the other side of motion control

GENERAL CATALOGUE 2023

SOLUTIONS OVERVIEW

Hardware
Software
Service

MADE IN ITALY

CMZ

MOTION CONTROL ENGINEERING & PRODUCTION

CMZ SISTEMI ELETTRONICI engineers and produces in Italy electronic systems for industrial motion control.

We target to machine builders and systems integrators for the co-development of automatic machines and equipment with customized and specific configurations in multi-axis motion.

Established in 1976 focusing on the production of controllers & drives, today the company offers customizable motion & control solutions including the systems design, the electronics programming, the development of ready-to-use motion & application libraries and ad-hoc softwares, alongside with a wide selection of master controllers IEC61131 up to 99 axis, servo drives, brushless and stepper servo motors up to 120 Nm strictly compact and Made in Italy, peripherals and I/O modules both digital and analogic, HMI operator panels.

Our high technological and safety standing is based on a team of 70 technicians and engineers.
The systems realized to date in our factory count over 150,000 units.

CMZ is a Research Laboratory recognized by the Italian Ministry for Scientific Research.

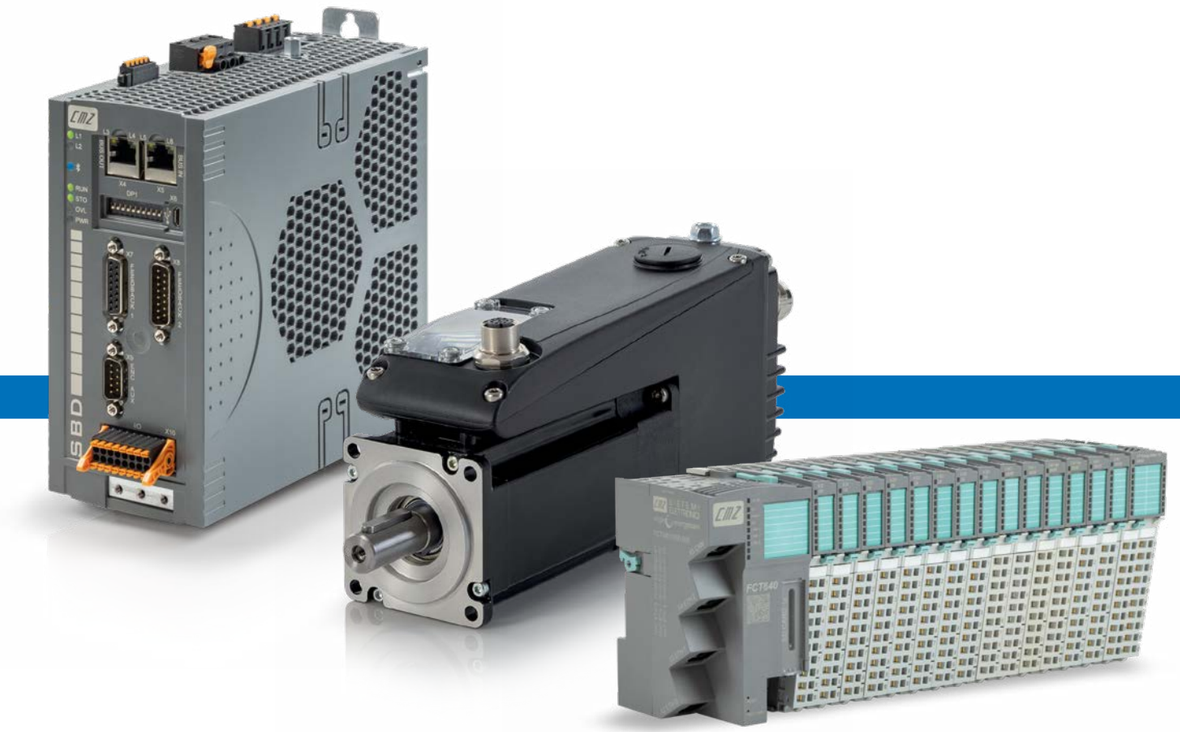
The company is part of Soga Energy Team industrial group operating in power generation, motion and control and established in 1966.

soga energyteam

CMZ Video

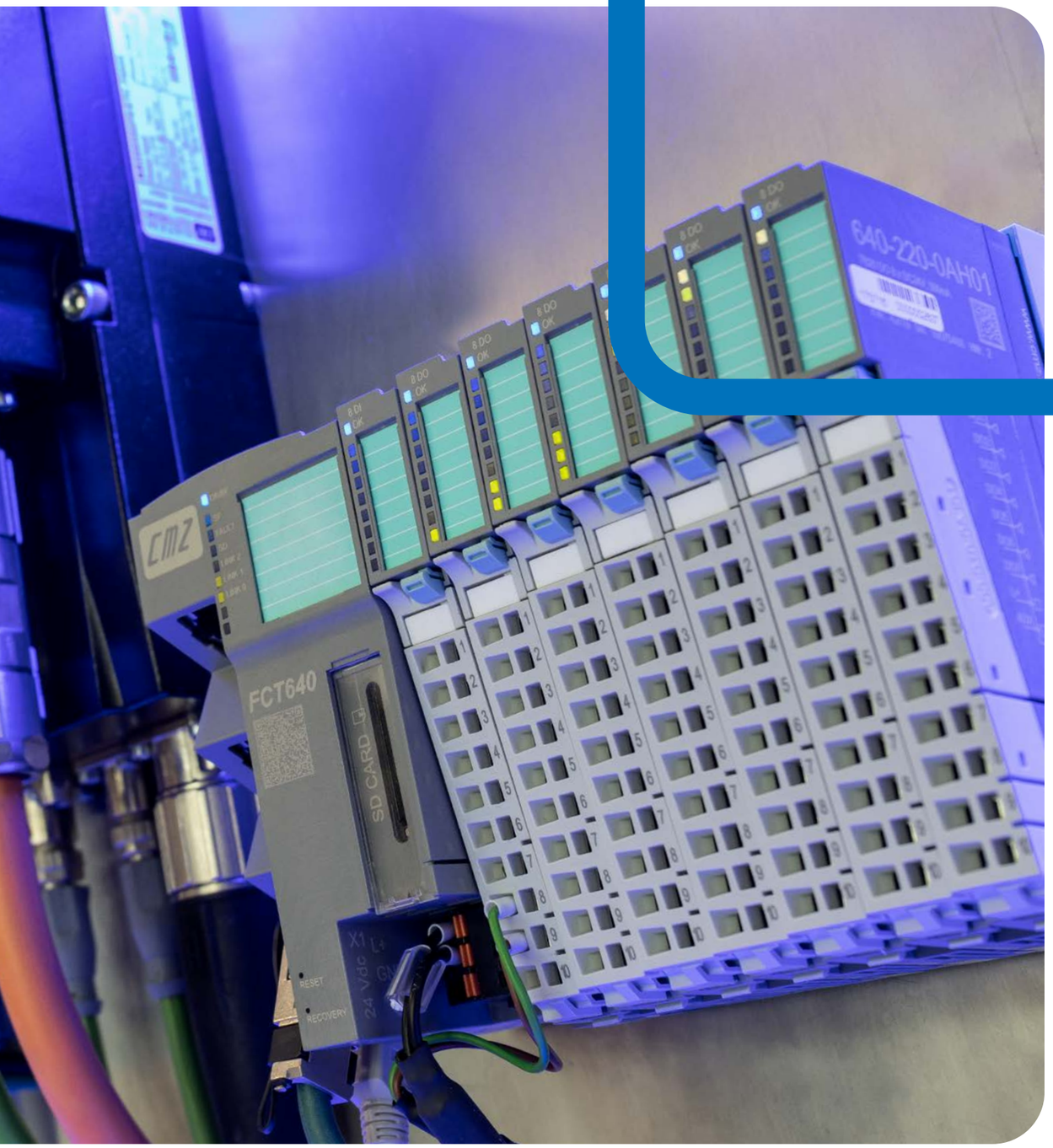
SYSTEMS & SOLUTIONS
FOR MOTION CONTROL

What's your next project?



HARDWARE

SOFTWARE



Master Controllers

MODULAR
FCT640 - FCT641

P. 8

SINGLE FRAME
FCT300

P. 10

SINGLE FRAME
FCT200

P. 11

Compactness,
Modularity,
Connectivity.

STRONG PERFORMANCE IN YOUR HANDS

MODULAR **MASTER CONTROLLER**

FCT640 - FCT641

CODESYS | CANopen | EtherCAT | Linux

For industrial motion control, CMZ Sistemi Elettronici provides FCT640/641 programmable plc controllers: new generation, modular, compact and high performing systems based on CODESYS 3.5 with integrated I/Os.

Their technological soul is fully conceived and developed by CMZ.

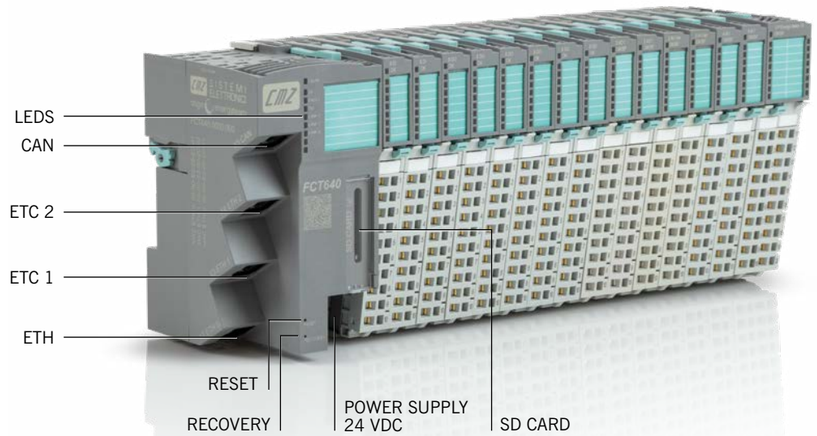
FCT640/641 integrate motion control solutions into a single and compact technological device.

The controllers are equipped with all the field buses used in industry (EtherCAT, CANopen, ModbusTCP) and integrated modular I/O units, both digital and analog. The choice of the OPC UA communication protocol is a coming soon implementation, to allow the system to be networked to the outside efficiently and safely by ensuring full connectivity with other devices as a relevant feature for Industry 4.0. interoperability.

The power of the processor, Ethernet and CAN ports and serial ports, and a total memory capacity of over 1 GB plus an SD-Card, complete FCT640/641 technological equipment.

- UP TO 99 AXES
- I/O INTEGRATED UNITS
- 110 H X 57 W X 73 L MM
- 0,3 KG

Linux 2023 COMING SOON



TECHNICAL SPECIFICATIONS AND DRAWING 3D

VERSIONS AND CODES

FCT640 FCT641	.2100	.101	.000 (example)
			axes controlled
		.101 CODESYS with PLC	**.000** 0 axes (only PLC)
		.102 CODESYS with PLC + WebVisu	**.100** 4 axes max
		.103 CODESYS with Soft Motion	**.200** 8 axes max
		.104 CODESYS with Soft Motion + CNC	**.300** 16 axes max
		.105 CODESYS with Soft Motion + WebVisu	**.400** > 16
		.106 CODESYS with Soft Motion + CNC + WebVisu	

SINGLE FRAME **MASTER CONTROLLER**

FCT300

CODESYS | CANopen | EtherCAT

FCT300 and FCT200 are single frame programmable controllers designed and made in Italy by CMZ.

They are high performing, hard working solutions for multi-axis control equipped with a complete range of I/O modules.

They can be managed by IEC 61131 development environments:

- CODESYS
- 4CONTROL proprietary environment developed by CMZ equipped with 5 program languages (Structured Test, Instruction List, Function blocks Diagram, Ladder Diagram, Sequential Flow Chart).

- **UP TO 99 AXES**
- **250 H X 78 W X 165 L MM**
- **1,8 KG**

TECHNICAL SPECIFICATIONS AND DRAWING 3D

VERSIONS AND CODES

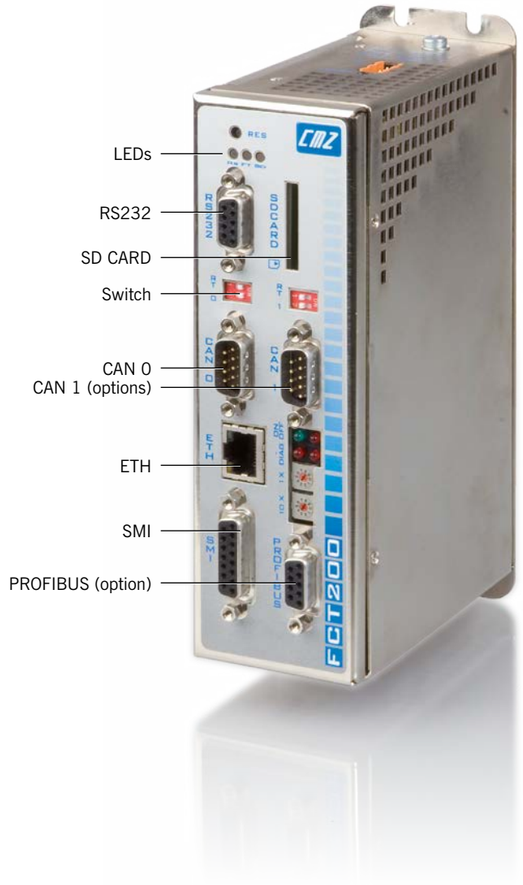
FCT300	.0100	.000 (example)
	basic version	software runtime licence
	.0100 2 CAN + 2 ETH GBIT + RS232 + SMI	**.000** 4CONTROL
	.1101 4 CAN+ 4 ETH GBIT+ RS232+SMI	**.101** CODESYS with PLC
	full version	**.102** CODESYS with PLC + WebVisu
	.2102 4 CAN + 2 ETH GBIT + 2 ETH 10/100 + RS232 + SMI + PROFIBUS DP	**.103** CODESYS with Soft Motion
	.3103 4 CAN + 2 ETH GBIT + 2 ETH 10/100 + RS232 + SMI + DEVICENET	**.104** CODESYS with Soft Motion + CNC
	.4103 4 CAN + 2 ETH GBIT + 2 ETH 10/100 + RS232 + SMI + ETHERNET IP	**.105** CODESYS with Soft Motion + WebVisu
		.106 CODESYS with Soft Motion + WebVisu + CNC

SINGLE FRAME **MASTER CONTROLLER**

FCT200

CODESYS | CANopen

- **UP TO 8 AXES**
- **170 H X 54 W X 110 L MM**
- **0,8 KG**



TECHNICAL SPECIFICATIONS AND DRAWING 3D

VERSIONS AND CODES

FCT200	.0100	.000 (example)
	basic version	software runtime licence
	.0100 CAN + ETH + RS232 + SMI	**.000** 4CONTROL
	.2106 2 CAN + ETH + RS232 + SMI	**.101** CODESYS with PLC
	full version	**.102** CODESYS with PLC + WebVisu
	.1101 2 CAN + ETH + RS232 + SMI + PROFIBUS	**.103** CODESYS with Soft Motion
		.104 CODESYS with Soft Motion + CNC
		.105 CODESYS with Soft Motion + WebVisu + CNC
		.106 CODESYS with Soft Motion + WebVisu + CNC

Servo Drives

BRUSHLESS STAND ALONE SBD

P. 14

BRUSHLESS STAND ALONE LBD HP

P. 18

BRUSHLESS INTEGRATED IBD

P. 20

BRUSHLESS NEARBY NBD

P. 22

STEPLESS STAND ALONE SVM

P. 25

STEPLESS INTEGRATED ISD

P. 26

STEPLESS NEARBY TSC

P. 27

BRUSHLESS **DRIVE** STAND ALONE

SBD400

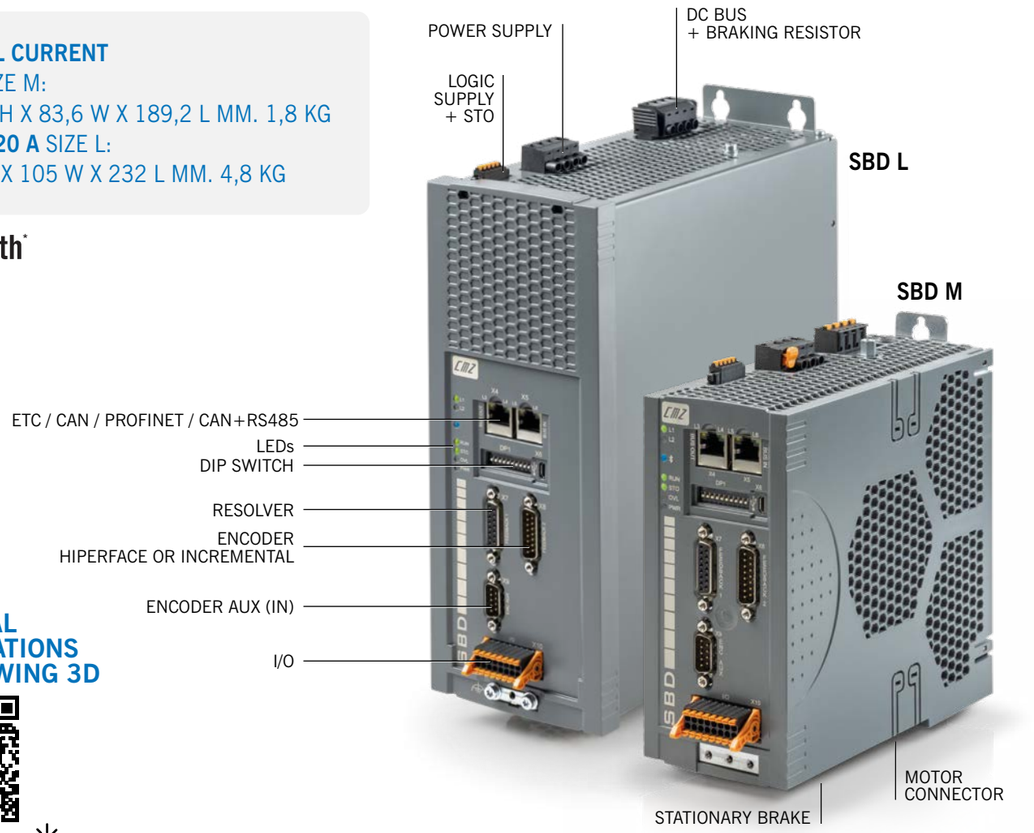
SBD is the new-generation CMZ brushless stand alone drive, featuring Italian best technology for versatility and connectivity, here in 400 Vac version.

- IEC 61131 PROGRAMMABILITY
- ALL BUILT-IN
- COST-EFFECTIVE SOLUTION
- DEVELOPED AND MADE IN ITALY

SBD is suitable with CMZ FCT controllers and other different-branded controllers using CODESYS 3.5.

NOMINAL CURRENT
- **5 A** SIZE M:
  178,3 H X 83,6 W X 189,2 L MM. 1,8 KG
- **10 A, 20 A** SIZE L:
  270 H X 105 W X 232 L MM. 4,8 KG

Bluetooth*



TECHNICAL SPECIFICATIONS AND DRAWING 3D

VERSIONS AND CODES

SBD	400	050	/CAN	0	0	0	0	0	1	0
	voltage	**current**	**fieldbus**	**feedback**	**PC connection**	**-**	**-**	**-**	**kit connectors**	**customization**
	400 400 Vac	**050** 5A	**/CAN** CANopen	**0** resolver + incremental encoder + Hiperface	**0** micro usb	**0** only 0	**0** only 0	**0** only 0	**0** no kit	**0** only 0
		100 10A	**/ETH** EtherCAT						**1** kit terminal block	
		200 20A	**/PNT** PROFINET						**2** kit terminal block + kit DSUB	
			/PLC							

(example)

*BY INFINEON TECHNOLOGIES

BRUSHLESS **DRIVE** STAND ALONE

SBD230

CANopen | EtherCAT | PROFINET | cULus

SBD is the new-generation CMZ brushless stand alone drive, featuring Italian best technology for versatility and connectivity, also available in 230 Vac version.

- IEC 61131 PROGRAMMABILITY
- ALL BUILT-IN
- COST-EFFECTIVE SOLUTION
- DEVELOPED AND MADE IN ITALY

SBD is suitable with CMZ FCT controllers and other different-branded controllers using CODESYS 3.5.

NOMINAL CURRENT
- **5 A, 8,5 A** - SIZE M:
  178,3 H X 83,6 W X 189,2 L MM. 1,8 KG

Bluetooth*

WATCH SBD HARDWARE CONFIGURATION

TECHNICAL SPECIFICATIONS AND DRAWING 3D

VERSIONS AND CODES

SBD	230	050	/CAN	0	0	0	0	0	1	0
	voltage	**current**	**fieldbus**	**feedback**	**PC connection**	**-**	**-**	**-**	**kit connectors**	**customization**
	230 230 Vac	**050** 5A	**/CAN** CANopen	**0** resolver + incremental encoder + Hiperface	**0** micro usb	**0** only 0	**0** only 0	**0** only 0	**0** no kit	**0** only 0
		085 8,5A	**/ETH** EtherCAT						**1** kit terminal block	
			/PNT PROFINET						**2** kit terminal block + kit DSUB	
			/PLC							

(example)

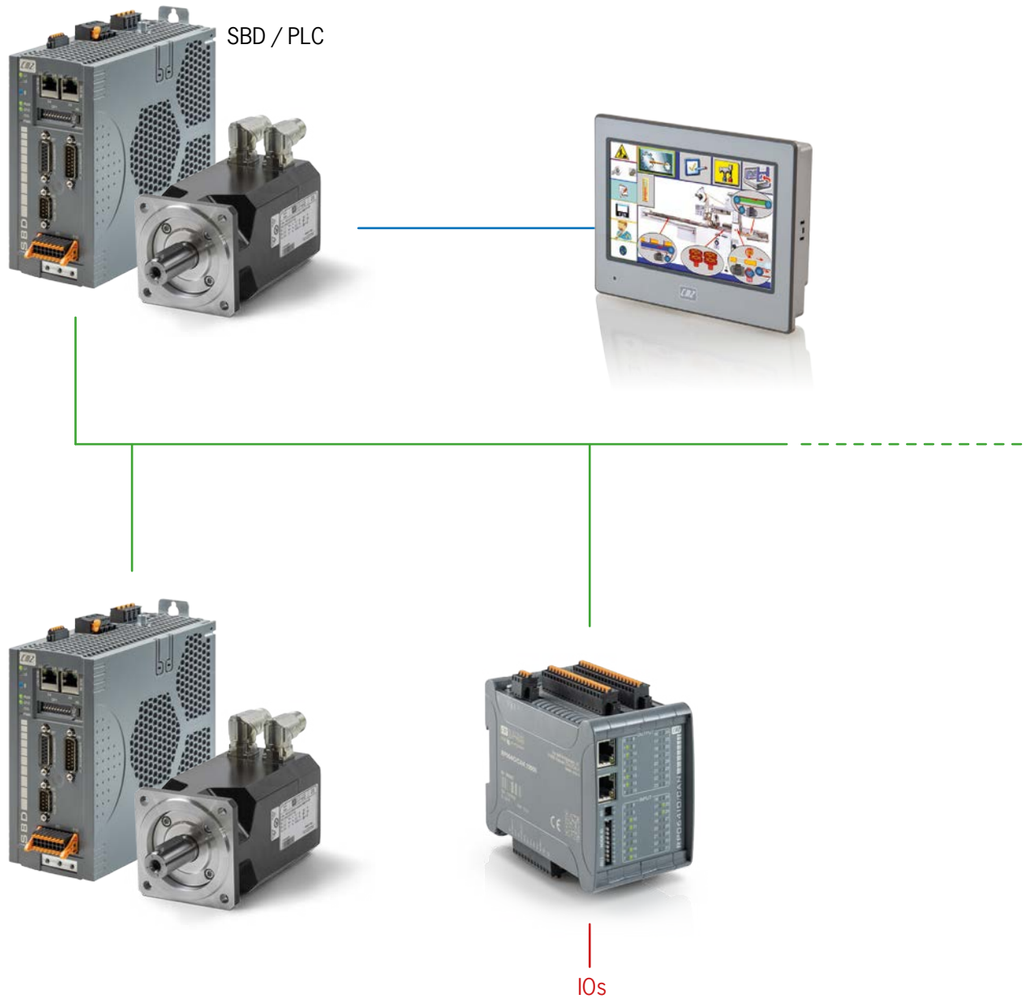
*BY INFINEON TECHNOLOGIES

SBD/PLC

All versions of SBD drives have an integrated PLC IEC-61131 which allows to customize the behavior of the drive and decentralize the machine automation.

The integrated PLC and CANopen fieldbus allow SBD SmartDrive (formally SBD/PLC) to become the main controller of a machine, for applications with a not very high number of axes and I/Os and simple types of motion.

SBD/ PLC, programmable in IEC-61131, is very powerful and ensures the management of axis motion and of local I/Os, as well as the management of remote axes and I/Os.



SBD/PLC SmartDrive: the brushless drive is used as a controller in CANopen for the management of I/O peripherals such as RP064 I/O and/or other SBDs.

Applications with a reduced number of axes and I/Os.
The complete application can be managed without a dedicated controller or PLC.

Through CANopen network it is possible to expand the number of I/Os with remote modules as the ones provided by RP064 I/O peripheral by CMZ, as well as to connect other SBD drives.

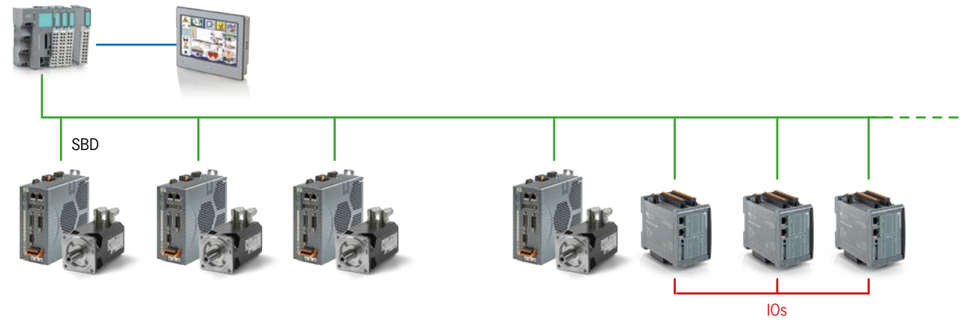
From the integrated PLC it is possible to access all the functions of the axis such as: the jog mode, the absolute/relative positioning, the homing function, the electronic gearing and the touch probe function.

The integrated PLC allows the definition of functions and function blocks and the execution of code on event.

The programming and the configuration, tuning and monitoring operations of the drive are carried out with the same program on the PC: SDSetup.

RS485 serial, also available on SBD/PLC, by using MODBUS RTU protocol ensures possible connection to an operator panel HMI for human-machine interface.

SBD/PLC becomes the main controller of the machine: the complete automation can be managed without a dedicated controller or PLC.



In the classic configuration SBD is suitable for the automation of complex multi-axis machines in combination with FCT640 controller, programmable in CODESYS, and I/O peripherals such as RP064 I/O.

BRUSHLESS **DRIVE** STAND ALONE

LBD400

LBD400 is a three-phase stand alone brushless drive. It is extremely compact, reliable, high performing.

In combination with brushless motors, it is a very suitable solution for applications on automatic machines requiring a strong kinematic performance.

LBD400 is suitable to be used with CMZ FCT controllers and other different-branded controllers using CODESYS 3.5.

The system is equipped with the standard safety functions STO at SIL3 level.

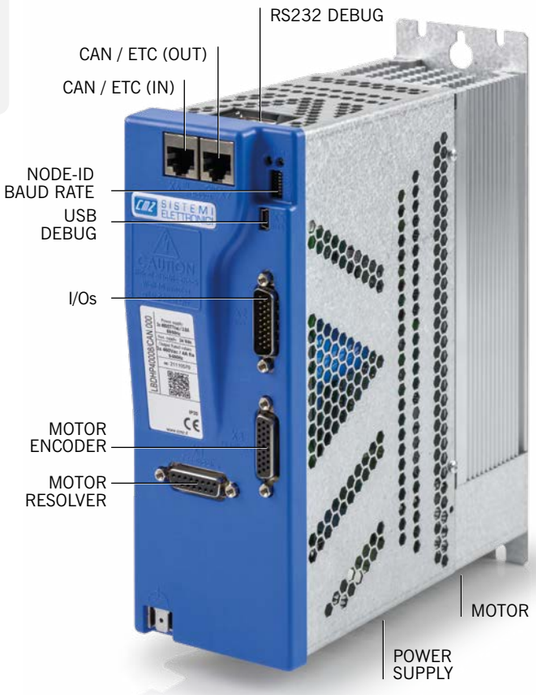
Also available interfacing analog inputs and stepper motors simulation.

PEAK CURRENT

- **8 A, 20 A** - 220 H X 70 W X 182 L MM. 2,2 KG
- **45 A** - 220 H X 70 W X 182 L MM. 2,4 KG
- **100 A** - 220 H X 80 W X 206 L MM. 3,3 KG
- **200 A** - 295 H X 166,6 W X 215 L MM. 8,5 KG

External braking resistors (if necessary)

REF. DRIVES	BRAKING RESISTOR	Ohm/Watt
LBD HP 40 008	DP100/100	100 Ohm 100 W
LBD HP 40 020	DP50/200	50 Ohm 200 W
LBD HP 40 045	DP33/280 (on MMSPS400/16)	33 Ohm 280 W
LBD HP 40 100	DP16,5/560 (on MMGSPS400/32)	16,5 Ohm 560 W
LBD HP 40 200	DP7,5/560 (on MMGDPS400/64)	7,5 Ohm 560 W



TECHNICAL SPECIFICATIONS AND DRAWING 3D

VERSIONS AND CODES

LBDHP40	008	/CAN	.0	0**	0***	(example)
	peak current (A)	**fieldbus/feedback**				
	008	**/CAN** CAN / standard feedback	**0** DSUB standard	**0**	**0**	
	020	**/CND** CAN / digital feedback				
	045*	**/ETC** EtherCAT / standard feedback				
	100*	**/ETD** EtherCAT / digital feedback				
	200*					

* external power supply MMGDPS is required
** in case of reserved version
*** in case of customized version

External power supply

MMGDPS400	/16	.000
	/16 Power supply 16 kW with kit external connector	
	/32 Power supply 32 kW with kit external connector	
	/64 Power supply 64 kW with kit external connector	

BRUSHLESS **DRIVE** STAND ALONE

LBD230

CANopen | EtherCAT | c UL us LISTED

LBD230 is a single-phase stand alone brushless drive. It is extremely compact, reliable, high performing.

In combination with brushless motors, it is a very suitable solution for applications on automatic machines requiring a strong kinematic performance.

LBD230 is suitable to be used with CMZ FCT controllers and other different-branded controllers using CODESYS 3.5.

The system is equipped with standard safety functions STO at SIL3 level.

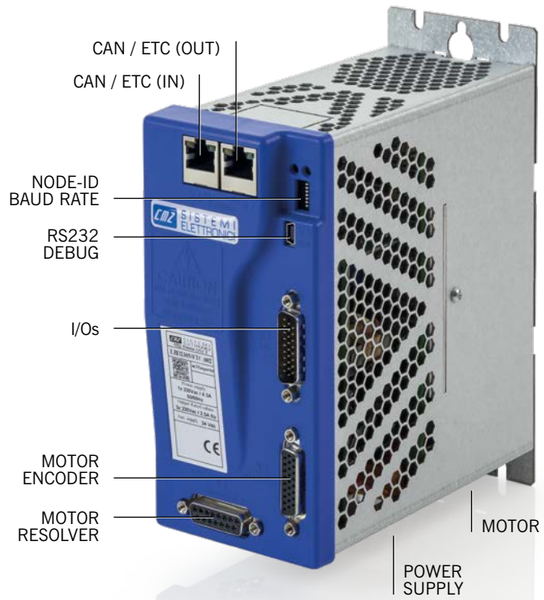
Also available interfacing analog inputs and stepper motors simulation.

PEAK CURRENT

- **11 A, 17 A** - 148 H X 70 W X 143 L MM. 1,5 KG

External braking resistors (if necessary)

REF. DRIVES	BRAKING RESISTOR	Ohm/Watt
LBD HP 23 11	DP50/200	50 Ohm 200 W
LBD HP 23 17		



TECHNICAL SPECIFICATIONS AND DRAWING 3D

VERSIONS AND CODES

LBDHP23	11	/CAN	.00	(example)
	peak current (A)	**fieldbus/feedback**		
	11	**/CAN** CAN / standard feedback		
	17	**/CND** CAN / digital feedback		
		/ETC EtherCAT / standard feedback		
		/ETD EtherCAT / digital feedback		

BRUSHLESS **DRIVE** INTEGRATED

IBD

CANopen | EtherCAT | PROFINET

IBD drive with integrated electronics and IEC 61131 programmability offers maximum control and power in a compact space.

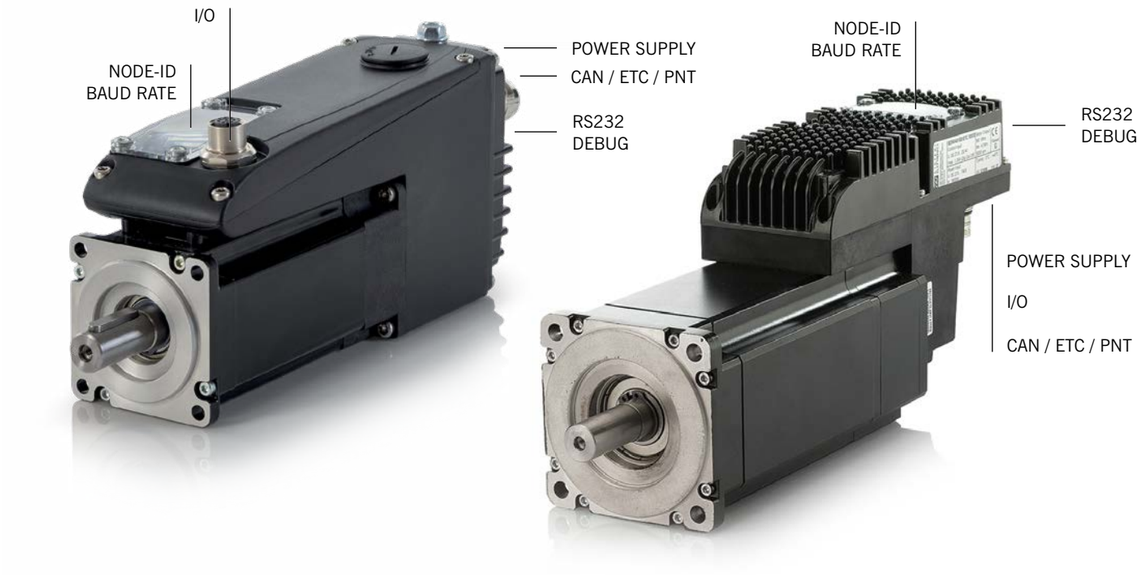
With the decentralization of the drive directly on the motor, the machine architecture is simplified: reduced wiring, more linear machine design, optimized and increasingly efficient processes.

Each model can be developed with solutions designed upon the specific project of the manufacturer, considering both electronics and mechanics.

IBD is suitable to be used with CMZ FCT controllers and other different-branded controllers using CODESYS 3.5.

- **DECENTRALIZED ARCHITECTURE**
- **IEC 61131 PROGRAMMABILITY**
- **PROFINET RT** (IBD SIZE 60, 80, 100)
- **INTEGRATED MOTION FEATURES:**
  DEVICE PROFILE DS402, INTERPOLATED MODE, POSITIONING, EXTENDED GEARING, FUNCTION, HOMING, CAPTURE
- **CAPTURE INPUT**
- **PC PARAMETRIZATION TOOL**
- **PROTECTIONS:** IT2, OVERLOAD, SHORT CIRCUIT, OVERTEMPERATURE, OVERVOLTAGE

TECHNICAL SPECIFICATIONS AND DRAWING 3D



VERSIONS AND CODES

IBD56	6C	0	A3	/CAN	.1	00	1	0 (example)
560 Vdc	voltage	shaft	feedback	fieldbus	brake	reserved	fan	-
	6C flange 60 - 1,3 Nm (8 poles) 5000 rpm	**0** keyed shaft *	**A0** multiturn absolute encoder (128 sin/cos) 4096 turns	**/CAN** CANopen	**.0** no brake	**00** only 00	reserved (IBD flange 60/80/100)	**0** only 0
	10 flange 80 - 2,8 Nm (8 poles) 3000 rpm	**1** smooth shaft	**A3** singleturn absolute encoder (16 sin/cos)	**/ETC** EtherCAT	**.1** with brake		**0** without fan (IBD flange 142/190)	
	20 flange 80 - 4 Nm (8 poles) 3000 rpm	* standard		**/PNT** PROFINET			**3** with fan (IBD flange 142/190)	
	30 flange 100 - 5,6 Nm (8 poles) 3000 rpm							
	40 flange 100 - 6 Nm (8 poles) 3000 rpm							
	F0 flange 142 - 15,4 Nm (8 poles) 3000 rpm							
	G0 flange 190 - 30 Nm (8 poles) 3000 rpm							

BRUSHLESS **DRIVE** NEAR BY

NBD

CANopen | EtherCAT

NBD nearby drive allows the management of servo motors with resolver, incremental encoder, incremental encoder with hall sensor, absolute encoder HIPERFACE.

IP65 protection makes possible to install NBD drives near the motor, directly on the mechanics of the machine.

The fieldbuses CANopen DS402 and DS402 over EtherCAT allow NBD to be used both with CMZ FCT controllers and other different-branded controllers using CODESYS 3.5.

- **IP65 FOR LINEAR AND ROTATING BRUSHLESS MOTORS**
- **IEC 61131 PROGRAMMABILITY**
- **INTEGRATED MOTION FEATURES:**
  DEVICE PROFILE DS402, INTERPOLATED MODE, POSITIONING, EXTENDED GEARING FUNCTION, HOMING, CAPTURE
- **ST LANGUAGE**
- **CAPTURE INPUT**
- **PC PARAMETRIZATION TOOL**
- **122 H X 102 W X 200 L MM**
- **1,9 KG**

TECHNICAL SPECIFICATIONS AND DRAWING 3D

POWER SUPPLY
FOR **IBD** AND **NBD** DRIVES

BDPOW

- **AC/DC THREE-PHASE POWER SUPPLY UNIT**
- **POSSIBILITY OF ONLINE DIAGNOSTICS AND PARAMETRIZATION VIA SERIAL CONNECTION AND PC INTERFACE (SD SETUP)**
- **352,5 H X 82,4 W X 270,6 L MM**
- **5,8 KG**

VERSIONS AND CODES

NBD56	M5	0	F0	/CAN	.F	0	0	0	00 (example)
560 Vdc	peak current	reserved	feedback	fieldbus	I/O	reserved		power supply configuration	-
	M5 15A	**0** only 0	**F0** encoder / resolver: TTL incremental + HES multiturn absolute HIPERFACE single absolute HIPERFACE	**/CAN** CANopen	**.F** with I/O (3 conn M12) and local STO (1 conn. M8)	**0** only 0	**0** only 0	**0** star (single on M23)	**00** only 00
	H5 21A			**/ETC** EtherCAT	**.0** no I/O				

VERSIONS AND CODES

BDPOW	20	/000	2	1	0 (example)
	output rated current		**1** one male output (only for spare)	certification	reserved
	20 20A (10 kW)		**2** two female outputs	**0** CE	**0** reserved
	40 40A (20 KW)			**1** UL	

CMZ STEPLESS TECHNOLOGY

Stepless is the technology conceived and developed by CMZ for low speed applications.

Through the closed loop control, a stepper synchronous motor can be controlled with modulated current by:

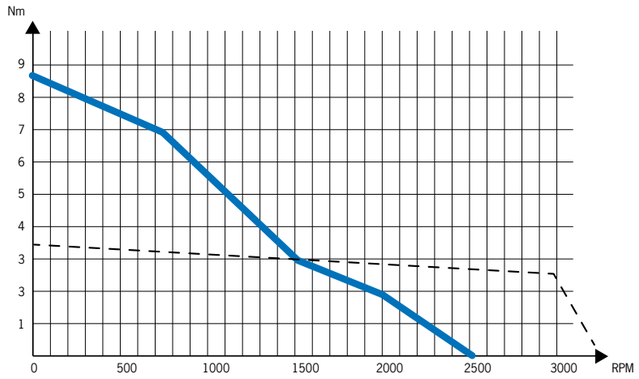
- **eliminating any problem due to the step loss**
- **reducing the motor temperature through the current [A] closed loop.**

Compared to the brushless solution, on the same motor size the Stepless technology provides higher torque at low speed.

This makes it most suitable for a wide variety of low speed applications.

TORQUE CURVE COMPARISON: STEPLESS VERSUS BRUSHLESS

THE AMBITION *TO MOVE* THE LIMITS

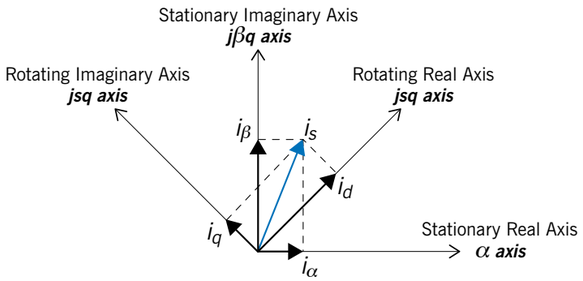


Torque curves considering S1 duty cycle

Stepless motor
Stall torque 8,7 Nm - 8 A / phase - 120 V
Overall dimensions: square flange 86 mm, lenght 173 mm

Brushless motor
Stall torque 3,4 Nm - 2,3 A / phase - 400 V
Overall dimensions: square flange 91 mm, lenght 177 mm

VECTOR CONTROL CURRENT MODULATION



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

STEPLESS **DRIVE** STAND ALONE

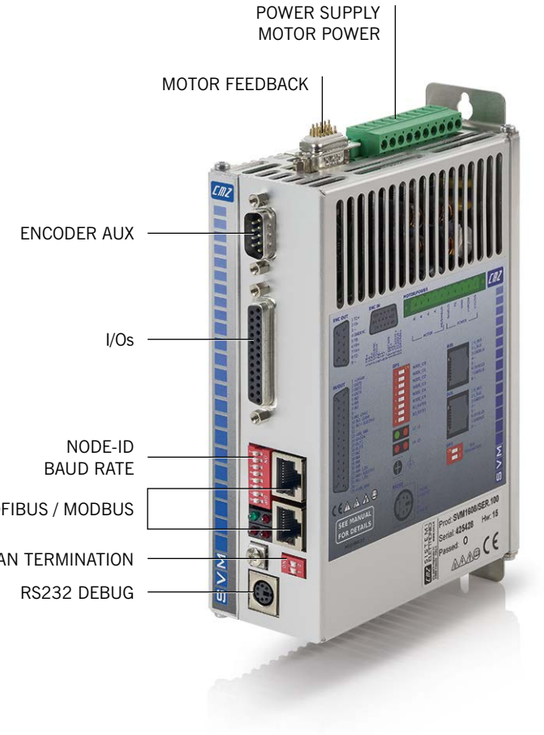
SVM

CANopen | PROFIBUS | Modbus

SVM is the stepless stand alone drive providing high performance and versatility.

It can be managed by a variety of fieldbuses ensuring connectivity in many applications.

- **IEC 61131 PROGRAMMABILITY**
- **SUITABLE FOR ALL MASTER CONTROLLERS USING CODESYS**
- **196 H X 51 W X 125 L MM**
- **0,8 KG**



TECHNICAL SPECIFICATIONS AND DRAWING 3D

VERSIONS AND CODES

SVM	16	08	/CAN	.1	0	0 (example)
	power supply	**rated current**	**interface**	**thermal sensor**	**coating**	**version**
	16 160V	**8** 8,5 Arms	**/CAN** CAN	**.1** only 1	**0** without conformal coating	**0** CAN/SER
			/SER SER (RS485)		**1** with conformal coating	**1** PROFIBUS
			/PRO PRO (Profibus)			

STEPLESS **DRIVE** INTEGRATED

ISD

CANopen | PROFIBUS | Modbus

ISD is our stepless integrated servo drive for decentralized architecture.

- **IEC 61131 PROGRAMMABILITY**
- **USABILITY WITH ALL MASTER CONTROLLERS USING CODESYS**
- **140,4 H X UP TO 262 W X 125 L MM 0,8 KG**

TECHNICAL SPECIFICATIONS AND DRAWING 3D

VERSIONS AND CODES

ISD	12	6	1	/CAN	.1	3	1	0
		holding torque	encoder	fieldbus	connectors	shaft diameter	standard mechanics (new)	custom (example)
	12 120 V	**8** 4,6 Nm	**1** incremental 2000 pulse/turn	**/CAN** CAN	**1** n.3 DSUB connectors + n.1 power supply 3 poles (ONLY FOR CAN, APD)	**0** 12 mm keyed shaft (ONLY FOR ISD1281 e ISD1271)	**0** only 0	**0** circular power connector (4 poles)
		7 8,7 Nm	**3** multiturn absolute 2048 pulse/turn - 4096 turns	**/ADP** analog pulse direction	**2** n.4 circular connectors IP67 (ONLY FOR CAN, SER)	**3** 14 mm keyed shaft (ONLY FOR ISD1261 e ISD1271)		**1** square power connector 3 poles
		6 12 Nm		**/SER** RS485	**3** n.3 DSUB connectors + n.1 power supply 4 poles (FOR CAN, SER, PRO, APD)			**-** custom
				/PRO PROFIBUS				

STEPLESS **DRIVE** NEAR BY

TSC

CANopen

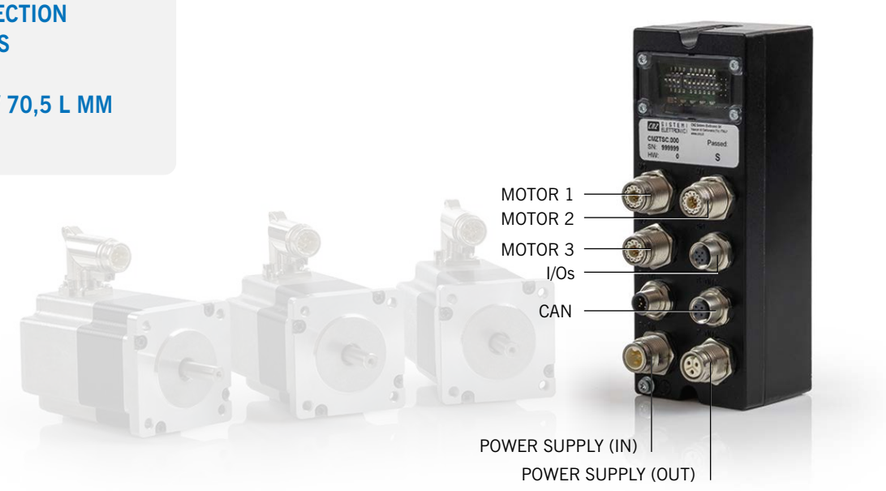
TSC is the nearby drive 48 Vdc for the open loop control of 3 stepper motors with encoder.

The solution offered by CMZ includes TSC drive supplied with 3 stepper motors of MM series.

TSC drive can be equipped with *TSC management* utility library developed by CMZ.

- **DAISY CHAIN CONNECTION UP TO MAX 6 DRIVES**
- **IP65**
- **185 H X 70 W X 55 / 70,5 L MM**
- **0,8 KG**

TECHNICAL SPECIFICATIONS AND DRAWING 3D



POWER SUPPLY
FOR **ISD** AND **SVM** DRIVES

SDPOW1 - SDPOWR - SDPOWT

- **AC/DC SINGLE-PHASE POWER SUPPLY UNIT**
- **EXTENDED INPUT/OUTPUT VOLTAGE**
- **PERFORMANCE**
- **COST-SAVING**

TECHNICAL SPECIFICATIONS SDPOW1

Servo Motors

BRUSHLESS MOTORS

P. 30

STEPPER MOTORS

P. 31

SERVO **MOTORS**

BRUSHLESS

CMZ provides a complete range of top-brand brushless synchronous servo motors.

The models are available with stall torque from 0,5 to 120 Nm.

They can be supplied in versions 400 Vac and 230 Vac.

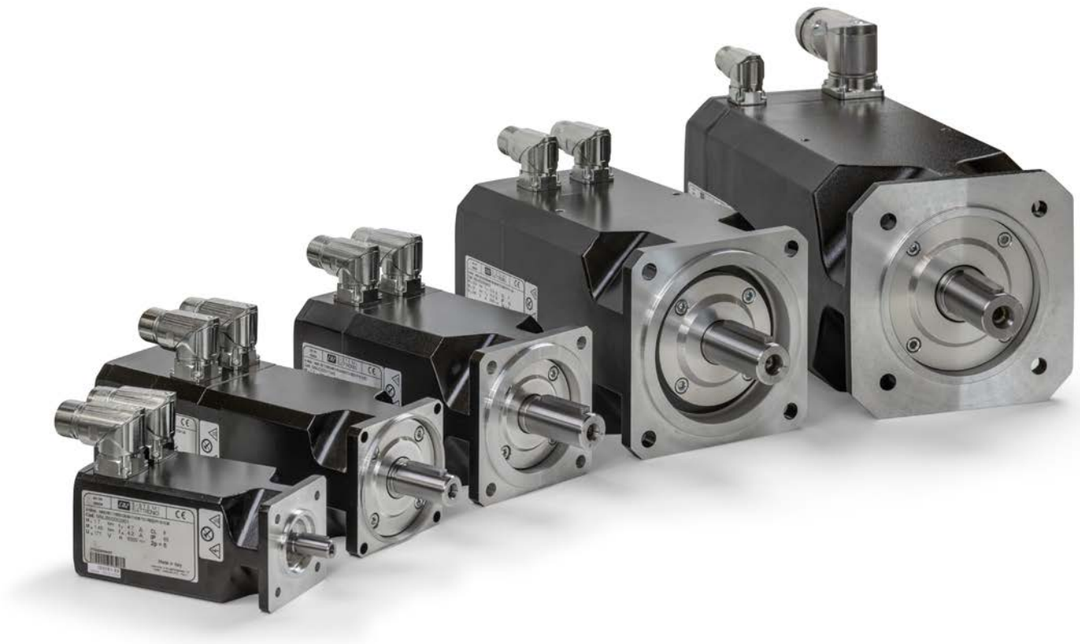
RPM 1500, 2000, 3000, 4500, 6000.

Number of poles: 8 / 10 / 6 sinusoidal, depending on the model.

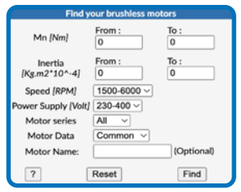
Resolver or absolute encoder hiperface connection.

Brake also available.

IP65 standard. IP67 on request.



TECHNICAL SPECIFICATIONS



TRY OUR MOTORS CONFIGURATOR. CLICK FOR THE PRODUCT FINDER

SERVO **MOTORS**

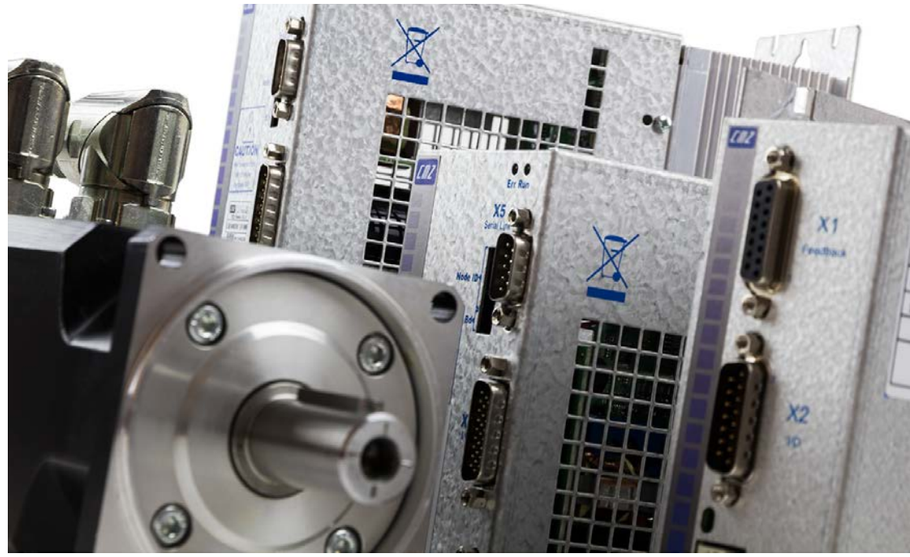
STEPPER

We also offer a range of stepper synchronous servo motors.

These are available in 5 sizes with torque from 2,8 Nm to 12 Nm.

They can be supplied with incremental encoder, circular or AMP connectors, cables (lenght on request) and other optional features to meet all applicative demands.

CMZ STEPLESS technology is applied on our stand alone and nearby drives, chosen by many customers for their automation projects.



TECHNICAL SPECIFICATIONS

Planetary Gearboxes

PRECISION PLANETARY **GEARBOX**

TQ - MP - LC

CMZ extends its range to the full “mechatronic package” by introducing a complete series of top-branded precision planetary gearboxes Made in Italy.

These are developed to serve all kinds of industrial applications, from widely complex to medium and more basic configurations, as well as to ensure:

- PRECISION
- PERFORMANCE
- EFFICIENCY
- RELIABILITY & SAFETY
- COMPACTNESS

Precision planetary gearboxes make CMZ motion control solutions reach a superior level of integration: from master controllers, servo drives, servo motors, now including also planetary gearboxes specifically engineered for demanding industrial sectors.

TQ - MP SERIES

- **PRECISION**
- **MAXIMUM POWER DENSITY**
- **OUTSTANDING POSITION ACCURACY**
- **TOP CLASS DESIGN**
- **EXTREME RELIABILITY**
- **EASY INSTALLATION**

LC SERIES

- **WIDE FLEXIBILITY**
- **HIGH MODULARITY**
- **COMPACTNESS**

TECHNICAL SPECIFICATIONS

Operator Panels

HMI

HMI operator panels of PT2 series are full part of CMZ range.

They provide optimized features upon Industry 4.0, IoT (Internet of Things) and IIoT (Industrial Internet of Things).

PT2 series is made of 7 touch screen terminals models from smallest to biggest, from 4,3" up to 15". IP66.

They can be connected with CMZ controllers and the main controllers on the market as well, thanks to standard or dedicated protocols.

PT2 panels are usable with PM PANEL MASTER DESIGNER development environment (V2.1.9.46 or later versions) very simple and intuitive in programming and realizing HMI's functionalities and GUI (Graphical User Interface).

On request we can provide PANEL EXPRESS software based on PC platform.

- **IMPROVED SCREEN RESOLUTION**
- **WORKING MEMORY 64 MB ALSO ON SMALL MODELS**
- **USB HOST FROM 1 TO 2.0 (MAXIMUM SPEED FOR APPLICATION DOWNLOADING)**
- **5 YEAR LIFE BATTERY**
- **5 COM COMMUNICATION INTERFACES (4 ONLY ON THE SMALLEST MODEL PT2043 4.3")**

c UL us LISTED

TECHNICAL SPECIFICATIONS

VERSIONS

model	PT2 043	PT2 070	PT2 070 WST	PT2 100	PT2 104	PT2 121	PT2 150
size	4.3" (16:9)	7" (16:9)	7" (16:9)	10,1" (16:9)	10,4" (4:3)	12,1" (4:3)	15" (4:3)

Peripherals

RP064 I/O

P. 37

FCT640
I/O MODULES

P. 37

FCT300, FCT200
I/O MODULES

P. 38

AXIS MODULE
CPENCA

P. 38

VIBRATING FEEDERS CONTROL
CP6V16

P. 39

VIBRATING FEEDERS CONTROL
CP4PWM

P. 39

THERMOCOUPLES
CP6TS0

P. 40

LOAD CELLS ACQUISITION
SGACQA

P. 40

STEPPER MOTOR CONTROL
CPMSG0

P. 41

I/O DIGITAL MODULES
CP32D0

P. 41

REMOTE PERIPHERAL 32+32 INPUTS/OUTPUTS

RP064 I/O

CANopen

RP064IO peripheral manages 32 digital inputs with integrated functions for incremental encoder and counters, 32 digital outputs, 2 analog inputs and 2 analog outputs, with CAN fieldbus and CANopen DS401 protocol.

RP064 I/O is used as:
- CANopen peripheral for FCT series controllers (FCT640, FCT300, FCT200)
- CANopen peripheral for expansion of servo drive SBD in PLC version
- CANopen peripheral for other-branded controllers with CANopen fieldbus (EDS file).

- **EXTREMELY COMPACT 110 H X 57 W X 73 L MM**
- **CUSTOMIZABLE ON REQUEST**
- **DIN RAIL MOUNTING**
- **MADE IN ITALY IN CMZ FACTORY**

TECHNICAL SPECIFICATIONS

I/O DIGITAL MODULES

FCT 640 I/O MODULES

FCT640 master controller can be integrated with a wide selection of componible digital and analog Input/Output modules for the management of different functions (such as thermo-resistors, thermocouples and many more).

FCT640 is equipped with an internal bus called HBUS which the I/O modules (digital and / or analog) can be connected through.

Furthermore, I/O modules can be connected also externally with CANOpen or EtherCAT fieldbus through CMZ TB20 bus couplers.

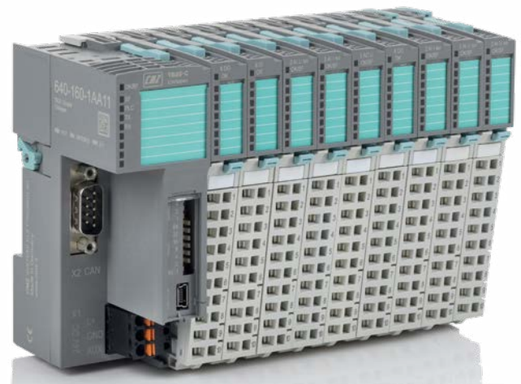
By using the bus couplers, FCT640 modules are suitable also for FCT300 and FCT200 controllers.

I/O MODULES AND ACCESSORIES:
- **BUS COUPLERS**
- **DIGITAL INPUT MODULES**
- **DIGITAL OUTPUT MODULES**
- **DIGITAL MIX MODULES**
- **ANALOG INPUT MODULES**
- **ANALOG OUTPUT MODULES**
- **FUNCTION MODULES**
- **COMMUNICATION MODULES**
- **SYSTEM MODULES**
- **ACCESSORIES**

All modules are very easy to apply, remove and replace.

Their structure features an ergonomic and easy to handle design, ensuring simple and user-friendly configurations.

Quick installation (DIN) and removal.
Top reliability in connection.
Space saving also in small cabinets.
Maintenance reduction.
Each channel can be labeled clearly and uniquely.
The modules are IP20.



SELECT THE MODULES

FCT300 & FCT200

I/O LOCAL MODULES

FCT300 and FCT200 master controllers can be extended with a wide range of local digital I/O modules. They are very easy to apply, remove and replace. Many types are available through SMI (Serial Management Interface) port.

Highest performance in the management of digital Input/Output up to 300 μsec on FCT300 and 1 msec on FCT200, is a distinctive feature of CMZ controllers, thanks to the SMI port where the LOCAL_IO board can be connected.

**THROUGH CMZ DEDICATED BUS COUPLERS TB20,
THE RANGE OF I/O MODULES FOR FCT300 AND FCT200 CONTROLLERS
CAN BE FURTHER ENHANCED BY USING FCT640 MODULES
(FCT300: BUS COUPLER CANOPEN AND ETHERCAT FIELDBUS.
FCT200: CANOPEN FIELDBUS).**

GET MORE DETAILS

AXIS MODULE

CPENCA

CANopen

CPENCA is the solution for the management of a standard speed reference drive (+/-10 V) operating as a CANopen drive.

- Device profile DS406/DS402
- 1 incremental encoder input
- 1 analog output +/- 10 V 12 bit + sign
- 6 optoisolated protected inputs 24 Vdc PNP
- 6 optoisolated protected outputs 24 Vdc PNP 200 mA
- Power supply 24 Vdc/18Vac

Only for 4CONTROL proprietary environment by CMZ.

VIBRATING FEEDERS CONTROL

CP6V16

CANopen

CP6V16 is the solution for the management of vibrating feeders.

It can manage up to 6 feeders in phase modulation modality.

- Power supply 110-240 Vac 50/60Hz
- Logic supply 24 Vdc/18Vac
- 8 optoisolated protected inputs 24 Vdc PNP
- 8 optoisolated protected outputs 24 Vdc PNP 200 mA
- Port RS232C (optional)
- 2 analog outputs +/- 10 Vdc 11 bit + sign

VIBRATING FEEDERS CONTROL

CP4PWM

CANopen

CP4PWM is the solution for the control and management of vibrating feeders with independent control from frequency and main voltage.

- This peripheral can manage up to 4 feeders.
- Load setting through PWM technology

SEE THE DIFFERENCE BETWEEN CP6V16 AND CP4PWM

THERMOCOUPLES

CP6TS0

CP6TS0 is the solution for the management of thermocouples.

- Power supply: 24Vdc with polarity inversion protection
- PT100-PT1000, thermoresistances sensor acquisition
- 6 thermocouples J-K
- 1 thermoresistance and 4 thermocouples
- 2 thermoresistances and 2 thermocouples
- Resolution 16 bit

LOAD CELLS ACQUISITION

SGACQA

SGACQA is the solution for the management of load cells acquisition.

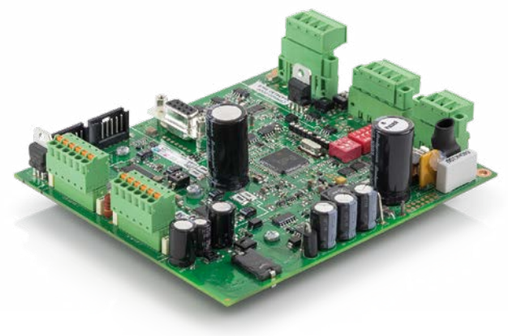
- Nominal resolution 24 bit
- Unipolar input range

STEPPER MOTOR CONTROL

CPMSG0

CPMSG0 is the solution for the management of stepper motors control.

- The board is developed for dosing baskets.
- It manages 2 stepper motors and a load cell.

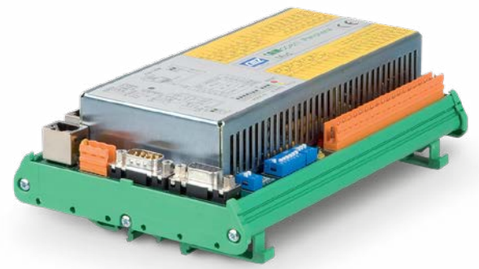


I/O DIGITAL MODULES

CP32D0

CP32D0 is the compact solution for I/O's digital modules for master controllers.

- Device profile DS401 version 2.0
- 16 optoisolated protected inputs 24 Vdc PNP
- 16 optoisolated protected outputs 24 Vdc PNP 200 mA
- Serial port RS232C (optional)



Motion Libraries

CMZ motion libraries are ready-to-use. They use CODESYS SoftMotion integrating it with additional functions and function blocks for multi-axis motion.

ELECTRONIC CAMS

Electronic Cams library comes from our decades of experience in interpolation, to coordinate the movement of some axis (slaves) based on the position of another axis or an encoder (master).

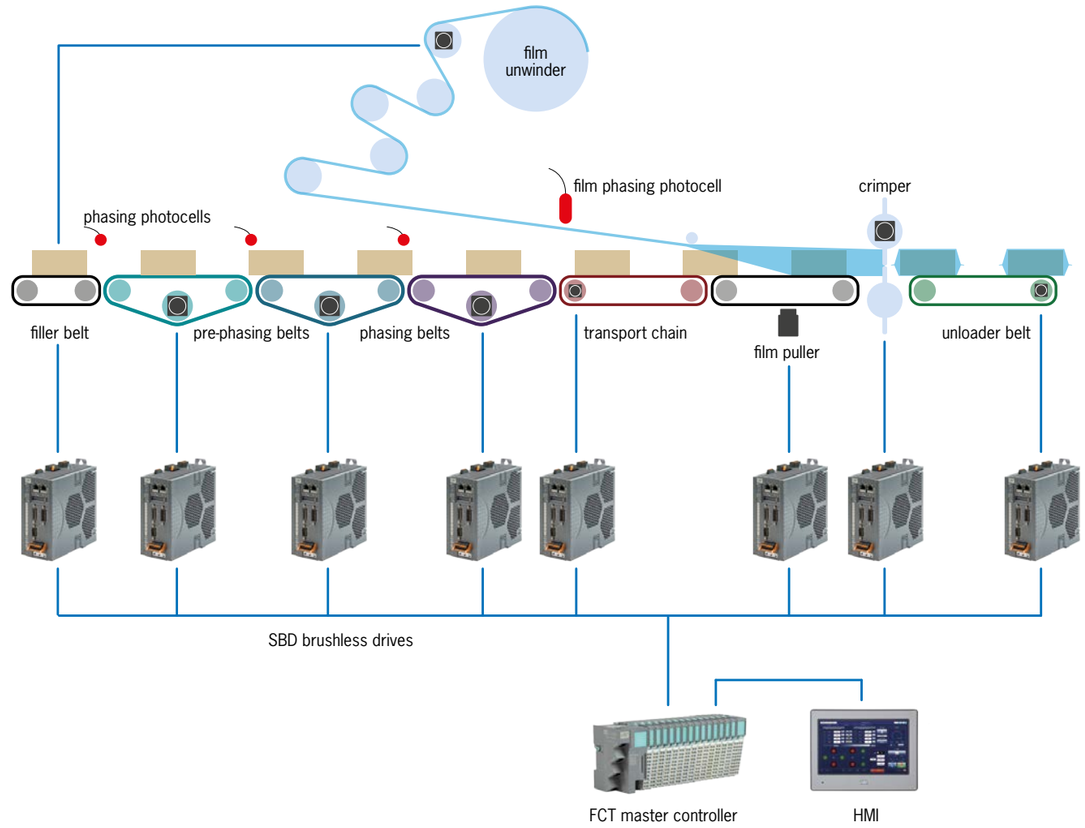
The core of this solution is the MC_CAM_REF data structure which describes the profile of the electronic cam. Functions have been prepared to manage MC_CAM_REF as input, re-elaborating it according to the specific needs while calculating a new profile, again described with MC_CAM_REF.

More features introduced by CMZ allow the modification of even a single section of the online cam and the use of polynomial fittings for the creation of particular trajectories.

It is also possible to use: CODESYS environment cam editor; tools for viewing the electronic cam running SMC_VISU_CamEditor; function blocks for the analysis of the profile limits.

This library does not require any license and it is fully usable by SoftMotion users without any incompatibility, as it is developed with open frame approach.

CMZ can develop libraries upon your specific project.



INTERPOLATION & MACISO

Interpolation library consists in a series of functions and function blocks created by CMZ for CODESYS, for the management of interpolation between linear and circular axes on the plane and linear interpolation on multiple dimensions.

The interpolation data between the different axes is based on a data table which describes the points and type of interpolation.

The library also offers the possibility to adjust the path of the tool in the XY through the radious compensation of the cutter.

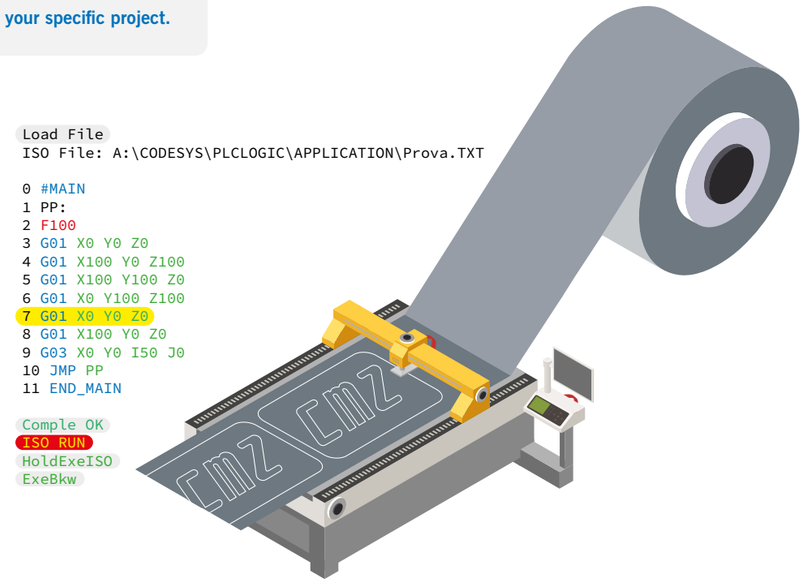
This library requires CODESYS SoftMotion.

A further possibility to manage interpolated axes is provided by the MACISO library developed by CMZ to interpret and execute G-CODE files.

MACISO is developed on CODESYS and requires SoftMotion.

The ISO interpreter manages the standard interpolation codes G00, G01, G02, G03 as well as more advanced functions, such as the customization of stop / start / slowdown points (G28, G29, G27, MDA, VEP etc), tool radius correction (G41, G42) and a variety of user's actions (T and M codes).

CMZ can develop libraries upon your specific project.



FLYING SHEAR

Fyling shear library allows to realize automatic machines where materials are in motion, on which a specific working (cutting, punching etc.) has to be applied.

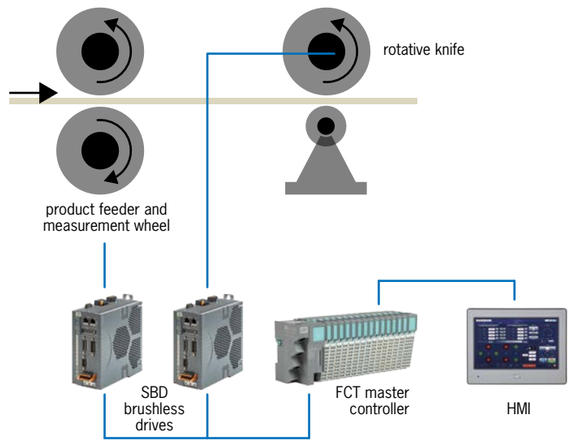
This library also allows to manage the processing of the materials both considering the length and notches/incisions on them.

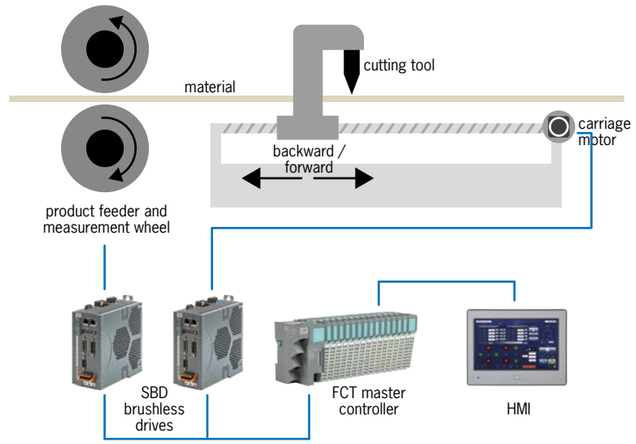
The position and speed of the material are read by a measuring wheel combined with the material feeding system, which acts as a master for the handling profile of the machining tools.

CMZ flying shear library further allows to:

- carry out custom-made workings or identified by notches/ incisions on the material
- customize the repositioning section of the tool in the final phase of each working
- manage procedures for "blade detachment" and for following the material during each working.

CMZ can develop libraries upon your specific project.





Communication Libraries

CMZ offers many libraries to allow communications between the controllers and the system devices.

DATA CONNECTION

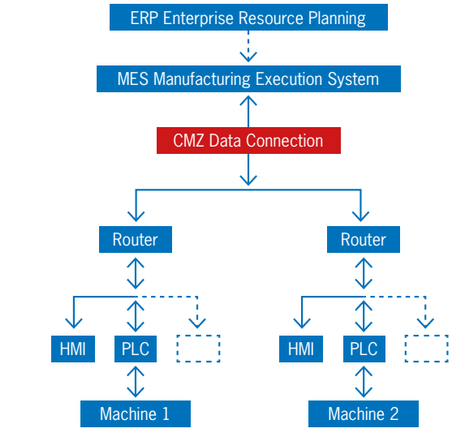
Data Connection library is a latest generation application for interfacing the factory computer system with the machines controllers upon Industry 4.0.

In Industry 4.0 infrastructures, in particular when creating interconnections with the factory IT systems, a key part is the integration of the machines into the factory network.

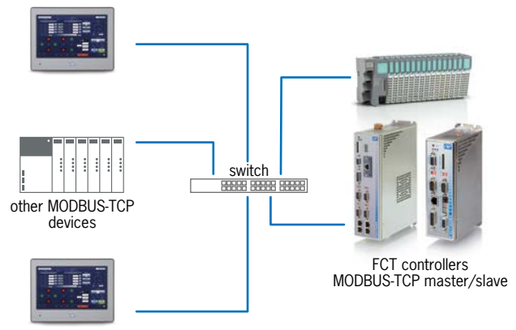
The activities to make possible the data exchange between the machines (suitably predisposed) and the management software (MES, ERP …) are not always easy to implement and very often they require the installation of additional HW/SW components (gateways, connectors, etc.) that are expensive and/or difficult to configure: for example, the OPCserver/MODBUS gateways need to be configured while the controllers -having gateway function- must be programmed.

To overcome these difficulties, CMZ has developed Data Connection: a PC software tool very easy to use and configure.

CMZ can develop libraries upon your specific project.



MODBUS MASTER & SLAVE TCP & RTU



CMZ provides the most transversal of communications between automation systems for its FCT640, FCT300, FCT200 CODESYS controllers.

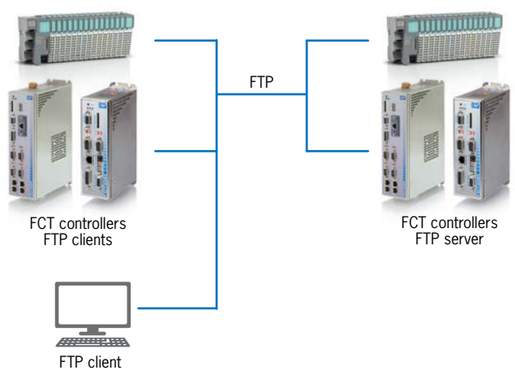
Through the MODBUS TCP library, FCT can act as both master and slave on ETHERNET (TCP) basis for all FCTs or on RS232 / 485 (RTU) basis for FCT200 and FCT300 systems.

FTP SERVER

FTP SERVER is a library that CMZ provides on its range of FCT series of CODESYS master controllers.

This functionality is part of the system firmware and it is distributed together.

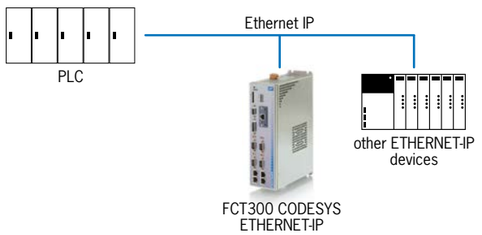
FTP (File Transfer Protocol) ensures the files exchange with the file system included in FCT640, FCT300, FCT200 controllers.



ETHERNET IP

ETHERNET-IP library is available for CODESYS FCT300 controllers: they become slave systems of an ETHERNET-IP network.

The fieldbus is managed as a library; the communication port on the controllers is single and available as option.

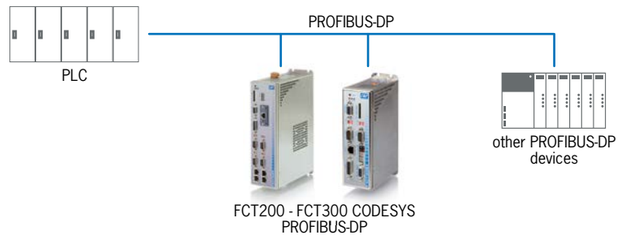


CMZ can develop libraries upon your specific project.

PROFIBUS DP

PROFIBUS-DP library is available for CODESYS FCT200 and FCT300 controllers: they become slave systems of a PROFIBUS-DP network.

The fieldbus is managed as a library; the communication port on the controllers is single and available as option.

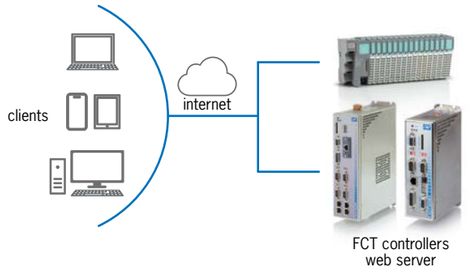


WEB SERVER

Web Server library allows the communication of one or more clients with the FCT series controllers (FCT640, FCT300, FCT200) by using internet.

For data transmission, the HTTP protocol is used and it is based on TCP network protocols.

Through this library it is possible to create web pages with HMI functions for machines with CMZ FCT Codesys controllers.



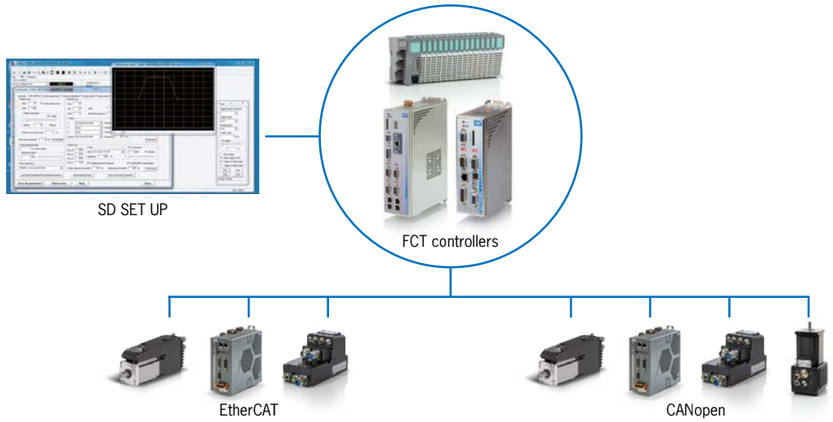
CMZ can develop libraries upon your specific project.

Utility Libraries

CMZ offers several utility libraries with function blocks useful for developers.

FIELDBUS BRIDGE

Fieldbus Bridge CODESYS library allows FCT640, FCT300, FCT200 controllers to be used as a bridge for communication between SDsetUP (configuration and calibration program for CMZ drives) and the drives, eliminating the need for a point-to-point connection.



NODES UTILITIES

Nodes Utilities is a CODESYS library that allows the controllers to manage directly the download update of the drives.

Through this library it is easy and fast to update:

- **firmware**
- **parameter files**

From CMZ controllers FCT640, FCT300, FCT200 (CODESYS) to the drives of any type (stand alone, integrated, nearby) such as the CMZ ones of SBD, LBD, IBD, NBD, SVM series.

This ensures considerable advantages in maintenance, with no need for further components.

BASIC UTILITIES

Basic Utilities library provides a set of function blocks to help developers in writing the program in CODESYS more easily.

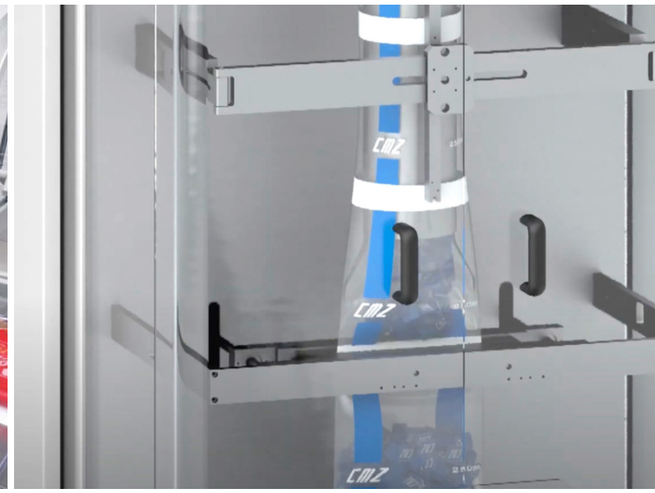
This library offers FNCs and FBs specific for this purpose.

CMZ can develop libraries upon your specific project.

Applicatives

CMZ offers complete software packages for ready-to-go motion control, as the result of our decades of experience in specific applications.

HFFS & VFFS
PACKAGING MACHINES



CMZ Sistemi Elettronici provides its specialized competence in developing motion control solutions for a wide range of packaging machines, along the entire industrial process including loading, weighing, labelling, end line.

CMZ solutions for HFFS horizontal packaging machines include the software package:

- **Software Applicatives** ready-to-use and easily configurable providing, in one shot, all motion control features and inputs for managing completely a multi-axis automatic packaging machine. The applicatives can be integrated with other applications already in use by the manufacturer.

- **Software Libraries** granting a pre-settled machine configuration while minimizing the commissioning set up, or developed by using CMZ completely customized functions for axis control.

Through our advanced and consolidated skills in automation, we set long-standing collaborations with an important number of manufacturers of automatic machines and system integrators worldwide.

Our sales and technical team is at disposal to support you in every step of your new project.

WATCH THE VIDEO 3D

MULTIHEAD & LINEAR
WEIGHERS

CMZ Sistemi Elettronici provides its specialized competence in developing motion control solutions for a wide range of dosing & weighing automatic machines, along the entire industrial process.

CMZ solutions for multihead and linear weighers include the software package such as:

- **Software Applicatives** ready-to-use and easily configurable providing, in one shot, all motion control features and inputs for managing completely a weigher machine. The applicatives can be integrated with other applications already in use by the manufacturer.
- **Software Libraries** granting a pre-settled machine configuration while minimizing the commissioning set up, or developed by using CMZ completely customized functions for axis control.

Through our advanced and consolidated skills in automation, we set long-standing collaborations with an important number of manufacturers of automatic machines and system integrators worldwide.

Our sales and technical team is at disposal to support you in every step of your new project.

WATCH THE VIDEO 3D

Development Environments

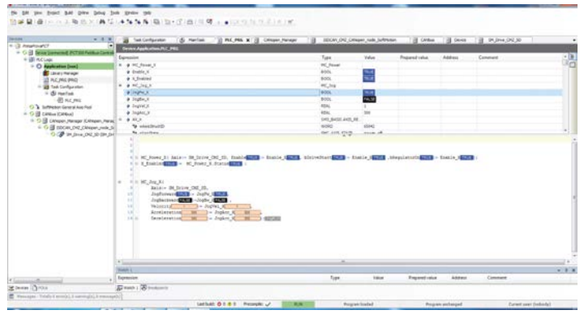
CODESYS

CODESYS is the leading non-proprietary IEC 61131-3 automation software for the engineering of control systems.

Through CODESYS, CMZ controllers (FCT640, FCT300, FCT200) are open to all CODESYS users worldwide taking advantage of the wide variety of services, engineering techniques and libraries provided by CODESYS development environment.

Besided the controllers, also CMZ drives (SBD, IBD, NBD, LBD, SVM, ISD) are open to CODESYS and can therefore be used with different CANopen and/or EtherCAT masters using this development environment.

All CMZ software libraries are also based on CODESYS: they use SoftMotion integrating it with additional functions and function blocks for multi-axis motion control.



SD SET UP

SD SetUP is the development environment to manage all CMZ servo drives (stand alone, integrated, nearby):

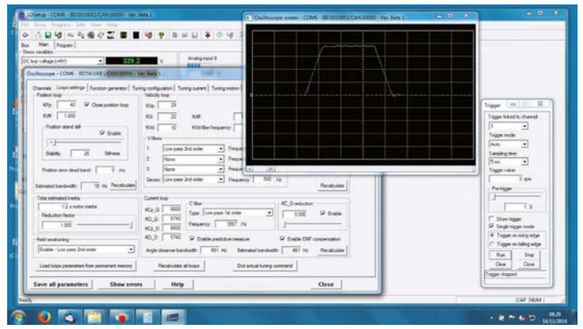
- **configuration**
- **parameterization**
- **tuning**
- **programming**

by using the RS232 serial connection or a centralized connection through a fieldbus (when the master controller is a controller of CMZ FCT series).

SD SetUP combines different functions:

- Instant monitor of the main variables of the system, but also of secondary variables
  System configuration (such as: configuration of digitals I/O modules, maximum speed/ acceleration range)
- Updating of parameters and firmware
- Auto-tuning and dedicated tuning of current loops, speed and position
- Oscilloscope for the analysis of variables
- Tools for the testing of basic movements (Function Generator).

With SD setup it is also possible to edit end debug the programs written in IEC61131 type Structured Test.



GEM DRIVE STUDIO

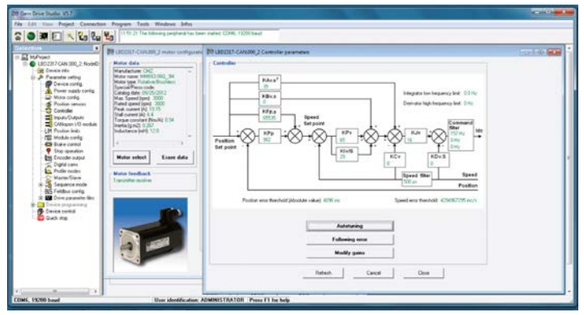
GEM Drive Studio GDS is the development environment to manage LBD and EASY servo drives:

- **configuration**
- **parametrization**
- **tuning**
- **monitoring**

by using RS232 or a centralized connection via fieldbus.

This software can be configured with different levels, easily adapting to the different users' expertise.

It also provides many tools for the drives configuration, tuning and monitoring.



PANEL MASTER DESIGNER

PM PANEL MASTER DESIGNER is the development environment for CMZ operator panels HMI of PT2 (current series) and PT models (previous series).

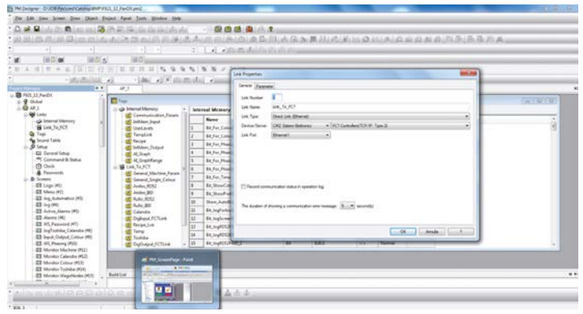
It is very intuitive, simple and powerful: the perfect solution to create your HMI projects.

You can:

- **program all the functionalities of the panels**
- **easily download all CMZ available software applicatives**
- **realize the GUI Graphical User Interface.**

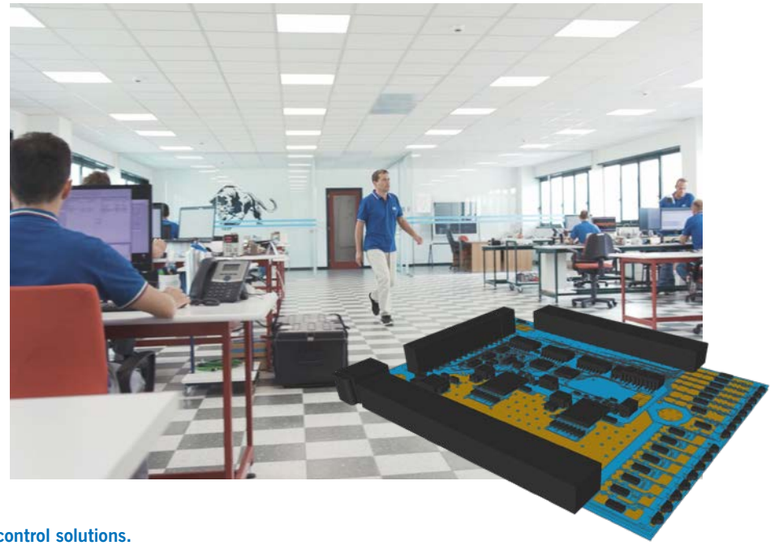
PM Designer is a free software package.

In addition CMZ can also provide PANEL EXPRESS runtime software based on PC platform.



Service

ONE PARTNER
FOR ALL YOUR NEEDS



CMZ provides the “complete package” for motion control solutions.
Hardware, Software, Service: these represent our integrated proposal for machine builders and system integrators worldwide.
Our focus is to be the **ONE PARTNER** for our customers, offering full customizable solutions for their motion control needs.
Everything can be supplied directly by one company: CMZ.

■ HARDWARE
controllers, servo drives and motors, peripherals, operator panels.

■ SOFTWARE
ready-to-use and customized libraries, applicatives, development environments.

■ SERVICE

ENGINEERING & CO-DESIGN
Our technical teams (hardware and software) operate side by side with your technical designers, supporting them in the development of automatic machines specifically made according to your needs and parameters.

REMOTE TECHNICAL ASSISTANCE
Our technical Customer Service area is dedicated to support you in pre and after sales, following you step by step for secure and fast systems configurations.

MAINTENANCE CONTRACTS AND PROGRAMS
You can enhance your aftersale operations by including scheduled actions regularly applied, in aim to keep your automatic machine running at highest performance.

REVAMPING
Do you have an old machine to revamp?
We can give advice, know-how, cost effective solutions.

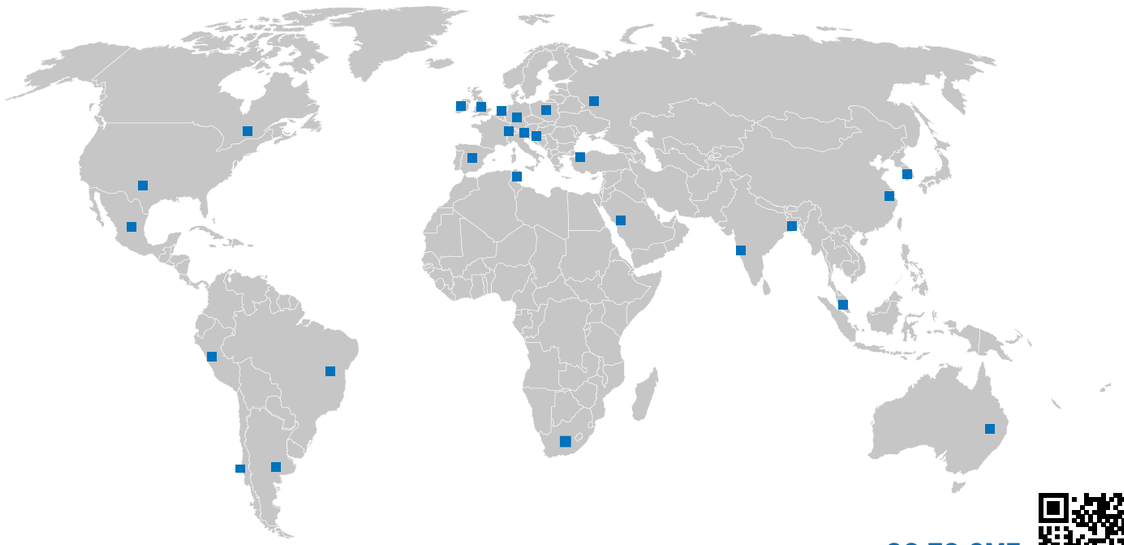
REPAIRS
cmz.it/repairs

ACADEMY
CMZ ACADEMY is our **new division dedicated to trainings and courses** focused on industrial motion control.

As part of CMZ SERVICE division, our Academy is based on interactivity while providing deepest technical knowledge, to bring our clients master some specific subjects related to **industrial motion control for Industry 4.0**. Courses are basic or advanced, held on-site at CMZ factory or at customer’s factory.
cmz.it/en/academy

PCB DESIGN (PRINTED CIRCUIT BOARDS)
CMZ provides a customized service of PCB Design fully engineered upon customers’ concepts.
Thanks to our qualified **IPC Designer Certification CID staff** and a highly innovative software, CMZ meets every need by designing the layouts, with particular focus on signal integrity and production, assembly and testability processes.
cmz.it/en/pcb-design-service

AUTOMATION PARTNERS



GO TO CMZ
AUTOMATION PARTNERS
ON-LINE

CMZ, A COMPANY OF SOGA ENERGY TEAM

CMZ is part of Soga Energy Team industrial group since 2017.

Soga Energy Team is headquartered in Northern-East Italy in Montecchio Maggiore (Vicenza hinterland) and operates worldwide in 85 countries within power generation, motion & control through 3 companies located in Italy (Soga S.p.A, CMZ Sistemi Elettronici S.r.l) and Croatia (Sincro d.o.o) and 5 brands: SOGA, SINCRO, AGROWATT, SOGAENERGIES, CMZ.

Owned and managed by the Soga family today in its second generation, the Group develops and manufactures motors, alternators, controllers and drives 100% Made in Europe:

- **Asynchronous electric motors | SOGA**
- **Synchronous & Asynchronous alternators & Rotating welders | SINCRO**
- **PTO tractor-driven generators | AGROWATT**
- **Permanent magnet, Hybrid and Special generators | SOGAENERGIES**
- **Electronic systems for industrial automation | CMZ**

Besides a range including over 850 standard models of rotating electrical machines among the most diversified and complete in our industry, the Group's portfolio extends to customized executions and the development of new special projects, for creating products with great technical innovative content.

sogaenergyteam.com

soga energyteam

N. 324838

N. 324839

soga energyteam

CMZ SISTEMI ELETTRONICI SRL

Via dell'Artigianato 21
31050 Vascon di Carbonera (TV)
Italy
+39 0422 447411
cmz@cmz.it

cmz.it

GENERAL CATALOGUE - May 2022 Rev. 03.2023