

TECHNICAL CATALOGUE



DRIVES
drivon[®]

STANDARD **IEC**



MOTOVARIO[®]
HEART OF MOTION
a **TECO** Group company

1. GENERAL INFORMATION

1.1	COMPANY PROFILE	3
1.2	PRODUCTS AND SOFTWARE MOTOVARIO	5

2. INTRODUCTION

2.1	INTRODUCTION	8
2.2	INVERTER CHARACTERISTICS	9

3. PLUS & BENEFIT

3.1	PLUS & BENEFIT	10
-----	----------------------	----

4. DESIGNATION

4.1	DESIGNATION	11
-----	-------------------	----

5. DIRECTIVES AND STANDARDS

5.1	DIRECTIVES AND STANDARDS	12
-----	--------------------------------	----

6. OPERATING CHARACTERISTICS

6.1	OPERATING CHARACTERISTICS	13
-----	---------------------------------	----

7. VERSIONS

7.1	VERSIONS	14
7.1.1	Versions	14
7.1.2	Version DV123	14
7.1.3	Version DV340	15

8. TECHNICAL DATA

8.1	RANGE	17
-----	-------------	----

8.2	PERFORMANCES	18
8.2.1	Version DV123	18
8.2.2	Version DV340	20
8.3	DIMENSIONS	24
8.3.1	Mounting positions B5	24
8.3.2	Mounting positions B14	25
8.3.3	Mounting positions B3	26
8.4	WEIGHTS	27

9. ACCESSORIES AND OPTIONS

9.1	ACCESSORIES AND OPTIONS	28
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10. SALES CONDITIONS

10.1	SALES CONDITIONS	32
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Motovario® corporate philosophy aims to promote the company's brand and products at an international level with determination and transparency, while constantly striving to offer innovative solutions for satisfying and anticipating the demand of the market. Motovario® provides technologically advanced solutions in the transmission components field for industrial and civil applications worldwide.

The company

At Formigine, the heart of Modena's industrial district, Motovario® boasts a production plant spanning 50,000 m² that employs 500 people.

1965 Foundation of Motovario

1998 Acquisition of Spaggiari Trasmissioni, an important brand in the mechanical technology sector.

2006 Motovario acquisition by a private investment fund managed by Synergo SGR, in order to guarantee its development and support its expansion throughout the world.

2014 Acquisition of Pujol.

2015 Acquisition by TECO.

At the core of Motovario® lies an evolved production process based on technological solutions that convert power into movement. Motovario® is at the heart of the production processes that drive industries worldwide. Quality and reliability are the company's fundamental assets. Motovario® is present throughout the world with branches in France, Spain, Germany, England, China, the United States and India. The sales network and customer service guarantee immediate and high-quality support to all customers. In addition, the company boasts a worldwide network of MAC (Motovario Assembly Centre). Qualified assembly centres are present, in Italy, Australia, Benelux, Bulgaria, China, Finland, France, India, Ireland, Israel, Malaysia, Poland, Portugal, South Korea, Spain, Sweden, Turkey, United Kingdom, Ukraine and USA. The company is able to offer a wide range of products: speed variators, right-angle, helical-bevel, shaft-mounted, worm gear reducers and gearmotors, electric motors, inverter and inverter drives. Maximum quality and precision are ensured by the cutting-edge technologies implemented in the production process. 170 numerical control machines, served by LGV lines for storage in automatic warehouses, ensure a high standard of efficiency for the Motovario® production department.

The highly automated assembly lines are supported by a specific computerised system. The process statistical control system manages the production process to avoid rejects, by enabling the operator to monitor all the processing phases. The annealing, tempering, hardening and carburizing treatments are carried out inside the plant. The plant operates on a 24-hour basis, including holidays. Reliability, resilience and versatility are the distinctive features of Motovario® products, the most qualified solution to any power transmission requirement.

Main fields OF APPLICATIONS

- Mechanical-electromechanical industry (car washing, pumps, barriers & automatic doors, circuit breakers)
- Ceramic industry (ovens, press feeding systems)
- Food, farming, oenology industry
- Wood, marble, glass industry
- Packaging & bottling industry
- Textile, shoes, leather industry
- Transport, logistic industry
- Construction industry
- Milling, animal husbandry, flower industry
- Machine tools & steel industry
- Mining, quarry, cement industry
- Energy industry (solar, nuclear, biomass, wind)
- Amusement industry (theatres, leisure parks, kiddy rides)
- Chemical & pharmaceuticals industry
- Paper & printing industry
- Plastic & rubber industry
- Telecommunications industry (satellite orientation systems, military radar)
- Engineering and consultant companies

Certifications

Our products can be manufactured to conform with the ATEX Directive 2014/34/UE. In addition, the safety and quality of our motors, geared motors and motovariators is guaranteed by the EAC (EurAsian Conformity) certification, an essential requirement for products exported to the Russian Federation. Our motors are UL certified, which guarantees their safety and quality requirements for the North American market.

Quality CONCEPT

Motovario® has obtained the quality certification renewal of its production system in conformity to the UNI EN ISO 9001:2008 standard. This internationally recognised certification acknowledges the company's commitment and drive geared towards constantly improving products, projects and services offered. Moreover, the company has obtained the OHSAS 18001:1999 (Occupational Health and Safety Assessment Series) certification, which defines the requirements of the workplace safety and health management system.

Research & DEVELOPMENT

Technological innovation: a crucial factor for competing in the market. In the company's 50-year history, research and change have been the pivotal factors in guaranteeing competitiveness at a global level, thanks to increasingly advanced products in terms of performance and reliability. Each year the company invests an increasing amount of its turnover in research and development, geared towards promoting the constant study and analysis of products, control processes and performance certification. In order to ensure that customers receive products that comply with the requested performance levels, the company carries out simulations on all new products, including NVH (Noise, Vibration, Harshness) tests effected in the advanced semi-anechoic chamber.

Customer CARE

Innovative instruments and software applications supporting the technical and logistic requirements of our partners worldwide guarantee a timely and customised service. The experience acquired by Motovario® has led to the creation of the new online portal MyMotovario 4.0, which allows for selecting products and exporting their 3D file. As a result, designers and engineering departments can download the three-dimensional model of the requested product and implement it directly in their own layout. In order to maximise customer service and quality, Motovario® offers all its customers the following online services: Order Tracking, which allows for monitoring the progress of an order in real time, and the Stock Availability service, through which users may check the availability (stock) of our products, both in the Italian plant and in the various branches.

Motovario chooses technological evolution.

Motovario® has chosen technological evolution and actively collaborates with the Faculty of Engineering of the University of Modena and Reggio Emilia and of the University of Bologna.

Reliability, sturdiness, versatility

These are the distinctive traits of Motovario products. A broad range of transmission products that provide a competent, innovative solution to each and every power application need. Cutting-edge tools, unrelenting research efforts and ongoing commitment to upgrading manufacturing equipment to the latest state-of-the-art enable us to offer high quality and performance standards to cater to industry requirements and the broadest variety of applications. Motovario ranks among the leading, well-reputed companies in Italy engaged in the design, manufacture and sales of transmission products for industrial and civil applications. The entire manufacturing process takes place in Formigine and Ubersetto plants, in Modena area, with an overall surface area of over 50.000 sq m. and a workforce of about 500 people. 170 numerically controlled machines and cutting-edge handling, storage and assembly automated systems ensure that all products meet high quality standards. The network includes more than 40 Motovario-certified assembly centres, with the capability to supply products in a broad range of versions, including customised versions, high service capacity and fast response. As a result, our product offering can cater to the needs of all plant engineering sectors, in all industries and for different applications, and includes: speed variators, helical, bevel-helical, parallel helical, worm gear reducers and gearmotors, electric motors and motor-inverters. All of the products we manufacture share such common features as reliability, sturdiness and versatility, topped with a high innovation content. At the heart of a company's technological innovation is the ability to develop integrated tools for computer-aided calculation simulation and management of different processes as part of product development. When simulating operating, setup and process conditions, it is also necessary to analyse and optimize the overall functional design of a product using a synergistic approach. This is achieved by implementing an exhaustive experimental plan, without using interpolation or approximation, as they frequently allow criticalities or any oversizing which is not conducive to maximising quality/cost ratio to go unnoticed.

High-efficiency method for calculation according to standards

A set of specific functions have been developed to this end. A few significant examples include functions to:

- Optimise individual reduction ratios and the combinations of the different reduction stages based on parametrisable target normal series;
- Calculate torque values and maximum permissible external forces for gear reducer units, using iterative numeric algorithms to confirm target life/safety values of components;
- Create databases for loading a FEM structural analysis model by automatically writing all reaction components of bearings under all load conditions to a specific file, with automatic selection of critical cases that need to be verified.

Another goal of the method is to create synergy between calculation according to standards and FEM structural calculation and the implementation of FEM model loading procedures, so as to simplify input data, meshing and constraint criteria

Competitiveness and operational benefits of the new method

This method offers many practical advantages over traditional calculation procedures within the company, namely:

- Iterative optimisation of project since setup stage;
- Accurate assessment of the various service factors and reliability levels for the entire gear reducer unit and for all operating conditions as per catalogue rating or customer specific requirements;
- Faster support to customers in analysing tailored product configurations;
- Integrated corporate databases that can be updated in real-time;

Range extension and ongoing evolution

The steady, significant growth of Motovario Group is achieved thanks to an ongoing search for new calculation and design tools, as well as to customer service. The new tools identified have led to innovation, improved product reliability as well as positive developments in market management. The following software products are used for design, calculation and management:

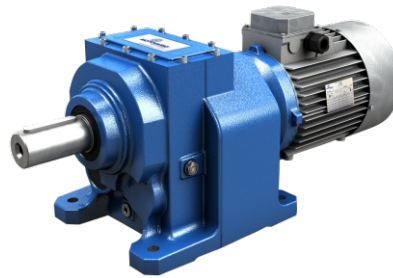
- Solidworks;
- Kisoft;
- Kissys;
- Ansys;
- FEM modelling analysis software;
- Circuit design and simulation software;
- Specific spreadsheets;
- SAP.

In MyMotovario 4.0 portal, PRODUCT SELECTION includes a section named APPLICATIONS where customers can enter application data and find out which gear reducer suits them best in a matter of minutes.

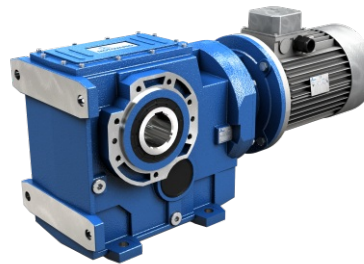
MOTOVARIO Products

HELICAL GEAR REDUCERS

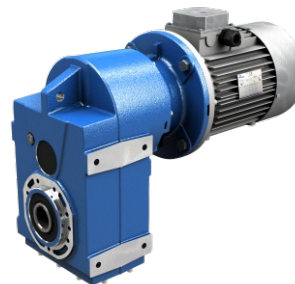
Cast iron or aluminum casing
 Output shaft up to 90 mm
 Mn₂ up to 8.600 Nm
 Reduction stages 1, 2, 3
 Ratios up to 354
 Atex units

**HELICAL BEVEL GEAR REDUCERS**

Cast iron or aluminum casing
 Output shaft up to 110 mm
 Mn₂ up to 14.000 Nm
 Reduction stages 2, 3
 Ratios up to 443
 Atex units

**SHAFT MOUNTED GEAR REDUCERS**

Cast iron
 Output shaft up to 90 mm
 Mn₂ up to 10.250 Nm
 Reduction stages 2, 3
 Ratios up to 395
 Atex units

**WORM GEAR REDUCERS**

Cast iron or aluminum casing
 Output shaft up to 50 mm
 Mn₂ up to 2.700 Nm
 Ratios up to 1083
 Atex units



PARALLEL HELICAL AND BEVEL HELICAL GEAR REDUCERS FOR MIDDLE HEAVY INDUSTRY

Cast iron casing
 Output shaft up to 180 mm
 Mn₂ up to 110.000 Nm
 Reduction stages 1, 2, 3, 4
 Ratios up to 636
 Atex units



MOTOVARIATORS AND MOTOVARIATOR-GEAR REDUCERS

Cast iron or aluminum casing
 Ratios infinite
 Mn₂ up to 5.000 Nm
 Atex units



ELECTRIC MOTORS

Power ratings up to 90 kW
 Poles 2, 4, 6
 Three-phase and single-phase, built-in brake, dual polarity
 Protection class up to IP66



DRIVES

DRIVON - motoinverter

Three phase and single phase power supply
 High dynamics sensorless vectorial control
 Power ratings up to 5,5 kW
 Standard integrated STO
 Integrated field bus
 Optional field bus



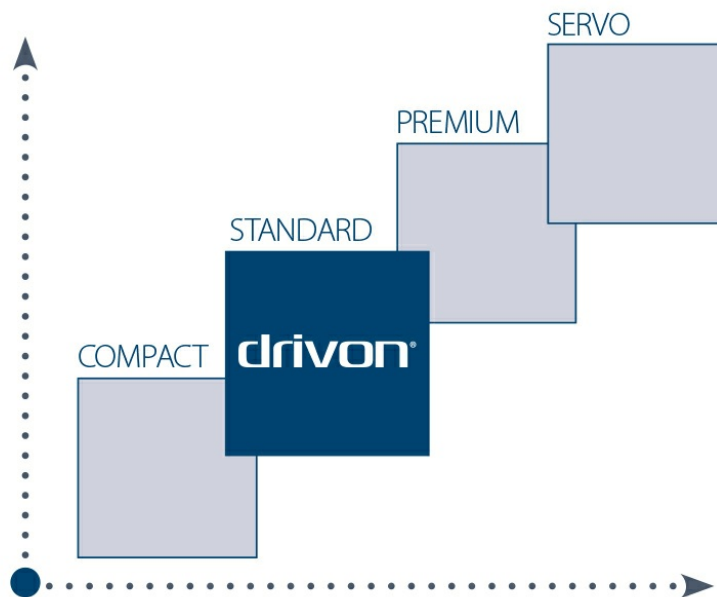
Drivon, designed to be used in different types of applications (especially pumps, fans and conveyor belts) consists of extremely reliable components and is controlled by our software that provides excellent performance with special attention to the system energy efficiency. Its Vectorial Control, besides ensuring a constant motor torque throughout a wide range of frequencies without requiring the use of the servo-ventilation at low rpm, provides fast and precise output according to the application dynamic conditions allowing high torque overload of the motor.

Conceived for extremely different and variable supply conditions, Drivon is available both in single-phase/three-phase version (200 ÷ 260 V / 47 ÷ 63 Hz) with a motor power between 0.25 and 1.5 kW, and in three-phase version (360 ÷ 480 V / 47 ÷ 63 Hz) with a motor power between 0.25 and 5.5 kW. The different functions of this software provide a wide range of standard and optional interfaces for a simple and flexible use. The electronic part, available in 10 power sizes, is located in two different chassis sizes, one for power up to 1.5 kW and the other for power up to 5.5 kW.

The product design considers the following aspects:

- power efficiency;
- modular configuration and expansion possibility;
- potential target markets;
- user-friendly;
- future design development flexibility.

Following these guidelines, Motovario has developed DRIVON, which belongs to the STANDARD segment along with all products of the reference competitors in the AC Induction market.



Industry sectors

The features of DRIVON enable its application in many industry sectors that require specific performance and functions:

- CONVEYOR BELTS
- PALLETISERS
- PUMPS
- FANS
- SCREW CONVEYORS
- MIXERS
- ROTARY TABLES
- PRESSES
- WINDERS/UNWINDERS
- ELEVATORS (NO ZERO-SPEED)

2.2 INVERTER CHARACTERISTICS

- FOC open-loop control of asynchronous motors
- Input for incremental encoder as speed feedback
- Available according to UL/CSA standards
- Possibility to set parameters through field Bus
- Many functions may be assigned to digital inputs, in particular UP/DOWN function
- Possibility to set the reference frequency



Motovario's Drivon inverter motor is the solution for numerous industrial applications. Conveyors, pumps, fans and other applications where the decentralised solution makes it possible to reduce the complexity and overall dimensions of the electrical panel. It also simplifies the wiring of the system through the multiple fieldbuses it is fitted with, allows for more flexible installation, reduces the commissioning time and increases the efficiency of the system thanks to lower energy losses between the inverter and the motor.

ENERGY EFFICIENCY

Thanks to streamlined control algorithms and the **IE2** energy class of the inverters combined with **IE2 and IE3** class motors, the complete Drivon inverter motor reached the **IES2** energy efficiency rating covered in IEC 61800-9-2.

REDUCED USE OF SERVO-VENTILATION

The efficient control exerted by the inverter on the motor and the high energy efficiency class of the inverter motor make it possible to limit the use of servo ventilation in applications that require operation at low engine revs.

SMART KEYPAD



With the optional keypad and the copy parameter function, Drivon will be more practical and faster to use at the product configuration stage. This feature enables you to very quickly replicate parameter settings from one inverter motor to another when the application requires the same programming. The keypad is also used for local Start/Stop and frequency reference controls in combination with the monitoring and diagnosis feature provided by the built-in display.

FIRMWARE UPDATE

The firmware update of the inverter, when required, is quick and flexible, and takes place via a USB connection with the PC on which the management software provided by Motovario must be installed beforehand.

CONFIGURATION SOFTWARE VIA PC

The software tool provided by Motovario provides access to all inverter parameters, allowing for both reading and writing (online editing of inverter parameters) and the related storage on a PC as a file. The same software tool also includes the multitrack digital oscilloscope feature to graphically display all the control values of the inverter and the motor.

BUILT-IN SAFE TORQUE OFF SAFETY

To ensure the safe removal of the drive torque when the motor is in the Stop status, Drivon has an internal **STO** (Safe Torque Off) device certified with a **SIL3-PLe** safety rating in accordance with **EN ISO/ISO 13849-1** and **EN/IEC 61800-5-2**. By activating the STO of the inverter through its 2 dedicated digital channels, the inside of the motor is safely disconnected from the inverter from an electrical point of view, without having to remove the input power supply of Drivon. This will always remain on and ready for all subsequent controls and monitoring.

4.1 DESIGNATION

Inverter Type	Power supply	Rated Speed (RPM)	Motor Inverter Power	Manual Adjustment Control	Accessories / Expansion Modules	Motor Type	Motor size	Motor Version	Brake Type	Brake Power Supply	Brake Control	Other Options
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DV	340	G2	0220M	KP1	IOA5	TBP	112M	B5	FM	/S	EMB6	UL
DV	123	G1	0025S	ISI	NO	TH	71A	B5	FM	/S	EMB5	IC416
	340	G2	0037S	KP1	IOA5	TP	...	B14	MS		EMB6	UL
		G3	0043S	KP2	IOA6	TBH	132MB	B3			BC	
		G4	0055S	KP3	PDP5	TBP		B35				
			0064S	KP4	PDP6			B34				
			0075S	PS5	ETC5							
			0095S	PS6	ETC6							
			0110S		PNT5							
			0130S		PNT6							
			0150S		ETN5							
			0190M		ETN6							
			0220M									
			0260M									
			0300M									
			0380M									
			0400M									
			0520M									
			0550M									

1/3PH 230V 123
3PH 400V 340

950 rpm G1
1450 rpm G2
1650 rpm G3
2450 rpm G4

025S 0.25kW inverter Small size
037S 0.37kW inverter Small size
....
190M 1.90kW inverter Medium size
220M 2.2kW inverter Medium size
....

EMB5 Electro Mechanical Braking Module in position 5
EMB6 Electro Mechanical Braking Module in position 6
BC Braking Chopper Module (sole position on the cover)

NO No Expansion Module
IOA5 I/O Module Type A in position 5
IOA6 I/O Module Type A in position 6
PDP5 Profibus DP Module in position 5
PDP6 Profibus DP Module in position 6
IOB5 I/O Module Type B in position 5
IOB6 I/O Module Type B in position 6
ETC5 Ethercat Module in position 5
ETC6 Ethercat Module in position 6
PNT5 Profinet Module in position 5
PNT6 Profinet Module in position 6
ETN5 Ethernet IP Module in position 5
ETN6 Ethernet IP Module in position 6

ISI Integrated Standard Interface
KP1 Keypad Pos.1
KP2 Keypad Pos.2
KP3 Keypad Pos.3
KP4 Keypad Pos.4
PS5 PotiSwitch Pos.5
PS6 PotiSwitch Pos.6



Regardless of the version, the entire Drivon range is fitted with High Efficiency inverters and motors in accordance with **EU Ecodesign Regulation 2019/1781**.

In accordance with the Regulation, Drivon complies with the efficiency requirements relating to the inverter, those relating to the motor and those relating to the complete motor+inverter system:

Product	Power range	Efficiency class	Reference standard
Drivon (complete inverter motor)	0.25 kW , 5.5 kW	IES2	IEC 61800-9-2
Inverter	0.25 kW , 5.5 kW	IE2	
Motor	0.25 kW , 0.55 kW	IE2	IEC 60034-30-1
	0.75 kW , 5.5 kW	IE3	

EN 61800-1:1998-02	Adjustable speed electrical power drive systems Part 1: General requirements and rating specifications for variable-speed low-voltage drives with d.c. motors
EN 61800-2:1998-04	Adjustable speed electrical power drive systems Part 2: General requirements and rating specifications for low-voltage drives with a.c. motors
EN 61800-3:2004-12	Adjustable speed electrical power drive systems Part 3: EMC requirements and specific test methods
EN 61800-5-1:2007-09	Adjustable speed electrical power drive systems Part 5-1: Safety requirements - Electrical, thermal and energy safety
EN 61800-5-2:2007-10	Adjustable speed electrical power drive systems Part 5-2: Safety requirements - Functional safety
EN 61800-7-1:2008-04	Adjustable speed electrical power drive systems Part 7-1: Generic interface and use of profiles for power drive systems - Interface definition
2014/35/UE	Low voltage directive
2014/30/UE	EMC directive (Electromagnetic compatibility)

AVAILABLE CERTIFICATIONS

UL (508c) „UL Standard for Safety for Power conversion equipment”

cUL (CSA C22.2 Nr. 14) „Industrial Control Equipment”

CE

Drivon is a motor inverter with sensorless field-oriented control. The inverter is optimised to operate with Motovario's motor and is always supplied assembled to it in a single product.

Drivon is able to control speed variation by using different reference sources (on-board, remote, I/O, fieldbus, standard, optional), which can be freely selected by the user.

Reference speed sources:

- Built-in potentiometer
- Up/down buttons from keypad
- Up/down inputs from digital inputs (motor potentiometer)
- Fixed frequency selected via a binary combination of digital inputs
- Analogue input (configurable +/-10V or 0-20mA)
- Algebraic sum of built-in potentiometer + analogue input
- Pulse train input 0-300KHz
- Modbus
- CANopen DSP402
- Profibus DP
- EtherCAT
- Profinet
- Ethernet IP

programmable multifunction digital inputs with the following features:

- start/stop
- motion reversal (relative direction control)
- clockwise start (absolute direction control)
- anticlockwise start (absolute direction control)
- motor potentiometer
- binary combination with fixed frequencies
- enabling for fast emergency stop according to a parameterisable ramp
- enabling for emergency stop at maximum current
- user alarm

Drivon is fitted with an encoder interface to backdrive the speed and position of the motor shaft on it when precision multi-motor interlockings are required.

The display built into the optional keyboard allows for multiple views chosen by the user, including:

- Motor speed (rpm)
- Torque provided (%)
- Torque current (A)
- Magnetising current (A)
- Reference frequency (Hz)
- Output frequency (Hz)

Moreover, for applications that require the display of physical quantity related to the process and not to the inverter motor (e.g. linear speeds, flowrates, temperatures, etc.), Drivon allows you to define a scale factor between the desired measurement and the speed of the motor in order to show the numerical value of the desired process quantity on the keyboard's display.

FIELDBUS

Drivon is dedicated to the automation sector, which is why it has numerous communication interfaces to be used as a Slave in many industrial fieldbuses, such as Modbus RTU, CANopen DSP 402, Profibus DP and in Real-Time networks such as EtherCAT, Profinet and Ethernet IP.

7.1.1 Versions

The DRIVON model is available in two different versions, which are distinguished by

- Power supply type
- Power range
- Rated operating speeds

Version	Power supply	Power range	Rated operating speeds
DV123	1ph 230V	0.25 - 1.5 kW	950 rpm
			1450 rpm
DV340	3ph 400V	0.25 - 5.5 kW	950 rpm
			1450 rpm
			1650 rpm
			2450 rpm

The term rated operating speed can be understood as the minimum speed at which the motor-inverter delivers its nominal power with continuity, or rather the maximum speed at which it is able to guarantee its nominal torque with continuity.

7.1.2 Version DV123

In this version, the rated operating speeds G1 and G2 are only available at the power ratings of 0.25 - 1.5 kW.

RATED OPERATING SPEED G1:

Drivon	Supply voltage (ph x V)	Supply current at 230V (A)	Rated output (kW)	Rated operating speed (rpm)	Inverter size	Motor size
DV123-G1-0025S-TH71	1 x 180...260	1,1	0.25	950	S	71
DV123-G1-0037S-TH80	1 x 180...260	1,8	0.37	950	S	80
DV123-G1-0055S-TH80	1 x 180...260	2,5	0.55	950	S	80
DV123-G1-0075S-TP90	1 x 180...260	3	0.75	950	S	90
DV123-G1-0110S-TP100	1 x 180...260	3,9	1.1	950	S	100
DV123-G1-0150S-TP100	1 x 180...260	5,2	1.5	950	S	100

RATED OPERATING SPEED G2:

Drivon	Supply voltage (ph x V)	Supply current at 230V (A)	Rated output (kW)	Rated operating speed (rpm)	Inverter size	Motor size
DV123-G2-0025S-TH71	1 x 180...260	1,1	0.25	1450	S	71
DV123-G2-0037S-TH71	1 x 180...260	1,5	0.37	1450	S	71
DV123-G2-0055S-TH80	1 x 180...260	2	0.55	1450	S	80
DV123-G2-0075S-TP80	1 x 180...260	2,5	0.75	1450	S	80
DV123-G2-0110S-TP90	1 x 180...260	3,5	1.1	1450	S	90
DV123-G2-0150S-TP90	1 x 180...260	4,8	1.5	1450	S	90

7.1.3 Version DV340

This version is available with the rated operating speeds G1, G2, G3 and G4:

RATED OPERATING SPEED G1:

Drivon	Supply voltage (ph x V)	Supply current at 400V (A)	Rated output (kW)	Rated operating speed (rpm)	Inverter size	Motor size
DV340-G1-0025S-TH71	3 x 320...520	0,7	0.25	950	S	71
DV340-G1-0037S-TH80	3 x 320...520	1,2	0.37	950	S	80
DV340-G1-0055S-TH80	3 x 320...520	1,6	0.55	950	S	80
DV340-G1-0075S-TP90	3 x 320...520	2	0.75	950	S	90
DV340-G1-0110S-TP100	3 x 320...520	2,5	1.1	950	S	100
DV340-G1-0150S-TP100	3 x 320...520	3,4	1.5	950	S	100
DV340-G1-0220M-TP112	3 x 320...520	4,7	2.2	950	M	112
DV340-G1-0300M-TP132	3 x 320...520	6	3.0	950	M	132
DV340-G1-0400M-TP132	3 x 320...520	8	4.0	950	M	132
DV340-G1-0550M-TP132	3 x 320...520	11	5.5	950	M	132

RATED OPERATING SPEED G2:

Drivon	Supply voltage (ph x V)	Supply current at 400V (A)	Rated output (kW)	Rated operating speed (rpm)	Inverter size	Motor size
DV340-G2-0025S-TH71	3 x 320...520	0,7	0.25	1450	S	71
DV340-G2-0037S-TH71	3 x 320...520	1	0.37	1450	S	71
DV340-G2-0055S-TH80	3 x 320...520	1,3	0.55	1450	S	80
DV340-G2-0075S-TP80	3 x 320...520	1,6	0.75	1450	S	80
DV340-G2-0110S-TP90	3 x 320...520	2,3	1.1	1450	S	90
DV340-G2-0150S-TP90	3 x 320...520	3,2	1.5	1450	S	90
DV340-G2-0220M-TP100	3 x 320...520	4,5	2.2	1450	M	100
DV340-G2-0300M-TP112	3 x 320...520	6,1	3.0	1450	M	112
DV340-G2-0400M-TP112	3 x 320...520	7,7	4.0	1450	M	112
DV340-G2-0550M-TP132	3 x 320...520	10	5.5	1450	M	132

7.1 VERSIONS

RATED OPERATING SPEED G3:

Drivon	Supply voltage (ph x V)	Supply current at 400V (A)	Rated output (kW)	Rated operating speed (rpm)	Inverter size	Motor size
DV340-G3-0043S-TH71	3 x 320...520	1,3	0.43	1650	S	71
DV340-G3-0064S-TH80	3 x 320...520	2	0.64	1650	S	80
DV340-G3-0095S-TH80	3 x 320...520	2,8	0.95	1650	S	80
DV340-G3-0130S-TP90	3 x 320...520	3,4	1.3	1650	S	90
DV340-G3-0190S-TP100	3 x 320...520	4,4	1.9	1650	M	100
DV340-G3-0260S-TP100	3 x 320...520	5,9	2.6	1650	M	100
DV340-G3-0380M-TP112	3 x 320...520	8,1	3.8	1650	M	112
DV340-G3-0520M-TP132	3 x 320...520	10,4	5.2	1650	M	132

RATED OPERATING SPEED G4:

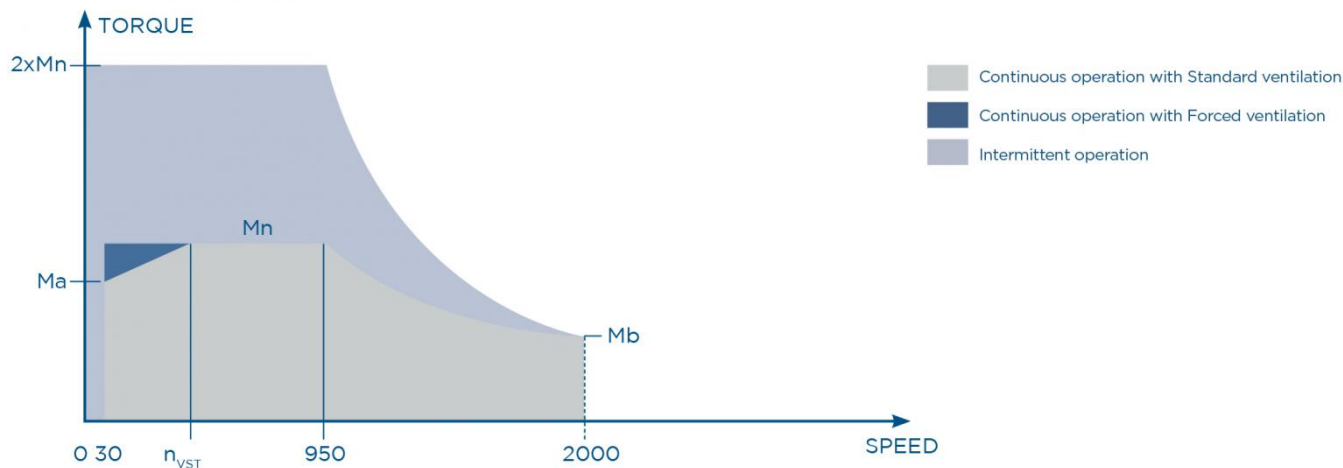
Drivon	Supply voltage (ph x V)	Supply current at 400V (A)	Rated output (kW)	Rated operating speed (rpm)	Inverter size	Motor size
DV340-G4-0043S-TH71	3 x 320...520	1,2	0.43	2450	S	71
DV340-G4-0064S-TH71	3 x 320...520	1,7	0.64	2450	S	71
DV340-G4-0095S-TH80	3 x 320...520	2,3	0.95	2450	S	80
DV340-G4-0130S-TP80	3 x 320...520	2,8	1.3	2450	S	80
DV340-G4-0190M-TP90	3 x 320...520	3,9	1.9	2450	M	90
DV340-G4-0260M-TP90	3 x 320...520	5,4	2.6	2450	M	90
DV340-G4-0380M-TP100	3 x 320...520	7,8	3.8	2450	M	100
DV340-G4-0520M-TP112	3 x 320...520	10,6	5.2	2450	M	112

P	V	f	I	M	n	max	min	nom
Power (kW)	Voltage (V)	Frequency (Hz)	Current (A)	Torque (Nm)	Speed (rpm)	Maximum	Minimum	Nominal

Power supply	1ph230V	3ph400V
Power range	0.25 - 1.5 kW	0.25 - 5.5 kW
Motor sizes	71-80-90	71-80-90-100-112-132
Inverter sizes	S	S-M
Constant torque speed ranges	50±950 50±1450	50±950 50±1450 50±1650 50±2450
Speed range	0 ÷ 3000 rpm	
Frequency range	0 ÷ 150 Hz	
Frequency resolution	0.01 Hz	
Motor control	Sensorless vectorial, V/f scalar	
Motor starting torque	200% of the rated torque	
100% torque step response	150ms	
Current overload	150% / 60s ; 200% / 3s	
Frequency reference	Integrated potentiometer, analogue input, binary fixed frequency, pulse train, digital Up/Down, keyboard, IP66 potentiometer, multi source (sum)	
Direction selection	Digital inputs, keyboard, fieldbus, IP66 switch (optional)	
Analogue inputs	1 x (-10÷10V) / (0-20mA)	
Digital inputs	4 multifunction (+1 optional)	
Thermal probe inputs	1 x bimetallic (+1 x PTC/PT100 optional)	
Built-in potentiometer	1 with Start/Stop function (+1 optional IP66)	
Encoder input	1 incremental Line Driver (speed loop)	
Analogue outputs	1 x (0-10V) multifunction (optional)	
Digital Outputs	1 multifunction (optional)	
Relay outputs	1 multifunction (+1 optional)	
Serial interfaces	USB	
Integrated field BUS	CANopen 402, Modbus RTU	
Optional field buses	Profibus DPV1, EtherCAT, Profinet, Ethernet IP	
Optional expansion modules	I/O expansion; EM brake control; Dynamic braking chopper; External IP66 Potentiometer and Direction Selector	
Integrated safety	Safe Torque Off SIL3-PLe, short circuit, temperature	
On-board power supplies	1x10V, 1x24VDC	
Other Functions	<ul style="list-style-type: none"> • Parametric V/f curve (V/f control mode) • Parametric S ramps • PI process controller • Jog function • Electronic torque limiter • DC-bus accessible • Integrated multiple dynamic braking • Parameter Copy Keyboard • I/O Expansions (optional) • Braking chopper and resistor (optional) • Synchronised electromechanical brake control (optional) • Configuration software via PC with integrated digital oscilloscope 	
Other options	Emergency stop button, quick Power and Signal connectors	
Protection rating	IP55-56-66	

8.2.1 Version DV123

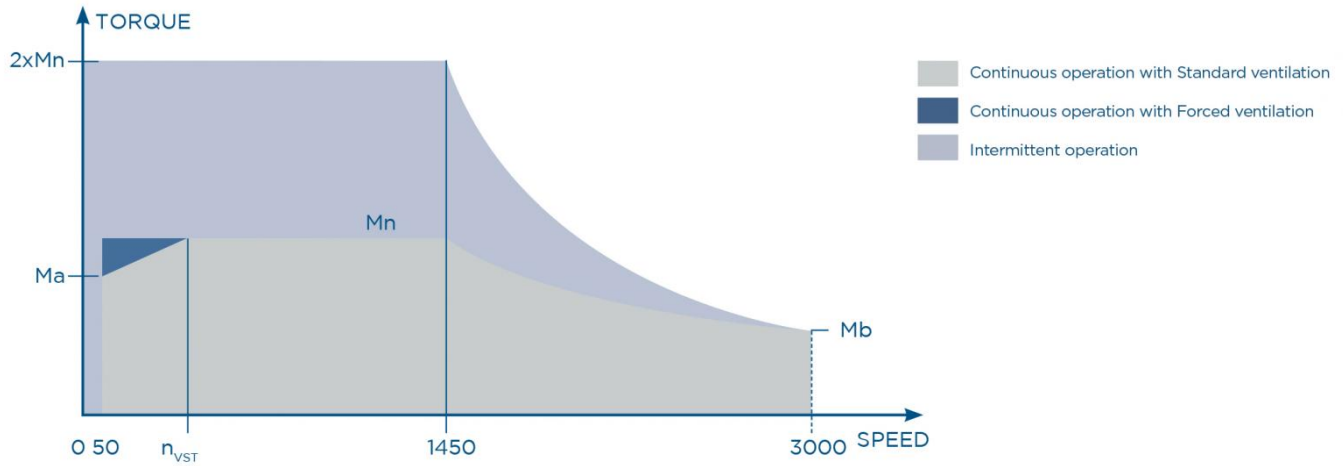
Rated operating speed G1



- Pn** = motor shaft nominal power
- Mn** = continuous nominal torque
- Ma** = continuous torque at minimum speed
- Mb** = continuous torque at maximum speed
- nn** = rated speed
- nmin** = minimum continuous speed
- nmax** = maximum continuous speed
- nVST** = forced ventilation speed threshold
- IC411** = STANDARD ventilation
- IC416** = FORCED ventilation
- (1)** With a 230V supply voltage
- (2)** At an ambient temperature of 25 °C and a carrier frequency of 4kHz

Drivon					Pn (kW)	n _n (rpm)	Mn (Nm) (1)	n _{max} (rpm)	Mb (Nm) (1)	n _{min} (rpm)	Ma (Nm) (1)		n _{VST} (rpm) (2)
											IC411	IC416	
DV	123	G1	0025S	TH71B	0,25	950	2,5	2000	1,2	30	1,1	2,5	180
DV	123	G1	0037S	TH80A	0,37	950	3,7	2000	1,8	30	1,6	3,7	180
DV	123	G1	0055S	TH80B	0,55	950	5,5	2000	2,6	30	2,4	5,5	180
DV	123	G1	0075S	TP90S	0,75	950	7,5	2000	3,6	30	3,3	7,5	200
DV	123	G1	0110S	TP100LR	1,1	950	11,1	2000	5,3	30	4,9	11,1	200
DV	123	G1	0150S	TP100L	1,5	950	15,1	2000	7,2	30	6,6	15,1	300

Rated operating speed G2

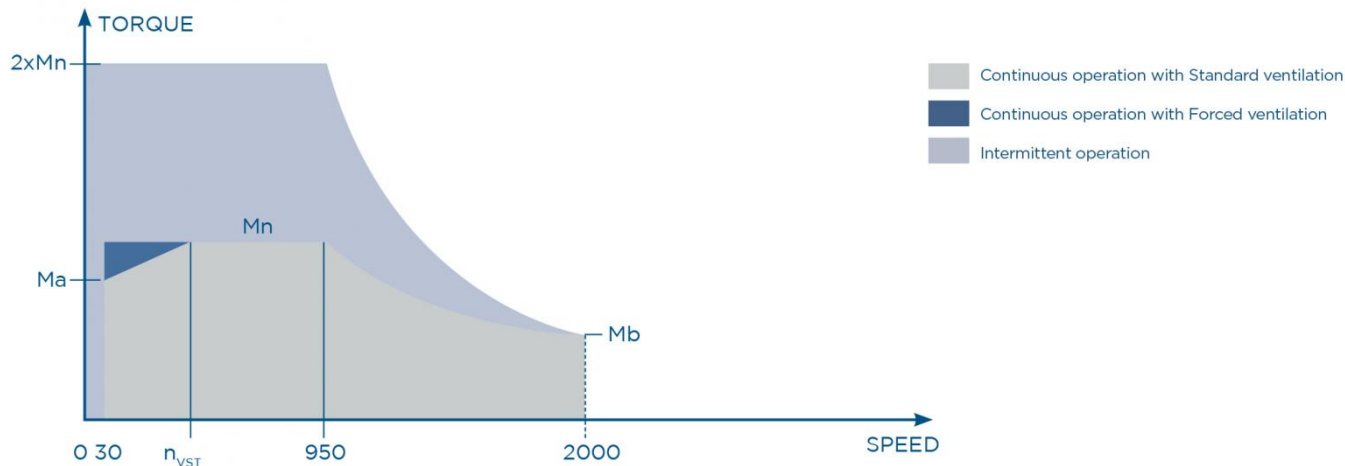


- P_n** = motor shaft nominal power
- M_n** = continuous nominal torque
- M_a** = continuous torque at minimum speed
- M_b** = continuous torque at maximum speed
- n_n** = rated speed
- n_{min}** = minimum continuous speed
- n_{max}** = maximum continuous speed
- n_{VST}** = forced ventilation speed threshold
- IC411** = STANDARD ventilation
- IC416** = FORCED ventilation
- (1)** With a 230V supply voltage
- (2)** At an ambient temperature of 25 °C and a carrier frequency of 4kHz

Drivon					P _n (kW)	n _n (rpm)	M _n (Nm) (1)	n _{max} (rpm)	M _b (Nm) (1)	n _{min} (rpm)	M _a (Nm) (1)		n _{VST} (rpm) (2)
											IC411	IC416	
DV	123	G2	0025S	TH71A	0,25	1450	1,6	3000	0,7	50	0,7	1,6	250
DV	123	G2	0037S	TH71B	0,37	1450	2,4	3000	1,1	50	1,1	2,4	250
DV	123	G2	0055S	TH80A	0,55	1450	3,6	3000	1,6	50	1,6	3,6	250
DV	123	G2	0075S	TP80B	0,75	1450	4,9	3000	2,1	50	2,2	4,9	250
DV	123	G2	0110S	TP90S	1,1	1450	7,2	3000	3,1	50	3,2	7,2	250
DV	123	G2	0150S	TP90L	1,5	1450	9,9	3000	4,3	50	4,4	9,9	400

8.2.2 Version DV340

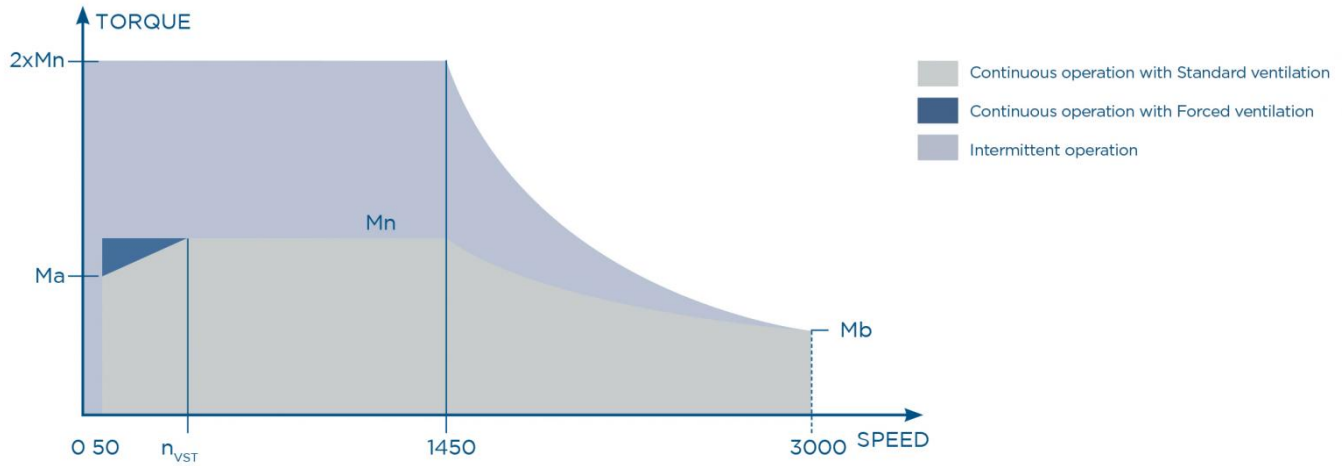
Rated operating speed G1



- P_n** = motor shaft nominal power
- M_n** = continuous nominal torque
- M_a** = continuous torque at minimum speed
- M_b** = continuous torque at maximum speed
- n_n** = rated speed
- n_{min}** = minimum continuous speed
- n_{max}** = maximum continuous speed
- n_{VST}** = forced ventilation speed threshold
- IC411** = STANDARD ventilation
- IC416** = FORCED ventilation
- (1)** With a 400V supply voltage
- (2)** At an ambient temperature of 25 °C and a carrier frequency of 4kHz

Drivon					P _n (kW)	n _n (rpm)	M _n (Nm) (1)	n _{max} (rpm)	M _b (Nm) (1)	n _{min} (rpm)	M _a (Nm) (1)		n _{VST} (rpm) (2)
				IC411							IC416		
DV	340	G1	0025S	TH71B	0,25	950	2,5	2000	1,2	30	1,1	2,5	180
DV	340	G1	0037S	TH80A	0,37	950	3,7	2000	1,8	30	1,6	3,7	180
DV	340	G1	0055S	TH80B	0,55	950	5,5	2000	2,6	30	2,4	5,5	180
DV	340	G1	0075S	TP90S	0,75	950	7,5	2000	3,6	30	3,3	7,5	200
DV	340	G1	0110S	TP100LR	1,1	950	11,1	2000	5,3	30	4,9	11,1	200
DV	340	G1	0150S	TP100L	1,5	950	15,1	2000	7,2	30	6,6	15,1	300
DV	340	G1	0220M	TP112M	2,2	950	22,1	2000	10,5	30	9,7	22,1	350
DV	340	G1	0300M	TP132S	3	950	30,2	2000	14,3	30	13,3	30,2	350
DV	340	G1	0400M	TP132MA	4	950	40,2	2000	19,1	30	17,8	40,2	350
DV	340	G1	0550M	TP132MB	5,5	950	55,5	2000	26,3	30	24,4	55,5	400

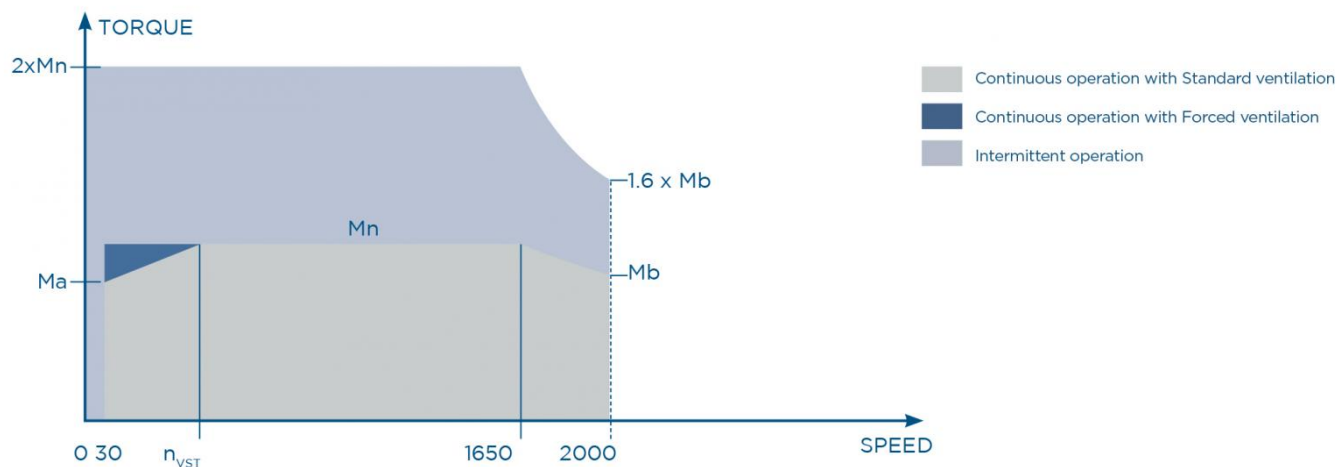
Rated operating speed G2



- P_n** = motor shaft nominal power
- M_n** = continuous nominal torque
- M_a** = continuous torque at minimum speed
- M_b** = continuous torque at maximum speed
- n_n** = rated speed
- n_{min}** = minimum continuous speed
- n_{max}** = maximum continuous speed
- n_{VST}** = forced ventilation speed threshold
- IC411** = STANDARD ventilation
- IC416** = FORCED ventilation
- (1)** With a 400V supply voltage
- (2)** At an ambient temperature of 25 °C and a carrier frequency of 4kHz

Drivon					P _n (kW)	n _n (rpm)	M _n (Nm) (1)	n _{max} (rpm)	M _b (Nm) (1)	n _{min} (rpm)	M _a (Nm) (1)		n _{VST} (rpm) (2)
				IC411							IC416		
DV	340	G2	0025S	TH71A	0,25	1450	1,6	3000	0,7	50	0,7	1,6	250
DV	340	G2	0037S	TH71B	0,37	1450	2,4	3000	1,1	50	1,1	2,4	250
DV	340	G2	0055S	TH80A	0,55	1450	3,6	3000	1,6	50	1,6	3,6	250
DV	340	G2	0075S	TP80B	0,75	1450	4,9	3000	2,1	50	2,2	4,9	250
DV	340	G2	0110S	TP90S	1,1	1450	7,2	3000	3,1	50	3,2	7,2	250
DV	340	G2	0150S	TP90L	1,5	1450	9,9	3000	4,3	50	4,4	9,9	400
DV	340	G2	0220M	TP100LA	2,2	1450	14,5	3000	6,3	50	6,5	14,5	500
DV	340	G2	0300M	TP112MS	3	1450	19,8	3000	8,6	50	8,9	19,8	500
DV	340	G2	0400M	TP112M	4	1450	26,4	3000	11,4	50	11,8	26,4	500
DV	340	G2	0550M	TP132MS	5,5	1450	36,2	3000	15,7	50	16,2	36,2	600

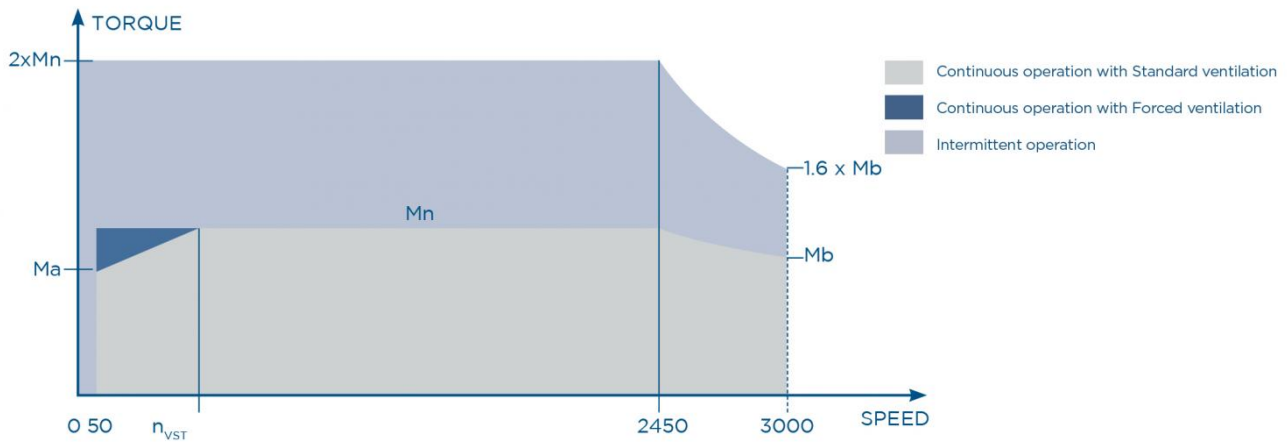
Rated operating speed G3



- P_n** = motor shaft nominal power
- M_n** = continuous nominal torque
- M_a** = continuous torque at minimum speed
- M_b** = continuous torque at maximum speed
- n_n** = rated speed
- n_{min}** = minimum continuous speed
- n_{max}** = maximum continuous speed
- n_{VST}** = forced ventilation speed threshold
- IC411** = STANDARD ventilation
- IC416** = FORCED ventilation
- (1)** With a 400V supply voltage
- (2)** At an ambient temperature of 25 °C and a carrier frequency of 4kHz

Drivon					P _n (kW)	n _n (rpm)	M _n (Nm) (1)	n _{max} (rpm)	M _b (Nm) (1)	n _{min} (rpm)	M _a (Nm) (1)		n _{VST} (rpm) (2)
											IC411	IC416	
DV	340	G3	0043S	TH71B	0,43	1650	2,5	2000	1,8	30	1,1	2,5	180
DV	340	G3	0064S	TH80A	0,64	1650	3,7	2000	2,7	30	1,6	3,7	180
DV	340	G3	0095S	TH80B	0,95	1650	5,5	2000	4,1	30	2,4	5,5	180
DV	340	G3	0130S	TP90S	1,3	1650	7,5	2000	5,6	30	3,3	7,5	200
DV	340	G3	0190M	TP100LR	1,9	1650	11,1	2000	8,2	30	4,9	11,1	200
DV	340	G3	0260M	TP100L	2,6	1650	15,1	2000	11,2	30	6,6	15,1	300
DV	340	G3	0380M	TP112M	3,8	1650	22,1	2000	16,4	30	9,7	22,1	350
DV	340	G3	0520M	TP132S	5,2	1650	30,2	2000	22,4	30	13,3	30,2	350

Rated operating speed G4

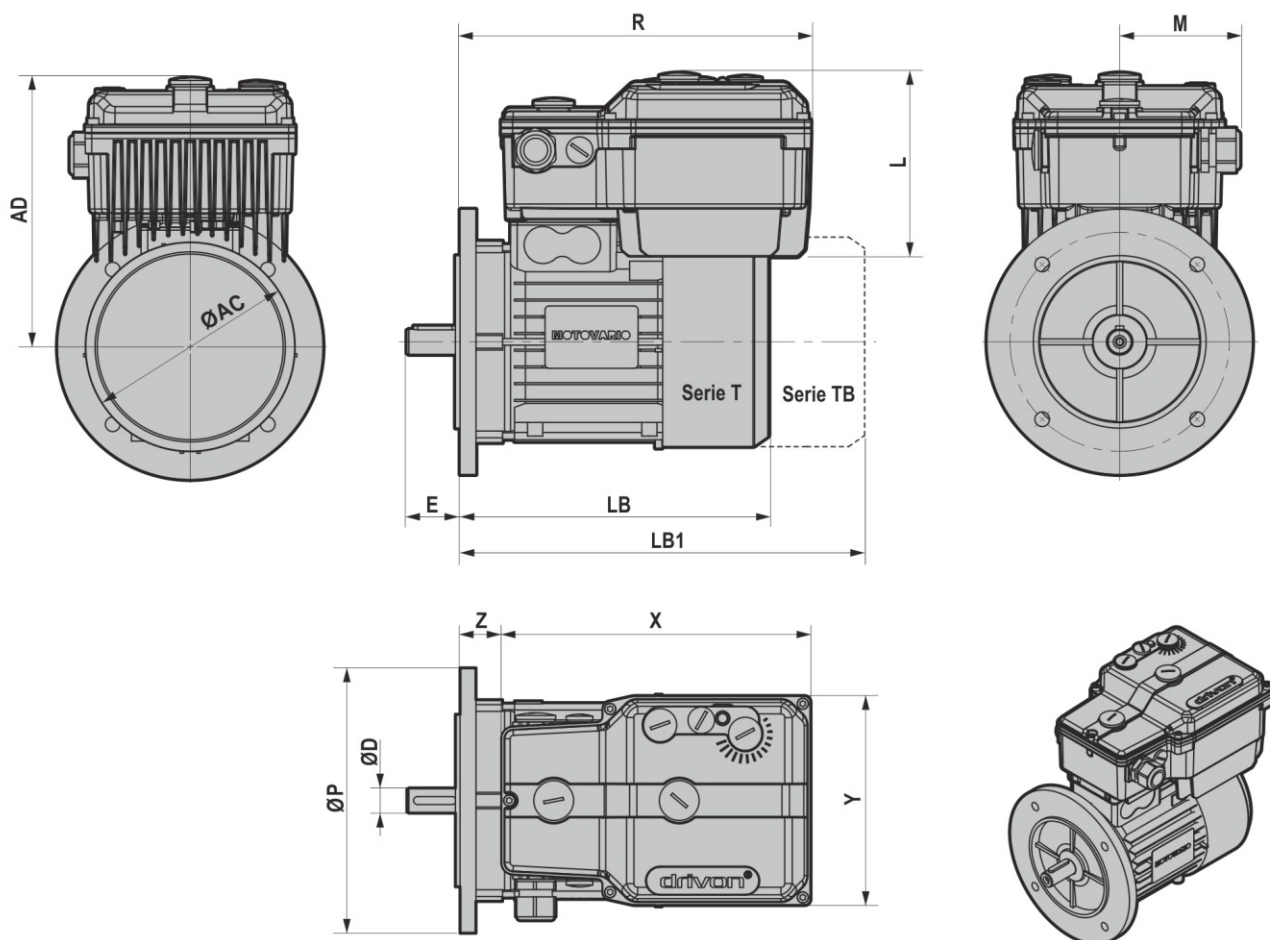


- P_n** = motor shaft nominal power
- M_n** = continuous nominal torque
- M_a** = continuous torque at minimum speed
- M_b** = continuous torque at maximum speed
- n_n** = rated speed
- n_{min}** = minimum continuous speed
- n_{max}** = maximum continuous speed
- n_{VST}** = forced ventilation speed threshold
- IC411** = STANDARD ventilation
- IC416** = FORCED ventilation
- (1)** With a 400V supply voltage
- (2)** At an ambient temperature of 25 °C and a carrier frequency of 4kHz

Drivon					P _n (kW)	n _n (rpm)	M _n (Nm) (1)	n _{max} (rpm)	M _b (Nm) (1)	n _{min} (rpm)	M _a (Nm) (1)		n _{VST} (rpm) (2)
				IC411							IC416		
DV	340	G4	0043S	TH71A	0,43	2450	1,6	3000	1,2	50	0,7	1,6	250
DV	340	G4	0064S	TH71B	0,64	2450	2,4	3000	1,8	50	1,1	2,4	250
DV	340	G4	0095S	TH80A	0,95	2450	3,6	3000	2,6	50	1,6	3,6	250
DV	340	G4	0130S	TP80B	1,3	2450	4,9	3000	3,6	50	2,2	4,9	250
DV	340	G4	0190M	TP90S	1,9	2450	7,2	3000	5,3	50	3,2	7,2	250
DV	340	G4	0260M	TP90L	2,6	2450	9,9	3000	7,3	50	4,4	9,9	400
DV	340	G4	0380M	TP100LA	3,8	2450	14,5	3000	10,7	50	6,5	14,5	500
DV	340	G4	0520M	TP112MS	5,2	2450	19,8	3000	14,6	50	8,9	19,8	500

8.3 DIMENSIONS

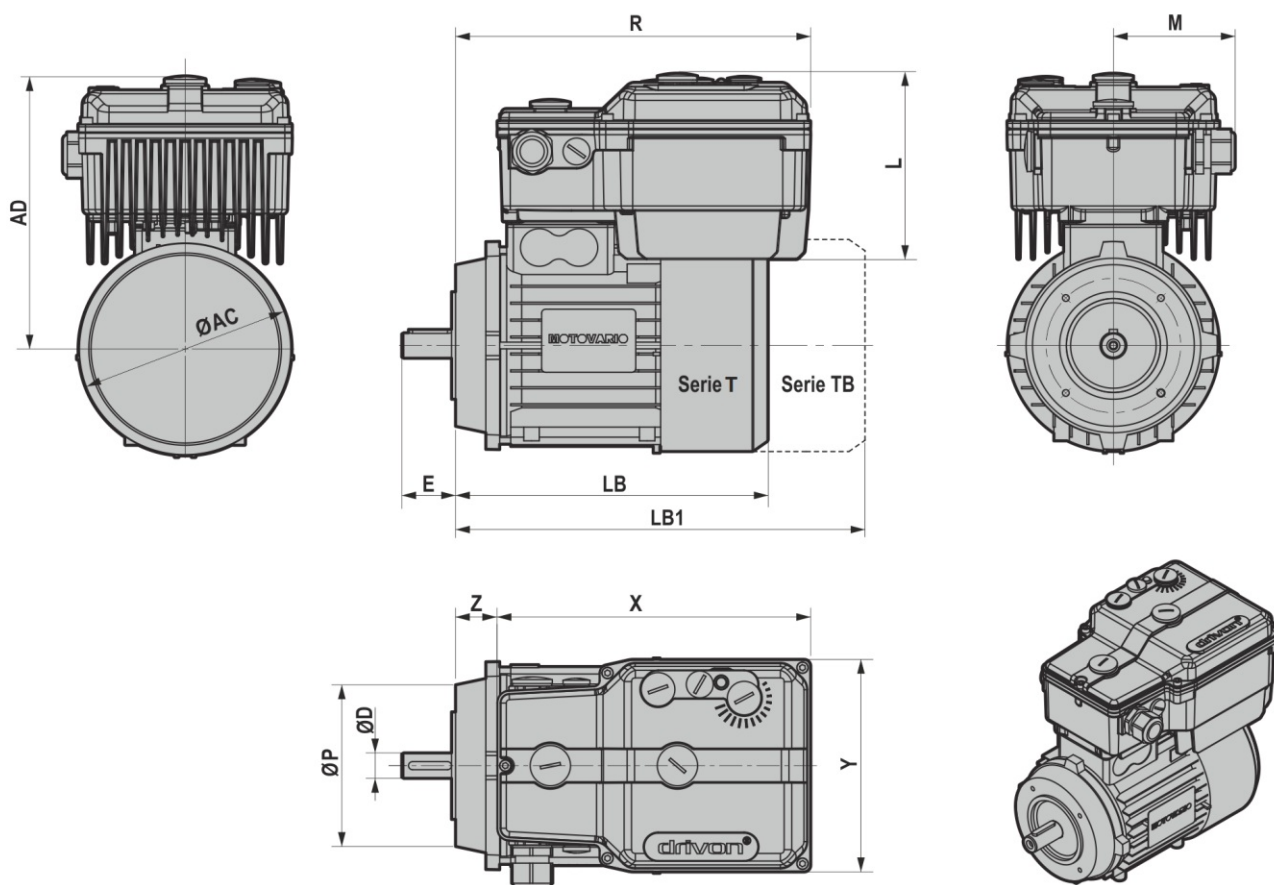
8.3.1 Mounting positions B5



Inverter	Mot.	X	Y	L	M	Z	R	AC	P	D	E	LB	LB1	AD
S	71	233	158	139	91	27	260	139	160	14 j6	30	209	276	200
S	80	233	158	139	91	31	264	158	200	19 j6	40	233	304	209
S	90S	233	158	139	91	42	275	173	200	24 j6	50	248	325	221
S	90L	233	158	139	91	42	275	173	200	24 j6	50	273	350	221
S	100	233	158	139	91	50	283	191	250	28 j6	60	308	390	232
M	90S	258	193	152	102	33	291	173	200	24 j6	50	248	304	215
M	90L	258	193	152	102	33	291	173	200	24 j6	50	273	350	215
M	100	258	193	152	102	41	299	191	250	28 j6	60	308	390	224
M	112	258	193	152	102	44	302	211	250	28 j6	60	323	419	238
M	132S	258	193	152	102	58	316	249	300	38 k6	80	372	462	276
M	132M	258	193	152	102	58	316	249	300	38 k6	80	410	514	276

8.3 DIMENSIONS

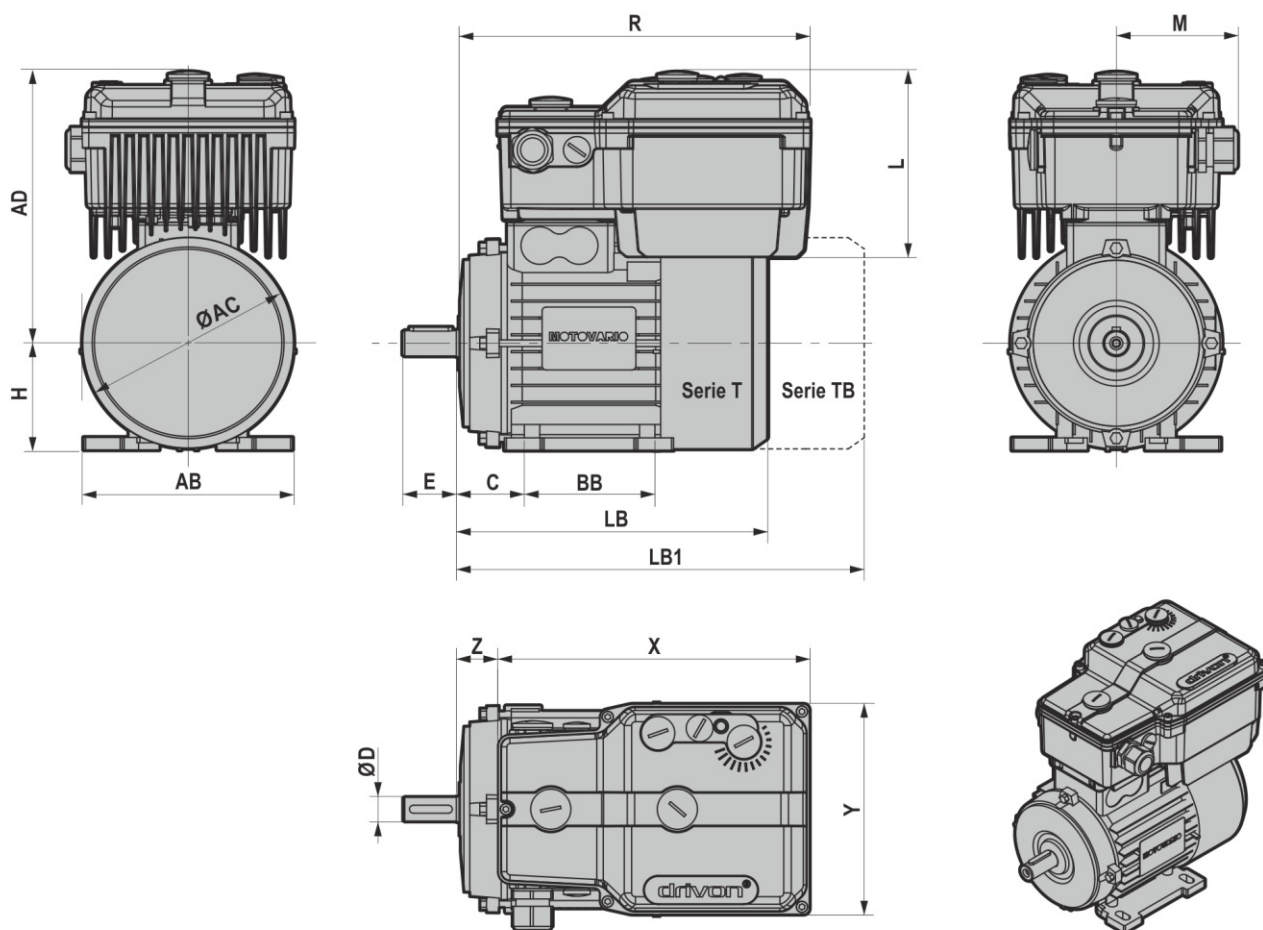
8.3.2 Mounting positions B14



Inverter	Mot.	X	Y	L	M	Z	R	AC	P	D	E	LB	LB1	AD
S	71	233	158	139	91	27	260	139	105	14 j6	30	209	276	200
S	80	233	158	139	91	31	264	158	120	19 j6	40	233	304	209
S	90S	233	158	139	91	42	275	173	140	24 j6	50	248	325	221
S	90L	233	158	139	91	42	275	173	140	24 j6	50	273	350	221
S	100	233	158	139	91	50	283	191	160	28 j6	60	308	390	232
M	90S	258	193	152	102	42	275	173	140	24 j6	50	248	304	215
M	90L	258	193	152	102	42	275	173	140	24 j6	50	273	350	215
M	100	258	193	152	102	41	299	191	160	28 j6	60	308	390	224
M	112	258	193	152	102	44	302	211	160	28 j6	60	323	419	238
M	132S	258	193	152	102	58	316	249	200	38 k6	80	372	462	276
M	132M	258	193	152	102	58	316	249	200	38 k6	80	410	514	276

8.3 DIMENSIONS

8.3.3 Mounting positions B3



Inverter	Mot.	X	Y	L	M	Z	R	AC	D	E	LB	LB1	AD	AB	C	BB	H
S	71	233	158	139	91	27	260	139	14 j6	30	209	276	200	132	44	90	71
S	80	233	158	139	91	31	264	158	19 j6	40	233	304	209	156	49	100	80
S	90S	233	158	139	91	42	275	173	24 j6	50	248	325	221	172	54	100	90
S	90L	233	158	139	91	42	275	173	24 j6	50	273	350	221	172	54	125	90
S	100	233	158	139	91	50	283	191	28 j6	60	308	390	232	192	62	140	100
M	90S	258	193	152	102	33	291	173	24 j6	50	248	304	215	172	54	100	90
M	90L	258	193	152	102	33	291	173	24 j6	50	273	350	215	172	54	125	90
M	100	258	193	152	102	41	299	191	28 j6	60	308	390	224	192	62	140	100
M	112	258	193	152	102	44	302	211	28 j6	60	323	419	238	221	69	140	112
M	132S	258	193	152	102	58	316	249	38 k6	80	372	462	276	260	87	140	132
M	132M	258	193	152	102	58	316	249	38 k6	80	410	514	276	260	87	140	132

8.4 WEIGHTS

DV123		
Mot.	P [kW]	kg
TH71B	0,37	9,2
TH80A	0,55	11,7
TP80B	0,75	15,5
TP90S	1,1	20,9
TP90L	1,5	22,0

DV340		
Mot.	P [kW]	kg
TH71B	0,37	9,3
TH80A	0,55	11,8
TP80B	0,75	15,6
TP90S	1,1	21,0
TP90L	1,5	22,1
TP100LA	2,2	30,4
TP112MS	3	38,4
TP112M	4	38,3
TP132MS	5,5	64,4

Drivon has been designed based on a modular approach so that its standard features can be expanded through appropriate hardware expansions which can be selected upon ordering. All optional accessories, with the exception of the Intelligent Keypad (KP), must be selected when ordering.

Smart keypad (option KP)



The optional keypad KP provides a control and monitoring interface for user to

- Start the inverter motor in both operating directions with two specific buttons.
- Set the inverter motor parameters by using the menus, easily available thanks to the keypad.
- Copy up to 4 different configuration sets and duplicate them infinitely on Drivon motor-inverters requiring the same operating parameters
- Monitoring motor-inverter state and diagnose its operation
- Operate the motor in JOG mode

The keypad can be used in one of the following modes:

1. Temporary remote connection

User quickly connects the keypad to the inverter through the suitable RJ connector accessible on the cover (IP20 degree of protection).

2. Permanent remote connection



User connects the keypad to the inverter through a cable gland (IP55 degree of protection). The keypad is not mechanically fixed to the inverter.

3. Permanent integrated connection



User connects the keypad electrically and mechanically to the inverter (IP66 degree of protection).

I/O expansion module (options IOA, IOB)

The I/O expansion module provides additional digital and analogue interfaces to supplement standard motor-inverter interfaces. These expansions make the following connections available:

- PT100/NTC/PTC temperature sensor input
- No.1 Auxiliary analogue input +/-10V or 4-20mA
- No.1 Digital input with frequency up to 100KHz at 24V
- No.1 24V auxiliary digital output
- No.1 Switching relay digital output (max 250V)
- No.1 0-10V analogue output with 500Hz maximum band

The same module comes in two versions - IOA and IOB - with different electric connections to the outside environment:

- IOA: version with cable gland
- IOB: version with two M12 A-code connectors (male connector for Input signals, female connector for Output signals)

Potentiometer and mode selector (option PS)

This supplementary module provides the user with an external Potentiometer and an external Direction Selector (IP66 degree of protection) for manual start and speed selection control.

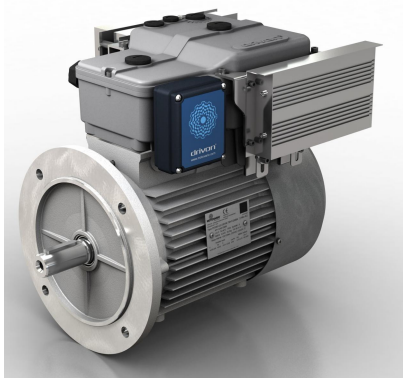
- Single-turn rotary potentiometer for frequency selection 0....fmax (Hz)
- Three-position direction selector FWD/STOP/REV

Minimum and maximum frequencies, as well as acceleration and deceleration ramps are factory presets. User may make changes to these presets from the KP keypad or via the USB connection to the PC using the Motovario BSi software tool.

Electro-mechanical braking module (option EMB)

The electro-mechanical braking module implements the Operation and Control feature for a self-braking motor equipped with DC brake. This module independently activates and deactivates the brake in perfect sync with motor behaviour through flexible (user-selectable) parameter setting for response timing and speeds. It is available for all Drivon power supply options (1ph230V and 3ph400V). The inverter independently provides the brake coil with the appropriate power supply. User need not carry out any assembly or wiring connections as they are done at the factory.

This option must be requested upon ordering.

Dynamic braking module (chopper) (option BC)

Drivon has a four-segment operating principle. This means it can control the motor even when it is acting as a generator under braking and, generally speaking, when mechanical loading causes the motor to run faster than command speed. Option BC dissipates regenerated energy from the motor to an additional resistor enabling Drivon to brake the load with a power equal to nominal motor power. It consists of a resistive element and an electronic control element, both fixed to the side of the inverter. On self-braking motors, the BC module doubles as EMB module.

Profibus communication module DPV1 (option PDP)

This optional module enables the communication through standard Profibus DPV1 field bus. This module makes it possible to assign a network address through on-board manual rotary selector switches. In addition, the user can activate a termination resistor through jumpers as required. Two M12 B-code connectors (a male and female connector) are provided on the outside of the module for Line connection to field network.

Ethercat communication module (option ETC)

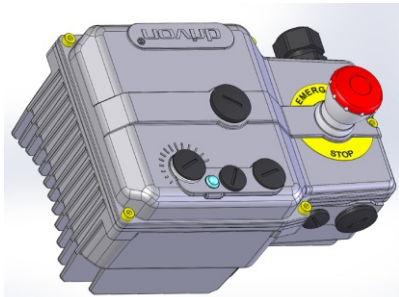
This optional module implements hardware and software interfaces for Real-Time-Ethernet networks over Ethercat profile. Two M12 D-code a female connectors are provided on the outside of the module for Line connection to field network.

Profinet communication module (option PNT)

This optional module implements hardware and software interfaces for Real-Time-Ethernet networks over Profinet profile. Two M12 D-code a female connectors are provided on the outside of the module for Line connection to field network.

Ethernet IP communication module (option ETN)

This optional module implements hardware and software interfaces for Real-Time-Ethernet networks over Ethernet IP profile. Two M12 D-code a female connectors are provided on the outside of the module for Line connection to field network.

Emergency stop button (option FEM)

This option consists in an external emergency stop button that activates the Drivon's STO function. Pressing the button cuts power to the motor in full safety in accordance with EN ISO 13849-1 and EN61508, whereas the inverter remains powered.

ATTENTION!

The revised data and information, shown in this technical catalogue, replaces the data of the previous editions. Old data is now obsolete. All technical data, dimensions, weights in this catalogue are subject to changes without warning. Illustrations are not binding. You can find the above mentioned data and information on our site www.motovario.com; please periodically consult the technical documentation on the web site to be always updated about possible modifications of performances and characteristics of the product.

All supplies effected by MOTOVARIO are governed exclusively by the general terms of sale that you can find on our website:

<http://www.motovario.com/eng/corporate/sales-conditions>

ATTENTION: Supply information

This catalogue refers to the DRIVON inverter motor, comprising an electric motor and an inverter, both supplied by Motovario. The combination of the single inverter to any electric motor manufactured by other companies does not guarantee the performance values indicated in this catalogue and consequently it does not fall under the Warranty Conditions of Motovario S.p.A.

