EMERGENCY AUTOMATIC PANELS FOR GENSET UNITS FITTING DIESEL OR PETROL (For petrol motor please request the relative documentation)

32 - 45 - 60 ATS VERSION

This only controls and commands the genset unit, maintains the charge of the start battery and connects the user to the mains or generator. It has beeen designed on a wall.

INSTRUCTION AND USER MANUAL

TYPE	Amp (Ac1)	
32 ATS	32 Three-phase 58 Single-phase	
45 ATS	45	Three-phase
60 ATS	60	

COMPLETE WITH DISPLAY TO SHOW:

- useful signals for generator set management.
- **8 instruments**:
  - mains voltmeter
  - generator voltmeter
  - generator frequency meter
  - total hour meter
  - partial hour meter
  - battery voltmeter
  - fuel level indicator only for models with fuel level sensor.

SIMULTANEOUS READING OF 6 INSTRUMENTS

- REMOTE SWITCHING MAINS/GENSET
- SINGLE-PHASE VOLTMETRIC MAINS/GENERATOR CONTROL
- AUTOMATIC BATTERY CHARGING (1A)
- AUTOMATIC SUPERVISION OF FAULTS
- GLOW PLUGS CONTROL
- STARTER CONTROL
- REMOTE COMMANDS WITH CONTACTS (STARTUP- STOP - TEST)
- PROGRAMMING OF PARAMETERS MADE EASY BY DIP SWITCHES
- AVAILABLE INPUT FOR ANOMALY
- CLOCK FOR PROGRAMMING THE START UP OR STOPPING OF THE GENSET
- PROGRAMMABLE WEEKLY SELFTEST
- ANOMALY HISTORICAL RECORD (Including data from the last 100 anomalies)

FUNCTIONS ON REQUEST

- KEY FOR EMERGENCY MANUAL STARTUP

- MAINS THREE-PHASE VOLTMETRIC CONTROL

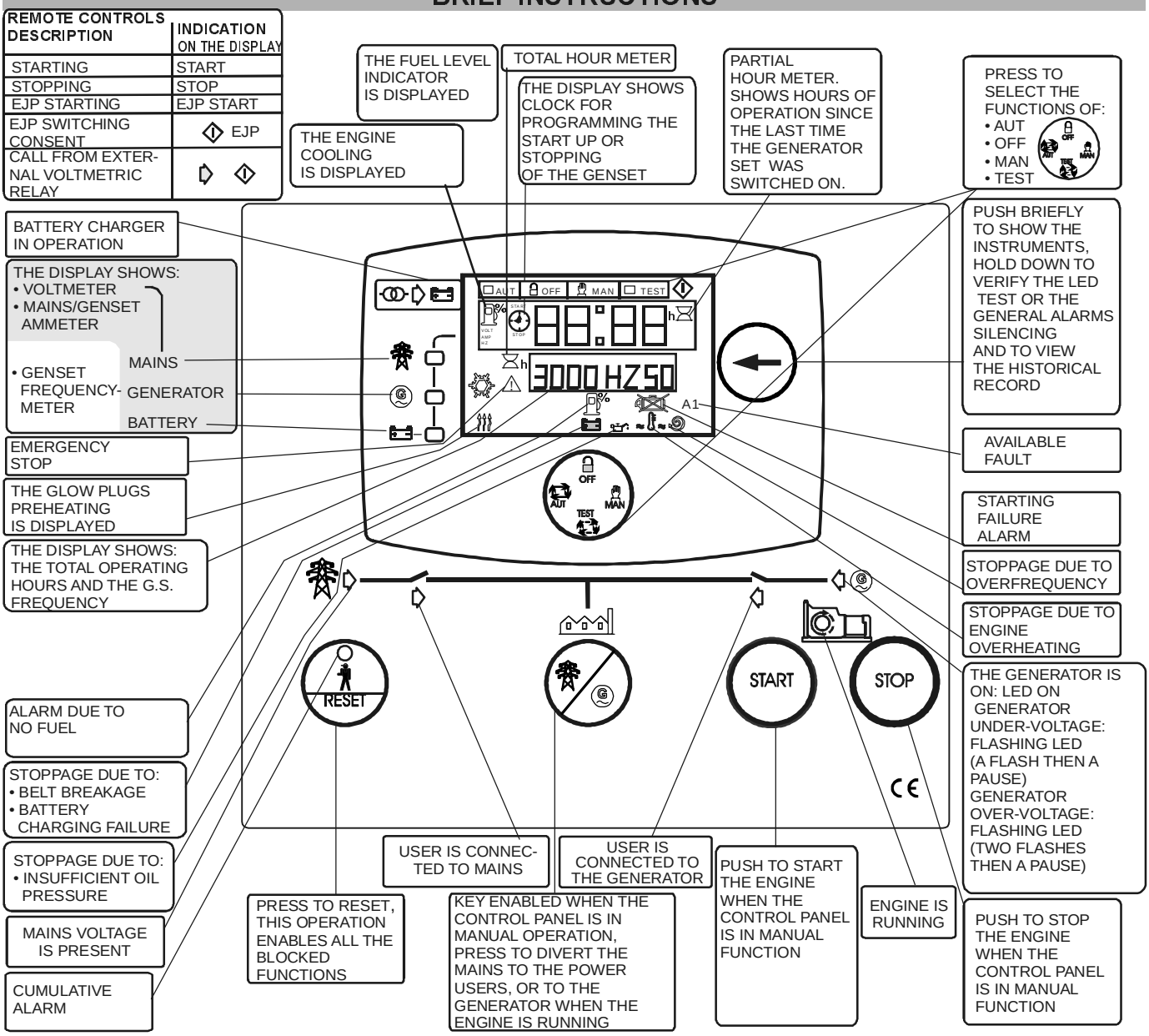
- GENERATOR OVERLOAD SWITCH

- EMERGENCY BUTTON

- PRE-WIRED MALE CONNECTOR

BRIEF INSTRUCTIONS

REMOTE CONTROLS DESCRIPTION	INDICATION ON THE DISPLAY
STARTING	START
STOPPING	STOP
EJP STARTING	EJP START
EJP SWITCHING CONSENT	EJP
CALL FROM EXTERNAL VOLTMETRIC RELAY	



INSTRUMENTS

• MAINS VOLTMETER	For single-phase voltage up to 254 V~, three-phase up to 440 V~
• GENERATOR VOLTMETER	For single-phase voltage up to 254 V~, three-phase up to 440 V~
• GENERATOR FREQUENCYMETER	From 0 Hz to 85 Hz for alternating voltages with amplitude greater than 20 V~.
• TOTAL HOUR METER	With five figures and a maximum reading of 99999.
• PARTIAL HOUR METER	With four figures and a maximum reading of 9999. The minutes can be read up to 99 hours
• BATTERY VOLTMETER	For voltages between 9 and 38 V= .
• FUEL LEVEL INDICATOR	Displays the percentage of fuel present in the tank. Only for models with fuel level sensor.

Warning: adhere closely to the following advices

- Make sure that the mains and generator conductors are correctly connected to the terminal board.
- Check that the absorption and consumption of the connected equipment are compatible with the described technical characteristics.
- Install in such a way that there is always adequate heat disposal.
- Always install under other equipment which produces or spreads heat.
- The equipment must be earthed via the relevant terminal.
- Handle and connect without mechanically stressing the electronic card.
- Make sure that copper conductor cuttings or other waste material do not fall inside the panel.
- If necessary, the fuses must only be replaced with the same type as the original.
- Never use a battery charger for the emergency start-up; the electronic cards could be damaged.

WARNING: The genset unit will restart automatically, when there is a mains failure or in test mode, or with the remote controls.

To exclude the possibility of sudden or unwanted starts, switch to "OFF" using the button  .

WARNING! Before performing any technical interventions on the genset unit, for the safety of the operators, terminal "50" of the start motor (start command) must be disconnected, the connections to the unit must be disconnected, the emergency stop button must be pressed and the control panel locked to the “OFF” position.

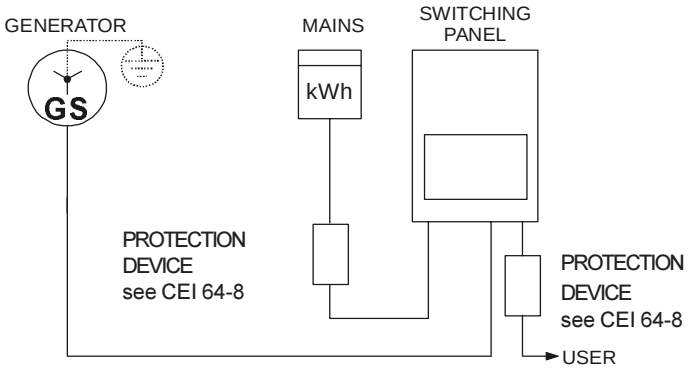
ELECTROMAGNETIC COMPATIBILITY
This panel functions correctly only if inserted in plants which conform with the CE marking standards; it meets the exemption requirements of the standard EN50082-2 but it cannot be excluded that malfunctions could occur in extreme cases due to particular situations.
The installer has the task of checking that the disturbance levels are within the requirements of the standards.

NOTE CONCERNING CONNECTION OF COMMAND AND SAFETY DEVICES TO THE PANEL
With the direct connection of engine protection probes and remote control and command contacts to the panel, particular anomalous situations (earth anomalies or interruption of electrical connections) could block the start-up or provoke its early activation.
To reduce these risks, if he believes it to be necessary, the installer can take on the responsibility of applying that which is described in paragraphs 9.4.2.1 and 9.4.2.2 of standard CEI EN60204-1(CEI 44-5) to the said connections.

UNLESS WE MAKE A WRITTEN DECLARATION STATING THE CONTRARY, THIS PANEL IS NOT SUITABLE FOR USE AS A CRITICAL COMPONENT IN EQUIPMENT OR PLANTS RESPONSIBLE FOR KEEPING PERSONS OR OTHER LIVING BEINGS ALIVE.
Any use which differs from that which is indicated in this instruction and user manual must be authorized by us.

MAINS CONNECTION

The panel connection must be made with the MAINS DISENGAGED and the BATTERY DISCONNECTED, in accordance with the scheme on pages 6-7.
Multi-polar cables with EPR (flame resistant) insulation and scratch proof PVC sleeves must be used, nominal voltage 450/750V.
The panel must be connected to the existing earth unit, via a YELLOW/GREEN cable with cpn insulation and with a minimum section of 16 mm².
The panel contains the protection devices of the engine-generator unit (see OPERATION at pages 8-9-10).
The client has the responsibility for installing, on the mains line, the protections against over-currents (fuses or thermo-magnetic switches) and contact voltages (differential), limiting the presumed short circuit current to 10kA.
The electric cabinet has a space for the installation of a protection device against overload currents in the generator set line.
The protections against direct/indirect contacts on the genset unit line, must adhere to the requirements described in the regulation CEI 64-8.



BEFORE SUPPLYING VOLTAGE:
- make sure that the live parts are inaccessible.
- check the earth connection.

Finally, check that the indicators, the block and alarm devices and the remote switch function correctly.

WARNING

THIS ELECTRICAL PANEL IS NOT SUITABLE FOR USE WHERE THE FOLLOWING CONDITIONS ARE PRESENT:
- temperatures, relative humidity values and altitudes which differ from those specified;
- in places where the temperature and pressure variations are so rapid that they produce exceptional condensation inside the panel;
- in places where there are high levels of pollution due to dust, fumes, corrosive or radioactive particles, vapours and salts;
- where there is exposure to high temperature due to solar radiation or furnaces;
- where attacks from mould or small animals are possible;
- in places where there is the risk of fires or explosions;
- subjection to strong vibrations or knocks;
- inside installations where the current throughput or interruption power could be influenced by certain conditions (e.g equipment incorporated in machinery).

RUNNING AND MAINTENANCE

The following maintenance operations should be performed each week:
- automatic start with switching;
- check that indicators function;
- check batteries;
- check that conductors are tight and condition of terminals.

WARNING: DANGEROUS LIVE PARTS

Only assigned and suitably trained personnel are allowed to have access to the inside of the panel.
No operations inside the panel are permitted unless the plant has been disconnected from the mains and from the genset unit.
The phases should be earthed and short-circuited as a safety measure.
Notwithstanding what is stated above, only assigned and trained personnel can have access to the inside equipment when the plant is live, to perform the following operations:
- visual inspection of the equipment;
- visual inspection of the connections and the markings;
- measurement of voltage and/or current values.

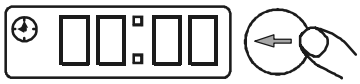
These operations must, in any case, be performed using a tool which guarantees the appropriate electrical protection.

CLOCK PROGRAMMING

TO PROGRAMME SELECT THE OFF FUNCTION

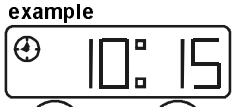
CLOCK. Allows generator set operation or stopping to be programmed.

TIME SETTING. **Switching off the power supply (1+ 2-) to the control unit will zero the clock.**



Press to display

example

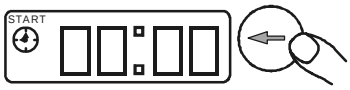


• Increases START STOP • Decreases

Press to set the clock.

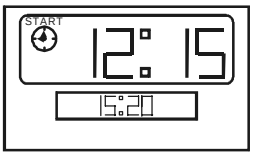
STARTING CONSENT. Operation obtained as during mains failure.

Move DIP switch 10 to ON



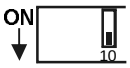
Press to display

Example: starts at 12:15 hrs
stops at 15:20 hrs

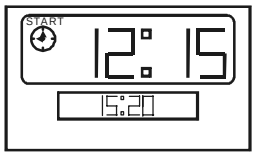


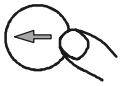
• Increases START STOP • Decreases

Press when the number flashes



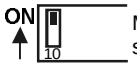
Move DIP switch 10 to OFF



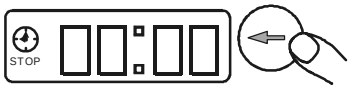


Press and wait until OK is written

STOP. Stops starting or running of generator set.

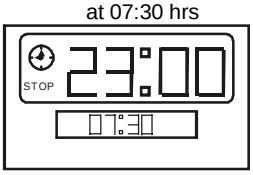


Move DIP switch 10 to ON



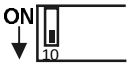
Press to display

Example: stays locked
from 23:00 hrs
unlocked
at 07:30 hrs

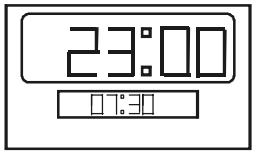


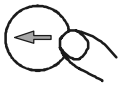
• Increases START STOP • Decreases

Press, when the number flashes



Move DIP switch 10 to OFF



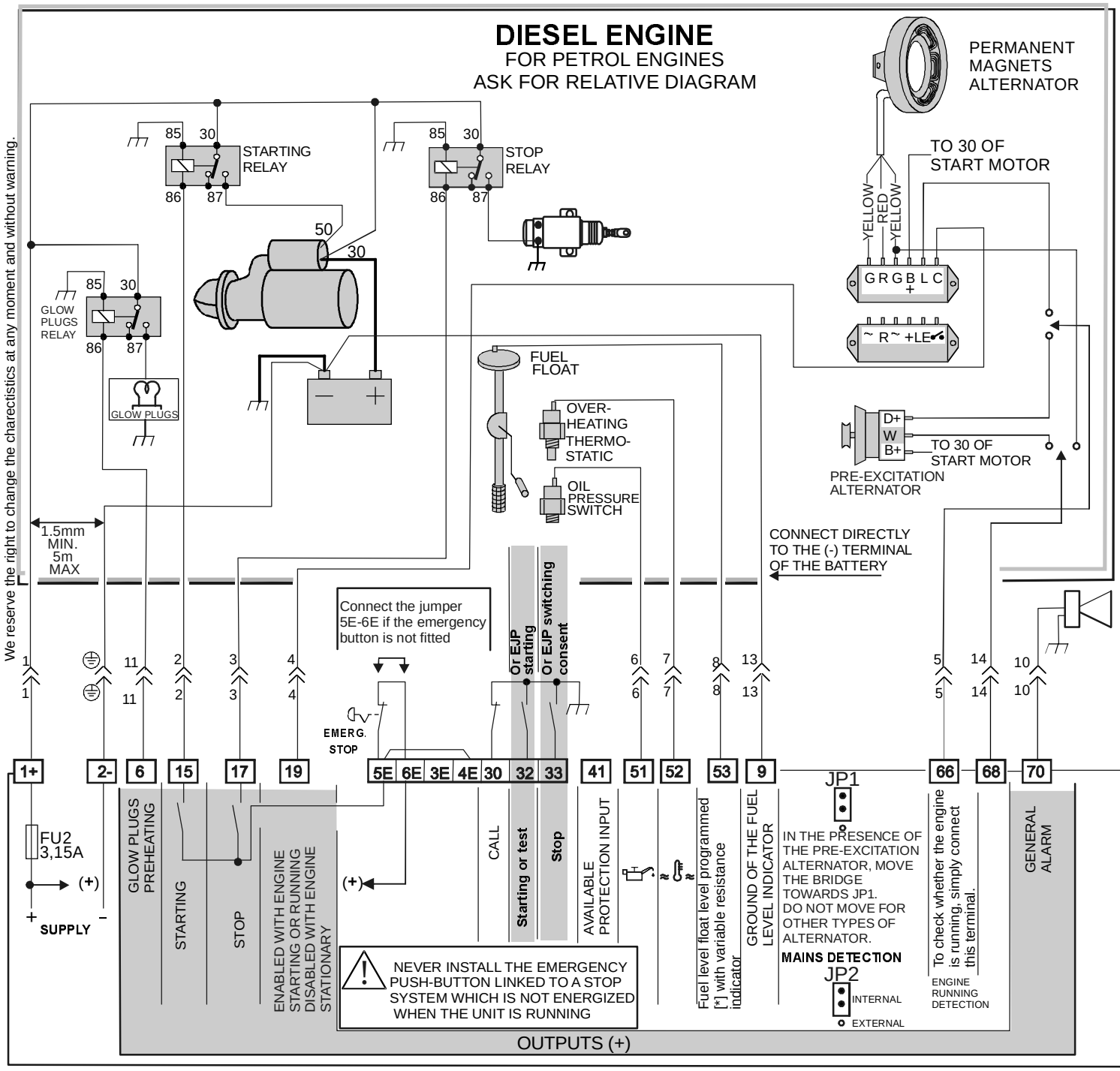


Press and wait until OK is written

WIRING DIAGRAM
TO THE THREE-PHASE GENSET UNIT CONTROL PANEL

Having made the connections, the control panel is enabled for manual operation.

To select other operating modes, see page 8



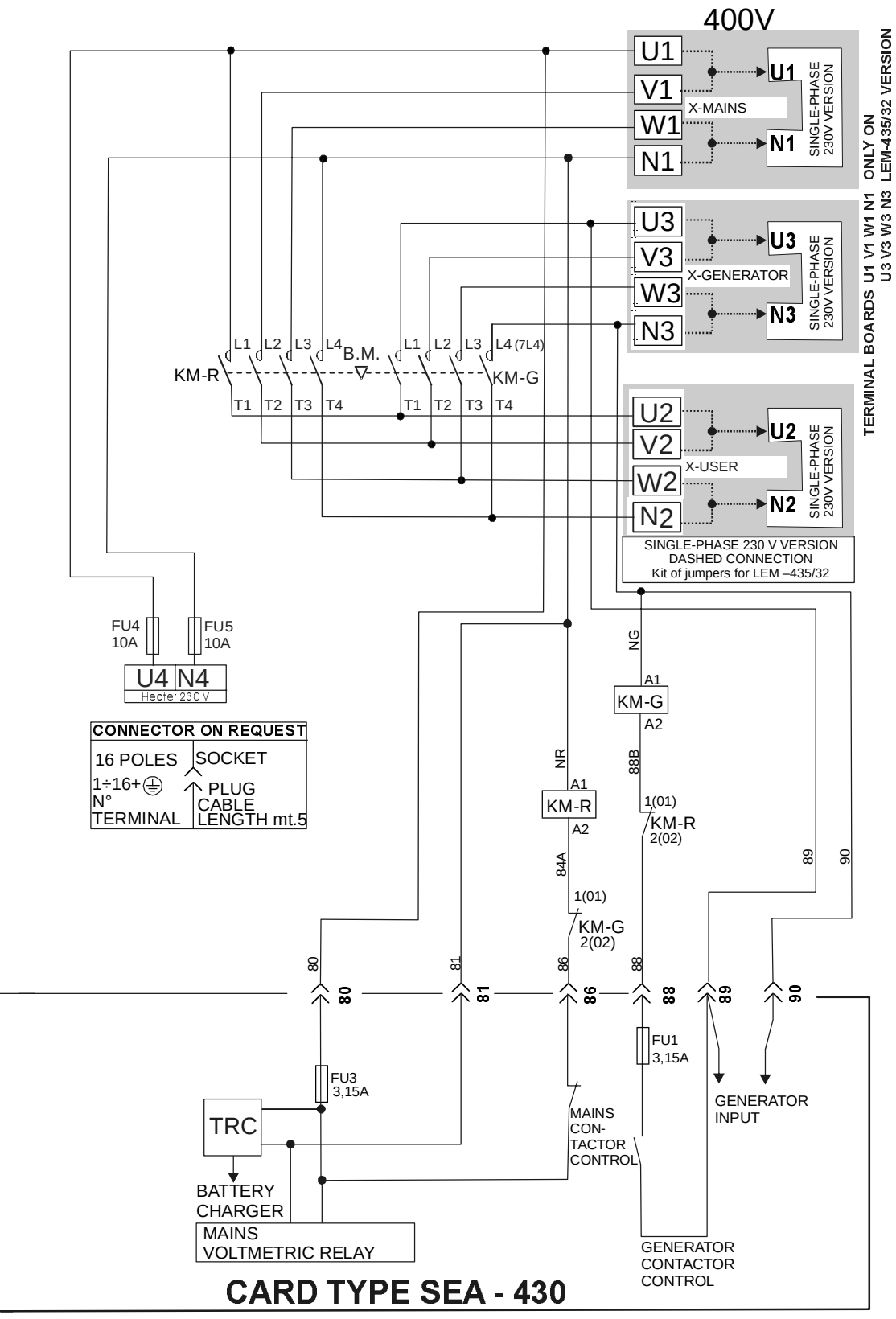
We reserve the right to change the charectistics at any moment and without warning.

MAX LOAD OUTPUTS (+) 6 - 17 1A
15 - 19 - 70 3W

	ENGINE TYPE	STOP SYSTEM SELEC-TION	WEEKLY SELF-TEST	GENERATOR FREQUENCY	MAINS AND GENERATOR VOLTAGE	CHARGE ALTERNATOR EFFICIENCY CHECK	GLOW PLUGS CONNECTION TIME / STARTUP DELAY AFTER MAINS FAULT	ENGINE COOLING	MAINS ACCEPTANCE	GENER-ATOR TO POWER USERS CONNEC-TION DELAY	USE ONLY WITH JOINT A - B - C
ON	PETROL	EXCITED IN STOP MODE	ENGAGED	60 Hz	SINGLE-PHASE THREE-PHASE 230V	NOT ACTIVE	15”	3”	3”	60”	
	1	2	3	4	5	6	7	8		9	10
OFF	DIESEL	EXCITED IN DRIVE MODE	EXCLUDED	50 Hz	THREE-PHASE 400V	ACTIVE	2”	120”	40”	7”	

FUSES
FU1 FU2 FU3
ARE MOUNTED
ON CARD
TYPE SEA-430

YOUR ELECTRICAL TECHNICIAN CAN ASK US ANYTHING ABOUT THIS PRODUCT BY TELEPHONING ONE OF OUR TECHNICIANS



CARD TYPE SEA - 430

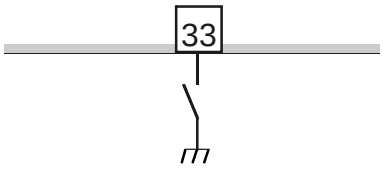
REMOTE CONTROLS (50m max)

AUTOMATIC STARTS EXCLUSION

STOPS THE START OR MOTION OF THE GENSET UNIT ONLY IN AUTOMATIC MODE, INDICATED BY THE SIGNAL STOP.

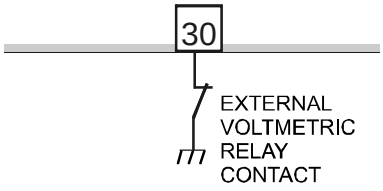
- **33 STOP,** Immediate stop without weekly selftest (factory setting).
- **33 TEST,** Engine cooling before stopping with the possibility of a weekly selftest.

} For programming see joint A at page 4.



CALL

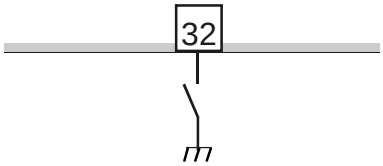
FUNCTIONS AS IF THERE IS A MAINS FAILURE.



STARTING

(Shown by the START on the display)

1 second after the contact closes the general alarm comes on intermittently (for 8 seconds); after a 3 second pause the start cycle begins with operation the same as that when there is no mains.



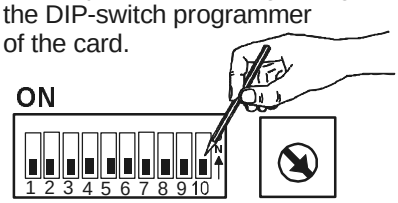
TEST

(Shown by the flashing warning TEST).

The start control can be changed using the TEST control (for operating instructions refer to TEST on page 8). For programming see attachment A on page 4.

PROGRAMMING

It is possible to change the control panel functioning, using the DIP-switch programmer of the card.



ENGINE RUNNING THRESHOLD ADJUSTMENT

Adjustment is not normally necessary. If it is necessary, perform the following operations:

- Start the engine manually and bring it down to minimum speed.
- Turn the potentiometer P1 anticlockwise until the indicator lights up.

FOR THE FUNCTIONS ON REQUEST:
- KEY PER EMERGENCY STARTING
- THREE-PHASE VOLTMETRIC CONTROL
ASK FOR RELATIVE DIAGRAM

CONSULT STANDARDS CEI 44-5 (EN60204) FOR INFORMATION CONCERNING PROTECTION AGAINST OVERLOAD CURRENTS IN THE ELECTRICAL EQUIPMENT USING BATTERY VOLTAGE

OPERATION

FUNCTIONS SELECTION

The function selected using the button is shown on the display.

MANUAL

The control panel commands are enabled.
Starting with key 

stopping with key 

CONTROL FOR MAINS-GENERATOR CONTACTORS

It is left to the key 
By pressing on the key, the load is switched from the mains to the generator and vice versa.

PROTECTIONS
The generator set protection function in manual mode can be programmed in two ways:
· Display only of the fault that has intervened WITHOUT STOPPING the engine. The generator overfrequency fault is programmed with stopping of the engine. It cannot be programmed without stopping of the engine.
· Display of the fault that has intervened WITH ENGINE STOPPING. (The control panel is programmed in this way).

AUTOMATIC

When a fault occurs on the mains, (detected by the internal voltmetric relay, or by the external call), once the 2 seconds have elapsed, the control unit commands the opening of the mains contactor control, and starts the generator set. With engine running and generator voltage normal and once the GENERATOR TO POWER USERS CONNECTION DELAY has elapsed (programmed to 7 sec.) the generator contactor closes. While it is running the generator set is protected from possible faults. When the mains voltage is restored and the MAINS ACCEPTANCE time has elapsed (programmed to 40 sec.), the mains contactor closes (after the GENERATOR-MAINS INTERLOCK time, programmed to 1,5 sec. not adjustable).
The COOLING TIME (programmed to 120 sec.) then allows the engine to be cooled easily before it is stopped.

TEST

On pressing key 

up the lighting 

, we obtain the engine startup cycle as in automatic, and the power users remain supplied by the mains. If a mains fault occurs during the test, the power unit remains in test mode, positions itself as in automatic operation and commands the closing of the generator contactor.

WEEKLY SELFTEST

ENABLED WITH POWER UNIT IN AUTOMATIC OR TEST MODE is indicated by the display 

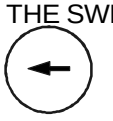
If the relative switch is positioned on TEST ENGAGED the general alarm is activated intermittently (for 8 sec.). When the general alarm is deactivated, and after a pause of 3 seconds, the engine starts and continues to run for 3 minutes.
This test will be repeated automatically every week on the exact day and at the hour to which the TEST ENGAGED switch has been positioned.

STOPPING OF ENGINE DURING THE TEST

Press button 

and move to function 

.

UPDATING OF THE HOUR LEAVING THE SWITCH ON TEST ENGAGED
Keep pressed at the same time keys 
and 

until the icon TEST 

starts to flash .
Press key 

within 3 sec.

The weekly test cycle is therefore obtained as if the relative switch had been repositioned.

OPERATION

OFF

Press button  until the warning led  comes on.
The engine cannot be started in any way and, if running the engine is stopped without carrying out engine cooling. The mains contactor stays closed. The LEDs and the instruments are active.

GLOW PLUGS PREHEATING

- In manual with key  that should be kept pressed until the engine has started.
- In automatic, Test and remote control, this is activated automatically before starting.
  The preheating action ceases during the starting pulse.

STARTER

- If programmed for the STARTER, the function is enabled at every odd starter pulse and is de-energised with the engine runningo.

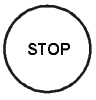
STARTING

- In manual mode with button  , in Test and with the remote control, it comes on immediately after the GLOW PLUG CONNECTION TIME.
- In automatic mode or if a mains anomaly is detected by the internal voltmetric relay, or an external call, and after the GLOW PLUG CONNECTION time (set to 2 secs; this time is always active, even in systems without glow plugs). To facilitate starting a given circuit leads to a succession of starts: 4 if set for diesel motors, each of 5 seconds with pauses at intervals also of 5 seconds. Otherwise, 15 pulses of 3 seconds each, each with pauses of 5 seconds if set for petrol motors.

STARTING FAILURE

Blocks the start cycle if the motor is not started after the whole succession of pulses.
This is shown by a special symbol  .

STOP

- In **Manual** mode using key  .
- In **Test** mode when the protection systems or the remote controls intervene.
- In **Automatic** mode when the mains power returns, or when the protection systems or remote controls intervene.
  Stopping for the Diesel engines can occur in two ways:
  - With the solenoid deactivated while the engine is running and activated when stopped. This condition is maintained during the STOP TIME (programmed to 20 seconds) after the engine stopped detection.
  - With solenoid or electro-valve activated while the engine is running and deactivated when stopped, remaining in this condition even when the engine is stationary.
- In PETROL engines, removing the supply from the start system.

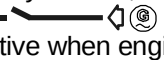
DETECTION ENGINE RUNNING

This is obtained with detection (adjustable P1) of the voltage and frequency of the battery charger alternator (PERMANENT MAGNETS or PRE-EXCITATION) and from the frequency and residual voltage of the generator.

When detection has been made, it disconnects the starter motor and lights the LED  .

PROTECTIONS

Memorized with engine stop, they can be divided into three groups:

- always active, for the faults generator undervoltage or overvoltage (indicated by the flashing signal)  (stopping without engine cooling).
- active when engine is running, for OVERHEATING  and OVERAFREQUENCY ANOMALY  stopping without engine cooling.
- active 10 seconds after the engine running detection for the following anomalies:
  INSUFFICIENT OIL PRESSURE  and FAULT AT THE BATTERY RECHARGING ALTERNATOR  (belt breakage) and A1.

ALARM

Always active, memorised, stops the motor as a result of the fuel empty anomaly  .

RESET

By pressing the key  , the protection devices and all the stopped functions are re-activated.

MAIN ALARM

This can be obtained by mounting an indicator connected to the relevant output.
It is activated continuously.

When key  is pressed, the main alarm is silenced.
It is activated intermittently for 8 seconds, followed by a pause, before beginning the generator set remote start up.

REMOTE CONTROLS
START OR TEST, STOP, EMERGENCY

EJP FUNCTION

Enabled with control panel in automatic and programmed with switch 10 (see programming joint A page 4).
When the START UP contact closes (terminal 32), EJP START is seen on the display. After the EJP STARTUP DELAY time (programmed to 25 min.) has elapsed , the start up procedure begins.
When the switching contact (terminal 33) closes, EJP is seen on the display and the operation is as when there is a mains fault.
When the two EJP contacts are opened functioning is as when the mains power returns.

EMERGENCY STOP

The emergency stop can be activated in all working conditions, by mounting one or more click down push-button.
The stop is immediate (without engine cooling), enables the general alarm and ⚠ is shown on the display.

Do not use the emergency push-button linked to a stop system that is not energized when the unit is running.

AUTOMATIC BATTERY CHARGER

- Rapid charge via current control
- Intermediate and maintenance charge via voltage control

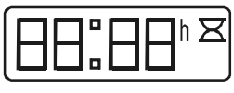
} FIXED LIGHT 

OPERATION

Automatic charging takes place at three levels:
- Rapid charging via current control 1,5A until 13,2V (26,4V) are reached in the battery.
- Intermediate charge via voltage control, until13,5 V (27V) are reached in the battery.
- Maintenance charge using a very low current value, but sufficient to maintain the voltage value at 13,5 (27 V).

The GREEN LED is lit only when the following conditions happen at the same time:
- mains on;
- battery voltage above the 65% (+/- 10%) of the rated value.

PARTIAL HOUR METER

Press  to select 

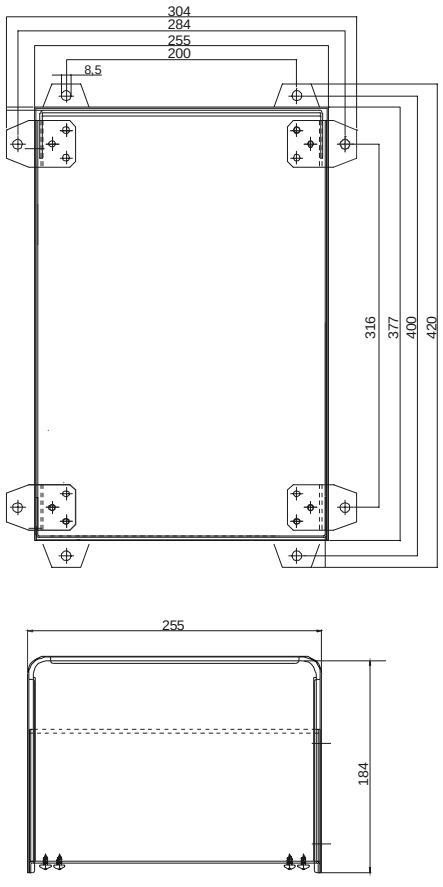
the operating hours and minutes of the last run of the genset unit.

The hours indicated are zero-set the next time the genset unit is started up.

COMPONENTS LIST

DESCRIPTION	TYPE	ELCOS	MANUFACTURER	QUANTITY
ELECTRONIC CARD	SEA-430 12 V 24 V	24.22.45 24.22.46	ELCOS	1
TRANSFORMER	VA 15 12V VA 24 24V	51.22.18 51.22.19	S.EL.IT.	1
FUSES HOLDERS	PS 10/E 50.101.001	45.08.33	WIMEX	2
FUSES	10A	40.03.06		
TERMINAL BOARDS	CBD10	42.17.86	CABUR	4
	CBD16	42.17.90		16
CONTACTORS COUPLE	CL02A400T6 VERSION 32 ATS	10.01.12	G.E.	1
	CL03A400M6 VERSION 45 ATS	10.01.13		
	CL0400M6 VERSION 60 ATS	10.01.15		
HORIZONTAL MECHANICAL INTERLOCK	BELA 02	10.01.51		1

DIMENSIONS



TECHNICAL DATA

PANEL CONFORMING WITH STANDARDS
CEI 17-13/1 (EN60439-1) CEI 44-5 (EN 602041-1)

TYPE	CONTACTOR CAPACITY (AC1)	CONTACTORS SHORT DURATION CURRENT
32 ATS	32 A THREE-PHASE	570 A x 1”
	58 A SINGLE-PHASE	
45 ATS	45 A	1010 A x 1”
60 ATS	60 A	1010 A x 1”

- Rated mains/generator voltage: 400 VAC
- Battery supply voltage: 12VDC (16VDC MAX) or 24VDC (32VDC MAX)
- Frequency: 50÷60 Hz
- Absorption with engine running without mains: 150 mA at 12V 90 mA at 24V
- Selfabsorption with engine stationary without mains: 38 mA at 12V 25 mA at 24V
- Battery charger supply: MAX 1 A
- Heater output: 230 VAC MAX 1500 W
- Rated insulation voltage:
  - Mains voltage terminals: 400V
  - Battery voltage terminals: 32V
- Insulation class: Class I
- Hour meter: 4 digits
- Frequency meter: 0-85 Hz, Precision ±0,1 Hz
- Battery voltmeter: Max 38V, Precision 2%
- Mains voltmeter: Max 440V, Precision ±2%
- Generator Voltmeter: Max 440V, Precision ±2%
- Generator ammeter (on request): Max 60A, Precision ±2%
- Outputs 6-17: MAX 1A
- Outputs 15 - 19 - 70: MAX 3W
- Degree of protection:
  - Accessible sides: IP40
  - Wall sides: IP20
- Temperature range: -30 ÷ +40 ° C
- Relative humidity: 90% MAX (without condensation of water) at 40°C
- Altitude: MAX 1000 mt a.s.l.
- Functioning of system: in insulation
- Installation conditions: for internal use
- Plant system to which it is connected: TN-IT-TT
- Panel weight:
  - VERSION 32 ATS: Kg. 7,2
  - VERSION 45 ATS: Kg. 7,6
  - VERSION 60 ATS: Kg .8,2

The protections against direct/indirect contacts on the genset unit line, must adhere to the requirements described in the regulation CEI 64-8

ORDERING DATA

Type	Volt	Code
32 ATS	12	02.14.97
32 ATS	24	02.14.98
45 ATS	12	02.14.93
45 ATS	24	02.14.94
60 ATS	12	02.14.95
60 ATS	24	02.14.96

SUPPLIED ACCESSORIES

MOUNTING BRACKET KIT	75.06.89
KIT OF JUMPERS	17.99.11