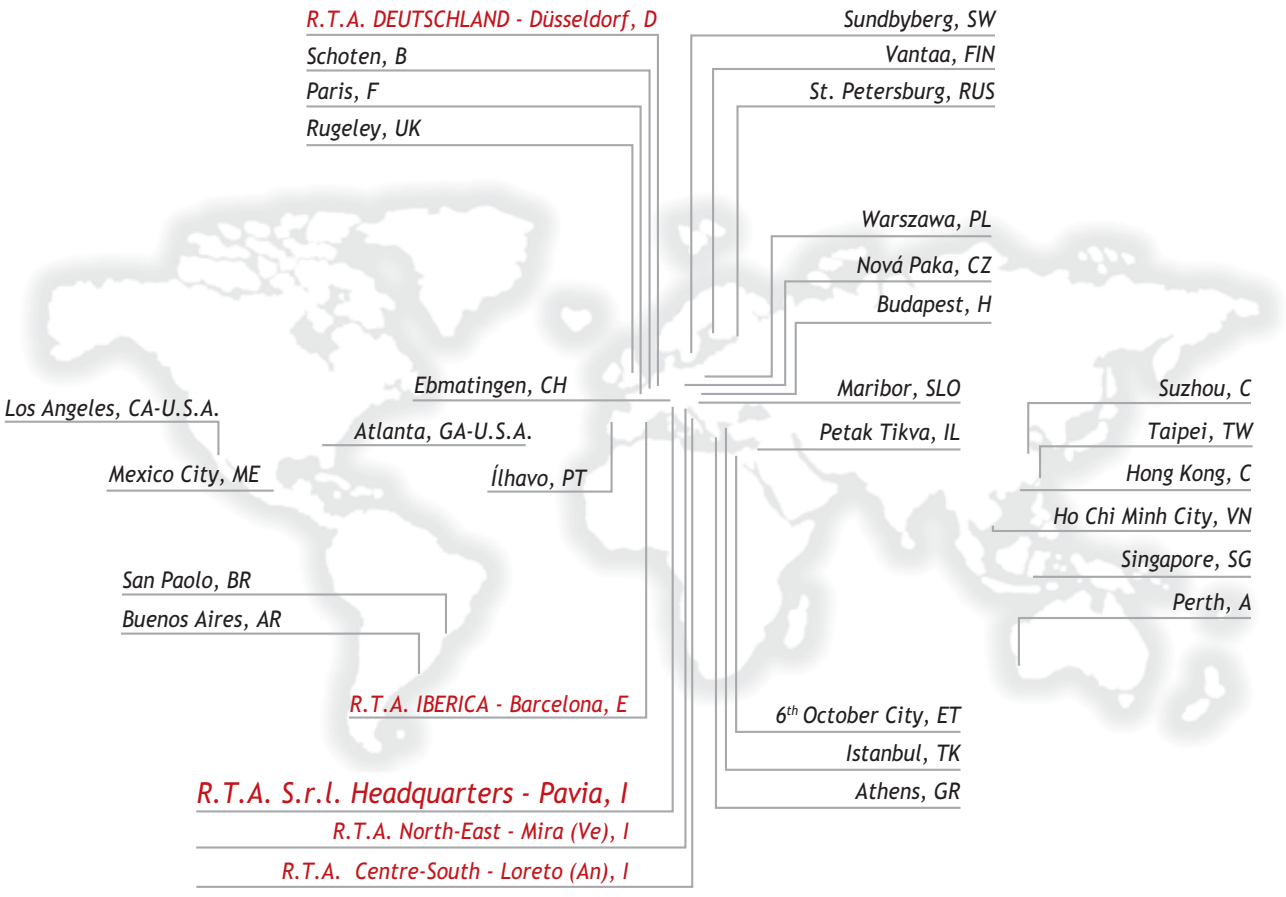
TECHNICAL FEATURES

- Communication through RS232 or RS485 serial line set by the user; up to 48 programmers can be connected on a single serial line (RS485). One instruction can be broadcasted to all programmers.
- Various types of available instructions as, for example: indexed run with ramp, free run with ramp, indexed run without ramp, free run without ramp, run with a programmable braking distance, zero research.
  Space can be programmed in relative or absolute mode (linear of circular).
- Number of steps for indexed run up to ± 8.338.607 in relative or absolute mode, speed from 200 to 24.000 Hz, 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.
- Zero research procedure with a single instruction and with hardware dedicate input.
- Possibility to control the execution of 16 previously stored motion programs through hardware inputs. Accordingly, the programmer can be used in stand-alone applications, without serial connection.
- Possibility to control all program previously stored or single instructions through the serial line.
- Ten inputs and four outputs, all optically insulated. Among them two inputs and two outputs are freely programmable. STEP and DIR double outputs that can realize two synchronous axis systems.
- Memory of 128 istructions kept also at programmer switched-off.
- Utilities working in Windows® are available in order to ease motion programs development by the user.





RTA in the World



RTA Motion Control Systems

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HEADQUARTERS
R.T.A. s.r.l. - Via E. Mattei
Fraz. Divisa - 27020 MARCIGNAGO (PV)
Tel. +39.0382.929.855 - Fax +39.0382.929.150
www.rta.it - e-mail: info@rta.it

NORTH-EAST BRANCH
Via D. Alighieri, 4/A - 30034 MIRA (VE)
Tel. +39.041.56.00.332 - Fax +39.041.56.00.165
e-mail: rtane@rta.it

CENTRE-SOUTH BRANCH
Via D. Alighieri, 41 - 60025 LORETO (AN)
Tel. +39.071.75.00.433 - Fax +39.071.97.77.64
e-mail: rtacs@rta.it

R.T.A. Deutschland GmbH
Bublitzer Straße, 34
40599 DÜSSELDORF (Germany)
Tel. +49.211.749.668.60
Fax +49.211.749.668.66
www.rta-deutschland.de
e-mail: info@rta-deutschland.de

R.T.A. IBERICA - Motion Control Systems S.L.
C/ Generalitat 22, 1° 3°
08850 GAVA - BARCELONA (Spain)
Tel. +34.936.388.805
Fax +34.936.334.595
www.rta-iberica.es
e-mail: info@rta-iberica.es

Motion Control Systems