

E **ELCOS**[®]



EQUIPMENTS FOR GENERATING SETS

GB GE090

CONTROL UNITS FOR AUTOMATIC GENERATING SETS

Made for automatic emergency switchboards.

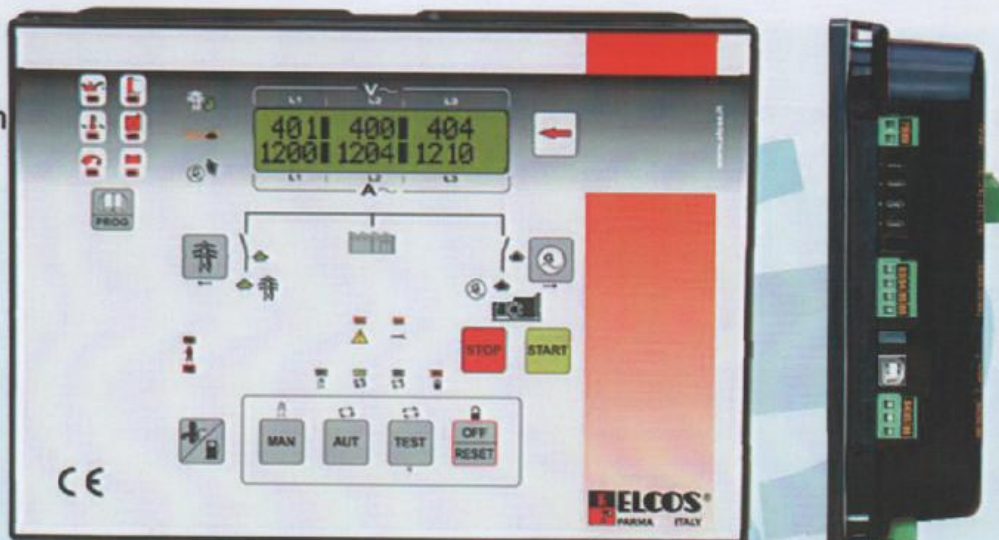
They are intended to check the status of the generating set and the mains, simultaneously showing the most important parameters of the mains, engine and generator on an easy-to-read alphanumeric display. Whenever setpoints are exceeded and other errors trigger, the relevant alarm is immediately displayed.

FUNCTIONS	CAM-685	CAM-333	CAM-431
For petrol engines			●
For diesel engines	●	●	●
EJP function	●		●
Possibility of associating 7 relays with various functions	●		
Mains voltmetric control	● (Three-phase)	● (Three-phase with CBV-015)	● (Single-phase)
Generator voltmetric control	● (Three-phase)	● (Two-phase)	● (Single-phase)
Glow plugs management	●		●
Mounting also on the machine	●	●	●
Weekly selftest	●	●	●
Texts in 6 languages: Italian, English, French, German, Spanish and Portuguese	●	●	
Indication of preventive maintenances	●	●	
Remote management with the possibility of using a GSM modem	●	●	
Management of refuelling of working tank from storage tank	●		
Clock to program starting or stopping the generating set	●	●	●
Engine running detection also with PICK-UP	●		
Start/Stop on request for power	●		
Possibility of starting the generating set in case of low battery-charge	●		
Check of the pinion engaged on the crown gear.	●		
Anomaly historical log (including data from the last 50 occurred anomalies)	●		● (100 anomalies)
Display of faults also with numeric code	●		

CAM - 685

Remote management
by cable or GSM modem
For remote control
through a personal
computer and a
mobile phone

Dimensions(LxHxP) mm
290x200x62



CAM - 333

Remote management
by cable or GSM modem
For remote control through
a personal computer or a
mobile phone

Dimensions(LxHxP) mm
144x96x49



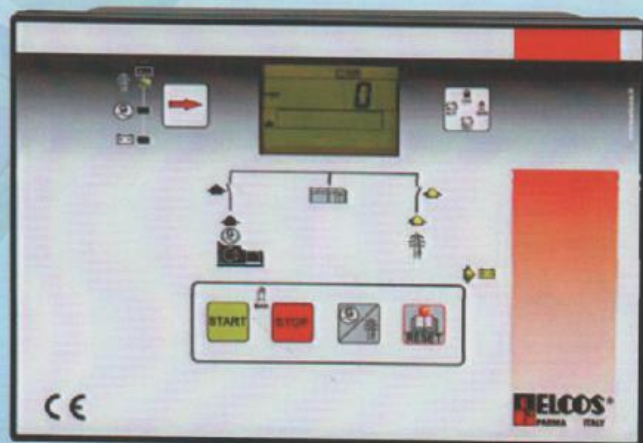
CAM - 431

- Anomaly historical log
(including data from the
last 100 occurred
anomalies)

Equipped with:

- Automatic battery charger
- Protection fuses:
mains, generator
contactors control and
battery supply.

Dimensions(LxHxP) mm
243x170x62



CONTROL UNITS FOR SELF-CONTAINED GENERATOR SET

Control units for manual generator set provided for automatic operation.

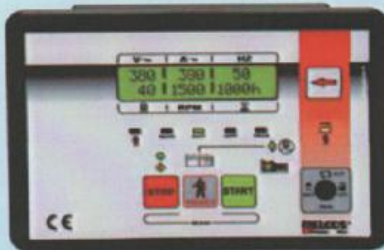
Possibility of combination with control units ATS-050 and ATS-100 or switchboards ATS-LEM and ATS-NEC (see page 8)
They start and monitor the generator set, stopping it in the event of anomaly.
They show the main parameters of the generator set on the display.
CAN BUS SAE J1939 connection with the engines equipped with control units for the electronic control of the injection system.



Dimensions(LxHxP) mm 157x109x114

CAM-120

- Three-phase voltmetric control. Minimum, maximum voltage, asymmetry and phase sequence of the generator.
- Manual start/stop buttons.
- Remote start input (call).
- Available fully programmable input for anomaly (times, polarities, stopping possibility and message about the anomaly).
- Preheating glow plugs management.
- Remote control (starting and stop).
- Possibility of starting the generator when the charge of the battery is low.
- Clock to program starting or stopping the engine.
- Weekly selftest.
- Texts in 6 languages: Italian, English, French, German, Spanish and Portuguese.
- Anomaly historical record (including data from the last 100 occurred anomalies).
- Preventive maintenance warning.



Dimensions(LxHxP) mm 157x109x52

CAM-110

- Manual start/stop buttons
- Remote start input (call).
- Possibility of starting the generator when the charge of the battery is low.
- Available fully programmable input for anomaly (times, polarities, stopping possibility and message about the anomaly).
- Preheating glow plugs management.
- Clock to program starting or stopping the engine.
- Weekly selftest.
- Texts in 6 languages: Italian, English, French, German, Spanish and Portuguese.
- Anomaly historical record (including data from the last 100 occurred anomalies).
- Preventive maintenance warning.

SWITCHING CONTROL UNITS

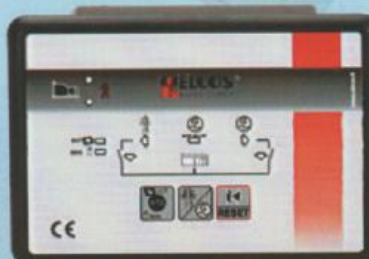
Made to equip switchboards (contactors or motor-driven switches)
Compatible with control units CAM-110 and CAM-120.



Dimensions(LxHxP) mm 157x109x114

ATS-100

- Three-phase voltmetric control. Minimum, maximum voltage, asymmetry and phase sequence of mains and generator.
- Manual start/stop buttons.
- Buttons for diverting the mains or the generator to the power users.
- Mains and generator presence warning lights.
- Switching done warning lights.



Dimensions(LxHxP) mm 157x109x52

ATS-050

- Three-phase voltmetric control. Minimum voltage and phase sequence of the mains.
- Generator voltmetric control: the voltmetric relay of CAM-110 or CAM-120 is used.
- Button for diverting the mains or the generator to the power users.
- Mains and generator presence warning lights.
- Manual and automatic operating.

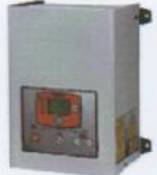




INSTRUMENTS OF CONTROL UNITS

INSTRUMENTS	SPG-120 	CAM-110 	CAM-120 	CAM-431 	CAM-333 	CAM-685 
Single-phase mains voltmeter				●		
Three mains voltmeters					●	●
Single-phase generator voltmeter		●		●		
Three generator voltmeters	● (one voltmeter)		●			●
Mains/generator phase/phase delta voltages			● (generator)		● (mains only)	●
Generator star voltages			●			●
Mains ammeter						●
Generator ammeter		●	●	●		
Three generator ammeters	●		●		●	●
Frequency meter	●	●	●	●	●	●
Wattmeter (total and per phase)		(1) ●	●			●
Varmeter (total and per phase)		(1) ●	●			●
Voltammeter (total and per phase)	● (total) (generator)	(1) ● (generator)	●		● (total)	●
Cosphimeter		(1) ●	●			●
Kilowatt-hour (total)		(1) ●	●			●
Partial hour-meter		●	●	●		●
Total hour-meter	●	●	●	●	●	●
Starting counter		●	●		●	●
Tachometer	●	●	●		●	●
Battery voltmeter	●	●	●	●	●	●
Battery charger ammeter						● (With battery charger CBS)
Starting failure counter		●	●			●
Fuel level gauge	●	●	●	●		●
Water or oil thermometer	●		●			●
Oil pressure gauge	●		●			●

(1) For single-phase systems only.

MODES OF COMMUNICATION	SPG-120	CAM-110	CAM-120	CAM-333	CAM-685
CAN Bus Connection (SAE J1939)		●	●		●
Serial port RS 232	●		●	●	●
Serial port RS 485			●		●
Modem GSM (to be mounted externally) to view, on a mobile phone, the instruments of the control unit, to start and stop the generator set and send an sms message warning about an alarm condition	●		●	●	●
MOD Bus Protocol			●		●

AUTOMATIC SWITCHBOARDS FOR EMERGENCY DIESEL GENERATOR SETS

CONTROL PANEL TYPE	KVA (PRP)	CON-TACTORS CAPACITY AC1	MOTOR-DRIVEN SWITCHES CAPACITY AC21	CONTROL UNIT OR ELECTRONIC BOARD	CONTROL PANELS DIMENSION (LxHxP) mm	
LEM-435/32	15 three 10 single	32 A 58 A		SEA-430	255x377x184 	
LEM-436/32	15 three 10 single	32 A 58 A		SEA-431		
LEM-430/45	20	45 A		SEA-430		
LEM-430/60	30	60 A		SEA-430		
LEM-431/45	20	45 A		SEA-431		
LEM-431/60	30	60 A		SEA-431		
LEM-434/45	45	90 A		 CAM-431	596x485x234 	
LEM-434/60	60	110 A			600x800x320 	
LEM-434/80	80	140 A			800x1000x320	
LEM-434/100	100	200 A			800x1200x320	
NEC-434/125	125	200 A			800x1000x320	
NEC-434/180	180	325 A			800x1200x320	
NEC-434/200	200	325 A				
NEC-685/125L	125	200 A				800x1000x320
NEC-685/180L	180	325 A				800x1200x320
NEC-685/200L	200	325 A				800x1600x400
NEC-685/250L	250		400 A		600x1600x500	
NEC-685/410L	410		630 A		600x1600x500	
NEC-685/500L	500		800 A		600x1600x500	
NEC-685/800L	800		1250 A		800x1800x600	
NEC-685/1000L	1000		1600 A		1000x1800x800	
NEC-685/180S	180	325 A		 CAM-685	800x1000x320	
NEC-685/200S	200	325 A			800x1200x320	
NEC-685/250S	250		400 A		600x1000x500	
NEC-685/410S	410		630 A		600x1000x500	
NEC-685/500S	500		800 A		600x1000x500	

Differences between control panels in NEC series:

- Control panels type NEC-434/... Simplified system
- Control panels type NEC-685/...L Large metalwork dimensions / it is possible to install the overflow switch
- Control panels type NEC-685/...S Small metalwork dimensions / it is not possible to install the overflow switch

The functions of the electronic control units are described on pages 2-3-5.

The functions of the electronic boards SEA-430 and SEA-431 are similar to those of the control unit CAM-431.



LEM-430
LEM-431
LEM-435
LEM-436



LEM-434/100



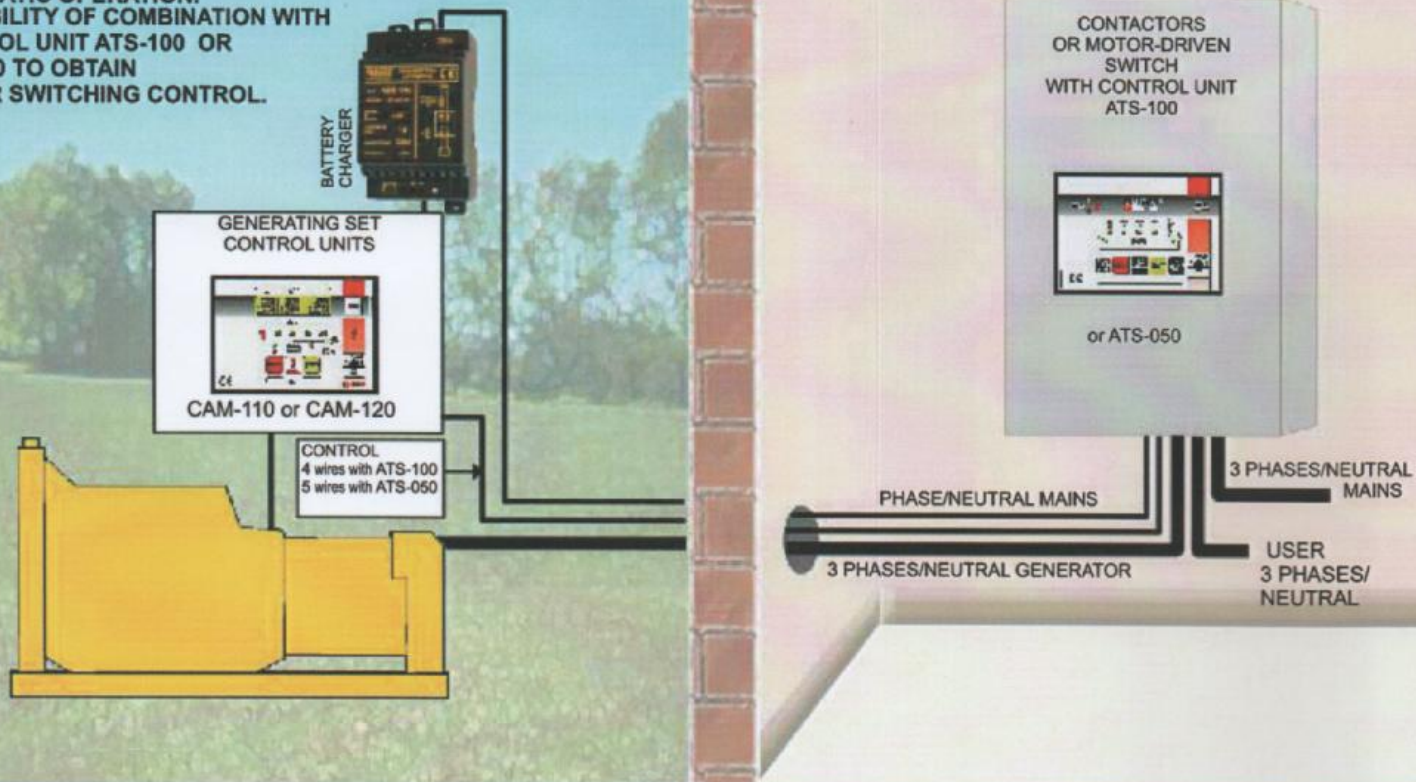
NEC-685/500








NEC-685/1000

CONTROL UNITS FOR GENERATOR SET AND POWER SWITCHBOARDS

CONTROL UNITS FOR MANUAL GENERATING SET, PROVIDED FOR AUTOMATIC OPERATION. POSSIBILITY OF COMBINATION WITH CONTROL UNIT ATS-100 OR ATS-050 TO OBTAIN POWER SWITCHING CONTROL.



CONTROL PANEL TYPE	KVA (PRP)	CAPACITY OF CONTACTORS AC1	MOTOR-DRIVEN SWITCHES CAPACITY AC21	ELECTRONIC CONTROL UNIT	CONTROL PANELS DIMENSIONS (LxHxP)mm	
ATS-LEM 30	30	45 A		 ATS-050	255x377x184 	
ATS-LEM 40	40	60 A			596x486x234 	
ATS-LEM 50	50	90 A				
ATS-LEM 65	65	100 A				
ATS-LEM 85	85	140 A				
ATS-LEM 110	110	200 A				
ATS-NEC 125	125	200 A		 ATS-100	600x800x320	
ATS-NEC 180	180	325 A			800x1000x320	
ATS-NEC 200	200	325 A			800x1200x320	
ATS-NEC 250	250		400 A		600x1000x500	
ATS-NEC 410	410		630 A		600x1000x500	
ATS-NEC 500	500		800 A		600x1000x500	
ATS-NEC 800	800		1250 A		800x1800x600	
ATS-NEC 1000	1000		1600 A		1000x1800x800	
						

Version with AUX230 Vac power supply:
 ATS-NEC 250/AC ATS-NEC 410/AC ATS-NEC 500/AC ATS-NEC 800/AC ATS-NEC 1000/AC



ATS-LEM 50



ATS-LEM 110



ATS-NEC 500

MULTI-INSTRUMENT WITH CONTROL AND PROTECTION DEVICE

Designed to equip manual switchboards.
Starting by a key to be mounted externally.

Stops the generating set by
electromagnet or electrovalve

- dimensions (LxHxP) mm 144x96x49
- mounting also on the machine
- level of protection on front IP 54

Instruments SPG120 see page 5



SPG - 120

DEVICES FOR PROTECTION OF GENERATING SETS

Starting by a key to be mounted externally.

The devices are enclosed in small containers surrounded
by resin.

They are therefore suitable for mounting, even on the
machine, and remain very reliable.

MADE TO PROTECT

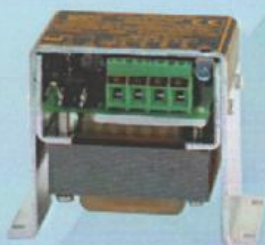
engines by stopping them in the event of anomaly for:



	DIP-806	DIP-804	DIP-521
Low oil pressure	●	●	●
Over temperature	●	●	●
Inefficient battery charge alternator (belt breakage)	●	●	●
Fuel reserve (engine is not stopped)	●	●	
Low coolant level	●		
Overfrequency	●		

AUTOMATIC BATTERY CHARGER FOR LEAD BATTERIES

- Rapid charging with current control
- Intermediate and maintenance charging, with voltage control.
- Possibility to have remote signals (CBA-030, CBA-060)
- Self - protection with accumulated signal for:
 - short circuiting
 - polarity inversion
 - low battery voltage



CBV-015
(1,5 A)

With mains voltmetric relay
Relay to be connected
exclusively to the
control unit CAM-333



CBA-030
(3 A)



CBS-010 (1 A)
12V only

- DIN bar hook also mounting.
- Battery charge
status indicators by led.
(no possibility to connect to
remote signal devices).



CBA-060
(6 A)

RUNNING SPEED DETECTION DEVICES

RADIATOR LEVEL PROBE

VIA MAGNETIC TRANSDUCER



MOS - 100/00 - Shows the running engine, it simulates the terminals W and D+ of a battery charge alternator

DRV - 100 - Shows the overspeed of a diesel engine

For radiator expansion upper chamber:
PLASTIC: SOL - 010/00
METAL: SOL - 015/00

For low radiator coolant level indication



VIA BATTERY CHARGE ALTERNATOR

DRS - 100 - Shows the overspeed of a diesel engine



GLOW-PLUGS INSERTER



ICT-100/00
 This device allows the timed engaging of the glow-plugs

VOLTMETRIC RELAYS - MAINS OR GENSET UNIT DETECTION

RET-100/10 (three-phase)
 Controls the voltage and intervenes if there is a failure or lowering of the voltage, even on only one phase

RET-200/00 (three-phase)
 Controls the voltage and intervenes if there overvoltage, or failure or lowering of the voltage, even on only one phase

REM-200/00 (single-phase)
 Controls the voltage and intervenes if there is a failure or lowering of the voltage or for overvoltage



KEY FOR EMERGENCY MANUAL STARTING

The key allows

- Starting
- Stop
- Mains-generator contactor switching



MAINS/GENSET SWITCHBOARDS:

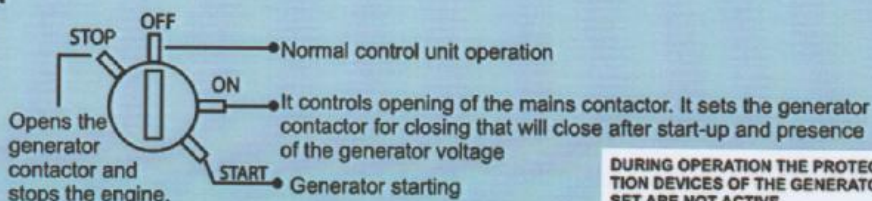
- Use exclusively contactors.
- Not recommended for currents higher than 300A.

Made to be connected in the electric switchboards and to the control units



ADE-200

OPERATION



DURING OPERATION THE PROTECTION DEVICES OF THE GENERATOR SET ARE NOT ACTIVE

PULL ELECTROMAGNETS FOR DIESEL ENGINES STOP

CONTINUOUS SERVICE



ESC-046/00



ESC-060/00

TYPE	STROKE mm	FORCE Kg	
		at begin of stroke	at end of stroke
ESC-046/00	35	3	12
ESC-060/00	50	7.5	30
ESI-046/00	35	1	25
ESI-060/00	50	5	50

INTERMITTENT SERVICE



ESI-046/00



ESI-060/00

WATER HEATERS FOR DIESEL ENGINES



RA-040 400W



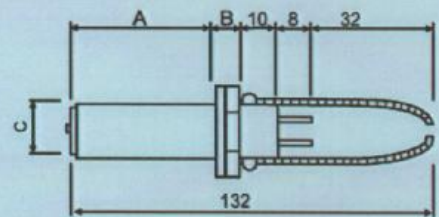
RA-200 1000W
RA-250 1500W

MAGNETIC TRANSDUCERS



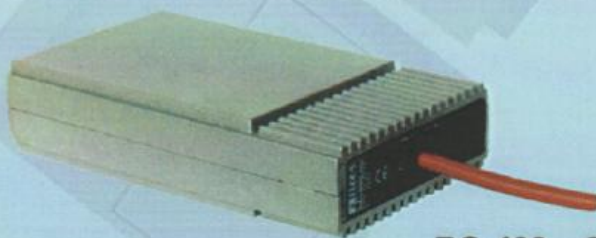
PICK-UP

- M16X1.5
- M18X1.5
- 5/8"-W18-UNF
- 3/4"-W16-UNF



OIL HEATERS

FOR APPLICATIONS IN CONTACT WITH THE SUMP



RO-403 350W
RO-803 700W

TYPE	A	B	C
TM90-M16	68	8	M16X1.5
TM90-M18	66	9	M18X1.5
TM90-5/8	67	8	5/8"W18-UNF
TM90-3/4	66	9	3/4"W16-UNF



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