TE808-PLATINUM
Instructions Manual - rev3

PREFACE

Thanking you for preference, ***TECNOELETTRA SRL*** *hopes that the use of this equipment could be a reason of satisfaction. This manual is designed to put you in a position to intervene on the equipment and different performs of installation and connection. In order to ensure efficient operation and durability, it is recommended the strict observance of the rules laid down here. Thanks in advance for the suggestions that we will be given o possible further improvements of the equipment. For any question always consult the* ***TECNOELETTRA*** *Technical Department.*

TECNOELETTRA S.r.l.

Note:
The manufacturer reserves the right to modify equipment for any manufacturing or commercial need, without the obligation to promptly update this installation and using manual.

NEW The TE808 Platinum is the first controller with the self-learning function, in two modalities. For more informations see paragraph 2-7.7.

NEW OpEx functions included. See paragraph 2-7.2.4 and 3-4.9 for more informations.

Warning: The TE808 Platinum doesn't manage the following situation:
Two or more generators synchronized with the mains cannot deliver power and are switched-off in case of lack of the mains itself.

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TE808 PLATINUM

Section 1 – Introduction

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1- 1 General rules

WARNING!

The equipment can not be used for other purposes without the express authorization or any changes made by TECNOELETTRA SRL.

For best results, TECNOELETTRA SRL recommends that all operations are carried out at regular cleaning to keep the switchgear at its best.

1- 1.1 Responsability

- TECNOELETTRA SRL disclaims any liability for damage or injury resulting from use not covered in this manual, improper use of the equipment, as well as the use of unqualified personnel or the use of non-original spare parts.
- **User**

User is responsible for damage to people or property resulting from:

- improper or different use from what indicated in this manual;
- compliance with the requirements of safe use and safety norms;
- modifications to the equipment;
- use of non-original or unfit spare parts.

- **Manufacturer**

The manufacturer is the company that physically performs the assembly, testing directly or by his authorized representative of the equipment and is ultimately responsible.
The manufacturer is responsible for the efficiency of the equipment.
In particular the manufacture is responsible for :

- parts used for assembly;
- compliance with legislation in the country of use of equipment, if the buyer had informed the manufacturer of the equipment on the laws in force.

1- 2 General norms of security

WARNING!
Do not install or operate your TECNOELETTRA equipment, until you have read these safety norms.

1- 2.1 User responsability

The basic safety rules established in this chapter are a guide for the installation and safe operation of TECNOELETTRA equipment.
These general safety rules, with other chapters on installation, operation and cleaning up constitute the complete instructions manual.
All staff involved with this equipment for any reason, must be familiar with this information before you start.
It is responsability of the Buyer be sure that the procedures are followed, and if required any change in use, appropriate procedures should be set to continue with the activities of security equipment.
It is strongly advised to contact TECNOELETTRA to be sure that the equipment can be converted to new use and to continue to operate safely.
If the equipment is not purchased directly from Tecnoelettra or its representatives, is Buyer's responsability to ensure that equipment conforms to current safety standards. Buyer is strongly advised to contact TECNOELETTRA to ensure that the equipment operates safely.

1- 2.2 Safety first of all

TECNOELETTRA equipment is designed and produced with priority consideration and attention to safety rules.
In any case, the presence of security systems does not exempt operators from acting with caution: the non-compliance can lead to accidents and damage the components of equipment.
For your protection and protection of others, learn and always follow safety rules set forth in this chapter.

Develop safe work habits by reading the rules and stick them.
Keep this paper handly and look through from time to time to refresh your understanding of the norms.

1- 2.3 Importance of the manual

- **Informations about the manual**

We hope that the informations contained in this manual will be of help.
They will give an explanation of the correct and secure use of your equipment and are based on data and our current and best knowledge.
Carefully read the manual, including recommendations and suggestions, and the conditions of sale and warranty.

- **TECNOELETTRA wrote this book with the greatest care, trying to make it as complete and clear as possible. However, if some point proves to be incomplete or unclear, contact us without hesitation.**

- **Importance of the manual**

This instruction manual was born to help you in the correct installation, starting-up, use and cleaning of your equipment.
This manual is integral part of equipment in order to obtain the best performance and it should be kept for the duration of the product.
Therefore, please do not remove, tear, or write to parts of the manual, taking care to integrate with any updates provided by TECNOELETTRA.
Please keep this manual in a place protected from moisture and heat, accessible and known to all operators (photocopy any parts of interest to the consultation of the various operators).

In case of sale or transfer of the machine (on which the equipment is installed) to another user, these instructions must be delivered to the new user.

- **This manual is to explain:**

- the use of equipment, as required by the project hypotesis;
- technical features;
- compostition of the different parts;
- operations for installation and assembly;
- operations of starting-up, adjustment, starting, shutdown, stopping-up, etc..;
- the risks related to hazardous waste, measures to eliminate it and instructions to operate safely;
- cleaning;
- what are the spare parts recommended to keep in stock.

Any person appointed by the developer to carry out installation, start-up and repair of this equipment must be aware of the contents of this Manual, with particular reference to safety standards. If the involved person does not understand the language of the manual, the client must properly educated him.

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This manual provides guidance and instructions on equipment that are added, but still not intend to replace, supplement or modify any general or specific NORM, RULE, DECRETE or LAW, in the place where the installation takes place and concerning the safety and use of electrical equipment.

The copy of the manual included in the packaging, should be used for all transactions related to the installation, assembly, calibration, setup, startup, etc...

After installation, this copy must be retained for all future interventions.
TECNOELETTRA is pleased to provide duplicates of the manuals supplied with the equipment to any customer request.
Requests must be submitted to our Technical Department together with the data characteristic of the equipment involved, derived from the CE label applied to the same equipment.
The manual, technical documentation and drawings delivered together with the tools are proprietary of TECNOELETTRA, who reserves all rights, they can not be made available to third party.
TECNOELETTRA will be glad to consider and possibly accept suggestions for improvement of this Manual.
Suggestions should be submitted to our Technical Department.
Upon handover to the equipment to other, the user also agrees to deliver copies of the manual in his possession and at the same time to report the fact to **TECNOELETTRA**.

1- 2.4 Note legend

The text should draw attention, will be highlighted along these graphics settings:

DANGER!
Text describing the danger

NOTE!
Text describing note for the reader.

NOTICE!
Text describing the notice.

WARNING!
Text follows the need to pay attention.

These simple graphical forms are used to signal the operator situations, actions, informations, special operations that may cause damage to people and to equipment, or suggest a correct operating procedure.

1- 2.5 Electrical system protections

The electrical system of the equipment was designed and constructed to protect operators from electrical shock and possible overheating or other abnormal dangerous conditions . All electrical devices which are in contact with operators, are waterproof to penetration of liquids or vapors that could cause short circuits or deterioration of insulation. Then there are overcurrent protections to prevent overheating or malfunctions that may cause hazardous conditions.

1- 2.6 Controls

- **Before start-up**

- Ensure that all security systems and protections are installed and operative.

- **During the functioning**

- Do not turn-on this equipment until you have read or understood the operating instructions.
- Be careful and observe lights and warning signs displayed on the equipment.
- Do not operate damaged or defective equipment.

- **After the power off**

- Make sure the power sources are off.

1- 2.7 Staff training

All staff using the equipment must have undergone some training that includes:

- reading and comprehension of this Instructions Manual
- a practical instruction by **TECNOELETTRA** staff which made the start-up of the equipment.

In addition, TECNOELETTRA runs, upon request, a sufficient period of training to educate staff on the operation.

1- 2.8 Operators

The machine described here requires only one operator to start and control the functioning. For special settings and use may be also required the intervention of a second operator.

1- 2.9 Residual risks

- **Risks linked to electrical energy**

All electric units are supplied with electricity and are therefore dangerous. All panels and electrical panels and junction boxes must be properly closed. Cables must not be damaged or left hanging, but must be properly cut and placed. Operations on the electrical system should only be performed by qualified personnel, with power disconnected. To avoid unwanted connections, the main switch must be disconnected and properly locked.

1- 3 Homologation/certifications

The equipment described in this manual complies with homologations / certifications below:

- **EMC: 2004/108/CE**
- **EN61000-6-3 (2007)**
- **EN61000-6-2 (2005)**

Halt test Accelerated Reliability Test Centers

1- 4 Use destination

TE808 controller is used to control manually and automatically the generators. Engine, alternator, power and transfer switch are identified and controlled by TE808, ensuring the best performance of the generator when there is a power failure or when there is an alarm in the engine, alternator or mains .
The TE808 also provides all the necessary informations to service and maintenance of the battery.
The events and alarms are stored in the events list. This allows us to identify over time any event that has occurred.
Through the RS232 and RS485 ports and powerful remote control software it is possible to control and use the generator remotely via GSM, Ethernet, etc.. For this functions you need to buy relative accessories of transmission.

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1- 5 Waste and residual management

General information on how to manage waste.
Identify and classify wastes according to specifications provided by law in the country of use. Do not leave or collect waste in an uncontrolled way. Do not enter into surface water or groundwater.
Do not mix different types of waste.
Deliver the waste to authorized people by the competent authorities in the country for collecting, transporting and processing of waste.
Prepare the documentation required by administrative regulations in force in the country of use (production register, storage and disposal, documents of transport).
Administrative duties (record keeping, preparation of documents etc...).

1) Waste separation by homogeneous types.
   The waste must be collected and stored for "homogenous types", since this is the only system through which you can:
   - avoid any risk of incompatibility in terms of chemical and physical characteristics of waste products.
   - ensure final proper treatment turning into a more useful and less dangerous, allowing their eventual recovery.

It is therefore important not to mix different types of wastes.

2) Use appropriate containers for handling and storage.
   Vessels designed to contain wastes must have adequate strength requirements in relation to chemical and physical properties and characteristics of the hazardous waste contained.
3) Vessels label
   In order to disclose, during storage in the company, the nature and hazardous of the waste, the containers must be appropriately marked with labels or lables affixed on the containers themselves or placed in storage areas. In particular it is important that waste containers are identified with a description of the type of waste and hazardous to humans and the environment.
4) Waste handling in the company.
   During handling, ensure that containers are closed properly.Avoid locations where there are wells of water stored to avoid accidental spills into public sewer and white water .
5) Storage of solid waste heaps.
   - In order to avoid possible pollution of soil, if storage takes place in piles, they should not be made on open ground but on strong bases (such land paved)
   - The waste stored in piles must be protected from the rain water where their runoff could lead to pollution of the water itself.

1- 6 Disposal/Scrapping

1- 6.1 Machine disposal

Dismantling operations must be performed by qualified personnel and in compliance with all applicable laws.
At the end of real life, the user company should proceed to the equipment alienation in accordance with the in force regulations by providing the first general cleaning of various elements and after the separation of the parts making up the equipment. After removing the equipment it is necessary to separate the various materials in accordance with the laws of the country where the equipment should be discarded. The device contains no hazardous substances nor requires special removal procedures.

1- 6.2 Materials that make the equipment

Regarding the elimination it should be noted that the materials used on the equipment are not of hazardous nature, and are essentially:
- polyethylene plastic;
- electric cables with relative sheaths;
- monitoring and implementing electronic devices.

During the disposal process you will need to comply to the regulations in the country of use.

1- 6.3 Consumer products

Regarding the disposal of consumer products, observe the following rules:

- **Batteries**

The battery of the equipment must be replaced by a maintenance electrician.
Used batteries should not be disposed as common waste, but it shall be delivered to designated disposal sites.

1- 6.4 Separate collection and start recovery

The unit consists of material that can easily be recycled and used as raw material for other production processes. Through proper recycling it's possible to recover a wide range of waste with ecological and economic advantages.

- **Plastic materials**

Plastic parts can be retrieved for the production of new resources both by recycling in the origin area and the heat and energy production through their incineration, thus avoiding, at the end of the life cycle, they become a burden on the environment under form of waste to be disposed of in landfills. To make a better recovery of such material is necessary to collect differentiating types.

1- 6.5 Dismantling the equipment

Before starting the decommissioning of the equipment, verify the current legislation in force specially:
- registration requirements and / or communication to control organisms;
- arrangements for environmental protection;
- requirements for the scrapping;
- requirements about health and safety safeguard of workers

About disposal of the equipment, follow this procedure:

1) disconnect the equipment from the mains;
2) disassemble the apparatus collecting separately the different components in relation to their nature as indicated in the paragrapgh "Separate collection and start recovery";
3) proceed to the storage and disposal of waste and materials for reuse as indicated in this paragraph and the regulatory requirements set out in the country of use.

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1- 7 Cleaning

- **Procedure of manual cleaning**

- Do not use toxic solvents and / or flammable to clean the machine.
- Turn off the electricity (close) before cleaning the equipment.
- Keep closed electrical panel protections when you are cleaning the equipment.
- Always clean the seals around the equipment as soon as possible.
- Never attempt to clean the equipment while it is running.

If necessary, clean the display with soft cloth. Do not use any detergent.

1- 8 USB Connections

Via PC connection is possible:
- Transferring the new firmware or software updated to the controller;
The USB cable used is of type AB male-male.

1- 9 Storage / reposition

In case of prolonged storage leave your device away from rain and wind and possibly dry. It is not advisable to cover the equipment with waterproof film that will prevent the evaporation of any moisture. The moisture can cause corrosion on the metal parts and damage the electronic components. The characteristics of storage must be within the limits prescribed below:

- Temperature -40 to 80 °C
- Relative Humidity 30-95% without condensation
- Atmospheric pressure 860 - 1060 hPa (mbar)

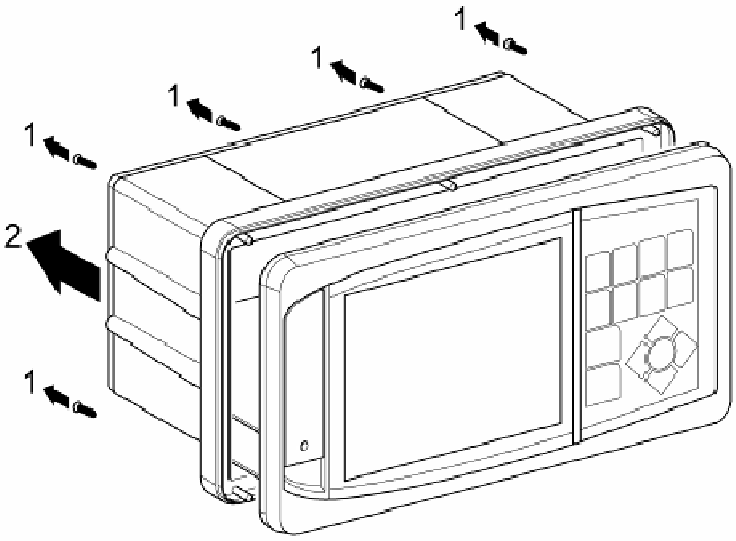
1- 10 Warranty

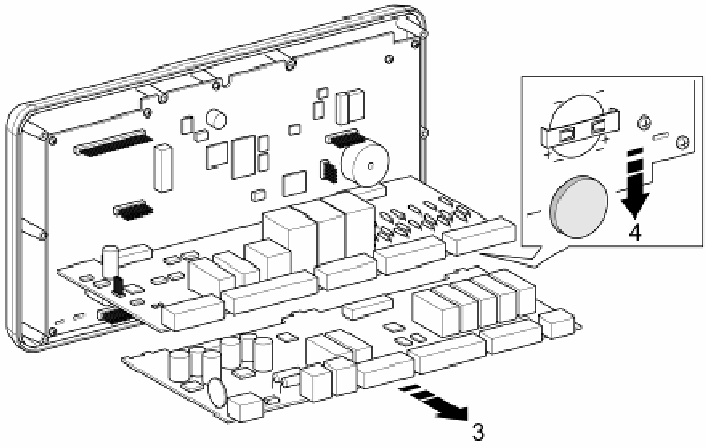
2 years warranty from date of installation, automatically recorded by the controller before commissioning.

1- 11 Inner battery replacement

1) Remove the screws (item 1) on the back of enclosure;
2) Separate the back cover from the front panel (Item 2);
3) Remove lower board from its slot (pos. 3);
4) Remove and replace internal battery (pos. 4) with an equal one

Battery type	Voltage
CR2032	3 V





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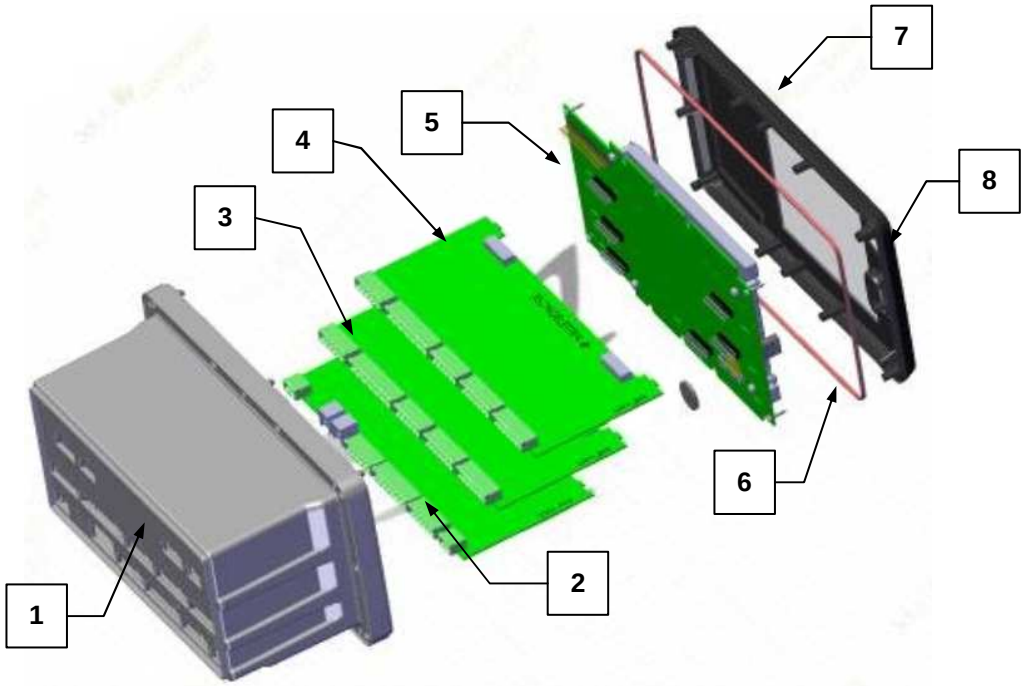
1- 12 Spare parts



1) Back box - code 226TE808R; 2) Circuit basic - code 2107TE808B; 3) Circuit synchro - code 2107TE808P-REV1; 4) Circuit CanBus/RS485 - code 2107TE808CB;	5) Circuit display - 2107TE808D code; 6) Seal - 215TE808FR code; 7) Front box - code 226TE808F; 8) USB Rubber protection 226TE808USB.

1- 13 Technical support

- For more informations and technical support, please e-mail at te808@tecnoelettra.it

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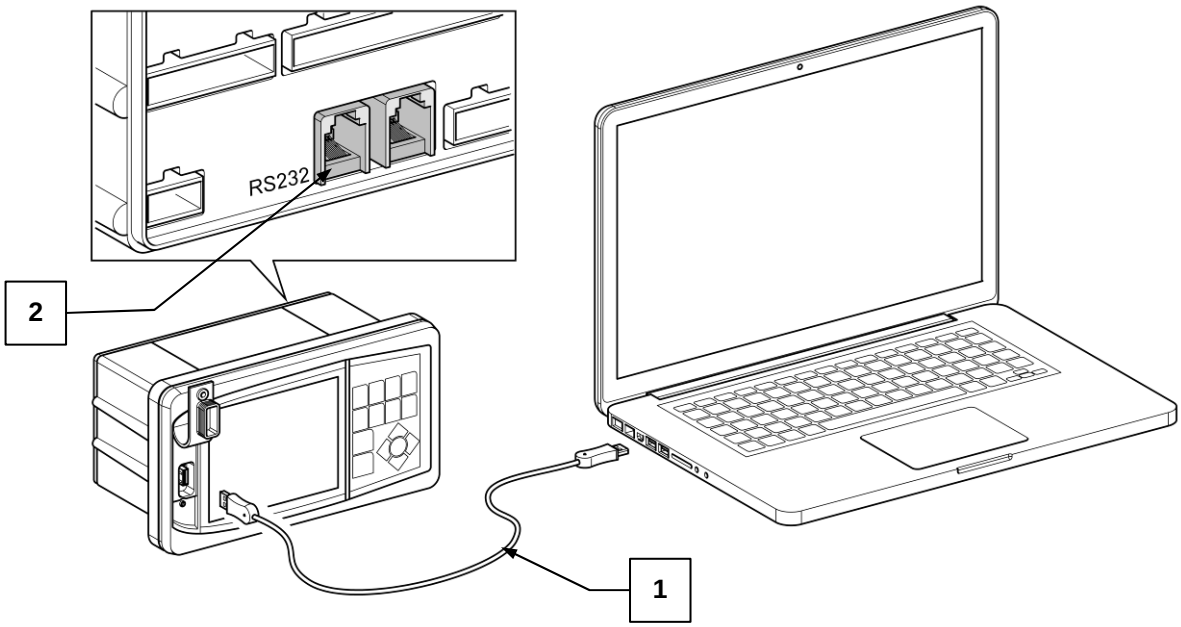
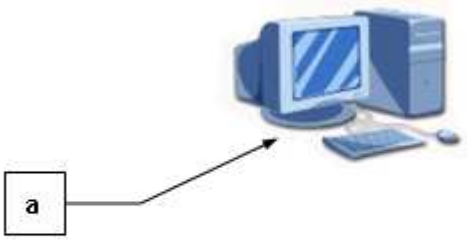
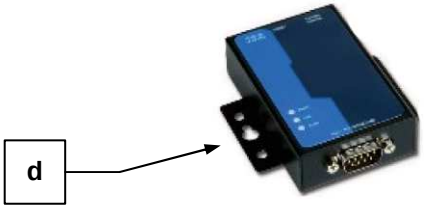
1- 14 Accessories







1) Cable code 1571807F;

2) n.2 RS232 ports allow direct connection to multiple devices;

a. Others Cable for direct PC connection to upload and download data and info. Cable code 1571807.

b. Analog modem connection for remote control via PC dial telephone. Optional code 1571806.

c. GSM modem for remote control via PC with modem or via SMS messages to / from mobile phones. Accessory code 1571806B.

d. Converter wired TCP / IP for remote control from PC via LAN / Ethernet. Code 1571806G accessory.

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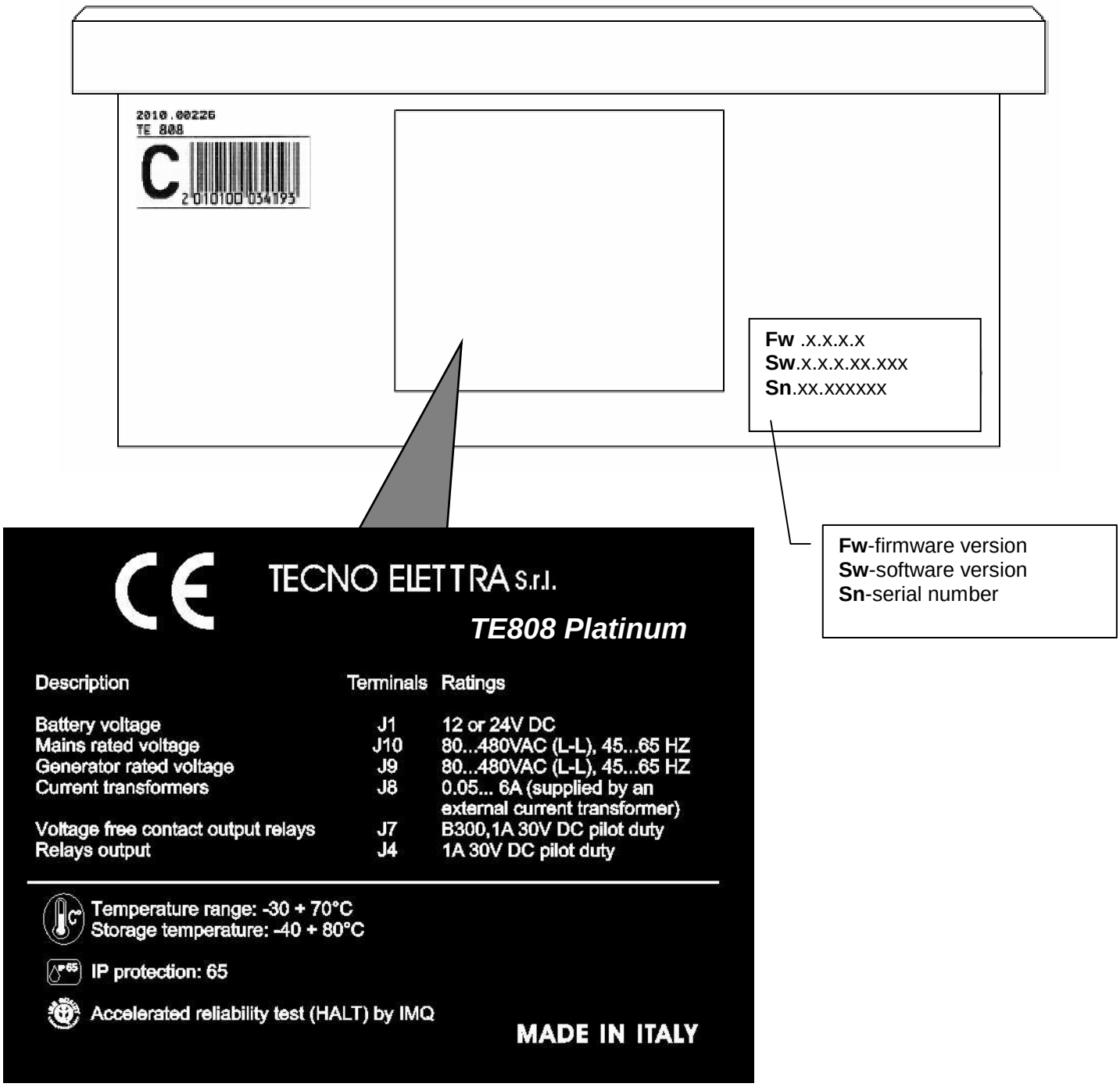
1- 15 Product label and rating plate

General identifications of each unit are traced on the plate below and placed on the controller.



NOTE!

Inform the maufacturer the general identification data reported on the label, before asking for technical specifications or information about the equipment.

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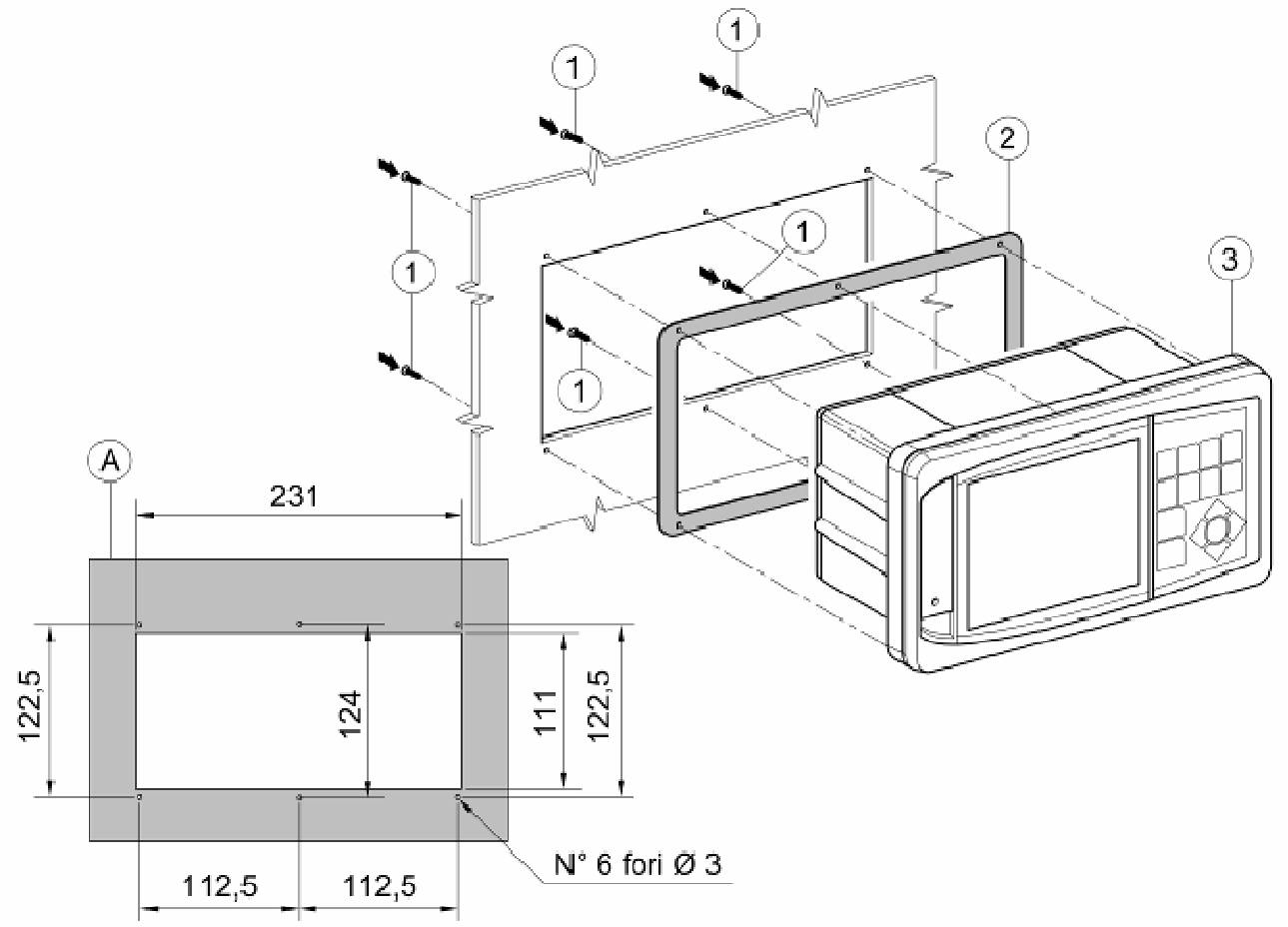
1- 16 Installation

Drill a hole for the rectangular box TE808 and No. 6 holes Ø3 mm on the mounting surface, as indicated on the template (A). Use the screws (1) supplied. If needed buy only screws with the same characteristics.
Be sure the gasket (2) is mounted correctly and perfectly fits the perimeter of the box TE808 (3).



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1- 17 Technical specifications

SUPPLY VOLTAGE	**In parenthesis values at 24V**
Battery rated voltage	12Vdc or 24Vdc
Voltage range	from 7Vdc to 33Vdc
BOARD CONSUMPTION	
Fixed consumption 12Vdc (24Vdc)	150 mA (75 mA)
Relay consumption 12Vdc (24Vdc)	210 mA (95 mA)
Backlight consumption 12Vdc (24Vdc)	100 mA (50 mA)
Pre-excitation consumption 12Vdc (24Vdc)	130 mA (170 mA)
Heater consumption	-
Digital input closed to negative consumption 12Vdc (24Vdc)	40 mA (20 mA)
Maximum consumption 12Vdc (24Vdc)	630 mA (410 mA)
TEMPERATURE RANGE	-40 ℃ + 70 ℃ (electronic)
	-20 ℃ + 70 ℃ (display)
	-30 ℃ + 70 ℃ (with heater)
	-40 ℃ + 80 ℃ (stocking)
DISPLAY LGC-2107TE808D	LCD monocromatic 5,7" , 320x240 pixel, transflective, white LEDs backlight
USB PORT	"Device" type, full-speed for upload firmware and projects, connector "A" female
DIGITAL INPUTS	
Input type	Active at low level with pull-up
Input current	< 10 mA
Low voltage level	< 3.5 V
High voltage level	> 8,0 V
Input latency interruption	< 30 ms
SPEED INPUT "W"	
Input type	In AC, frequency and voltage measures
Range of voltage	From 6 to 100 Vpp (precision 10%)
Range of frequency	From 40 Hz to 2000 Hz (precision 2%)
ALTERNATOR PRE-EXCITATION INPU/OUTPUT (D+)	
Input type	Voltage measure + pre-excitation current generation
Range of voltage	From 0 to 40 Vdc
Input current	< 15 mA
Pre-excitation current	130 mA a 24 V - 170 mA a 12 V
RELAYS OUTPUT	
Type of contact	N.O. contacts with one common pole
Rated current	5 A / 30 VDC - 5 A / 250 VAC
SENSORS INPUT	
Input type	3 inputs for resistance measures referred to the board negative
Range of measure	
- fuel level	from 0 to 850 ohm
- engine temperature	from 0 to 1300 ohm
- oil pressure	from 0 to 400 ohm
Measure current	
- fuel level	< 10 mA
- engine temperature	< 6 mA
- oil pressure	< 20 mA
Precision	< 5 %
SERIAL PORTS	
Type: Serial RS -232 wihtout handshake signals	
Cable lenght	< 3 m
Speed	Up to 115200 bps
Type: Serial RS -485	
Cable lenght	< 1000 m
Speed	Up to 115200 bps
Type: Serial RA “Remote Alarms”	
Cable lenght	< 1000 m
Speed	9600 bps
AVR ANALOG OUTPUT	
Output type	Insulated voltage referred to the board negative
Output current	20 mA max
Regulation range	±5 Vdc
RPM ANALOG OUTPUT	
Output type	Insulated voltage referred to the board negative
Output current	20 mA max
Regulation range	0-10Vdc
CANBUS PORT	
Cable lenght	< 10 m
Speed	Up to 250kbps
OUTPUT RELAY CONTACTOR / MCCB / ACB	
Type of contact	1 N.O. contact for GENERATOR 1 N.C. contact for MAINS
Rated current	8 A / 250 VAC
LOAD CURRENT INPUTS	
Range of measure	0.2 ÷ 5A
Maximum overcurrent	30 A
Type of measure	RMS calculated value at 2 KHz and a 12 bit converter
Precision	< 0.5 % end of scale.
VOLTAGE INPUTS	
Type of input	Voltmetric transformers
Rated voltage	0÷253 Vac (L-N) - 0 ÷ 440 Vac (L-L)
Range of measure	Direct insertion: from 0 to 230Vac +/-10% (L-N) - from 0 to 400 Vac +/-10% (L-L); Insertion by voltage transformers /100Vac: up to 15kV (L-L)
Range of frequency	from 40Hz to 68Hz
Dissipation current	< 0.5 mA
Type of measure	RMS calculated value at 2 KHz and a 12 bit converter

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TE808 Platinum

Section 2 – Equipment overview

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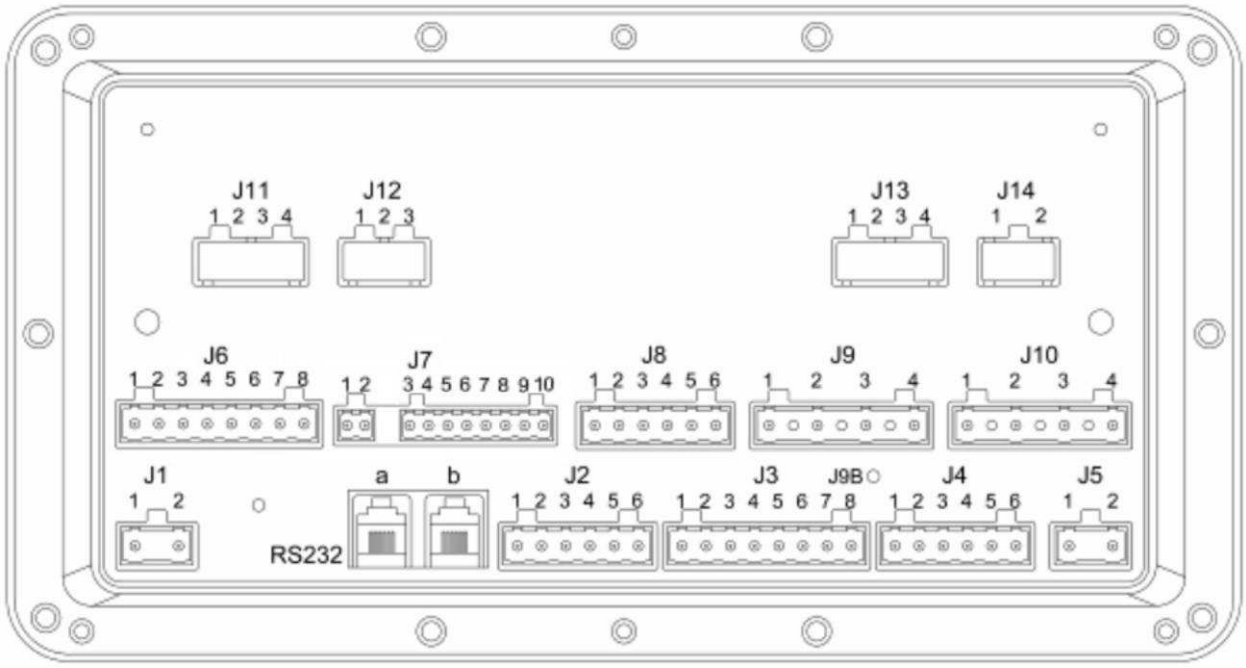
2- 1 Electrical connections TE808



J1-Vdc supply
1-battery positive
2-battery negative

J2-Analog inputs
1-D+ batterycharger alternator
2-Tachometric signal (W;Pickup)
3-not used
4-engine temperature instrument
5-fuel instrument
6-oil pressure instrument

J3-Digital inputs
1- Programmable (def. High engine temp.)
2- Programmable (def. Low fuel level)
3- Low oil pressure
4- Programmable (def. Emergency button)
5- Programmable (def. Remote start)
6- Programmable (def. Battery charger alarm)
7- Programmable (def. Breaker prot.)
8- Programmable (def. Mains interface)

J4-Relay output 5A
1- Programmable (def. EV / EM stop)
2- Start output
3- Programmable (def. Glow plugs)
4- Programmable (def. Acoustic alarm)
5- Programmable (def. Fuel pump)
6- Common for relay outputs

J5-not used

J6- switches management
1-synchro board battery positive
2-synchro board battery negative
3-genset switch output
4-genset switch output
5-mains switch output
6-mains switch output
7-genset switch feedback (+)
8-mains switch feedback (+)

J7- status, RPM and AVR
1-AVR positive command
2-AVR negative command
3-RPM governor positive command
4-RPM governor negative command
5-Analog mains input 4-20mA (+)
6-Analog mains input 4-20mA (-)
7-CanBus between TE808 (H)
8-CanBus between TE808 (L)
9-CanBus termination resistor

J8-Current transformers inputs
1-Phase L1, S1 terminal
2-Phase L1, S2 terminal
3-Phase L2, S1 terminal
4-Phase L2, S2 terminal
5-Phase L3, S1 terminal
6-Phase L3, S2 terminal

J9-Generator voltage inputs
1-L1 ; 2-L2 ; 3-L3 ; 4-Neutral

J10-Bus/Mains voltage inputs
1-L1 ; 2-L2 ; 3-L3 ; 4-Neutral

RS232-communication ports
RS232a- factory setting for PC
RS232b- factory setting for GSM

J11-Engine Can Bus
1-Shield
2-CanBus Low (L)
3-CanBus High (H)
4-Internal terminal resistor 120ohm

J12- Relay output 5A
1-Common for relay output
2-ECU aux supply
3-Global alarm #2 - Mains breaker KM tripping coil

J13-RS485 communication port
1-Shield
2-Data Receive (RX)
3-Data Transmit (TX)
4-Internal terminal resistor 120ohm

J14-Remote Alarm output (RA)
Communication output for Remote Alarm SRAN board (optional): codes 1571101 or 1571102

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2- 2 General electrical drawings

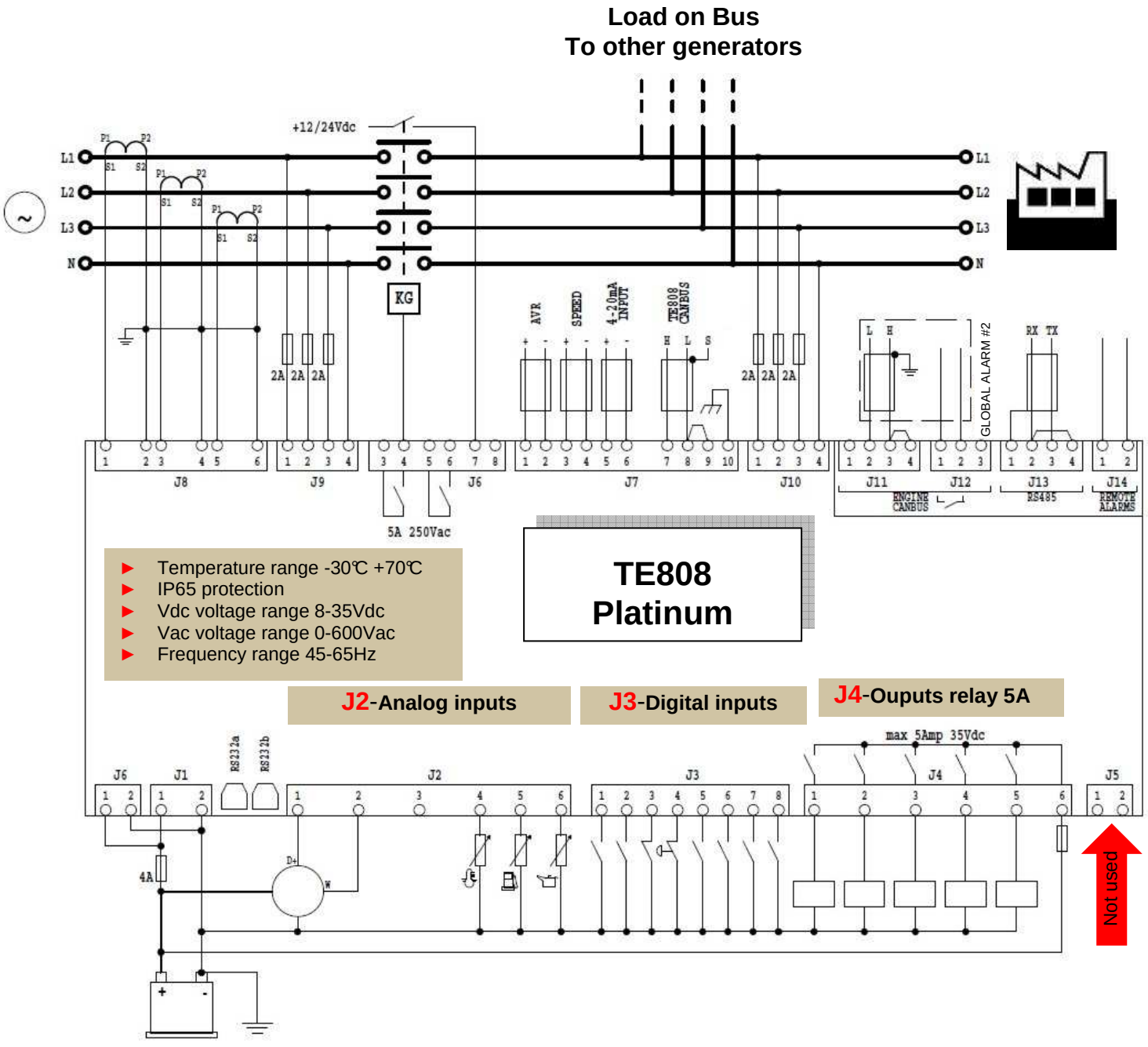
2- 2.1 Synchro between generators

Warning! Before inserting the plugs make sure that the connections strictly comply with the wiring diagram below.

Terminal J3
1-High engine temp. alarm
2-Low fuel level alarm
3-Oil pressure alarm
4-Emergency stop alarm
5-Remote start
6-Battery charger alarm
7-Breaker protection
8-Mains external interface protecition

Terminal J7
Very important!
J7-5 and 6 (4-20 mA input) must be insulated if connected.
* We suggest to put a bridge between J7.5 and J7.6 when 4-20mA input is not used.
Do not connect canbus TE808 shield to generator GND.

Terminal J4
1-Stop electrovalve / electrosolenoid
2-Start/Crank
3-Glow plugs
4-Auto fuel refill command
5-Acoustic alarm
6-Common for relays output



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2- 2.2 Synchro between generator and mains

Warning! Before inserting the plugs make sure that the connections strictly comply with the wiring diagram below.

Terminal J3
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2-Low fuel level alarm
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4-Emergency stop alarm
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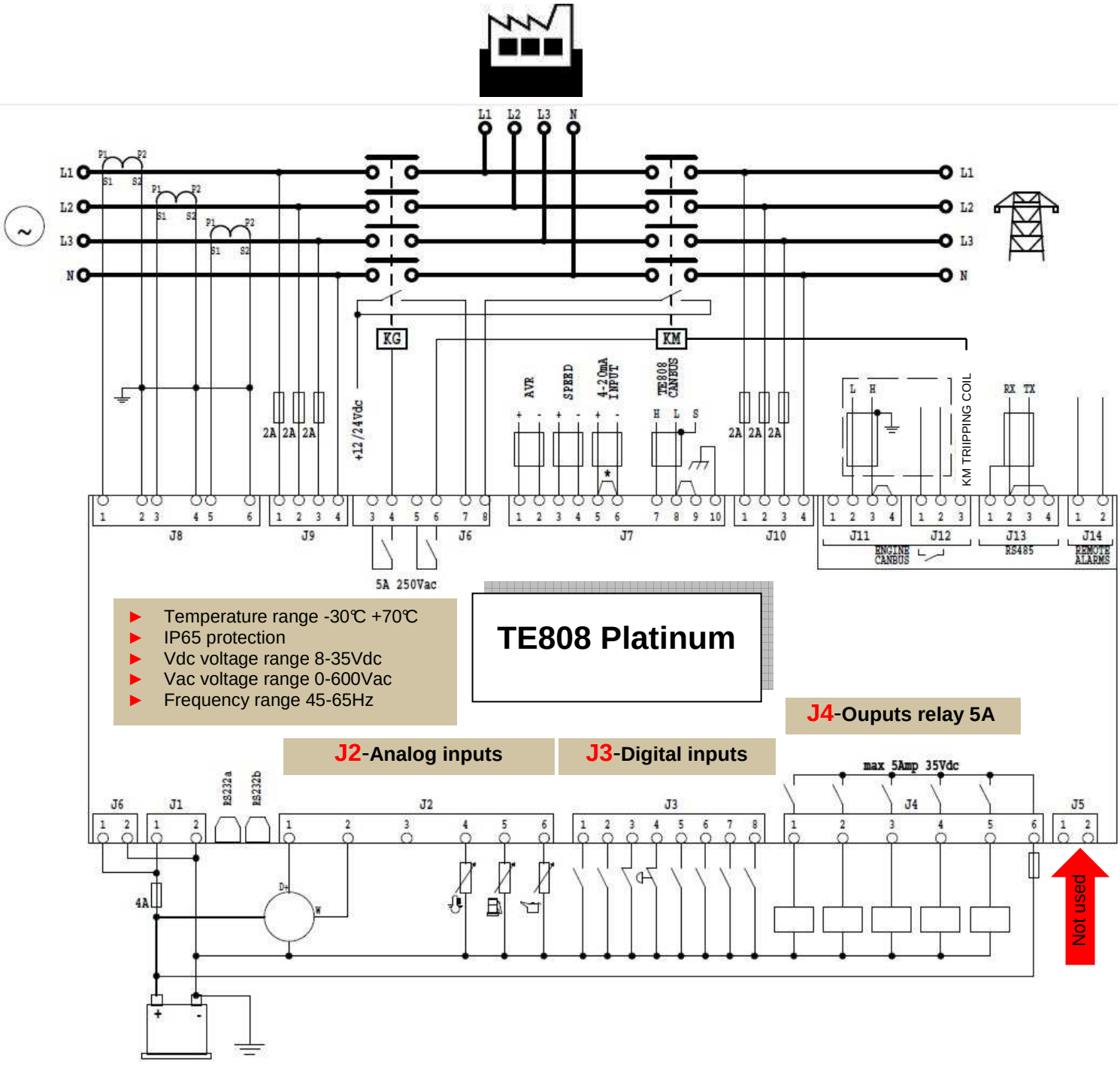

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2- 3 Types of system

TE808 PLATINUM allows the complete management in automatic and manual of the synchronization between generators and mains, with different typologies of system.

2- 3.1 Synchro between 2 or more gensets

There are 2 different management options:

2- 3.1.1 Load sharing without start/stop management

Load sharing between all the gensets available
All the gensets start at the same time and the first one that closes the MCB on the load, will be the master genset. The gensets continue to work together. The load is shared by all the gensets to achieve the same load percentage on each genset, compared to their rated power.

For example:
you have genset n.1 with rated power 500kW, genset n.2 with rated power 250kW and a total load consumption of 150kW. The load is shared with 100kW on genset n.1 and 50kW on genset n.2. By this each genset is loaded with same load percentage compared to their rated power, equal to 20%. This working mode is used normally in these cases:

-when the load power consumption changes quickly, and you want to be sure that the load peaks are supported
-when the load must be supplied always and no power failures are admitted (in this case, normally, the power of each genset is enough for the total maximum power consumption)

If one genset has an alarm it will be stopped, but the other (or the others) genset already synchronized continues to supply the load.

TPS -Timed programmable start no break (Telecom applications)
All the gensets are programmed to start at a different time. This is possible with the parameters of TPS setup (see menu 3-3.3). In this menu it's possible to select the time at which the generator must be started and stopped. The programmation is usually made to have the second generator starting before the stopping of the first generator, the eventual third generator starting before the stopping of the second generator and so on. This way the load is always supplied. When the second generator starts, it synchronizes with the first generator and both generators supply the load. At the stopping time of the first generator, it is automatically stopped and only the second generator supplies the load. And so on for the eventual other generators.

It's also necessary to connect one alarm output (for example global alarm 1 output) of the first generator to the remote start input of the second generator, to command the starting of the second generator in case of alarm of the first generator.
The global alarm output of the last generator must be connected to the remote start of the first generator.

For example:
You have 2 gensets. Genset n.1 is set to start at 6.00 and to stop at 9.00, and genset n.2 is set to start at 8.50 and to stop at 11.50. At 6.00 o'clock the genset n.1 starts and supplies the load alone. At 8.50 the second generator starts, and remains synchronized until the 9.00, time at which the generato n.1 is stopped. Then the second generator supplies the load alone until the 11.50

2- 3.1.2 Load sharing with dynamic or progressive start/stop

Load sharing between gensets, with automatic start/stop sequence function in accordance to the load consumption value.

This working mode permits to start automatically the gensets in the system only if the load consumption increases and, obviously, permits to stop automatically the gensets in the system when the load consumption decreases. The load is shared by all the working gensets to achieve the same load percentage on each one, compared to their rated power (as for previous example).

To enable this function, you must set parameter B inside Genset synchro setup.

To set the load consumption thresholds for auto starting/stopping sequence (and their respective delay times), you must set parameters from J to M inside Genset synchro setup.

The load power thresholds are in percentage compared to the total sum of the working gensets rated power.

For example:
you have n.3 gensets, all with rated power 100kW. You set the starting threshold at 80% and the stopping threshold at 30%.

All the gensets start, synchronize and supply the load. After this, the master controller (the first one that closes to supply the load) checks the total load consumption: if the total load is higher than 90kW (30% of the 300kW that corresponds to the sum of rated power of the n.3 working gensets), all the gensets remain active and synchronized to supply the load.

When the load consumption decreases to less than 90kW (and it remains under the threshold for its delay time set), one genset will be stopped. If the load consumption increases again to more than 160kW (80% of the 200kW that corresponds to the sum of rated power of the n.2 working gensets), the 3rd genset will be restarted. Otherwise, if the load consumption decreases to less than 60kW (30% of the 200kW that corresponds to the sum of rated power of the n.2 working gensets) and it remains under the threshold for its delay time set, another genset will be stopped.

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The last genset is not stopped automatically and it remains active to supply the load also if the power consumption decreases. When the load consumption increases, the starting procedure is opposite to the stopping procedure: when the power consumption increases to more than 80kW (80% of the rated power of the single working genset) for its delay time set, a 2nd genset will be started. If the load consumption continues to increase up to more than 160kW (80% of the 200kW that corresponds to the sum of rated power of the n.2 working gensets), also the 3rd genset will be started.
For the described working mode about automatic starting/stopping procedure in accordance to the power consumption, n.2 different starting sequence modes are available by parameter C inside Genset synchro setup:

Progressive: the sequence is in accordance to the ID number of each genset. When only the genset with ID1 is working, if the load consumption increases, it will be started genset with ID2. If the load consumption increases again, it will be started genset with ID3. When the load consumption decreases, genset with ID3 will be stopped. If the load consumption decreases again, genset with ID2 will be stopped. Genset with ID1 continue to work always, also if there is no power request.

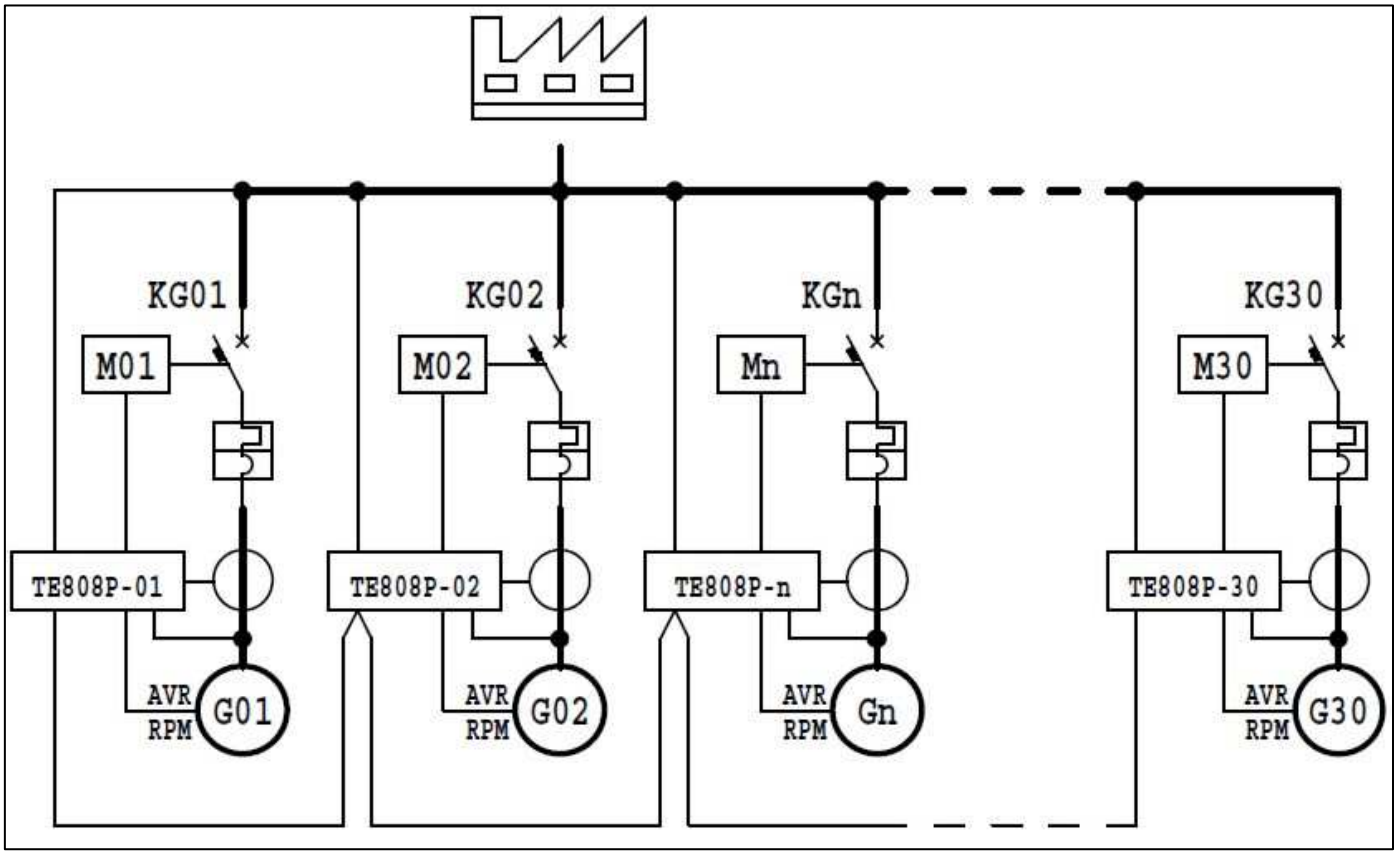
This sequence mode is used normally in this case:

-when the load power consumption changes during the working period and the gensets are with different rated power. For example: you have n.3 different genset. Genset ID1 of 100kW, genset ID2 of 200kW and genset ID3 of 500kW. Maybe, during the night, there are only auxiliary loads with very low consumption and the genset ID1 works alone. Then during the morning the load increases and also genset ID2 will be automatically started. During the afternoon the full load is applied and also genset ID3 will be started. Then after the working period the load consumption decreases and automatically genset ID3 is stopped and the in the night also genset ID2 will be stopped.

Dynamic: the sequence is in accordance to the working hours of each genset. Every time that one genset must be started for a load consumption increasing, it will be started the standby genset with lower working hours stored. Otherwise, every time that one genset must be stopped for a load consumption decreasing, it will be stopped the working genset with higher working hours stored. Also master genset can be stopped in accordance to its working hours; in this case another genset becomes automatically the master one.

This sequence mode is used normally in this case:
-when the gensets are with equal rated power and you want to have always the same working hours on all the gensets in the system.

SAMPLE DRAWING:



gensets A.jpg

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2- 3.2 Synchro between mains and 1 generator

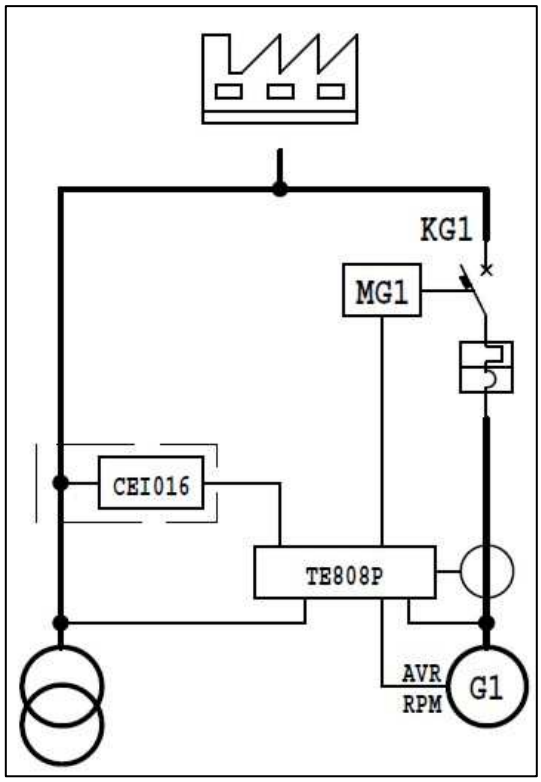
There are several types of system available to synchronize one genset with the mains. In all the systems, a single controller TE808P can manage all the mains and genset measures, protections, commands, etc. In the following paragraphs you can find the types of system available, with drawing samples and the main functions.

2- 3.2.1 Simultaneous load supply - Cogeneration

"Co-generation" of single genset on the mains

This system permits to produce energy from one generator synchronized with the mains, and permits to sell this energy (or part of it) to the electrical company. In this case, the generator produces a fixed power value (settable by parameter B inside Mains synchro setup). If there is a load on the bus between mains and genset, its power consumption is subtracted from the power generated by the genset, and only the remainder can be supplied to the mains.

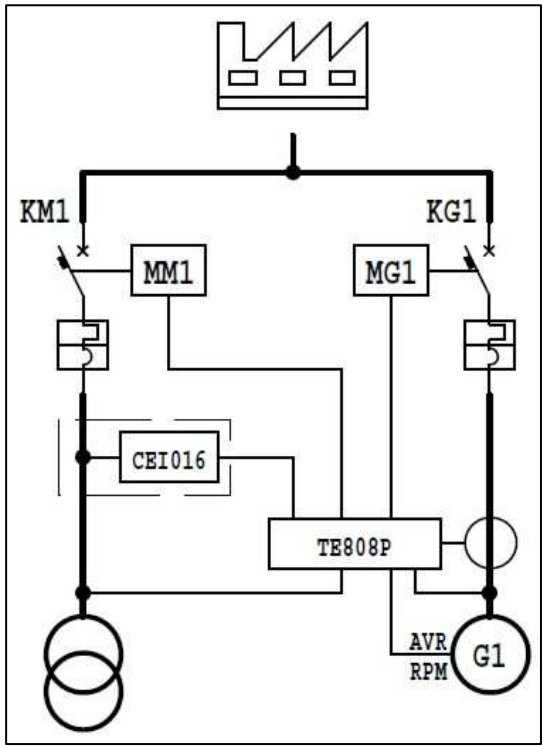
In a system as for drawing A, without the mains interface MCB (KM1), in case of mains failure, the generator MCB (KM2) opens immediately and the generator will be stopped after the cooling time. The genset restarting is allowed only when the mains is restored. (**warning**: in some countries it is imposed by regulation the use of a particular option device to satisfy the CEI016 norm about the mains failure, or maybe other local norms must be satisfied). In case of mains control without any external device, we suggest to use output (J12-3) to trip the eventual KM mains breaker.



genset-mains A.jpg

In a system as for drawing B, it is managed the control of the mains interface MCB (KM1). This system permits to detect also an eventual mains failure (**warning**: in some countries it is imposed by regulation the use of a particular option device to satisfy the CEI016 norm about the mains failure, or other local norms can be satisfied). In case of mains control without any external device, we suggest to use output (J12-3) to trip the eventual KM1 mains breaker.
By this function the mains interface opens immediately in case of failure, and the genset can continue to work to supply the eventual load (or it can work with no power), waiting the mains restoring.

To enable the synchronization after mains restoring, you must set the parameter I inside Mains synchro setup. When the mains is detected in good condition, the genset is synchronized to the mains and the mains interface MCB (KM1) will be closed to restore the co-generation status.



genset-mains B.jpg

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2- 3.2.2 Automatic mains failure no break

Auto start of single genset for mains failure, with no break on mains return

This working mode is available for systems as for drawing B, that includes the control of mains MCB interface (KM1).
This system permits to leave the genset in standby mode when the mains is detected in good conditions. When the mains fails (**warning**: in some countries it is imposed by regulation the use of a particular option device to satisfy the CEI016 norm about the mains failure, or other local norms can be satisfied), the KM1 breaker on the mains opens and the genset starts automatically. In case of mains control without any external device, we suggest to use output "J12-3" to trip the KM1 mains breaker.

After the delay time about the genset stabilized, breaker KG1 on the genset side is closed to supply the load. When the mains is restored, the genset will be synchronized to the mains and the mains interface MCB (KM1) will be closed; in that moment both genset and mains supply together the load in synchro mode. After a programmable delay time (parameter N inside Mains synchro setup), the genset power is downloaded on the mains side and the KG breaker is open. After the cooling time the genset is stopped and it remains in standby mode until next intervention.

2- 3.2.3 Synchro between mains and 1 generator with peak shaving

"Peak shaving" function of single genset on mains
This working mode is available as for drawing C and D, and it must include an optional device that measures the active power on the mains side, as a kWmeter with 4-20mA analog output connected to the TE808P controller.

This system permits to work with a fixed value of power supplied by the mains, and the remaining power requested by the load is supplied by the genset. This working mode prevents mains disconnections caused by overloads on the mains side. To enable this function you must set the parameter about the maximum power detectable from the kWmeter (parameter P inside Mains synchro setup) in accordance to the current transformers installed and connected to the kWmeter.

For example:
if you have 200/5A current transformers in a 3phase system 400Vac and power factor 0.8, the maximum power will be 200 x 400 x √3 x 0.8 = 110kW.

You must set now also the parameter in percentage (compared to the maximum mains power just described) about the fixed mains power that you want to supply (parameter O inside Mains synchro setup). In this sample, if you want to fix the mains supply power at 50kW, you must set 45%; all the remaining power is supplied by the genset. In these systems as for drawing C and D, also several advanced working modes are available. Check the following descriptions to discover all the opportunities available.

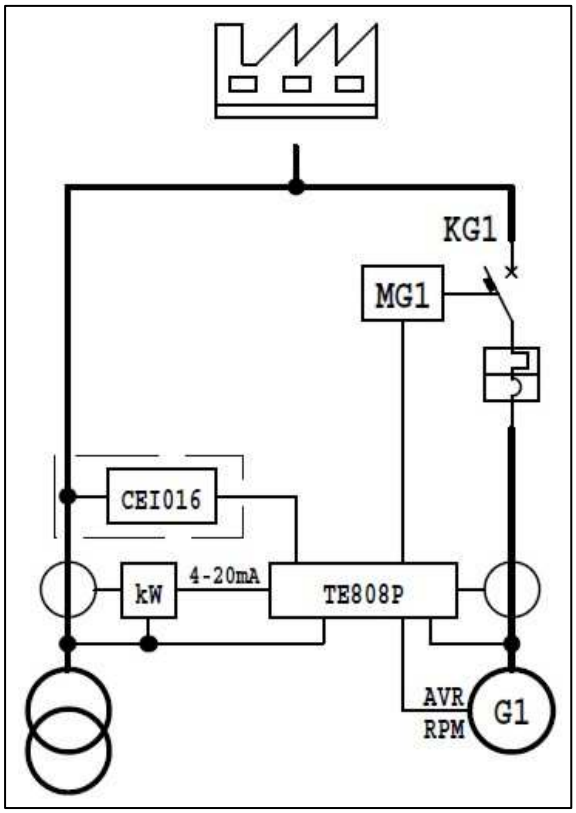
You can combine the "peak shaving" working mode with a special function that permits you to start automatically the genset in accordance to power supplied by the mains.

You can enable this function by parameter Q inside Mains synchro setup. In this case, the genset starts automatically when the power supplied by the mains is higher than the starting threshold (with delay time) set at parameters R and S inside Mains synchro setup. When the genset is synchronized, its MCB (KG1) is closed to supply and share the load together with the mains.

After that, the mains power supply is fixed to a power set on parameter O inside Mains synchro setup (as for previous description about peak shaving). When the total power supplied by genset and mains is less than the stopping threshold (with delay time) set at parameters T and U inside Mains synchro setup, automatically the power of the genset is downloaded on the mains side, the KG1 breaker opens to disconnect the genset then, after the cooling time, the generator will be stopped.

This function that starts automatically the genset in accordance to the power supplied, can be used also without "peak shaving" feature (you can disable parameter Q inside Mains synchro setup). In this case the genset starts when the mains power supply is higher than the starting threshold. When the genset is synchronized and closed to the mains, it generates fixed power as for set of parameter C inside Mains synchro setup (see also "co-generation function" on paragraph 3- 6.1.2). As previously described, when the total power supplied by genset and mains is less than the stopping threshold, automatically the generator is downloaded and stopped.

If the system is as for drawing C, the TE808P can't manages the mains failure and its restoring condition; in case of missing mains, the genset MCB (KG1) opens immediately and the genset will be stopped after the cooling time.



genset-mains C.jpg

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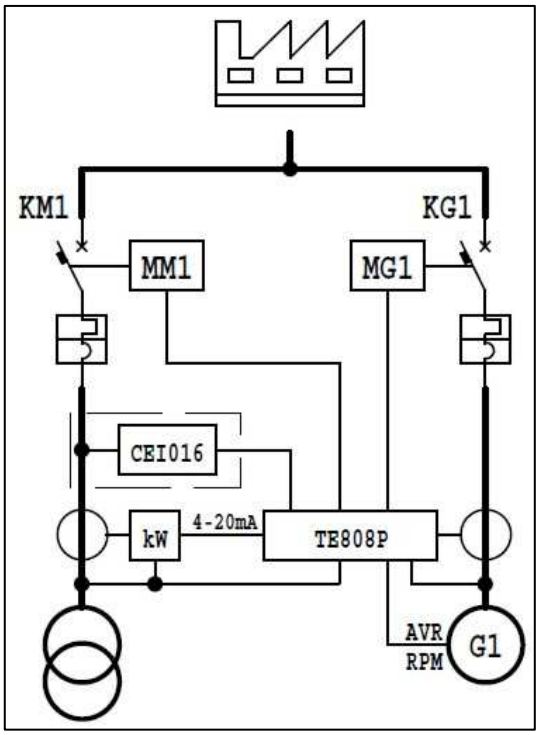
If the system is as for drawing D, the TE808P controller can manage also the mains failure and its restoring condition, opening and closing the mains MCB (KM1). (**warning**: in some countries it is imposed by regulation the use of a particular option device to satisfy the CEI016 norm about the mains failure, or other local norms can be satisfied). In case of mains control without any external device, we suggest to use output "J12-3" to trip the eventual KM mains breaker.

In this case you can combine the "Auto start function with no break on mains return" together with the "Peak shaving function" and together with the "Auto start for mains power consumption".

In this case the genset start for mains failure or for maximum power detected on the mains. Then it synchronizes with the mains (if detected) and, anyway, its MCB breaker (KG1) is closed. If the mains is detected, the genset works in "peak shaving" mode to fix the power consumption on the mains.

If the mains is faulty, it works alone to supply the load. When the mains is detected and the total power of the load is less than the stopping threshold, the genset is downloaded on mains side, its MCB breaker (KG1) opens and after the cooling time the genset will be stopped.

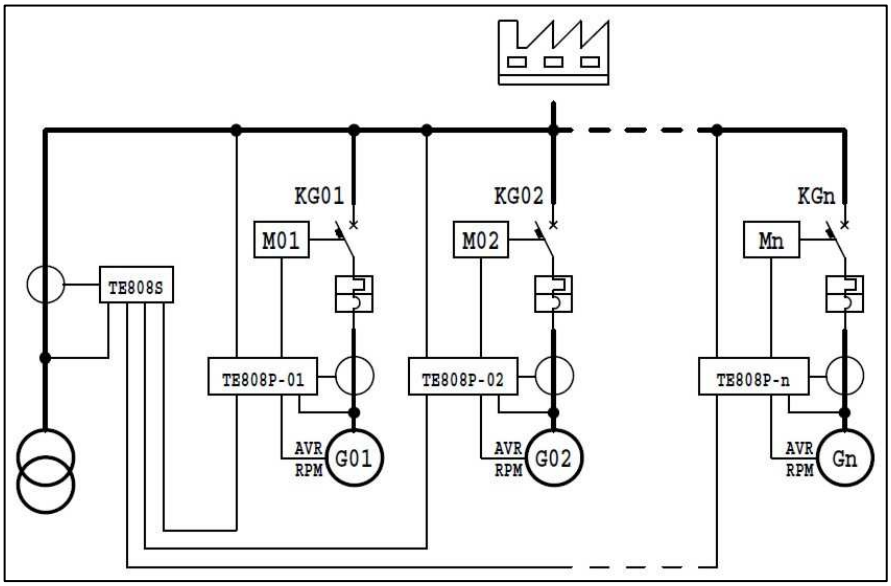


genset-mains D.jpg

2- 3.2.4 Synchro between mains and 2 or more generators, with external master management

Special function about multiple gensets on the mains, by external master controller
In a system as for drawing E, a special working mode is available by an external TE808 Master controller. In this system this Master controller can send remote start sequence to all the gensets. By this, in accordance to its own internal logic, the master controller can start one or more generator in synchro mode to the mains.

The logic can be in accordance to several monitored status, for example in accordance to the mains power detection it is possible to start a progressive number of gensets. Another option is to start only 1 genset in synchro to the mains, and the working genset can change in accordance to adjustable timers settings in the TE808 Master controller, or in case of particular events, or in accordance to an internal daily/weekly/monthly schedule, etc. Please, refer to our technical department to have more informations about the TE808 Master controller.



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2- 4 Operation modes

2- 4.1 Off Mode

Mode OFF – To inhibit the operation of a generator. After the startup the controller will be positioned in this OFF operation mode. It is possible to switch in AUT or MAN mode but the working operations are avialable only if faulty mains conditions or alarms are not detected.
To activate OFF mode from both AUTO and MAN mode, press and hold the STOP button for 5 seconds until the display shows OFF mode (the genset will stop if running).

2- 4.2 Man Mode

Mode MAN - Generator starts and stops by START and STOP buttons. By Hz/Vac, “increase” and “decrease” buttons you can adjust its frequency and voltage. You can close manually the switch on the load by “On/Off” button only if synchronoscope indicates that the synchro point is reached. If the button is pushed in an wrong position, the cursor stops in that position and must be moved to the correct position manually increasing or decreasing the frequency. When the synchronization condition is reached, the switch is closed. If the switch is closed on the load, synchronization management (frequency, voltage, load sharing, etc) is automatically controlled by TE808. Changing from manual mode to automatic mode, if the switch is closed, it will remain in that condition and the system proceeds to work automatically. If the switch is open, the board automatically reaches the syncronization conditions and closes the switch.

2- 4.3 Automatic Mode

Mode AUT - Generator starts automatically by remote starting if mains is detected in good conditions and no alarms are active. It is automatically sinchronized to the Bus/Mains side and automatically its switch will be closed on the load. Power sharing is automatically managed in accordance to the settings.
Switching from automatic mode to manual mode is not allowed as safety measure, the remote start must be removed to stop the engine. In this case the genset power is downloaded then the switch will be open and genset is stopped after the programmed cooling time. Pushing STOP button for 5 seconds the switch opens, the engine stops immediately and the TE808 controller returns to OFF mode.

2- 4.4 Reset alarms mode

RESET button - Pressing the RESET button you will cancel the alarms present on the equipment only if the cause of the alarm has been already removed. If several alarms happen, they appear individually in sequence. For each alarm is available a message that can help you to identify the source of the problem.

2- 4.5 Test mode

TEST button - If SELF LEARNING function is enabled, test button will give the access to the system test menu. Is possible to select the type of test to perform and start the procedure. At the end of the test, on the display will appear the statistics of the test.

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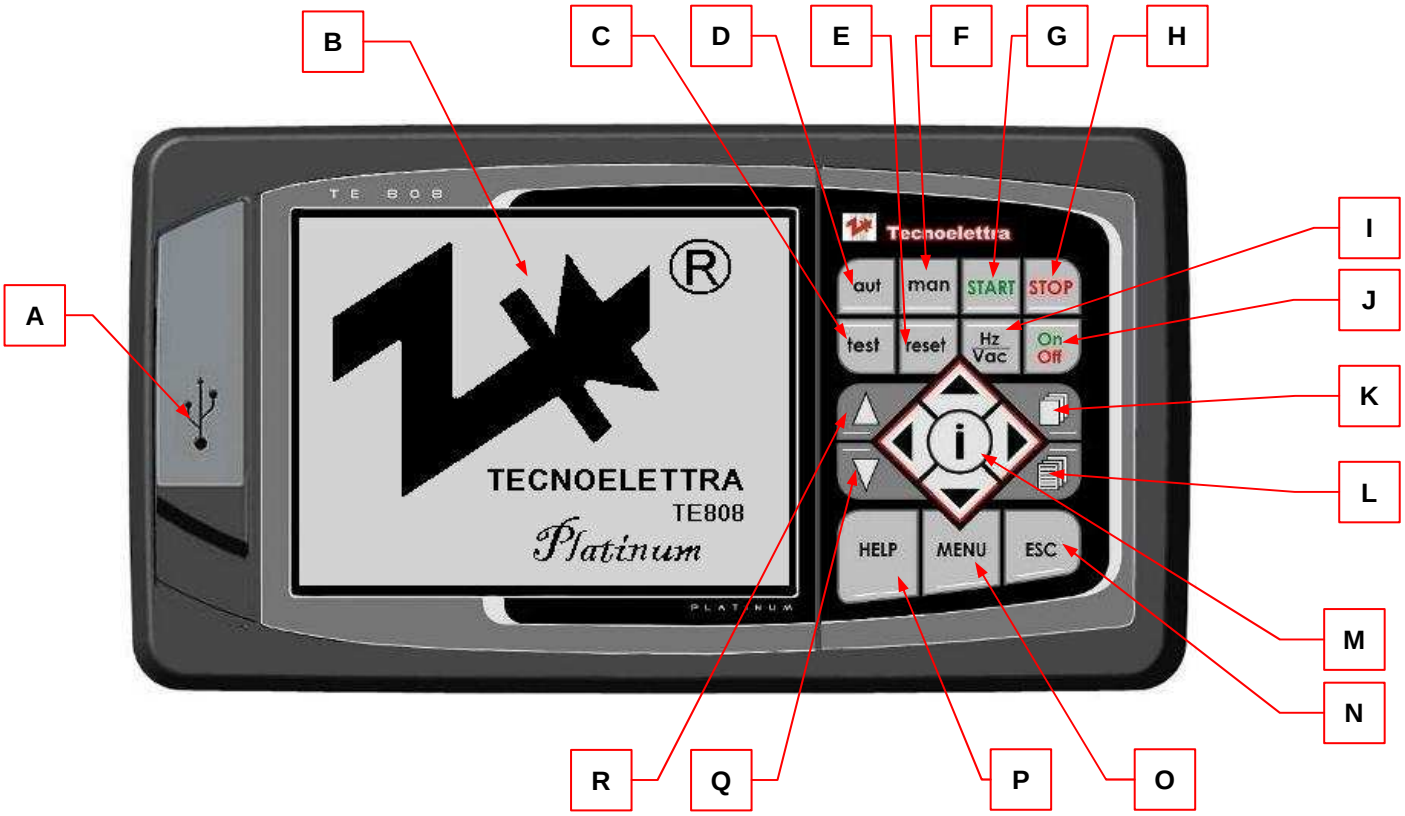
2- 5 Equipment overview and keyboard



POS.	NAME	DESCRIPTION
A	USB port	To download a new software or upgrade the project using a PC.
B	Display	With backlight, it shows all the measures, the status and the settings of the board. To save energy, it turns off automatically if any button is not pressed after the delay time programmed.
C	Test	If enabled allows to enter inside the menu to perform the automatic test selected (self-learning function)
D	Aut	To select the Automatic operation mode for the genset.
E	Reset	To select the Reset operation mode for the genset.
F	Man	To select the Manual operation mode for the genset.
G	Start	To start the generator when the TE808 is in manual operation mode.
H	Stop	To stop the generator when the TE808 is in manual operation mode.
I	Hz/Vac	To select Frequency or Voltage adjustment when the TE808 is in manual mode (see points Q and R).
J	On/Off	To close and open the generator switch when the TE808 is in manual mode.
K	Previous page	To return to previous display page of the same section.
L	Next page	To go to next display page of the same section.
M	Navigation Drive	The Arrows permit you to scroll inside menu, scroll between parameters, change values, move inside the pages. "**i**" button is used as confirmation. On the display pages, the "**i**" button is used to change section.
N	Esc	To exit the Menu or actual page and return to the main page.
O	Menu	To enter the main menu page.
P	Help	To have access to dedicated help page, with description about functions, screen, settings, etc.
Q	Decrease	To decrease generator Frequency or Voltage (in accordance to button **Hz/Vac**, point I) when the TE808 is in manual mode.
R	Increase	To increase generator Frequency or Voltage (in accordance to button **Hz/Vac**, point I) when the TE808 is in manual mode.

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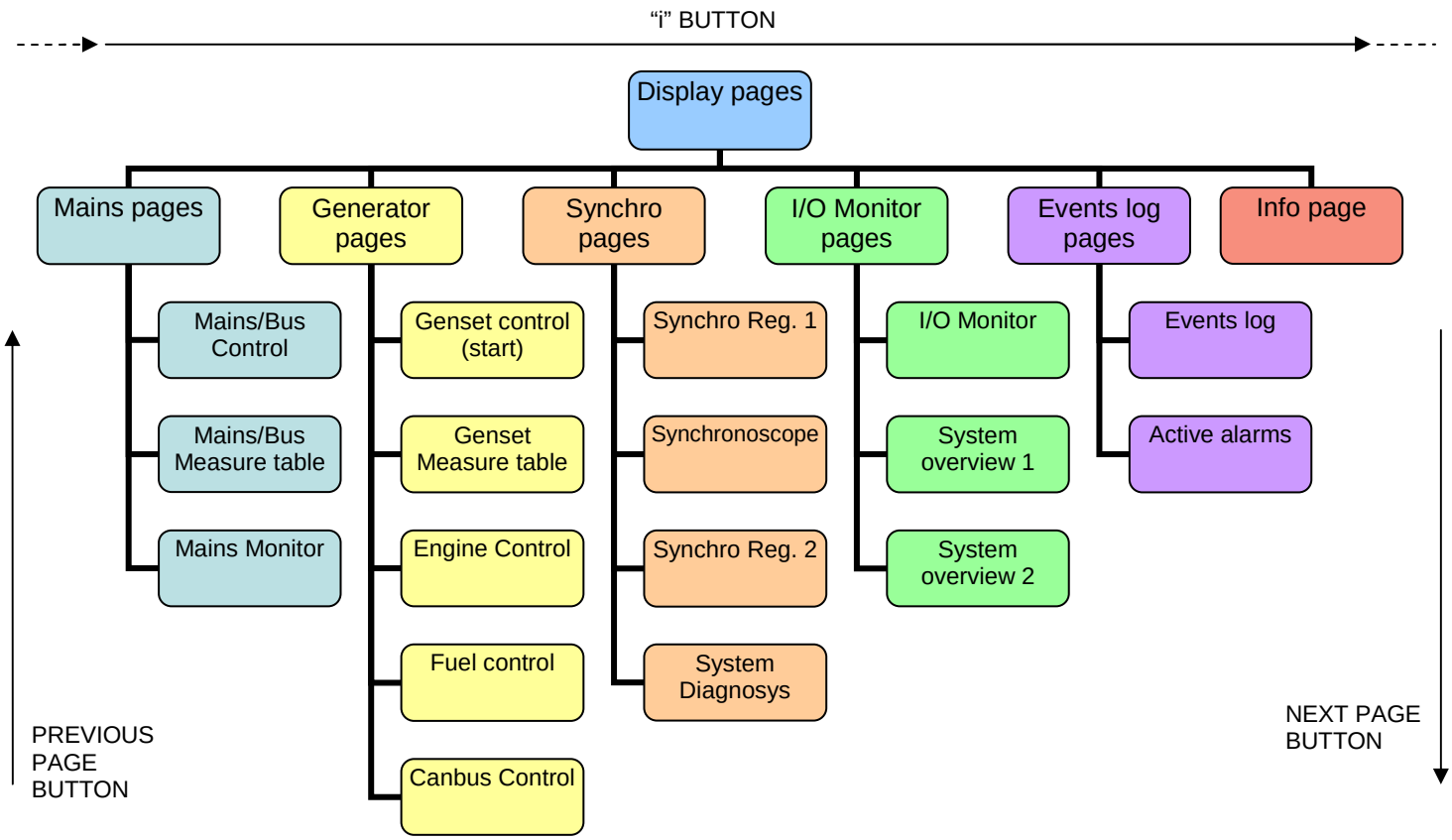
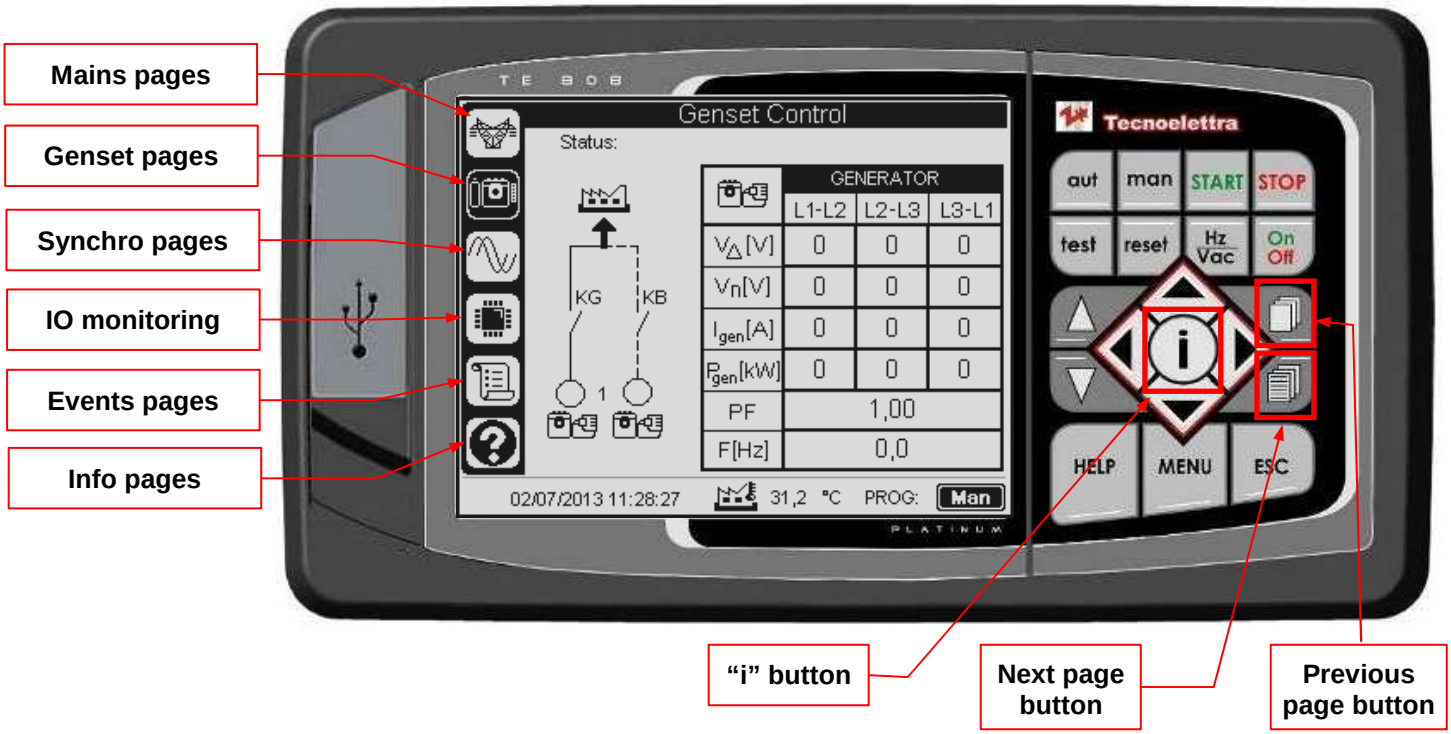
2- 6 Navigation diagram





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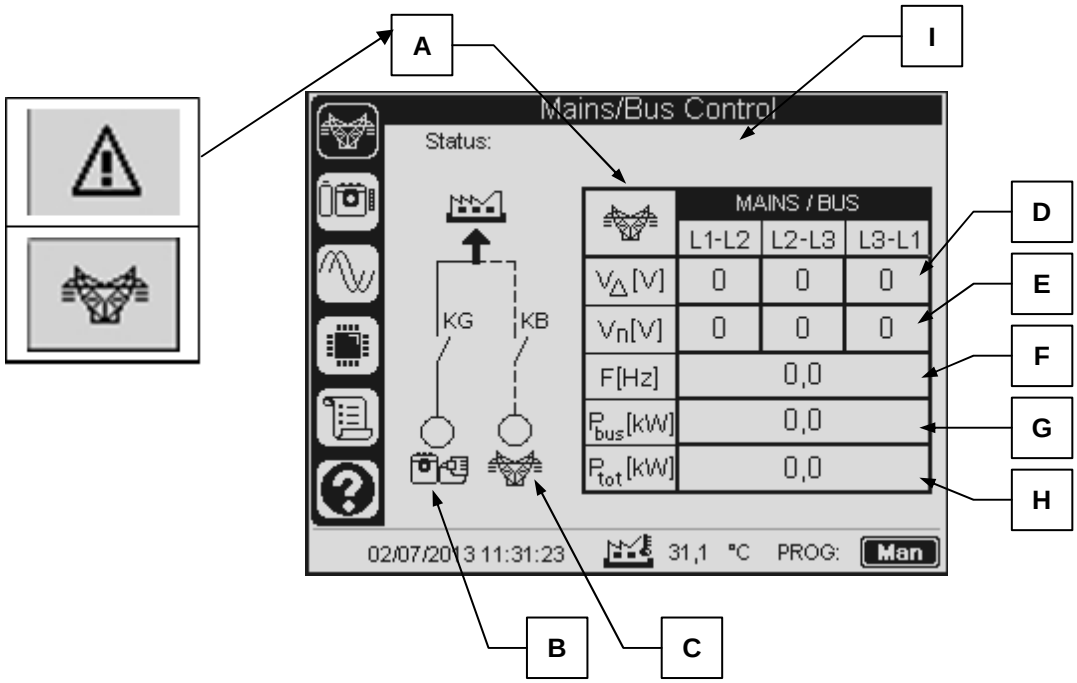
2- 7 Display pages

2- 7.1 Mains/Bus pages

2- 7.1.1 Mains/Bus Control



POS.	NAME	DESCRIPTION
A	Mains/Bus Alarm Symbol	Mains symbol appears to indicate that the measurements refer to the mains/bus side; it can be shown also the warning symbol if an alarm is detected. In this case, the description of the alarm is available in the “ACTIVE EVENTS" page
B	Generator symbol	Symbol that indicates the generator controlled by the TE808.
C	Mains/Bus Symbol	Indicates mains/bus side (if the board is set for synchro between mains and genset). -If barred, and mains/bus line is thin, it indicates that the mains/bus is not detected. -If barred, but the mains/bus line is thick, it indicates that the mains/bus is detected but is not expired yet the stabilization time. -If not barred and mains/bus line is thick, it indicates that the mains/bus is detected in good conditions.
D	Mains/Bus voltage	Measurements of mains or bus phase voltages
E	Mains/Bus voltage	Measurements of mains or bus line voltages
F	Mains/Bus frequency	Measurements of mains or bus frequency
G	Mains/Bus active power	Total active power measured on mains side with 4-20mA analog input. This value triggers the start procedure when peak shaving function is enabled.
H	Total active power (Genset + Mains)	Total active power measured on mains side with 4-20mA analog input plus total active power on the generator. This value triggers the stop procedure when peak shaving function is enabled.
I	Status	It shows the last active alarm. It doesn’t show anything if there isn’t any active alarm.

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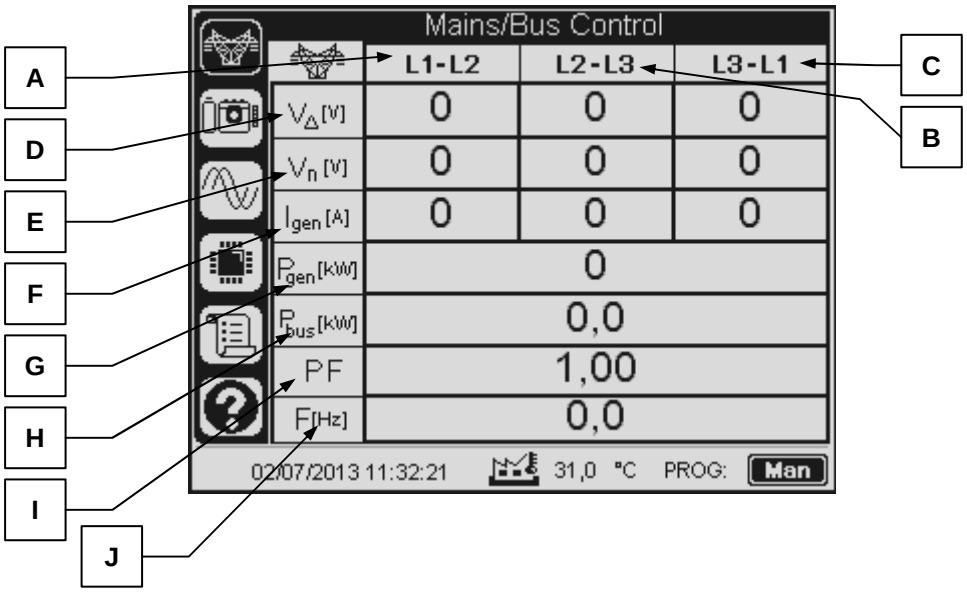
2- 7.1.2 Mains/Bus Measure Table



POS.	NAME	DESCRIPTION
A	L1-L2	Indicates the measure on phase L1
B	L2-L3	Indicates the measure on phase L2
C	L3-L1	Indicates the measure on phase L3
D	VΔ (V)	Indicates the mains voltage between phases
E	Vn(V)	Indicates the mains voltage between phases and neutral
F	I(A)	Indicates the alternator currents on the three phases L1-L2-L3
G	Pgen(kW)	Indicates the total active power supplied by the generator
H	Pbus	Indicates the total active power supplied by the mains/bus
I	PF	Indicates the total power factor (PF) of the load
J	F(Hz)	Indicates the mains frequency

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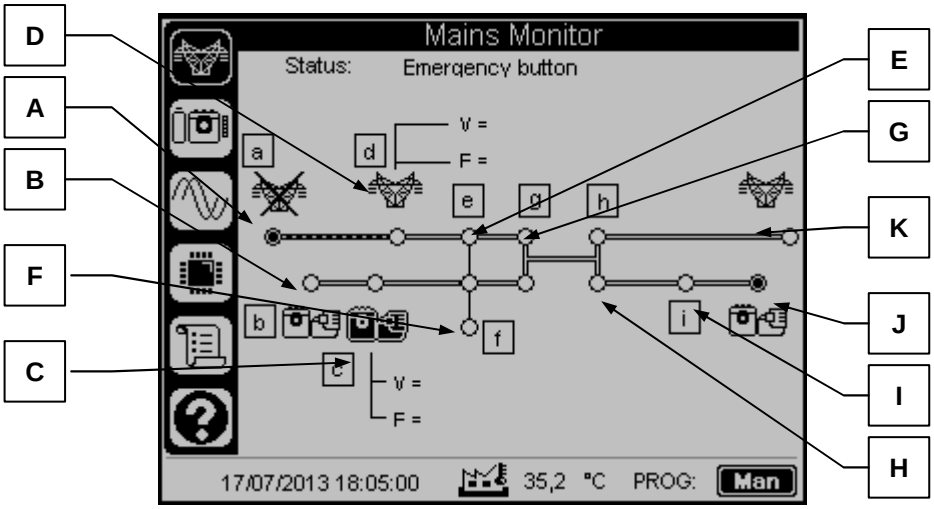
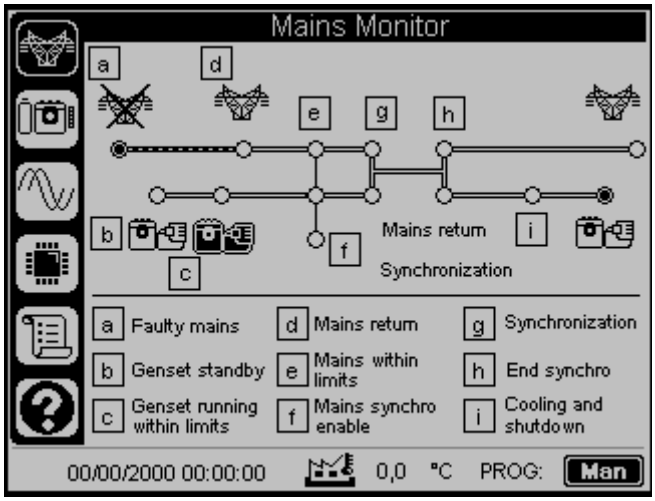
2- 7.1.3 Mains/Bus Monitor

Mains monitor page is useful with application where the mains could be disconnected from the plant and return after some delay time. For example with AMF applications is possible to see the status of the system during operation.



POS.	NAME	DESCRIPTION
A	Faulty mains indicator	Mains is faulty and the genset is started
B	Genset starting indicator	Genset is started because of faulty mains
C	Genset running indicator	Genset is running and the measurements are within the limits, and the generator contactor is closed
D	Mains return	Mains is now detected
E	Mains within limits	Mains is within limits. Mains and generator are waiting the input from external interface to start the synchronization
F	External mains protection input indicator	External interface input gives to the system the confim that mains voltage and frequency are inside programmed limits. The synchro procedure begins.
G	Synchronization indicator	The genset is running and is synchronizing with mains
H	Synchro mode ok	Genset and mains are synchronized and the contactors are closed at the same time. The synchronization procedure has ended, and the generator begins to give its power to the mains side (power decrease mode)
I	Cooling mode genset	The genset contactor is open and the cooling procedure begins
J	Idle genset	Genset is stopped and ready for the next procedure
K	Mains returned	Mains is stable and connected to the load without genset

Mains monitor page is also completed with a help page activable with the “help” button, to see directly on display the meaning of every single step of this page.



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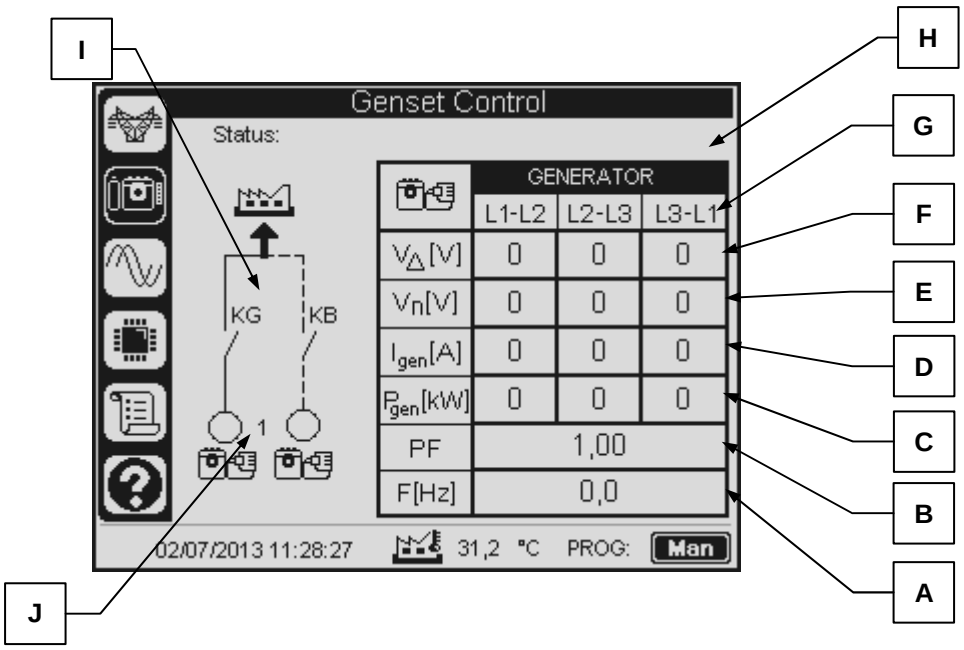
2- 7.2 Generator pages

2- 7.2.1 Genset control (default screen)



POS.	NAME	DESCRIPTION
A	F (Hz)	It shows the generator frequency
B	Power factor	It shows the system powerfactor (negative values for capacitive loads, positive values for inductive loads
C	Pgen (kW)	It shows the generator active power value
D	Igen(A)	It shows the generator current value
E	Vn(V)	It shows the generator phase/neutral voltage value
F	VΔ (V)	It shows the generator phase/phase voltage value
G	L1-L2 /L2-L3/L3-L1	It shows the measures phases references
H	Generator / Alarms	2 different informations can be shown: - GENERATOR: it shows that the measures are about generator - ALARM: it shows that one or more alarms are detected. You can have access to their descriptions at page « ACTIVE EVENTS »
I	Switches	It shows the generator switch and system status
J	Genset ID number	It shows the generator ID

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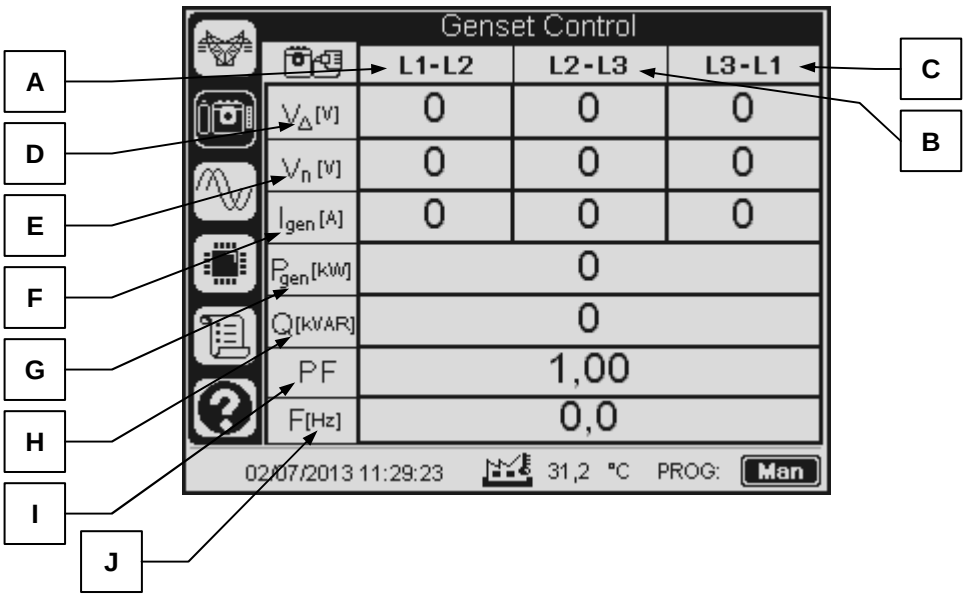
2- 7.2.2 Genset measure table



POS.	NAME	DESCRIPTION
A	L1-L2	Indicates the measure on phase L1
B	L2-L3	Indicates the measure on phase L2
C	L3-L1	Indicates the measure on phase L3
D	VΔ (V)	Indicates the voltage between phases
E	Vn(V)	Indicates the voltage between phases and neutral
F	I(A)	Indicates the currents on phases L1-L2-L3
G	P(kW)	Indicates the total active power supplied by the generator
H	Q(kVAR)	Indicates the total reactive power shared by the generator
I	PF	Indicates the total power factor (PF) of the load
J	F(Hz)	Indicates the generator frequency

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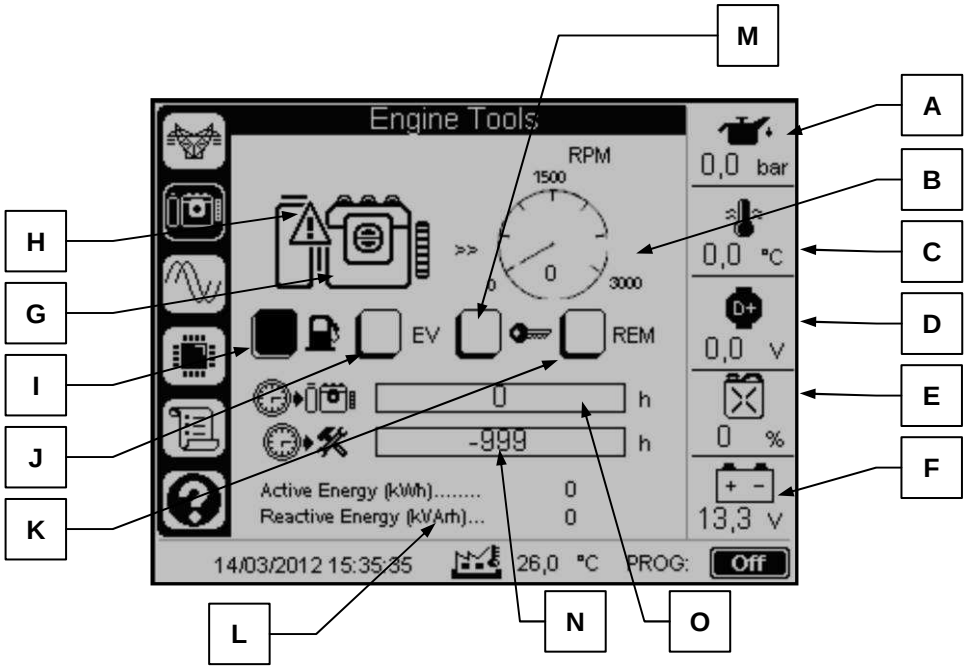
2- 7.2.3 Engine control



POS.	NAME	DESCRIPTION
A	Oil pressure instrument	Indicates the oil pressure value
B	RPM	Engine tachometer, instrument with analog and digital RPM values
C	temperature instrument	Indicates the engine temperature value
D	Alternator battery charger	Indicates the voltage of the batterycharger alternator
E	Fuel level percentage	Indicates the percentage of fuel inside the tank
F	Engine Vdc battery voltage	Indicates the DC voltage of the engine batteries
G	Engine animation	Indicates a successful engine running detection
H	Alarm icon	Indicates if an alarm programmed for global alarm 1 is active
I	Refueling output icon	Indicates if the refueling output is active
J	Fuel valve output icon	Indicates if fuel electrovalve output is active
K	Remote start input icon	Indicates if external/remote start input is active
L	Energy counters	It shows the energymeters measures, about Active (kWh) and Reactive (kVARh) energy produced
M	Starter output icon	Indicates if start/crank output is active
N	Hours left for the next service	Indicates the remnant hours to the next service
O	Engine hours	It shows the value of the working hours of the genset

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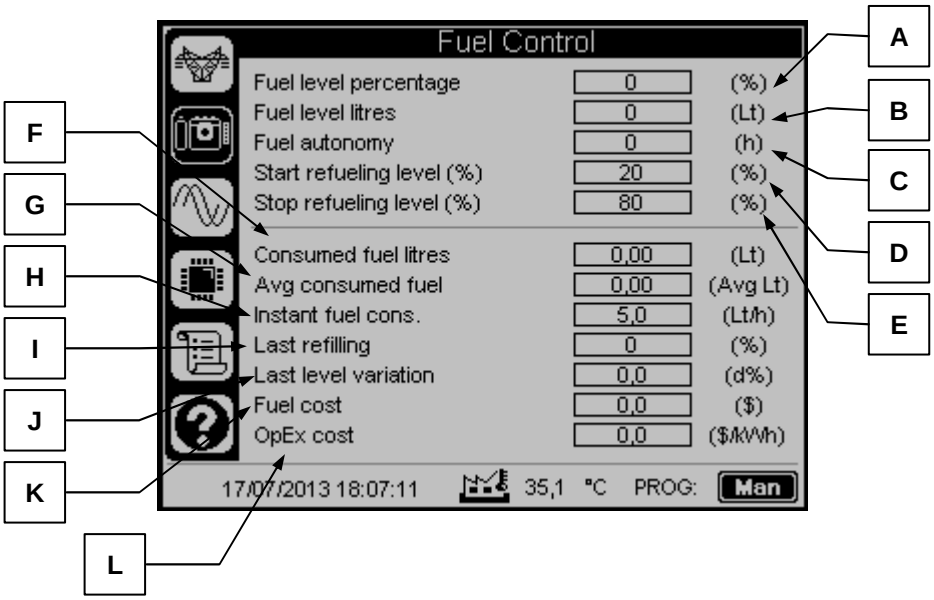
2- 7.2.4 Fuel control



POS.	NAME	DESCRIPTION
A	Fuel level percentage	Fuel level percentage from analog sensor
B	Fuel level litres	Fuel level litres calculated from tank capacity and fuel level percentage
C	Fuel autonomy	Autonomy hours calucated from fuel consumption and litres inside tank
D	Start refueling level	Fuel level to start the automatic refill procedure
E	Stop refualeing level	Fuel level to stop the automatic refill procedure
F	Consumed fuel litres	Total consumed litres calculated from load percentage and hours of work
G	Avg consumed fuel	Average consumed fuel during work hours
H	Instant fuel cons.	Instant fuel consumption
I	Last refilling	Last detected refilling level
J	Last level variation	Last detected fuel level variation
K	Fuel cost	Total cost of consumed fuel
L	Opex cost	Cost of each generated kWh

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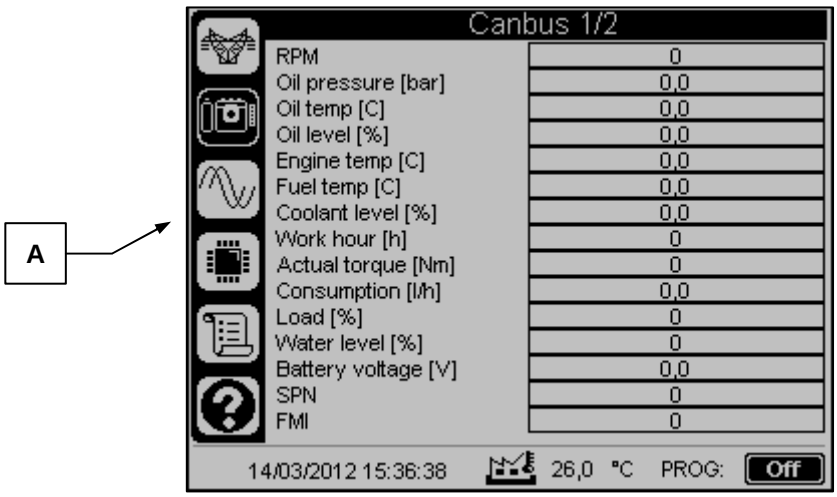
2- 7.2.5 Canbus control



POS.	NAME	DESCRIPTION
A	CANBUS reading values	▪ Engine RPM ▪ Oil pressure [bar] ▪ Oil temperature [℃] ▪ Oil level [%] ▪ Engine temperature [℃] ▪ Fuel temperature [℃] ▪ Coolant level [%] ▪ Work hours [h] ▪ Actual torque [Nm] ▪ Consumption [Lt/h] ▪ Load percentage [%] ▪ Water level [%] ▪ Battery voltage [V] ▪ SPN – Suspect parameter number ▪ FMI – Failure mode indicator

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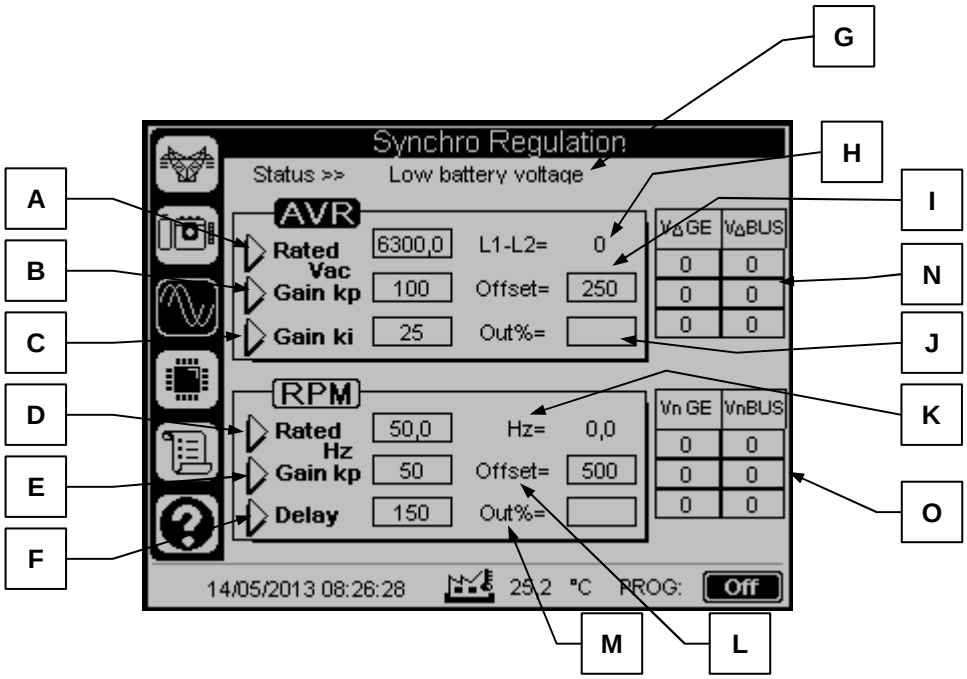
2- 7.3 Synchro pages

2- 7.3.1 Synchro regulations 1



POS.	NAME	DESCRIPTION
A	AVR Rated Vac	It shows the voltage set as rated voltage on the generator
B	AVR gain Kp	It permits to set how quick must be the voltage regulation. Higher value means quicker control
C	AVR integrate Ki	It permits to set the integration value to adjust the regulation dynamics.
D	RPM Rated Hz	It shows the frequency set as rated frequency on the generator
E	RPM gain Kp	It permits to set how quick must be the RPM regulation, to change the frequency value. Higher value means quicker control
F	RPM delay	It permits to set the delay time on the RPM control. Higher value means slower control
G	Status messages	It shows the status messages or active alarms
H	L1-L2	It shows the L1-L2 voltage value measured on the generator
I	AVR Offset	Set-point of the TE808 output that commands the AVR regulator
J	AVR Out%	It shows the voltage position on AVR output: 0% = -5V 50% = 0V 100% = 5V
K	Hz	It shows the frequency value measured on the generator
L	RPM Offset	Set-point of the TE808 output that commands the RPM regulator (see M402.F)
M	RPM Out%	It shows the voltage position on RPM output 0% = 0V 50% = 5V 100% = 10V
N	L-L voltages	Table that shows all the L-L voltages of Generator and Bus
O	L-N voltages	Table that shows all the L-N voltages of Generator and Bus

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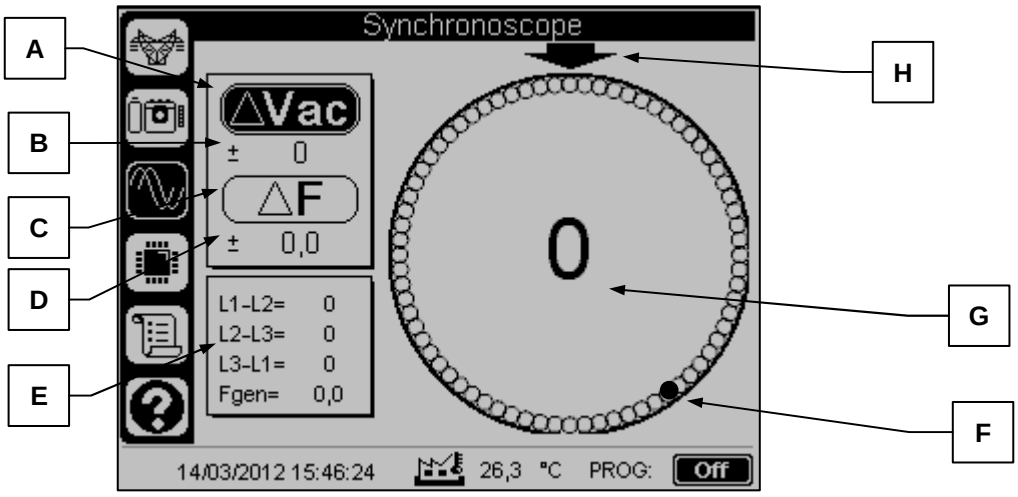
2- 7.3.2 Synchronoscope



POS.	NAME	DESCRIPTION
A	**Δ**Vac - Voltage select	**Only in manual mode.** By Vac/Hz button you can select the **ΔVac** box
B	Vac delta value	It shows the difference in voltage between the measured value on the Mains/Bus side and the Generator. By "increase" and "decrease" buttons you can change the voltage of the generator. To be in good condition for synchronization this value must be close to zero.
C	**ΔF** - Frequency select	By Vac/Hz button you can select the **ΔF** box
D	Frequency delta value	It shows the difference in frequency between the measured value on the Mains/Bus side and the Generator. By "increase" and "decrease" buttons you can change the speed of the generator. To be in good condition for synchronization this value must be close to zero.
E	Electrical Measures	It shows the actual values of the voltage and the frequency of this generator
F	Angle Cursor	It moves continously around the synchronoscope. Faster is the movement, higher is the difference in frequency between the Bus/Mains and the generator. If it turns in clockwise direction, the generator frequency is higher than Bus/Mains frequency: to match good condition you must decrease the speed. If it turns in counter-clockwise direction, the generator frequency is lower than Bus/Mains frequency: to match good condition you must increase the speed. Each step is 5°.
G	Digital synchro measure	It shows the digital voltage angle difference between the generator and mains
H	Synchro ok position	When the angle cursor reaches this position, the phase angle is correct. To allow the synchronization of the generator with bus it is necessary that the following conditions are satisfied : • Phase angle correct and stable in that position, • The Delta voltage is near to zero • The delta frequency is near zero, With the "ON/OFF" button the generator switch KG can be closed on the load. If one of the above conditions is not realized, the controller does not close immediately the load contactor when you push the button: the cursor stops in that position and the arrow starts flashing, the frequency selector is activated automatically and you must use the "increase" and "decrease" buttons to reach the correct position. When the switch is closed, it is not possible anymore to change the frequency and voltage manually, and the board manages them automatically in accordance to the power shared, to the settings, etc. The arrow also stops flashing. **ATTENTION: As safety measure the new value for M401.E and M402.F parameters will not be saved at the end of the procedure. To save them into flash memory a further confirmation is needed inside programmation menu M401 and M402.**

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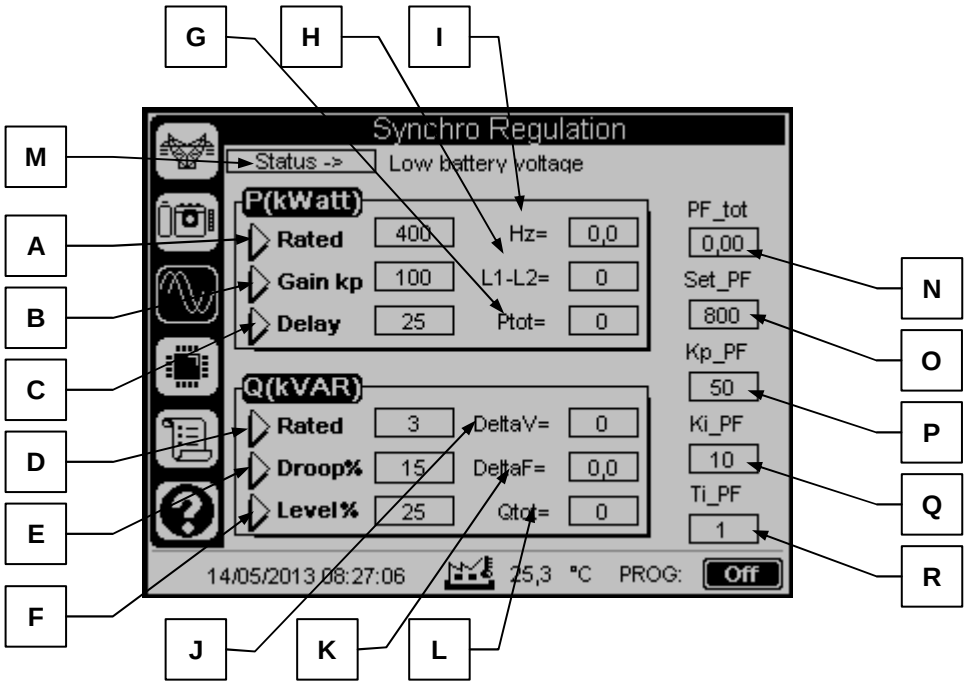
2- 7.3.3 Synchro regulations 2



POS.	NAME	DESCRIPTION
A	Rated Active power	It permits to set the rated active power of the generator
B	Active power gain - Kp	It permits to set how quick must be the active power regulation (by frequency control). Higher value it means quicker control. This controls are active AFTER synchronization.
C	Active power delay	It permits to set the delay time on the active power regulation (by frequency control). Higher value it means slower control. This controls are active AFTER synchronization.
D	Rated reactive power	Is the rated reactive power acceptable in a system with more generators syncronized. Normally is suggested a value of 1/20 of the max active power.
E	Droop %	Is the parameter which lowers alternator voltage (AVR) with a portional value when load is supplied. The proportional controller will not always settle at its target value, but may retain a steady-state error. If the process gain is down, then the bias will be below the set point.
F	Reactive power level %	Set the percentage of reactive power allowed by the system.
G	System frequency	Indicates the genset measured frequency
H	Genset phase 1 voltage	Indicates the genset measured voltage on the phase 1
I	Instant total active power	Indicates the total active power measured
J	Delta voltage between genset and Bus/Mains	Indicates the difference between Genset voltage and Mains /Bus voltage
K	Delta frequency between genset and Bus / Mains	Indicates the difference between Genset frequency and Mains / Bus frequency
L	Instant total reactive power	Indicates the total reactive power measured
M	Status messages	It shows the status messages or active alarms
N	PF total	Indicates the total power factor (PF) measured
O	Set PF	It indicates the power factor value that must be reached in the system. It is set in "one of thousand " (for example, set to 800 means power factor 0,8, set 1000 means power factor 1,0, etc).
P	Kp_PF	It permits to set how quick must be the power factor regulation (proportional). Higher value it means quicker control. This is the most important gain about the power factor regulation.
Q	Ki_PF	It permits to set how quick must be the power factor regulation (integrated). Higher value means quicker control. We suggest to leave it at default value and use "Kp" gain to adjust the power factor control.
R	Ti_PF	It permits to set the delay time during the power factor regulation. Higher value means slower control. We suggest to leave it at the default value.

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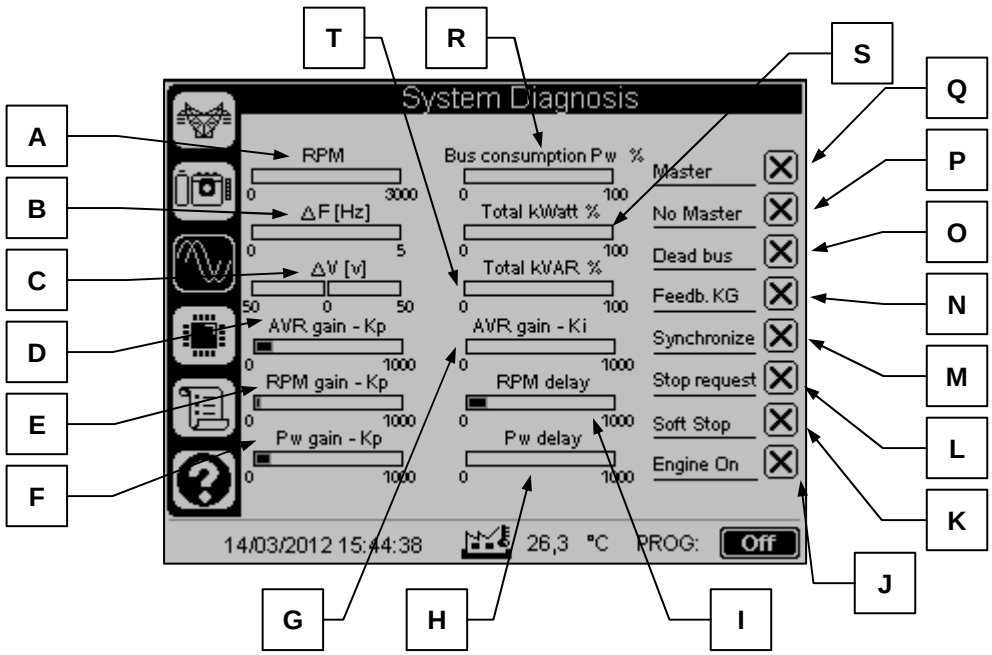
2- 7.3.4 System Diagnosys



POS.	NAME	DESCRIPTION
A	RPM	It shows the value of the RPM of the engine. It's from 0 to 3000, then in case of 1500RPM engine, the bar must be approximately on middle position
B	ΔF	It's the frequency difference between this generator and the bus/mains. Bargraph range is 0÷5Hz
C	ΔV	Is the voltage difference between this generator and the bus/mains. Bargraph range is ±50Vac
D	AVR gain	It's the value of the gain on the AVR control. Higher values mean faster AVR controls
E	RPM gain	It's the value of the gain on the RPM control. Higher values mean faster RPM controls. This value is important when the load is not shared, for example before the synchronizing or after the synchronizing, but without load applied
F	Pw gain	It's the value of the gain on the Active Power sharing control. Higher values mean faster sharing controls. This value is important to share the load between the sources, for example when the generators are synchronized and the load is applied
G	AVR delay	It's the value of the delay response time on the AVR control. It works togheter with AVR gain. Lower values mean faster AVR controls
H	Pw delay	It's the value about the delay response time on the Active Power sharing control. It works togheter with Active Power gain. Lower values mean faster sharing controls
I	RPM delay	It's the value of the delay response time on the RPM control. It works togheter with RPM gain. Lower values mean faster RPM controls
J	Engine ON	It indicates if the engine is detected working or not
K	Soft Stop	It indicates if a soft stop procedure is running
L	Stop Request	It shows that a stop request for this generator has arrived from master generator (for example, maybe that the load absorption is low and a lot of generators are working, so this one can be considered as unnecessary)
M	Synchro enable	It shows the status of the board. When it shows "V" symbol, it means that the generator is under control for the synchronizing work. If it shows "X" symbol, it means that generator is not controlled for synchronizing (maybe during starting or stopping phases)
N	Feedback KG	Indicates a successful closure in synchronization mode of generator contactor.
O	Dead Bus	It shows the status of the bus system. If it shows "X" symbol it means that the volage on the bus is detected, and one or more sources are suppling the load. If it shows "V" symbol, no voltage is detected on the bus, and the load is not supplied by the system.
P	No master	It shows if a master controller is available in the system. If it shows "V" symbol, no master controller are detected. If it shows "X" symbol, one controller is master; all the other controllers, in case of working request, command their generator in accordance to the data of the master controller.
Q	Master	It shows if the controller is the master one. If it shows "V" symbol, this controller is the master and all the other controllers follow the indication of this one during the work. If it shows "X" symbol, this controller is not the master and, in case of work, it must follow the master controller informations. The first generator that is ready and close on the system, becomes the "Master" one.
R	Bus consumption	It shows the total power supplied by the system compared to the total power available.
S	Gen kWatt/Total %	It shows the percentage of active power of this genset, compared to the total available power for this generator.
T	Gen kVAR/ Total %	It shows the percentage of reactive power of this genset, compared to the maximum reactive power for this generator.

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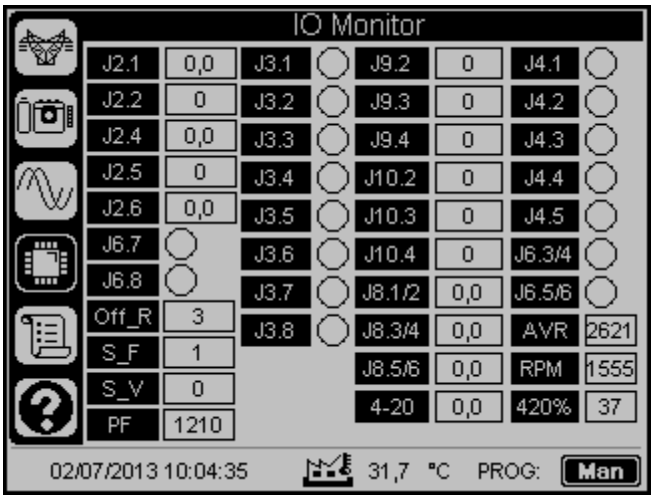
2- 7.4 I/O Monitor pages

2- 7.4.1 IO monitor



POS.	Function description according to the terminal position and numeration
J2.1	Shows the J2.1 analog input value
J2.2	Shows the J2.2 analog input value
J2.4	Shows the J2.3 analog input value
J2.5	Shows the J2.4 analog input value
J2.6	Shows the J2.5 analog input value
J3.1	Shows the J3.1 digital input status
J3.2	Shows the J3.2 digital input status
J3.3	Shows the J3.3 digital input status
J3.4	Shows the J3.4 digital input status
J3.5	Shows the J3.5 digital input status
J3.6	Shows the J3.6 digital input status
J3.7	Shows the J3.7 digital input status
J3.8	Shows the J3.8 digital input status
J4.1	Shows the status of the relay output J4.1
J4.2	Shows the status of the relay output J4.2
J4.3	Shows the status of the relay output J4.3
J4.4	Shows the status of the relay output J4.4
J4.5	Shows the status of the relay output J4.5
J6.3/4	Shows the state of the gensets switch output
J6.5/6	Shows the state of the mains switch output
J6.7	Shows the state of the gensets switch feedback
J6.8	Shows the state of the mains switch feedaback
J8.1/2	Shows the state of the current trasformer input, phase L1
J8.3/4	Shows the state of the current trasformer input, phase L2
J8.5/6	Shows the state of the current trasformer input, phase L3
J9.2	Shows the state of the generator voltage input, phase L1
J9.3	Shows the state of the generator voltage input, phase L2
J9.4	Shows the state of the generator voltage input, phase L3
J10.2	Shows the state of the bus/mains voltage input, phase L1
J10.3	Shows the state of the bus/mains voltage input, phase L2
J10.4	Shows the state of the bus/mains voltage input, phase L3
AVR	Number of samples AVR exit; if this value is 4095, the maximum voltage (+5 V) is applied to the AVR regulator. If this value is 0, the minimum voltage (-5 V) is applied to the AVR regulator
RPM	Number of samples RPM exit; if this value is 4095, the maximum voltage (+10 V) is applied to the RPM regulator. If this value is 0, the minimum voltage (0 V) is applied to the RPM regulator
OFF_R	Shutdown time by pressing STOP button in automode
S_F	RPM regulation logic status: 0 = Wait for Initialize, 1= Initialize, 2= Synchronization, 3= Frequency control, 4= Minimum power (mains synchro), 5= Synchro mains, 6= Active power regulation (gensets synchro) 7= Manual synchro
S_V	AVR regulation logic status: 0= Initialize, 1= Mains/bus following, 2= Power factor control (mains synchro), 3= Maximum reactive power control (gensets synchro)
4-20	Current measured from 4-20mA analog input
420%	Converted mains / genset power ratio: 75% of the programmed ratio
PF	It shows the value of the power factor used by the Synchro board (used to verify the effective value used by the device to synchronize the generator with the mains)

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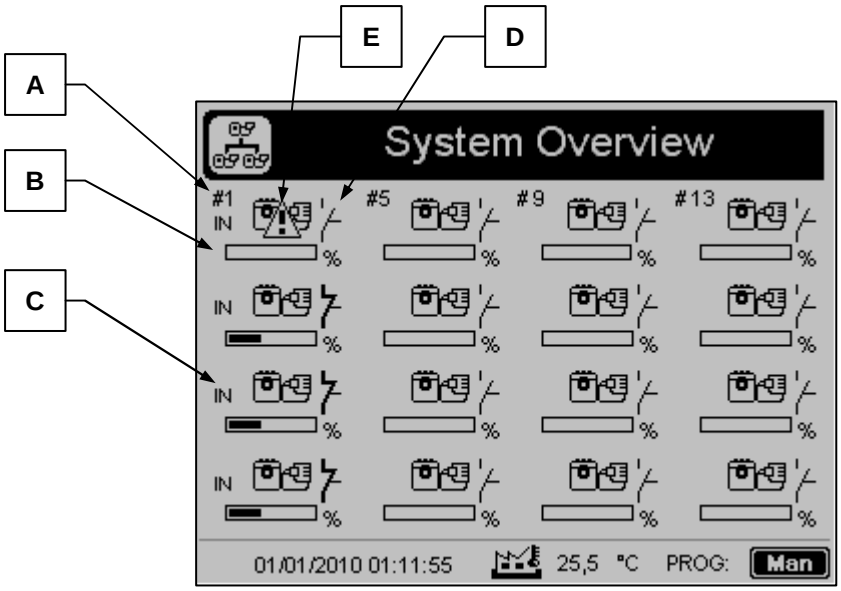
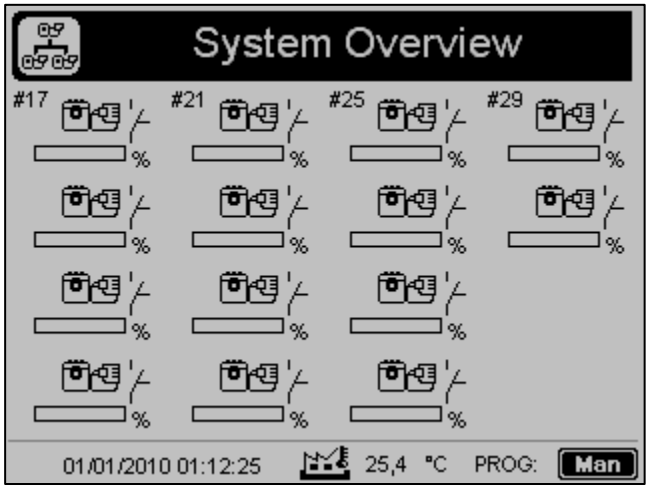
2- 7.4.2 System overview



POS.	NAME	DESCRIPTION
A	Generator ID number	Indicates the informations of the generator with that ID number. The number of the generator is indicated only for generator n.1,5,9,13. The others are in sequence. In the first page are shown the generators from ID1 to ID16.
B	Percent of load	It indicates the value of the power supplied by that generator, compared to the total power consumption of the load
C	IN symbol	It indicates that generator is connected in the system.
D	Switch symbol	It shows the status of the **generator breaker (KG)**
E	Warning symbol	It indicates the presence of one or more alarm conditions for that generator

As sample, we report the description of the status of the system shown in the picture above:

1st genset: connected in the system, in alarm, therefore the genrator can not start and work.
2nd genset: connected in the system, it supplies approximately 33% of the total load consumption.
3rd genset: connected in the system, it supplies approximately 33% of the total load consumption.
4th genset: connected in the system, it supplies approximately 33% of the total load consumption.
5th genset: not connected in the system.



This is the second page of the "System overview" indication. It permits to see the generators from ID17 to ID30.

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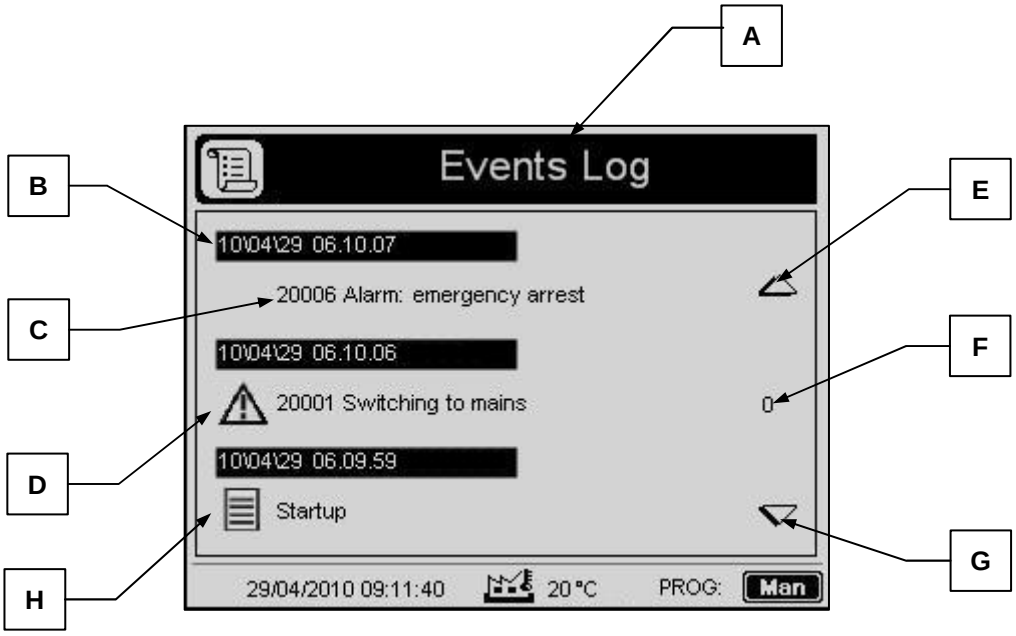
2- 7.5 Alarm pages

2- 7.5.1 Events log page



POS.	NAME	DESCRIPTION
A	Events list	Indicates that the page refers to the list of events stored. Can be maintained in memory up to 100 events, which remain regardless of power supply to controller if at least 25 events are recorded. When this number is exceeded, the older event is automatically deleted and the new event is included in the events log.
B	Date and Time	Shows the date and time at which the event was registered
C	Description	Shows the code and event description
D	Icon	Symbol that identifies an event as a priority (eg alarm) or secondary (eg warning)
E	Up Arrow Drive	Indicates to press the up arrow on the drive to scroll up the events
F	Number of pages	Indicates the actual number of the page
G	Down Arrow Drive	Indicates to press the down arrow on the drive to scroll down the events
H	Icon	Symbol that identifies a notice

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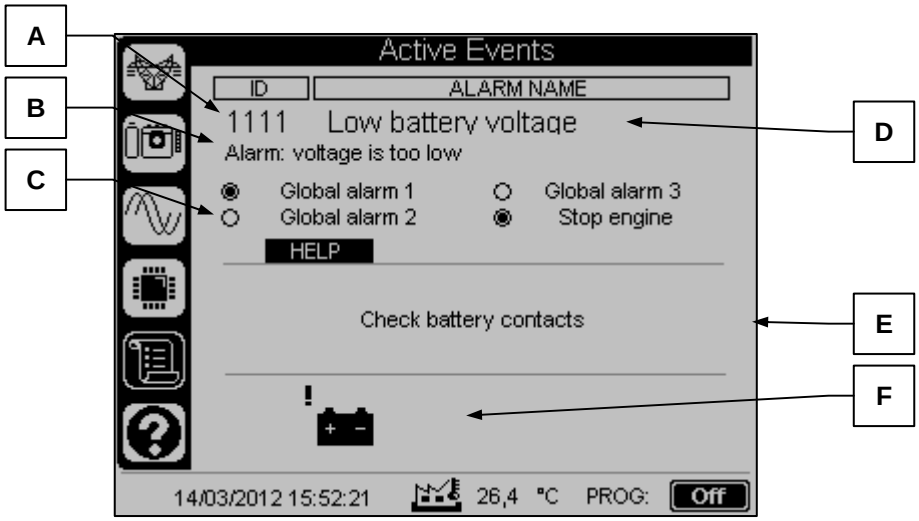
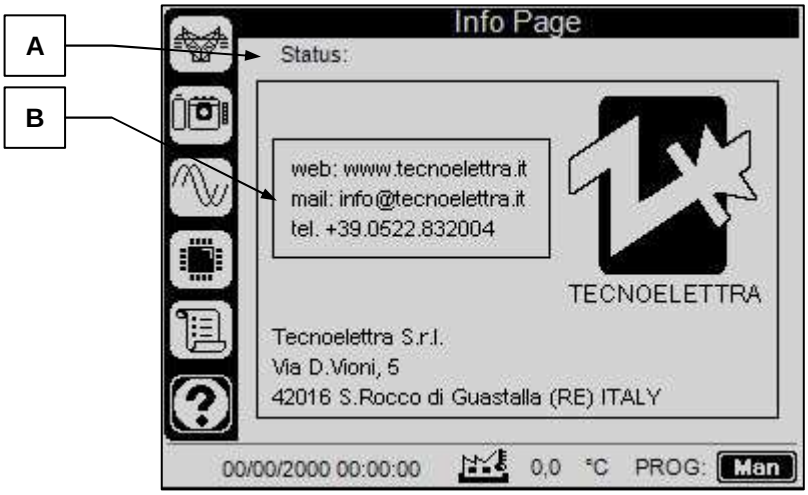
2- 7.5.2 Active events



POS.	NAME	DESCRIPTION
A	Alarm ID	Shows a code to identify the alarm occurred
B	Alarm Description	Shows a description to the alarm occurred
C	Global alarm status icon	Shows the staus of global alarm flags and stop engine flag
D	Alarm name	Shows the name of occurred alarm
E	Alarm help	Shows a help message to understand better the alarm
F	Alarm icon	Shows an icon message to understand better the alarm

2- 7.6 Info page



POS.	NAME	DESCRIPTION
A	Status messages	It shows the status messages or active alarms
B	Informations	Shows sensible informations as assistance numbers and web/email

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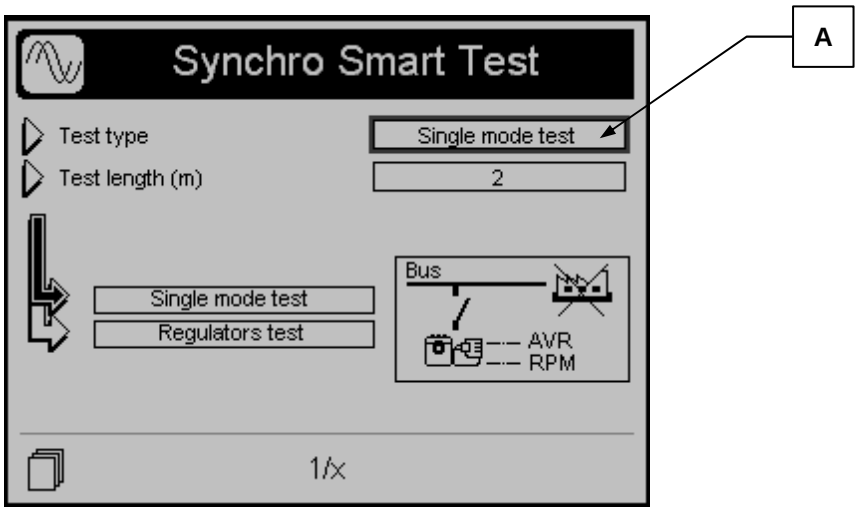
2- 7.7 Self-learning

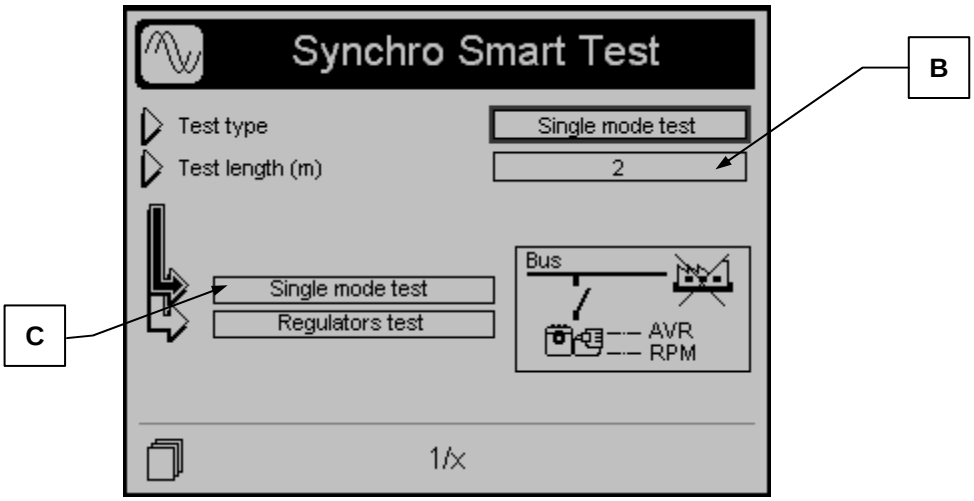
Pressing TEST button you have access to the special self-learning function that permits to test the Controller, the genset and their connections.
There are n.2 test mode available: scroll to icon at point "A" to select and change the type of test (by arrows and "**i**" buttons).



The 2 options are the following:
1- "single genset mode": it permits to start the genset as "stand alone" application, to check its working conditions. If the voltage and frequency are next to the rated values, the RPM and AVR offsets are next to the optimal value.
2- "regulators mode": it permits to start the genset and check if the AVR and RPM regulators are properly connected and properly set to work in synchronizing mode.

2- 7.7.1 Single mode test

When "single mode test" is selected, you can also set the test duration, setting value at point "B"; if the test is performed for this time without any problem, automatically the TE808 controller stops this test.



When you have set the test duration, you can enter in the "single mode test" page confirming the option at point "C" by "**i**" button.

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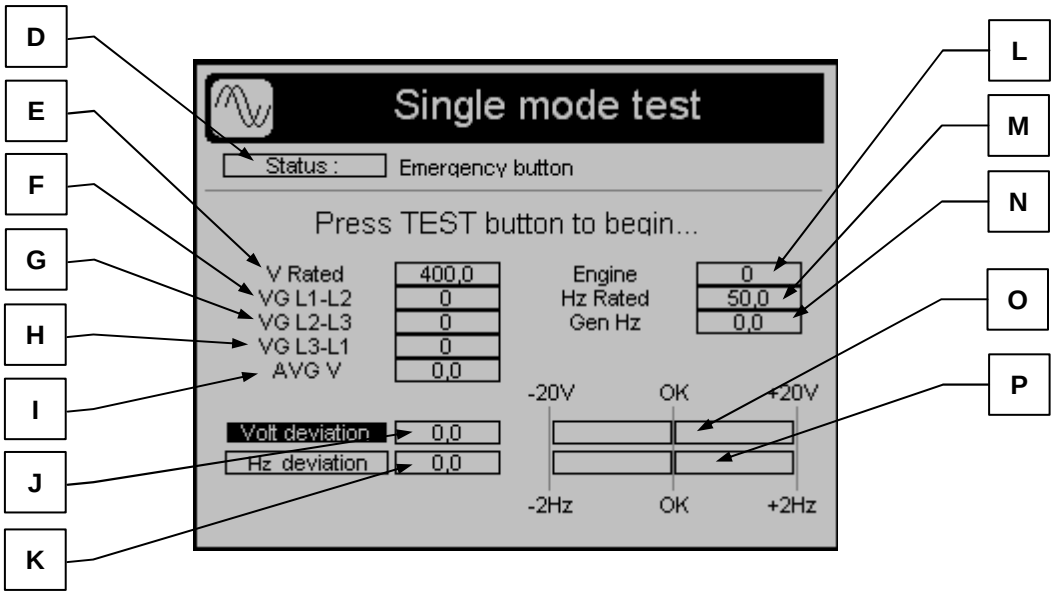

Pressing the TEST button again, the genset starts and you can check its condition and the measures detected; if some alarms occur, obviously the genset will be stopped and you have the info about the alarm. If it works fine and all the monitored values are in conformity with the settings, when the programmed time expires the genset will be stopped. In the lower area of the display, you can see the measures stored during the test and their variations compared to the rated values set.

POS.	NAME	DESCRIPTION	USER NOTES
D	Status	It shows the test status or the eventual alarms detected.	
E	Rated voltage	It shows the rated voltage set	
F	VG L1-L2	It shows the voltage measure on phase L1	
G	VG L2-L3	It shows the voltage measure on phase L2	
H	VG L3-L1	It shows the voltage measure on phase L3	
I	AVG V	It shows the average voltage measured on the 3 phases	
J	Volt deviation	It shows the difference between the L1 voltage detected and the rated voltage	
K	Hz deviation	It shows the difference between the frequency detected and the rated frequency	
L	Engine status	It shows the status of the engine: 0 means "engine stop" 1 means "engine running"	
M	Rated frequency	It shows the rated frequency set	
N	Genset frequency	It shows the generator frequency measured	
O	Voltage deviation bargraph	It shows by a bargraph the deviation between rated voltage and measured voltage	
P	Frequency deviation bargraph	It shows by a bargraph the deviation between rated frequency and measured frequency	

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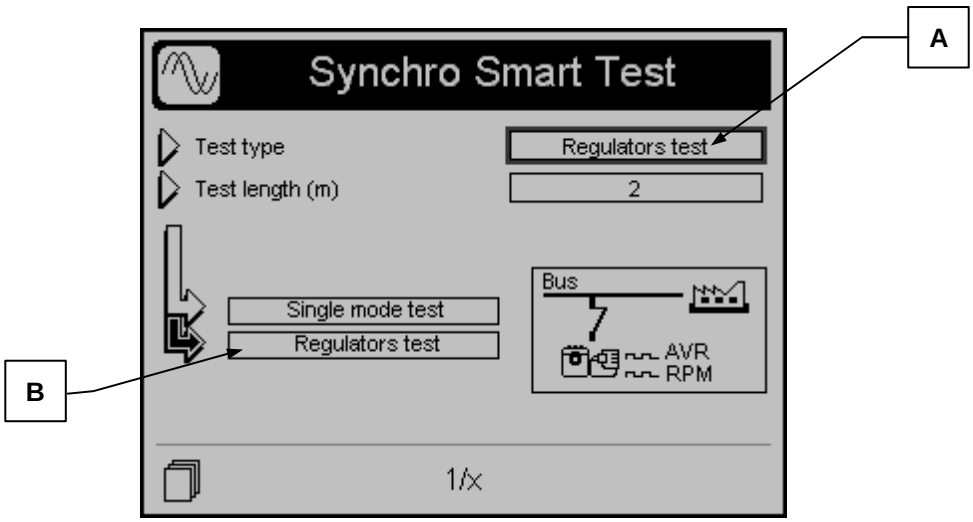
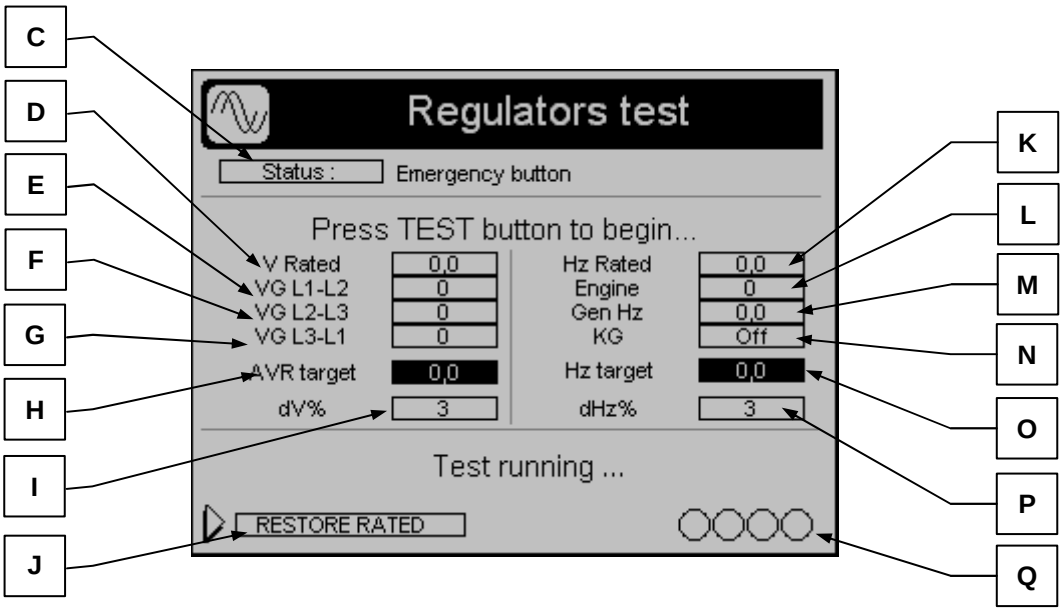
2- 7.7.2 Test with regulation mode

You can also decide to perform the "test with regulations"; in this case the controller executes a test that checks the AVR and RPM regulators (automatically the controller changes the rated values of voltage and frequency to test the governors response). If some problems are detected the test stops and you can see on the display the indications about the type of problem. If no problems are detected about the AVR and RPM regulators, the controller tries to close the generator switch/breaker to test also if it works properly. If all is good the switch/breaker will be re-opened and the test finishes. Move by arrows on “Test type” (point A) and select "Regulators test". Then scroll down with arrows and select "Regulators test" option (point B) to enter in the specific test page.



During the test you can see several measures and status:



Pressing the TEST button again, the genset starts and you can check its condition and the measures detected; if some alarms occur, obviously the genset will be stopped and you have the info about the alarm. If it works fine and all the monitored values are in conformity with the settings, the controller closes the genset breaker to test it.
WARNING: IF THE TEST IS PERFORMED CORRECTLY, WHEN THE BREAKER CLOSES THE GENSET SUPPLIES THE EVENTUAL LOAD CONNECTED TO THE PANEL.

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During the test you can control and monitor the following measures and status:

POS.	NAME	DESCRIPTION	USER NOTES
C	Status	It shows the test status or the eventual alarms detected.	
D	Rated voltage	It shows the rated voltage set	
E	VG L1-L2	It shows the voltage measure on phase L1	
F	VG L2-L3	It shows the voltage measure on phase L2	
G	VG L3-L1	It shows the voltage measure on phase L3	
H	AVR target	It shows the value of voltage that the genset must reach to consider the AVR connected and set properly	
I	Voltage deviation	It is the increasing percentage from rated voltage to the test target voltage	
J	Restore Rated	If for any reason the test is interrupted, we suggest to select this option and confirm it by "**i**" button to restore previous voltage and frequency rated values	
K	Rated frequency	It shows the rated frequency set	
L	Engine status	It show the status of the engine: 0 means "engine stop" 1 means "engine running"	
M	Genset frequency	It shows the generator frequency measured	
N	KG status (genset breaker)	It shows the status of the switch/breaker of the genset: 0 means "breaker open" 1 means "breaker closed"	
O	Hz target	It shows the value of frequency that the genset must reach to consider the RPM governor connected and set properly	
P	Frequency deviation	It is the increasing percentage from rated frequency to the test target frequency	
Q	Test progression icons	They show you the test progression; from left to right the icons become black for following status: 1st: for test running 2nd: setting targets and starting the AVR+RPM regulation 3rd: feedback received from genset breaker These 3 icons turn sequentially black during the test. When the test is finished, the 4th icon becomes black and the icons 1-2-3 turn off	

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TE808 Platinum

Section 3 – Programming Menu

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3- 1 Control and management screens description

3- 1.1 Symbols used by the TE808: descriptions

- HOUR LEFT BEFORE SERVICE

- FUEL AUTONOMY INDICATOR

- BATTERY VOLTAGE INDICATOR

- ENGINE TEMPERATURE INDICATOR

- RENTAL SERVICE, HOURS LEFT

BATTERYCHARGER ALTERNATOR VOLTAGE

- EVENT MESSAGE AVAILABLE IN EVENT LIST

- LOAD SYMBOL

- FUEL LEVEL INDICATOR

- STARTING OUTPUT

- OIL PRESSURE INDICATOR

- GENERATOR SYMBOL

- MAINS SYMBOL

- TOTAL WORKING HOURS

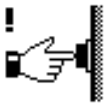
- PREVIOUS PAGE

- NEXT PAGE

- GLOW PLUGS OUTPUT ACTIVE

- AUTOMATIC BATTERYCHARGER ALARM

- STARTING FAILURE ALARM


- EMERGENCY STOP BUTTON ALARM

- ENGINE TEMPERATURE ALARM

- CURRENT OVERLOAD ALARM

- GENERATOR VOLTAGE ALARM

- TIMER ALARM

- MECHANICAL FAILURE ALRM

- USER ALARM

- HIGH SPEED ALARM

- LOW SPEED ALARM

- PROGRAMMED TESTS GENERIC ALARM

- LOW FUEL AUTONOMY ALARM

- BATTERY VOLTAGE ALARM

- LOW OIL PRESSURE ALARM

- LOW FUEL LEVEL ALARM

- EVENT LIST SYMBOL

- GENERIC ALARM AND/OR ACTIVE EVENTS SYMBOLS

- INPUT/OUTPUT MONITOR SYMBOL

- ENGINE STARTING STATUS

- DISPLAY SYMBOL

- ENGINE SYMBOL

- ALTERNATOR SYMBOL

- SECURITY SYMBOL

- SERVICE AND MAINTENANCE

- PROGRAMMED TESTS SYMBOLS

- SPECIAL FUNCTIONS SYMBOL

- STOP ENGINE SYMBOL

- RENTAL SYMBOL

- DATE/CLOCK SYMBOL

- WARRANTY SYMBOL

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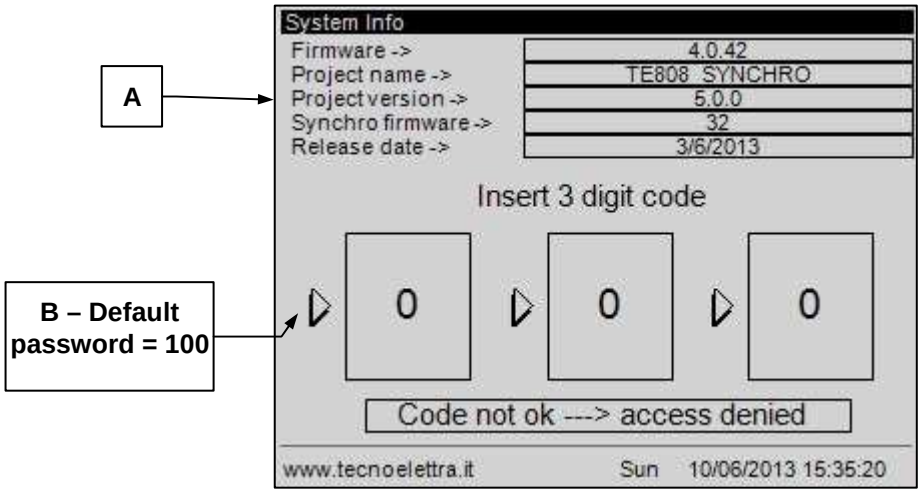
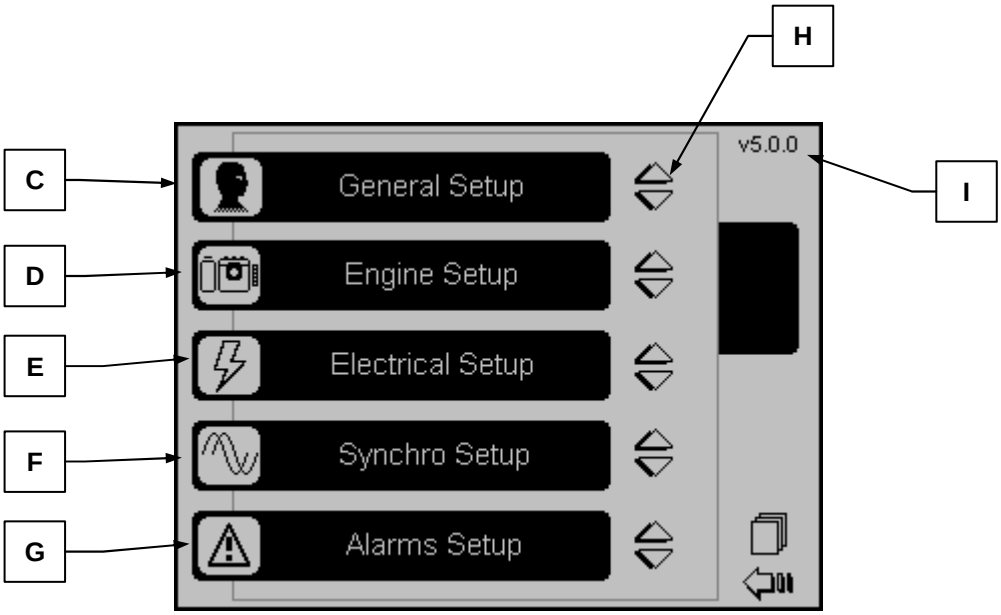
3- 1.2 Navigation main page



POS.	NAME	DESCRIPTION
A	Data	This section informs you about the firmwares and project installed in the controller
B	Password	Insert the password to access to the menus. Press the right or down arrow to select the first cipher. Confirm with “i” to modify the number with the left and right arrows. Then confirm with “i”. Use the left and right arrows to move to the other ciphers. If the password is correct, you will see the indication “Code ok → access to SETUP”. Use the down arrow to select that indication, then confirm with “i” to enter in the programmation menus.



POS.	NAME	DESCRIPTION
C	General Setup	Indicates access to the General Setup
D	Engine Setup	Indicates access to the Engine Setup
E	Electrical Setup	Indicates access to the Electrical setup, about generator and mains electrical parameters
F	Synchro Setup	Indicates the access to the Synchro Setup menu, about specific parameters for synchronizing systems, as AVR control, RPM control, etc
G	Alarms setup	Permits the access to the Alarms Setup
H	Selection button	Use the up and down arrows to select this indicators, then confirm with “i” button to enter in the correspondant setup
I	Firmware	Indicates the firmware version

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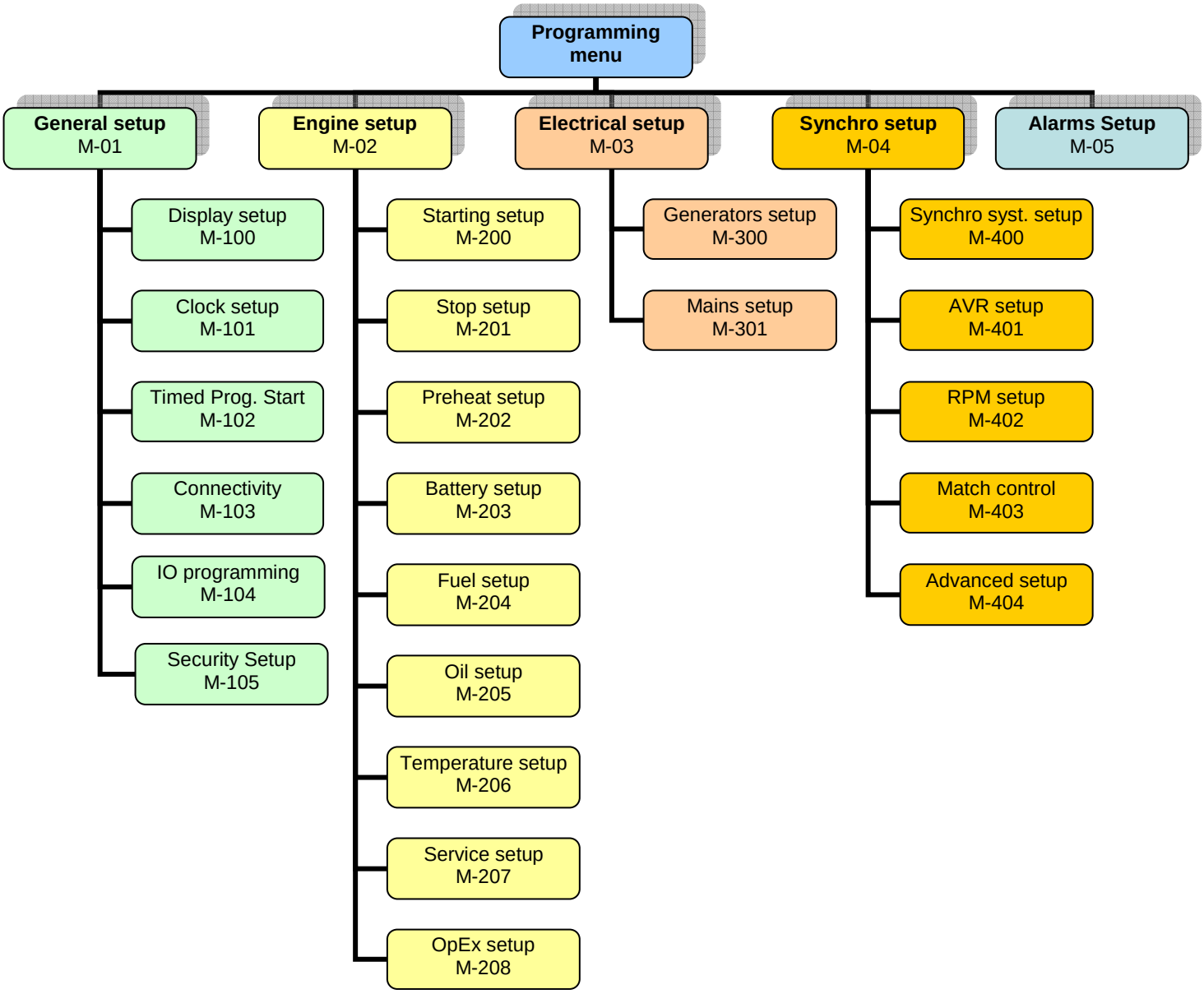
3- 2 Navigation organization chart



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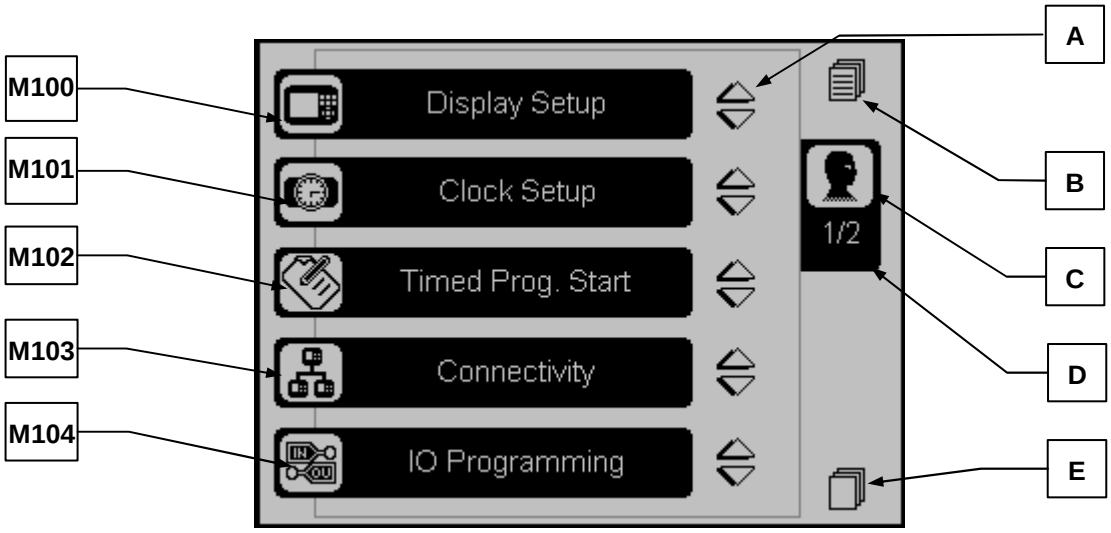
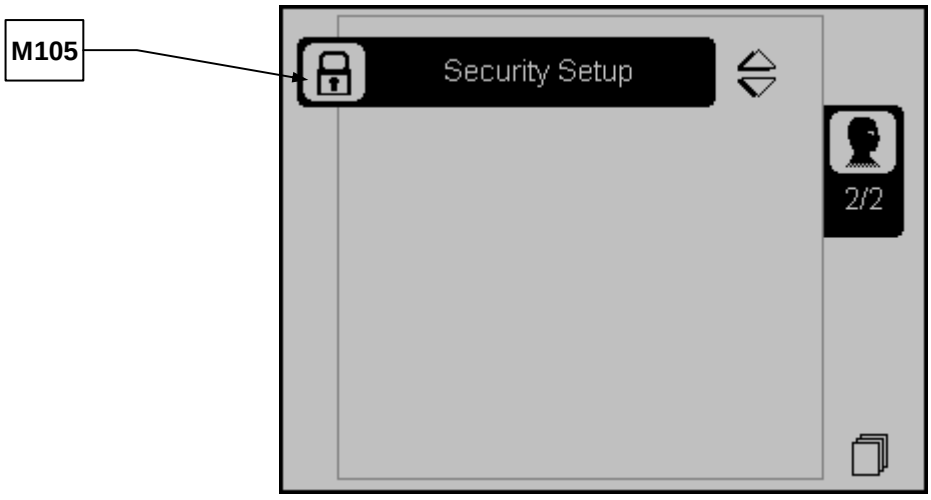
3- 3 General setup menu description: M-01



PAR.	NAME	DESCRIPTION
M-100	Display Setup	Submenu that contains all the parameters settings of the screen: language type, contrast, offset thermostat, etc.
M-101	Clock Setup	Submenu for setting the Time and Date
M-102	System setup	Submenu for the setting of refilling and system temperatures
M-103	Connectivity	Submenu that allows the setting of communication parameters of the RS232 and RS485 ports available
M-104	IO Programming	Submenu for the programmation of all the inputs and outputs
A	Arrows drive	Indicates to use the arrows on the drive to scroll through the submenus
B	Page forward	Indicates to press the corresponding button to go to the next page (in this case it goes to page 2 of 2)
C	Icon menu	Symbol that indicates that we are inside the "General Setup" menu
D	Indication pages	Indicates the current page number and the total pages available in the menu (in this case we are at page 1 of 2 pages available in the "General Setup" menu)
E	Page backward	Indicates to press the corresponding button to return to the previous page (in this case should come back to the main menu)



PAR.	NAME	DESCRIPTION
M-105	Security Setup	Submenu to setting passwords for each menu

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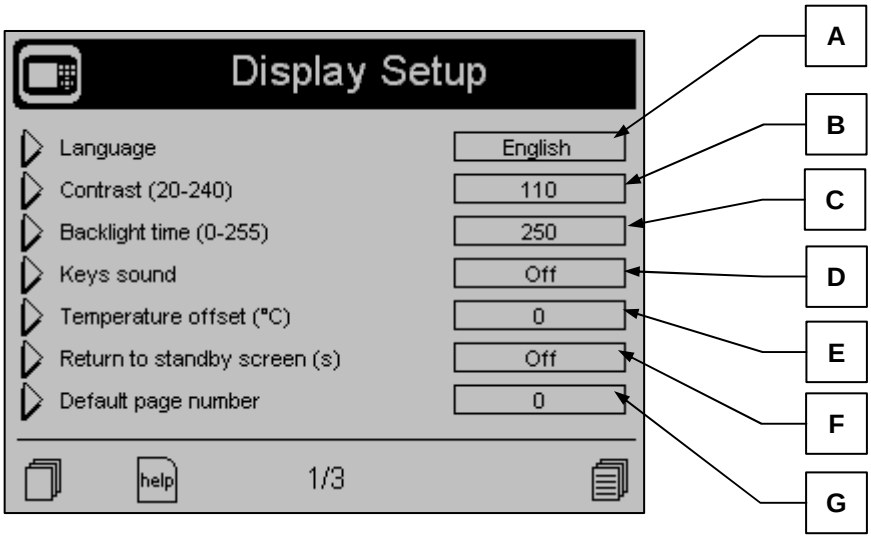
3- 3.1 Display setup menu: M100



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
A	Language	You select the language inside the controller. On board are available the following languages: English and Italian. It's possible to request and install other languages.	English Italian	English	
B	Contrast	To set the preferred contrast of the display.	20-240	110	
C	Backlight time	If no operations are done, after this time the display backlight turns off. It returns on automatically when an event occours.	0-255 [s]	250	
D	Keys sound	To set a beep sound when pressing the keys.	On-Off	Off	
E	Temperature offset	Used to set a thermostat correction coefficient, about the ambient temperature value shown on the display.	-127 ÷ +128 [℃]	0	
F	Return to standby screen	It is the time after which the controller automatically returns to the standby page set in parameter "G". It can be disabled setting it to OFF, otherwise you can set a time with steps of 10 seconds.	Off-250 [s]	Off	
G	Default page number	To set the page you want to set as standby: 0: Genset control 1: Synchro regulation 1 2: Engine tools 3: Events log 4: Genset measurements 5: Logo 6: Synchro regulation 2 7: Alarms 8: Info 9: Canbus 10: Menu	0-10	0	

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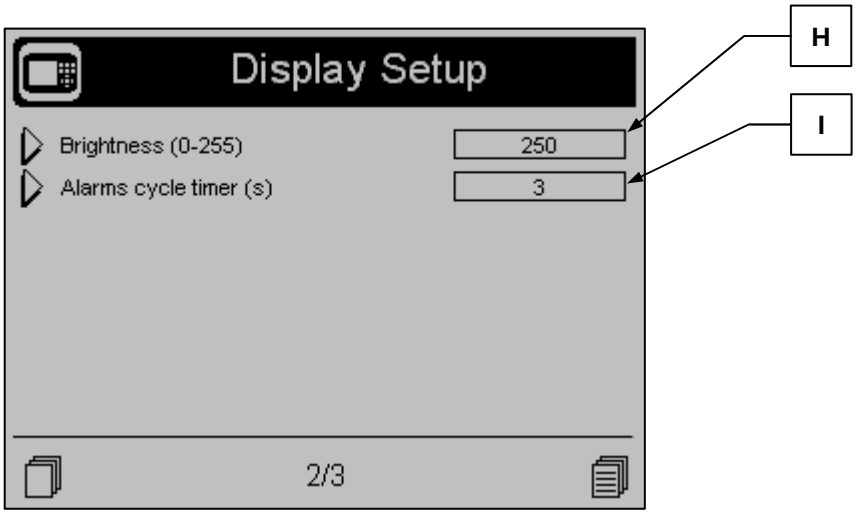

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
H	Brightness	Set the brightness of the screen.	0-255	250	
I	Alarms cycle timer	If there are two or more alarms, they are shown on the display at a distance of time specified by this parameter.	0-255 [s]	3	

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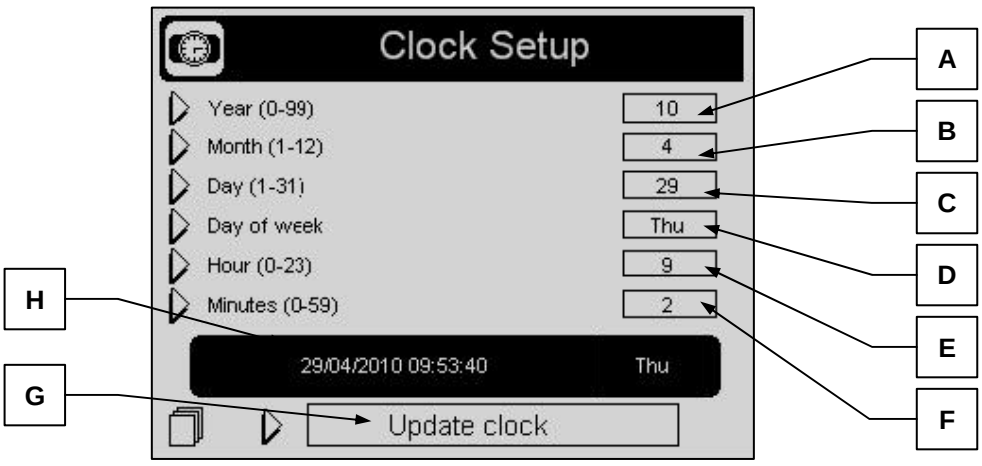
3- 3.2 Clock setup menu: M101



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
A	Year	To set the year	0-99	10	
B	Month	To set the month	1-12	1	
C	Day	To set the day	1-31	1	
D	Day of week	To set the day of the week, from Monday to Sunday	Mon...Sun	Mon	
E	Hours	To set the current hour	0-23	0	
F	Minutes	To set the current minute	0-59	0	
G	Update clock	Used to confirm the adjusted date/clock, it updates the current time. To do it, you must select the area using the drive arrows and then confirm by the "**i**" button	-	-	
H	Current setting	It shows the current date and clock set	-	-	

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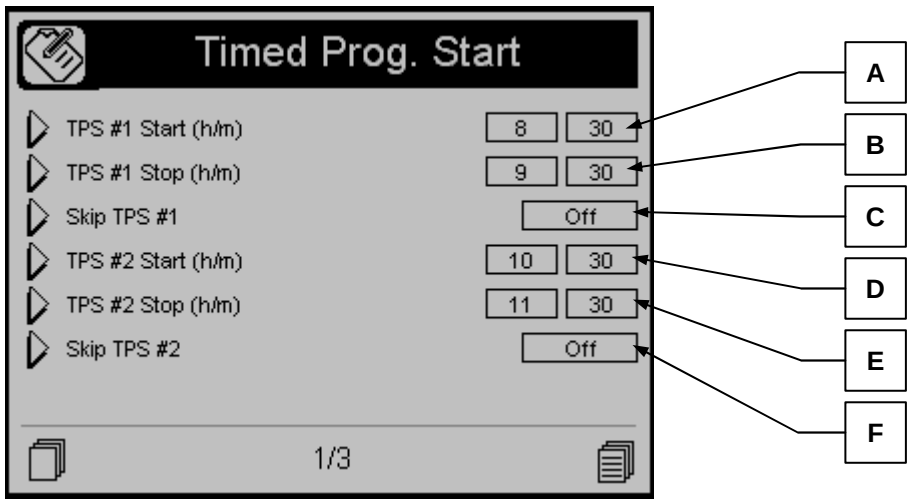
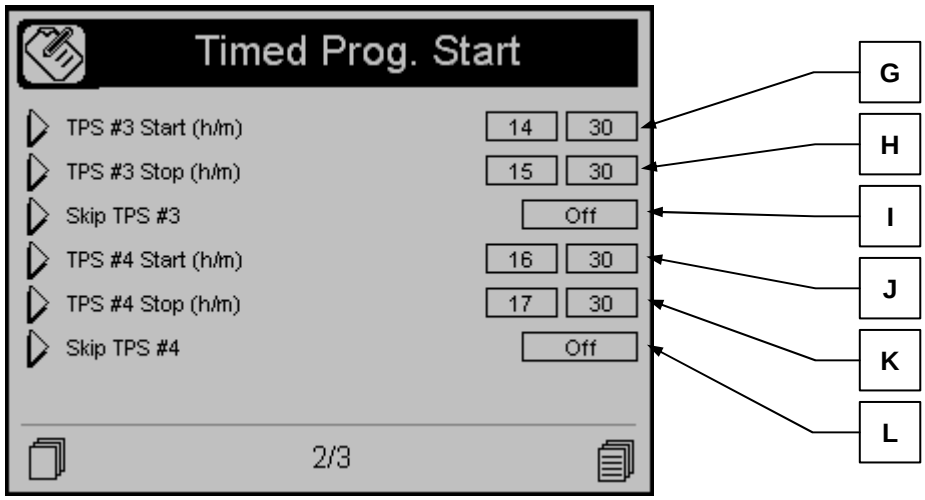
3- 3.3 Timed Prog. Start: M102



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
A	TPS #1 Start	You can set the start hour and minute of the first working window. Active only in automatic mode.	[0-24] [0-59]	8:30	
B	TPS #1 Stop	You can set the stop hour and minute of the first working window.	[0-24] [0-59]	9:30	
C	Skip TPS #1	If On, the first starting is not executed	On-Off	Off	
D	TPS #2 Start	You can set the start hour and minute of the second working window. Active only in automatic mode.	[0-24] [0-59]	10:30	
E	TPS #2 Stop	You can set the stop hour and minute of the second working window.	[0-24] [0-59]	11:30	
F	Skip TPS #2	If On, the second starting is not executed	On-Off	Off	



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
G	TPS #3 Start	You can set the start hour and minute of the third working window. Active only in automatic mode.	[0-24] [0-59]	14:30	
H	TPS #3 Stop	You can set the stop hour and minute of the third working window.	[0-24] [0-59]	15:30	
I	Skip TPS #3	If On, the third starting is not executed	On-Off	Off	
J	TPS #4 Start	You can set the start hour and minute of the fourth working window. Active only in automatic mode.	[0-24] [0-59]	16:30	
K	TPS #4 Stop	You can set the stop hour and minute of the fourth working window.	[0-24] [0-59]	17:30	
L	Skip TPS #4	If On, the fourth starting is not executed	On-Off	Off	

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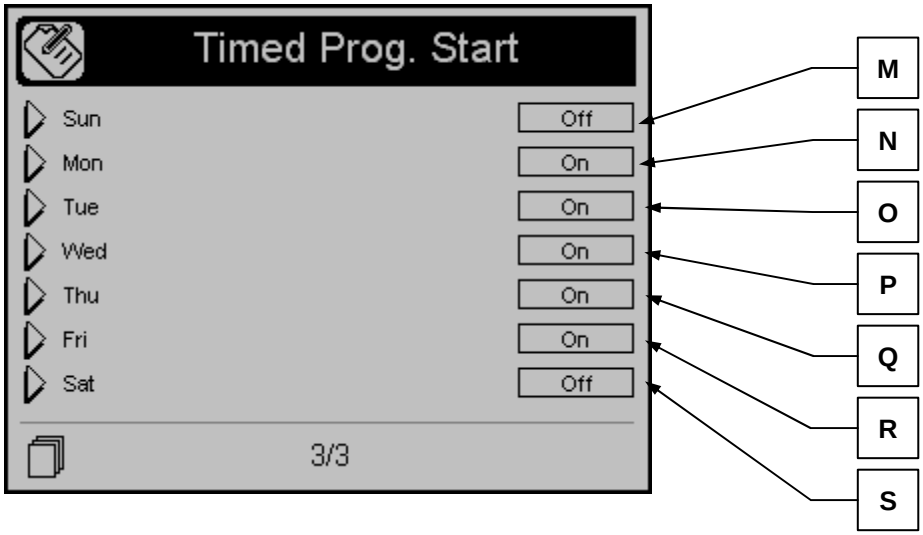

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
M	Sunday	Select if the day of the week is enabled for the timed programmable starts.	On-Off	Off	
N	Monday	Select if the day of the week is enabled for the timed programmable starts.	On-Off	On	
O	Tuesday	Select if the day of the week is enabled for the timed programmable starts.	On-Off	On	
P	Wednesday	Select if the day of the week is enabled for the timed programmable starts.	On-Off	On	
Q	Thursday	Select if the day of the week is enabled for the timed programmable starts.	On-Off	On	
R	Friday	Select if the day of the week is enabled for the timed programmable starts.	On-Off	On	
S	Saturday	Select if the day of the week is enabled for the timed programmable starts.	On-Off	Off	

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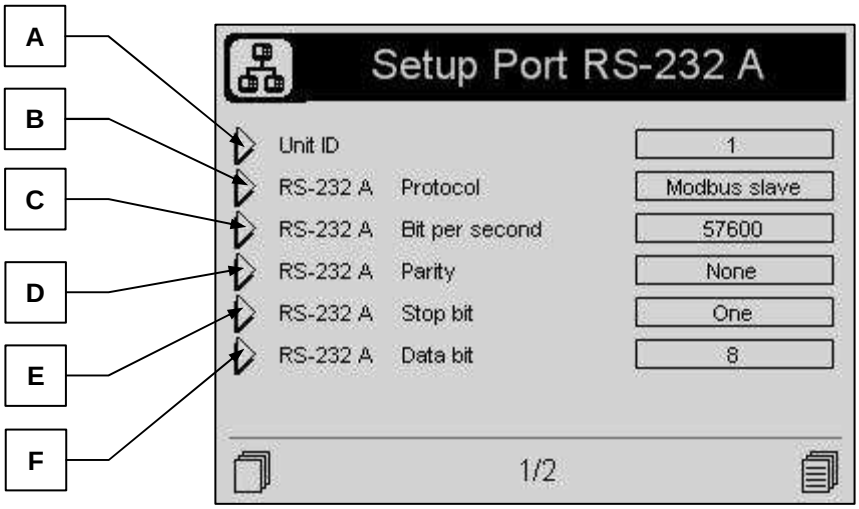
3- 3.4 Connectivity menu: M103



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
A	Unit ID	Unit Identification Number. It's very important for the communication via RS485.	0-255	1	
B	Protocol	Protocol type. Selectable: - None: Serial port disabled - Modbus Master: setting used when the controller commands other devices via serial communication with protocol Modbus RTU (for example TE6010 expansion cards). - Modbus slave: setting used when the TE808 is controlled by external device, for example when it is connected to a supervisor PC. - GSM modem: setting used when on the RS232 port is connected a GSM/GPRS modem.	None Modbus Master Modbus Slave Gsm modem	Modbus slave	
C	Bits per second	Baud rate: - For connections to a PC, you can select preferred speed (we suggest 57600) - For modem connections, it is recommended speed of 9600.	9600 19200 38400 57600 115200	115200	
D	Parity	Set always to "none" (Other values are used only for special functions)	None Odd Even Mark Space	None	
E	Stop bit	Set always to "one" (Other values are used only for special functions)	One two none	One	
F	Data bit	Set always to "8" (Other values are used only for special functions)	6 7 8	8	

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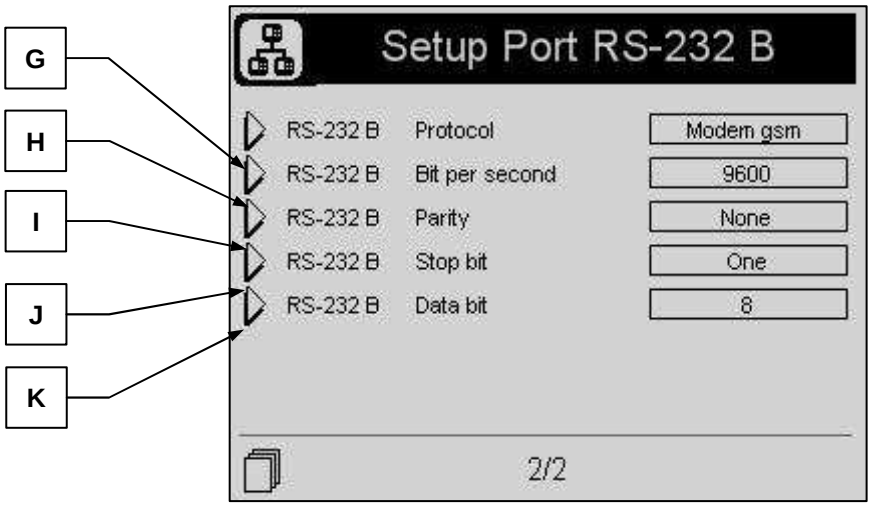

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
G	Protocol	Protocol type. Selectable: - None: Serial port disabled - Modbus Master: setting used when the controller commands other devices via serial communication with protocol Modbus RTU (for example TE6010 expansion cards). - Modbus slave: setting used when the TE808 is controlled by external device, for example when it is connected to a supervisor PC. - GSM modem: setting used when on the RS232 port is connected a GSM/GPRS modem.	None Modbus Master Modbus Slave Gsm modem	Gsm modem	
H	Bits per second	Baud rate: - For connections to a PC, you can select preferred speed (we suggest 57600). - For modem connections, it is recommended speed of 9600.	9600 19200 38400 57600 115200	9600	
I	Parity	Set always to "none" (Other values are used only for special functions)	None Odd Even Mark Space	None	
J	Stop bit	Set always to "one" (Other values are used only for special functions)	One two none	One	
K	Data bit	Set always to "8" (Other values are used only for special functions)	6 7 8	8	

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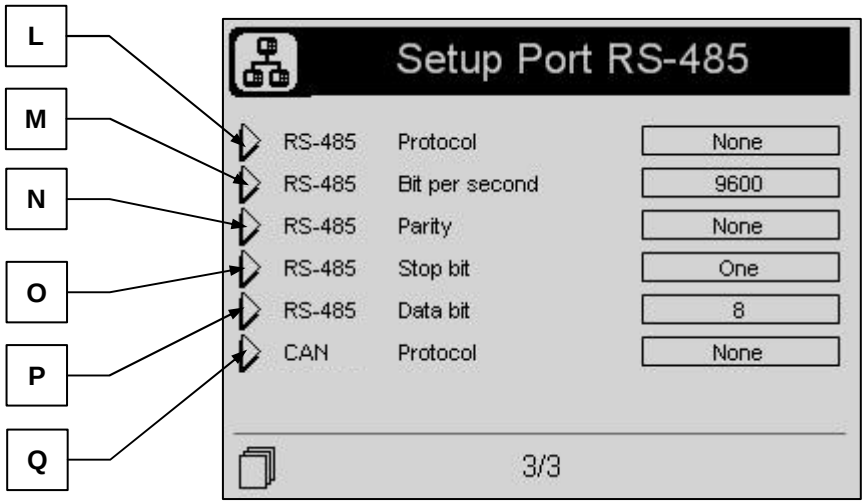

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
L	Protocol	Protocol type. Selectable: - None: Serial port disabled - Modbus Master: setting used when the controller commands other devices via serial communication with protocol Modbus RTU (for example TE6010 expansion cards). - Modbus slave: setting used when the TE808 is controlled by external device, for example when it is connected to a supervisor PC. - GSM modem: setting used when on the RS232 port is connected a GSM/GPRS modem.	None Modbus Master Modbus Slave Gsm modem	None	
M	Bits per second	Baud rate: - For connections to a PC, you can select preferred speed (we suggest 57600). - For modem connections, it is recommended speed of 9600.	9600-19200-38400-57600-115200	9600	
N	Parity	Set always to "none" (Other values are used only for special functions)	None-Odd-Even-Mark-Space	None	
O	Stop bit	Set always to "one" (Other values are used only for special functions)	One-Two-None	One	
P	Data bit	Set always to "8" (Other values are used only for special functions)	6-7-8	8	
Q	Canbus Protocol	Set the communication protocol of for engine canbus communication. Canbus available are: - J1939 - SCANIA EMS - SCANIA EMS6 (Start/Stop) - SCANIA EMS8 (Start/Stop) - VOLVO EMS - VOLVO EMS2 (Start/Stop) - VOLVO EDC4 - PERKINS ECM - JOHN DEERE JDEC - DEUTZ EMR1 - IVECO NEF / CURSOR - CUMMINS CM850 - MTU ECU7 (Start/Stop) - MTU ECU8 (Start/Stop) - DEUTZ EMR2 (Start/Stop) - JCB TIER2 - TE80x TE80x is a proprietary can protocol which allows the communication between different devices of TE808 family. Protocols marked with “Start/Stop” allow to activate and shut down the engine directly from CANBUS communication.	None-TE80x	None	

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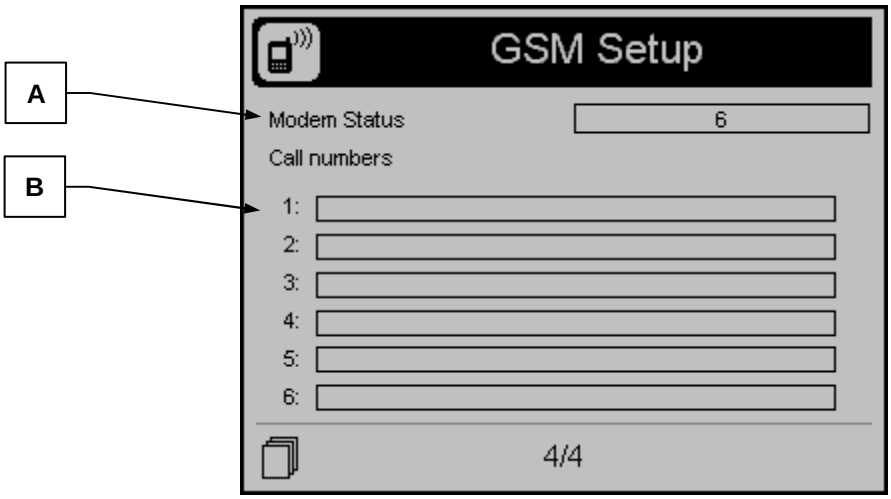

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
A	Modem Status	Shows the stauts of GSM modem	-	-	
B	Call numbers	Shows the mobile phone numbers set (up to 6) that the controller must send messages to. See chapter 5 for more informations about the GSM communication	-	-	

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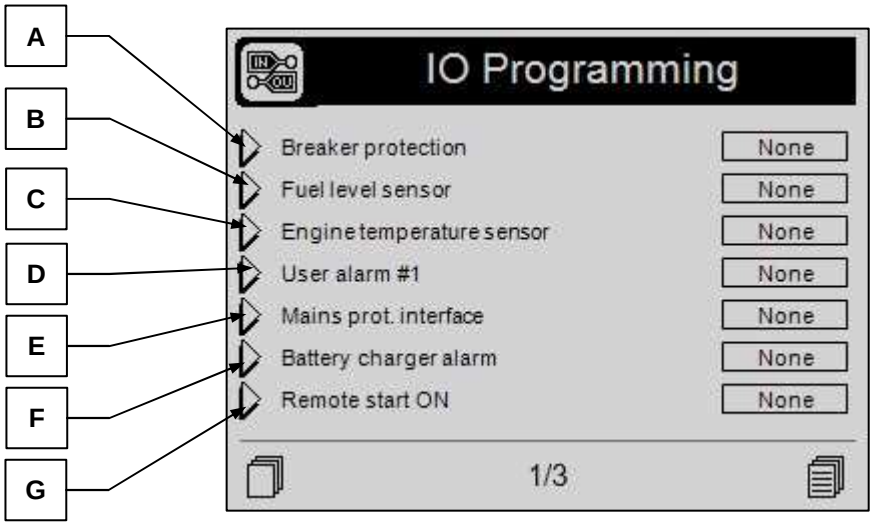
3- 3.5 IO programming setup menu: M104



This section permits to associate the digital inputs of the J3 connector to many preset functions or alarms. For every function/alarm it's possible to specify the terminal. If set to None, the function is not assiciated to any input terminal.

When the input is closed to negative, the controller considers the relative function/alarm activated.

J3.3 Input is not programmable and connected with low oil pressure alarm.

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
A	Breaker protection	Select the input of connector J3 associated to the Circuit breaker alarm	None – J3.1 – J3.2 – J3.4 – J3.5 – J3.6 – J3.7 - J3.8	J3.7	
B	Fuel level sensor	Select the input of connector J3 associated to the Low fuel level digital alarm	None – J3.1 – J3.2 – J3.4 – J3.5 – J3.6 – J3.7 - J3.8	J3.2	
C	Engine temperature sensor	Select the input of connector J3 associated to the High engine temperature digital alarm	None – J3.1 – J3.2 – J3.4 – J3.5 – J3.6 – J3.7 - J3.8	J3.1	
D	User alarm 1	Select the input of connector J3 associated to the User alarm 1	None – J3.1 – J3.2 – J3.4 – J3.5 – J3.6 – J3.7 - J3.8	None	
E	Mains prot. Interface	Select the input which enables mains return synchro procedure.	None – J3.1 – J3.2 – J3.4 – J3.5 – J3.6 – J3.7 - J3.8	J3.8	
F	Battery charger alarm	Select the input of connector J3 associated to the Battery charger alarm	None – J3.1 – J3.2 – J3.4 – J3.5 – J3.6 – J3.7 - J3.8	J3.6	
G	Remote start ON	Select the input of connector J3 that is considered as Remote Start	None – J3.1 – J3.2 – J3.4 – J3.5 – J3.6 – J3.7 - J3.8	J3.5	

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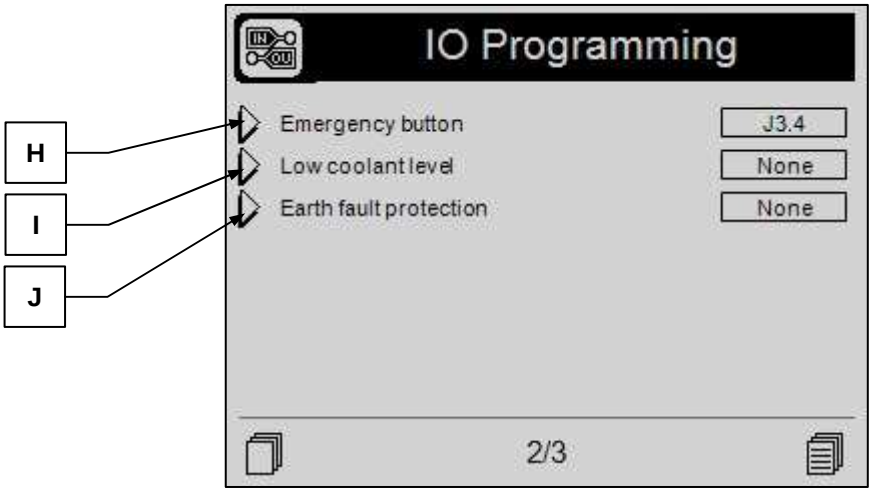

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
H	Emergency button	Select the input of connector J3 associated to the Emergency button alarm	None – J3.1 – J3.2 – J3.4 – J3.5 – J3.6 – J3.7 - J3.8	J3.4	
I	Low coolant level	Select the input of connector J3 associated to the Low coolant level alarm	None – J3.1 – J3.2 – J3.4 – J3.5 – J3.6 – J3.7 - J3.8	None	
J	Earth fault protection	Select the input of connector J3 associated to the Earth fault protection alarm	None – J3.1 – J3.2 – J3.4 – J3.5 – J3.6 – J3.7 - J3.8	None	

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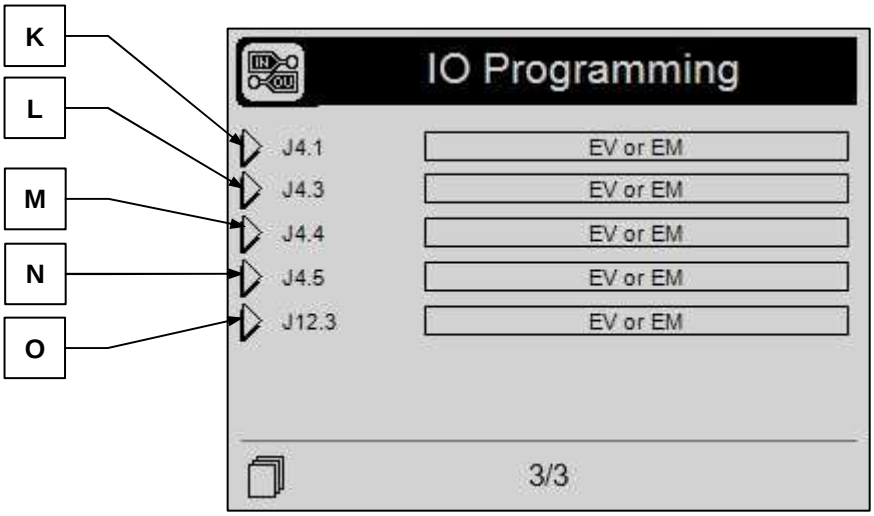

This section permits to associate the relay outputs of the J4 and J12 connectors to many preset functions or alarms.
For every output it's possible to select which function must be performed by the output.

J4.2 Output is not programmable and connected with engine starter.

J12.1 Output is not programmable and connected with ECU aux supply.

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
K	J4.1	Set the function for the J4.1 output	See functions below	EV or EM	
L	J4.3	Set the function for the J4.3 output	See functions below	Glow plugs	
M	J4.4	Set the function for the J4.4 output	See functions below	Siren	
N	J4.5	Set the function for the J4.5 output	See functions below	Fuel pump	
O	J12.2	Set the function for the J12.2 output	See functions below	Global alarm 1	

The possible functions are the following:

- EV or EM: the output is used to command the stop with EV or EM. The programmation of EV or EM can be made inside Stop setup
- Glow plugs: the output is used to command the preheating function, with modality that you can set in the preheat setup.
- Siren: the output is used to command a siren that sounds when an alarm with siren enabled appears.
- Global alarm 1: the output is used to command an indication when an alarm set as general alarm 1 appears. The output remains active until you reset or the alarm disappears.
- Global alarm 2: the output is used to command an indication when an alarm set as general alarm 2 appears. The output remains active until you reset or the alarm disappears.
- Global alarm 3: the output is used to command an indication when an alarm set as general alarm 3 appears. The output remains active until you reset or the alarm disappears.
- Refueling pump: the output is used to command the start and stop of a refueling pump. The parameters about the refilling functions can be set in the fuel menu.
- Load shedding: the output is activated in accordance with load shedding function logic, if the load on genset is too high, the output is activated to reduce the load.
- RPM+: this output is used to increase the speed of the engine
- RPM-: this output is used to decrease the speed of the engine

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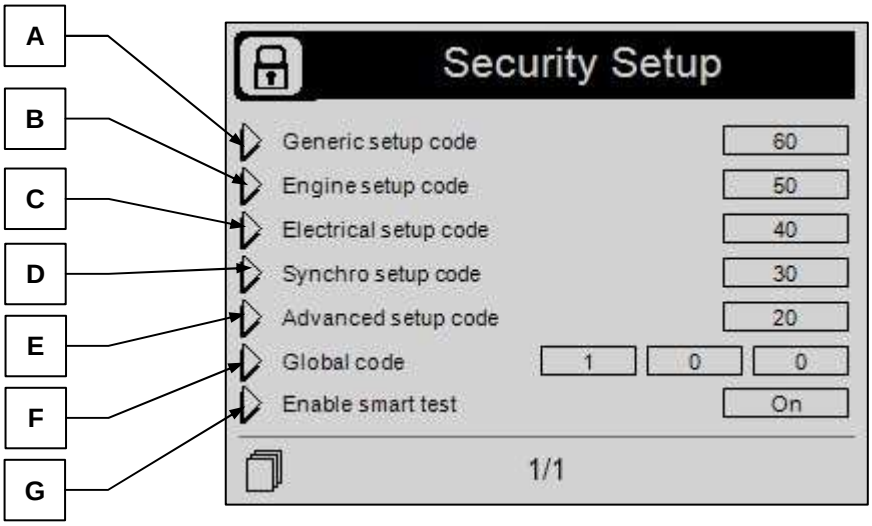
3- 3.6 Security setup menu: M105



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
A	Generic setup code	Enter the password that locks/unlocks the general setup. If you enter the code correctly to 60, the general menu is completely unlocked. If you enter a wrong code, the general is locked until the correct code will be inserted.	0-999	60	
B	Engine setup code	Enter the password that locks/unlocks the engine setup. If you enter the code correctly to 50, the engine setup is completely unlocked. If you enter a wrong code, the menu is locked.	0-999	50	
C	Electrical setup code	Enter the password that locks/unlocks the electrical setup. If you enter the code correctly to 40, the electrical setup is completely unlocked. If you enter a wrong code, the menu is locked.	0-999	40	
D	Synchro setup code	Enter the password that locks/unlocks the synchro setup. If you enter the code correctly to 30, the synchro setup is completely unlocked. If you enter a wrong code, the menu is locked.	0-999	30	
E	Advanced setup code	Enter the password that locks/unlocks the advanced setup. If you enter the code correctly to 20, the advanced setup is completely unlocked. If you enter a wrong code, the menu is locked.	0-999	20	
F	Global code	You set the global access code to enter in the programmation menus.	[0-9] [0-9] [0-9]	[1] [0] [0]	
G	Enable smart test	It permits to enable the TEST button to access manual test / Self learning selection	On-Off	On	

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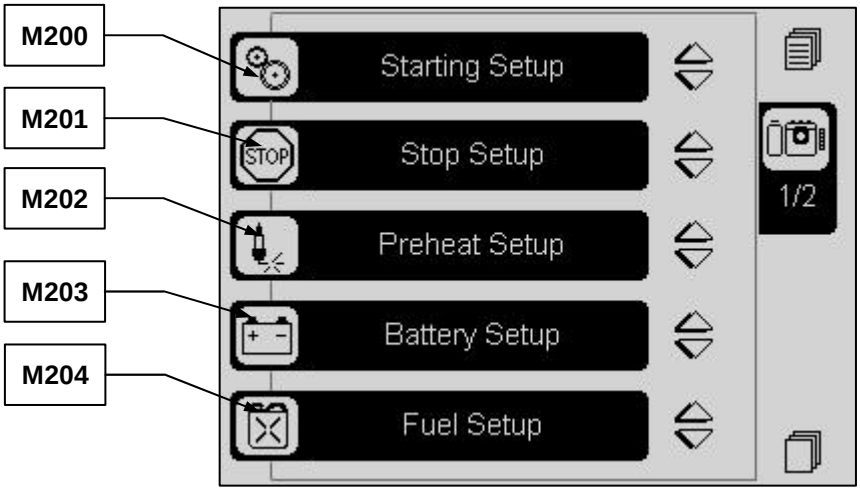
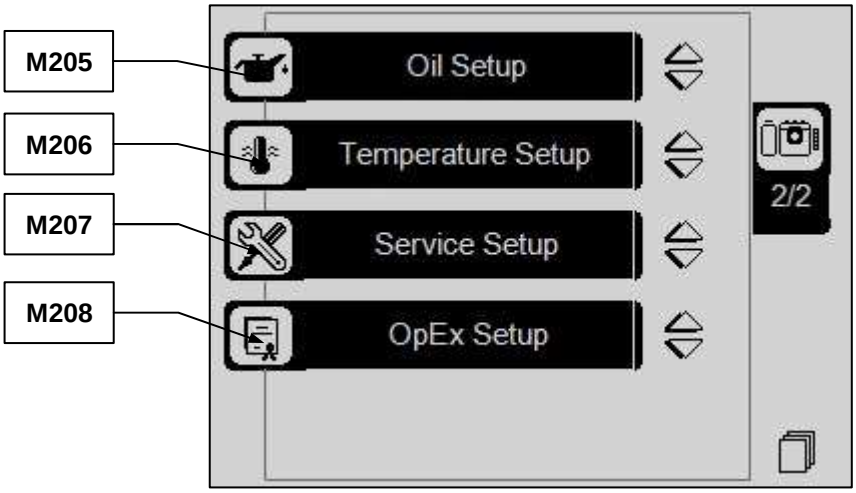
3- 4 Engine setup menu description: M-02



POS.	NAME	DESCRIPTION
M200	Starting Setup	It contains all the parameters about starter setting for the motor and the engine running detection signals
M201	Stop Setup	It contains all the parameters about the type of engine stop and its timers
M202	Preheat Setup	It contains all the parameters about the engine glow plugs type and its timers
M203	Battery Setup	It contains all the parameters about monitoring of battery and its limits values
M204	Fuel Setup	It contains all the parameters about the fuel instrument type, related alarms limits and autonomy settings



POS.	NAME	DESCRIPTION
M205	Oil Setup	It contains all the parameters about the oil pressure instrument type and its related alarms limits
M206	Temperature Setup	It contains all the parameters about the engine temperature instrument type and its related alarms limits
M207	Service Setup	It contains parameters to set the intervals of service
M208	OpEx Setup	It contains all the parameters for the evaluation of costs and wastes about fuel and management

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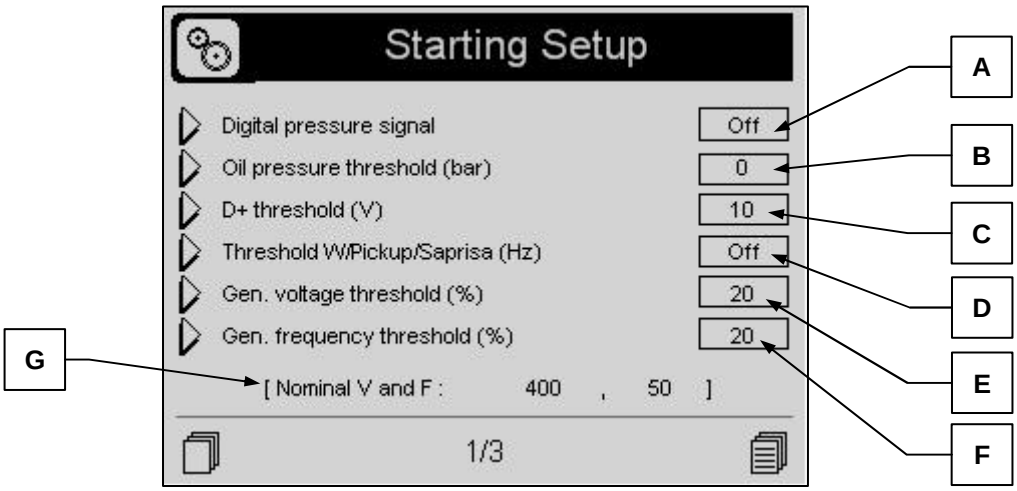
3- 4.1 Starting setup menu: M200



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
A	Digital pressure signal	Permits to detect (if On) the engine running status by the digital oil pressure sensor. With engine stopped the sensor is closed. At the starting, when the sensor opens the engine is considered started.	On-Off	Off	
B	Oil pressure threshold	Permits to detect engine running status by the analog oil pressure value	-65000 - +65000 [bar]	0	
C	D+ threshold	Permits to set the voltage of D+ of a batterycharger alternator, over which the engine is considered started	Off-9999 [v]	10	
D	Threshold W / pickup / Saprisa	You set the frequency value measured on a permanent magnet alternator type Saprisa, or a pickup or a "W" tachometric sensor, over which the engine is considered started	Off-9999 [hz]	Off	
E	Generator voltage threshold	You set the voltage value measured of the power alternator (in % on the nominal voltage set in Generator setup), over which the engine is considered started.	0-100 [%]	20	
F	Generator frequency threshold	You set the frequency value measured of the power alternator (in % on the nominal frequency set in Generator setup), over which the engine is considered started	0-100 [%]	20	
G	Nominal V and F	It shows you the nominal voltage and frequency values set in "Generator menu" M300, used as reference when you set parameters in points E and F above.	-	-	

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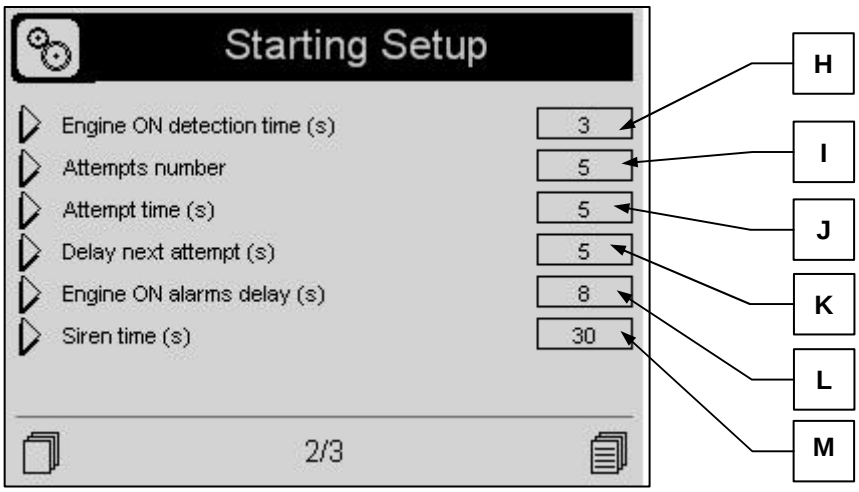

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
H	Engine ON detection time	After the detection of engine started the cranking motor is deactivated immediately, but this delay time must pass before the engine is considered completely started (to prevent fakes detections) and exit the start phase.	0-20 [s]	3	
I	Start Attempts number	You set the number of start attempts; when expired, the “start failure” alarm is activated.	1-10	5	
J	Start Attempt time	It is the maximum duration time of each starting attempt. When the engine is detected running, the cranking output is de-activated also if this "start attempt time" is not expired.	1-20 [s]	20	
K	Delay next attempt start	It is the time between a failed starting attempt and the next one.	1-10 [s]	5	
L	Engine On alarms delay	It is the time delay from the engine running detection to enable the alarms control; this time allows the generator to reach the nominal operating conditions.	0-1000 [s]	10	
M	Siren time	It is the duration time of the acoustic advisor in case of alarm.	0-1000 [s]	30	

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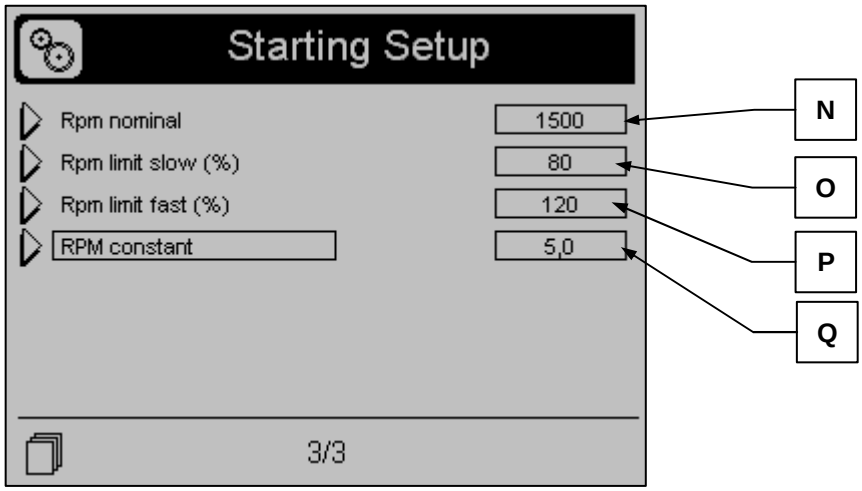

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
N	RPM nominal	It is the nominal speed of the engine, used also as reference to set the limits on points O and P.	0-10000	1500	
O	Rpm limit slow	You set the minimum value under which the alarm for slow engine rpm appears.	0-100 [%]	80	
P	Rpm limit fast	You set the maximum value over which the alarm for fast engine rpm appears.	0-100 [%]	120	
Q	Rpm constant	Multiplicative constant with allows to calculate the rpm value from the frequency measured on the Vac of the power alternator.	0-100	30.0	

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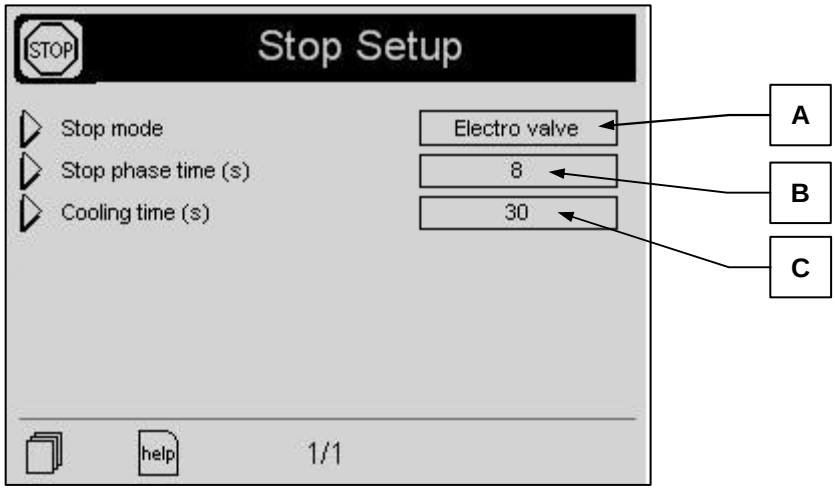
3- 4.2 Stop setup menu: M201



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
A	Stop mode	It sets the stop system (terminal J4-1) - Electrovalve: type of stop called “energize to run”, normally used with electric fuel valve connection. - Electrosolenoid: type of stop called “energize to stop”, normally used with electrosolenoid connection.	Electrovalve; Electromagnet;	Electrovalve	
B	Stop phase time	You set the maximum time of the stop phase, after which the engine must be completely stopped. It also coincides with the maximum time of supplying power to the stop electromagnet, to avoid problems due to its permanent power supply.	0-99 [s]	20	
C	Cooling time	It sets the cooling time after which the engine is stopped: after the generator contactor opening, the engine continues to run for the set time, to cool down without load.	0-255 [s]	300	

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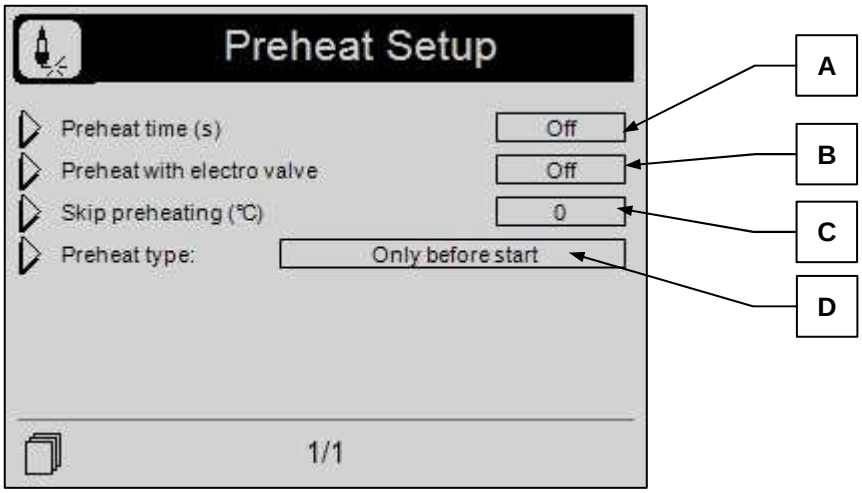
3- 4.3 Preheat setup menu: M202



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
A	Preheating time	You set the maximum glow plugs time before starting.	0-99 [s]	3	
B	Preheating with electrovalve	If ON, during preheating is also supplied the fuel electrovalve output. If OFF, during the preheating the fuel electrovalve output is not supplied.	True-False	False	
C	Skip preheating	You can set the value of the engine temperature above which are not supplied the glow-plugs before the starting, because the engine is already considered "warm".	-999 - +999 [°C]	70	
D	Preheat type	You can select the type of glow plugs: - Only Before start: the glow plug output is active only before each starting attempt. - Also during the start: the glow plugs output is active before and during each starting attempt. - Also during attempts: the glow plugs output is active before starting, during the starting and also during the pause between attempts.	Only before start - Also during the start - Also during attempts	Only before start	

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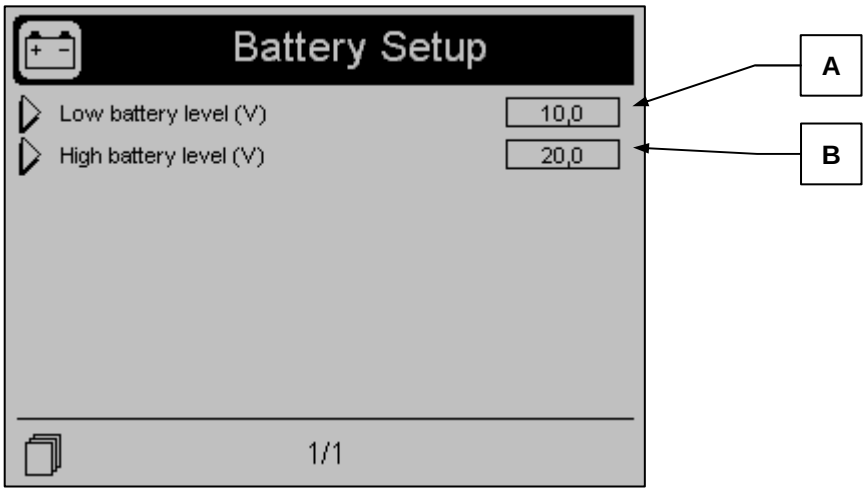
3- 4.4 Battery setup menu: M203



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
A	Low battery level	It sets the minimum battery voltage; if the battery value measured is less than this value, the “low battery alarm” is shown.	0-50 [v]	20.0	
B	High battery level	It sets the maximum battery voltage; if the battery value measured is higher than this value, the “High battery alarm” is shown.	0-50 [v]	30.0	

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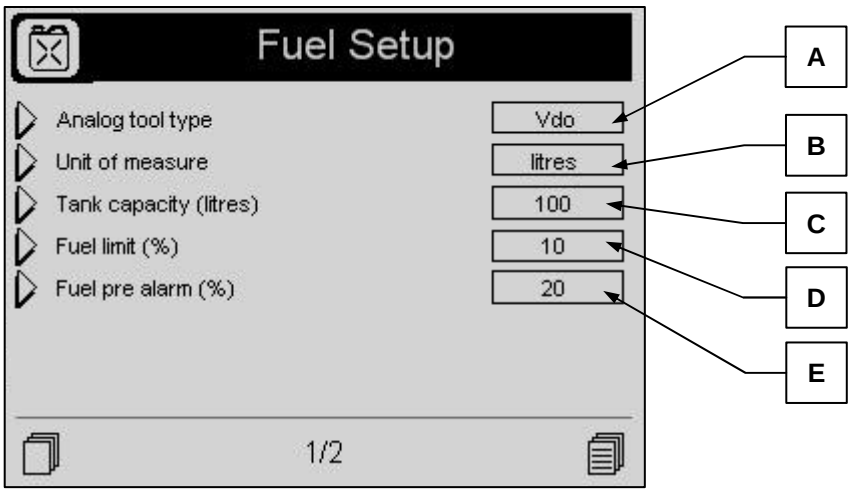
3- 4.5 Fuel setup menu: M204



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
A	Analog tool type	You select the brand of transmitter used. See appendix A to visualize the curves referred to the different types of sensor.	Vdo Veglia Datcon	Vdo	
B	Unit of measure	You select the measure unit	Litres-Gallons	Litres	
C	Tank capacity	You set the capacity of the tank	0-2000 [l]	100	
D	Fuel Limit	Value under which the display shows an alarm message (Low fuel level) that normally shuts down the generator.	0-100 [%]	10	
E	Fuel Pre-alarm	Value under which the display shows a warning message (Low fuel prealarm) that normally does not stop the generator.	0-100 [%]	20	

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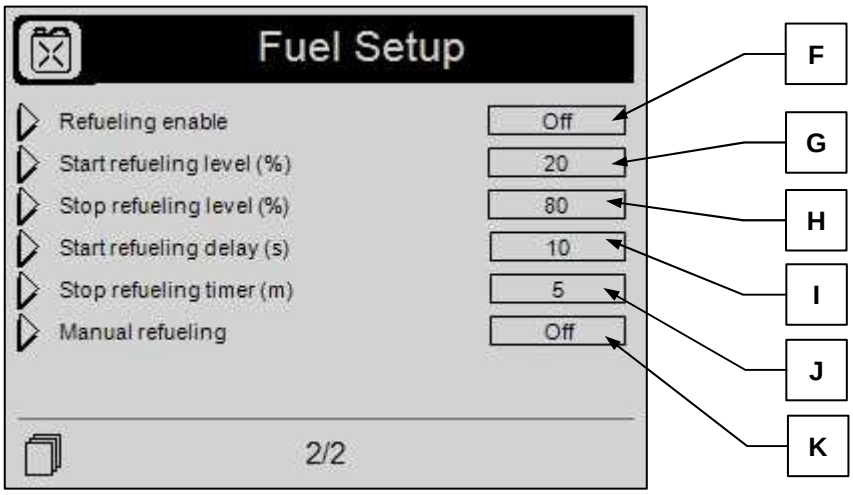

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
F	Refueling enable	This parameter allows you to activate (On) or deactivate (Off) one of the programmable outputs designed to control a pump for the automatic refilling of fuel. This automatic fuel refilling works in accordance to the setting of parameter "K". Check also paragraph 3-3.5 for the description about the programmable outputs settings.	On-Off	Off	
G	Start refueling level	It sets the fuel level below which the automatic fuel refilling starts.	0-100 [%]	20	
H	Stop refueling level	It sets the fuel level that, when reached, stops the automatic refilling.	0-100 [%]	80	
I	Start refueling delay	It 's a time delay on the refilling starting detection to avoid false signals due to possible movements of fuel sensor in the tank.	0-255 [s]	10	
J	Stop refueling timer	You set a time limit after which the refilling pump output is stopped, although the stop level was not reached. In this case an alarm (refueling timeout) will be displayed and the refueling function is stopped.	0-99 [min]	5	
K	Manual refueling	If Off, the refueling pump logic is activated only in auto mode. If On, the refueling logic is activated in both manual and auto mode.	On-Off	Off	

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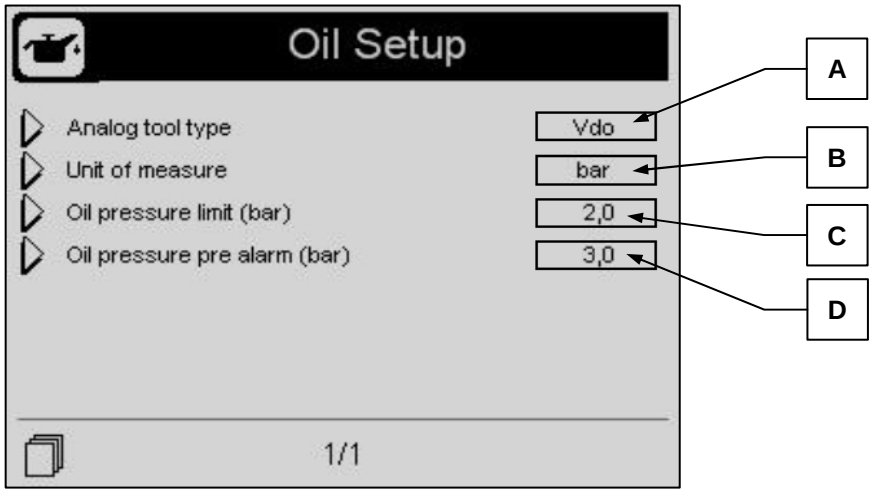
3- 4.6 Oil setup menu: M205



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
A	Analog tool type	You select the brand of transmitter used. See appendix B to visualize the curves referred to the different types of sensor.	Vdo Veglia Datcon	Vdo	
B	Unit of measure	You select the measure unit	Bar-Psi	Bar	
C	Oil pressure limit	Value under which the display shows an alarm message (Low oil pressure) that normally shuts down the generator.	1-400 [bar]	2.0	
D	Oil pressure prealarm	Value under which the display shows a warning message (Oil pressure prealarm) that normally does not stop the generator.	1-400 [bar]	3.0	

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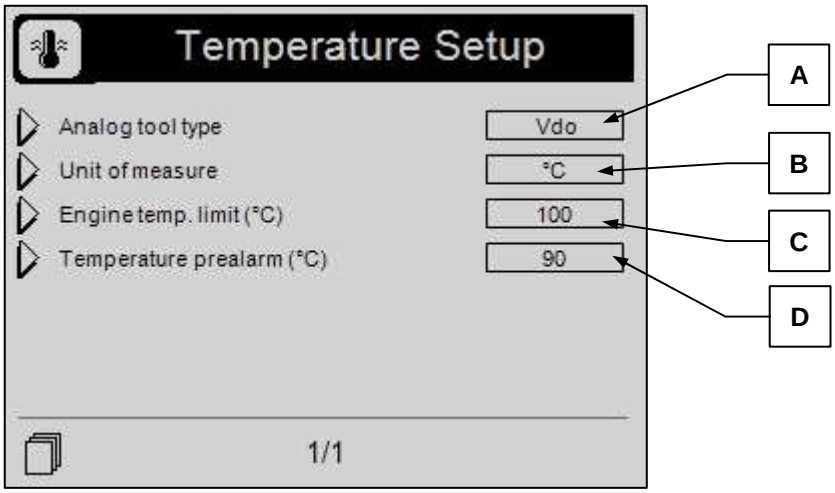
3- 4.7 Temperature setup menu: M206



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
A	Analog tool type	You select the brand of transmitter used. See appendix C to visualize the curves referred to the different types of sensor	Vdo Veglia Datcon	Vdo	
B	Unit of measure	You select the measure unit	℃ - ° F	℃	
C	Engine temperature limit	Value over which the display shows an alarm message (High engine temperature) that normally shuts down the generator after the cooling time.	40-999 [℃]	100	
D	Temperature prealarm	Value over which the display shows a warning message (Engine temperature prealarm) that normally does not stop the generator.	40-999 [℃]	90	

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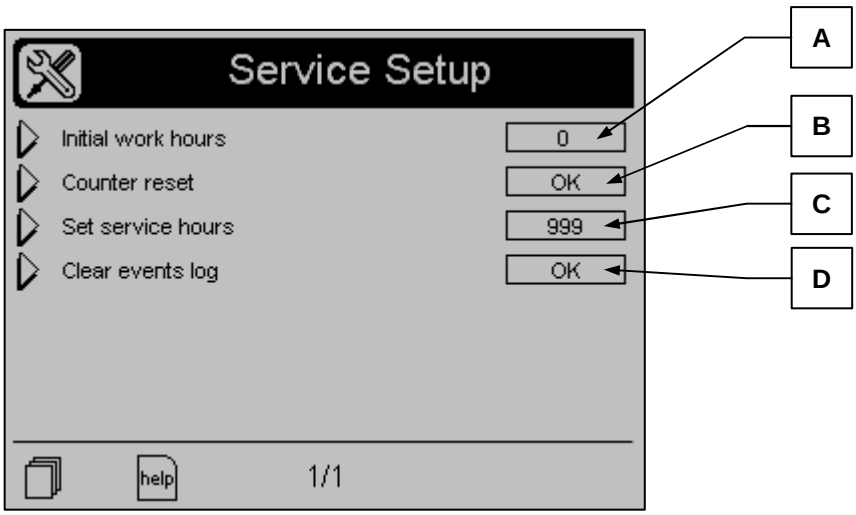
3- 4.8 Service setup menu: M207



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT VALUES	USER NOTES
A	Initial work Hours	It permits to set a number of working hours. The total work hours are automatically set to this value confirming parameter B.	0-65000 [h]	0	
B	Counter reset	Confirm with "i" this option, the hours saved are reset to value at parameter A.	Ok	-	
C	Set service hours	You can set the working hours before next service. After the service, you must set the new number of hours.	0-65000 [h]	999	
D	Clear events log	Confirm with "i" this option to clear the events list.	Ok	-	

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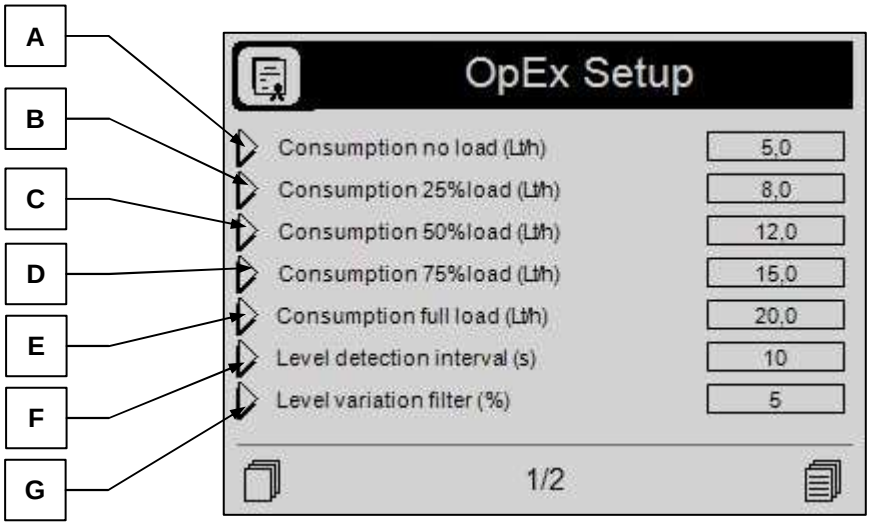
3- 4.9 OpEx setup menu: M208



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
A	Cons. no L	You can set the hourly consumption of the engine declared by the manufacturer without load. It is necessary for fuel management.	0-10000 [Lt/h]	5	
B	Cons. 25% L	You can set the hourly consumption of the engine declared by the manufacturer with 25% load. It is necessary for fuel management.	0-10000 [Lt/h]	8	
C	Cons. 50% L	You can set the hourly consumption of the engine declared by the manufacturer with 50% load. It is necessary for fuel management.	0-10000 [Lt/h]	12	
D	Cons. 75% L	You can set the hourly consumption of the engine declared by the manufacturer with 75% load. It is necessary for fuel management.	0-10000 [Lt/h]	15	
E	Cons. 100% L	You can set the hourly consumption of the engine declared by the manufacturer with 100% load. It is necessary for fuel management.	0-10000 [Lt/h]	20	
F	Level detection interval	Interval time between two consecutive fuel level detections to determine eventual leakages.	0-255 [s]	10	
G	Level variation filter	Minimum level variation for refilling and leakage detection.	0-100 [%]	5	

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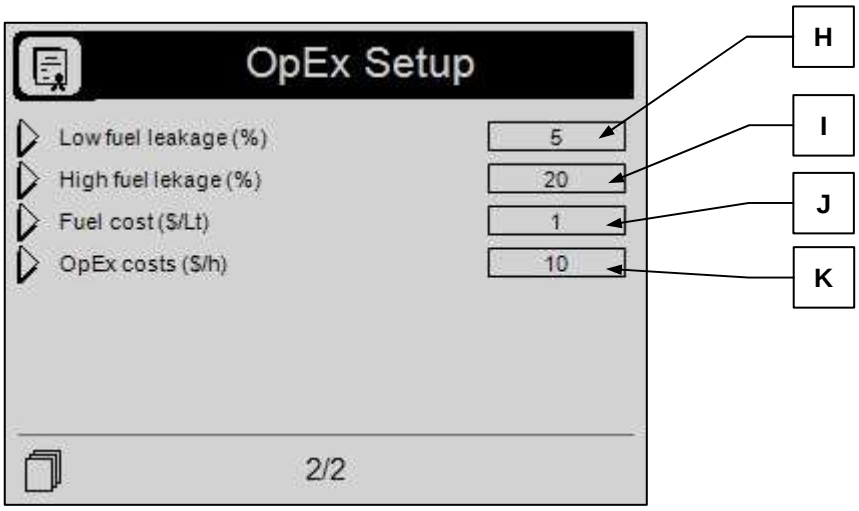

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS	USER NOTES
H	Low fuel leakage	If the fuel decreases more than this value with engine not running in the “level detection interval” time (parameter F), the controller shows the fuel low leakage alarm. This value must be equal or higher than parameter G.	0-100 [%]	5	
I	High fuel leakage	If the fuel decreases more than this value in the “level detection interval” time (parameter F), the controller shows the fuel high leakage alarm. This value must be equal or higher than parameter G.	0-100 [%]	20	
J	Fuel cost	Cost of the fuel for each liter.	0-65535 [$/Lt]	1	
K	OpEx cost	Average maintenance cost for each hour of work.	0-65535 [$/h]	10	

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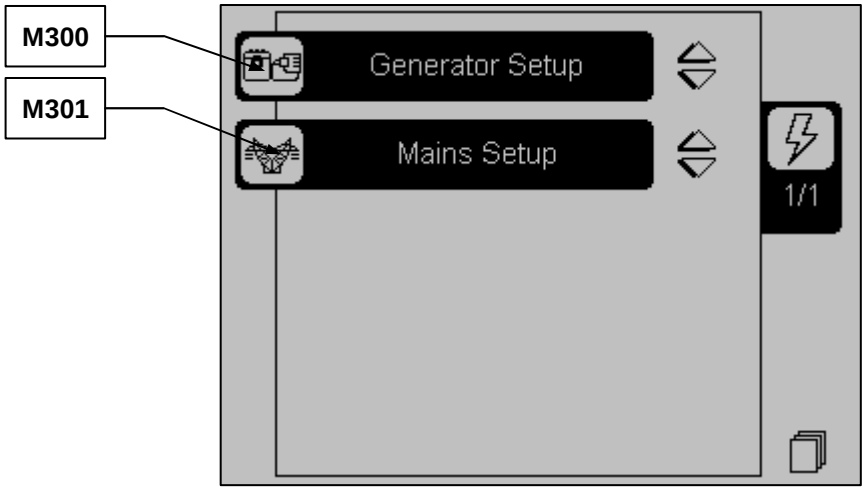
3- 5 Electrical setup menu description: M-03



POS.	NAME	DESCRIPTION
M300	Generator setup	It includes all the electrical parameters about the genset, as voltage, frequency, alarms thresholds, power settings, load/unload ramps
M301	Mains setup	It includes all the electrical parameters about the mains, as alarms thresholds, power settings, load/unload ramps, power factor management

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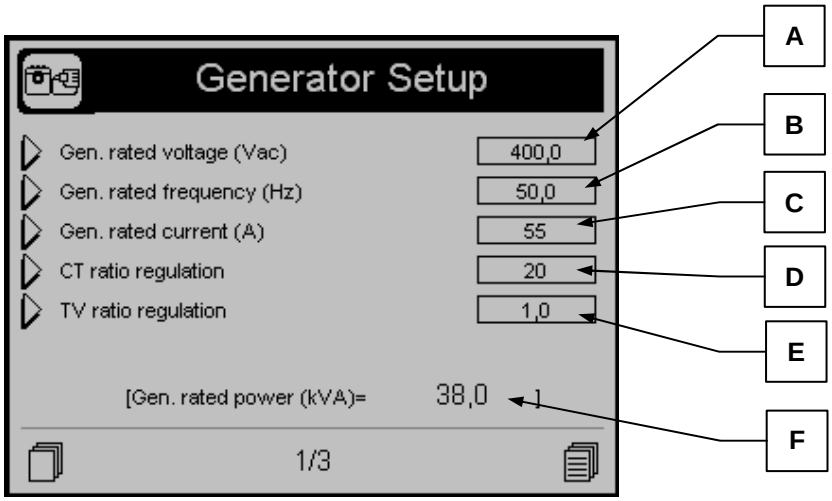
3- 5.1 Generator setup menu: M300



POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
A	Gen. rated voltage	It permits to set the nominal phase voltage of the generator.	0-10000 [v]	400.0	
B	Gen. rated frequency	It permits to set nominal frequency of the generator.	40-70 [Hz]	50.0	
C	Gen. rated current	It permits to set the nominal current of the generator.	0-9999 [A]	55	
D	CT ratio regulation	It permits to set the Current Transformers ratio, in accordance to the current transformers installed. For example, if you install current transformers 400/5A, you must set this parameter to “80” (because 400 : 5 = 80).	0-10000	20	
E	TV ratio regulation	It permits to set the Voltage Transformers ratio, in accordance to the transformers used for example in case of “medium voltage” applications. For example, if you install voltage transformers 10000/400V, you must set parameter to “25” (because 10000 : 400 = 25).	1-999999	1.0	
F	Gen. rated power	It shows the generator rated power in kVA, calculated in accordance to the settings of rated voltage and current.	-	-	

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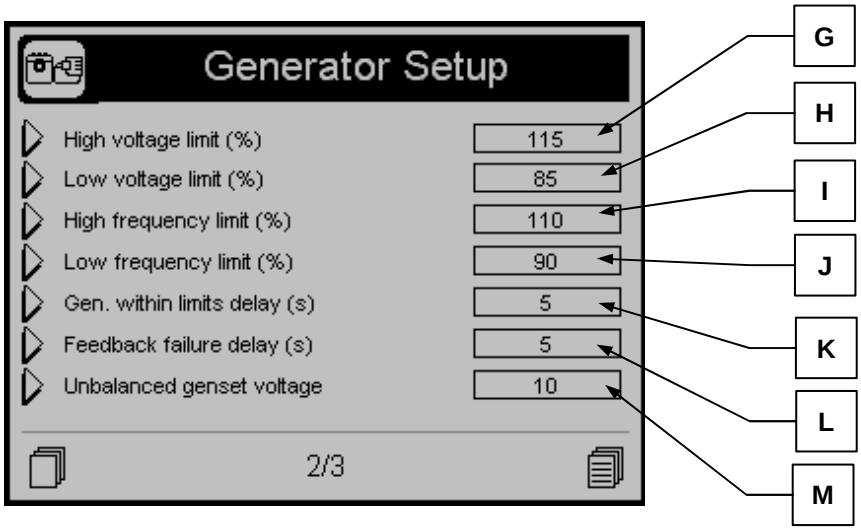

POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
G	High voltage limit	If the generator voltage is higher than this value, TE808 shows the alarm and the generator is considered out of limits.	100-200 [%]	115	
H	Low voltage limit	If the generator voltage is lower than this value, TE808 shows the alarm and the generator is considered out of limits.	0-100 [%]	85	
I	High frequency limit	If the generator frequency is higher than this value, TE808 shows the alarm and the generator is considered out of limits.	100-200 [%]	110	
J	Low frequency limit	If the generator frequency is lower than this value, TE808 shows the alarm and the generator is considered out of limits.	0-100 [%]	90	
K	Gen.within limits delay	After the generator starting, if the voltage and frequency conditions remain inside the programmed thresholds (points G,H,I,J) for this time, the genset is considered stable and the synchronization procedure begins.	0-65000 [s]	30	
L	Feedback failure delay	When the TE808 closes its contact to insert the synchronized generator on the load, it waits the feedback signal from the switch as confirmation. If after this delay time from the closure command, feedback signal is not detected, the TE808 shows the alarm and stops the generator.	0-255 [s]	5	
M	Unbalanced genset voltage	It is the protection about the difference (in percentage) between higher and lower voltage values detected on the genset. If the difference is higher than this percentage, the controller shows the "genset unbalanced voltage" alarm.	0-100 [%]	10	

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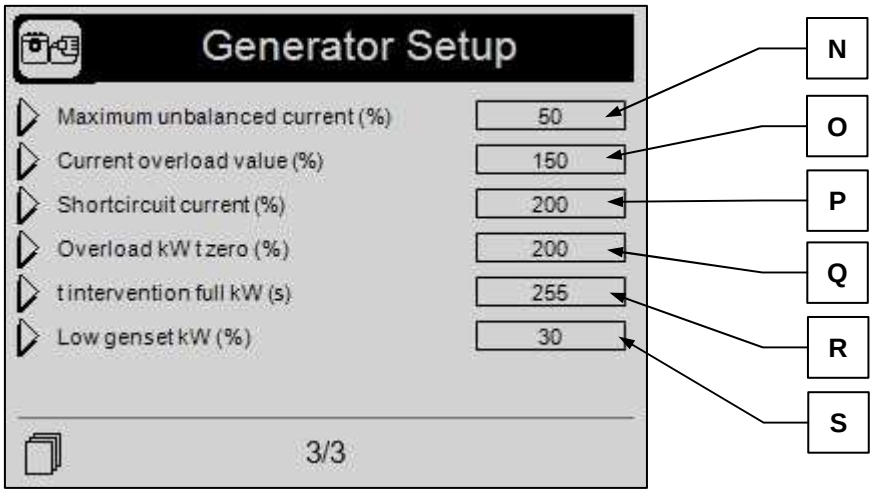

POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
N	Maximum unbalanced current	If the difference in percentage between the phase with the max current consumption and the phase with the minimum current consumption is higher than this value, the board shows “Unbalanced load” alarm and it stops the generator.	0-100 [%]	50	
O	Current overload value	Percentage value referred to the nominal current value to activate the current overload alarm.	0-1000 [%]	150	
P	Short circuit current	Percentage value referred to the nominal current value to activate the short circuit alarm.	0-1000 [%]	200	
Q	Overload kW t zero	kW overload level with 0s intervention time.	100-300 [%]	200	
R	T intervention full kW	kW overload intervention time at 101% of genset rated active power.	0-255 [s]	255	
S	Low genset kW	Minimum genset active power.	0-100 [%]	5	

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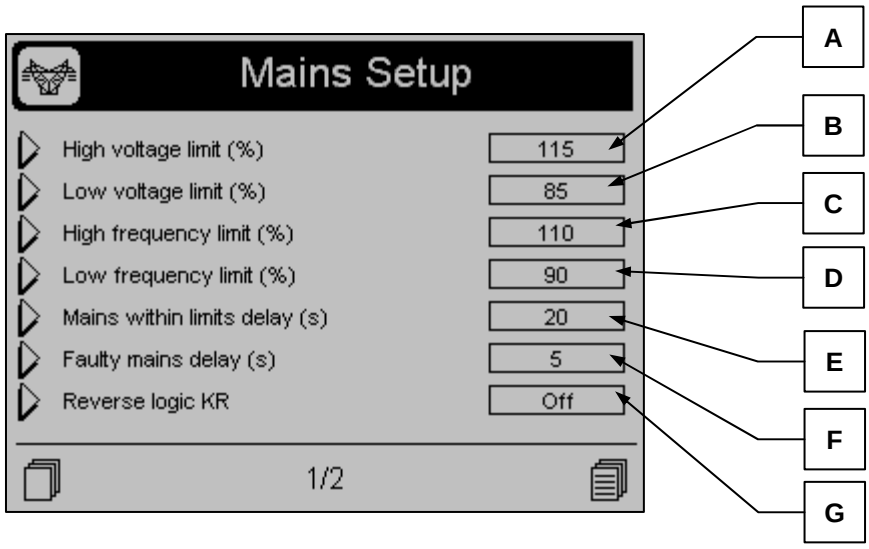
3- 5.2 Mains setup menu: M301



POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
A	High voltage limit	If the mains voltage is higher than this value, TE808 shows the alarm.	100-200 [%]	115	
B	Low voltage limit	If the mains voltage is lower than this value, TE808 shows the alarm.	0-100 [%]	85	
C	High frequency limit	If the mains frequency is higher than this value, TE808 shows the alarm.	100-120 [%]	110	
D	Low frequency limit	If the mains frequency is lower than this value, TE808 shows the alarm.	0-100 [%]	90	
E	Mains within limits delay	After a mains failure, when the mains comes back, TE808 waits this time to check the stability. After this time, TE808 drives the generator and when it is synchronized with the mains, it closes the mains interface.	0-600 [s]	20	
F	Faulty mains delay	If one of the values of the mains is not in the set limits (point A, B, C, D) for this time, the TE808 considers the mains as faulty.	0-600 [s]	5	
G	Reverse logic KR	Mains contactor logic is normally open if Off and normally closed if On. If it is set to "ON", it means "normally closed mains contactor", and the output (terminals J6-5 and J6-6) is activated (closed) to open the contactor.	On - Off	Off	

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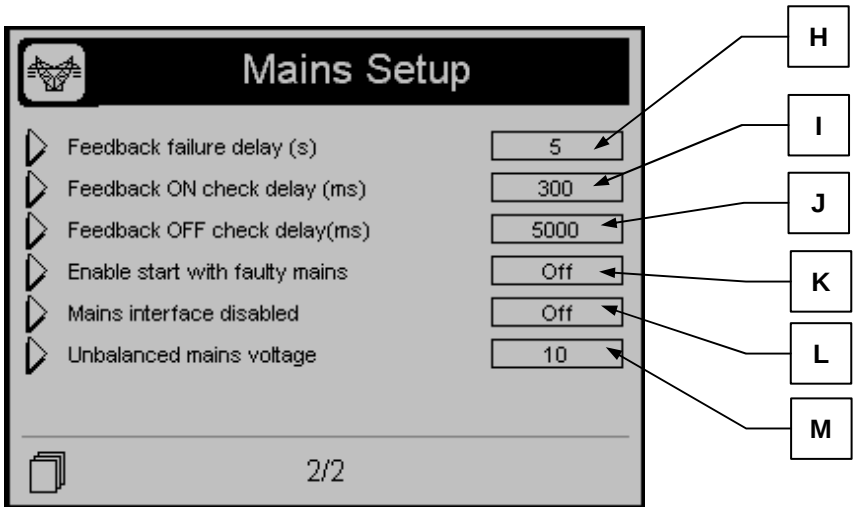

POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
H	KR Feedback alarm delay	When the TE808 closes its contact to insert the mains on the system after a mains failure, it waits the feedback signal from the switch KR as confirmation. If after this delay time from the closure command the feedback signal is not detected, the TE808 shows the alarm.	0-255 [s]	5	
I	Feedback On check delay	Set the check delay on mains feedback when mains contactor output is activated.	0-10000 [ms]	300	
J	Feedback Off check delay	Set the check delay on mains feedback when mains contactor output is deactivated.	0-10000 [ms]	5000	
K	Enable start with faulty mains	It permits the automatic start of the generator if the mains is not detected or if it is detected faulty.	On-Off	Off	
L	Mains interface disabled	It permits to set if the TE808 must command and control the mains switch (or interface) and its feedback. If set to ON, this management is disabled and the TE808 doesn't control the mains interface. If set to OFF, the mains power switching device is managed by the TE808.	On-Off	Off	
M	Unbalanced mains voltage	It is the protection about the difference (in percentage) between higher and lower voltage values detected on the mains. If the difference is higher that this percentage, the controller shows the "mains unbalanced voltage" alarm.	0-100 [%]	10	

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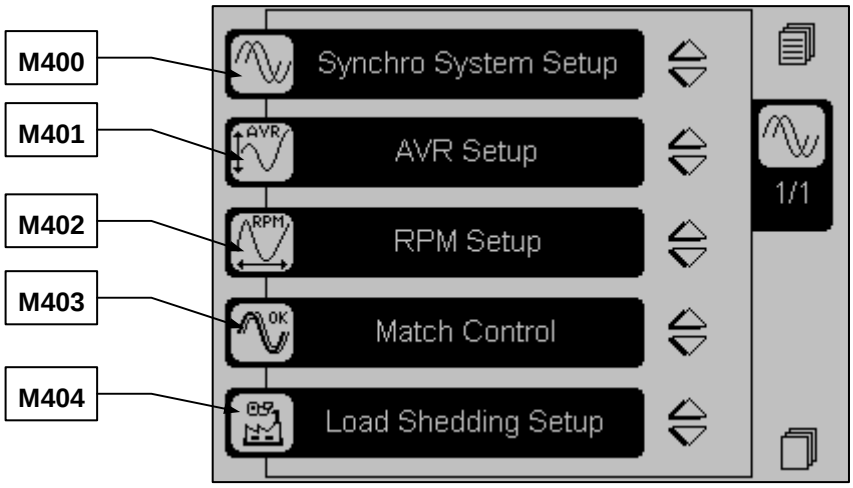
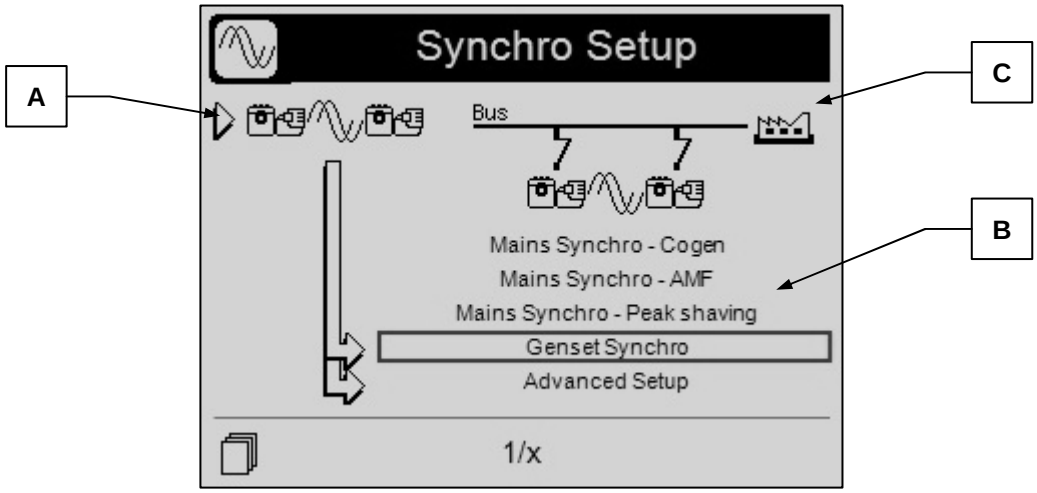
3- 6 Synchro setup menu description: M-04



POS.	NAME	DESCRIPTION
M400	Synchro system setup	It permits to set general info about hte system Generator number, synchro with or without mains, etc)
M401	AVR setup	It permits to set AVR parameters, about voltage regulator control
M402	RPM setup	It permits to set RPM parameters, about frequency regulator control
M403	Match control	It permits to set the better conditions about the synchro matching
M404	Load shedding setup	It permits to activate and manage the load-shedding function

3- 6.1 Synchro system setup menu: M400

In this section it's possible to select the type of system used.



1) Choose the synchronization type: synchro between gensets or synchro between genset and mains. Press the down arrow to highlight the left-up icon (A). Press the "i" button to confirm and use the left and right arrows to select the desired type of synchronization (gensets or mains). Then confirm with "i".
2) Proceed to select the type of system that you want to realize. This choice depends on the type of synchro that you chase in the previous operation. Press the down arrow to highlight the first type of system allowed, then use the up and down arrows to select the desired system (B). A picture on the right-up corner (C) will show graphically the type of system. Confirm with "i" button to directly go to the menu with the parameters necessary for that type of system. Independently by the type of synchro selected, you can also enter inside the advanced setup (protected by password). **Warning: in the advanced setup, only special functions are available. Changes inside this menu can affect the proper work of the controller.**

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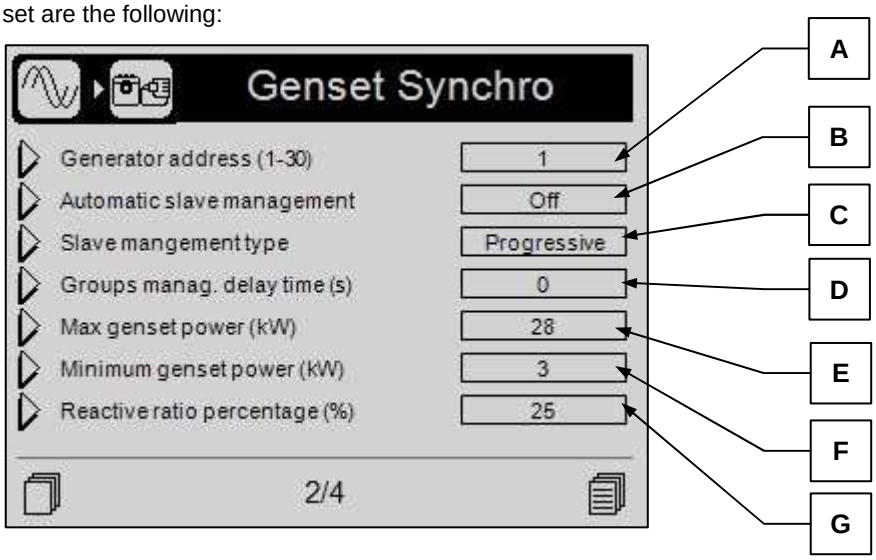
3- 6.1.1 Genset synchro setup

Selecting this type of system you can realize one of the following (introduced at paragraph 2.3):

- 2- 3.1.1 Load sharing without start/stop management (set parameter B to Off)
- 2- 3.1.2 Load sharing with dynamic or progressive start/stop (set parameter B to On)

The parameters that you will have to set are the following:



POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
A	Generator address	Set the number of the genset: each TE808 controller must have a different number.	1-30	1	
B	Automatic slave management	If set to ON, you enable the start/stop sequence in accordance to the load power consumption; check following parameter description (point C). If set to OFF, all the gensets work together and share the load, without any automatic start/stop sequence.	Off-On	Off	
C	Slave management type	This parameter is enabled only if the “Automatic slave management” on previous parameter "B" is set to ON. If set to “PROGRESSIVE”, generators start/stop sequence (in accordance to the power consumption) follows the gensets ID numbers (point “A”). In case of power consumption increasing, it will be started the standby generator with lower ID number; in case of power consumption decreasing, it will be stopped the running generator with higher ID number. If set to “DYNAMIC”, generators start/stop sequence (in accordance to the power consumption) follows the gensets working hours. In case of power consumption increasing, it will be started the standby generator with lower working hours; in case of power consumption decreasing, it will be stopped the running generator with higher working hours.	Progressive - Dynamic	Progressive	
D	Groups managing delay time	It is the time limit about the automatic start request for load power consumption increasing: if after this time the TE808 master doesn’t see a reply from a TE808 slave (via communication channel) about the succesfull starting of next genset for power increasing request, this request is automatically sent to another standby genset.	0-65000 [s]	0	
E	Max active power	It permits to set the maximum active power of the generator.	0-65000 [kW]	28	
F	Minimum genset power	It’s the value that the board must reach when it downloads this genset. When this value is reached, the board opens the breaker, then the cooling time begins; if this value is not reached, the breaker opens after delay set at point "Q".	0-5000 [kW]	3	
G	Reactive ratio percentage	It’s the maximum reactive power in percentage acceptable in the system.	20-50 [%]	25	

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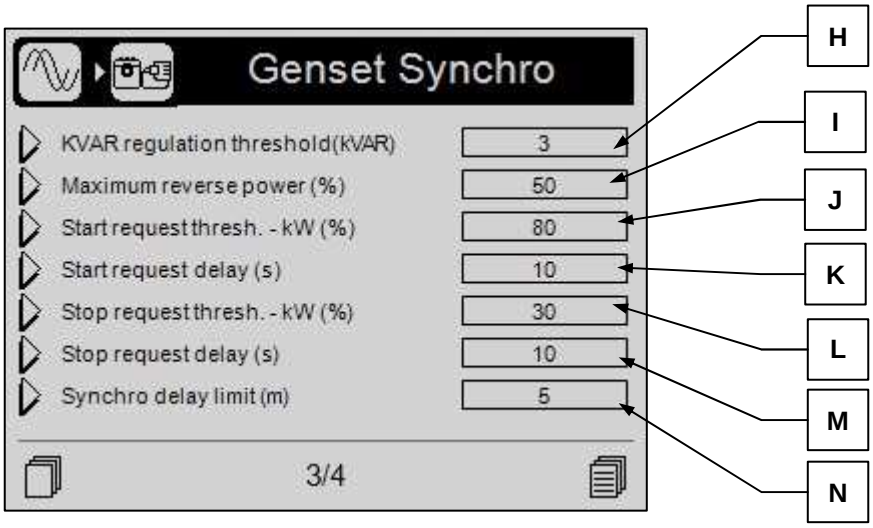

POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
H	kVAR regulation threshold	Is the maximum reactive power accetable in a system with more generators synchronized. The TE808 tries to regulate the generator to obtain a reactive power lower than this value. Then it tries to maintain the reactive power (in percentage of the total reactive power) to a level lower than the value set at parameter G. Normally is suggested a value of 1/20 of the max active power (point “E”).	0-65000 [kVAR]	3	
I	Maximum reverse power	If the generator active power is negative and its value is higher than this parameter, the “Reverse power” alarm is shown and the generator is stopped.	0-100 [%]	50	
J	Start request threshold – kW	It permits to set the maximum power acceptable in the system. The TE808 master calculates the total power available in the system (it sums the nominal active power values of all the working gensets). When the load consumption is higher than this value (in percentage), automatically another genset starts, synchronizes and shares the load (only if previous point "B" is set to ON). Check also previous point "C" about the start/stop sequence.	0-100 [%]	80	
K	Start request delay	The load consumpion must be higher than the previous parameter “J” at least for this time, to begin the generator starting sequence.	0-255 [s]	10	
L	Stop request threshold - kW	It permits to set the minimum power acceptable in the system. The TE808 master calculates the total power available in the system (it sums the nominal active power values of all the working gensets). When the load consumption is lower than this value (in percentage), automatically one genset is downloaded and stopped after the cooling time (only if previous point "B" is set to ON). Check also previous point "C" about the start/stop sequence.	0-100 [%]	30	
M	Stop request delay	The load consumption must be lower than the previous parameter “L” at least for this time, to begin generator stopping sequence.	0-255 [s]	10	
N	Synchro delay limit	When the synchronization procedure begins, the generator insertion on the load (synchronization) must happen before this expiration time. If not, TE808 shows the alarm because the synchro conditions are not reached and the synchronization fails.	0-59 [m]	5	

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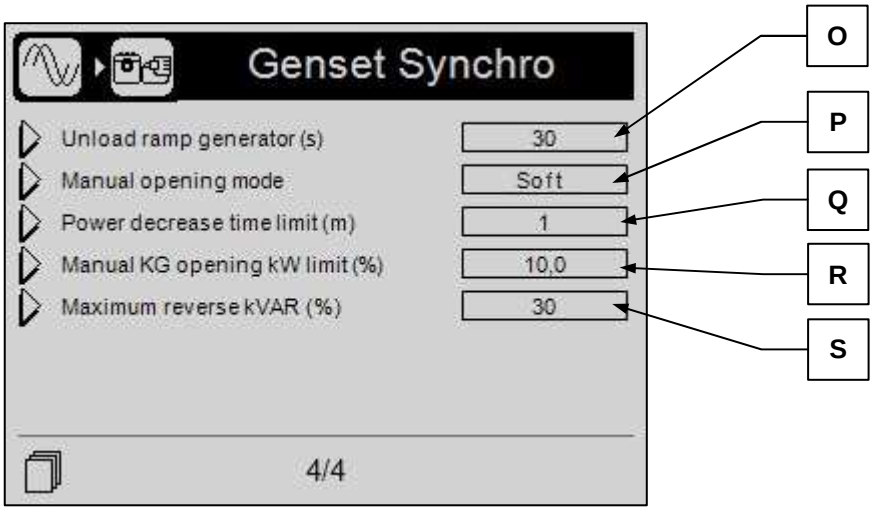

POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
O	Un-load ramp time gen	When the generator is stopped manually (by soft-stop procedure) or automatically (in case of “low load power consumption", or in case of mains return, etc), its power is downloaded completely on other sources of the system in this time; when completely unloaded (or time at point "Q" is expired), the generator will be stopped by the TE808.	0-2000 [s]	30	
P	Manual opening mode	It permits to prevent operator mistakes when the generator is working. -If “direct” option is selected, when the operator tries to stop manually the synchronized generator (with part of the load shared on it), TE808 opens immediately the switch and begins the stopping procedure. Therefore, its load passes immediately on the other sources of the system -If “soft” option is selected, when the operator tries to stop manually the synchronized generator (with part of the load shared), TE808 discharges the power by “unload ramp time” (or it waits the expiration time on at point "Q"), then it opens the power switch and it begins the stopping procedure.	Direct-Soft	Soft	
Q	Power decrease time limit	When a "power download" procedure begins, if the generator doesn't reach the minimum active power value (point “F”) before this time, anyway the TE808 opens the genset breaker and begins the stopping procedure.	0-59 [min]	1	
R	Manual KG opening Kw limit	If the load connected on generator is greater than this percentage value calculated on nominal kWatt set (point "E"), the opening of genset breaker in manual mode will not be allowed and a message will be displayed to inform the user that the load must be reduced before open the contactor. Ex. Nominal kW = 50kW, Manual opening thresh. = 10% Load must lower than 5 kW to open KG with “On/Off” button in manual mode.	0-100 [%]	10	
S	Max reverse KVAR	If the generator reactive power is negative and its value is higher than this parameter, the “Reactive reverse power” alarm is shown and the generator is stopped. It is calculated and compared to the value set as "max active power" at point "E". By this if parameter "E" is set at 200kW and you set this parameter at 10%, the maximum reactive reverse power admitted is equal to "-20kVAR".	0-100 [%]	30	

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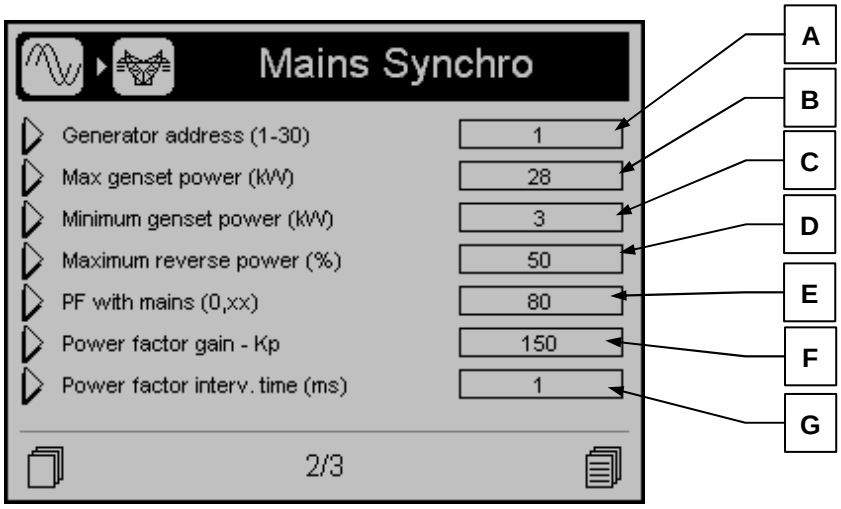
3- 6.1.2 Mains synchro - Cogen

Selecting this type of system you can realize the following system (introduced at paragraph 2.3):

- 2- 3.2.1 Simultaneous load supply - Cogen

The parameters that you will have to set are the following:



POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
A	Generator address	Set the number of the genset: each TE808 controller must have a different number.	1-30	1	
B	Max active power	It permits to set the active power of the generator supplied to the mains.	0-65000 [kW]	28	
C	Minimum genset power	Is the value that the board must reach when it downloads this genset (for a soft-stop procedure coused by user stopping or by remote start de-activation). When this value is reached, the board opens the breaker, then it begins the cooling time; if this value is not reached, the breaker opens after delay at point "M".	0-5000 [kW]	3	
D	Maximum reverse power	If the generator active power is negative and its value is higher than this parameter, the “Reverse power” alarm is shown and the generator is stopped.	0-100 [%]	50	
E	Power Factor with mains	It permits to set the average power factor of the system, when one or more generators are synchronized with the mains. This parameter is not controlled during the synchronization between gensets. The parameter is shown in 1/100 of value: for sample, if you want to set power factor value at 0,80, you must set parameter at "80". Check also following parameter "N" about "capacitive" or "inductive" loads.	50-100	80	
F	Power factor gain - Kp	Is the proportional correction gain to the output power factor that is proportional to the current error value. Higher values mean quicker controls.	10-1000	150	
G	Power factor intervention time	Synchronoscope regulation – delay time between PID samples, higher values mean slower controls.	0-1000 [ms]	1	

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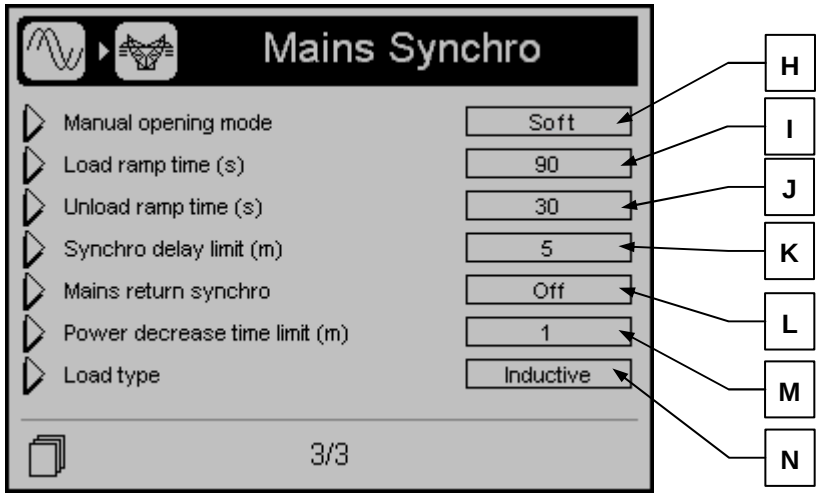

POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
H	Manual opening mode	It permits to prevent operator mistakes when the generator is working. -If “direct” option is selected, when the operator tries to stop manually the synchronized generator (with part of the load shared on it), TE808 opens immediately the switch and begins the stopping procedure. Therefore, its load passes immediately on the other sources of the system. -If “soft” option is selected, when the operator tries to stop manually the synchronized generator that supplies power to the mains, automatically the TE808 controller discharges the power by “unload ramp time” (or it waits the expiration time at point "M"), then it opens the power switch and begins the stopping procedure.	Direct-Soft	Soft	
I	Load ramp time	When the working generator is synchronized and the mains is re-closed on the load after a mains failure, power sharing to the mains is reached after this time.	0-2000 [s]	90	
J	Un-load ramp time	When the mains must be opened for system programmation requirements, this un-load ramp time is applied, power is shared on the other sources, then the mains switch is opened.	0-2000 [s]	30	
K	Synchro delay limit	When the synchronization procedure begins, the generator insertion on the load must happen before this expiration time. If not, TE808 shows the alarm because the synchronization is failed.	0-59 [m]	5	
L	Mains return synchro	It permits to decide the type of synchro with mains. If ON, when the mains comes back, the genset is synchronized to the mains and it will be stopped only when the mains assumes completely the entire load. If OFF, genset and mains work permanently synchronized and with the load shared.	Off-On	Off	
M	Power decrease time limit	When a "power download" procedure begins, if the generator doesn't reach the minimum active power value (point C) before this time, anyway the TE808 opens the genset breaker and begins the stopping procedure.	0-59 [min]	1	
N	Load type	It permits to decide if the load is "Capacitive" type or "Inductive" type. This setting changes the "-/+" sign about previous parameter "E"; in case of "Capacitive" setting, the power factor at parameter "E" is considered for example -0,80 and in case of "Inductive" setting, the power factor at parameter "E" is considered for example +0,80.	Capacitive or Inductive	Inductive	

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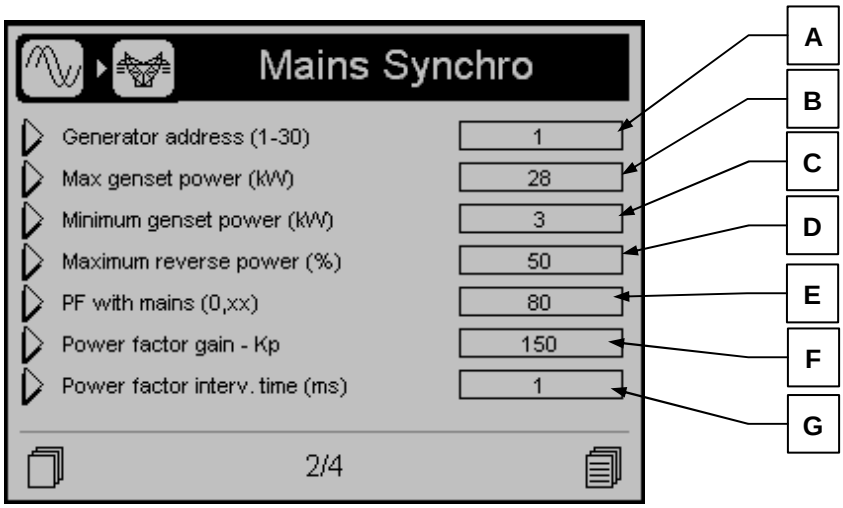
3- 6.1.3 Mains synchro - AMF

Selecting this type of system you can realize the following system (introduced at paragraph 2.3):

- 2- 3.2.2 Auto mains failure no break

The parameters that you will have to set are the following:



POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
A	Generator address	Set the number of the genset: each board must have a different number.	1-30	1	
B	Max active power	It permits to set the maximum active power of the generator.	0-65000 [kW]	28	
C	Minimum active power	Is the value that the board must reach when it downloads this genset. When this value is reached, the board opens the breaker, then it begins the cooling time; if this value is not reached, the breaker opens after delay as for point "O".	0-5000 [kW]	3	
D	Maximum reverse power	If the generator active power is negative and its value is higher than this parameter, the “Reverse power” alarm is shown and the generator is stopped.	0-100 [%]	50	
E	Power Factor with mains	It permits to set the average power factor of the system, when one or more generators are synchronized with the mains. This parameter is not controlled during the synchronization between gensets. The parameter is shown in 1/100 of value: for sample, if you want to set power factor value at 0,80, you must set parameter at "80". Check also following parameter "P" about "capacitive" or "inductive" loads.	50-100	80	
F	Power factor gain - Kp	Is the proportional correction gain to the output power factor that is proportional to the current error value. Higher values mean quicker controls.	10-1000	150	
G	Power factor intervention time	Synchronoscope regulation – delay time between PID samples, higher values mean slower controls.	0-1000 [ms]	1	

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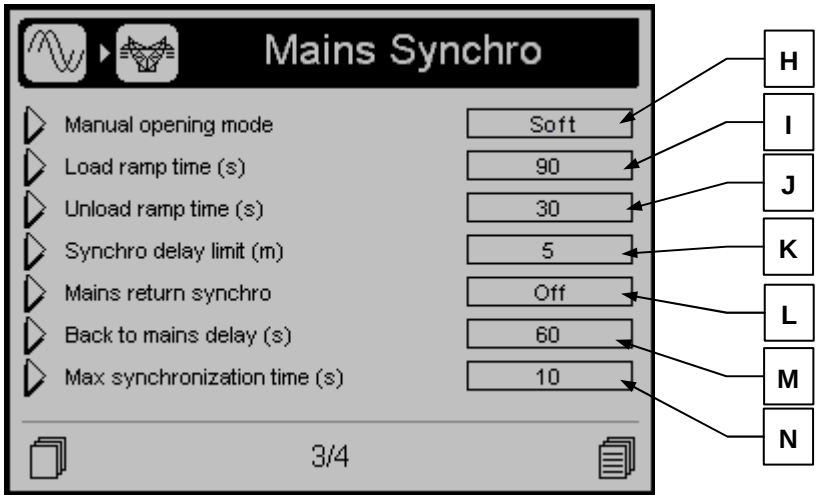

POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
H	Manual opening mode	It permits to prevent operator mistakes when the generator is working. -If “direct” option is selected, when the operator tries to stop manually the synchronized generator (with part of the load shared on it), TE808 opens immediately the switch and begins the stopping procedure. Therefore, its load passes immediately on the other sources of the system. -If “soft” option is selected, when the operator tries to stop manually the synchronized generator that supplies power to the mains, automatically the TE808 controller discharges the power by “unload ramp time” (or it waits the expiration time at point "O"), then it opens the power switch and it begins the stopping procedure.	Direct-Soft	Soft	
I	Load ramp time	When the working generator is synchronized and the mains is re-closed on the load after a mains failure, power sharing to the mains is reached after this time	0-2000 [s]	90	
J	Un-load ramp time	When the mains must be opened for system programmation requirements, this un-load ramp time is applied, power is shared on the other sources, then the mains switch is opened.	0-2000 [s]	30	
K	Synchro delay limit	When the synchronization procedure begins, the generator insertion on the load must happen before this expiration time. If not, TE808 shows the alarm because the synchronization is failed.	0-59 [m]	5	
L	Mains return synchro	It permits to decide the type of synchro with mains. If ON, when the mains comes back, the genset is synchronized to the mains and it will be stopped only when the mains assumes completely the entire load. If OFF, genset and mains works permanently synchronized and with the load shared.	Off-On	Off	
M	Back to mains delay	If the mains is controlled by an external protection device, TE808 waits a signal from this device to consider the mains in good conditions. Before starting the synchronization procedure between the generator and mains, the system waits this time.	0-300 [s]	60	
N	Maximum synchronization time	In a system with genset starting for mains failure, it works untill the mains come back. When the mains is detected, the genset is synchronized to the mains then the mains switch is closed. Genset and mains work in synchro mode for this time, then the generator is unloaded, its breaker KG is opened then, after the cooling time, the generator is stopped.	0-59 [s]	10	

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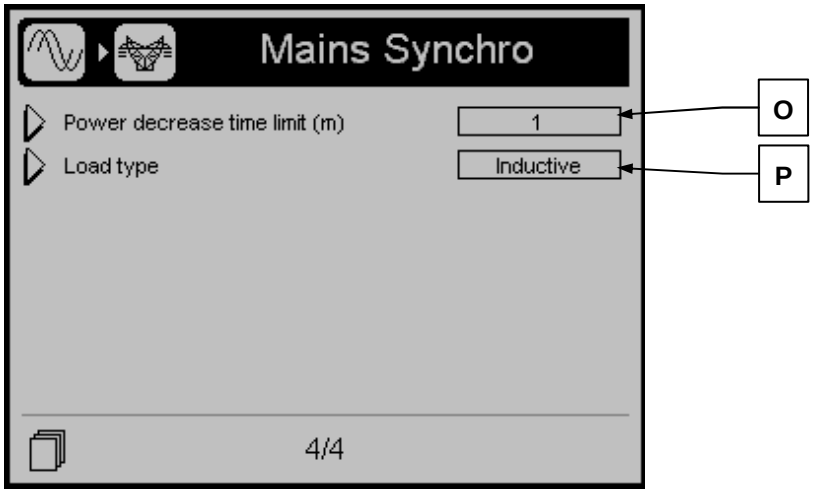

POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
O	Power decrease time limit	When a "power download" procedure begins, if the generator doesn't reach the minimum active power value (point C) before this time, anyway the TE808 opens the genset breaker and begins the stopping procedure.	0-59 [min]	1	
P	Load type	It permits to decide if the load is "Capacitive" type or "Inductive" type. This setting changes the "-/+" sign about previous parameter "E"; in case of "Capacitive" setting, the power factor at parameter "E" is considered for example -0,80 and in case of "Inductive" setting, the power factor at parameter "E" is considered for example +0,80.	Capacitive or Inductive	Inductive	

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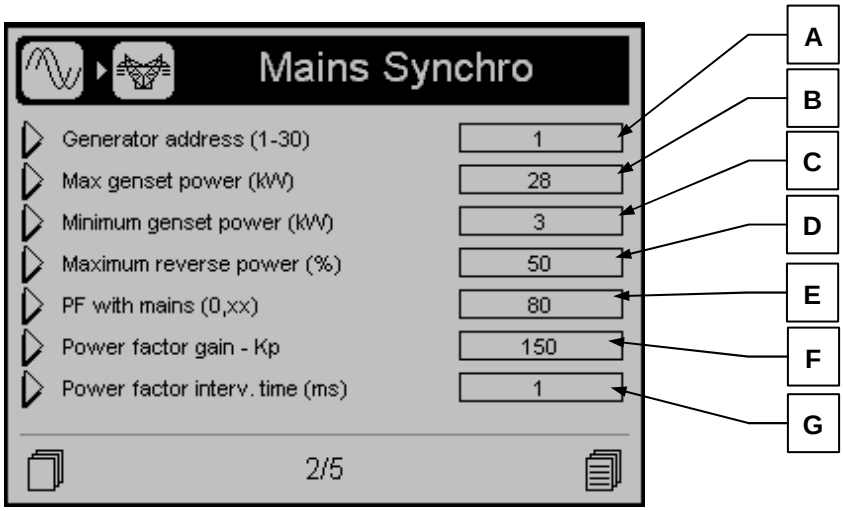
3- 6.1.4 Mains synchro - Peak shaving

Selecting this type of system you can realize the following system (introduced at paragraph 2.3):

- 2- 3.3 Synchro between mains and 1 generator, without interface control

The parameters that you will have to set are the following:



POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
A	Generator address	Set the number of the genset: each board must have a different number.	1-30	1	
B	Max active power	It permits to set the maximum active power of the generator.	0-65000 [kW]	28	
C	Minimum active power	Is the value that the board must reach when it downloads this genset. When this value is reached, the board opens the breaker, then it begins the cooling time; if this value is not reached, the breaker opens after delay as for point "W".	0-5000 [kW]	3	
D	Maximum reverse power	If the generator active power is negative and its value is higher than this parameter, the “Reverse power” alarm is shown and the generator is stopped.	0-100 [%]	50	
E	Power Factor with mains	It permits to set the average power factor of the system, when one or more generators are synchronized with the mains. This parameter is not controlled during synchronization between gensets. The parameter is shown in 1/100 of value: for sample, if you want to set power factor value at 0.80, you must set parameter at "80". Check also following parameter "X" about "capacitive" or "inductive" loads.	50-100	80	
F	Power factor gain - Kp	Is the proportional correction gain to the output power factor that is proportional to the current error value. Higher values mean quicker controls.	10-1000	150	
G	Power factor intervention time	Synchronoscope regulation – delay time between PID samples, higher values mean slower controls.	0-1000 [ms]	1	

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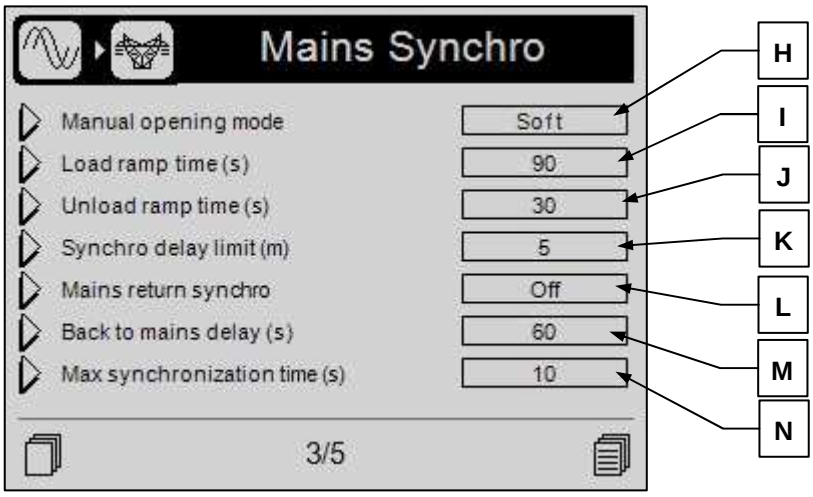

POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
H	Manual opening mode	It permits to prevent operator mistakes when the generator is working. -If “direct” option is selected, when the operator tries to stop manually the synchronized generator (with part of the load shared on it), TE808 opens immediately the switch and begins the stopping procedure. Therefore, its load passes immediately on the other sources of the system. -If “soft” option is selected, when the operator tries to stop manually the synchronized generator that supplies power to the mains, automatically the TE808 controller discharges the power by “unload ramp time” (or it waits the expiration time at point "W"), then it opens the power switch and it begins the stopping procedure.	Direct-Soft	Soft	
I	Load ramp time	When the working generator is synchronized and the mains is re-closed on the load after a mains failure, power sharing to the mains is reached after this time	0-2000 [s]	90	
J	Un-load ramp time	When the mains must be opened for system programmation requirements, this un-load ramp time is applied, power is shared on the other sources, then the mains switch is opened.	0-2000 [s]	30	
K	Synchro delay limit	When the synchronization procedure begins, the generator insertion on the load must happen before this expiration time. If not, TE808 shows the alarm because the synchronization is failed.	0-59 [m]	5	
L	Mains return synchro	It permits to decide the type of synchro with mains. If ON, when the mains comes back, the genset is synchronized to the mains and it will be stopped only when the mains assumes completely the entire load. If OFF, genset and mains works permanently synchronized and with the load shared.	Off-On	Off	
M	Back to mains delay	If the mains is controlled by an external protection device, TE808 waits a signal from this device to consider the mains in good conditions. Before starting the synchronization procedure between the generator and mains, the system waits this time.	0-300 [s]	60	
N	Maximum synchronization time	In a system with genset starting for mains failure, it works until the mains come back. When the mains is detected, the genset is synchronized to the mains then the mains switch is closed. Genset and mains work in synchro mode for this time, then the generator is unloaded, its breaker KG is opened then, after the cooling time, the generator is stopped.	0-59 [s]	10	

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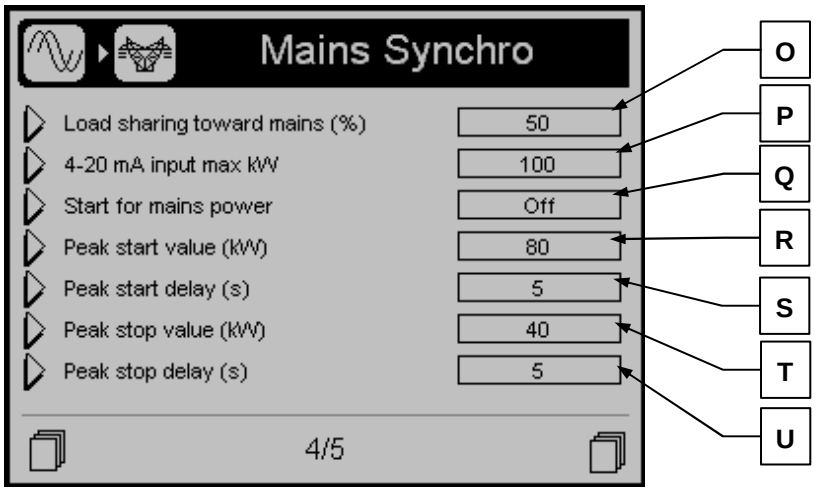

POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
O	Load sharing toward mains	This parameter allows to fix the power supplied by the mains. All the remaining power requested by the load is supplied by the genset. Load percentage supplied by mains side is measured with 4-20mA input on J7 connector (terminals 3 and 4; this current input must be insulated). The value set at this parameter is compared to the 4-20mA conversion parameter (next point P). If you set this parameter at 50% and the parameter P is set at 200kW, the fixed power supplied by the mains is 100kW and the remaining power requested from the load is supplied by the genset.	0-100 [%]	50	
P	4-20mA input conversion	Is the maximum active power measured on the mains side by a kWmeter connected to the 4-20mA input (you must set it in accordance to the current transformers installed on the kWmeter). For sample: if the kWmeter is connected with current transformers 200/5A in a 400Vac three-phase system with power factor 0.8, the maximum mains power must be set at 110kW (*200 x 400 x √3 x 0.8 = 110kW).*	0-65000 [kW]	100	
Q	Start for mains power	If ON it enables the automatic start/stop of the genset when the power supplied by mains is higher than the programmed values (check following parameters from R to U).	Off-On	Off	
R	Peak start value (kW)	When the power supplied by the mains via 4-20mA input is higher than this value (for the time at parameter S), the genset starts automatically.	0-65000 [kW]	80	
S	Peak start delay (s)	Delay time about genset automatic start for power request.	0-59 [s]	5	
T	Peak stop value (kW)	When the power supplied by the mains via 4-20mA input is lower than this value (for the time at parameter U), the genset stops automatically.	0-65000 [s]	40	
U	Peak stop delay (s)	Delay time about genset automatic stop for power request.	0-59 [s]	5	

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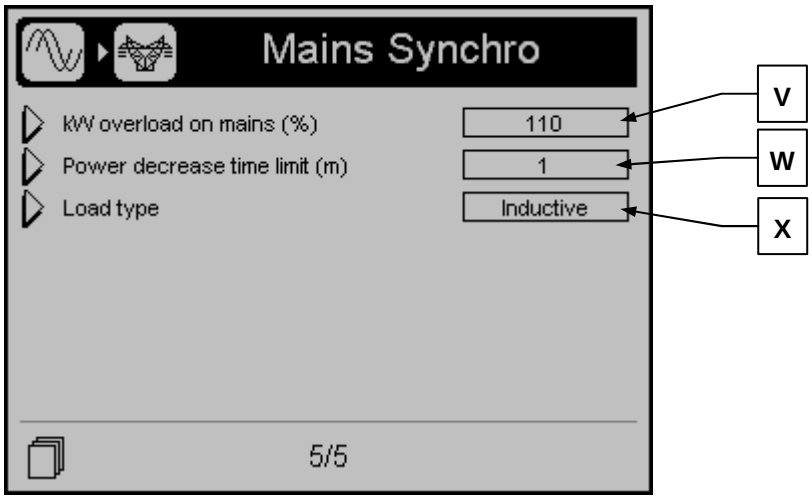

POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
V	kW overload on mains	Maximum kW value for "mains overload alarm", measured on mains side from 4-20mA analog input.	100-130 [%]	110	
W	Power decrease time limit	When a "power download" procedure begins, if the generator doesn't reach the minimum active power value (point C at page 90) before this time, anyway the TE808 opens the genset breaker and begins the stopping procedure.	0-59 [min]	1	
X	Load type	It permits to decide if the load is "Capacitive" type or "Inductive" type. This setting changes the "-/+" sign about previous parameter "E"; in case of "Capacitive" setting, the power factor at parameter "E" is considered for example -0,80 and in case of "Inductive" setting, the power factor at parameter "E" is considered for example +0,80.	Capacitive or Inductive	Inductive	

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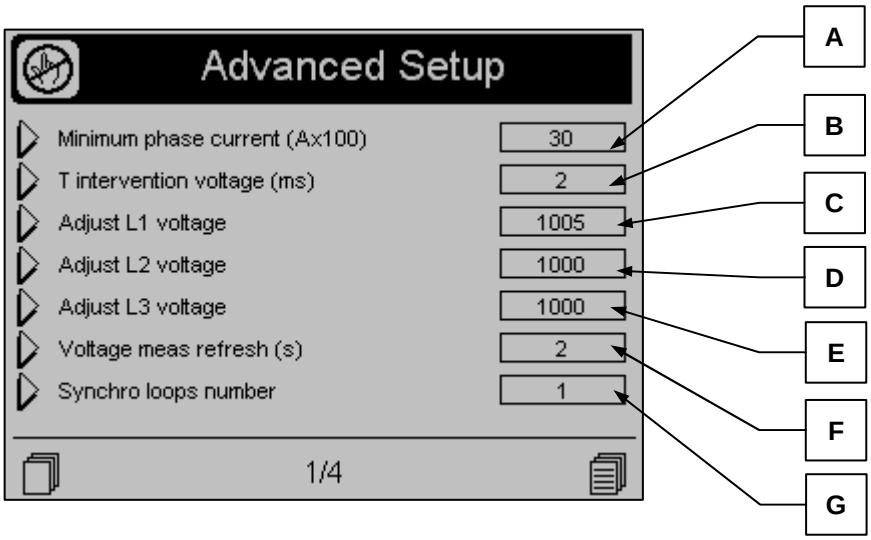
3- 6.1.5 Advanced setup



POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
A	Min phase current.	Minimum current allowed on each phase. If 30 is selected it means that measured currents lower than 0,3 Amperes are ignored for power regulation.	0-1000 [Ax100]	30	
B	T intervention voltage	Number of samples to upgrade voltage PID values.	0-1000 [ms]	2	
C	Adjust L1 voltage	Voltage adjustment setting to decrease the maximum precision of voltage measurement. 1000 = max precision less than 1%.	0-10000	1005	
D	Adjust L2 voltage	Voltage adjustment setting to decrease the maximum precision of voltage measurement. 1000 = max precision less than 1%.	0-10000	1000	
E	Adjust L3 voltage	Voltage adjustment setting to decrease the maximum precision of voltage measurement. 1000 = max precision less than 1%.	0-10000	1000	
F	Voltage measurements refresh (s)	The voltage measurements are upgraded periodicaly in accordance with this parameter.	0-59 [s]	2	
G	Synchro loops numbers	Synchronoscope loops before closing the generator contactor.	1-10	1	

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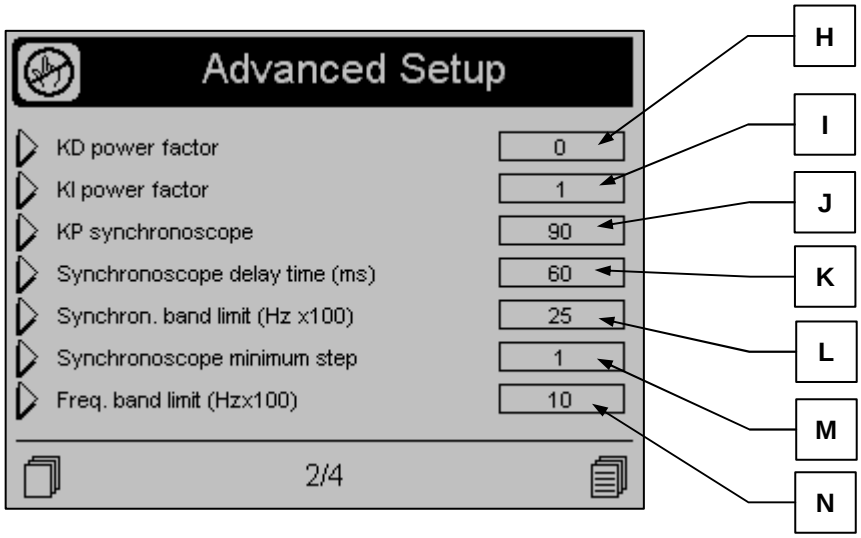
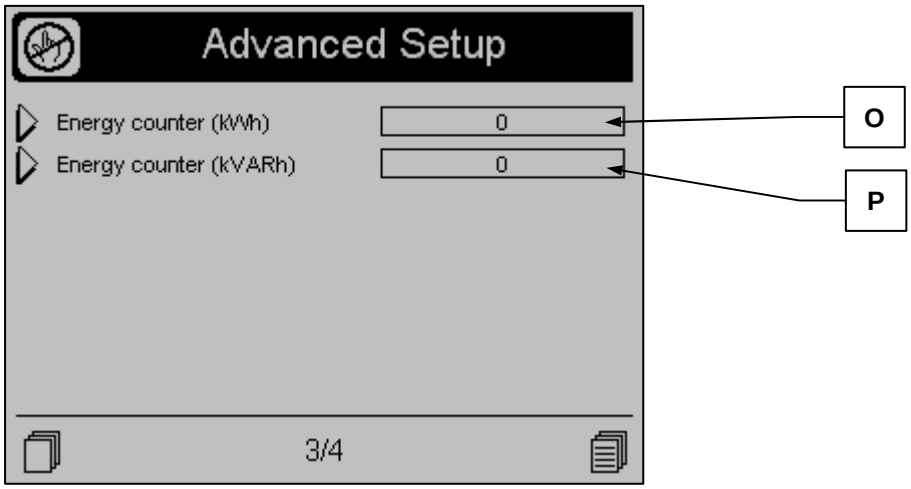


POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
H	KD power factor	Power factor regulation – derivative gain term.	0-1000	0	
I	KI power factor	Power factor regulation – integration gain term.	0-1000 [ms]	1	
J	KP synchronoscope	Synchronoscope regulation – proportional gain term.	0-1000	90	
K	Synchronoscope delay time	Synchronoscope regulation – delay time between PID samples, higher values mean slower control dynamics.	0-1000 [ms]	60	
L	Synchronoscope band limit	Frequency band limit for synchronoscope	10-75 [Hz]	25	
M	Synchronoscope min. step	Step limit for synchronoscope	1-100	1	
N	Frequency band limit	Frequency limit	1-100 [Hzx100]	10	



POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
O	Energy counter	Active power energy counter	0-9999999 (kWh)	0	
P	Energy counter	Reactive power energy counter	0-9999999 (kVARh)	0	

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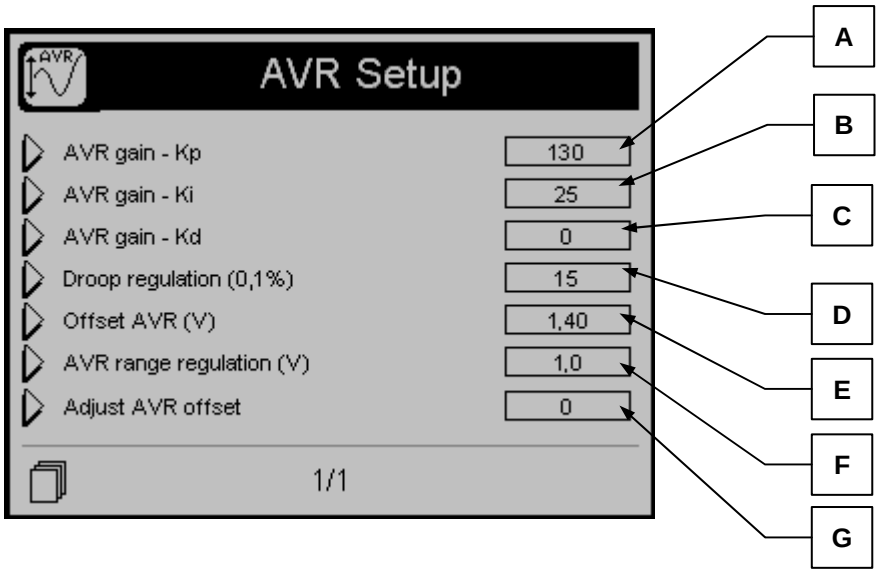
3- 6.2 AVR setup menu: M401



POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
A	AVR gain - Kp	It permits to set how quick must be the voltage regulation. Higher value means quicker control.	0-1000	130	
B	AVR gain - Ki	Voltage regulation - integral gain term which accelerates the movement of the process towards setpoint and eliminates the residual steady-state error.	0-1000	25	
C	AVR gain - Kd	Voltage regulation - derivative gain term which slows the rate of change of the controller output and this effect is most noticeable close to the controller setpoint.	0-1000	0	
D	Droop (0,1%)	Is the parameter which lowers alternator voltage (AVR) with a proportional value when load is supplied. The proportional controller will not always settle at its target value, but may retain a steady-state error. If the process gain is down, then the bias will be below the set point.	0-1000	15	
E	Offset AVR	It permits to set the value in Vdc of the TE808 output that commands the AVR regulation to set immediately the correct voltage to achieve the nominal Vac voltage from the alternator, just after the starting. When the board assumes the control (after the closure of the power switch KG or during the synchronizing to other sources), it manages automatically this output value to reach the best results.	-5.0 - +5.0 [v]	1.40	
F	AVR range regulation	It permits to set maximum range of operation of the output that commands the AVR regulation. The middle point of this range is the offset set at previous point C. For example: - you set the offset (point C) to 1,5V, because with this value the genset voltage after the starting is immediately at nominal value (for example 400Vac). - If you set the AVR range to 2,0V, you have +/- 1V from offset and by this the maximum working range is from 0,5V up to 2,5V. - If you find correct settings with these values, you can have e better accuracy of the AVR control and its reactive power management.	1.0 - 10.0 [v]	1.0	
G	Autoadjust AVR	Type of autoadjust of AVR offset: 0: disabled (offset fixed at the set value on point "E") 1: autoadjust up to the "synchro on" signal (start regulation) 2: autoadjust up to the "switch insertion" in synchro mode	0-99	0	

HOW TO FIND BETTER CONDITION ON AVR CONTROL
- Set the offset to a value that allows to obtain, immediately after the starting, the nominal voltage value. For example with offset of 1,5V you have 400Vac after the starting. - Set a range for example at 2.0V. Then in Self Learning page, change nominal voltage to 360Vac, then start the genset. - If the controller can reach this 360Vac value, you must decrease the range set (maybe 1,5 instead of 2.0V) - If the controller reaches approximatively 380Vac, the range setting is good - If the controller can't reach this values and for example remains at 390Vac, you must increase the range set (maybe 2,5V instead of 2.0V)

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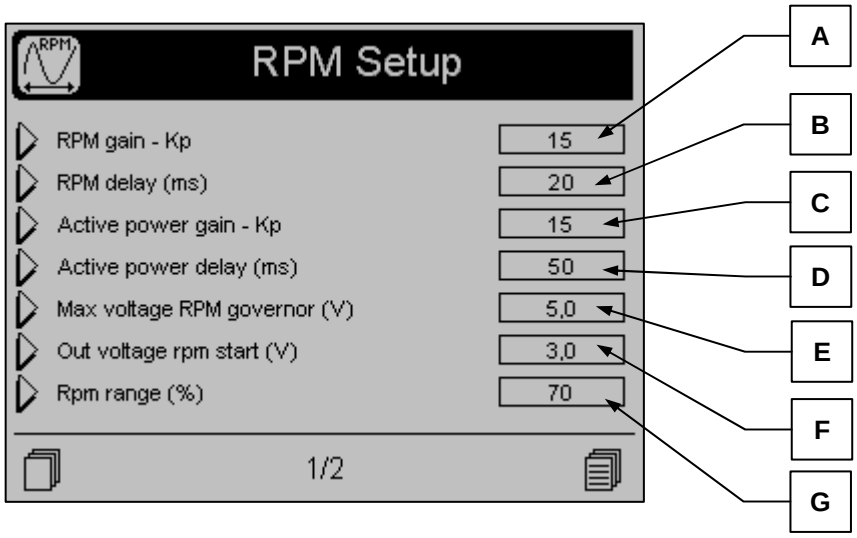
3- 6.3 RPM setup menu : M402



POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
A	RPM gain - Kp	It permits to set how quick must be the RPM regulation, to change the frequency value. Higher value it means quicker control. **This control is active BEFORE synchronization.**	0-1000	15	
B	RPM gain delay	It permits to set the delay time on the RPM controls. Higher value it means slower control. **This control is active BEFORE synchronization.**	0-1000 [ms]	20	
C	Active power gain - Kp	It permits to set how quick must be the active power regulation (by frequency control). Higher value it means quicker control. **This control is active AFTER synchronization**.	0-1000	15	
D	Active power delay	It permits to set the delay time on the active power regulation (by frequency control). Higher value it means slower control. **This control is active AFTER synchronization**.	0-1000 [ms]	50	
E	Max voltage RPM governor	You can set maximum voltage of the TE808 output control for RPM governor. If the governor range is 0-5V, set 5.0V. This parameter limits the hardware output of the TE808 controller. We suggest to set this value just a little bit higher than the "Out voltage rpm start" parameter at next point "F". For sample, if you set next parameter "Out Voltage RPM Start" at 3.2V, we suggest to set this value at 3.4V.	0 – 10 [v]	5.0	
F	Out voltage rpm start	Initial voltage output of RPM governor during start. This value permits to reach immediately the nominal RPM/frequency of the genset (for example 50Hz).	0.0 - 10.0 [v]	3.0	
G	Rpm range	Percentage range of rpm governor output.	0 - 100 [%]	70	

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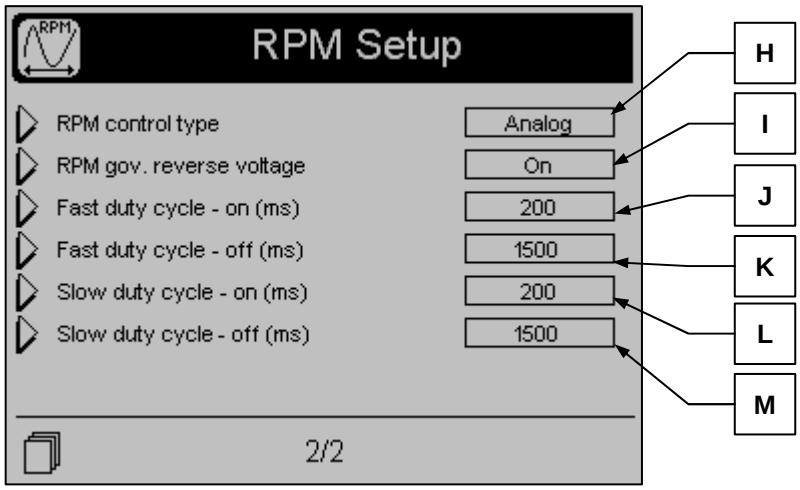

POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
H	RPM control type	It permits to select if you want to drive the RPM governor by analog signal (voltage adjustement 0-10Vdc on J7-3 and J7-4) or by digital signals command (On/Off), by increase rpm relay (J4-3) and decrease rpm relay (J4-5).	Analog - Digital	Analog	
I	RPM governor reverse voltage	If ON, it reverses the output (positive and negative) on terminals 3 and 4 of J7. Also the decrease rpm relay (available on the J4-5 terminal) and increase rpm relay (available on the J4-3 terminal) are reversed for the digital function described previously at point H.	Off-On	On	
J	Fast duty cycle – on	**Only for digital rpm control type.** Set the activation time for increase / decrease rpm output relays (high state logic level), when measured frequency is far from rated value.	0-1000 [ms]	200	
K	Fast duty cycle – off	**Only for digital rpm control type.** Set the de-activation time for increase / decrease rpm output relays (low state logic level) when measured frequency is far from rated value.	0-1000 [ms]	1500	
L	Slow duty cycle – on	**Only for digital rpm control type.** Set the activation time for increase / decrease rpm output relays (high state logic level) when measured frequency is near rated value. Moduled by RPM gain parameter (M402.A).	0-1000 [ms]	200	
M	Slow duty cycle – off	**Only for digital rpm control type.** Set the de-activation time for increase / decrease rpm output relays (low state logic level) when measured frequency is near rated value. Moduled by RPM gain parameter (M402.A).	0-1000 [ms]	1500	

HOW TO FIND BETTER CONDITION ON RPM CONTROL

- Set the Max RPM governor reference to the manufacturer indication (for example 5.0V if the manufacturer declares 0-5Vdc regulation on the RPM governor)
- Set the Out voltage RPM start to a value that allows to obtain, immediately after the starting, the nominal frequency/speed value (for example Out voltage RPM start at 3.0V to have 50Hz after the starting).
- Set the RPM range for example at 20%. Then in Self Learning page, change nominal frequency to 47Hz, then start the genset.
  - If the controller can reach this 47Hz value, you must decrease the RPM range set (maybe set it to 10% instead of 20%)
  - If the controller reach approximately 48.5Hz, the range setting is good
  - If the controller can't reach this values and for example remains at 49.3Hz, you must increase the range set (maybe 30% instead of 20%)

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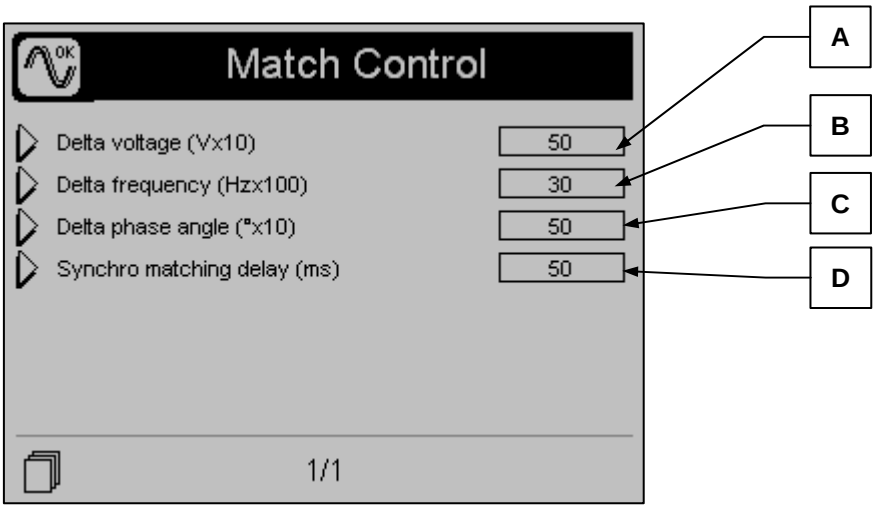
3- 6.4 Match control menu: M403



POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
A	Delta voltage	If the difference in voltage between the Bus/Mains and the generator is less than this value, the TE808 considers it as a good condition for synchronization. It is expressed in tenth of volt, than a value of 50 is equal to 5V.	0-1000 [v*10]	50	
B	Delta frequency	If the difference in frequency between the BUS/Mains and the generator is less than this value, TE808 considers it as a good condition for synchronization. It is expressed in hundredth of Hz, than a value of 30 is equal to 0,3Hz.	0-1000 [Hz*100]	30	
C	Delta phase angle	If the difference in degrees between the Bus/Mains and the generator is less than this value, TE808 considers it as a good condition for synchronization. It is expressed in tenth of degree, than 50 is equal to 5°.	0-1000 [deg* 10]	50	
D	Synchro matching delay	All the conditions (points A, B, C) must be good at least for this time for the generator to be considered synchronized.	0-1000 [ms]	50	

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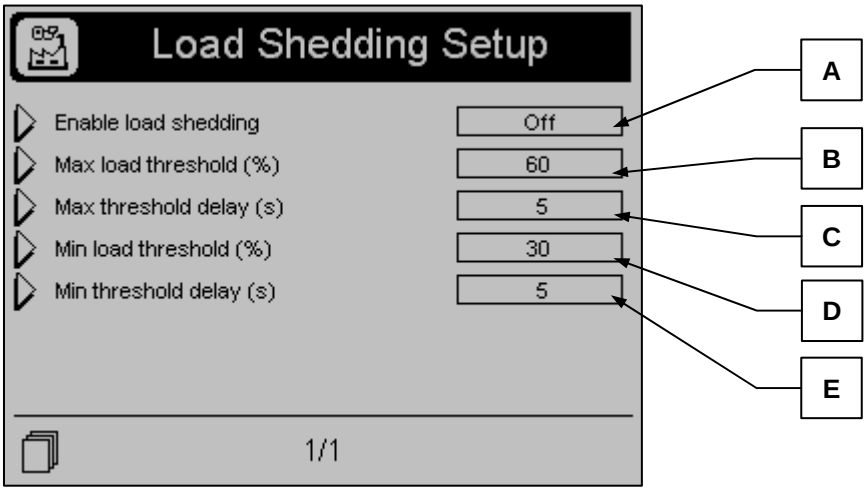
3- 6.5 Load Shedding: M404



POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
A	Enable Load Shedding	If ON, the function called “Load Shedding” is enabled. That load sharing function allows to automatically open one load line, if the total power absorbed by the plant is almost equal to the maximum power obtainable from the generator. If the plant is down or it’s working in normal conditions, this output is closed so to keep the load lines completely inserted. When the plant is working, if the absorbed power is greater than the “load maximum threshold” (point B) for a time longer than the “maximum threshold delay” (point C), the Load shedding output relay is closed. Instead, if the power absorbtion is lower than the “load minimum threshold” (point D) for a time longer than the “minimum threshold delay” (point E), the controller opens the relay. **WARNING**: To use load shedding function one of the outputs must be selected for Load shedding inside IO programming menu (General setup).	Off-On	Off	
B	Max load threshold	Is the total active power threshold calculated which determines the opening of the load switches.	0-100 [%]	60	
C	Max. threshold delay	Delay time for load shedding activation.	0-59 [s]	5	
D	Min load threshold	Power threshold which determines the closure of the load switches.	0-100 [%]	30	
E	Min. threshold delay	Delay time for load shedding deactivation.	0-59 [s]	5	

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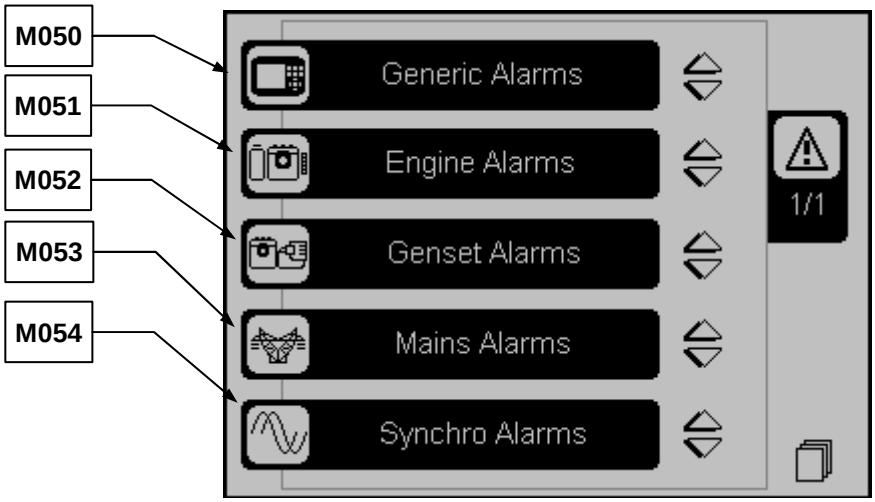
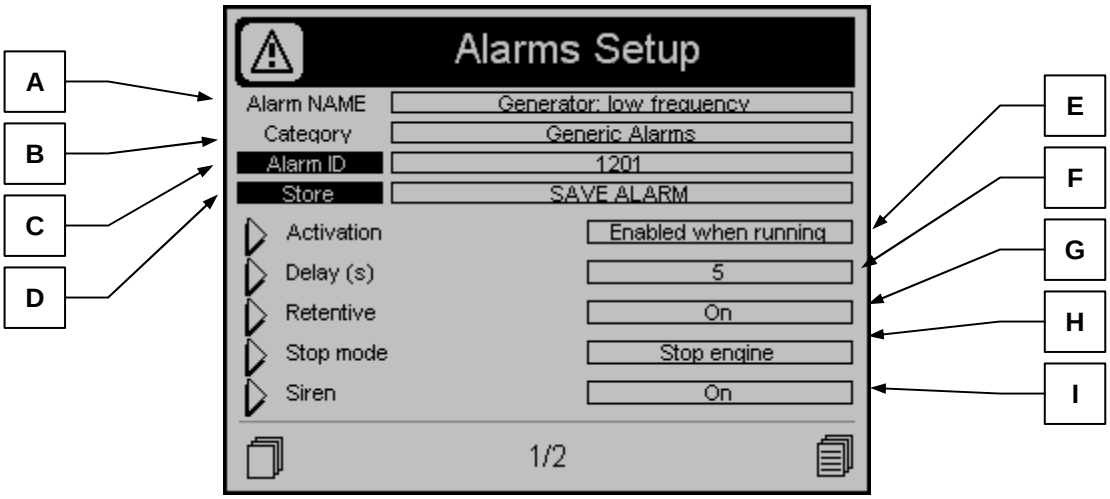
3- 7 Alarms setup menu description: M-05



POS.	NAME	DESCRIPTION
A	Generic Alarms	It permits to program generic alarms
B	Engine alarms	It permits to program engine alarms
C	Genset alarms	It permits to program genset alarms
D	Mains alarms	It permits to program mains alarms
E	Synchro alarms	It permits to program synchro alarms

When you select one of the alarms setup area, this screen will appear:



POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
A	Alarm name	Shows the name of selected alarm	-	-	
B	Category	Shows the currently selected alarms category: generic, engine, genset, mains or synchro alarms.	-	-	
C	Alarm ID	Set the alarm ID to modify the alarm options: go on this parameter then select it by "**i**" button. Then scroll by left and right arrows the codes and check the corresponding alarm description at point "A". Press again "**i**" button to confirm the alarm and scroll its parameters to modify the properties.	See alarms list	-	
D	Store	When the alarm programmation is finished, select SAVE ALARM and press "**i**" button to confirm and activate new alarm's properties.	-	-	

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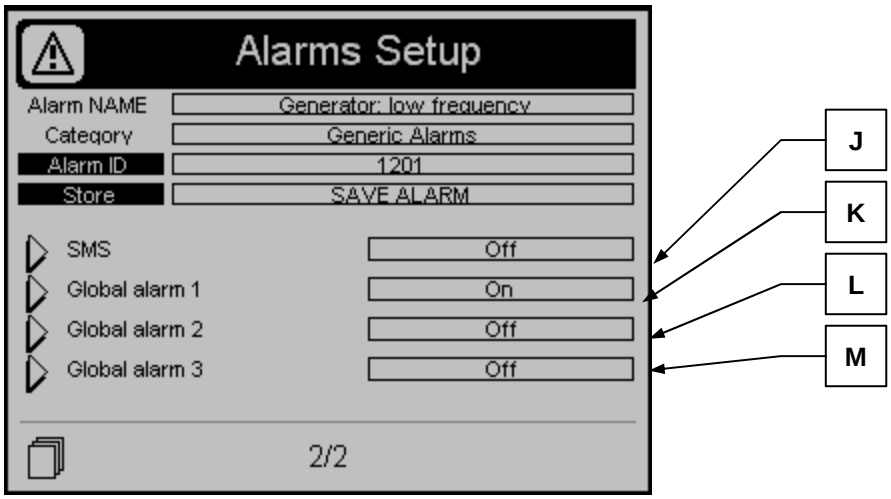
POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
E	Activation	Select the activation mode for the alarm -Disable: alarm not active -Always enabled: active with engine run and also engine stop condition -Enable when running: the alarm status is checked only with engine running and after the "Engine ON alarm delay" parameter (point "L" inside starting setup).	- Disabled -Always enabled -Enabled when running	See alarms list	
F	Delay	Select the delay time (in seconds) for alarm detection.	0 - 59	See alarms list	
G	Retentive	If set to "Off" the alarm is automatically reset when the alarm condition disappears. If set to "On", also if the alarm cause disappears, you must press "Reset" button to reset the alarm.	On-Off	See alarms list	
H	Stop mode	Select the action mode for the alarm: -"only signal" means the warning on the display but no actions on the engine -"stop" means immediate stop of the generator. -"stop with cooling" means that the generator will shut down after the cooling time.	Only signal – Stop action – Stop with cooling	See alarms list	
I	Siren	Select if the alarm will activate acustic alarm output or not.	On - Off	See alarms list	



POS.	NAME	DESCRIPTION	SETTING RANGE	FACTORY VALUES	USER NOTES
J	SMS	Select if the alarm will send a SMS message through GSM modem connected with RS232 serial port	On – Off	See alarms list	
K	Global alarm 1	Select if the alarm will activate global alarm #1 output	On – Off	See alarms list	
L	Global alarm 2	Select if the alarm will activate global alarm #2 output	On – Off	See alarms list	
M	Global alarm 3	Select if the alarm will activate global alarm #3 output	On - Off	See alarms list	

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3- 8 Alarms List

3- 8.1 Generic alarms: M500

N	Alarm code	Bit	Alarm name	Setup															
				Delay (sec)	*Retenetive*	*Siren*	*Alarm relay*			*activation*			*Type of stop*			*value*		
							Global alarm 1	*Global alarm 2*	*Global alarm 3*	*Always enabled*	*Disabled*	*Enabled when running*	*Stop with cooling*	*Stop engine*	*Only indication signal*	*0= contact NC*	*1= contact NO*	SMS
1	20003	3	Starting	0						☑					☑			
2	20020	14	Manual stop	0						☑				☑				
3	20022	16	User alarm 1	0		☑	☑			☑					☑			☑
4	20024	-	Stopping	0						☑					☑			
5	20041	-	Remote start ON	0						☑					☑			
6	20053	-	Engine running	0						☑					☑			

N	Alarm name	*Description*
1	Starting	Indicates that the TE808 has registered a starting attempt
2	Manual stop	Indicates the activation of stop button in manual mode. IF THIS ALARM IS DISABLED THE ENGINE WILL NOT BE STOPPED BY STOP BUTTON IN MANUAL MODE
3	User alarm 1	Indicates the activation of the user alarm 1 from digital input
4	Stopping	Indicates that the stop phase is active
5	Remote start ON	Indicates that remote start input is active
6	Engine running	Indicates that he engine is detected running

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3- 8.2 Engine alarms: M501

N	Alarm code	Bit	Alarm name	Setup														
							Alarm relay			activation			Type of stop			value		
				Delay (sec)	Retenetive	Siren	Global alarm 1	Global alarm 2	Global alarm 3	Always enabled	Disabled	Enabled when running	Stop with cooling	Stop engine	Only indication signal	0= contact NC	1= contact NO	SMS
1	1001	18	Start attempts	0	☒	☒	☒			☒				☒				
2	1003	19	Mechanical fault	10	☒	☒	☒					☒		☒				☒
3	1101	34	Temperature prealarm (Analog)	2		☒	☒				☒				☒			
4	1102	35	High engine temperature (Analog)	2	☒	☒	☒				☒			☒				
5	1104	37	Fuel prealarm (Analog)	10		☒	☒				☒				☒			
6	1105	38	Low fuel level (Analog)	10		☒	☒				☒				☒			
7	1107	40	Oil pressure prealarm (Analog)	2		☒	☒				☒				☒			
8	1108	41	Low oil pressure (Analog)	2	☒	☒	☒				☒			☒				
9	1109	42	Low oil pressure (Digital)	2	☒	☒	☒					☒		☒				☒
10	1110	43	High battery voltage	15		☒	☒			☒					☒			
11	1111	44	Low battery voltage	15		☒	☒			☒					☒			☒
12	1112	45	RPM alarm (too fast)	2	☒	☒	☒					☒		☒				☒
13	1113	46	RPM alarm (too slow)	5	☒	☒	☒					☒		☒				☒
14	20006	4	Emergency button	0	☒	☒	☒			☒				☒				☒
15	20012	5	Service	5			☒				☒				☒			☒
16	20017	10	Charger alternator failure	10		☒	☒					☒			☒			☒
17	20004	11	Stop engine failure	0	☒	☒	☒					☒		☒				
18	20002	52	Soft stop time limit	0								☒	☒					
19	20029	53	Low coolant level	2	☒	☒	☒			☒			☒					
20	20052	-	Refueling timeout	0	☒	☒	☒			☒					☒			
21	20055	-	Fuel level sensor	5		☒	☒			☒					☒			☒
22	20056	-	Engine temperature sensor	2	☒	☒	☒					☒		☒				☒

N	Alarm name	*Description*
1	Start attempts	Indicates that the start attempts set are finished without the detection of engine running conditions
2	Mechanical fault	Indicates that, with engine started, all the running signals are weakened simultaneously
3	Temperature prealarm (Analog)	Indicates that the temperature measured by the analog sensor has reached the prealarm value set
4	High engine temperature (Analog)	Indicates that the temperature measured by the analog sensor has reached the alarm/shutdown value set
5	Fuel prealarm (Analog)	Indicates that the fuel level measured by the analog sensor has reached the prealarm value set
6	Low fuel level (Analog)	Indicates that the fuel level measured by the analog sensor has reached the alarm/shutdown value set
7	Oil pressure prealarm (Analog)	Indicates that the oil pressure measured by the analog sensor has reached the prealarm value set
8	Low oil pressure (Analog)	Indicates that the oil pressure measured by the analog sensor has reached the alarm/shutdown value set
9	Low oil pressure (Digital)	Indicates that the digital sensor has detected the low oil pressure alarm
10	High battery voltage	Indicates that the battery voltage measured is too high
11	Low battery voltage	Indicates that the battery voltage measured is too low
12	RPM alarm (too fast)	Indicates that the engine speed (RPM) measured is too fast
13	RPM alarm (too slow)	Indicates that the engine speed (RPM) measured is too slow
14	Emergency button	Indicates that the emergency button is pressed
15	Service	Indicates that the service time is expired.
16	Charger alternator failure	Incicates that the D+ batterycharger signal is not detected
17	Stop engine failure	Indicates that after a stopping time set phase, the TE808 still detects active signals on the engine running status
18	Soft stop time limit	Indicates that the power discharge procedure during soft stop has reached the time limit IF THIS ALARM IS DISABLED THE ENGINE WILL NOT BE STOPPED AT THE END OF THE TIMER
19	Low coolant level	Indicates the activation of low coolant alarm from digital input
20	Refueling timeout	Indicates that the refueling pump remianed active for too long time
21	Fuel level sensor	Indicates that the digital sensor has detected the fuel reserve alarm
22	Engine temperature sensor	Indicates that the digital sensor has detected the high temperature alarm

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3- 8.3 Genset alarms: M502

N	Alarm code	Bit	Alarm name	Setup														
							Alarm relay			activation			Type of stop			value		
				Delay (sec)	Retenetive	Siren	Global alarm 1	Global alarm 2	Global alarm 3	Always enabled	Disabled	Enabled when running	Stop with cooling	Stop engine	Only indication signal	0= contact NC	1= contact NO	SMS
1	1201	20	Generator low frequency	5	☒	☒	☒					☒		☒				☒
2	1202	21	Generator high frequency	2	☒	☒	☒					☒		☒				☒
3	1203	22	Generator low voltage	5	☒	☒	☒					☒		☒				☒
4	1204	23	Generator high voltage	3	☒	☒	☒					☒		☒				☒
5	1206	24	Generator short circuit	0	☒	☒	☒				☒			☒				☒
6	1207	25	Generator current overload	2	☒	☒	☒				☒			☒				☒
7	3005	50	Unbalanced current	20	☒	☒	☒					☒	☒					☒
8	20065	-	Unbalanced genset voltage	2	☒	☒	☒				☒			☒				
9	20008	49	Generator wrong phase sequence	3	☒	☒	☒					☒		☒				
10	20027	54	Breaker protection	1	☒	☒	☒			☒				☒				
11	20035	60	Gen: feedback error 0->1	2	☒	☒	☒					☒			☒			
12	20036	61	Gen: feedback error 1->0	2	☒	☒	☒					☒		☒				
13	20037	62	Gen: current detection	2	☒	☒	☒					☒		☒				
14	20039	-	High active power	3	☒	☒	☒					☒		☒				
15	20042	-	KG opening not allowed	0	☒	☒						☒			☒			
16	20048	-	Low genset kW	30		☒	☒				☒				☒			☒
17	20051	-	Earth fault protection	0	☒	☒	☒			☒				☒				

N	Alarm name	*Description*
1	Generator low frequency	Indicates that the generator frequency measured is lower than the set value
2	Generator high frequency	Indicates that the generator frequency measured is higher than the set value
3	Generator low voltage	Indicates that the generator voltage measured is lower than the set value
4	Generator high voltage	Indicates that the generator voltage measured is higher than the set value
5	Generator short circuit	Indicates that the current measured by the TE808 is over the short circuit threshold
6	Generator current overload	Indicates that the current measured by the TE808 is over the overload threshold
7	Unbalanced current	Indicates that the difference in current between phases is higher than the set value
8	Unbalanced genset voltage	Indicates that three phase voltage on genset side is unbalanced
9	Generator wrong phase sequence	Indicates that the sequence of the phases on the Generator side is reversed (is detected un-clockwise instead of clockwise)
10	Breaker protection	Indicates the activation of ground protection alarm from digital input
11	Gen: feedback error 0->1	Indicates that after closing genset contactor the genset feedback remains inactive
12	Gen: feedback error 1->0	Indicates that after opening genset contactor the genset feedback remains active
13	Gen: current detection	Indicates current detection when genset contactor is open
14	High active power	Indicates that the total active power supplied by the genset is greater than the programmed value
15	KG opening not allowed	Indicates the load measured on generator is greater than programmed value. To open genset contactor in manual mode, the load must be removed.
16	Low genset kW	If the generator contactor is closed and the power is under a programmable threshold (Generator setup - low genset kW), this alarm is activated
17	Earth fault protection	Indicates that the input programmed for “Earth fault protection” is active

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3- 8.4 Mains alarms: M503

N	Alarm code	Bit	Alarm name	Setup														
							Alarm relay			activation			Type of stop			value		
				Delay (sec)	Retenetive	Siren	Global alarm 1	Global alarm 2	Global alarm 3	Always enabled	Disabled	Enabled when running	Stop with cooling	Stop engine	Only indication signal	0= contact NC	1= contact NO	SMS
1	20066	-	Unbalanced mains voltage	2	☒	☒	☒	☒			☒				☒			
2	20007	48	Mains/Bus wrong phase sequence	3	☒		☒	☒		☒					☒			
3	20031	-	Mains: feedback error 0->1	2	☒	☒	☒			☒					☒			
4	20032	57	Mains: feedback error 1->0	2	☒	☒	☒			☒					☒			
5	20033	58	Mains: faulty voltage	2	☒	☒	☒			☒					☒			
6	20034	-	Unexpected feedback error	2	☒	☒	☒			☒					☒			
7	20046	-	kW overload on mains	5	☒	☒	☒			☒					☒			
8	20047	-	4-20 mA sensor disconnected	3	☒	☒	☒			☒					☒			
9	20050	-	Battery charger alarm	1		☒	☒			☒					☒			☒
10	20054	-	Mains interface disabled	1	☒	☒	☒			☒				☒				
11	20059	-	Mains high voltage	5		☒	☒	☒		☒					☒			
12	20060	-	Mains low voltage	5				☒		☒					☒			
13	20061	-	Mains high frequency	5		☒	☒	☒		☒					☒			
14	20062	-	Mains low frequency	5				☒		☒					☒			
15	20068	-	Faulty external mains protection	1	☒	☒	☒			☒			☒					

N	Alarm name	*Description*
1	Unbalanced mains voltage	Indicates that three phase voltage on mains/bus side is unbalanced
2	Mains/Bus wrong phase sequence	Indicates that the sequence of the phases on the Bus/Mains side is reversed (is detected un-clockwise instead of clockwise)
3	Mains: feedback error 0->1	Indicates that after closing mains contactor the mains feedback remains inactive
4	Mains: feedback error 1->0	Indicates that after opening mains contactor the mains feedback remains active
5	Mains: faulty voltage	Indicates that the contactor is closed but no mains voltage is detected
6	Unexpected feedback error	Indicates that the mains synchronization cannot be achieved
7	kW overload on mains	Indicates that the active power on mains is over a programmable threshold (Mains setup - kW overload on mains, active only in Peak Shaving mode)
8	4-20 mA sensor disconnected	Indicates that the 4-20 mA sensor for the measure of the mains power is disconnected
9	Battery charger alarm	Indicates that the automatic battery charger alarm relay (on J3-6) is tripped
10	Mains interface disabled	Indicates that the controller is not managing the opening/closure of the mains contactor
11	Mains high voltage	Indicates that the mains voltage measured is higher than the set value
12	Mains low voltage	Indicates that the mains voltage measured is lower than the set value
13	Mains high frequency	Indicates that the mains frequency measured is higher than the set value
14	Mains low frequency	Indicates that the mains frequency measured is lower than the set value
15	Faulty external mains protection	Indicates that the J3.8 digital input has been activated by the external mains protection device that detected a problem on the mains

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3- 8.5 Synchro alarms: M504

N	Alarm code	Bit	Alarm name	Setup														
							Alarm relay			activation			Type of stop			value		
				Delay (sec)	*Retenetive*	*Siren*	*Global alarm 1*	*Global alarm 2*	*Global alarm 3*	*Always enabled*	*Disabled*	*Enabled when running*	*Stop with cooling*	*Stop engine*	*Only indication signal*	*0= contact NC*	*1= contact NO*	SMS
1	3006	51	Maximum reverse power	5	☒	☒	☒					☒	☒					☒
2	20049	-	Maximum reverse kVAR	10	☒	☒	☒					☒	☒					
3	20057	-	Power unload	0						☒					☒			
4	20058	-	Faulty synchronization - AVR	0	☒	☒	☒			☒					☒			☒
5	20063	-	Self-learn: V governor error	5	☒	☒	☒			☒				☒				
6	20064	-	Self-learn: F governor error	5	☒	☒	☒			☒				☒				
7	20067	-	Faulty synchronization - RPM	0	☒	☒	☒			☒					☒			☒

N	Alarm name	*Description*
1	Maximum reverse power	Indicates that the power consumption by the generator is too high respect to the value set.
2	Maximum reverse kVAR	Indicates that the reactive power consumption by the generator is too high respect to the value set.
3	Power unload	Indicates the phase before the cooling phase, during which the power is reduced
4	Faulty synchronization - AVR	After the starting and the engine running detection, the board can't regulate the generator and after the expiration time it shows you that is impossible to reach correct voltage values for synchronization
5	Self-learn: V governor error	Indicates that during the self learning, is not possible to regulate the AVR of the alternator
6	Self-learn: F governor error	Indicates that during the self learning, is not possible to regulate the RPM governor of the alternator
7	Faulty synchronization - RPM	After the starting and the engine running detection, the board can't regulate the generator and after the expiration time it shows you that is impossible to reach correct frequency values for synchronization

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TE808-Platinum

Section 4 – Putting on service

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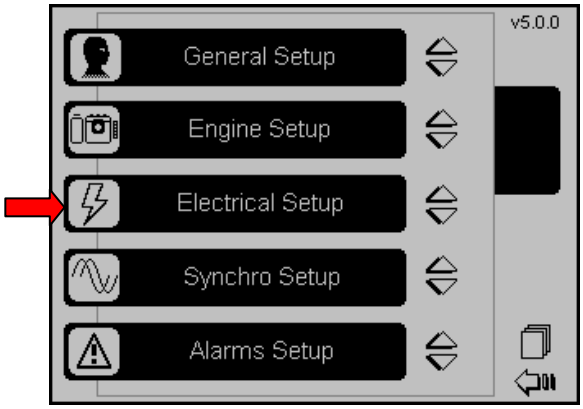
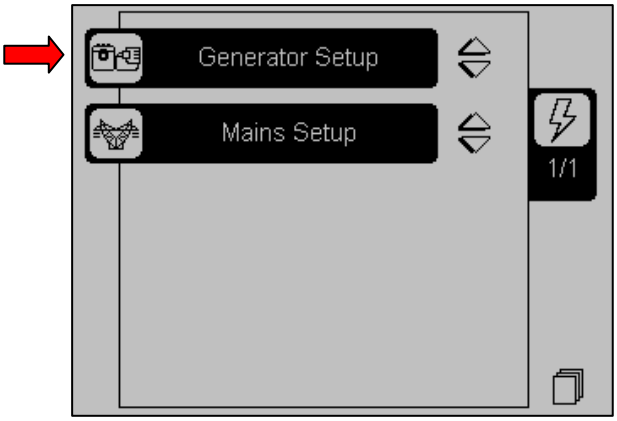
4- 1 Synchronization between generators

Before synchronizing procedure and tests, it's necessary to test the single generator functions in every detail.
Especially the RPM and AVR regulators settings are very important.

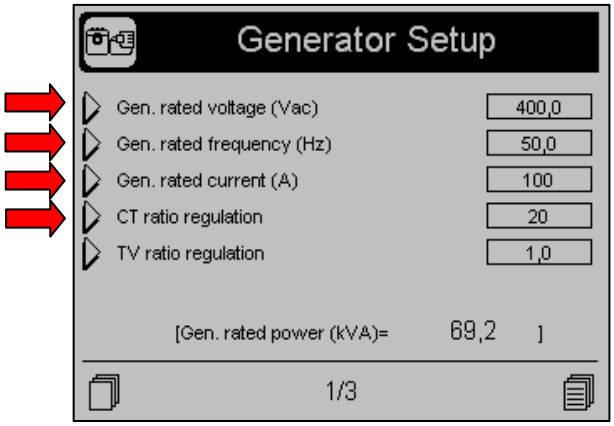
1- Verify that the electrical parameters of the generator are correct for the system used
Enter in the menu and select "Electrical Setup":

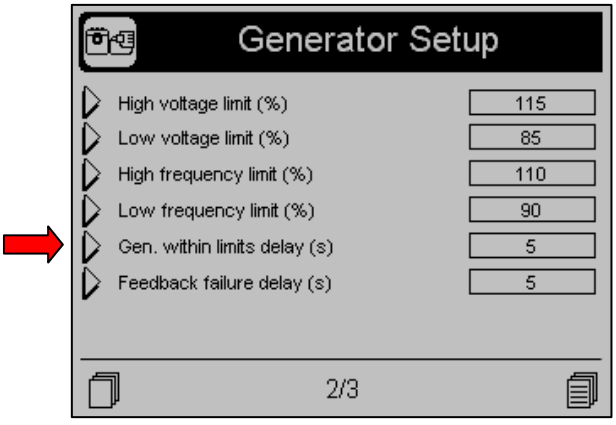


Then enter in the generator setup:



The main parameters to verify are listed below:





Our advice is to increase the parameter "Gen. Within limits delay" to about 10 seconds during the tests.

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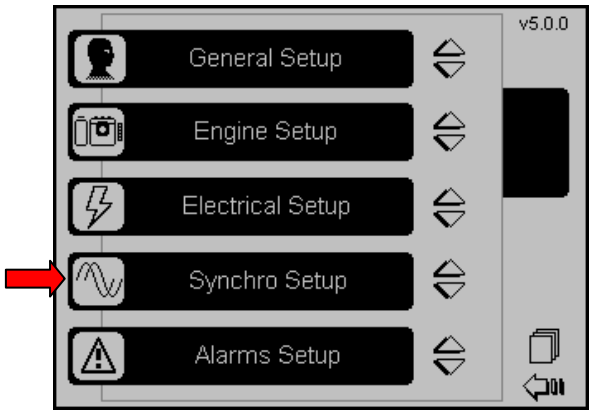
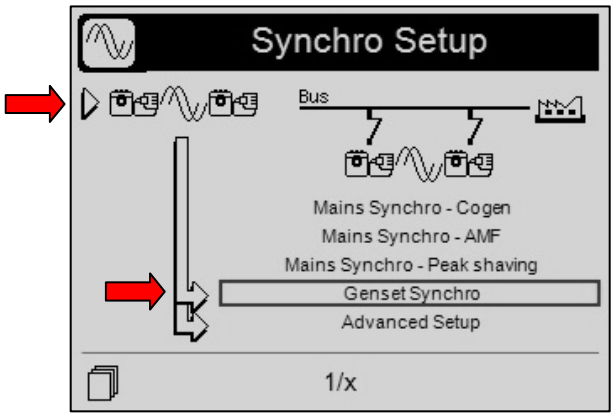
2- Select the "Genset synchro" system

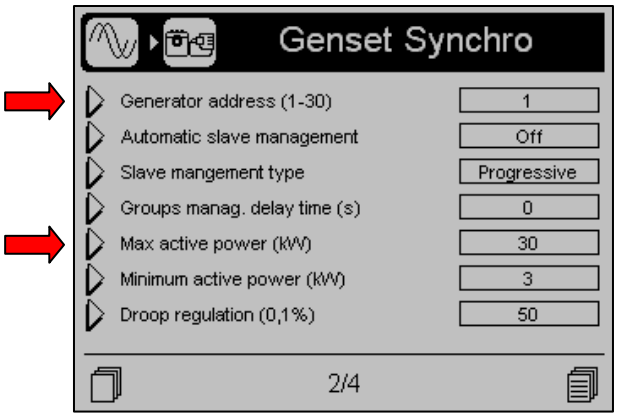
Enter in the Synchro Setup:



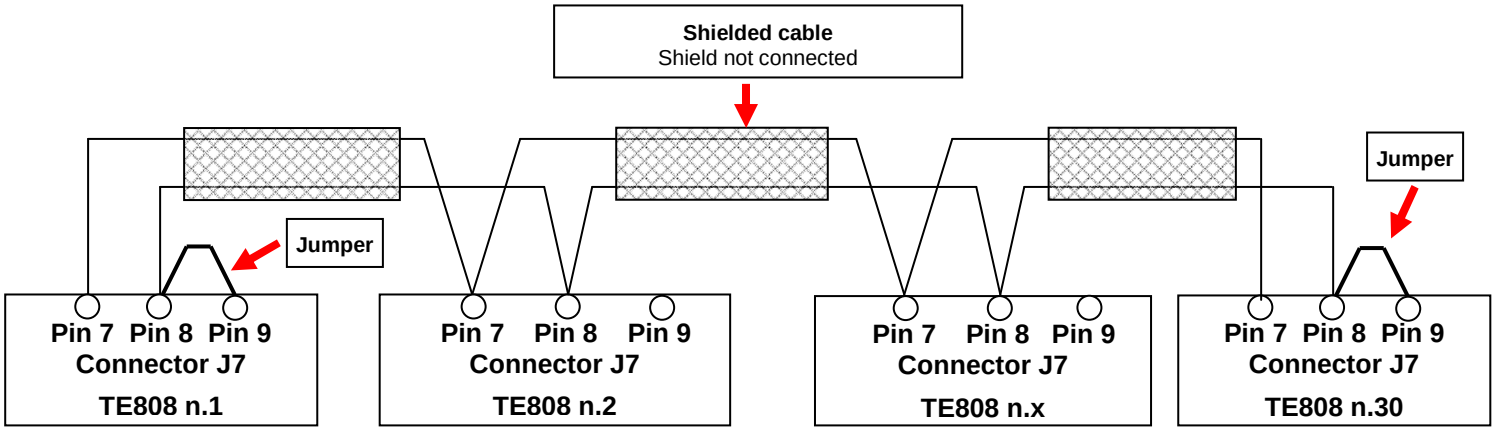
Select the “Genset Synchro” type of synchronization:



The most important parameters to program are the following:



It’s FUNDAMENTAL that the ID address of the generator is different for every controller connected to the same system; 2 or more TE808Synchro controllers must be connected using connector J7, pins 7-8-9 (see following drawing for proper connection).



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3- First manual start of the generator without RPM and AVR control

This test must be made with genset breaker/contactor disconnected to avoid voltage presence on the bus of the system. The first starting of the generator must be made without control and regulations of RPM and voltage by the controller, to be sure that the regulators are working next to the standard settings and the genset conditions are not close to extreme settings. We also suggest to set to "0" the value of the eventual droop on both RPM and AVR/voltage regulators.
This first starting is made disconnecting the regulation of the RPM governor (connector J7, pins 3-4) and of the AVR (connector J7, pins 1-2) from the TE808, and eventually restoring settings or jumpers on the governors to be sure that they can work independently (as in case of a stand-alone generator or as for generator in emergency to mains without synchronization).

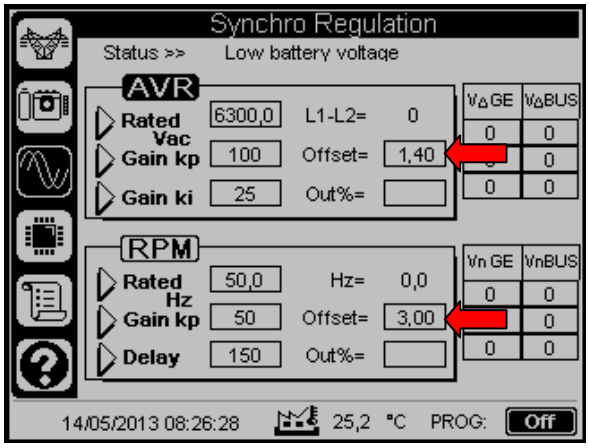
a) Let yourself be guided by the self-learning function
See paragraph 2-7.7.1. Use the first modality of our self-learning function. Set the AVR regulator to obtain the rated voltage (usually 400 Vac) and set the RPM regulator to obtain the rated frequency (usually 50 Hz).

OR

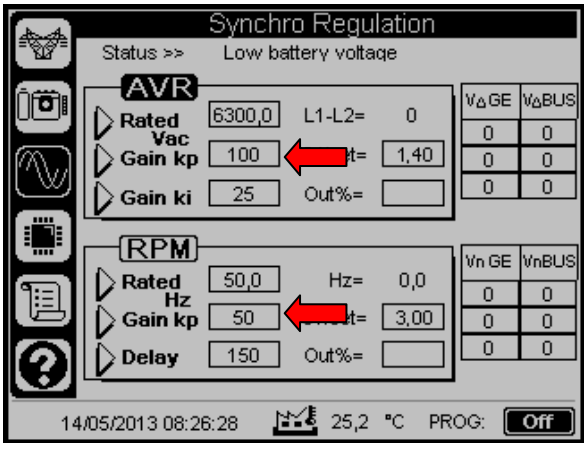
b) Manually check the proper condition
Selecting the MAN (manual) mode on the TE808 and pressing the START button, the generator starts.
With generator started, set the RPM regulator to obtain a frequency next to the rated frequency (usually 50Hz) and set the AVR regulator to obtain a voltage next to the rated voltage (usually 400Vac).
When voltage and frequency are closed to the rated values, it's possible to shut-down the generator.

4- Manual starting of the generator with RPM and AVR control

This test must be performed with genset breaker/contactor disconnected to avoid voltage presence on the bus of the system. Restore the connection between the RPM governore outputs (J7 pins 3-4) and the AVR outputs (J7 pins 1-2) of the TE808 and remember to restore the eventual settings or jumpers to permit external adjustments of RPM and AVR governors.
Verify the offset values about voltage and frequency in the following page (the offset values are Vdc values supplied from the controller to the regulators input).



The default values that you find set as AVR offset and RPM offset on the controller, are average voltage values that should permit to work in conditions similar to the nominal ones. In case of accidental modification, we suggest a value of the AVR offset of about 1,5V and a value of the RPM offset of about 3,0V. Verifiy also that the values of the AVR gain and RPM gain are appropriate.



The default values set as AVR gain and RPM gain on the controller, are average values that should already permit a good regulation control. In case of accidental modification, we suggest a value of the AVR gain of about 100 and a value of the RPM gain of about 200 (values programmable from 0000 to 1000; higher values mean quicker regulations by the TE808 controller).

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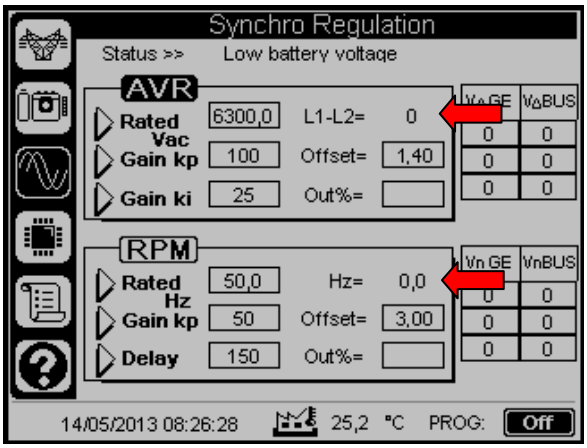
It's now possible to start the generator selecting the MAN mode on the TE808 and pressing the START button.
With generator started, in the same page described previously, verify the voltage and frequency values of the generator.



Selecting the AVR offset parameter, change that value until you reach a voltage equal to the rated required voltage. Repeat the procedure for the RPM offset: find an offset value to reach a frequency equal to the rated required frequency.

5- Automatic starting of the generator with RPM and AVR control

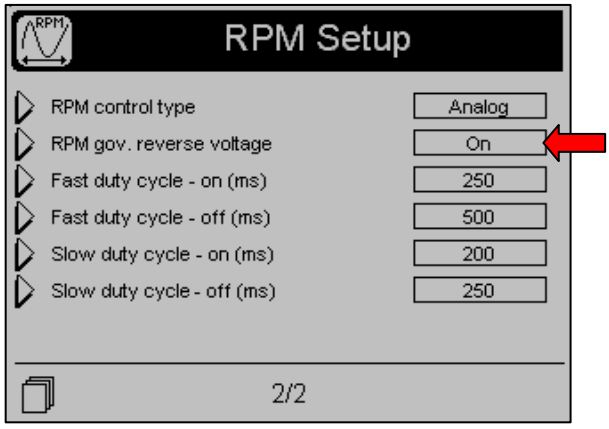
a) Now remember/write these two offset values, to be able to restore them in future; this must be made because it's now necessary to set different AVR and RPM offset values to reach voltage and frequency values lightly different from the rated ones. For example, if the rated voltage and frequency are 400Vac and 50Hz, set the AVR and RPM offsets to have the measured values of voltage and frequency of about 410Vac e 50,5Hz. Once you found these values, shut-down the generator.

First of all be sure that the power device for the insertion of the generator (contactor, switch, breaker, etc) can be drived and closed by the TE808. This test must be done without load.
Be careful: during this test, if good conditions are reached, the generator supplies the bus/load side by its power insertion.
To make this test, select the automatic mode and give the remote start to the controller (connector J3 pin 5). The generator starts and for the first 10 seconds it must maintain the voltage and frequency values lightly different from the rated ones (if the values have been set as previously indicated, the generator should start at 410Vac and 50,5Hz). After these 10 seconds, the controller begins to drive the AVR and RPM regulators to reach the rated set values (400Vac and 50,0Hz). If the regulation is correct, once reached the rated values, the generator insertion breaker/contactor closes.

OR

b) Let yourself be guided by the self-learning function
See paragraph 2-7.7.2. Use the second modality of our self-learning function. This second mode permits to automatically move the AVR and RPM offsets and check if the regulation is correct. Finally, it tests if it's possible to close the generator contactor.

The possible problems that can occour are the followings:
-the voltage of the generator, instead of moving to the rated voltage, it moves in opposite direction (with probable alarms intervention): in this case, shut-down the generator and try to reverse the 2 command wires of the AVR (connector J7, pins 1-2). Probably it's also necessary to reverse the "sign" of the AVR offset (i.e. if in the previous example the offset was set to 1,3V, eventually set it to -1,3V). Try with both positive and negative values.
-the frequency of the generator, instead of moving to the rated frequency, it moves in opposite direction (with probable alarms intervention): in this case, shut-down the generator and try to modify the parameter "RPM reverse voltage" in the menu "Synchro Setup - RPM Setup - page 2" (see the following image).



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If the problem is not solved following this way, try to reverse also the command wires to the RPM regulator (connector J7 pins 3-4) and repeat the modification to the parameter "RPM reverse voltage". Probably in this phase it could be necessary to set a new different value of the RPM offset.

-the generator insertion switch/contactor doesn't close and the alarm "generator feedback" appears: verify the connections to the insertion device. In case of motorized switch, verify if a "mode selector" is present directly on the breaker; in this case it must be set to "automatic".
-the generator insertion switch/contactor doesn't close and no alarm appears: verify that effectively the voltage and frequency values of the generator are stable and very close to the rated values.

It's necessary to reach the correct functioning status, included the closure of the generator insertion device (breaker, contactor, etc), before proceeding with the next steps.

Shut-down the generator and prepare a load (can be also a small load) to be connected to the single generator.
Start the generator 1 in AUTOMATIC mode, and wait that the breaker/contactor closes.
Insert the load and verify that the values of currents and powers are correct, expecially they must be POSITIVE and not negative, and check the power factor. that must be properly detected in accordance to the type of load connected.

If powers/currents are negative on one or more phases, it's necessary to interchange S1 and S2 incoming terminals of the J8 connector about the current transformers, on the phases deteceted as negative. For example, if the power is negative on phase 1, you must interchange S1 and S2 of the phase 1 on J8 connector (terminals 1 and 2).

If powers/currents are positive but the power factor is low (0,4 ÷ 0,7), you must check that effectively the transformer mounted on phase 1 enters in the input of the phase 1 of J8 (and not in the input of the phase 2 or 3). Check all the current inputs.

When all is fine, repeat the same connections and settings (OFFSET AVR and OFFSET RPM) on generator 2.
Start the generator 2 in automatic, and wait that the switch closes.
Supply a small load and check powers and currents as described previously.
We suggest to set "max voltage RPM regulator" parameter 0,2Vdc higher than "RPM offset" value
Everything must be OK before proceeding. Apply the same procedure on all the gensets that must be synchronized.

6- Restore of the correct conditions and first automatic starting for synchronization with no load

First of all it's necessary to restore the AVR and RPM offsets to obtain the rated values of voltage and frequency.

Start the first generator in automatic and wait that the switch closes.
Start the second generator in automatic. If it closes it means that AVR and RPM connections are correct.

Both the 2 gensets are working with no load, so the measured power must be very low, not higher than the 5% of the rated power of the generator.
If the power is higher and/or it continues to move (for example 30kvar or kW on gen1 and -20 on gen2; then it goes to -10kvar or kW on gen1 and +40 on gen2; etc…) you have to check and modify the gain and/or times about regulators.

If the problem is about reactive power it's necessary the modification on the AVR settings: check and modify "AVR gain - Kp" (see parameter "A" inside AVR setup). Increasing this value, the control is faster, decreasing this value the control is slower. Set the value to approximately 100 (on both generators). If the problem persists, try to set the KP value to 50 and see if the behavior is better or worse. If it worse, try to set the value to 150. It's necessary to find a value quite correct, even if may happen that the power continues to move a little between the 2 generators

If the problem is about active power it's necessary the modification on the RPM settings: check and modify "Active power gain - Kp" and its delay time (see parameters "C" and "D" inside RPM setup). Increasing "Active power gain - Kp" value, the control is faster, decreasing it the control is slower. Opposite about the delay time: increasing its value the control is slower, decreasing it the control is faster. Normally with no load connected, the active power is quite stable: the RPM regulation are deeeply descripted in the following paragraph 7 about the synchronization with load.

All these parameters about RPM and AVR settings can be modified directly with the generators running to check immediately the resulting effect.
When you find a quite stable condition, you can supply the load.

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7- First automatic sychronization with load

For the active power sharing (kW), you have to act only in the RPM setup (the parameters of the AVR are not necessary).

RPM regulation
Entering into “Synchro Setup”, then “RPM Setup” you find the 2 needed parameters.
They are “RPM gain – KP” and “RPM delay”.
The “RPM gain – KP” has the same behavior of the AVR: if you increase the value the control is faster; the “RPM delay” works in the opposite way; higher the value, slower the control. Leave that delay parameter to 20 and work only on the GAIN.
Set the “RPM gain – KP” to approximately 150 on both generators.
See if the load is stable or if it moves between the 2 generators. If it moves, try to increase the parameter to for example 200 and see if the behavior is better or worse. Eventually try to decrease it to 100 and see if it’s better or worse. Find the best condition. If you can't find a good condition try to increase or decrease also the delay time to fight the genset reactions (if the genset is too quick, increase delay time; if it is too slow decrease delay time.

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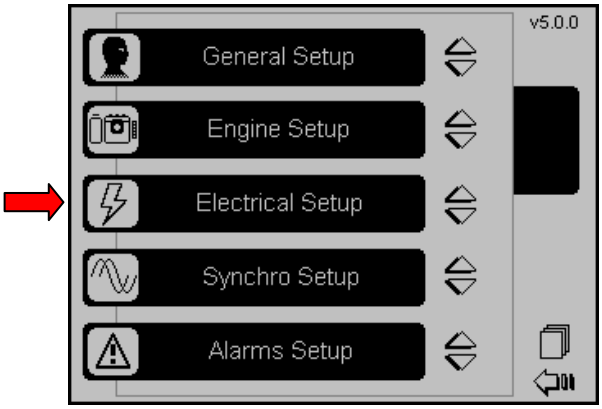
4- 2 Synchronization between generator and mains

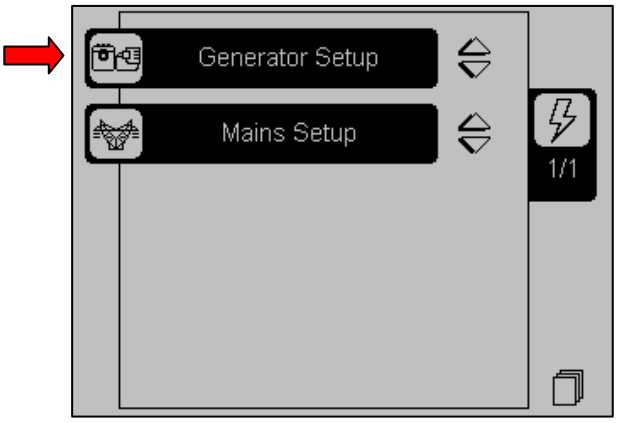
Before synchronizing procedure and tests, it's necessary to test the single generator functions in every detail.
Especially the RPM and AVR regulators settings are very important.
In case of synchronization with the mains, to perform at their best these regulations without disturbance due to the connection to the mains, we suggest to follow this procedure:

1- Verify that the electrical parameters of the generator are correct for the system used

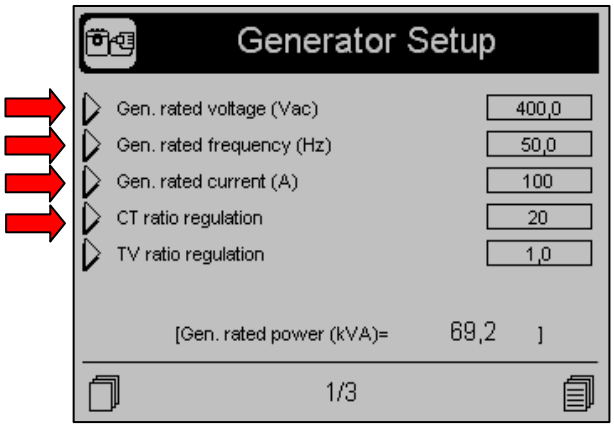
Enter in the menu and select "Electrical Setup":

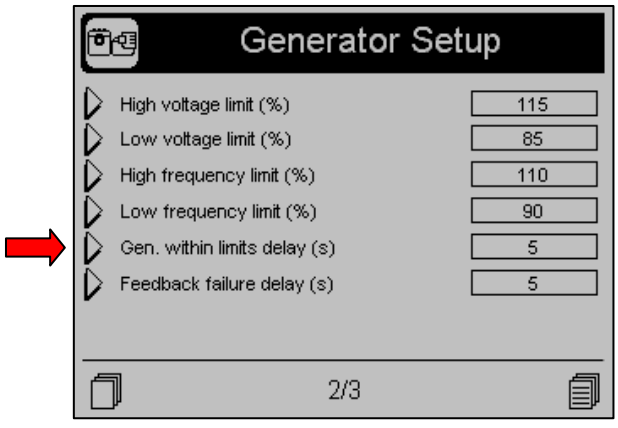


Enter then in the setup dedicated for the generator:



The main parameters to verify are listed below:





Our advice is to increase the parameter "Gen. Within limits delay" to about 10 seconds during the tests.

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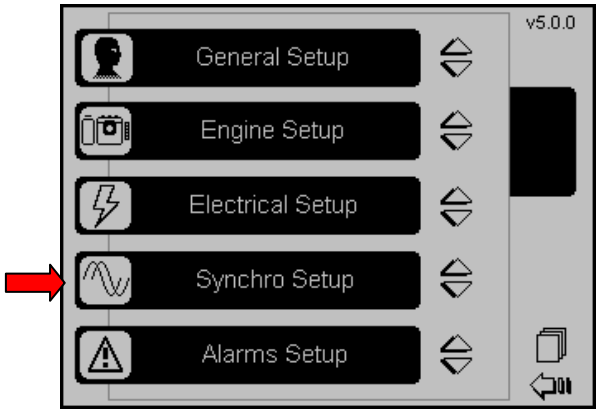
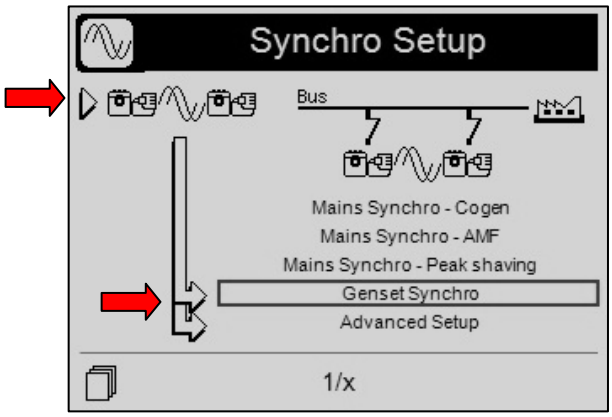
2- Select the “Genset synchro” system

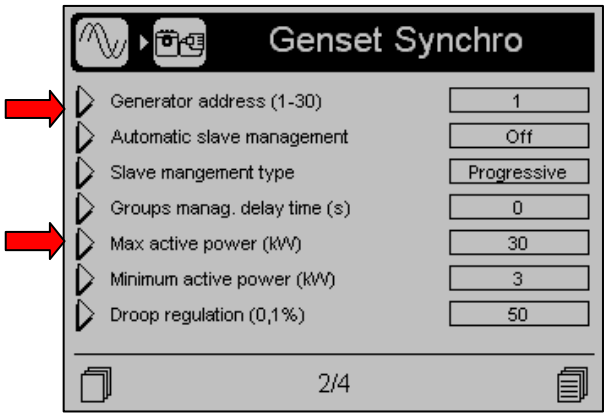
For starting, we suggest to test the genset as it if were for "Gensets synchronization " system. This way it will be possible to make the generator work with no load without controlling the bus on which is normally present the mains. Enter into “Synchro Setup”:



Select the “Genset Synchro” type of synchronization and then the genset synchro setup:



The most important parameters to program are the following:



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3- First manual start of the generator without RPM and AVR control

This test must be made with genset breaker/contactor disconnected to avoid voltage presence on the bus of the system. The first starting of the generator must be made without control and regulations of RPM and voltage by the controller, to be sure that the regulators are working next to the standard settings and the genset conditions are not close to extreme settings. We also suggest to set to "0" the value of the eventual droop on both RPM and AVR/voltage regulators.
This first starting is made disconnecting the regulation of the RPM governor (connector J7, pins 3-4) and of the AVR (connector J7, pins 1-2) from the TE808, and eventually restoring settings or jumpers on the governors to be sure that they can work independently (as in case of a stand-alone generator or as for generator in emergency to mains without synchronization).

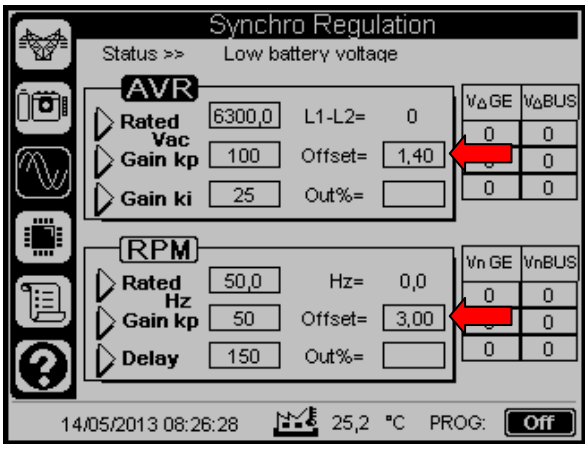
a) Let yourself be guided by the self-learning function
See paragraph 2-7.7.1. Use the first modality of our self-learning function. Set the AVR regulator to obtain the rated voltage (usually 400 Vac) and set the RPM regulator to obtain the rated frequency (usually 50 Hz).

OR

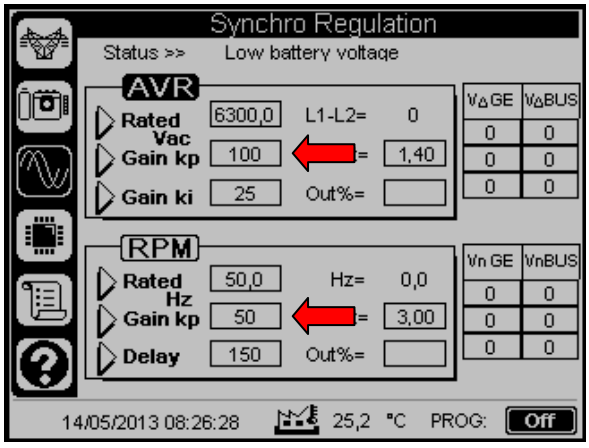
b) Manually check the proper condition
Selecting the MAN (manual) mode on the TE808 and pressing the START button, the generator starts.
With generator started, set the RPM regulator to obtain a frequency next to the rated frequency (usually 50Hz) and set the AVR regulator to obtain a voltage next to the rated voltage (usually 400Vac).
When voltage and frequency are closed to the rated values, it's possible to shut-down the generator.

4- Manual starting of the generator with RPM and AVR control

This test must be performed with genset breaker/contactor disconnected to avoid voltage presence on the bus of the system. Restore the connection between the RPM governore outputs (J7 pins 3-4) and the AVR outputs (J7 pins 1-2) of the TE808 and remember to restore the eventual settings or jumpers to permits external adjustments of RPM and AVR governors.
Verify the offset values about voltage and frequency in the following page (the offset values are Vdc values supplied from the controller to the regulators input).



The default values that you find set as AVR offset and RPM offset on the controller, are average voltage values that should permit to work in conditions similar to the nominal ones. In case of accidental modification, we suggest a value of the AVR offset of about 1,5V and a value of the RPM offset of about 3,0V. Verifiy also that the values of the AVR gain and RPM gain are appropriate.



The default values set as AVR gain and RPM gain on the controller, are average values that should already permit a good regulation control. In case of accidental modification, we suggest a value of the AVR gain of about 100 and a value of the RPM gain of about 200 (values programmable from 0000 to 1000; higher values mean quicker regulations by the TE808 controller).

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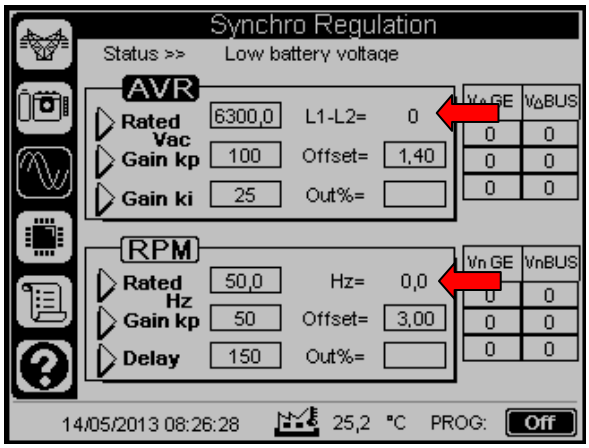
It's now possible to start the generator selecting the MAN mode on the TE808 and pressing the START button.
With generator started, in the same page described previously, verify the voltage and frequency values of the generator.



Selecting the AVR offset parameter, change that value until you reach a voltage equal to the rated required voltage. Repeat the procedure for the RPM offset: find an offset value to reach a frequency equal to the rated required frequency.

5- Automatic starting of the generator with RPM and AVR control

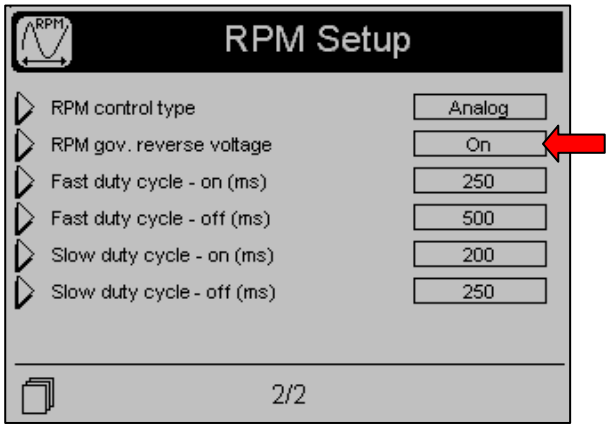
a) Now remember/write these two offset values, to be able to restore them in future; this must be made because it's now necessary to set different AVR and RPM offset values to reach voltage and frequency values lightly different from the rated ones. For example, if the rated voltage and frequency are 400Vac and 50Hz, set the AVR and RPM offsets to have the measured values of voltage and frequency of about 410Vac e 50,5Hz. Once you found these values, shut-down the generator.

First of all be sure that the power device for the insertion of the generator (contactor, switch, breaker, etc) can be drived and closed by the TE808. This test must be done without load.
Be careful: during this test, if good conditions are reached, the generator supplies the bus/load side by its power insertion.
To make this test, select the automatic mode and give the remote start to the controller (connector J3 pin 5). The generator starts and for the first 10 seconds it must maintain the voltage and frequency values lightly different from the rated ones (if the values have been set as previously indicated, the generator should start at 410Vac and 50,5Hz). After these 10 seconds, the controller begins to drive the AVR and RPM regulators to reach the rated set values (400Vac and 50,0Hz). If the regulation is correct, once reached the rated values, the generator insertion breaker/contactor closes.

OR

b) Let yourself be guided by the self-learning function
See paragraph 2-7.7.2. Use the second modality of our self-learning function. This second mode permits to automatically move the AVR and RPM offsets and check if the regulation is correct. Finally, it tests if it's possible to close the generator contactor.

The possible problems that can occour are the followings:
-the voltage of the generator, instead of moving to the rated voltage, it moves in opposite direction (with probable alarms intervention): in this case, shut-down the generator and try to reverse the 2 command wires of the AVR (connector J7, pins 1-2). Probably it's also necessary to reverse the "sign" of the AVR offset (i.e. if in the previous example the offset was set to 1,3V, eventually set it to -1,3V). Try with both positive and negative values.
-the frequency of the generator, instead of moving to the rated frequency, it moves in opposite direction (with probable alarms intervention): in this case, shut-down the generator and try to modify the parameter "RPM reverse voltage" in the menu "Synchro Setup - RPM Setup - page 2" (see the following image).



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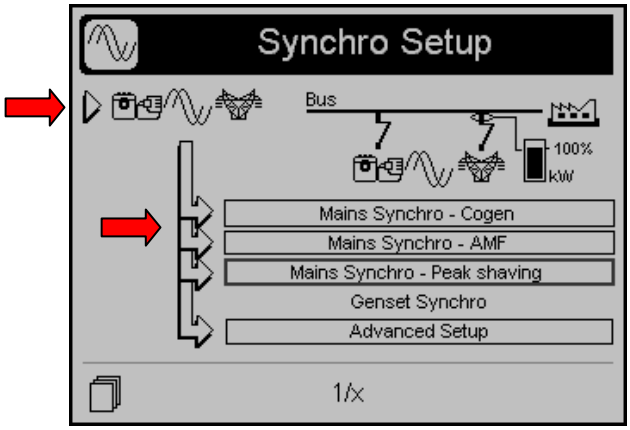
If the problem is not solved following this way, try to reverse also the command wires to the RPM regulator (connector J7 pins 3-4) and repeat the modification to the parameter "RPM reverse voltage". Probably in this phase it could be necessary to set a new different value of the RPM offset.

-the generator insertion switch/contactor doesn't close and the alarm "generator feedback" appears: verify the connections to the insertion device. In case of motorized switch, verify if a mode selector is present; in this case it must be set to "automatic".
-the generator insertion switch/contactor doesn't close and no alarm appears: verify that effectively the voltage and frequency values of the generator are stable and very close to the rated values.

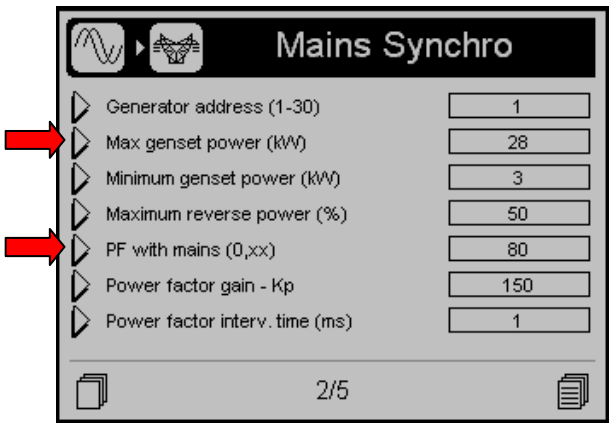
It's necessary to reach the correct functioning state, included the closure of the generator insertion device, before proceeding with the next steps.

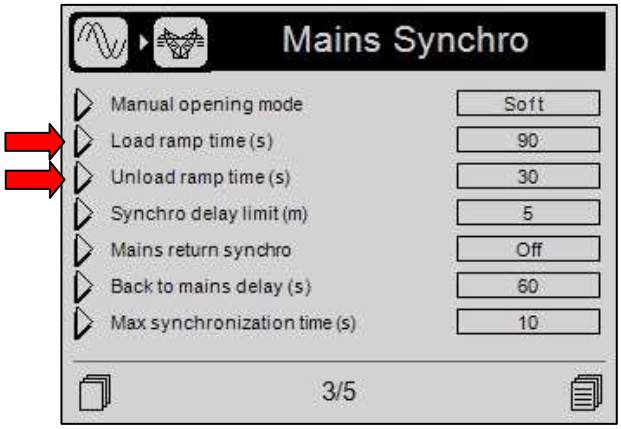
6- Restore of the correct conditions and first automatic starting for synchronization with the mains

First of all it's necessary to restore the AVR and RPM offsets to the values to obtain the rated values of voltage and frequency. Successively it's necessary to restore the system as "Mains Synchro":



and set the most important parameters about the synchronization with the mains, as indicated below:





-The "maximum active power" is very important because it's the value of the power in kw that the generator will deliver to the mains. For the first tests, we advise to keep a value approximately 25-30% of the rated power of the generator.
-The "power factor with mains" normally must be set to 80 (i.e. 0,80); pay attention that this value may depend exclusively on the tipology of load prevailing (inductive/capacitive) of the system. It may that it's not possible to reach the set value of the power factor.
-The "load ramp time" is the extimated time necessary that passes from the insertion of the generator on mains and the full deliver of power of the generator (i.e. the generator inserts with delivered power approximately zero and reaches the set value of the maximum active power after this time). For the tests set the time to 20-30sec.
-The "unload time ramp" is the time that the generator needs to pass from the deliver of the maximum active power to the minimum delivery of power before switching-off (in case of stop by removing the remote start).

It's now possible to reactivate the power on the mains, so that on the Bus there is the mains voltage, that is also detected by the TE808 Platinum.

Verify that there isn't any alarm about the phase sequence of the mains.
It's possible to set the controller in AUT mode and start the generator with the remote start signal.
If the previous passages have been completed correctly, the controller commands the insertion of the generator with delivery of power on the mains.

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The fault conditions that may happen are the followings:
-*The active power (**kW**) delivered is not stable, it changes quickly/slowly or oscillates:* verify and eventually adjust the RPM gain and the relative delay time. If the machine is too “jerky” and quick in the regulation, decrease first the value of the RPM gain and then try also to increase its relative delay time. If the response of the engine is too slow, set the values in the opposite way (i.e. eventually increase the RPM gain and successively decrease its relative delay time).
-*The reactive power (**kVAR**) delivered is not stable, it changes quickly/slowly or oscillates:* verify and eventually adjust the AVR gain and its relative delay time. If the machine is too “jerky” and quick in the regulation, decrease first the value of the AVR gain and then try also to increase its relative delay time. If the response of the engine is too slow, set the values in the opposite way (i.e. eventually increase the AVR gain and successively decrease its relative delay time).

In accordance to the type of system that you have, check the installation and programmation instructions about the "Synchro between mains and 1 generator" system, paragraph 2-3.2.

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TE808 Platinum

Section 5 - Remote control

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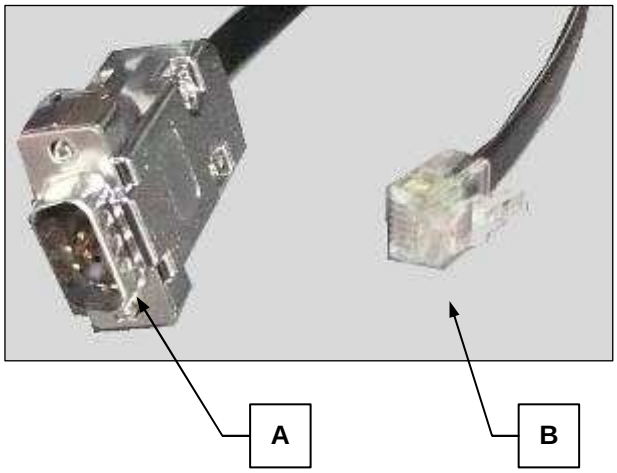
5- 1 Preliminary connection instructions

The controller is equipped with a TE808 GSM system easy to use.

5- 1.1 Serial cable connection

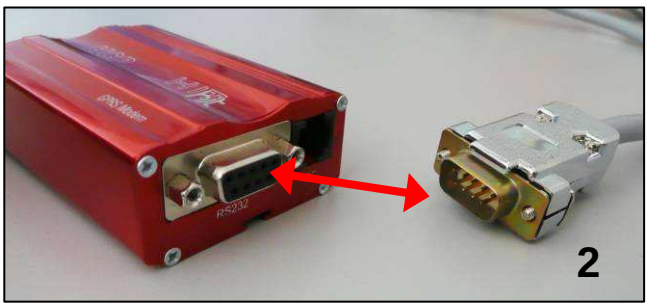
You can easily connect the GSM modem through the serial cable 9 poles female female
This cable (code 51C7) consists of two connectors:

a) the connector on the GSM modem
b) TE808 side connector



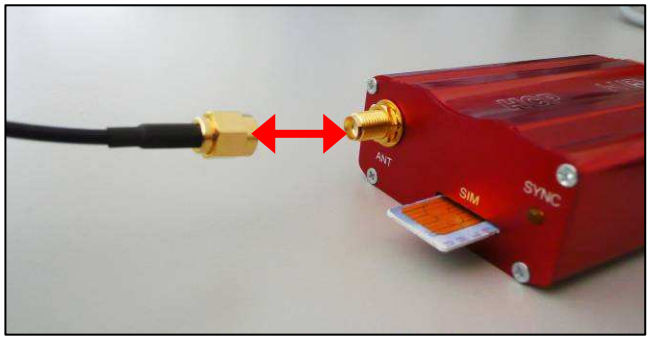
Connect the cable as shown in the pictures 1 and 2: in figure 1 you can see the connection to the TE808.

In figure 2 you can see the connection with the GSM modem.



5- 1.2 Antenna connection

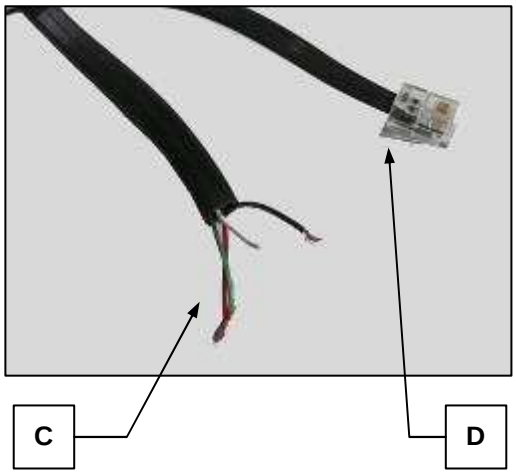
Connect the antenna to the GSM modem as shown in the figure. When the antenna connector is fixed to the antenna and free from barriers you should have a good signal quality. This antenna has a magnetic base that allows it to be attached to metal supports without tools.



5- 1.3 Power connection

(8-32Vdc power supply)
Use the included power cord. These are the terminals of the power cable:

c) free wires for power-on
d) connector on the GSM.



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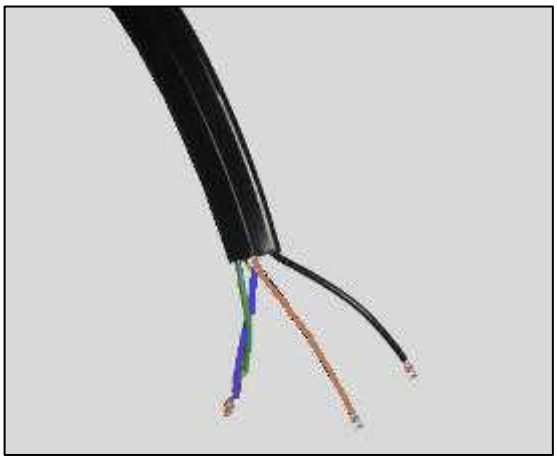
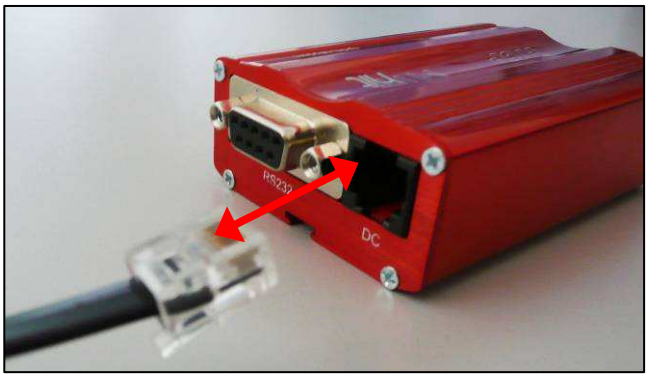
Connect the cables (figure below) to the power supply:



You have to connect the black and the brown together to the battery negative, and the green and the blue together to the battery positive.

Then, connect the other side of the connector to the GSM modem:



5- 1.4 SIM card settings

When the system is connected, you must insert the SIM card in the GSM modem. **Before doing this, you should follow these steps to make sure the SIM settings are correct:**
- Insert the SIM card inside a mobile phone
- Turn on the phone and if asked the PIN code:

- Enter parameters in the "security" of the phone, then disable the option to request a PIN.
- Turn off your phone then turn on again, should not require a PIN. Otherwise, go back into security menu and try again.
- VERY IMPORTANT! The PIN code request must be disabled. Try sending an SMS message to another phone, and reply with the receiver to the message of the phone. If it doesn't work, check in the configuration of SMS if the phone "SMS Service Number" is set correctly and then try again.
- When the system works, remove the SIM card from the phone and put it into the GSM modem.

5- 1.5 LED diagnosis

When you power up the GSM modem, the LED flashes to show that it is running. Also, after switching on:
- For a few seconds, it blinks slowly every 1 second: normal condition of pre-operation
- After a few seconds after supply, it starts flashing every 2-3 seconds: normal condition, operation enabled
- If it continues to blink slowly, something may be wrong. Possible causes:
  - SIM card not included
  - PIN is not disabled
  - GSM signal absent or very low, try to change the place where the antenna is located

5- 1.6 On-board settings

It's necessary to configure the serial port of the TE808 for the GSM communication (see Connectivity setup):
If you use the RS232 port:
- Parameter "Protocol": Gsm modem
- Parameter "Baud rate": 9600

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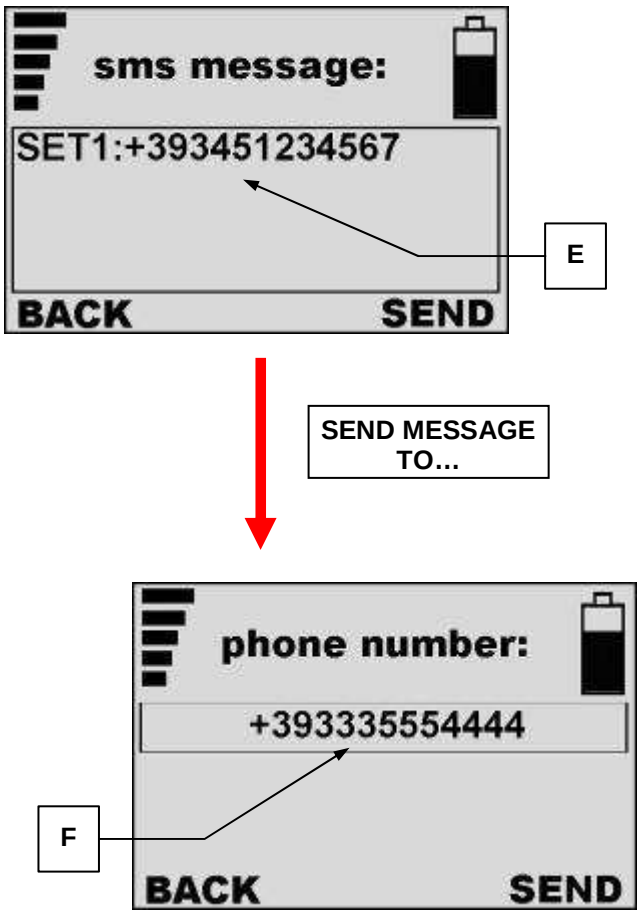
5- 2 SMS command and control

Automatically when the GSM modem and the controller TE808 are connected together, the TE808 sets the GSM modem for all parameters.
You only need to set the parameters for automatic call (if different from the preset from the factory) and mobile phone numbers.

WARNING:
Text messages must be wrote exactly following uppercase or lowercase characters.

Example of the phone display:



To set up mobile phone numbers to which the board must send the messages, the TE808 should receive a message (eg the first mobile phone number):
SET1:+393451234567
E) number of the first mobile phone enabled to receive SMS messages from the controller TE808.
F) the number of the SIM card in the GSM modem. For information about these settings, the TE808 answers the phone with the following message:
"SMS number +393451234567 set in place: 1".
If you wish, you can send (via your phone) other messages to the GSM modem to set up additional numbers (up to 3); for example:
"SET2:394441112223" sets the second mobile phone number to which SMS will be sent.

If you have already established a mobile number as Set 2, and you want to change it, you can do so by sending another message with the new number, eg: "SET2:+1199999999; the former is automatically deleted and replaced.
If you want to permanently delete a phone number in the heading of TE808, you can send a message with an "empty number", for example "SET3:". TE808 receives the message and sets the third mobile number as empty, ie delete it.

5- 2.1 SMS commands

If you wish, you can also send commands to the TE808 which will then be automatically executed. This is the list of commands:

Command	Action
Man	It selects the manual mode on the TE808
Aut	It selects the automatic mode on the TE808
Test	TE808 passes to test mode
Off	It selects the Off mode on the TE808
Reset	It permits to reset the alarms of the TE808
Start	TE808 starts the generator in manual mode
Stop	TE808 stops the generator in manual mode
Info	TE808 responds with an SMS with all the important informations and measures about the system
Kr	TE808 closes the mains contactor
Kg	TE808 closes the generator contactor
Lock	TE808 shows the alarm “system block” (set for engine stop and doesn’t permit to start). To make the alarm disappear, send again the message “Lock”

The measures available in message "info" are:
Vgen: three-phase voltages
FG: frequency generator
Vbat: Battery voltage
h: hours worked
Eng: state of the motor (0 = Stop, 1 = started)
Fuel%: amount of fuel in the tank
KG: generator contactor status (0 = off, 1 = on)
kW: three-phase total load consumption

Info= sample message:
VGen:400; 403; 400; FG:50; Vbat:12,3; h:100; Eng:1; Fuel%:100; KG:1; kW:23;

You can also send several commands in the same message to the TE808 as:
Man; Start; Info

In this case, the TE808 will go into manual mode, starts the generator will then sends a message like "Info" to read the measurement.

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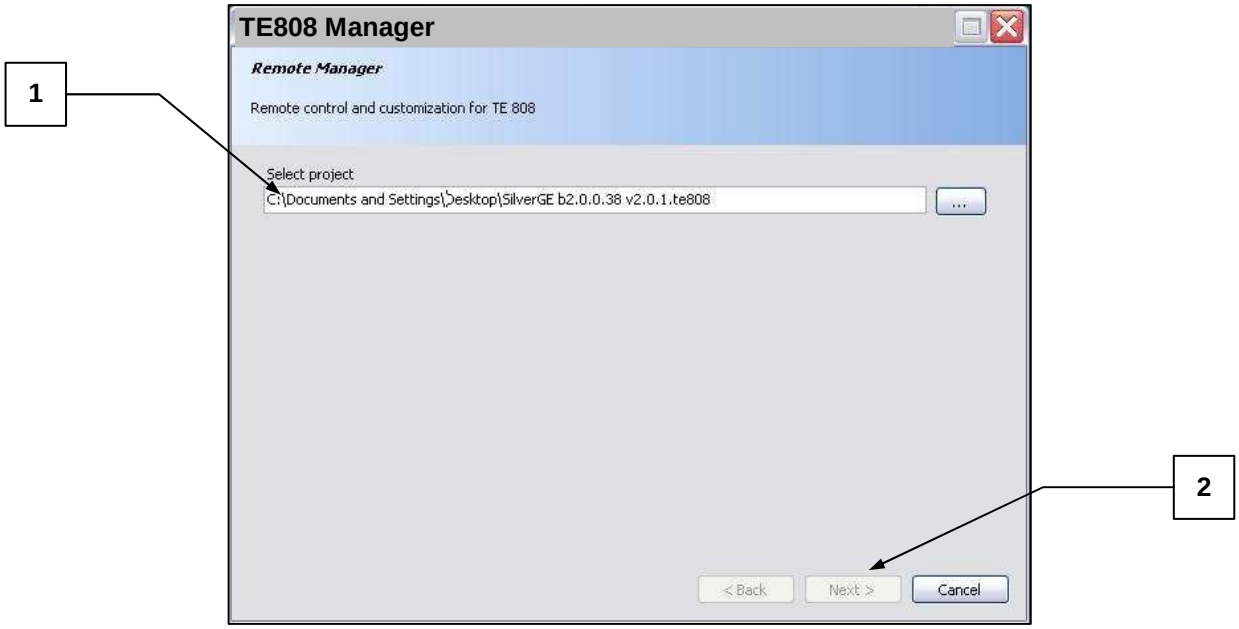
5- 3 Remote control software

5- 3.1 TE808 Monitor

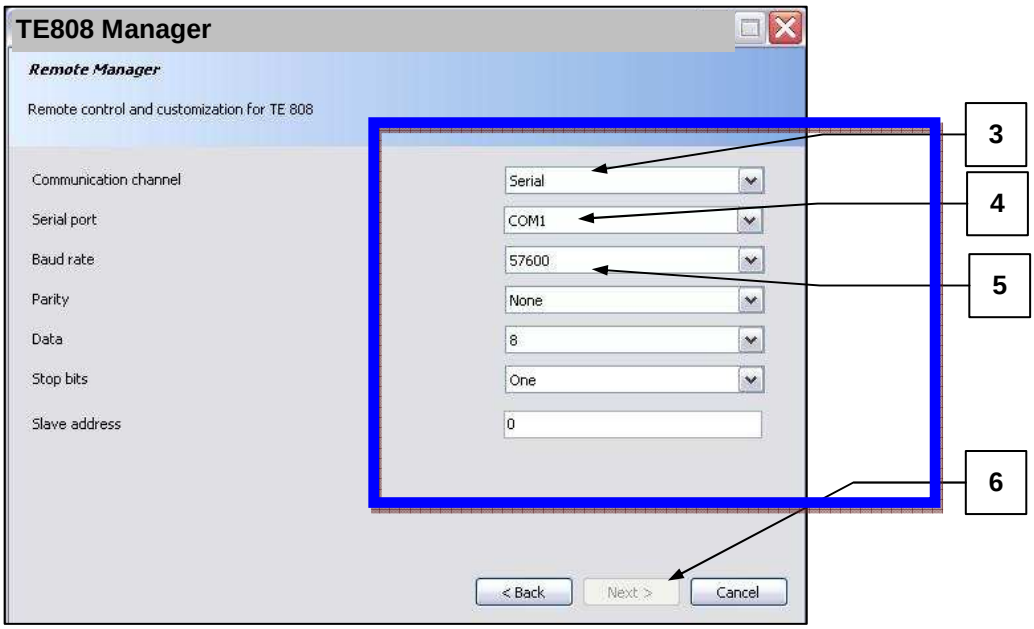
To install the TE808 remote control software ("TE808 Monitor"), you must install the "TE808 Utilities" pack.
When installed, launch "Tecnoelettra - TE Utilities" software from your softwares list.
Then follow instructions by "TE808 Manager" tool that permits to access to the "TE808 monitor".

1. The software asks you the type of project installed on the TE808; find that file
2. When selected, press "next" to go ahead.



Procedure for standard TE808 via serial cable connected to a PC

You must use cable code 51C2.



3. Select "Serial" as type of connection;
4. Select the COM port number;
5. Select the speed (the same of baud rate in "Connectivity Setup ");
6. Confirm "Next" to move forward;

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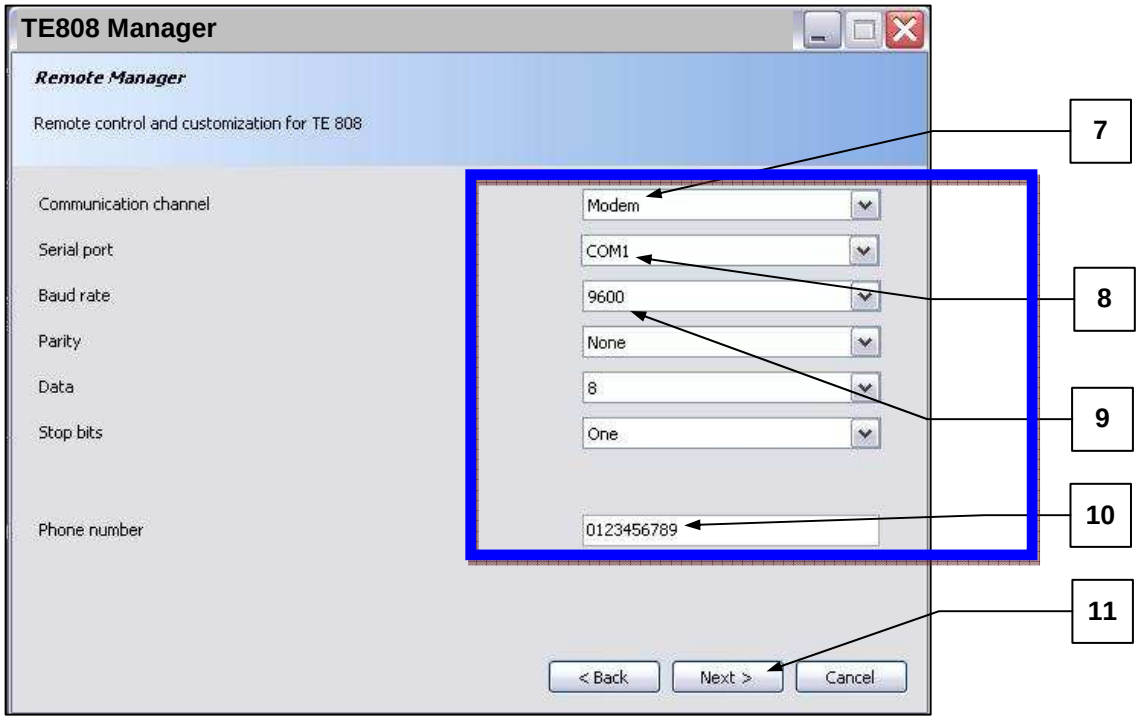
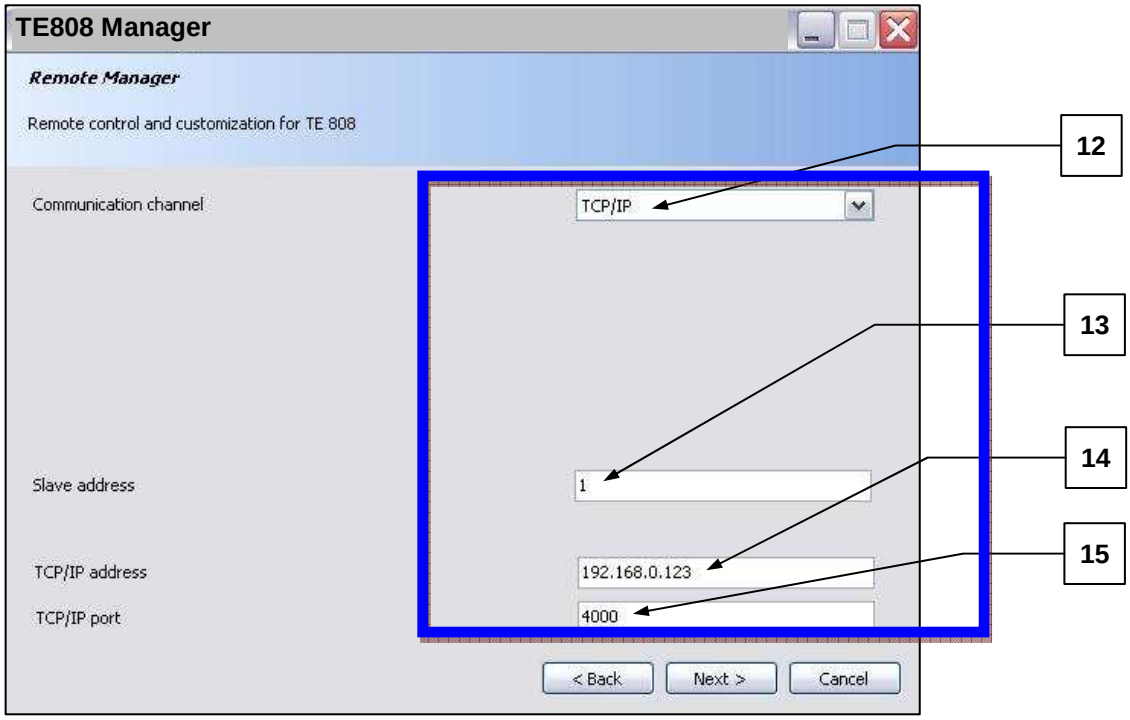
Procedure for communication via Modem



7. Select Modem as type of connection;
8. Select the COM port number connected to the modem;
9. Select the speed (the same of baud rate in "Connectivity Setup " on serial port RS232);
10. Digit the number you want to call (the phone number of the modem connected to the TE808);
11. Confirm with "Next"

Procedure for TE808 connection via TCP/IP converter (communication networks LAN / Ethernet)



12. Select TCP/IP
13. TE808 identification number (usually "1");
14. IP address assigned to the network cable connected to the converter;
15. Enter serial port number of the serial port on converter (always "4000");

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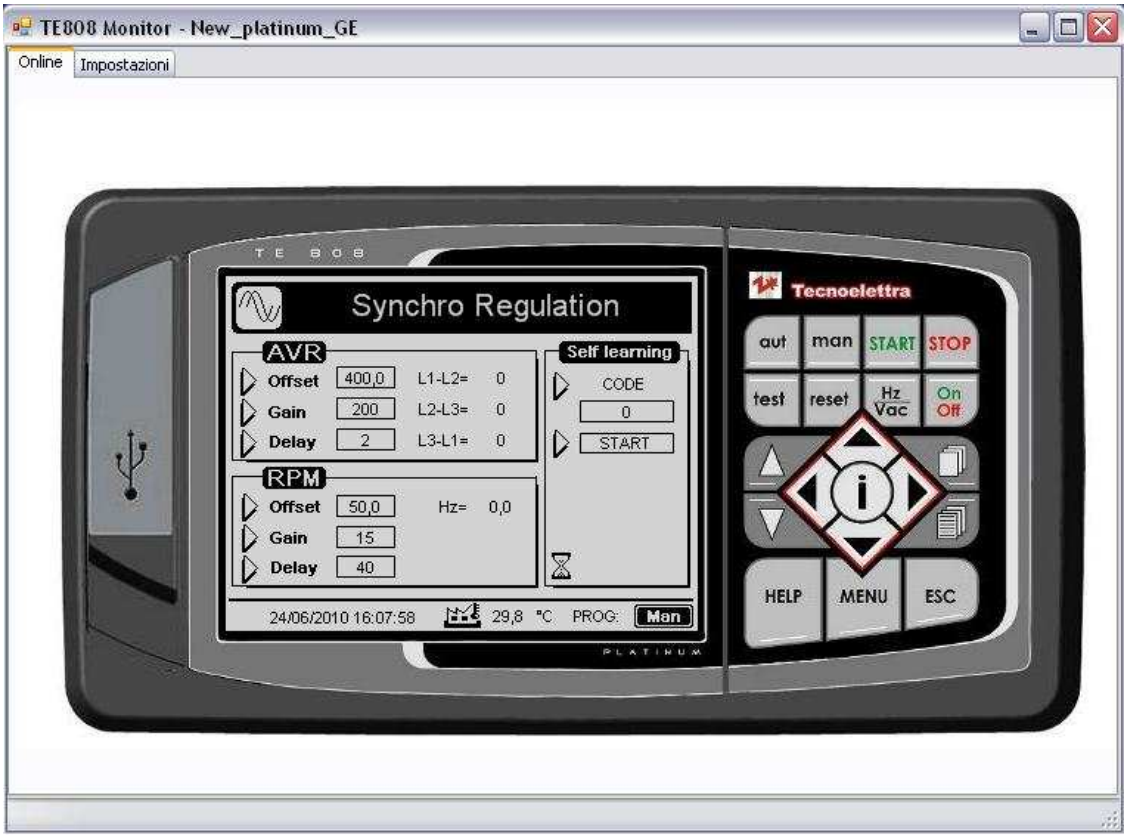
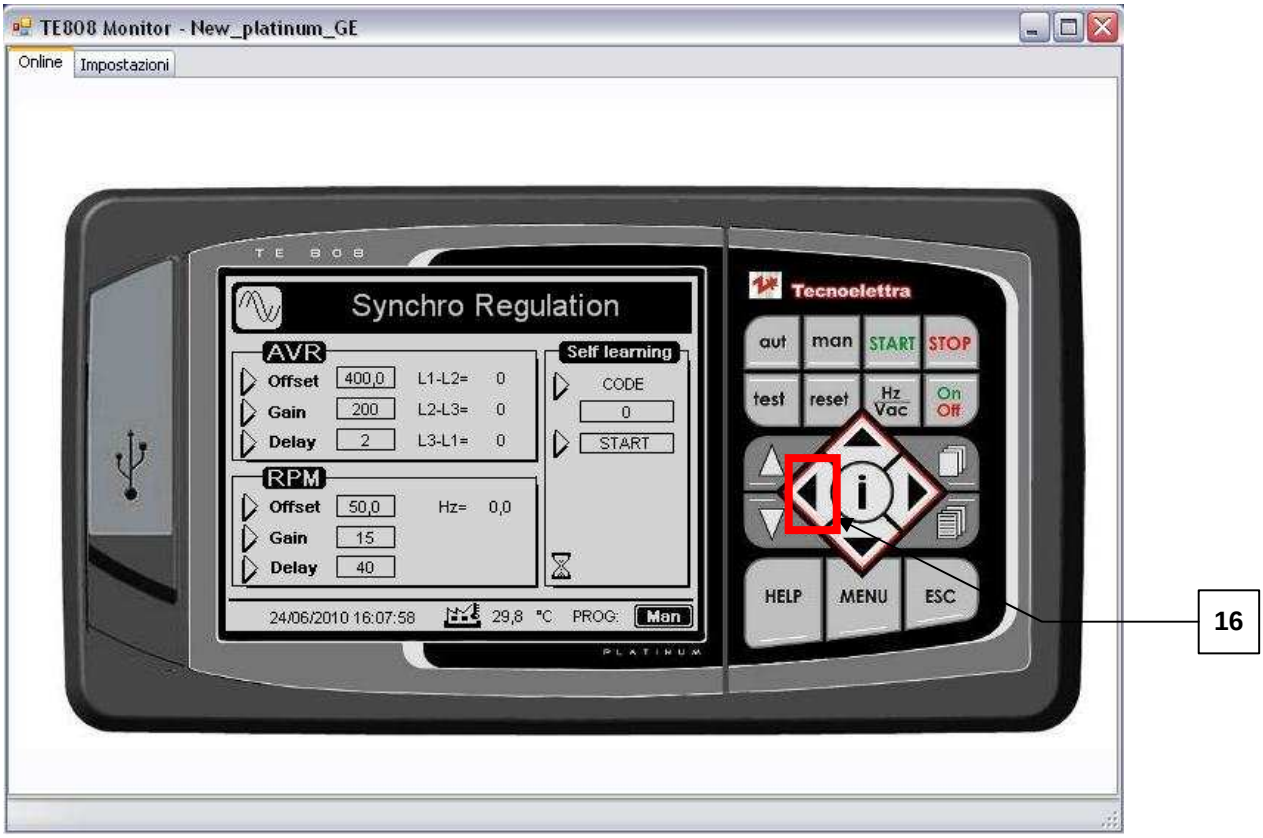
When you are Online, you can use the Remote Control Software with the same procedure normally used when you are in front of the controller TE808; you should use the mouse to act on the buttons. A red box will help you locate the button you are selecting.



16. When you have your mouse cursor on buttons active, these are highlighted by a red square. Click the left mouse button to activate it.



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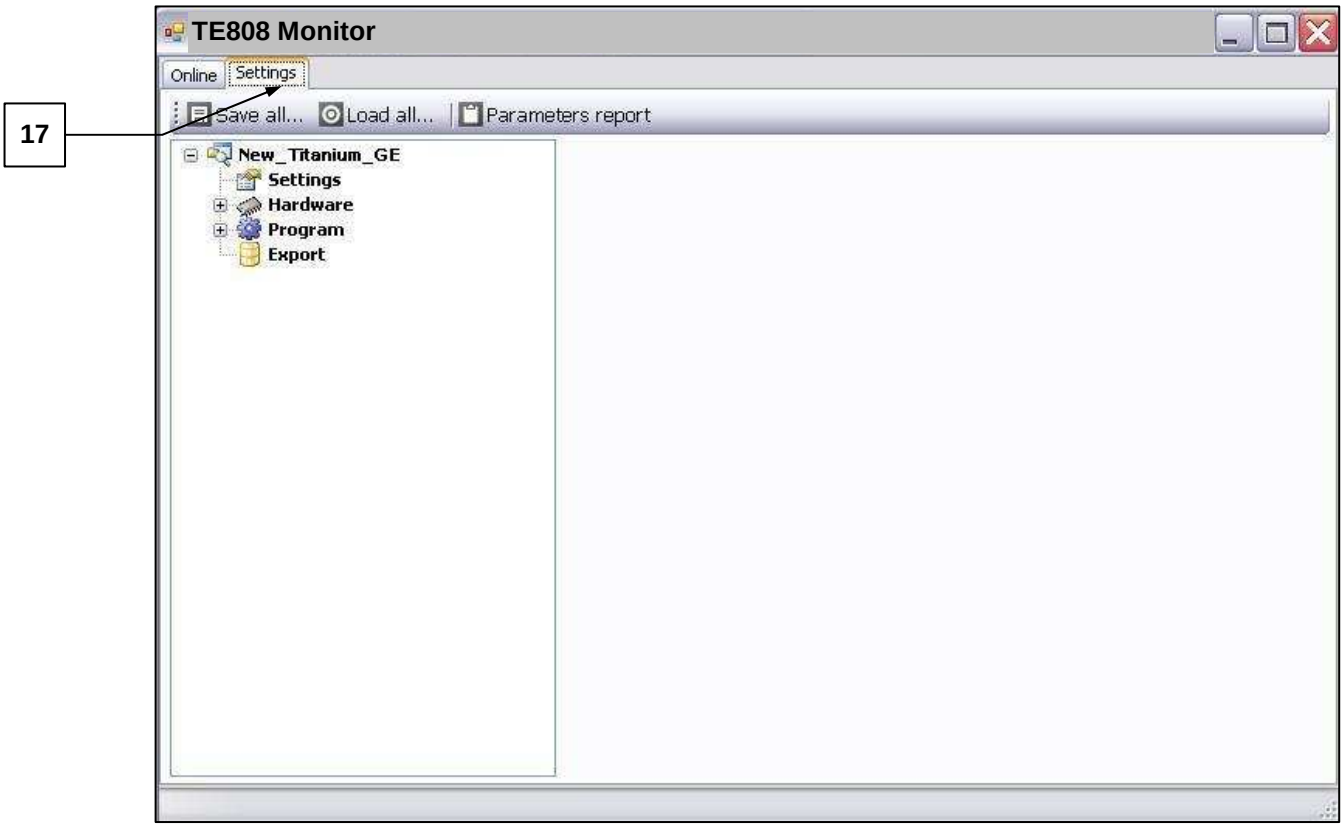
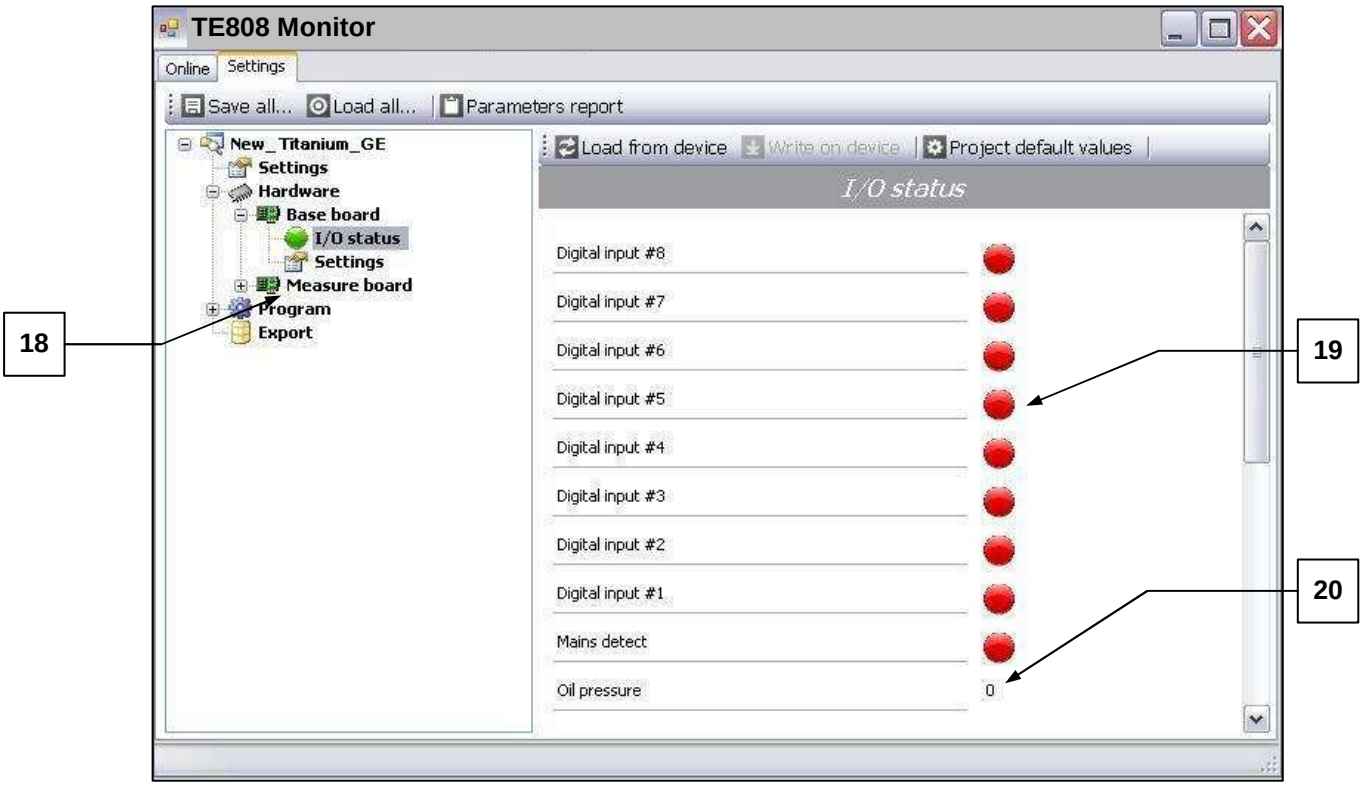
17. When you change the mode to "Settings", you can check all the measurements, all the states of input / output settings and the list log.



18. When you select, for example, the "TE808 board" to verify the state of I / O, you can see all inputs and outputs states of engine sensors and controls;
19. Virtual lamps show the status, red for input / output open, green for input / output closed;
20. Numbers show the values of measurement;



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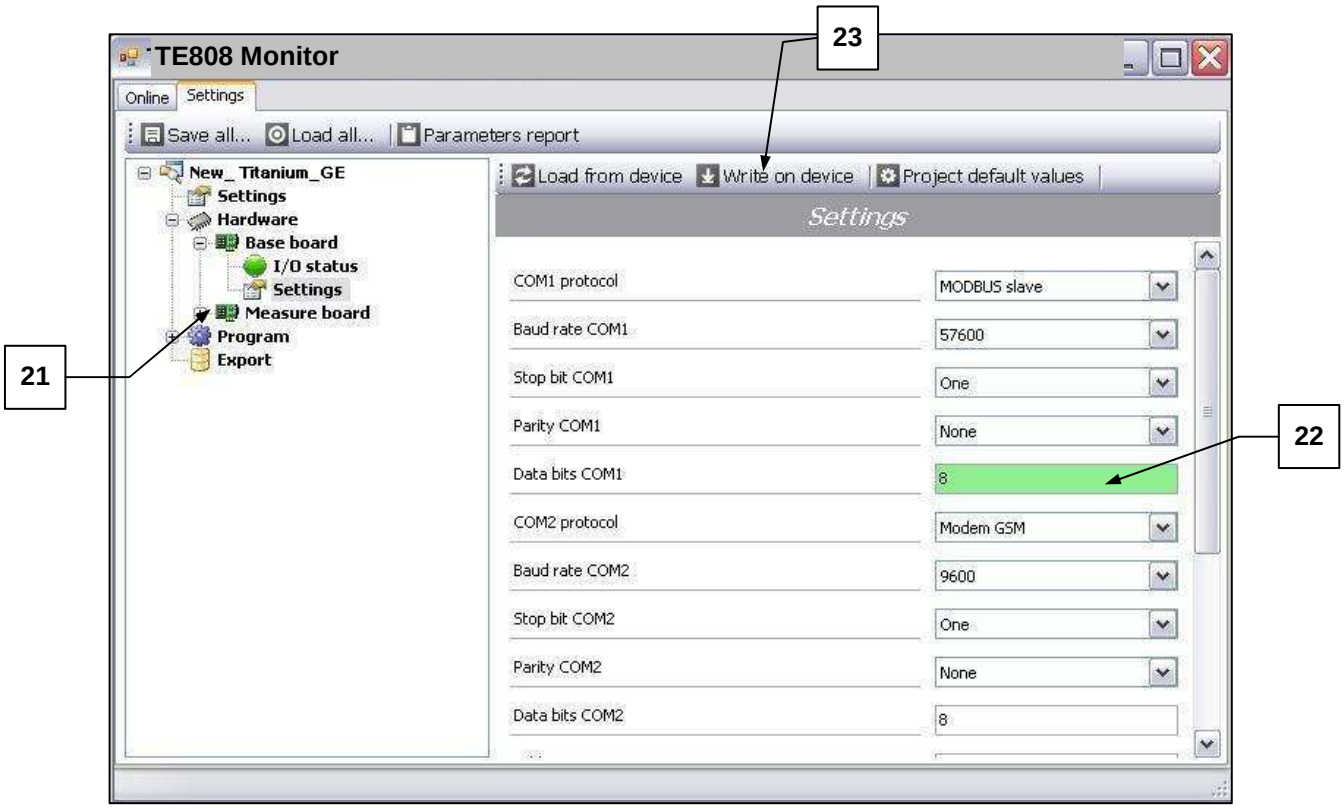
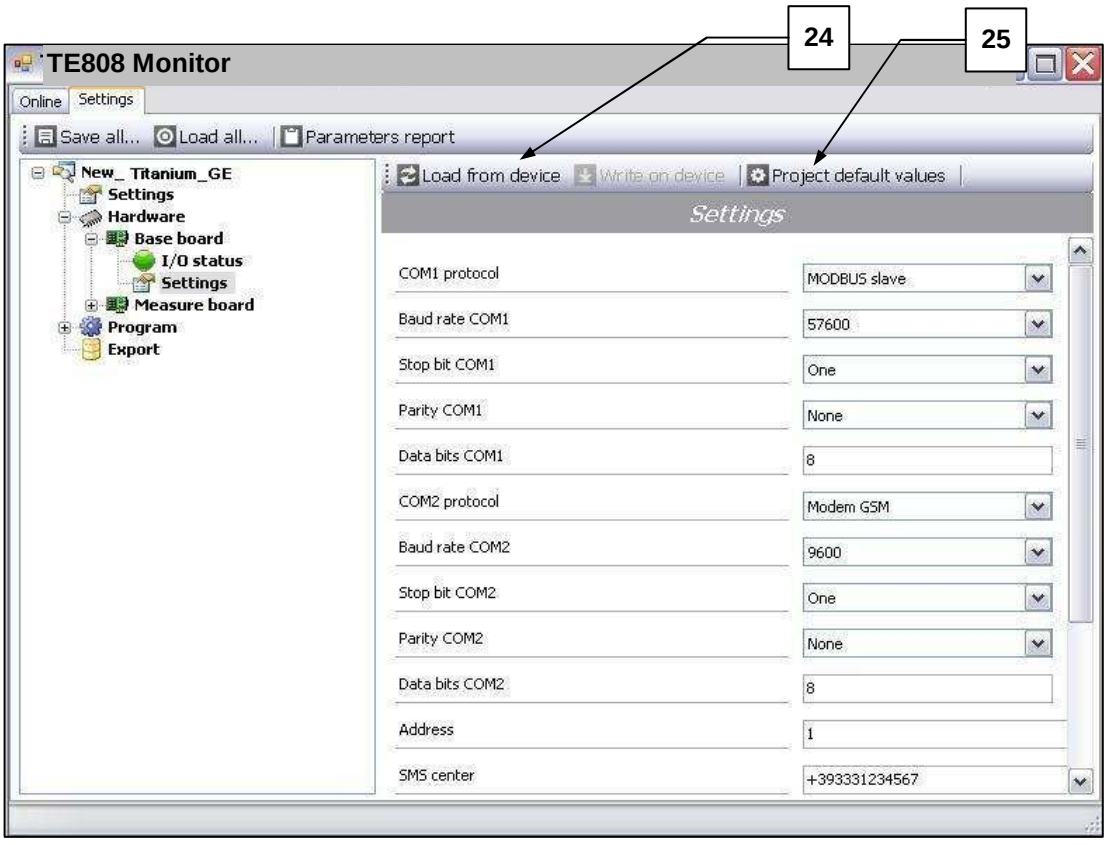
21. When you select, for example, "TE808 board" to check the "Settings", you can see all parameters that can be set. In this case you can change the settings for serial communication and modem parameters;
22. When you change a parameter and confirm the change by the Enter key, the box turns green and activates the feature to set the text in TE808 (see paragraph 23);
23. Press "Write in your device" to write and store the modified parameter in TE808;



24. It is also possible to press "Load from device" to read parameters actually set in the TE808 controller;
25. If you press "Project Default values" all the parameters that differ from the default become orange and return to default: now you can upgrade the parameters on the controller as described on point 22/23;



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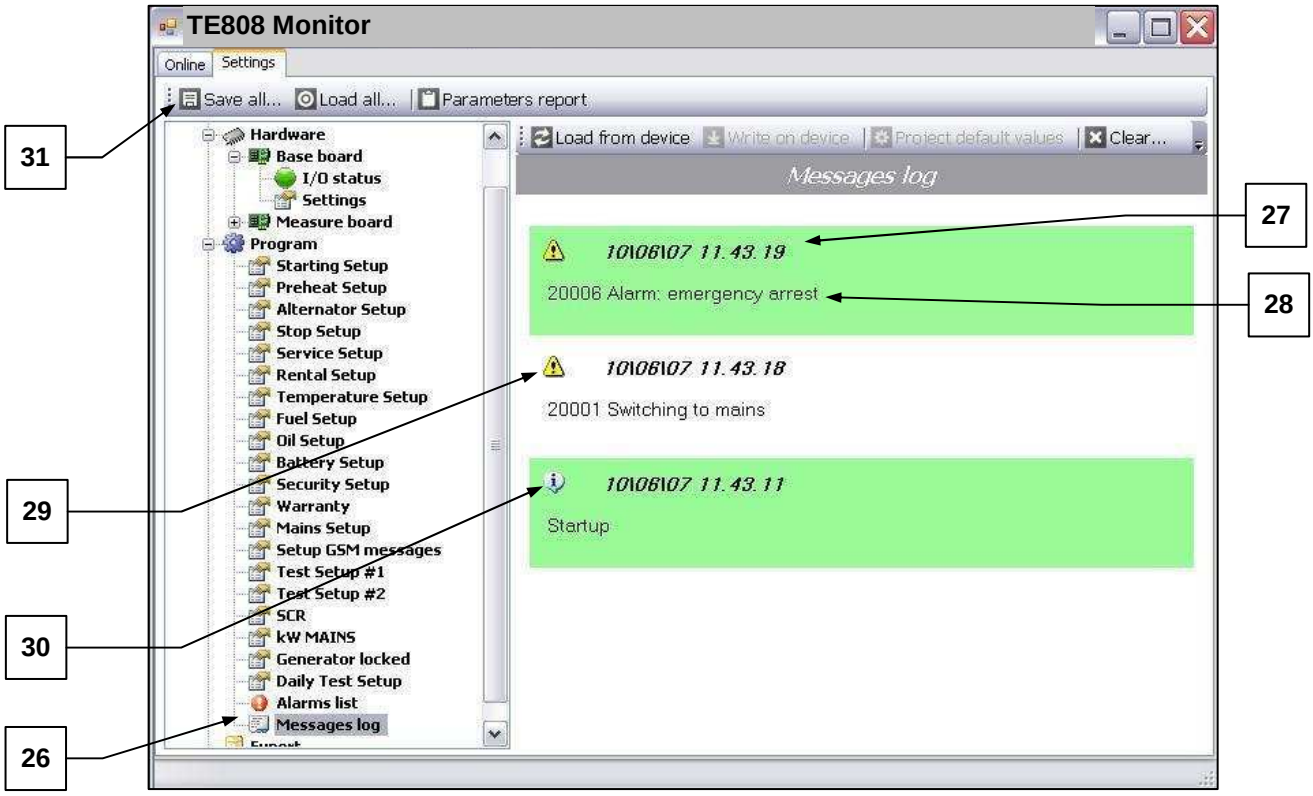
26. If you select "Log Messages" you have access to events list stored on the card. All events are stored with date and time, with the message of explanation and a symbol that identifies if the message is a warning or an information;
27. Date and time;
28. Messages;
29. Warning symbol;
30. Info symbol;
31. Functions of the Settings menu:
-Save all: you can use this function to export all the parameters values into a .ters file;
-Load all: you can use this button to import the settings stored in .ters files into the controller. WARNING: use this function only if .ters file was created with the same project version;
-Parameters report: you can use this function to create a printable list of all the parameters and alarms;



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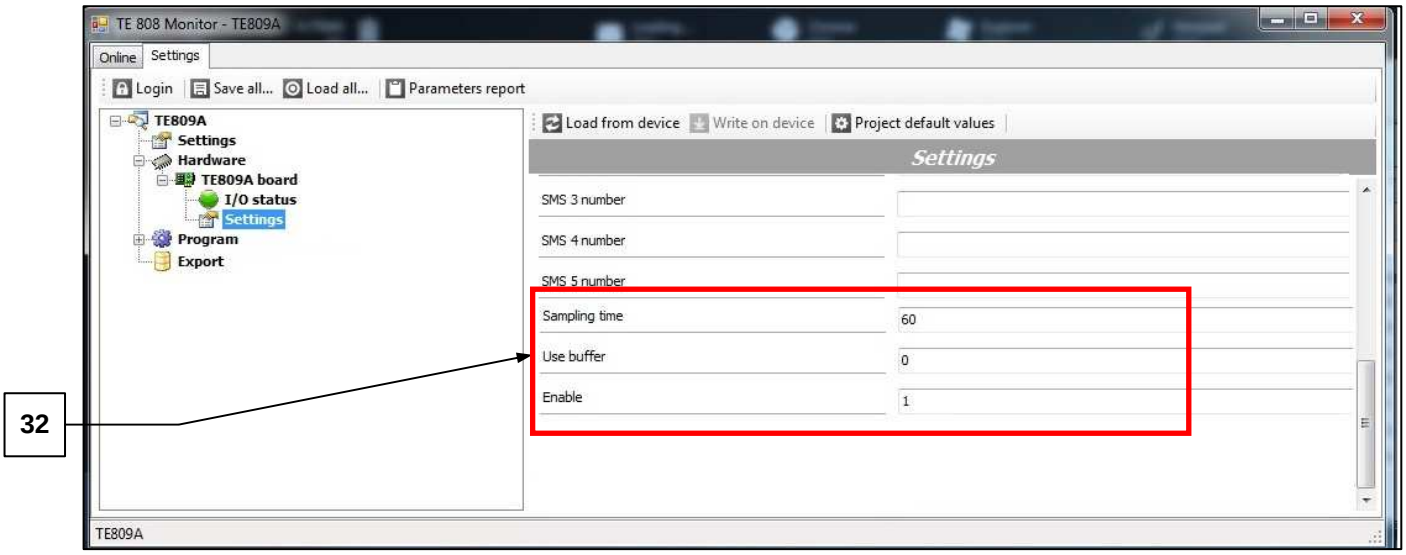
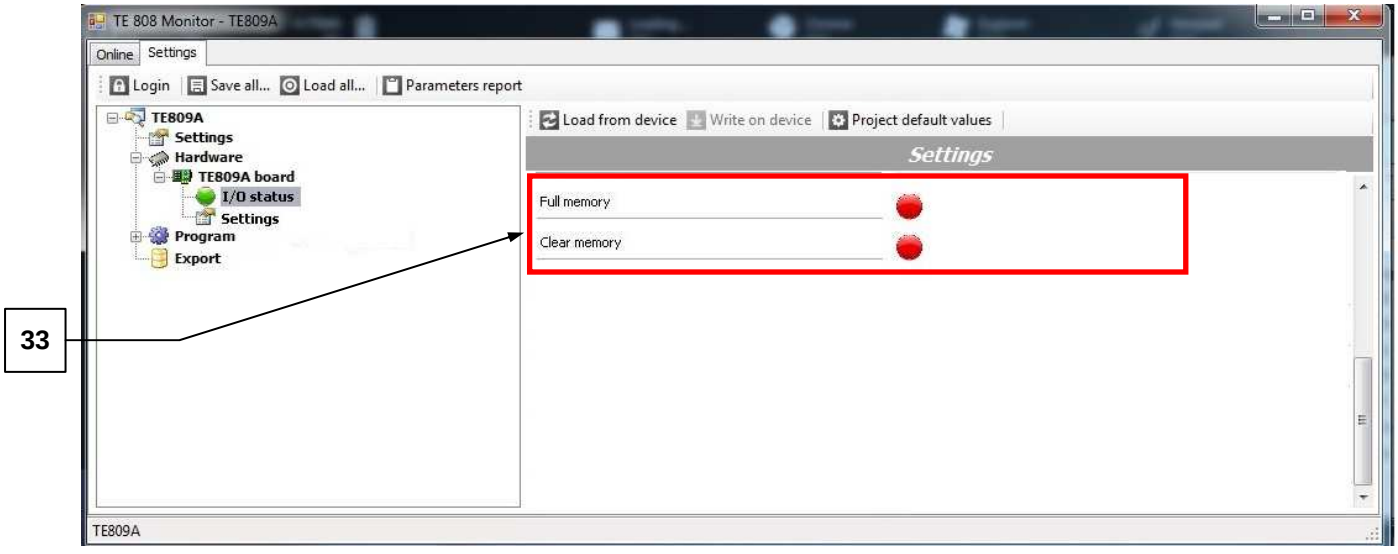
5- 3.2 Memory setting for data-logger



32. You can set the dedicated part of the memory for the data-logger function. The parameters, inside Hardware → TE808 board → Settings, are:

- Sampling time (5-65535s): you can program the number of seconds to detect datalogger values.
- Use buffer: if programmed at 0, the memory will be filled FLAT MODE: each sampling timer cycle will trigger a data acquisition from datalogger; if programmed at 1 the memory will be filled BUFFER MODE: samples are stored inside buffered 5% of total capacity; when this temporary partition is complete, the average value of samples is saved inside 95% partition and the buffer is cleared to restart the sampling procedure. When special alarm events happens, the whole buffer is stored inside 95% partition to have a more detailed understanding of the problem.
- Enable: if 1, the datalogger function is enabled and ready.



33. Memory state (inside I/O status):

- Full memory: a green dot means that memory must be erased manually in order to continue data acquisition from datalogger.
- Clear memory: a green dot means memory erasing procedure active.

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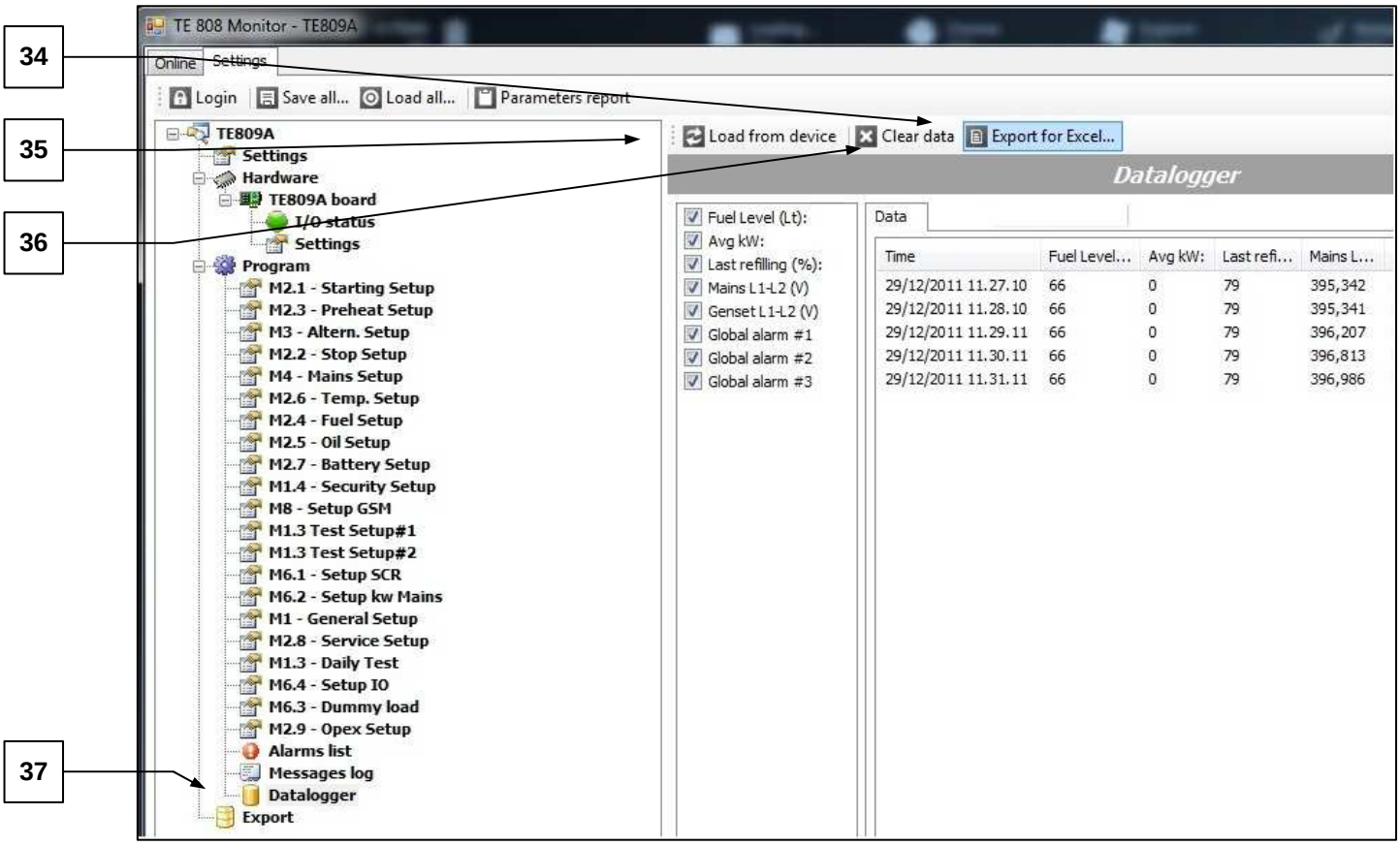
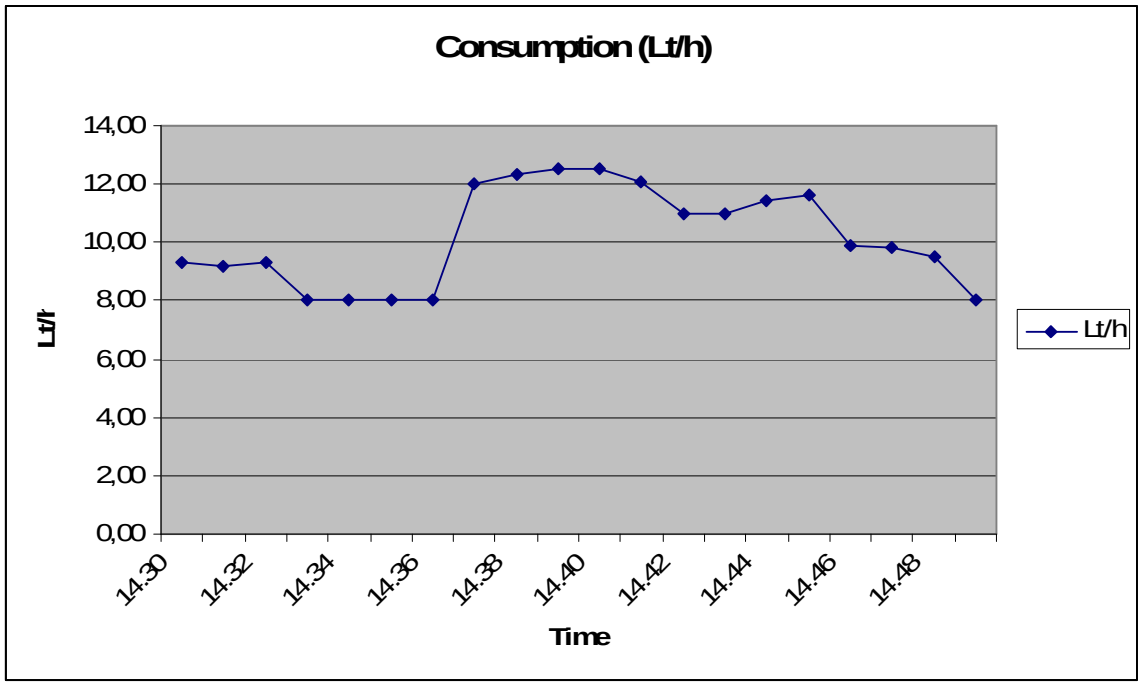
5- 3.3 Data-logger function



34. Press this button to export all data samples into an Excel compatible file and to create trend graphics and stats (see figure below).
35. Press this button to send data request to connected TE808, if data-logger function is enabled, data samples will be received within few seconds.
36. Press this button to clear data-logger memory.
37. Datalogger indicator inside project tree.



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5- 3.4 Logged Variables

The available variables saved inside datalogger memory are:

POS.	NAME	DESCRIPTION
A	Fuel Level (Lt)	Litres of fuel stored inside the tank
B	Avg kW	Partial average active power measured during work cycle
C	Last refilling (%)	Last refilling percentage
D	Mains L1-L2 (V)	Mains instant voltage line 1
E	Genset L1-L2 (V)	Generator instant voltage line 1
F	Global alarm #1	Status of global alarm variable #1
G	Global alarm #2	Status of global alarm variable #2
H	Global alarm #3	Status of global alarm variable #3

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Section 6 – Firmware and project download

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6- 1 Firmware and project installation instructions

6- 1.1 Firmware update

DfuSeDemo install following the instructions on the screen

- Double click on Setup.exe in the folder Dfuse.
- GettingStarted_DFU.pdf Consult the document for more information.
- Completed the installation start the program DfuSeDemo v1.0.
  START -> Programs -> ST -> DfuSe Demonstration (default route)

Enable the USB port to download the TE808.

- With TE808 off, hold the “STOP” button and energize the controller
- An acustic sound warns that your download firmware via USB is ok.
- Now you must connect the USB cable (type “A-male / A-male”) from the PC to TE808.
- If we need to install the USB driver, this is located in the installation folder of the program DfuSe (the USB driver file is "STDFU.INF).
- If the connection is successful, the program will appear as in Figure 1.

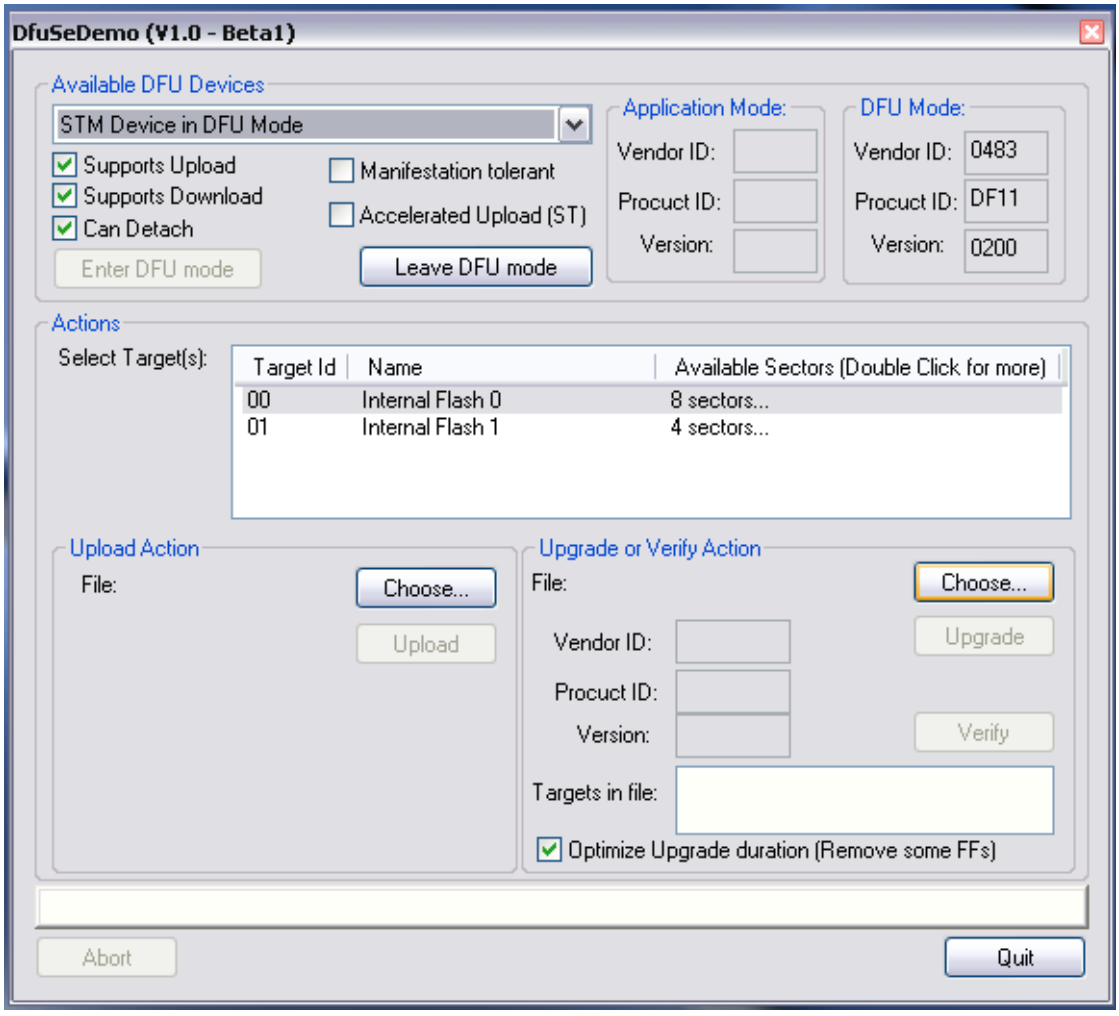

Fig. 1

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Now you can start to install the firmware:
- Press the "Choose" and select the latest firmware from folder FW.
As shown in Figure 2, the file will have extension “dfu".

Fig.2

To upload the file, press the "Upgrade" button (point A) to start the download.
When the warning message shown below appears (fig. 3a), confirm it.

Fig.3a

The green bar below (point B) shows the progress of the download.

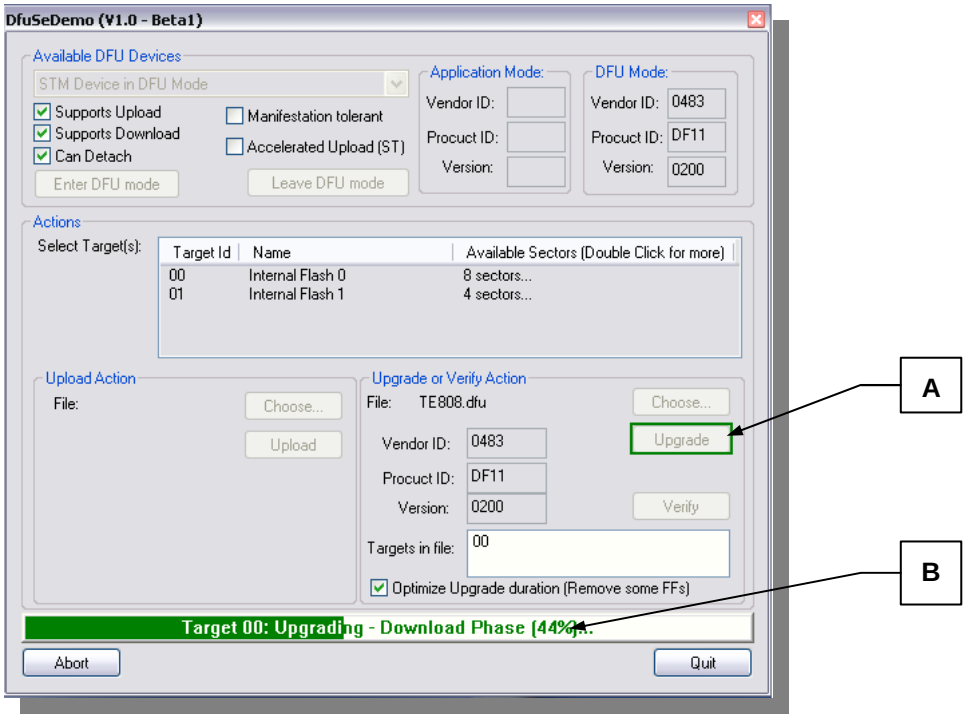

Fig.3b

At the end of the process, to restt the card disconnect and reconnect the supply terminal J1 on the controller TE808.

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6- 1.2 Project update

The “TE Utilities” software install the program by clicking on the **Setup.exe icon** and follows the screen instructions.

- Once the installation is completed launch the TE Downloader:
  START -> Programs -> Tecnoelettrica -> Utilities TE -> TE Downloader (Default location)

Now you must enable the USB port of TE808 to download the project:

- With TE808 off press and hold the AUTO button at the top left of the keyboard
- Apply the supply power while continuing holding the AUTO button for about 10 seconds. After this time the message "User FLASH erase Force. Please wait ... "appear on the display.
- At the end of the deletion the message "UPGRADE PROJECT” is shown on the display. The internal memory has been erased and the USB port is enabled to receive a new project.
- Now you must connect the USB cable (A-male / A-male) from the PC to TE808. If you need to install the USB driver, it is located at the installation folder of the program TE Utilities (USB driver file is "te808.inf).

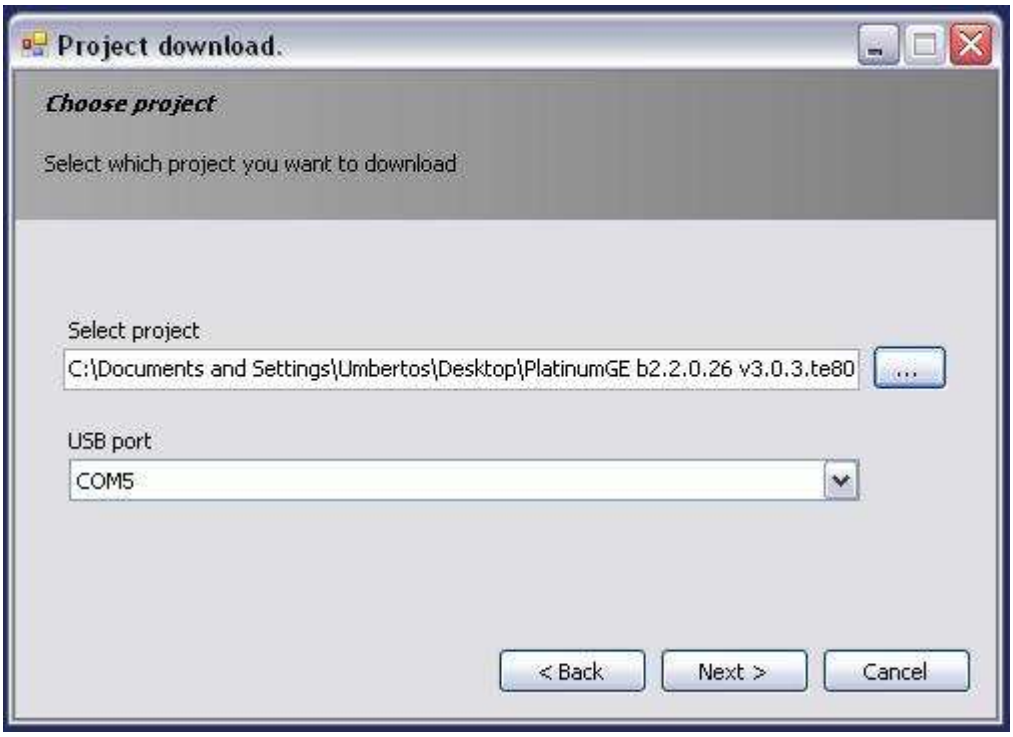

Fig. 4

- Press "Next" and select the project to be downloaded from the folder Project. As you can see on Figure 4 above, the file will have extension "**.te808**".

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Choose the correct USB communication port

To find the port to use, follow these steps on Windows :

- START -> Settings -> Control Panel -> System -> Hardware -> Device Manager
- Under "Ports COM & LPT" you can see the ports connected: locate the serial com port “TE808 Communication Port“ (COM 5 in the figure below).

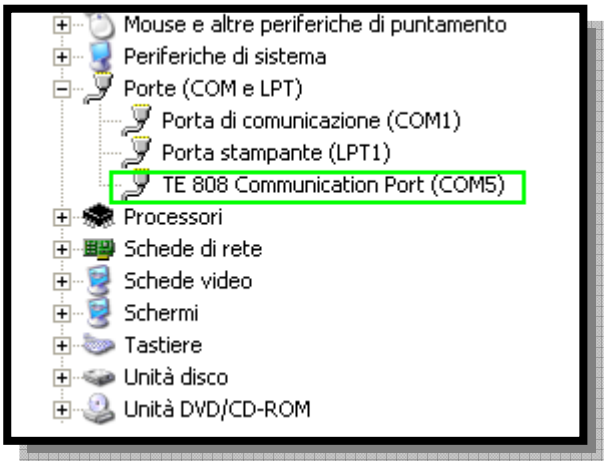

fig. 5

- Press the button "Next" keeping selected all the functions (Figure 6). The download of the project will start after a few seconds.

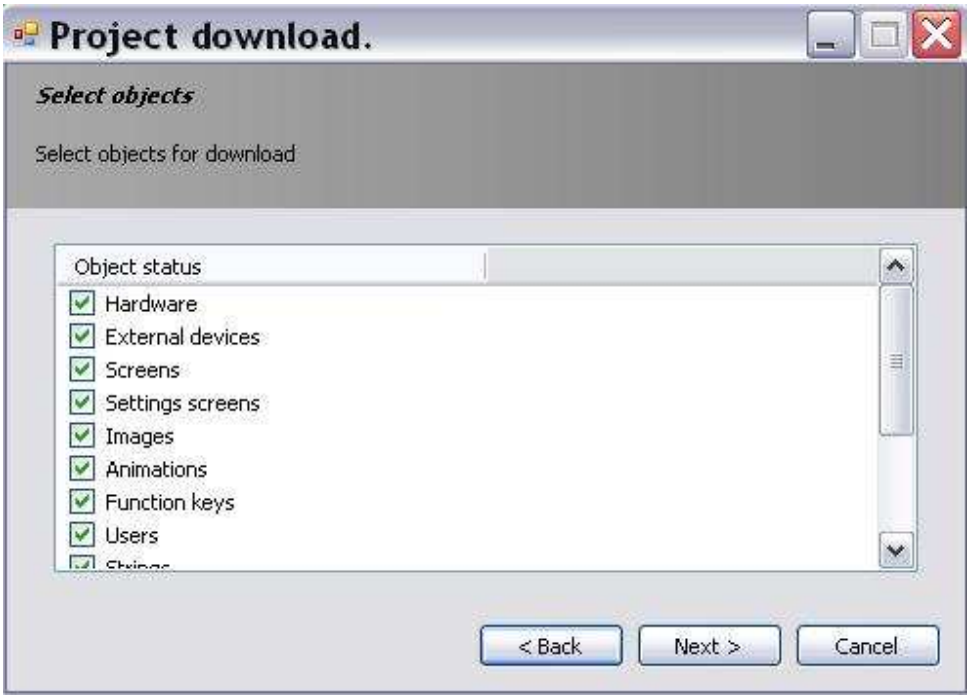

fig. 6

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Appendix

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Appendix A: Fuel sensor curves

Fuel level value (%)	VDO-Ohm	VEGLIA-Ohm	DATCON-Ohm
0	10	304	240
16	44	224	187
32	74	151	140
48	103	88	108
60	121	51	89
76	146	21	68
92	170	5	46
105	200	-1	-1

Appendix B: Oil pressure sensor curves

Oil pressure value	VDO-ohm	VEGLIA-ohm	DATACON-ohm
0	10	305	240
2	51	204	174
4	87	114	123
6	122	53	88
8	153	12	62
10	181	12	37
12	181	12	37
14	181	12	37

Appendix C: Temperature sensor curves

Engine temperature value	VDO-ohm	VEGLIA-ohm	DATACON-ohm
0	685	1050	650
40	325	1050	650
60	145	495	345
80	65	245	172
100	35	125	80
120	22	80	49
140	15	50	30
150	-1	-1	-1

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NEW FUNCTIONS OF THE RELEASE 5.0.0

1) New self-learning function with 2 modalities for a proper testing of your system
2) OpEx management for the control and evaluation of the fuel consumptions and costs
3) Programmability of many inputs and outputs with different preset functions
4) New Synchro menu with only the parameters needed for your specific system
5) New TPS function for programmable start and stop, with up to 4 time windows programmable
6) New Canbus protocols available
7) 3-ciphers password to enter inside the setup

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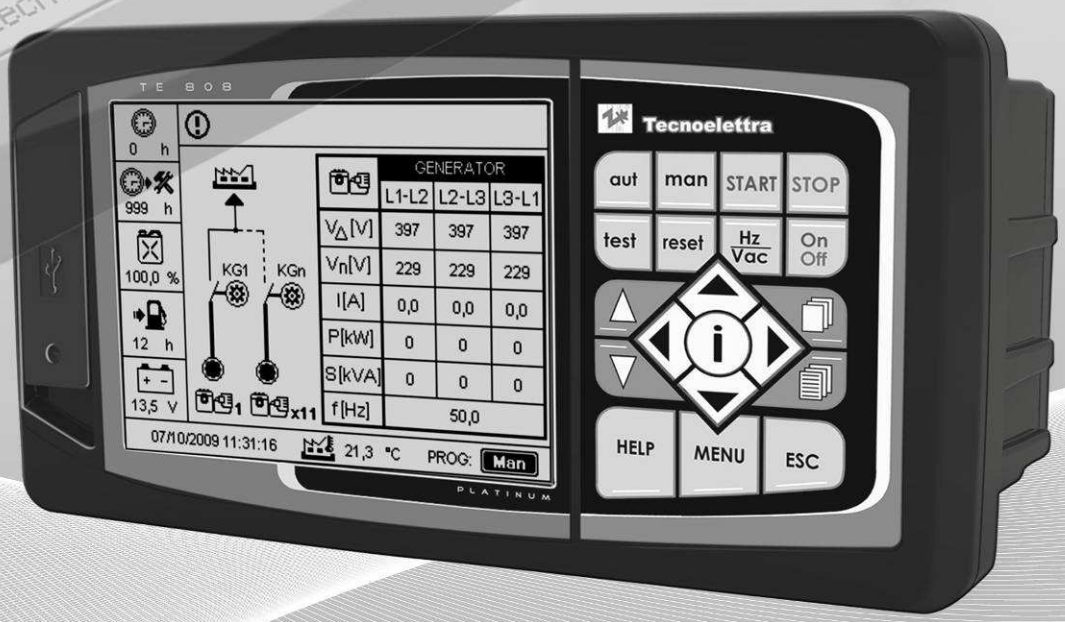
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