



elektrosistem



# TRACTION CHOPPER AND POWER MODULE TYPE “SYSTEM-MOS”

The brand SYSTEM-MOS has been chosen by Elektrosistem for a new line of control units characterised by a completely new power technology able to guarantee functionality, operator's safety as they are manufactured in conformity with the EEC standard No. 86/663 of 22-12-86 and a reliability never reached by the older “bipolar transistor technology”.

Assembled as “power modules”, that is complete with contactors, these control units introduce a new concept of electronic drive units for lift trucks.

For the operators facing every day the technical problems of this sector, this line represents without doubt a very good solution.

## FUNCTIONALITY

The philosophy of the power module has recently developed among the foreign producers of chopper equipment, as it offers many economic and technical advantages, such as:

a) economy of the regulation system obtained by means of the integration of the electromechanical part with the electronic one, with the consequent elimination of wiring harness, and therefore of assembly and storage costs.

b) functionality of the power module system thanks to the rigorous space organization, the total elimination of electric connection by cable that very often causes loss of power and electromagnetic interference, the elimination of overheating and malfunctioning problems (difficult to locate) and, last but not least, the neat aesthetics that makes modules inspection easy.

## RELIABILITY

The System-Mos “power module” is totally protected against battery polarity reversal and is extremely resistant to adverse working conditions and to human errors as no harness is necessary. It can stand motor short circuits in a continuous way and does not get overheated thanks to a thermal self-control system that acts on the max. overload current without limiting the vehicle's running. During maintenance and repair of a power module even contactors are controlled as they are part of the unit and therefore subjected to the same guarantee terms of the electronic part. On the contrary, a simple replacement of the controller could not solve the problem if the malfunctioning is due to contactors. The “power module” enables the operator to solve technical problems even by phone, as it represents a great proportion of the entire power apparatus of an electrical vehicle and can be easily replaced even by non-specialised personnel. It can be easily isolated from the auxiliary unit by means of a check connector that simulating all functions, enables immediate detection of existing problems.

## OPERATOR'S SAFETY

Special attention has been paid to the “Safety system” that is controlled by a “Supervisor” checking the condition of all parts and acting in case of inconveniences of the electronic system. When the electronic system is enabled, the supervisor checks the different clusters making up the logic unit and in case of anomalies blocks all operations, avoiding dangerous conditions for the operator. Possible short circuits existing or caused at the ends of running contactor coils are neutralised by the electronic circuit controlling contactors that transfers the information to the supervisor in order to block all controls until the anomaly



condition is removed. The actual efficiency of the safety supervisor can be checked by the operator without any danger (see EEC standard 86-663 par. 9.7.3.5.5). Another very important function for the operator's safety is the emergency dynamic braking. This function has been included in the "System-Mos" line and can be used to carry out a strong braking when the dead man protection (generally present on transpallets) is enabled, or as alternative to the anti-rollback function, to avoid back up movements of the lift truck during start on the climb. The power module type "System-Mos" offers many other advantages, such as: soft acceleration (that can be adjusted from the outside), possibility to use a unidirectional potentiometer (with no need to carry out adjustment) or a bidirectional potentiometer with electric centring of rest position, "EPS" system (by Elektrosistem) enabling a constant current braking with a very efficient operation dynamic of the vehicle, etc...

The "System-Mos" line is available from 220A to 550A, with battery voltages that ranging from 12V to 80V make these choppers a product connecting the small power line (ETC...M) with the thyristor high power line (PWF and PULSAR). The System-Mos choppers are therefore suitable for medium power vehicles such as transpallets, small lift trucks, floor washers and sweepers and can control series excited DC motors with 2, 3 and 4 terminals.

MAIN FEATURES

- # Soft starting by means of acceleration slope that can be adjusted from the outside.
- # Limiter of max. current applied to the motor that can be adjusted from the outside.
- # Automatic limiter of short circuit current.
- # Thermal limiter with proportional action.
- # Braking system type "EPS".
- # Emergency electric braking.
- # Internal supply type SWITCHED-MODE.
- # Electric centring of bidirectional potentiometers.
- # Possibility to use a unidirectional potentiometer with no need of adjustment.
- # Display of different operation conditions by means of green and red LEDs.
- # Total protection against battery polarity reversal.
- # Safety supervisor circuit with automatic reset, including:
  - a) Check of logic undersupply
  - b) Check of short circuit on contactors driver
  - c) Check of mechanical failure of accelerator pedal
  - d) Check of power part malfunctioning
  - e) Check of short circuit or interruption of the speed adjusting potentiometer.

POWER MODULE TECHNICAL SPECIFICATIONS

POWER MODULE = CHOPPER complete with CONTACTORS for Forward and Backward Running for 3 and 4 Terminal Motors

Voltage	12-36 VDC	Thermal limiter action	80 °C
Allowed variation	67÷125 %	Max. voltage supplied at 12VB	88 %
Operation frequency	0÷350 Hz	Max. voltage supplied at 24 and 36VB	94 %
Ambient temperature	from -20 to +40 °C	Max. voltage supplied at 48VB	97 %
Relative humidity at 25 °C	90 %	Insulation of mechanical parts	2VB + 1000 V

Models	SYSTEM-MOS 22	SYSTEM-MOS 250	SYSTEM-MOS 35
Voltage	12-24-36V	48V	12-24-36V
Current supplied for 1'	220A	250A	350A
Current supplied for 1 hour	120A	160A	210A
Short circuit current	240A	275A	385A



MECHANICAL CLEARANCE

Fig. -1 Dimensions SYSTEM-MOS 22

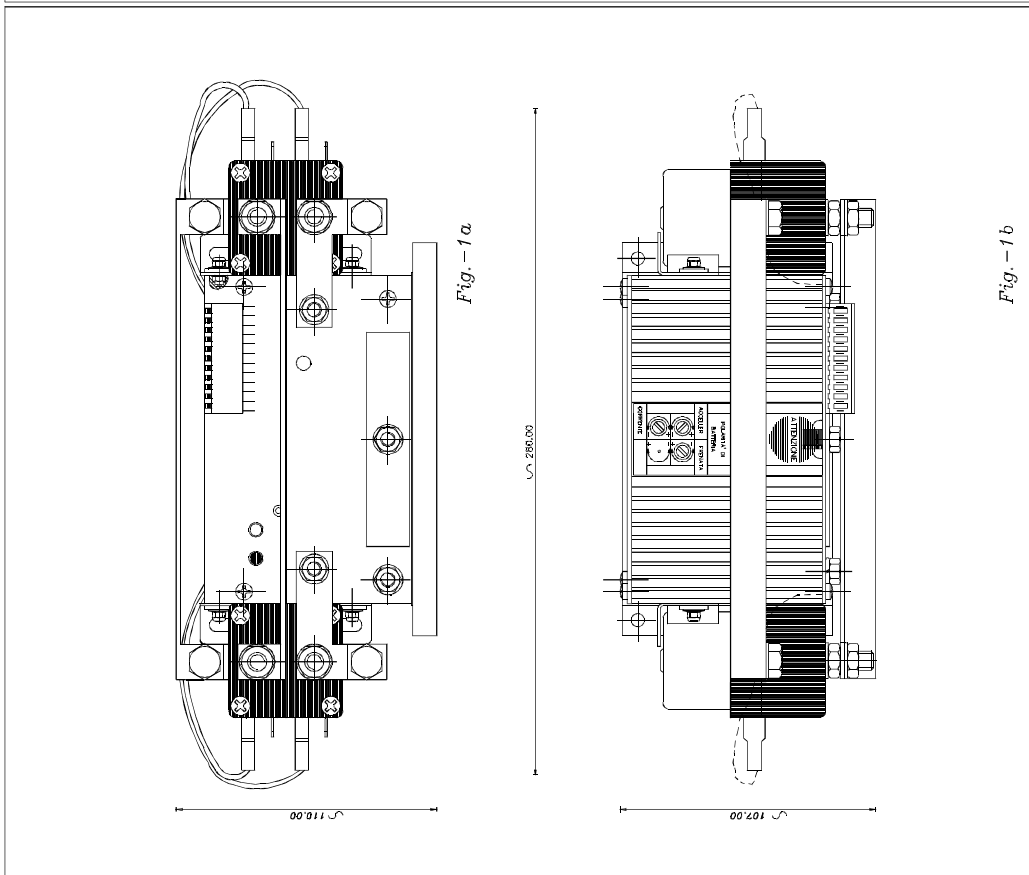
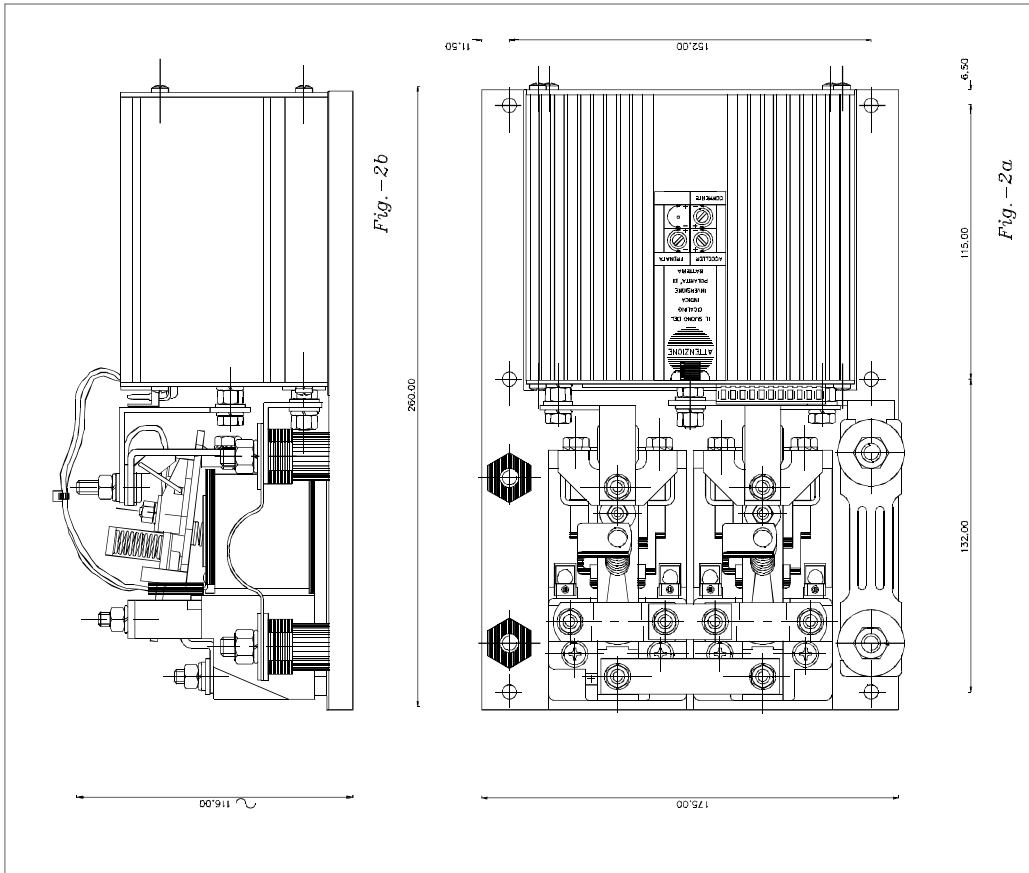
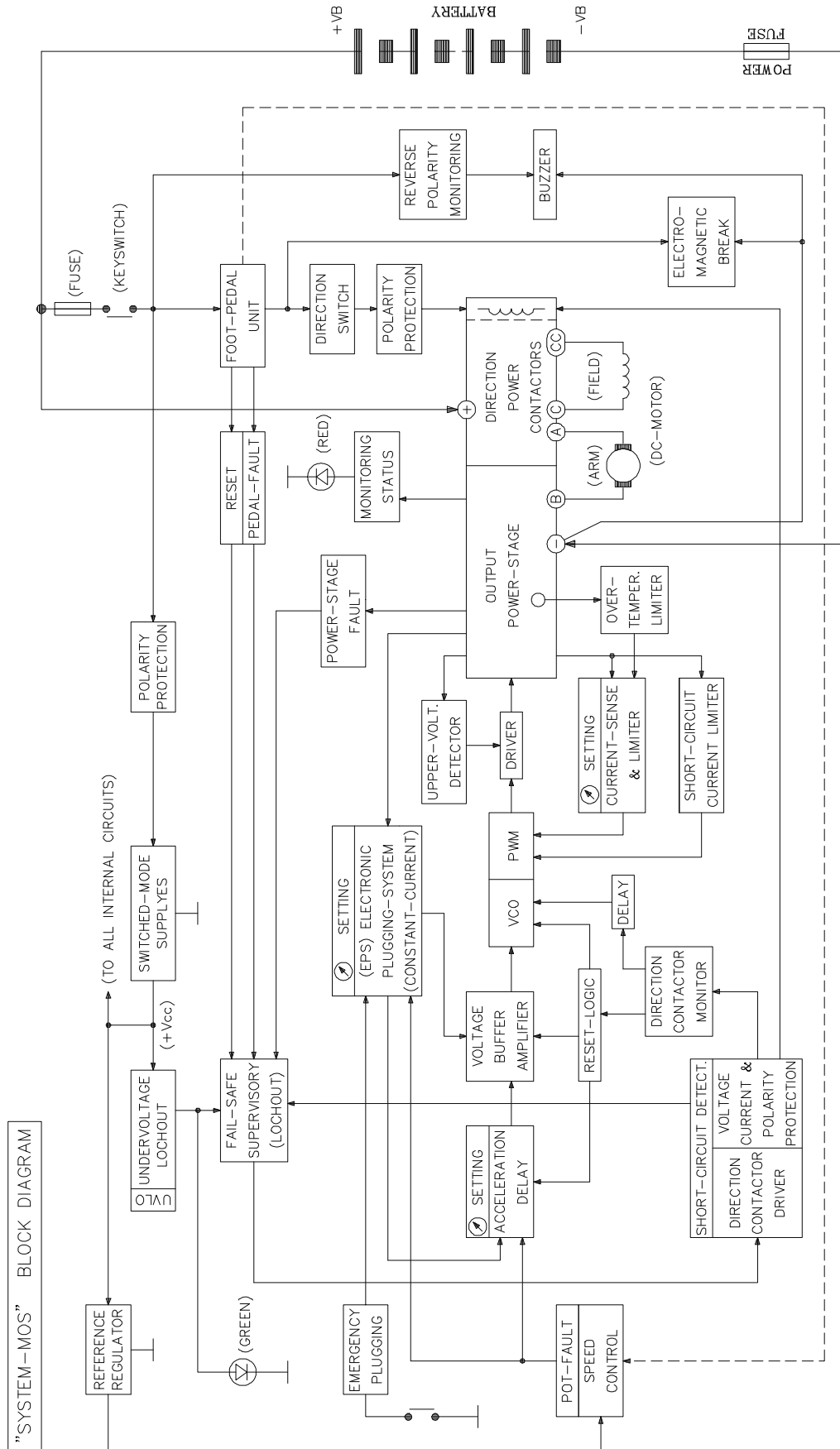


Fig. -2 Dimensions SYSTEM-MOS 250 and SYSTEM-MOS 35





"SYSTEM-MOS" BLOCK DIAGRAM



CHOPPER TECHNICAL SPECIFICATIONS

Voltage	24-80 VDC	Thermal limiter action	80 °C
Allowed variation	67÷125 %	Max. voltage supplied at 12VB	88 %
Operation frequency	0÷350 Hz	Max. voltage supplied at 24 and 36VB	94 %
Ambient temperature	from -20 to +40 °C	Max. voltage supplied over 48VB	> 97 %
Relative humidity at 25 °C	90 %	Insulation of mechanical parts	2VB + 1000 V

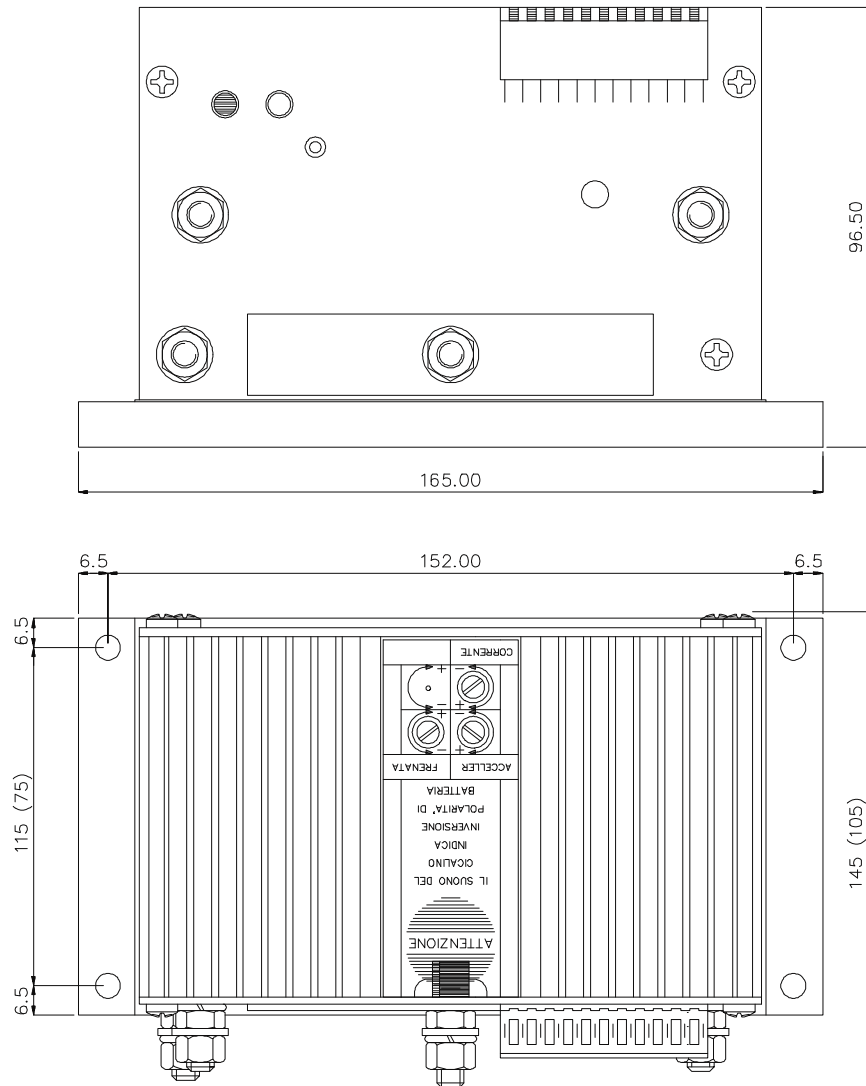
  

Models	MOS 22	MOS 30 with Filter*	MOS 35
Voltage	24-36V	24-80V	24-36V
Current supplied for 1'	220A	300A	350A
Current supplied for 1 hour	120A	170A	210A
Short circuit current	240A	320A	380A

\* Available even without filter to be applied on SCR control units.

N.B. 12V model only on request.

MECHANICAL CLEARANCES



N.B. The data in brackets refer to the control unit type MOS 22.

~~NEWS~~

CHOPPER TECHNICAL SPECIFICATIONS

Models	MOS-355	MOS-55
Voltage	24-80V	24-80V
Current supplied for 1'	350 A	550 A
Current supplied for 1 hour	210 A	300 A
Short circuit current	385 A	600 A

N.B. 12V model only on request.

MECHANICAL CLEARANCES

