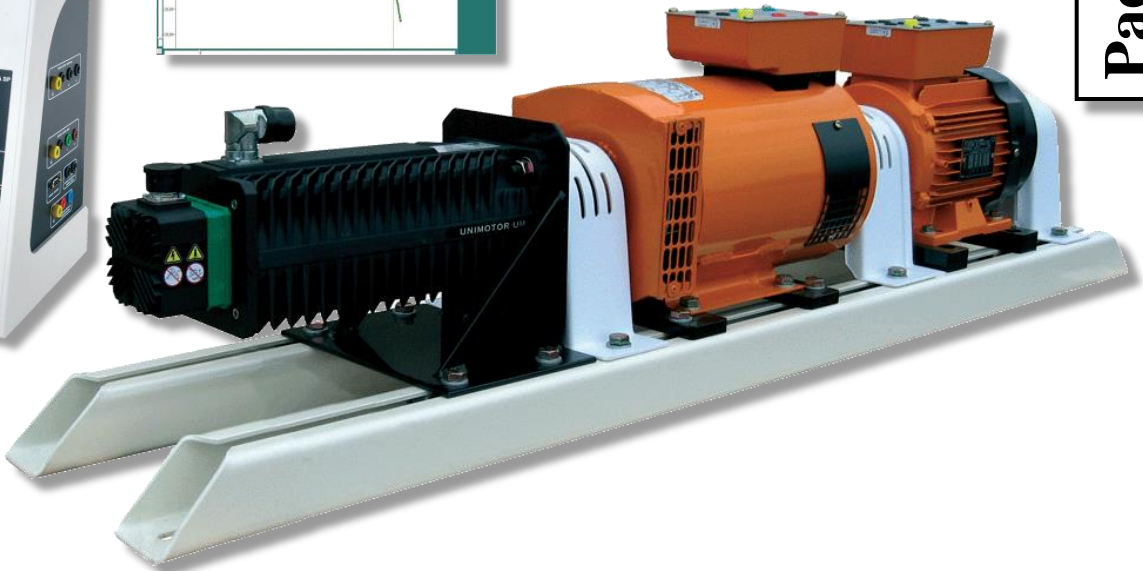


Package: ELD 150



Active load, test bench for AC and DC motors, load generator

MAIN CHARACTERISTICS

The complete bench (ELD150B) is a technical bench used for

- The study of electrotechnical characteristics of DC motors and AC 3-phase asynchronous and synchronous motors,
- Test of controls of motors (with load),
- Simulation of industrial processes (overhead cranes...)
- Design of a lot of kind of loads in order to do practical works in speed and position control.

FIELD OF APPLICATION

- Basic training
- Vocational training,
- Technical high schools, and polytechnics,
- Technical universities.

TECHNICAL CHARACTERISTICS

The bench is set on a support with castors ; it includes:

- A synchronous servo motor, with its variator in a control unit, « **ApILE** » control program (operating with Windows),
- A DC motor,
- A 3-phase asynchronous squirrel cage motor.

Nota : you can ask for specific configurations.

ENVIRONMENT

When you use the package ELD150B, you need to be in an electrotechnical environment with all the security norms :

ELD100B Electrotechnical table bench, 2,2 kW, with AC & DC power supplies

Optional extra:

Power electronics and servo control:

EP360, Graetz bridge, 1-phase and 3-phase rectifier and AC regulator

EP560, Chopper, 1-phase inverter

EP660, Chopper, 3-phase inverter

PACKING LIST :

Net : 185 kg

Machines bench: 1500 x 460 x 860 mm

Control unit: 320 x 250 x 500 mm

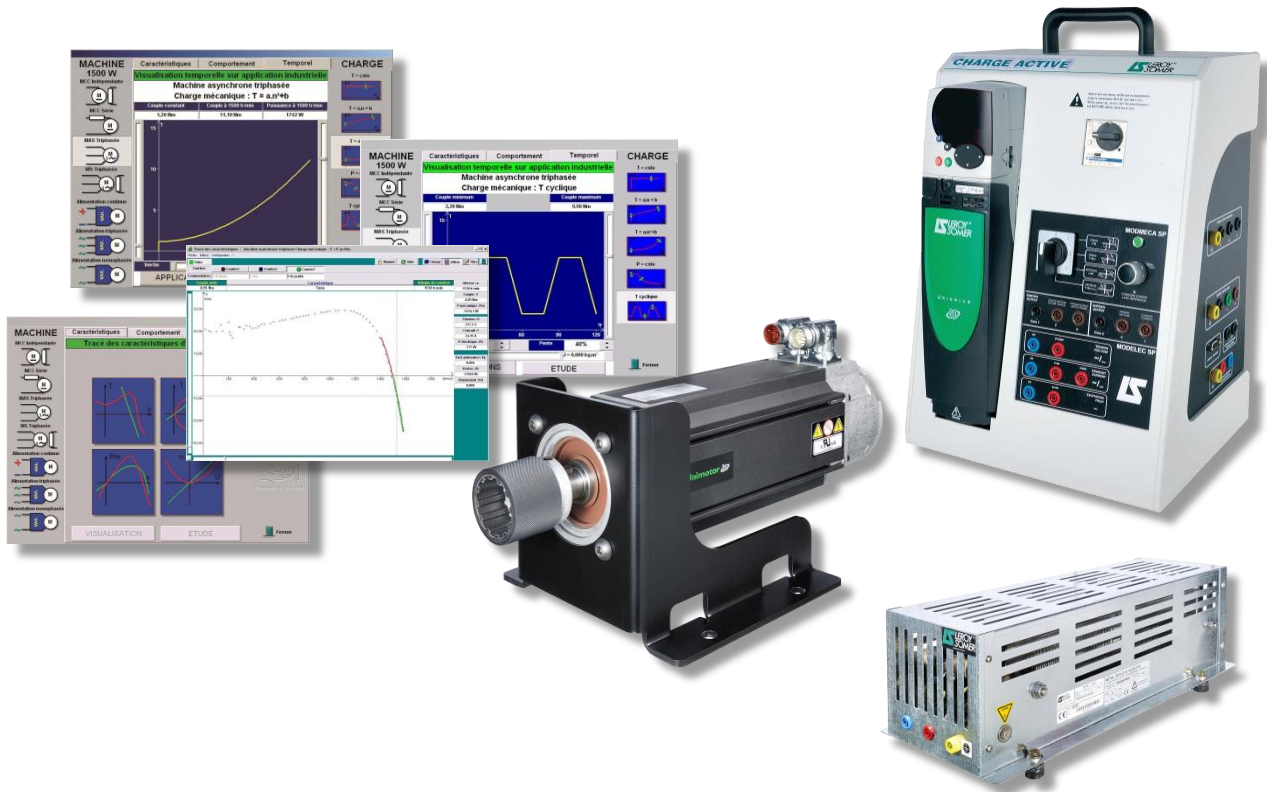
Rheostat : 350 x 200 x 170 mm

Brut : 1720 x 720 x 1040 mm ; 220 kg

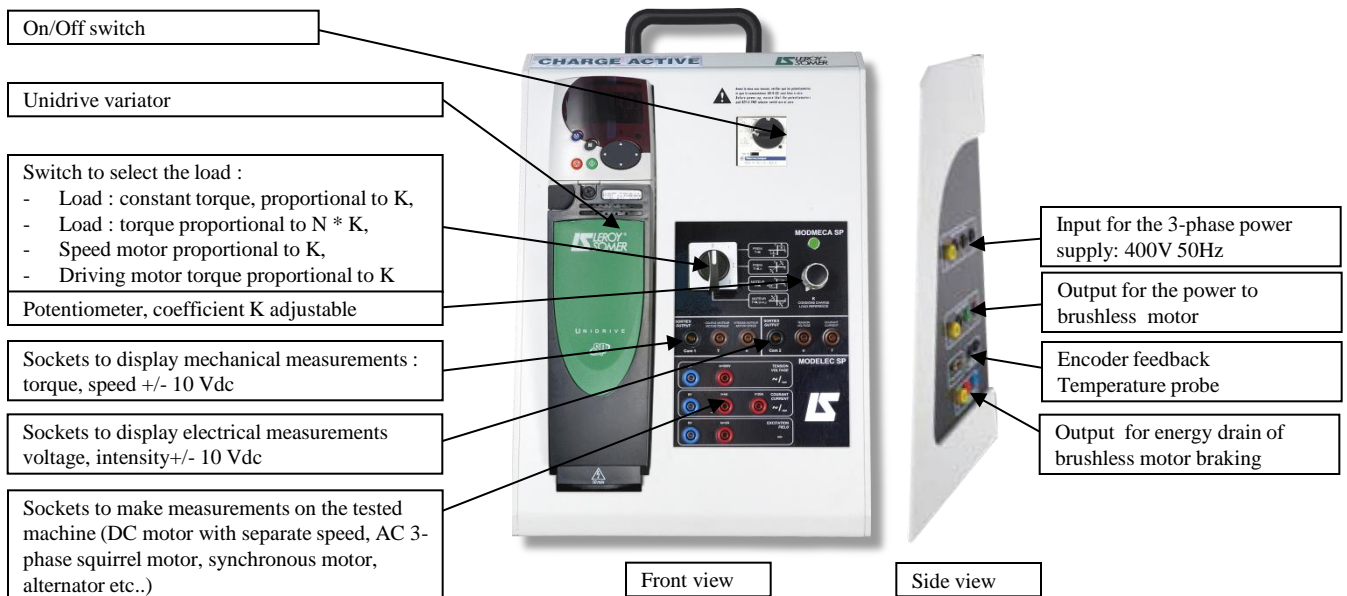


ELD 151 000 : « Active load » 4-quadrants :

The active load, ELD 151 00, is made of a 2,26 kW brushless motor with its control unit and its energy draining rheostat. The control unit includes a Unidrive variator, in order to create several kind of loads for the brushless motor. These loads are used to characterize the tested motor (AC or DC motor), (torque depending of the intensity, speed depending of the voltage, torque depending of the motor slip, etc..), to simulate an industrial process, (overhead crane, piston pump, lifting etc..) or to design laws of loads (fluid friction, driving load etc..) in order to do Practical works in speed and position control with power converters ((EP 360 000, EP 560 000 or EP 660 000).



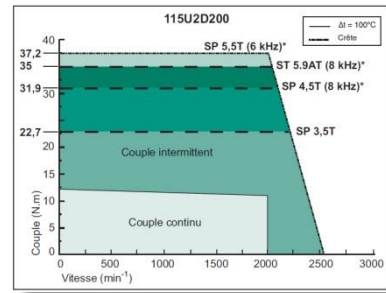
Details of the control unit:



Brushless motor:

The brushless motor of the active load is 115U2D200, here are some characteristics:

- Power supply: 3 x 400 V, 50 Hz,
- Rated torque: 10,8 Nm, pick torque 49,6 Nm, permanent torque (stalling) 12,4 Nm,
- Rated speed: 2 000 tr/min, max speed: 3 200 tr/min,
- Rated output: 2,26 kW,
- Optical encoder: 4 096 Pts/tr.



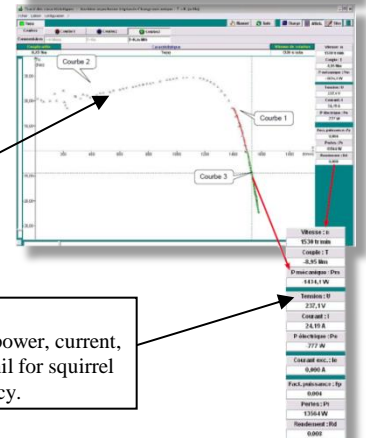
ApiLE, control software for PC :

The ApiLE program (Industrial Applications in Research Laboratories) is supplied with the active load set.

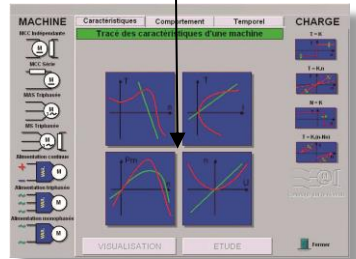
It has the following assets:

- **Intuitive**, it enables immediate use,
- **Concrete**, industrial animations show the different laws of load for the machines, ...
- **Open**, the images of the curves can be saved and used for practical works reports,
- **Powerful**, Numerous tests are available, efficiencies, torque function of the sliding of the rated speed up to stalling, then from stalling to rated speed etc..

Screen for static measurements



Red curves: AC 3-phase motor
Green curves: DC motor



Result of a test with 3-phase asynchronous squirrel cage motor :

- Downward load, from load torque nil to torque growing until the blocking,
- Increasing load, from the blocking to no load.

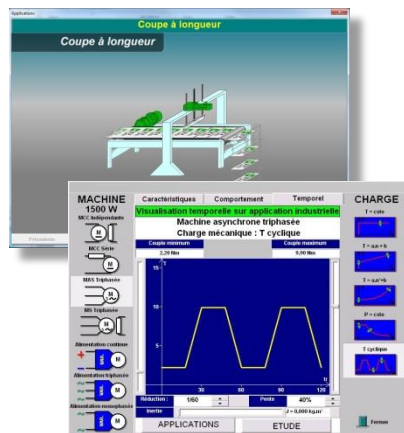
Results for an operating point .
Speed in tr/min, torque, mechanical power, current, electrical power, excitation current (nil for squirrel motor), power factor, losses, efficiency.

Industrial scenarii:

To concretize laws of loads applied to machines, industrial animations are available for every law of load, some examples:

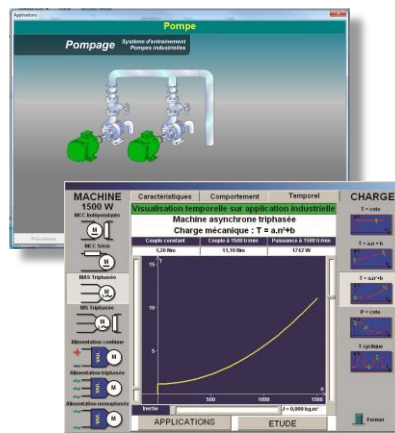
Shear cutting.

Torque by fits and starts



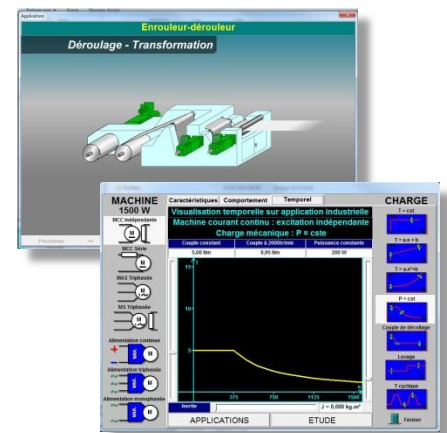
Pumping.

Constant torque + F square speed



Unwinding.





Constant torque - F reverse of the Ø of the coil



ELD 152 000 –Asynchronous squirrel cage motor, 1,5 kW

- Rated output : 1.5 kW, 1 500 tr/min
- Thermal protection with PTO probe, Double shaft, each fitted with

Electrical specifications (for 50 Hz)

Setting	Voltage	Speed	Power	Cos φ	Current
	380 V	1 425 tr/min	1,5 kW	0,86	3,40 A
	230 V	1 435 tr/min	1,5 kW	0,84	5,50 A
	400 V	1 435 tr/min	1,5 kW	0,84	3,20 A
	415 V	1 440 tr/min	1,5 kW	0,82	3,20 A



ELD 153 000 – DC motor with separate excitation, 1,5 kW

- Rated output: 0,9 3to2,3 kW
- Thermal protection with PTO probe, Double shaft, each fitted with half coupling.

Electrical specifications

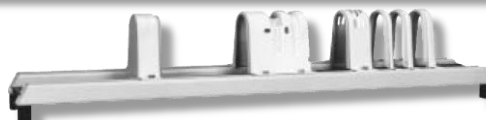
Power	Speed	Voltage	Currant	U (Excitation)	I (Excitation)
0,93 kW	1 500 tr/min	170 V	6,5 A	190 V	0,4 A
1,42 kW	2 300 tr/min	260 V	6,5 A	190 V	0,4 A
1,7 kW	2 740 tr/min	310 V	6,5 A	190 V	0,4 A
2,3 kW	3 700 tr/min	420 V	6,5 A	190 V	0,4 A



ELD 151 100 – Stand with castors

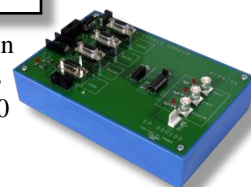


ELD 151 200 – Slide rail test bed, 1,5 m



EP000100 – Encoder interface

It is used to duplicate the encoder pulses in order to do the speed and position controls with the power electronics bridges (EP360 or EP660) (cf documentation).



ELD150B : Basic package « DC/AC 1.5 KW MOTORS TEST BENCH, with LOAD GENERATOR, and ACQUISITION" including :

References	Description	Qty
ELD151000	(ACTIVE1500) : 1500-W active load, made of: - Brushless motor, 1500 W with encoder, - Load generation unit, acquisition data system for the electrical and mechanical measures - Load resistance for energy drain - Control and acquisition software for PC (computer not supplied), USB cord,	1
ELD152000	3-phase asynchronous squirrel cage motor 1.5 KW, 230V 5,5A, 400V 3,2A	1
ELD153000	DC motor, 1.5 KW with separate excitation,	1
EP000100	Incremental encoder interface (for experiments in speed and position control) wiht 2 cables SVGA/DB15	1
ELD151100	Stand with castors S2L	1
ELD151200	Slide rail test bed, length 1500 mm, supplied with protections and screws	1

Suggested Environment:

ELD100B : Electrotechnical table ; EP360 : Graëtz bridge, AC controller, EP660 : Chopper, 3-phase inverter.

Document non contractuel