

STEPLESS MOTORS & DRIVES



SYSTEMS & SOLUTIONS FOR MOTION CONTROL



CMZ engineers and manufactures electronic systems for industrial motion control.

The company targets to OEMs and systems integrators for the co-development of automatic machines featuring a deep level of customization in multi axis motion. The result: high performing machines with unique, special features.

Established in 1976 focusing on controllers, today CMZ offers a complete portfolio of solutions including the systems design, the electronics programming, the development of ready-to-use application libraries and ad-hoc softwares, alongside a wide selection of master controllers IEC61131 up to 99 axis, integrated and stand-alone drives, brushless and stepper motors up to 120 Nm strictly compact and Made in Italy, peripherals and I/O modules both digital and analogic, integrated vision systems based on machine learning technology, HMI operator panels.

CMZ's high technological and safety standing is based on its team of 70 technicians and engineers. The systems realized to date in its plant count over 125,000 units.

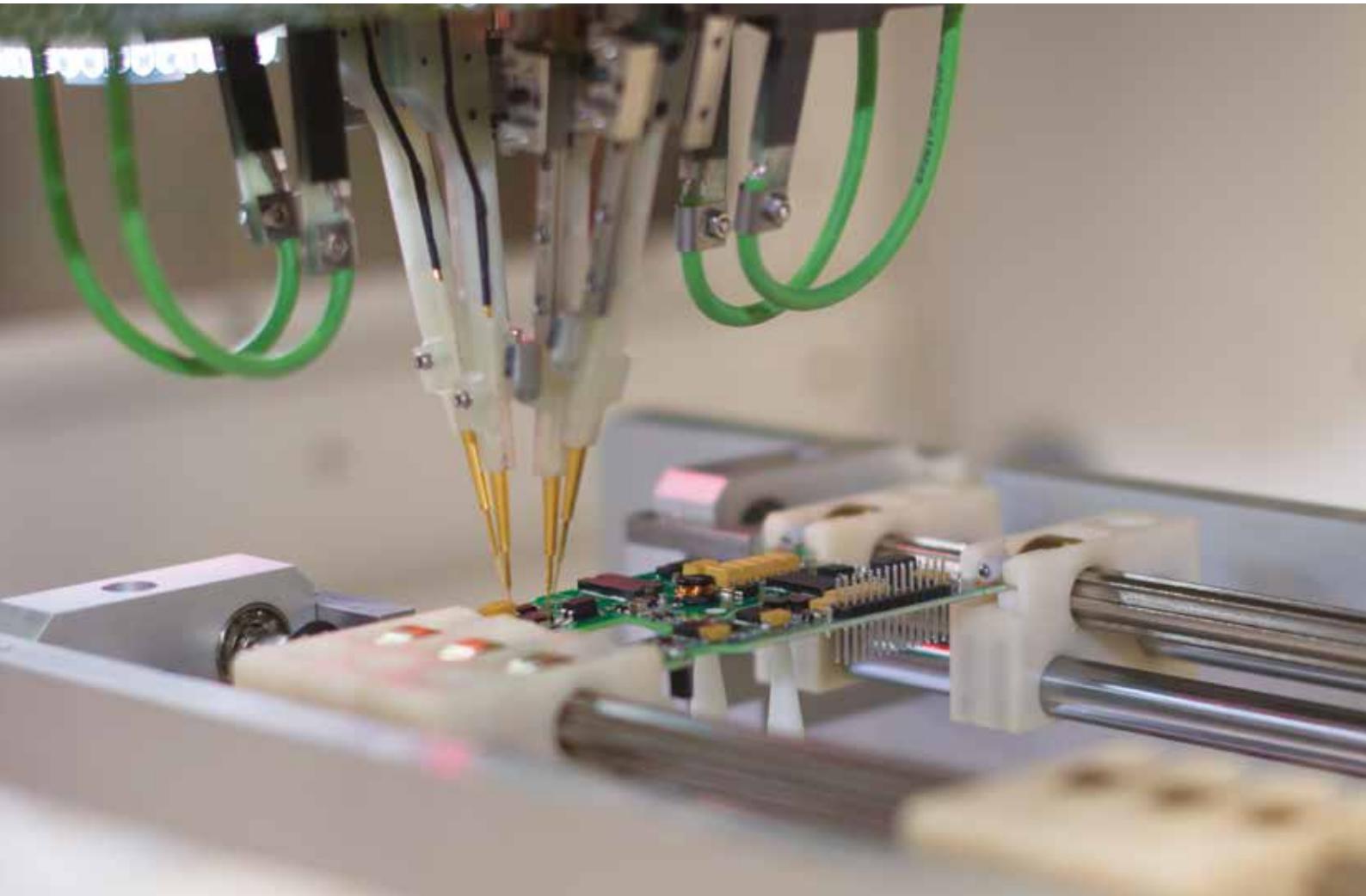
CMZ is part of SOGA ENERGY TEAM industrial group operating in energy, motion and control since 1966.

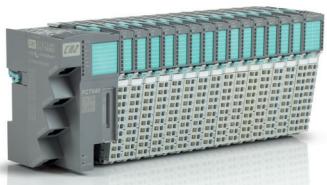
CMZ sviluppa e realizza sistemi elettronici e soluzioni per il motion control industriale.

L'azienda si rivolge a OEMs e system integrators per la co-progettazione di macchine automatiche dotate di funzionalità personalizzate e speciali nella movimentazione degli assi. Il risultato: macchine ad alta performance e dalle caratteristiche uniche.

Fondata nel 1976 con focus sui controllori, oggi CMZ offre un portfolio integrale di soluzioni che include la progettazione dei sistemi, la programmazione dell'elettronica, lo sviluppo di librerie applicative ready-to-use e pacchetti software ad-hoc, affiancati a un'ampia scelta di controllori IEC 61131 programmabili fino a 99 assi, azionamenti integrati e stand-alone, motori brushless e passo-passo fino a 120 Nm rigorosamente compatti e Made in Italy, periferiche e moduli I/O digitali e analogici, sistemi di visione integrata con tecnologia machine learning, pannelli operatore HMI.

L'elevato standing tecnologico e di sicurezza di CMZ si basa su un team di 70 tecnici e ingegneri. I sistemi realizzati fino ad oggi nel sito produttivo dell'azienda sono oltre 125.000. CMZ fa parte del gruppo industriale SOGA ENERGY TEAM, attivo dal 1966 a livello internazionale nei settori power generation, motion e control.





Master controllers

FCT640 modular basis, 04, 08, 16, >16 axes
FCT200 8 axes motion controller
FCT300 99 axes motion controller



Brushless motors & drives

LBD Brushless Drive 230-400V
EASY Brushless Drive 230V
IBD Integrated Brushless Drive
NBD Drive for brushless and linear motors
MMB Brushless motors stand alone



Stepless motors & drives

ISD Integrated Stepless Drive
SVM Stepless drive
MM Stepless motors



Peripherals

CANopen & EtherCAT modules
I/O modules



HMI

PT2 Touch screen operator panels



Custom Products

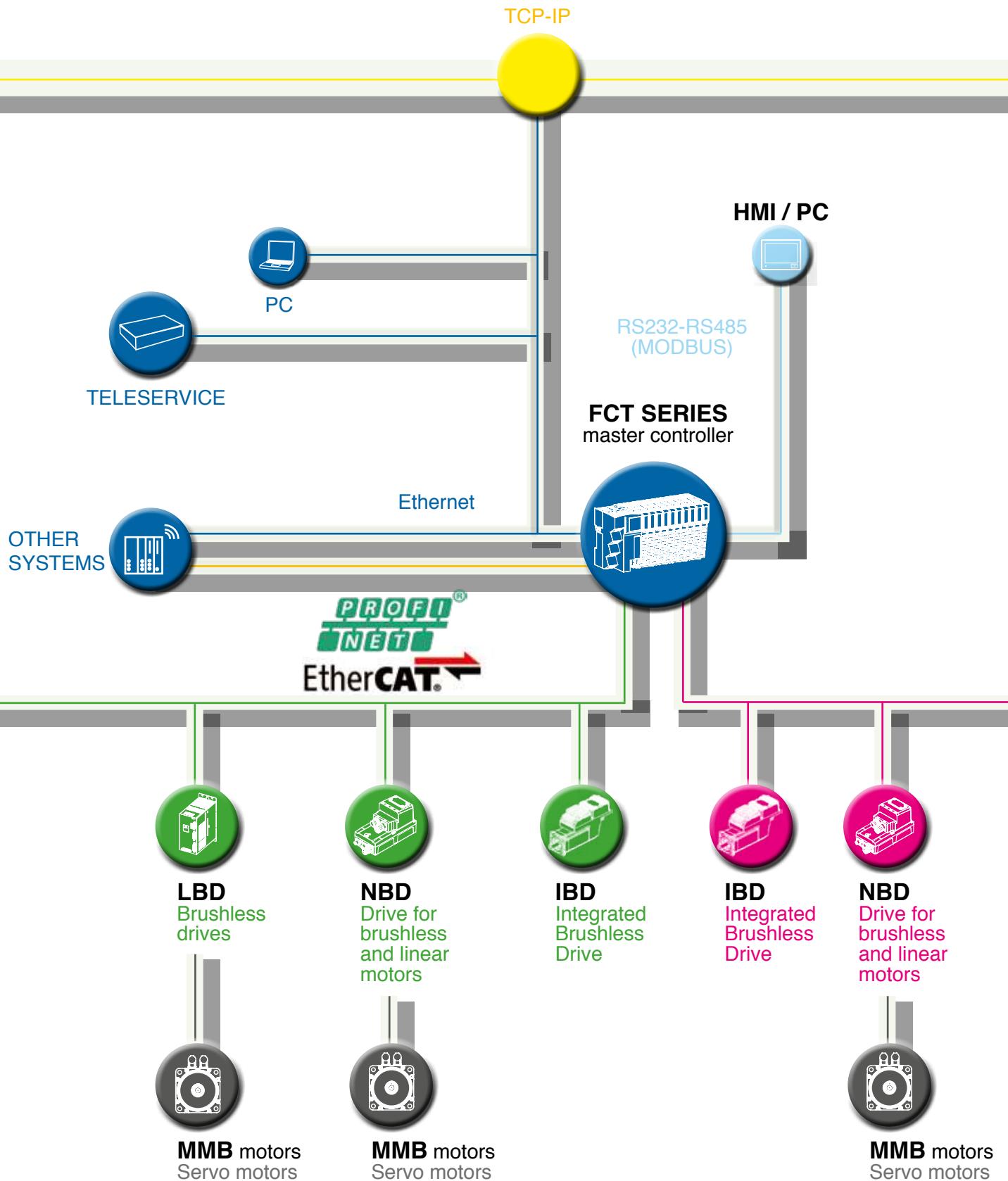
Design and engineering service upon customer's specifications



Solutions

Solution for OEMS
New Integrated Vision

RANGE OF PRODUCTS GAMMA PRODOTTI



Global solution

Soluzione Globale

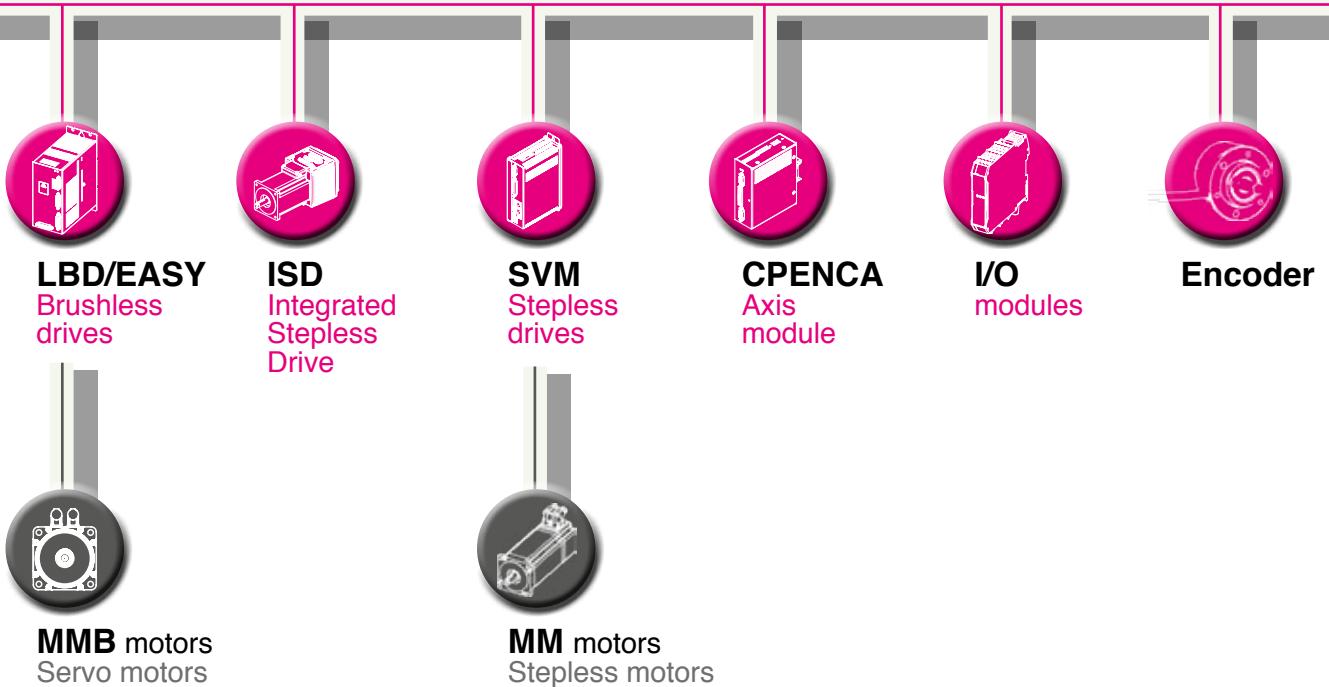
The global solution for automation proposed by CMZ is based on a complete range of products suitable for the total realization of a machine from the point of view of "automation and drive" with particular attention to the flexibility of the solutions and the utilization of the most important fieldbuses.

Starting from motion control as a core component, the proposal is developed towards the fieldbus, with a wide range of motors and drives and input/output devices, and towards the user thanks to the proposal of our panels. 30 years of experience is consolidated in many diverse sectors as a guarantee of best results.

La soluzione globale per l'automazione proposta da CMZ si basa su una gamma completa di prodotti atti alla realizzazione totale di una macchina dal punto di vista dell' "automation and drive" con particolare attenzione alla flessibilità delle soluzioni e all'uso dei più importanti bus di campo.

A partire dal motion control, come componente centrale, la proposta si sviluppa verso il bus di campo, con un'ampia gamma di motori e azionamenti e dispositivi di input/output, e verso l'utilizzatore grazie alla proposta di pannelli. L'esperienza di 30 anni di CMZ è consolidata in molti settori e si aggiunge come garanzia di ottimi risultati.

CANopen



SD

Stepless
motors & drives

SD

Stepless is the term used to identify the CMZ closed loop control of a stepper motor. This technology allows you to control the stepper motor with modulated current, eliminating the problem of the loss of the step and reducing the temperature of the motor. Considering that stepless solution provides higher torque at low speed (for the same size of the motor) with respect to the brushless solution, it makes stepless servo motor very suitable for particular applications at low speeds. The stepless solution is available as a stand-alone version composed by SVM, stepless servo drive, and by MM series, "motor encoder box", or as integrated version SISD/ISD, both with the fieldbus CANopen, PROFIBUS, serial RS485 with MODBUS protocol or controlled in Step & Dir. The fieldbus CANopen DS402 allows SISD/ISD and SVM to be used with the controllers of FCT family and with different controllers, especially with controllers that use the environment CODESYS 3.5 (with Softmotion).

Stepless è il termine con cui CMZ identifica il controllo in catena chiusa di un motore stepper. Questa tecnologia permette di controllare il motore passo passo con corrente modulata, eliminando la problematica della perdita del passo e riducendo in modo importante la temperatura del motore. Considerando che soluzione stepless offre coppie superiori a bassi giri (a parità di dimensione del motore) rispetto alla soluzione brushless, ciò rende gli stepless servo motor molto adatti in particolari applicazioni a basse velocità. La soluzione stepless è disponibile nella versione stand alone composta dal servo drive SVM e dai "motor encoder box" della serie MM o nella versione integrata SISD/ISD, entrambi con i bus di campo CANopen, PROFIBUS, serie RS485 con protocollo MODBUS o comandabili in Step&Dir. Il bus di campo CANOpen con il profilo DS402 permette al SISD/ISD e all'SVM di essere utilizzati sia con i controllori della serie FCT sia con controllori diversi e soprattutto con controllori che usano l'ambiente CODESYS 3.5 con Softmotion.

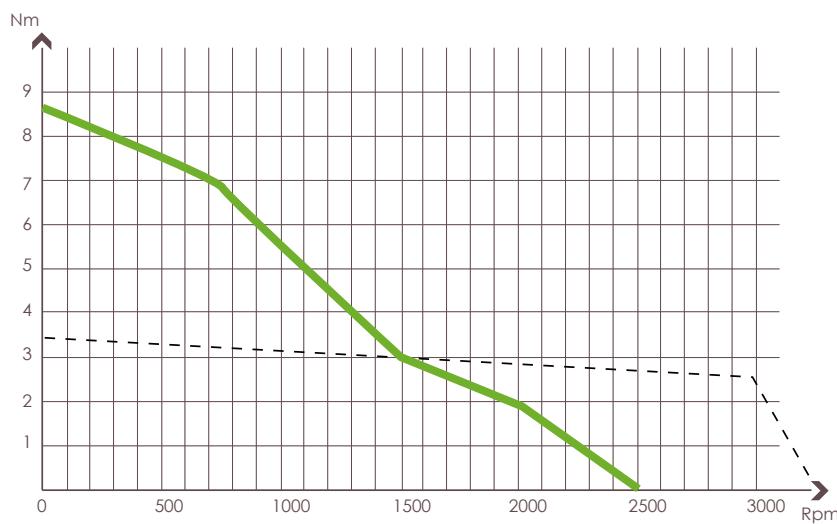


- STEPLESS CONTROL

THE NEW GENERATION OF SERVODRIVE

- TORQUE CURVE COMPARISON: STEPLESS VERSUS BRUSHLESS

The ambition to move the limits



Torque curves considering S1 duty cycle

Stepless motor —————

Stall torque 8,7Nm - 8A/phase - 120V

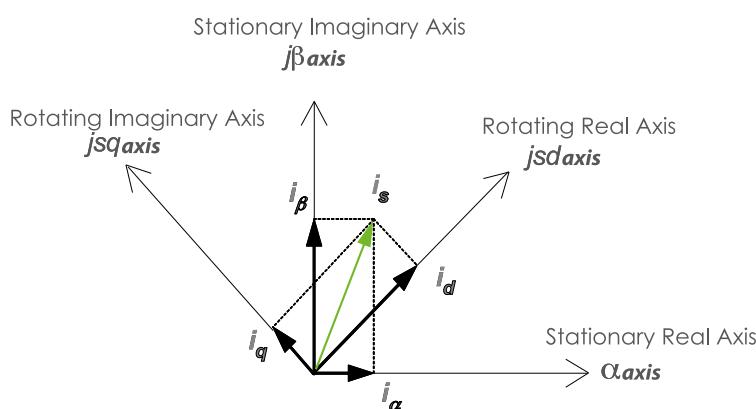
Overall dimensions: square flange 86mm, lenght 173mm

Brushless motor - - - - -

Stall torque 3,4Nm - 2,3A/phase - 400V

Overall dimensions: square flange 91mm, lenght 177mm

- VECTOR CONTROL CURRENT MODULATION



- > Minimum speed and torque ripple
- > Low vibration
- > Low noise
- > High torque density
- > Low power consumption
- > High stiffness

• INTEGRATED STEPLESS DRIVE

HARDWARE FEATURES

Power supply

65-130Vdc [Nominal 120Vdc]

Control supply

20-130Vdc [Nominal 120Vdc]

Current

Maximum current internally set
(depends on motor)

Feedback

Incremental encoder

Multiturn absolute encoder

Encoder output

Incremental encoder output (only APD version)

Digital input

N. 3 optoisolated PNP digital inputs

N. 2 differential (+24V or +5V/Line driver) digital inputs
(used as general purpose, encoder input or step-dir input).

Analog input

1 Analogue IN +/-10V

Digital output

2 optoisolated PNP digital outputs 24Vdc max 200mA,
(external 24Vdc required)

Digital bidirectional I/O

2 bidirectional optoisolated PNP digital IN/OUT

Interface

Profibus-DP slave

CANopen

RS232/485 (ModBus)

Available versions

Profibus-DP

CANopen (DS402),

ModBus RS485,

Step/dir, ±10V with encoder output

Certifications: CE



FUNCTIONAL FEATURES

Integrated movement features:

device profile DS402, interpolated mode, positioning, extended gearing function, homing, capture

Stand alone programmability

according to the standard IEC61131, ST language

Capture input

PC parametrization tool

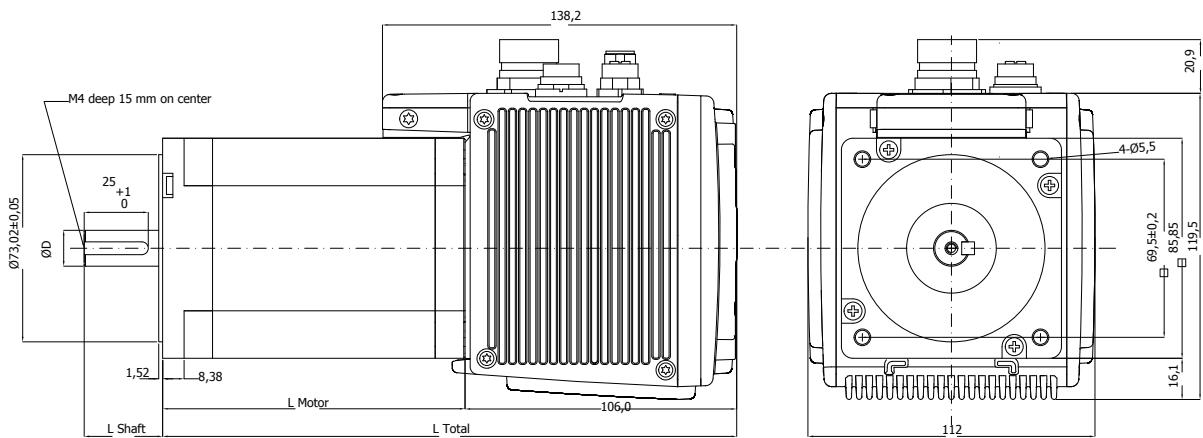


canopen

ISD

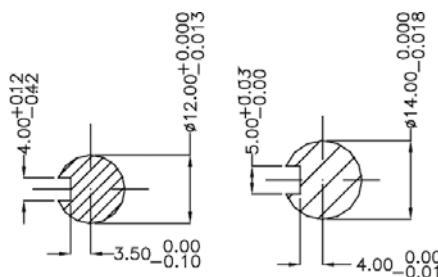
Stepless motors & drives

- OVERALL DIMENSIONS



Drive	Holding torque (Nm)	Length (mm)		Shaft		Shaft section
		L motor	L total	L Shaft	D Diameter	
ISD 1281	4,6	80	186	30,6	12	Type 0 Keyed shaft
ISD 1271	8,7	118	224	30,6	12 or 14	Type 0 or 3 Keyed shaft
ISD 1261	12	156	262	30,6	14	Type 3 Keyed shaft

TYPE 0 TYPE 3

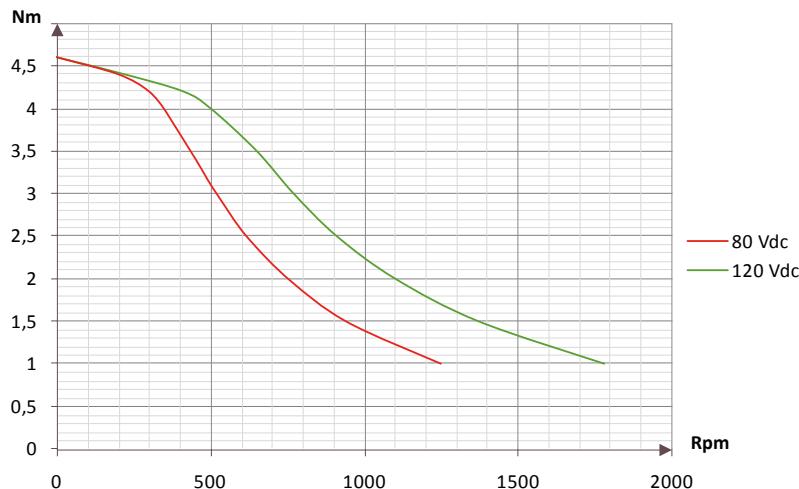


• SHAFT SECTION TYPES

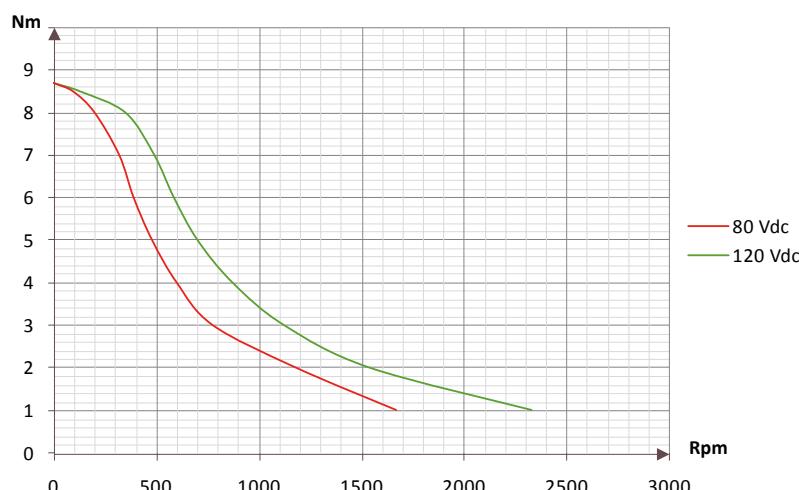
• TECHNICAL FEATURES

Drive	Holding torque (Nm)	Phase Current (A)	Rotor Inertia (gcm²)	Phase inductance (mH)	Weight (kg)
ISD 1281	4,6	5,5	1400	4,0	3,3
ISD 1271	8,7	8,0	2700	2,9	5,1
ISD 1261	12	9,9	4000	2,9	6,6

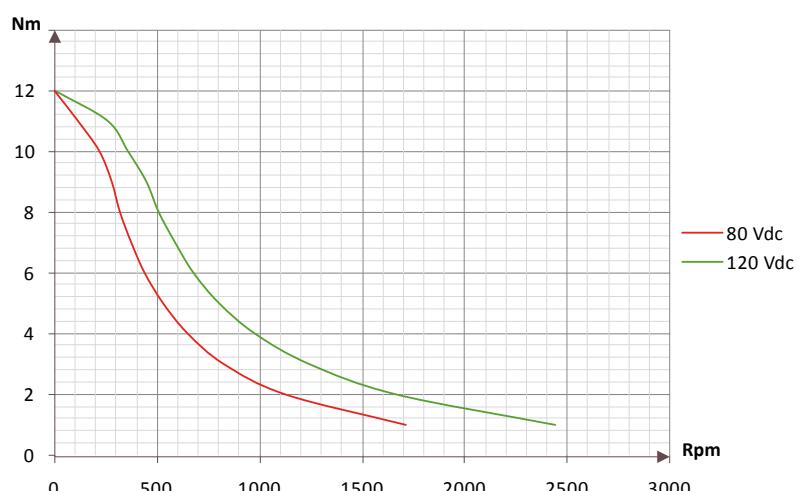
- TORQUE CURVES



ISD 1281 - 4,6 Nm



ISD 1271 - 8,7Nm



ISD 1261 - 12Nm

ISD

Ordering codes

- ISD

Ordering codes with optionals:								ISD12xy/a.bcde
Type	Holding torque	Encoder	Com. (a)	Conn. (b)	Shaft type (c)	Option (d)	Customiz (e)	
12=120V	x	y	a	b	c	d	e	
y	8					0		
a	7					0 or 3		
b	6					3		

E.G. ISD1271/CAN.100							
ISD12	7	1/	CAN	1	3	1	0
12V	8,7 Nm	Incremental encoder	Can interface	n.3 DSUB + n.1 power supply	14 mm keyed shaf	New mechanics	Circular power connector 4 poles

Options		
x	8	4,6 Nm
	7	8,7 Nm
	6	12 Nm
y	1	Incremental encoder 2000 pulse/turn
	3	Multiturn absolute encoder 2048 pulse/turn - 4096 turns
a	CAN	CAN Communication
	APD	Analog Pulse Direction
	SER	RS485 Communication
	PRO	PROFIBUS Communication
b	1	n.3 DSUB connectors + n.1 power supply 3 poles (ONLY FOR CAN, APD)
	2	n.4 circular connectors IP67 (ONLY FOR CAN, SER)
	3	n.3 DSUB connectors + n.1 power supply 4 poles (FOR CAN, SER, PRO, APD)
c (see the available options above)	0	Shaft diameter: 12 mm keyed shaft (ONLY FOR ISD1281 e ISD1271)
	3	Shaft diameter: 14 mm keyed shaft (ONLY FOR ISD1261 e ISD1271)
d	0	Old mechanics (no more available)
	1	Standard mechanics
e	0	Circular power connector 4 poles
	1	Square power connector 3 poles
	-	Custom execution

- SMART SERVODRIVE FOR 2 PHASES SYNCHRONOUS MOTOR

HARDWARE FEATURES

Power supply

65-180Vdc [Nominal 160Vdc]

Control supply

20-180Vdc

Rated current

4Arms @40°C (8,5Arms with external ventilation)

Peak current

12Arms

Feedback

Incremental encoder, multiturn absolute encoder

Encoder output

Incremental line driver (differential output)

Digital input

7 configurable 24Vdc PNP optoisolated (e.g.: limit switch +/-, index, captures or general purpose)

Special digital input

2 configurable 24Vdc PNP or line driver optoisolated: settable as master encoder or step/dir or general purpose

Analog input

1 Analogue IN +/-10V

Digital output

4 optoisolated PNP digital outputs 24Vdc max 200mA

n. 1 24Vdc max 1,4A

for motor brake control or general purpose
(external power device required)

Interface

Profibus-DP slave

CANopen RS232/485 (ModBus) step/dir,
+/-10V with encoder output

CAN Speed/address selection

by switches or software settable

Available versions

Profibus-DP, CANopen, ModBus RS485, Step/dir, ±10V

Dimensions (mm)

W51xH196xD125

Weight (Kg) 0.8

Certifications: CE

• SVM ORDERING CODES

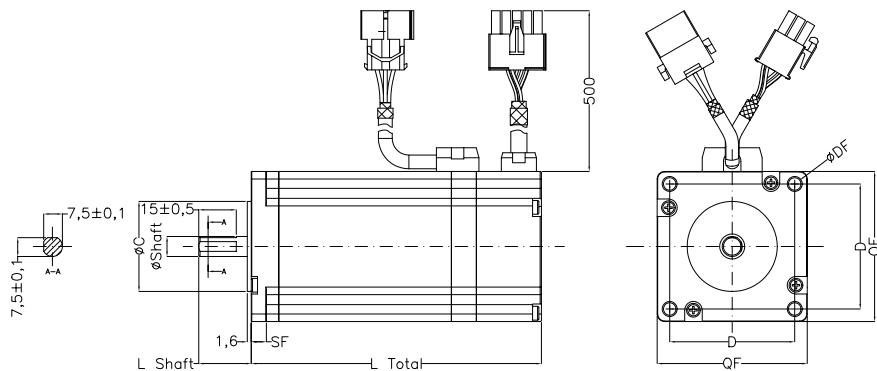
SVM1608/a.bcd

Type	Power supply	Rated current	Interface (a)	Reserved thermal sensor (b)	Reserved (c)		Reserved (d)	
SVM	16 (160V)	08 (8,5Arms)	CAN	1	0 without conformal coating	1 with conformal coating	0 version CAN/SER	1 version PROFIBUS
SVM	16 (160V)	08 (8,5Arms)	SER (RS485)					
SVM	16 (160V)	08 (8,5Arms)	PRO (Profibus)					

- OVERALL DIMENSIONS

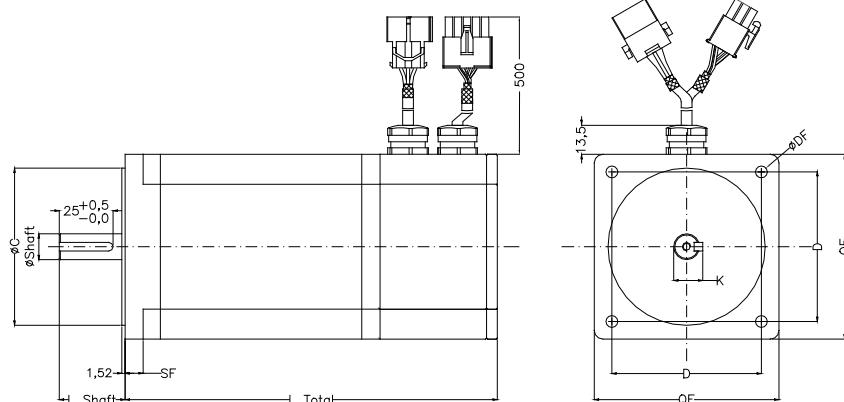
Motor type	Stall torque (Nm)	L total Length (mm)	QF Flange (mm)	C Centering (mm)	SF Thikness flange (mm)	D Holes distances (mm)	DF Fixing holes (mm)	Ø Shaft (mm)	K (mm)	L Shaft (mm)	Weight (kg)
MM609442	2,8	116	60	36,05	6,00	50,2	4-Ø5,5	8	-	21,0	1,5
MM868055	4,6	135	86	73,02	8,38	69,5	4-Ø5,5	12	13,5	30,6	2,8
MM8611880	8,7	173	86	73,02	8,38	69,5	4-Ø5,5	12/14	16,0	30,6	4,3
MM8615699	12	211	86	73,02	8,38	69,5	4-Ø5,5	14	16,0	30,6	5,8
MM11015065	21	205	110	55,52	12,5	89,00	4-Ø8,5	19	21,5	55,37	9

- OVERALL DIMENSIONS FLANGE 60

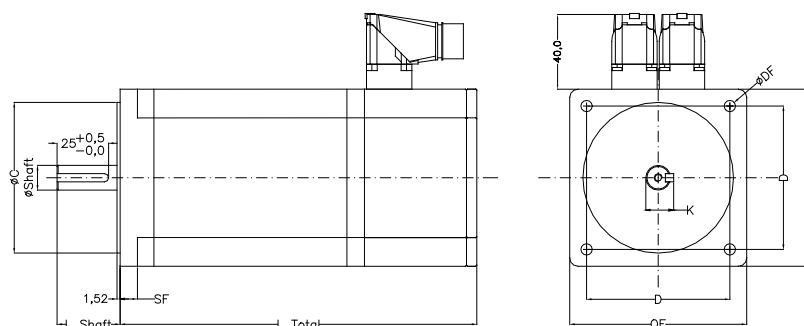


• AMP CONNECTORS

- OVERALL DIMENSIONS FLANGE 86 - 110

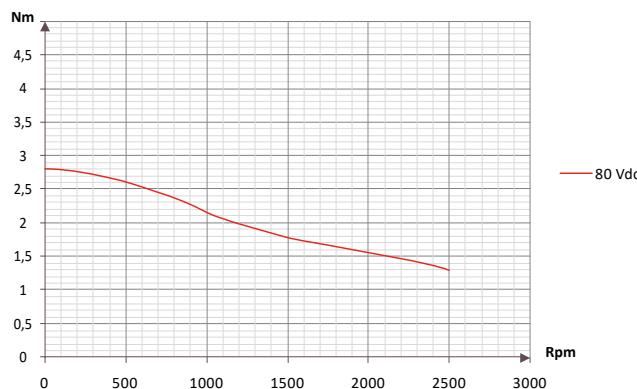


• AMP CONNECTORS

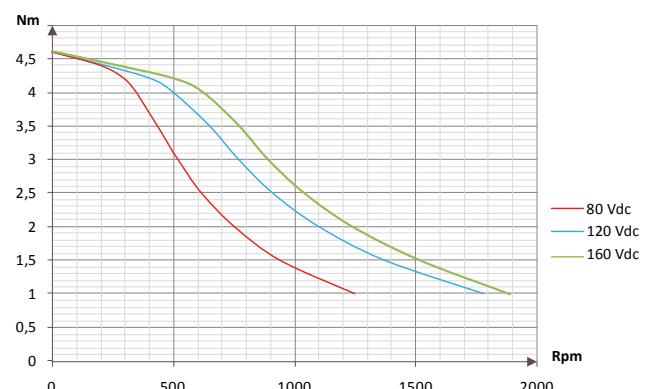


• CIRCULAR CONNECTORS

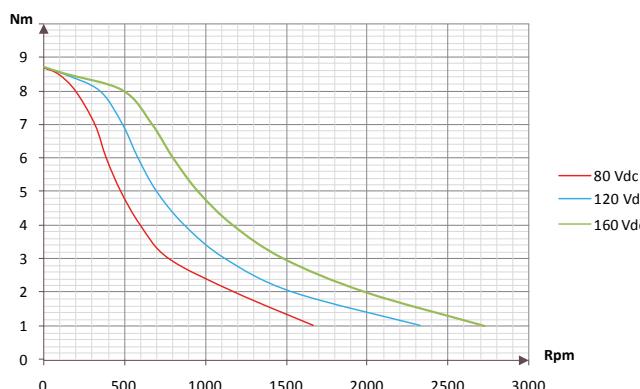
- TORQUE CURVES



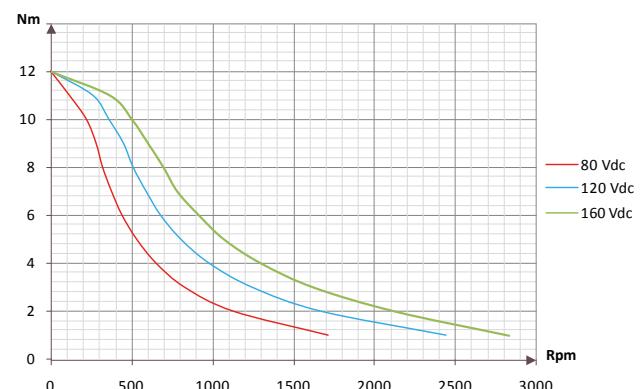
SVM - MM609442 - 2,8 Nm



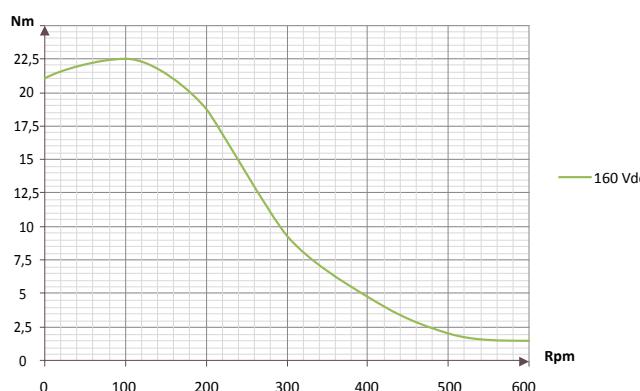
SVM - MM868055 - 4,6 Nm



SVM - MM8611880 - 8,7 Nm



SVM - MM8615699 - 12Nm



SVM - MM11015065 - 21Nm

MM

Ordering Codes

- MM

Ordering codes with Optionals:									
	x			a	b	c	d		
	MM	60	9442	.	3	6	1	0	
x	MM	60	9442		Holding torque 2,8 Nm	<input type="checkbox"/> FL60 mm	780 gcm	Ø 8mm Inc enc 1000 pulse/turn	
	MM	86	8055		Holding torque 4,6 Nm	<input type="checkbox"/> FL86 mm	1400 gcm	Ø 12mm Inc enc 2000 pulse/turn	
	MM	86	11880		Holding torque 8,7 Nm	<input type="checkbox"/> FL86 mm	2700 gcm	Ø 12 or 14mm Inc enc 2000 pulse/turn	
	MM	86	15699		Holding torque 12 Nm	<input type="checkbox"/> FL86 mm	4000 gcm	Ø 14mm Inc enc 2000 pulse/turn	
	MM	110	15065		Holding torque 21 Nm *	<input type="checkbox"/> FL110 mm	10900 gcm	Ø 19mm Inc enc 2000 pulse/turn	
a	0				Shaft Diameter: 12 mm Keyed shaft (ONLY FOR 4,6 Nm and 8,7Nm)				
	1				Shaft Diameter: 14 mm Keyed shaft (ONLY FOR 8,7 Nm and 12Nm)				
	2				Shaft Diameter: 19 mm Keyed shaft (ONLY FOR 21Nm)				
	3				Shaft Diameter: 8 mm Keyed shaft (ONLY FOR 2,8 Nm)				
b	0				Incremental encoder 2000 pulse/turn (ONLY FOR MM86 and MM110)				
	3				Incremental encoder 2000 pulse/turn + Thermal sensor (ONLY FOR MM86 and MM110)				
	6				Incremental encoder 1000 pulse/turn (ONLY FOR MM60)				
c	1				AMP connectors with cable output 50cm				
	2				Circolar connector output 90°				
d	0				IP44				

* Usable only up to the speed of 500 rpm

Ordering Codes

• CABLES

Type	Description	Lenght (mt)
Cable with connector motor side and drive side for fixed installation		
CSMP.IIPS.PF6S.A.0500	Motor cable for motors cover box with AMP 6 poles	5
CSMP.IIPS.PF6S.A.0300	Motor cable for motors cover box with AMP 6 poles	3
CSEI.DMCS.PF9S.A.0500	Encoder cable for motors cover box with AMP 15 poles	5
CSEI.DMCS.PF9S.A.0300	Encoder cable for motors cover box with AMP 15 poles	3
CSMP.IIPS.CFCS.A.0500	Motor cable for motors cover box circular connector 7 poles	5
CSMP.IIPS.CFCS.A.0300	Motor cable for motors cover box circular connector 7 poles	3
CSEI.DMCS.CFCS.A.0500	Encoder cable for motors cover box circular connector 12 poles	5
CSEI.DMCS.CFCS.A.0300	Encoder cable for motors cover box circular connector 12 poles	3
CSIT.DMCS.CFCS.C.0500	Encoder cable for motor cover box with temperature sensor circular connector 12 poles	5
CSIT.DMCS.CFCS.C.0300	Encoder cable for motor cover box with temperature sensor circular connector 12 poles	3
Cable with connector motor side and drive side for flexing installation		
CSMP.IIPS.CFCS.B.0500	Motor cable for motors cover box circular connector 7 poles	5
CSMP.IIPS.CFCS.B.0300	Motor cable for motors cover box circular connector 7 poles	3
CSEI.DMCS.CFCS.C.0500	Encoder cable for motors cover box circular connector 12 poles	5
CSEI.DMCS.CFCS.C.0300	Encoder cable for motors cover box circular connector 12 poles	3
CSIT.DMCS.CFCS.D.0500	Encoder cable for motor cover box with temperature sensor circular connector 12 poles	5
CSIT.DMCS.CFCS.D.0300	Encoder cable for motor cover box with temperature sensor circular connector 12 poles	3

• POWER SUPPLY

Ordering codes with optional : SDPOW0.xxx

Auxiliary output 24Vdc 150mA

SDPOW0.201	Power supply AC/DC 80Vdc-120Vdc
SDPOW0.211	Power supply AC/DC 80Vdc-120Vdc + DIN guide

Ordering code with optional : SDPOWR.xx

Auxiliary output up to 50Vdc 1A

SDPOWR.00	Power Supply AC/DC 80Vdc-170Vdc
SDPOWR.10	Power Supply AC/DC 80Vdc-170Vdc+START UP circuit - It is necessary with ISD

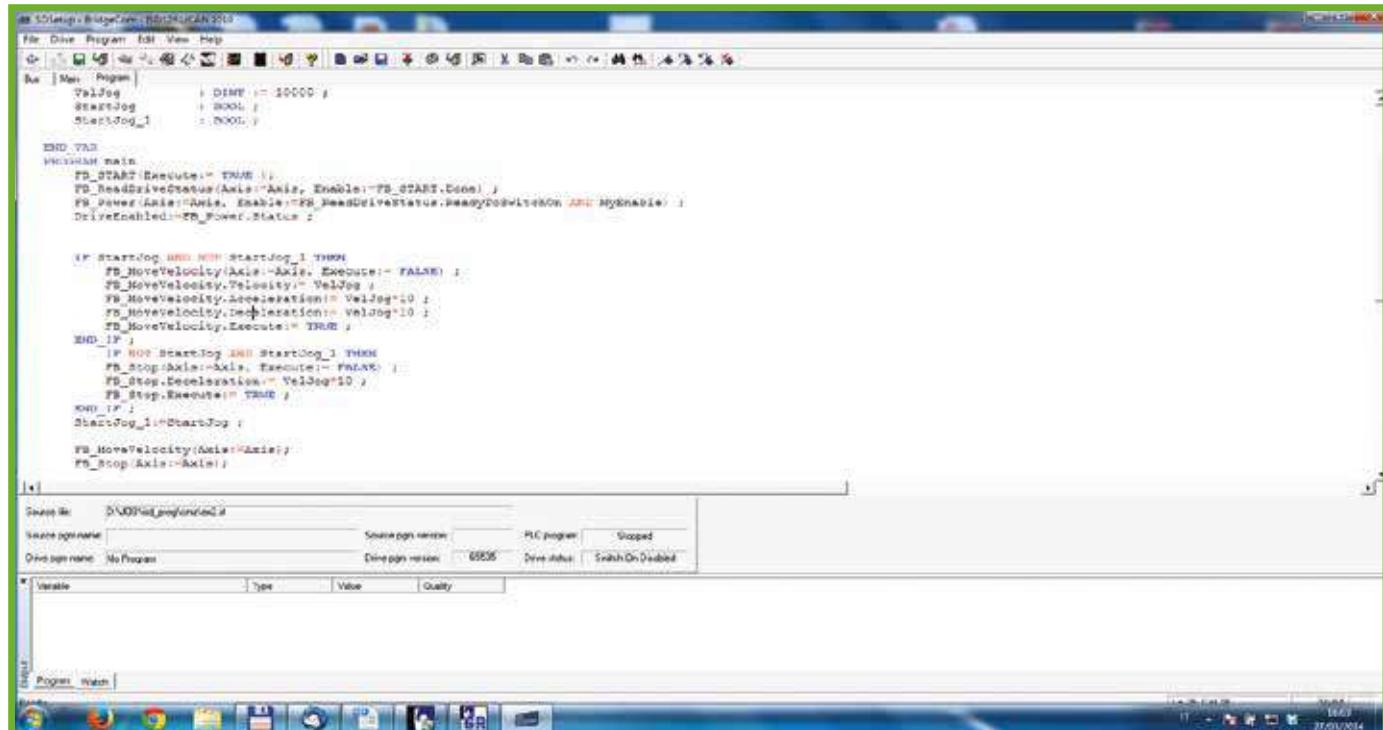
Ordering code with optional : SDPOWT.00

SDPOWT.00	Power Supply AC/DC up to 160Vdc
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SD SETUP

Environment

Stepless
motors & drives



SD setup is the development environment for the configuration, parameterization, tuning and programming of the drives SISD/ISD/SVM and IBD/Nearby using the RS232 serial connection or a centralized connection through a fieldbus when the master controller is a controller of the FCT family.

It is a software that combines various tools such as:

- Instant monitor of the main variables of the system, but also of all the secondary variables through an access to vocabulary.
- Configuration of the system (such as configuration of the digital I/O modules and the maximum limits of speed/acceleration).
- Updating of parameters and firmware.
- Auto-tuning and dedicated tuning of the current loops, speed and position, with help of procedures for self-esteem of the moment of inertia.
- Oscilloscope for the analysis of the variables.
- Tools for testing of basic movements (Function Generator).

Finally, recalling that the systems are also programmable, SD setup is also proposed as a tool that allows editing and debugging programs written in IEC61131 type Structured Test.

SD setup è l'ambiente di sviluppo per la configurazione, parametrizzazione, programmazione e taratura degli azionamenti SISD/ISD/SVM e IBD/Nearby utilizzando la seriale RS232 o un collegamento centralizzato tramite bus di campo quando il master controller è un controllore della famiglia FCT.

Si tratta di un software che unisce diversi strumenti come:

- Monitor immediato delle principali variabili di sistema ma anche di tutte le variabili secondarie tramite un accesso a vocabolario.
- Configurazione del sistema (ad esempio degli I/O digitali, dei limiti massimi di velocità/accelerazione).
- Aggiornamento di parametri e firmware.
- Autotuning e taratura dedicata dei loop di corrente, velocità e posizione, con ausilio di procedure di autostima del momento di inerzia.
- Oscilloscopio per l'analisi delle varie grandezze.
- Strumenti per il test dei movimenti base (Function Generator).

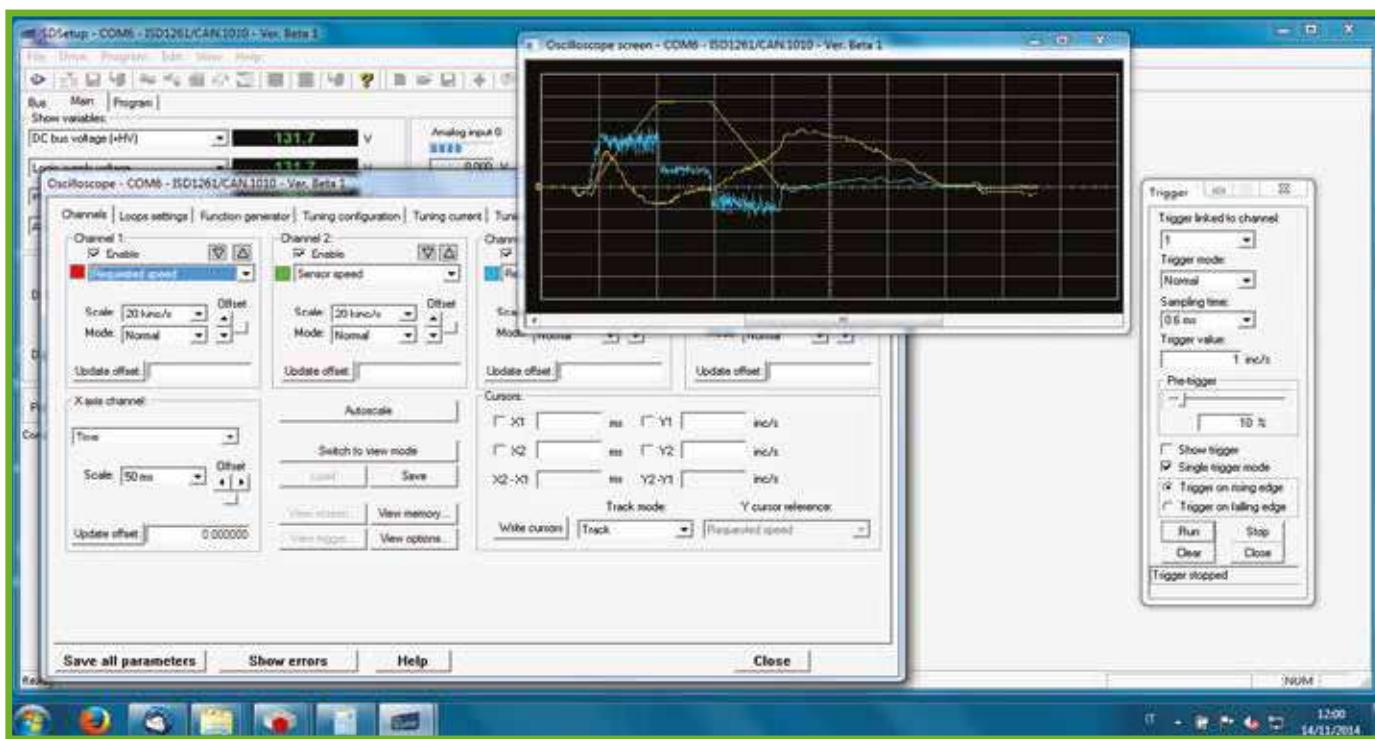
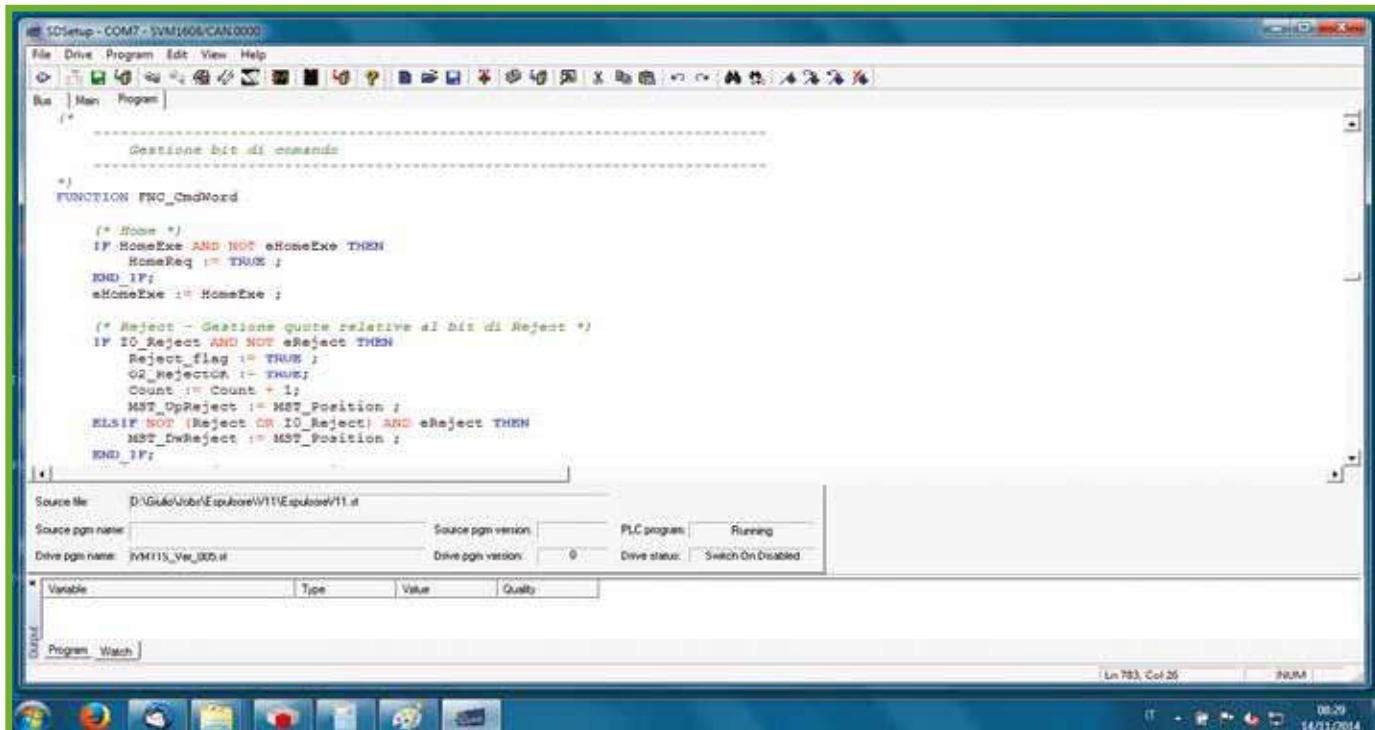
Infine, ricordando che i sistemi sono anche programmabili, SD setup si propone anche come lo strumento che permette l'editing e il debug dei programmi scritti in linguaggio IEC61131 di tipo Structured Test.

SD SETUP

Environment

Stepless
motors & drives

Integrated stepless
drives & motors



CMZ reserves the right to change the data in order to update or improve its products without prior notice
CMZ si riserva il diritto di modificare i dati per aggiornare o migliorare i propri prodotti senza alcun preavviso



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