



Digitax *ST*

**Variable speed drives
for servomotors**

The servodrive in motion!

Satisfying the stringent yet progressive requirements of modern automation environments requires products that are highly efficient, more flexible and more compact.

Digitax STs are the first servodrives that enable you to meet these challenges in the industrial drive system environment.

EFFICIENT

Digitax STs are designed and developed to meet the demands of dynamic processes and high-performance servo-control systems.

- Their ability to supply very high peak torques, up to 300% of the rated torque, allows transient cycles with an exceptional dynamic response.
- Position movement control can be managed internally or externally, via synchronisation algorithms and high-speed data exchanges.
- Autocalibration can be used to measure the characteristics of the servomotor connected to the driven machine and adjust the control loop gains to obtain optimum performance.

FLEXIBLE

- Perfect adaptation to processes is now easy with the 3 **Digitax ST** versions and associated modules.
- Control of your servomotor: in torque, speed or position modes, as you choose.
- The universal nature of the analogue or digital offer enables data exchanges using different protocols.
- **Digitax ST** combined with LEROY-SOMER's **Unimotor fm** servomotors is the solution that always fits your constraints through the various mechanical configurations available: a complete range of **Dynabloc** servo gearboxes, optional shaft extensions and flanges, mechanical brake and compatibility with a wide selection of incremental or absolute position/speed sensors.

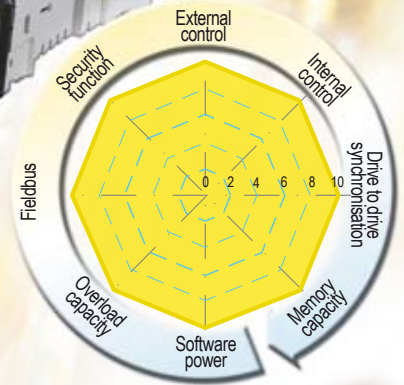
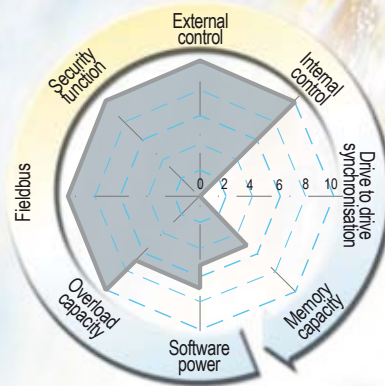
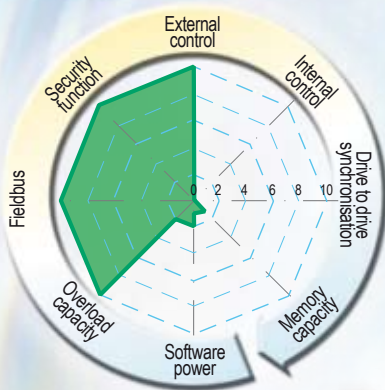


ECONOMICAL

LEROY-SOMER have used their expertise, combining innovation and reliability as a matter of priority, to develop the **Digitax STs** which, through their compact design and high level of integration, provide you with competitive solutions fully meeting the stringent requirements of mechatronics.

Maximum optimisation

ST-BASE, **ST-INDEXER**, **ST-PLUS**, have been designed to provide the right answer to the different requirements involved in the diversity of servomotor-based industrial applications. One of these three versions will meet the requirements of your process in the best possible way, providing you with a high level of performance, flexibility and quality.



ST-BASE

The centralised architectures solution

Positioning control by an external controller

Total connectivity with other automated elements via optional modules fieldbus digital and analogue I/O
Up to 300% overload – Parameter setting, saving and display via **CTSoft** & **CTScope**

ST-INDEXER

The response to self-positioning applications

Simple servo mechanism using absolute or relative positioning linear or rotary modes

Development of your control in position using **CTSoft** graphics functions

ST-PLUS

High-performance motion controller, perfectly adapted to Motion Control applications

Exchange and synchronisation between drives
Simple development by IEC 61131-3 language using PLCopen functions and logic blocks:

SyPTPro environment

Value your time !

DESIGN

... optimised!

- Create your configuration with the development tools
 - Positioning movement by graphical programming with **CTSoft**
 - Software programs providing the IEC 61131-3 languages with PLCopen or Advanced Position Controller (APC) functions
- Guaranteed communication via an extensive fieldbus offer
- Easy and quick implementation of your drawings using the Digitax ST, Unimotor FM and Dynabloc CAD files in 2D or 3D formats

INSTALLATION

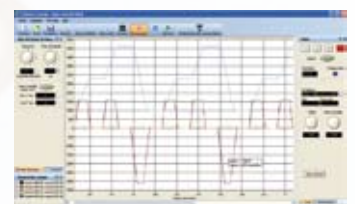
... simple!

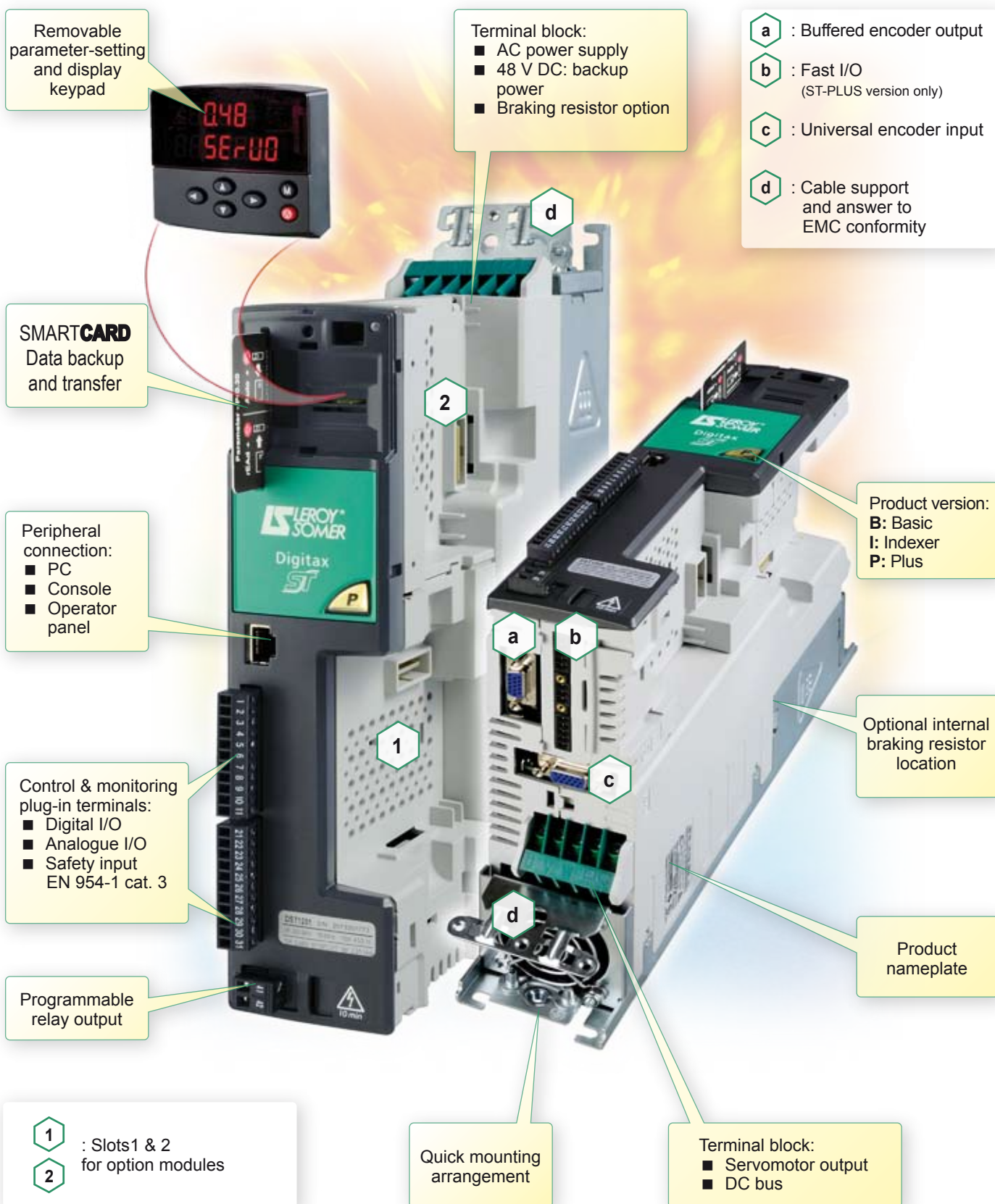
- Innovative mechanical design providing flexibility and ease of mounting in cabinets
- Disconnectable integrated hardware functions
 - EMC filter as standard
 - Overvoltage protection
- Pluggable control terminals allowing fast connection
- Optional modules that can be clipped in without a special tool for immediate customisation
Click-in option modules mean the drive can be quickly customised without specialist tools

COMMISSIONING

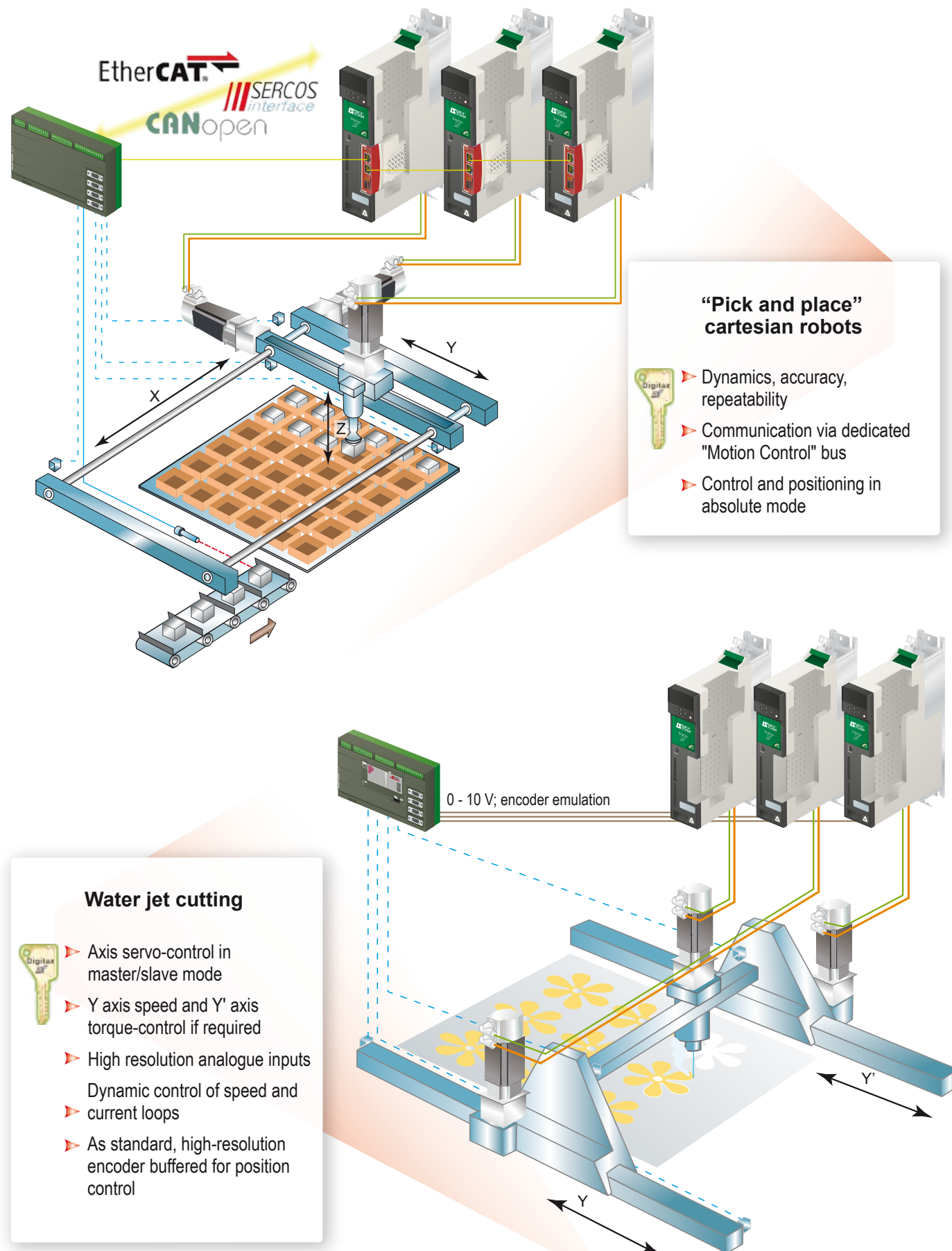
... fast!

- Parameter setting via:
 - The removable keypad
 - The **SMARTCARD** that allows parameters to be saved and copied into other servodrives
 - The **CTSoft** installation wizard that allows intuitive configuration
- **Digitax ST** automatically integrates the servomotor characteristics stored in the encoder
- Control loop gains optimised by autocalibration
- **CTScope** allowing real-time data display





Keys to the dynamics



ST-BASE

Axis coordination by centralised intelligence

Digitax ST - Basic is designed for integration with centralised motion controllers, connected via digital communication bus or analogue technologies. The servodrive offers optimised performance and flexible connectivity. It can be configured quickly and easily using the keypad, SMARTCARD or **CTSoft** software.

Optional modules allow interfacing of the servodrive using dedicated communication buses such as EtherCAT, SERCOS and CANopen. Standard I/O include a fast input for position capture (Freeze), a high-resolution analogue input and an encoder output allowing the servodrive to be connected to traditional motion controllers.

The integrated universal encoder input can be used to connect incremental, SinCos, Hiperface, EnDAT and SSI encoders; you can therefore choose the best speed/position sensor for your applications.

A safety input, complying with EN 954-1 category 3, disables the power stage (zero motor torque) in order to satisfy machinery safety standards. In this way it eliminates the need for a line contactor and a safety relay.

Typical applications

- Packaging
- Material handling
- XY transfer gantry cranes & robots
- Material, glue depositing, etc.
- Laser or water jet cutting (metal, glass, plastic, textile, etc.)
- Profiling applications
- Machining centres reconditioning, etc.

Suitable communication modules

SM-EtherCAT
SM-SERCOS
SM-CANopen

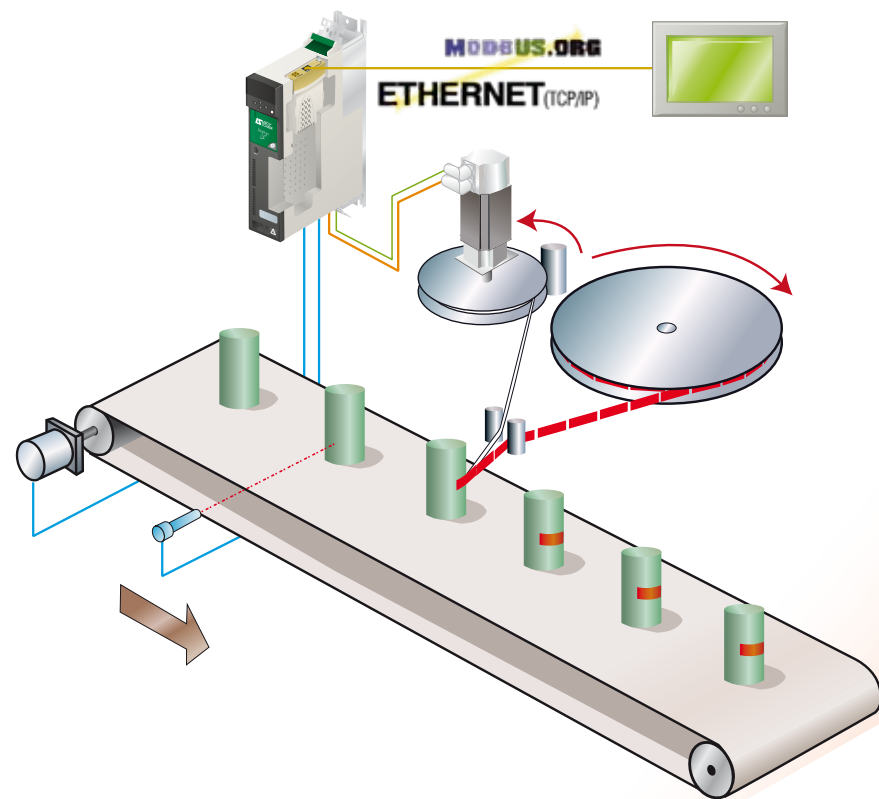


Speed/position feedback modules

SM-Resolver



Keys to flexibility

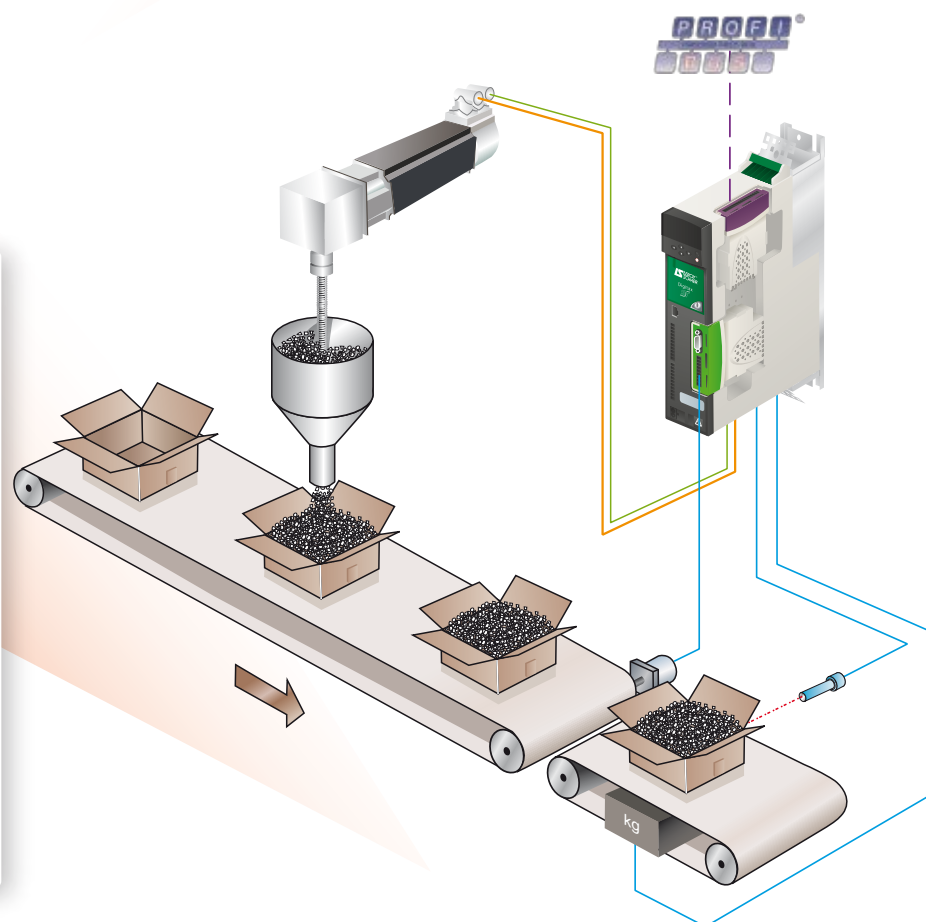


Labelling

- Synchronisation by encoder on the master axis
- Error correction in absolute or relative mode
- Increased fixing speed and quality
- Exchange of data with an operator panel

Dosage

- Simple implementation with standard function blocks for origin capture, position, sequential processing, etc. via the graphical interface
- Relative positioning
- Easy selection and change of recipes
- Dosage optimised and process efficiency increased through cycle time reduction



ST-INDEXER



Linear or rotating positioning

Digitax ST - Indexer enables the management of position servo-controls in absolute or relative mode. It can operate as a standalone controller. The **CTSoft** intuitive software and its graphics editor allow easy configuration of your application and assist you during commissioning for the following functions:

- Origin capture
- Position profile configuring
- Sequence linking

A wide choice of communication modules allows the **Digitax ST** to be integrated at different levels of the control system architecture.

A safety input, complying with EN 954-1 category 3, disables the power stage (zero motor torque) in order to satisfy machinery safety standards. In this way it eliminates the need for a line contactor and a safety relay.

Typical applications

- Indexing tables
- Dosage
- Cut-to length machines
- Punching
- Transfer mechanisms
- Packaging
- Labelling, etc.

Suitable communication modules

- SM-Ethernet, Modbus TCP/IP
- SM-Profibus
- SM-DeviceNet
- SM-CANopen, SM-Interbus,
- SM-Applications (CTNet)



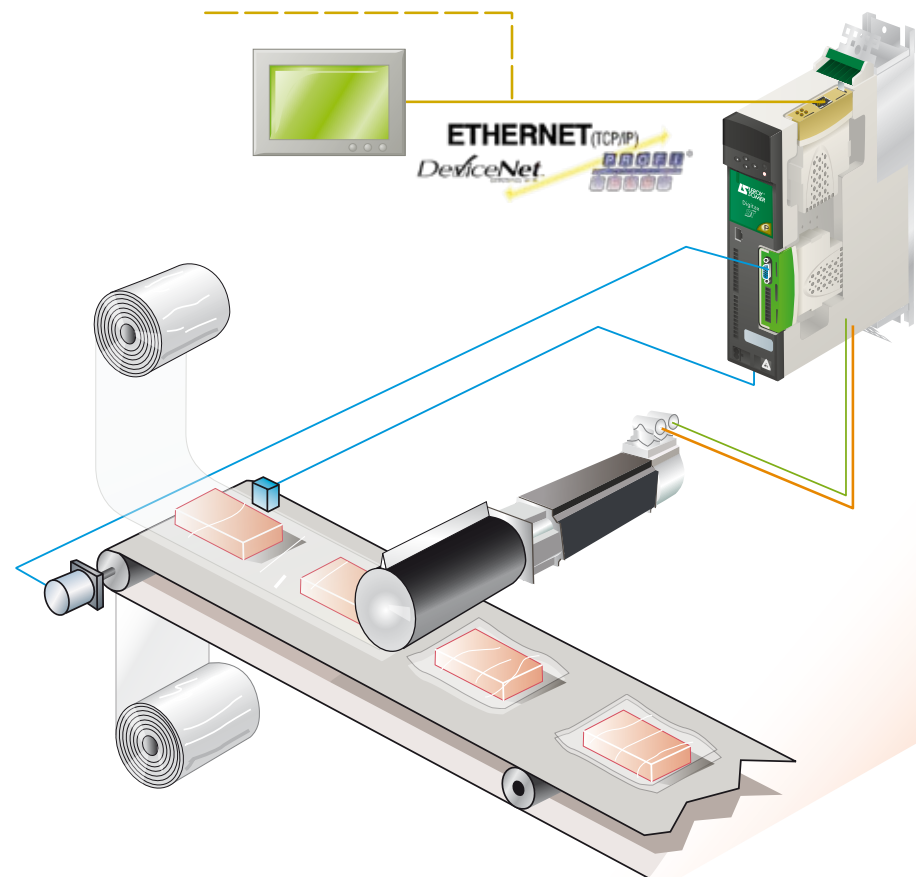
Speed/position feedback modules

- SM-Resolver

I/O modules

- SM-I/O Lite, SM-I/O Plus, SM-I/O Timer
- SM-I/O 32

Keys to accuracy



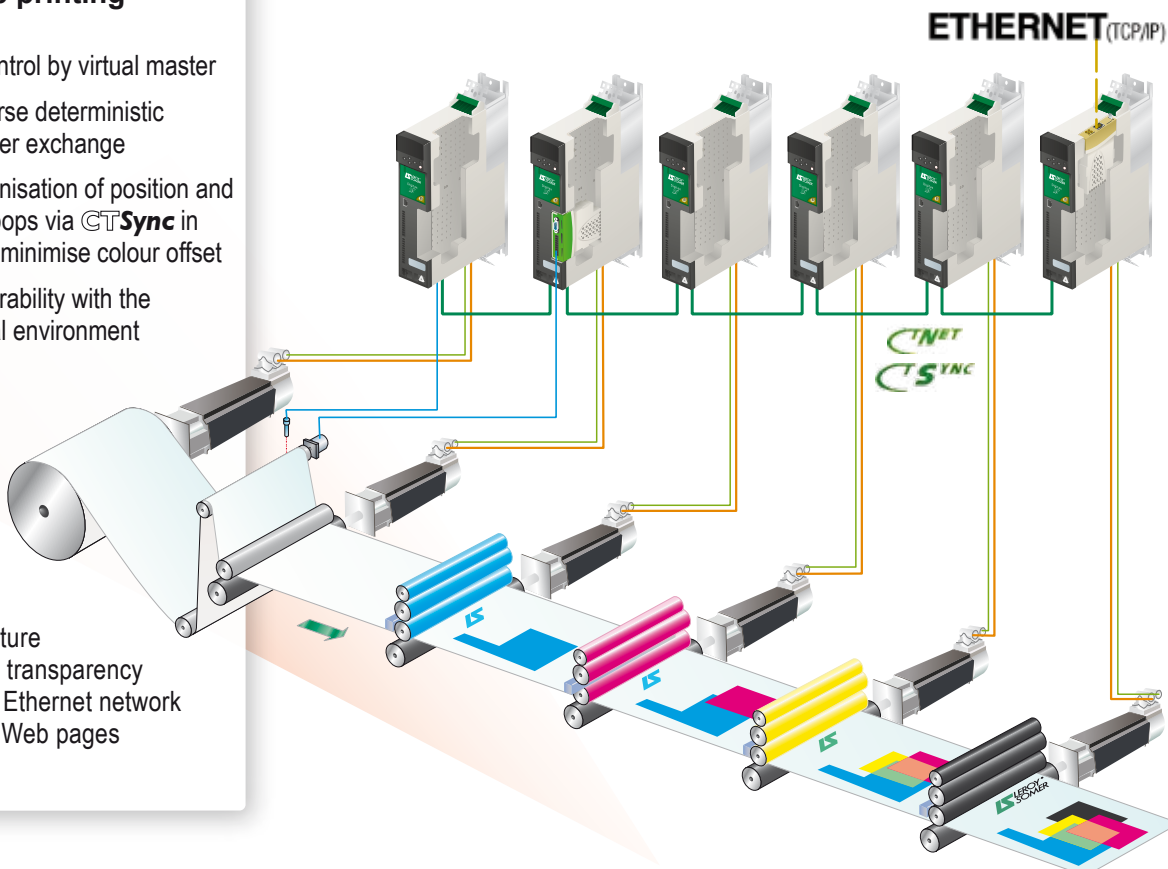
Rotary knife

- ▶ Synchronisation via cam profiles
- ▶ Configurable interpolation management
- ▶ Loading of formula tables by communication bus
- ▶ Saving of process data in Digitax ST
- ▶ Optimisation of machine I/O through Digitax ST modularity
- ▶ Guaranteed upgradability and flexibility

In-line printing

- ▶ Axes control by virtual master
- ▶ Transverse deterministic parameter exchange
- ▶ Synchronisation of position and speed loops via **CTSync** in order to minimise colour offset
- ▶ Interoperability with the industrial environment

- ▶ Architecture allowing transparency with the Ethernet network through Web pages



ST-PLUS



Flexibility for the most efficient axes

Digitax ST - Plus is designed for decentralised applications. It provides more advanced movement functions, including cam profile and inter-axis synchronisation. These functions are configured using the IEC 61131-3 language, PLCopen or the APC included in the **SyPT Pro** software workshop.

Networking allows data exchanges and distributed servo-controls. By integrating the position controller, Digitax ST - Plus guarantees high performance, a reduced size and simplicity in automated architectures. The program developed in a multitasking system and synchronisation of the speed/position loop make it an efficient product that is simple to use, whilst reducing the operational testing time.

The use of **SyPT Pro** means that **Digitax ST - Plus** protects intellectual property by safeguarding your application's source code. With its internal intelligence, inter-servodrive deterministic synchronisation and numerous communication options, **Digitax ST - Plus** enables you to standardise your products easily whilst retaining full interoperability of any PLC or operator panel, whatever the standard.

A safety input, complying with EN 954-1 category 3, disables the power stage (zero motor torque) in order to satisfy machinery safety standards. In this way it eliminates the need for a line contactor and a safety relay.

Typical applications

- ▶ Printing
- ▶ Packaging
- ▶ Flying shear or rotary knife
- ▶ Winder traverse
- ▶ X-Y transfer lines

Suitable communication modules

- SM-Ethernet, SM-Ethernet IP
- SM-Profibus
- SM-DeviceNet
- SM-CANopen, SM-Interbus
- SM-Applications (CTNet)



Speed/position feedback modules

- SM-Resolver, SM-Universal Encoder Plus
- SM-Encoder Plus

I/O modules

- SM-I/O Lite, SM-I/O Plus, SM-I/O Timer, SM-I/O 32, external I/O modules

Software tools

The LEROY-SOMER software tools give easy access to all the servodrive functions for:

- Setting the **Digitax ST** parameters via application wizards
- Developing and optimising your position, current or speed servo-control
- Setting up exchanges with other LEROY-SOMER drives via different communication media
- Backing-up your configurations

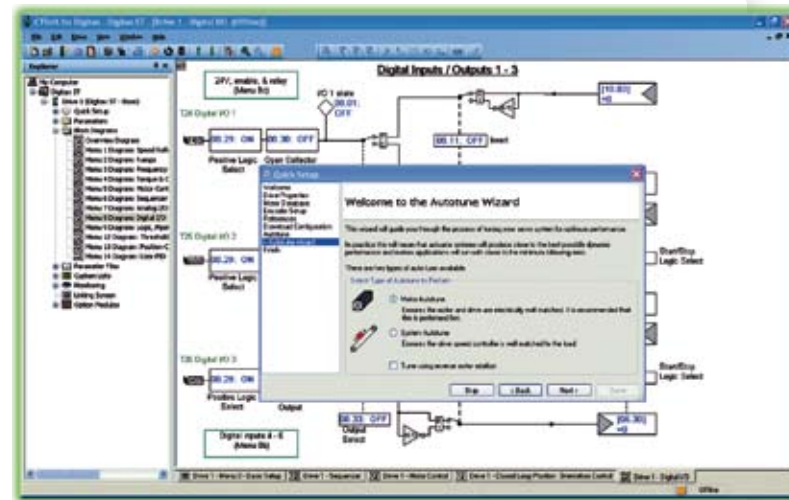
The software pack comprises **CTSoft**, **CTScope**, **SyPT Pro** and **CTOPCserver**.

Communication media available: Ethernet, CNet, serial or USB connections. Ethernet communications can be used to access remote drives throughout the world with M2M (Machine to Machine) technologies.

CTSoft

Servodrive configuring software

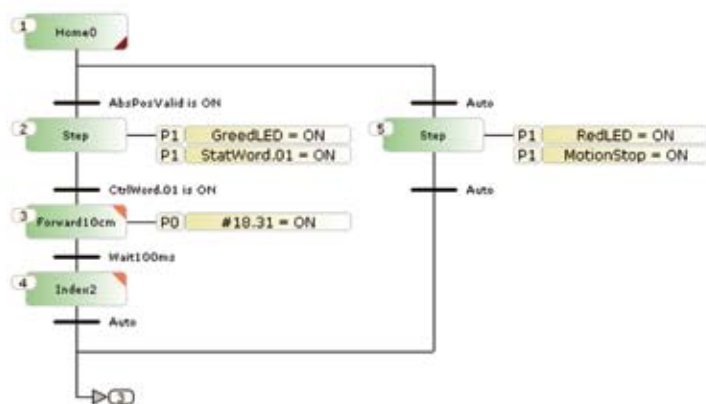
- Configuring wizards for commissioning the Digitax STs
- Animated diagrams for displaying and modifying your configuration
- Reading, saving and loading drive parameter settings
- Management of SMARTCARD data
- Online access to technical manuals
- Servo-control programming using the graphics editor designed for the **ST-INDEXER** version; this can be used to define the movement profile, set up control system sequences and configure the associated I/O



Possibilities for checking the program status

Adaptation of the movement speed for commissioning and testing

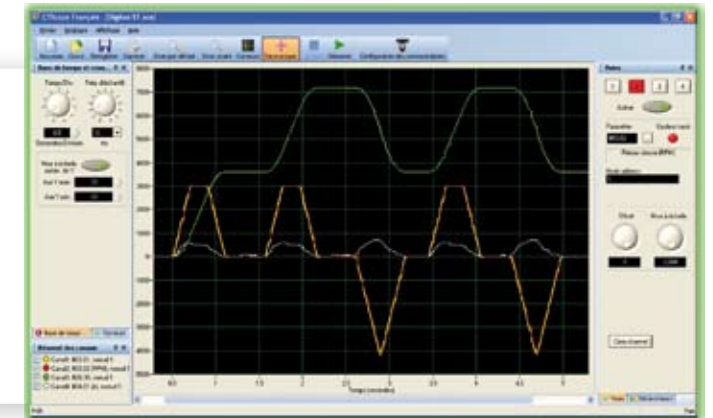
SFC (Sequential Function Chart) language



CTScope

4-channel real-time oscilloscope can be used to display, analyse and save the application data

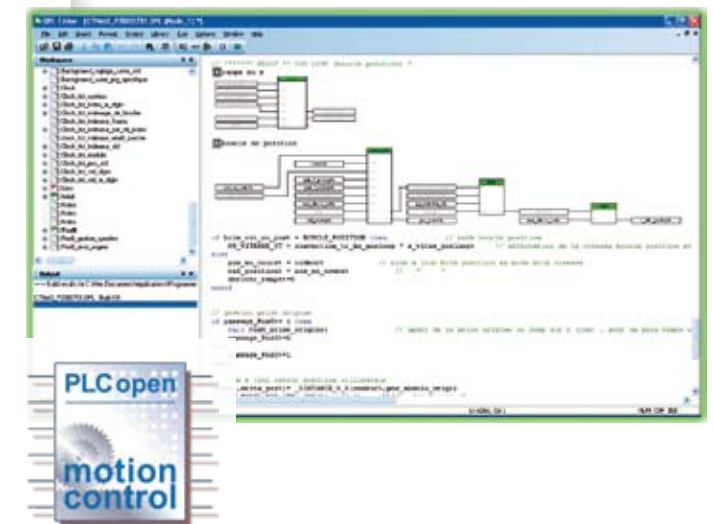
- Selection of servodrive parameters
- Adjustable time base and scale
- Trigger function
- Integrated zoom and measurement cursors



SyPTPro

Complete control system environment that can be used for developing solutions for applications with single or multiple axes.

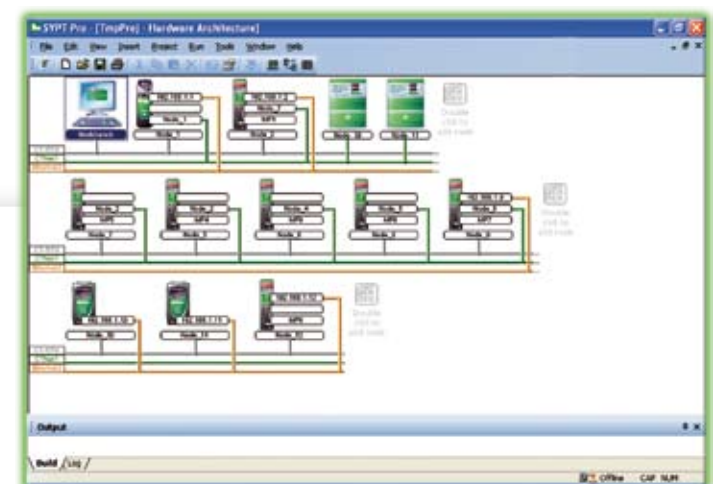
- IEC 61131-3 compliant programming software with three languages:
 - Ladder
 - Function blocks
 - Structured text
- Servo-control configured using APC or PLCopen language which allows synchronisations up to 1.5 axes (real or virtual master)
- Configurable via SyPT Pro, the CNet network allows exchanges between drives using I/O or operator panels.



CTOPCserver

OPC (OLE for Process Control) server enabling PC platforms to communicate with LEROY-SOMER drives

- Ethernet, CNet, RS485 and USB
- Standard interfacing with operator panels, compatible with Microsoft™ products



A complete servo offer ...

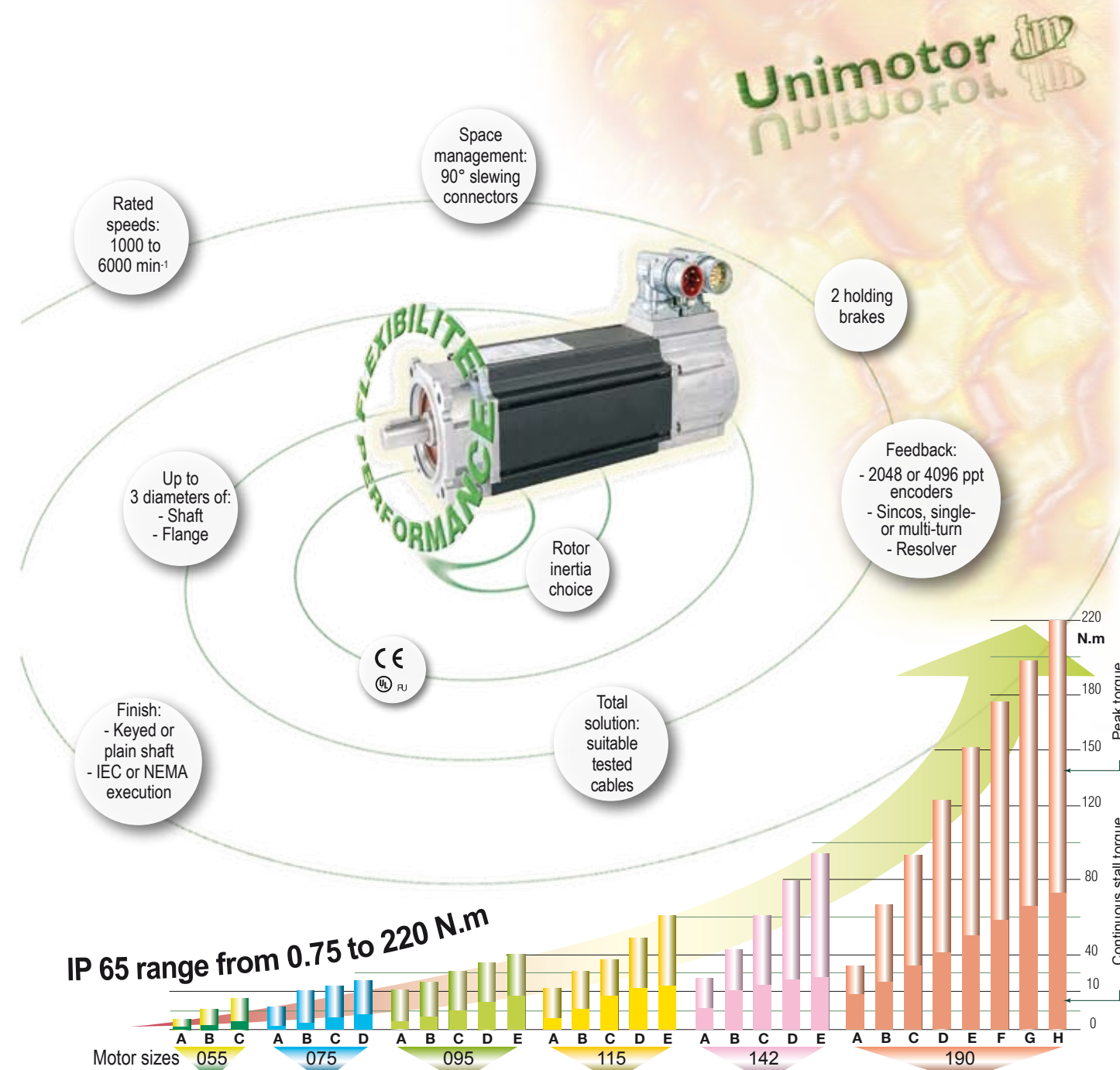
Controlling axes as quickly as possible with the greatest accuracy is a requirement for industrial applications. Designed to work together, **Digitax ST**, **Unimotor fm** and **Dynabloc** provide the user with compactness and an overall guarantee of performance. LEROY-SOMER therefore offers an incomparable range of solutions to meet the constraints of high-dynamics applications.



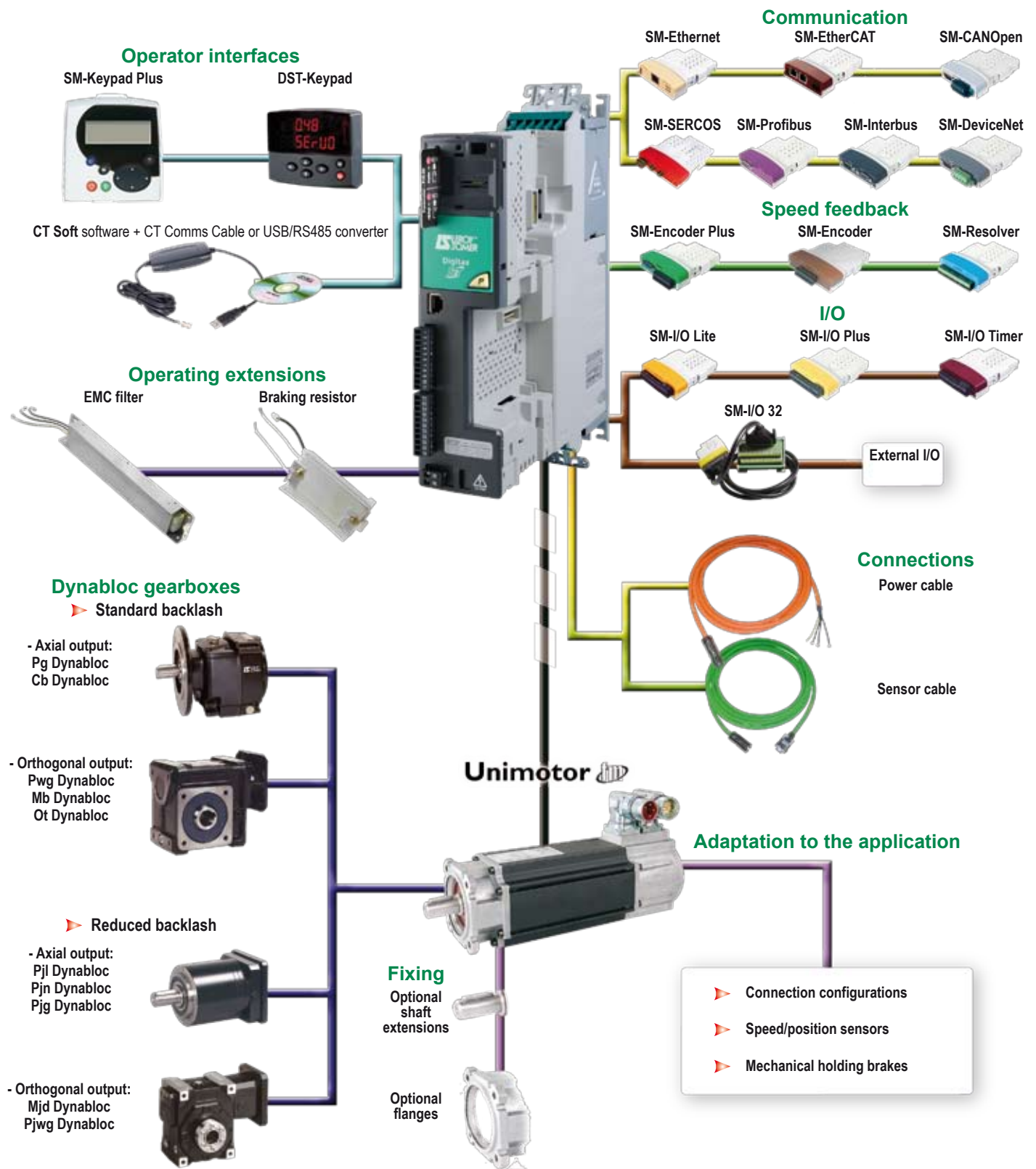
Dynabloc gear servomotor range enabling a variety of technical solutions

- Backlash: 1 to 30' as required
- Foot or flange mounting
- Orthogonal or axial output
- Hollow or plain shaft, keyed or smooth with shrink disc

... suited to the application and environment



The LEROY-SOMER offer



General information

Environment

Protection:	IP20 (UL Type 1 / NEMA 1)
Ambient temperature:	operation from 0 to 50°C (derated for ambient temperatures > 40°C)
Ambient humidity:	95% maximum relative humidity, non-condensing
Altitude:	0 to 3,000 m (maximum output current derated by 1% for every 100 m above 1000 m)
Electromagnetic immunity:	complies with EN 61800-3 (2nd environment)
Electromagnetic emissions:	complies with EN 61800-3 (2nd environment), integrated filter as standard; EN 61000-6-3 and EN 61000-6-4 with optional EMC filter

Mechanical strength

Vibrations:	tested in accordance with IEC 60068-2-6/64
Shocks:	tested in accordance with IEC 60068-2-29

Overload capacity

Up to 300% of rated current for 250 ms

Main characteristics

Electrical characteristics

Designation	Power supply Frequency range: 48 Hz to 65 Hz					
	Single phase 230 V		3-phase 230 V		3-phase 400 V	
	<i>I</i> R (A)	<i>I</i> p (A)	<i>I</i> R (A)	<i>I</i> p (A)	<i>I</i> R (A)	<i>I</i> p (A)
ST 1.1 A/TL*	1.1	2.3	1.7	5.1		
ST 2.4 A/TL*	2.4	4.8	3.8	11.4		
ST 2.9 A/TL*	2.9	5.8	5.4	16.2		
ST 4.7 A/TL*	4.7	9.4	7.6	22.8		
ST 1.5 AT*					1.5	4.5
ST 2.7 AT*					2.7	8.1
ST 4.0 AT*					4	12
ST 5.9 AT*					5.9	17.7
ST 8.0 AT*					8	24

* : B: BASIC version - I: INDEXER version - P: PLUS version

I R: rated current

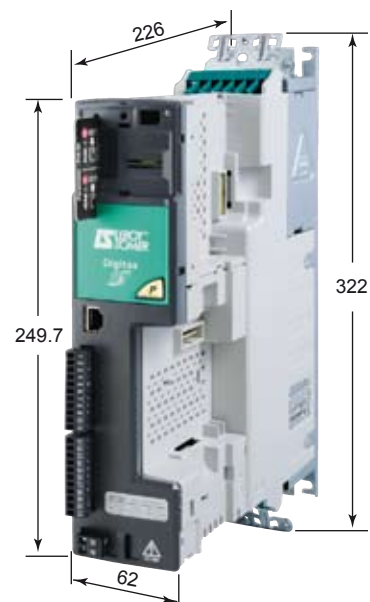
I p: peak current (250 ms)

I/O

- 3 digital inputs
- 3 bidirectional I/O
- 2 analogue outputs
- 1 high-speed input (1 µs, "Freeze")
- 1 high-resolution analogue input (16 bits + sign)
- 1 analogue input (10 bits + sign)
- 1 safety input complying with EN 954-1 category 3
- 1 relay output, 2 A - 240 V AC
- 1 universal encoder input
- 1 buffered encoder output

Dimensions (mm)

1 size only



Weight: 2.1 kg, bare drive



MOTEURS LEROY-SOMER 16015 ANGOULÊME CEDEX - FRANCE

338 567 258 RCS ANGOULÊME
Limited company with capital of €62,779,000

www.leroy-somer.com