



TE809-A

Instructions Manual

Project: v1.0.22

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 to 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.



Index

1- GENERAL REQUIREMENTS AND INSTALLATION	3
1- 1 General notes.....	3
1- 2 Product Label and Rating plate.....	3
1- 3 Hardware ratings	3
1- 4 Electrical Installations.....	3
1- 5 Connections.....	3
1- 6 Operation mode	3
1- 6.1 Automatic mode.....	3
1- 6.2 Manual mode.....	3
1- 6.3 Test mode.....	3
1- 6.4 Reset mode	3
1- 6.5 Alarms	3
1- 6.6 First installation	3
1- 7 Equipment Overview	3
1- 8 Display pages	3
1- 8.1 Navigation diagram.....	3
1- 8.2 Display pages - Mains.....	3
1- 8.3 Display pages - Genset.....	3
1- 8.4 Display pages - Engine.....	3
1- 8.5 Display pages - Fuel	3
1- 8.6 Display pages - OpEx	3
1- 8.7 Display pages - Events log.....	3
1- 8.8 Display pages - System	3
1- 8.9 Display pages - Start and stop.....	3
1- 8.10 Display pages - Fast setup	3
1- 9 Optional accessories	3
1- 9.1 Serial cable code 95-050.....	3
1- 9.2 GSM modem code 1571806B	3
2- PROGRAMMATION MENUS	3
2- 1 Navigation chart - Global Setup	3
2- 2 Navigation instructions.....	3
2- 3 M1 - Mains setup.....	3
2- 4 M2 - Alternator setup.....	3
2- 5 M3 - Engine setup.....	3
2- 5.1 M3.1 - Starting setup.....	3
2- 5.2 M3.2 - Stop setup	3
2- 5.3 M3.3 - Preheat setup	3
2- 5.4 M3.4 - Fuel setup.....	3
2- 5.5 M3.5 - Oil pressure setup.....	3
2- 5.6 M3.6 - Temperature setup.....	3
2- 5.7 M3.7 - Battery setup	3
2- 5.8 M3.8 - Service setup	3
2- 5.9 M3.9 - OpEx management and warranty.....	3
2- 5.10 M3.10 - Canbus setup	3
2- 6 M4 - General setup	3
2- 6.1 M4.1 - Display setup	3
2- 6.2 M4.2 - Clock setup	3
2- 6.3 M4.3 - Test setup.....	3
2- 6.4 M4.4 - Security setup	3
2- 7 M5 - Alarms list	3
2- 7.1 M5 - Alarms description	3
2- 8 M6 - Special functions.....	3
2- 8.1 M6.1 - SCR.....	3
2- 8.2 M6.2 - Start by mains kW	3
2- 8.3 M6.3 - Dummy load	3
2- 9 M7 - Connectivity.....	3
2- 9.1 M7.1 - Serial port setup.....	3
2- 9.2 M7.2 - GSM Setup.....	3
2- 10 M8 - IO setup.....	3
2- 10.1 M8.1 - Input setup	3
2- 10.2 M8.2 - Output setup.....	3
2- 10.3 M8.3 - Input type.....	3
2- 10.4 M8.4 - Output type.....	3
2- 10.5 M8.5 - Measures.....	3
3- GSM COMMUNICATION	3
3- 1 GSM Preliminary connection instructions	3
3- 1.1 Serial cable connection	3
3- 1.2 Antenna connection.....	3
3- 1.3 Power connection.....	3

3- 1.4 SIM card settings	3
3- 1.5 LED diagnosis	3
3- 1.6 On-board settings	3
3- 2 SMS command and control	3
3- 2.1 SMS commands	3
4- REMOTE CONTROL SOFTWARE – TE MONITOR	3
4- 1 TE809 Utilities installation	3
4- 2 TE Settings	3
4- 3 TE Monitor	3
4- 3.1 Connection options	3
4- 3.2 On-line management	3
4- 3.3 Settings and measures	3
4- 3.4 Data-logger function	3
4- 4 MODBUS RTU	3
APPENDIX	3
Appendix A: Fuel sensor curves	3
Appendix B: Oil pressure sensor curves	3
Appendix C: Temperature sensor curves	3

1- GENERAL REQUIREMENTS AND INSTALLATION

1- 1 General notes

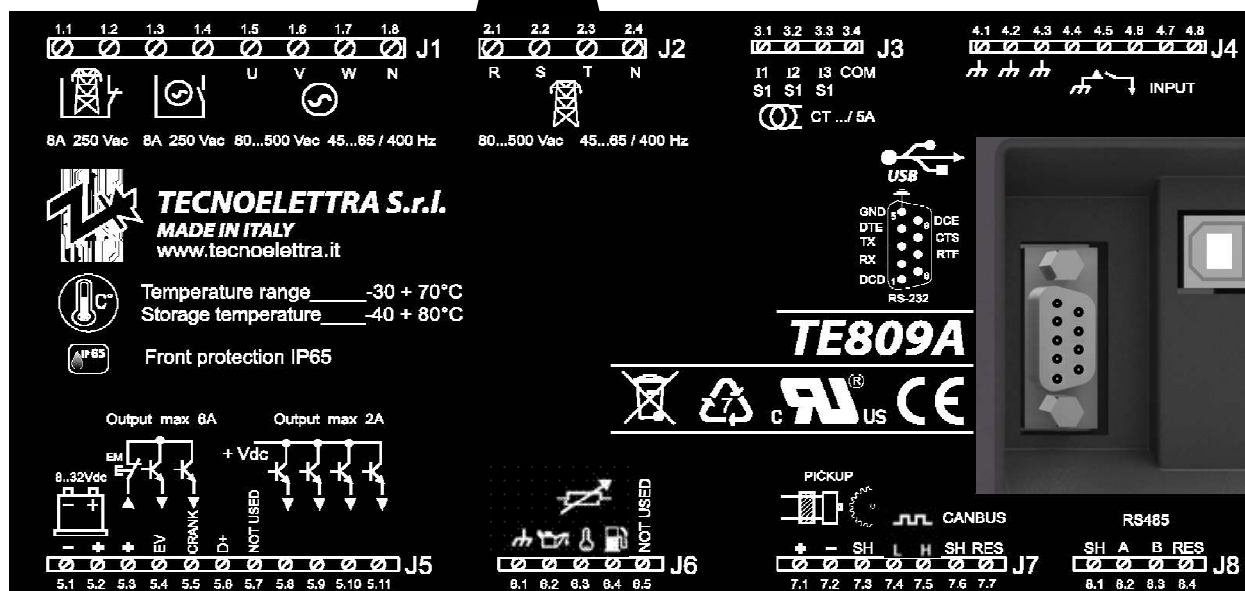
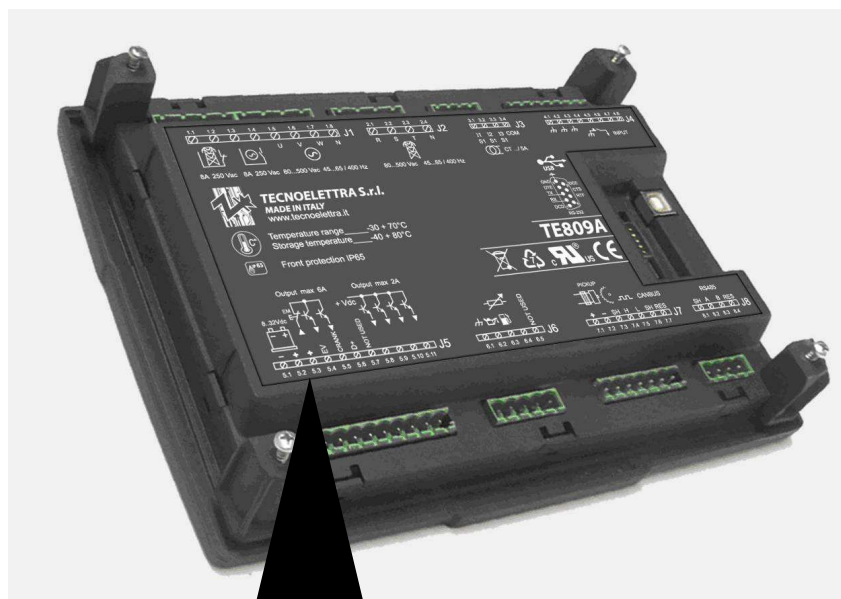


WARNING!

- Carefully read the manual before the installation or use.
- This equipment is to be installed by qualified personnel, complying to current standards, to avoid damages or safety hazards.
- Before any maintenance operation on the device, remove all the voltages from measuring and supply inputs and short-circuit the CT input terminals.
- Products illustrated herein are subject to alteration and changes without prior notice.
- Technical data and descriptions in the documentation are accurate, to the best of our knowledge, but no liabilities for errors, omissions or contingencies arising there from are accepted.
- A circuit breaker must be included in the electrical installation of the building. It must be installed close by the equipment and within easy reach of the operator. It must be marked as the disconnecting device of the equipment: IEC /EN 61010-1 § 6.12.2.1.
- Clean the instrument with a soft dry cloth; do not use abrasives, liquid detergents or solvents.

1- 2 Product Label and Rating plate

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



NOTE!



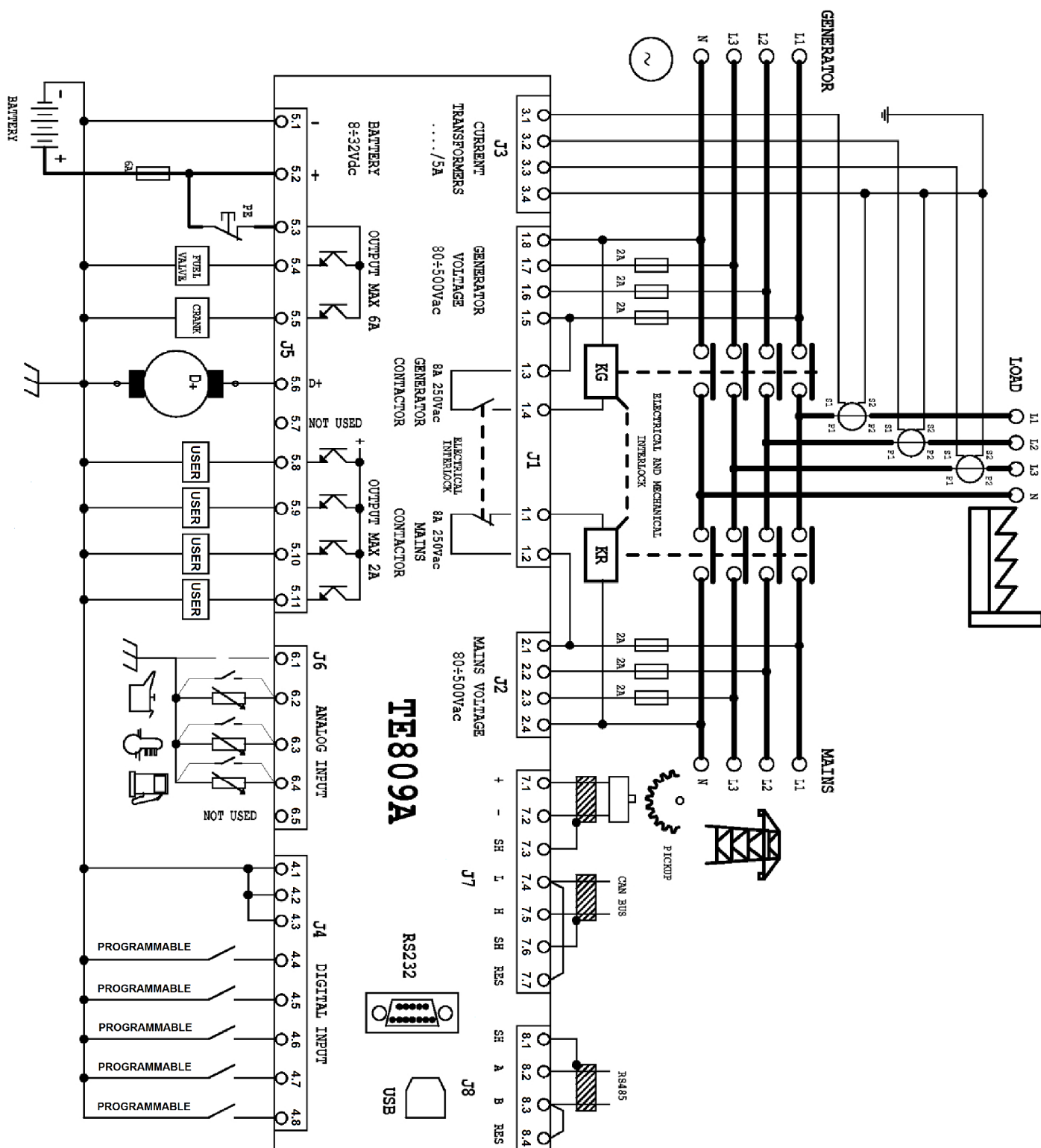
Inform the manufacturer the general identification data reported on the label, before asking for technical specifications or informations about the equipment.

1- 3 Hardware ratings

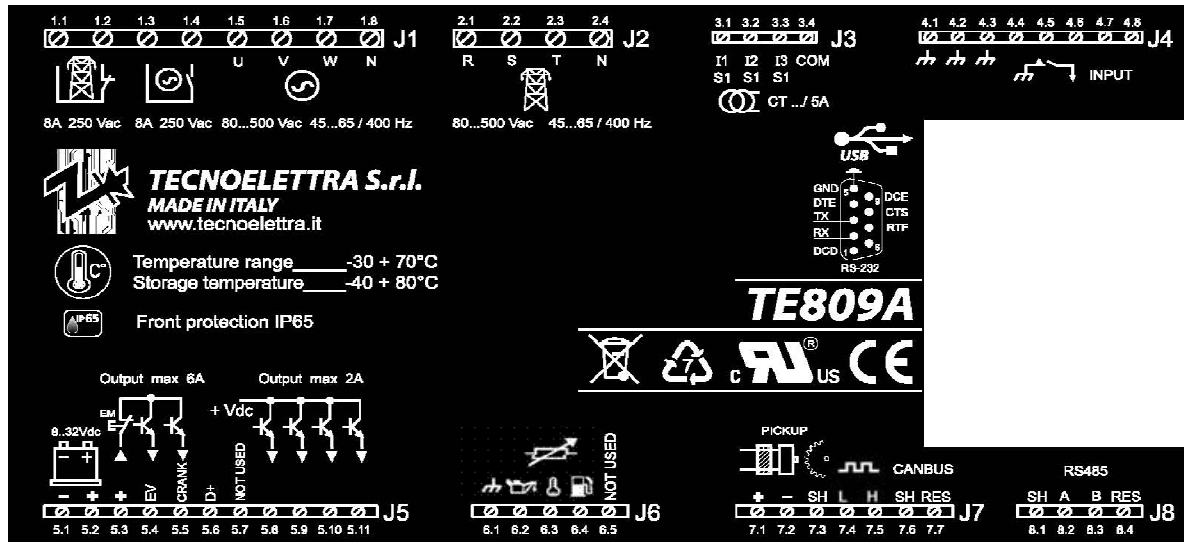
GENERAL CHARACTERISTICS	
Rated voltage Vdc	12Vdc (24Vdc)
Allowed Vdc	from 7Vdc to 33Vdc
Rated voltage Vac	400 Vac
Allowed Vac	Up to 600 Vac
Allowed frequency	From 45 to 75 Hz
Current consumption standby	150 mA (75 mA)
Relay	210 mA (95 mA)
Backlight	100 mA (50 mA)
Pre-excitation	130 mA (170 mA)
Micro interruption immunity	-
Grounded measurements inputs	40 mA (20 mA)
Max consumption	630 mA (410 mA)
Temperature range	-40 °C + 70 °C (electric)
	-20 °C + 70 °C (display)
	-30 °C + 70 °C
	-40 °C + 80 °C (storage)
DISPLAY	128x64 px ; 66x33mm
DIGITAL INPUTS	
N°	5
Input type	Low level activated with pull-up
Input current	< 10 mA
Low level voltage	< 3.5 V
High level voltage	> 8,0 V
Latency	< 30 ms
SPEED INPUT – pickup	
Input type	
Voltage range	
Frequency range	
IN/OUT Pre-Excited alternator D+	
Input type	DC voltage measurement + pre-excitation current output
Voltage range	From 0 to 40 Vdc
Input current	< 15 mA
Pre-excitation	130 mA to 24 V - 170 mA to 12 V
STATIC OUTPUT	
N°	6 (2x4A ; 4x2A)
ANALOG INPUTS	
Input type	Resistance to ground measurements
Measure range	
- Fuel level	from 0 to 850 ohm
- Engine temperature	from 0 to 1300 ohm
- Oil pressure	from 0 to 400 ohm
Measure currents	
- Fuel level	< 10 mA
- Engine temperature	< 6 mA
- Oil pressure	< 20 mA
Precision	< 5 %
SERIAL COMMUNICATION INTERFACE	
Interface type	Serial RS -232
Cable length	< 3 m
Velocity	Up to 115200 bps
Interface type	RS485
Can Bus	J1939
CONTACTORS RELAYS	
N° outputs	2
Type of contacts	1x N.O. genset contactor - 1x N.C. mains contactor
Contacts capacity	8 A / 250 VAC
LOAD CURRENTS INPUT	
N°	3
Measure range	from 50 mA to 6 A
Max overcurrent	30 A
Measure type	TRMS sampling at 2 KHz with 12 bit converter
Precision	< 0.5 % F.S.
VOLTAGE INPUTS	
N°	8
Input type	Resistive coupling
Rated voltage	230 Vac (L-N) - 400 Vac (L-L)
Measure range	from 0 to 350 Vac (L-N) - from 0 to 600 Vac (L-L)
Allowed frequency	from 25 Hz to 80 Hz
Precision	< 0.2% F.S.
Input resistance	470 K ohm
Discharge current	< 0.5 mA
Measure type	TRMS sampling at 2 KHz with 12 bit converter
ACTIVE POWER MEASURE	
Measure type	Instant power integration
Precision	< 1%
HARDWARE	
N°Keys	15
N°LED	10

1- 4 Electrical Installations

Warning! before inserting the plugs make sure that the connections strictly comply with the wiring diagram below. For more informations about programmable inputs/outputs, see par. 2-10.



1- 5 Connections



J1 – Genset AC voltage and contactors

- 1.1 - Mains contactor output (NC)
- 1.2 - Mains contactor output (NC)
- 1.3 - Genset contactor output (NO)
- 1.4 - Genset contactor output (NO)
- 1.5 - Genset voltage phase 1
- 1.6 - Genset voltage phase 2
- 1.7 - Genset voltage phase 3
- 1.8 - Neutral

J2 – Mains AC voltage

- 2.1 - Mains voltage phase 1
- 2.2 - Mains voltage phase 2
- 2.3 - Mains voltage phase 3
- 2.4 - Neutral

J3 – Genset AC current

- 3.1 - Genset current I1
- 3.2 - Genset current I2
- 3.3 - Genset current I3
- 3.4 - CT common

J4 – Digital inputs

- 4.1 - Gnd
- 4.2 - Gnd
- 4.3 - Gnd
- 4.4 – Programmable digital input (default - Low coolant level)
- 4.5 – Programmable digital input (default – Ground protection alarm)
- 4.6 – Programmable digital input (default – Remote start)
- 4.7 – Programmable digital input (default – Remote stop)
- 4.8 – Programmable digital input (default – Load contactor open)

J5 – Supply and Outputs

- 5.1 - Battery negative
- 5.2 - Battery positive
- 5.3 - Common positive for fuel valve and start output (Default - Emergency stop alarm input)
- 5.4 - Fuel valve output
- 5.5 - Start engine output
- 5.6 - Battery charger alternator output (D+)
- 5.7 - Not used
- 5.8 - Programmable relay output (default – Global alarm #1)
- 5.9 – Programmable relay output (default – Glow plugs)
- 5.10 – Programmable relay output (default – Siren)
- 5.11 – Programmable relay output (default – Electro solenoid)

J6 – Digital / Analog inputs

- 6.1 - Gnd
- 6.2 - Oil pressure digital / analog (programmable, default – Low oil pressure digital)
- 6.3 – High engine temperature digital / analog (programmable, default – High engine temperature digital)
- 6.4 – Fuel level percentage digital / analog (programmable, default – Fuel level percentage analog)
- 6.5 – Not used

J7 – Rpm and Canbus

- 7.1 - Pickup input positive
- 7.2 - Pickup input negative
- 7.3 - Pickup shield
- 7.4 - Canbus Low
- 7.5 - Canbus High
- 7.6 - Canbus
- 7.7 - Canbus termination resistor (bridge with J7 7.5)

J8 - RS485 port

- 1- Shield
- 2- A
- 3- B
- 4- Termination resistor

RS232 - Communication ports

RS232 - connection of a remote device

1- 6 Operation mode

1- 6.1 Automatic mode

The engine automatically starts in case of mains failure (or out of limits) and stops in the presence of the same, with automatic management of KG and KR. During the starting phase it is possible to stop the engine with the STOP button. At the end of this phase the button is disabled. Use the RESET button to stop the engine. Push the AUT button to select this functioning mode.

1- 6.2 Manual mode

The engine can be started and stopped manually by pressing start and stop key buttons; load switching on mains and generator is managed using buttons KG and KR. Push the MAN button to select this functioning mode.

1- 6.3 Test mode

Manual test: Press the TEST button: the engine starts immediately to test the genset for a programmable time. If activated during AUT mode, in absence of mains TE809 switches the load to the generator. If activated during MAN mode, the load switching can be controlled only by KG and KR buttons, even if the mains is faulty. Disabling the test (or after the test time), the controller returns to the previous operation mode. Push the TEST button to select this functioning mode.

Automatic test: If you programmed an automatic test (see par 2-6.3), it will run only if you are in automatic mode.

1- 6.4 Reset mode

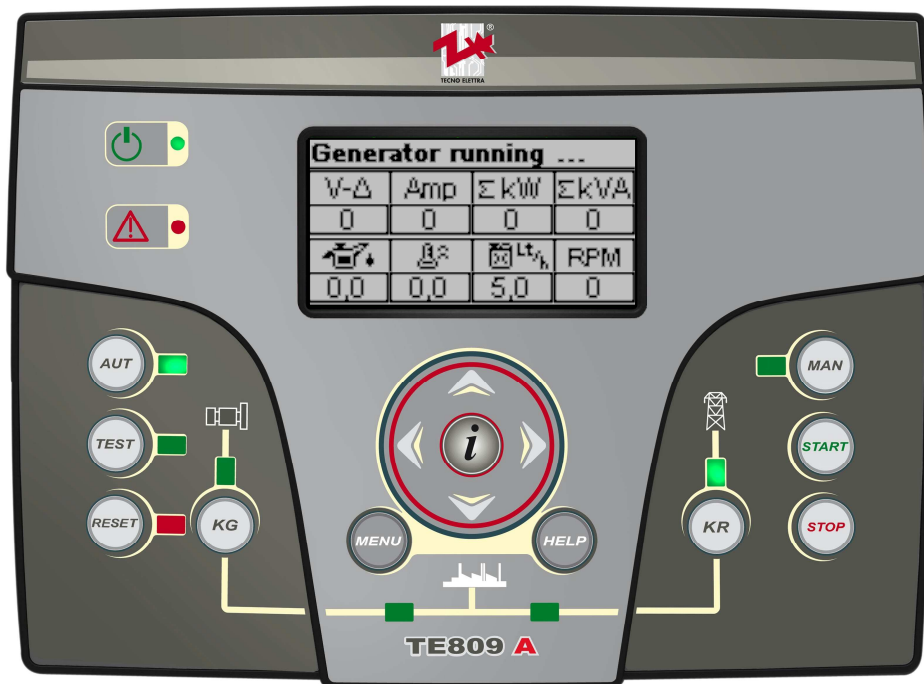
The engine can not work. If the mains is available it is connected to the load. If you select Reset mode, the alarms are reset and the engine stops immediately if it is working. If the cause of the alarm remains, it is not possible reset the alarm. Push the RESET button to select this functioning mode.

1- 6.5 Alarms

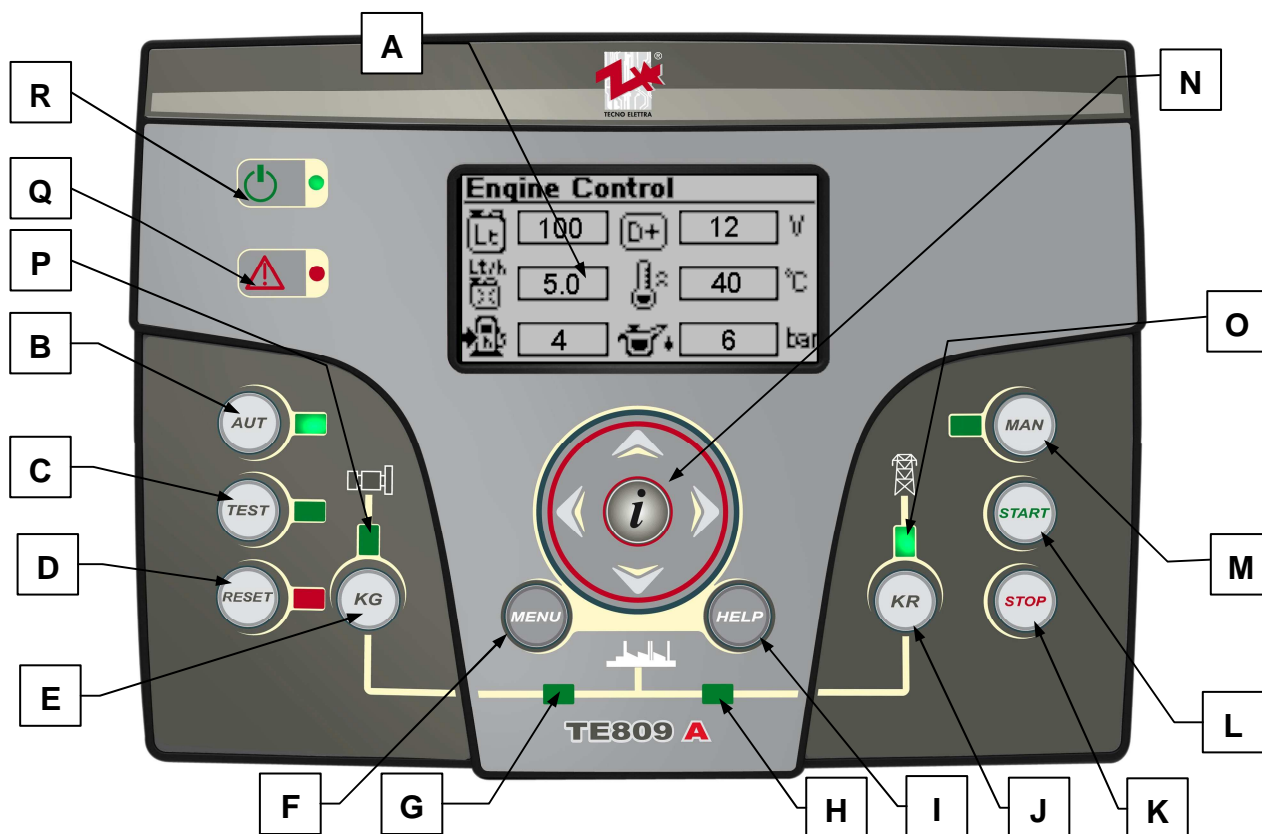
In case of alarm, the display shows its description. If more different alarms are detected, they appear individually in sequence. For each alarm it is available a message that can help to identify the source of the problem. The alarm reset can be made by pressing the RESET button; by this, the alarm is deleted and the TE809 goes in Reset mode, preventing accidental generator starting attempts. If the alarm, after reset, still remains on the display, the cause of the alarm is not removed.

1- 6.6 First installation

At power on, the TE809 goes automatically to Reset mode. The TE809 can be powered either be 12 or 24Vdc, but it needs proper setting of maximum and minimum battery voltage in the "battery setup" menu; if it is not properly set, you will have a warning about the battery voltage. You must set or verify menu parameters about ALTERNATOR (CT ratio, type of connection, rated voltage and frequency) and the Starting Menu inside "Engine setup", according to the type of engine used.



1- 7 Equipment Overview

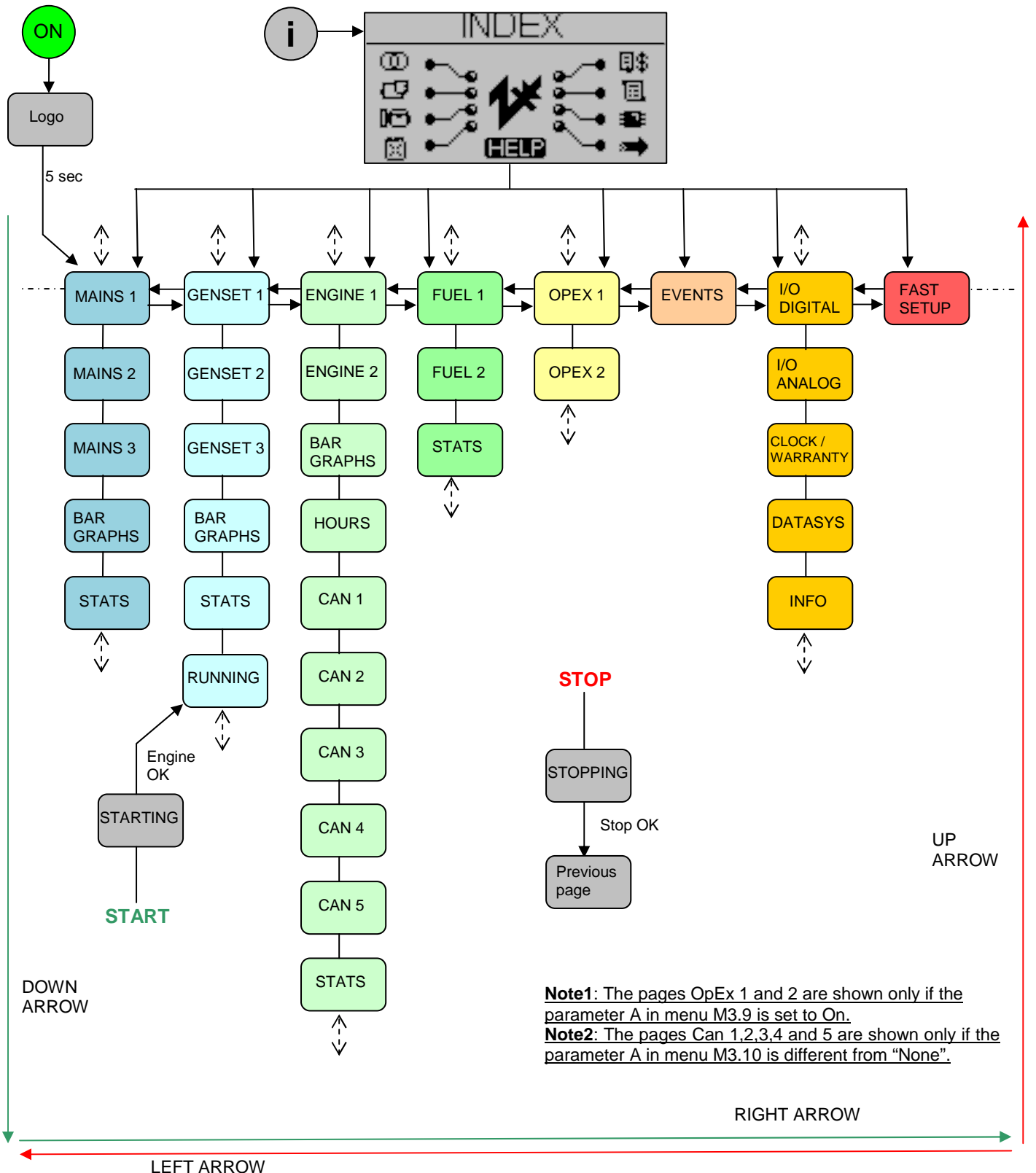


POS.	NAME	DESCRIPTION
A	Display	Backlighted display shows all functions, measures and alarms about the generator and the mains. Automatically backlight turns off, and it turns on again when you press a button.
B	AUT	Button to select the automatic mode.
C	TEST	Button to select the test mode.
D	RESET	To activate reset/OFF mode. In this operative mode the engine is stopped without cooling and the alarms are deleted. If the cause of the alarm persists, it's not possible to delete it in reset/OFF mode.
E	KG	Key control for generator contactor. Active only in manual mode if the generator is running.
F	Menu	To enter the programming menu. Inside the menus, it's used as a button "back" or "esc".
G	KG state led	Led that indicates if KG is closed (led on) or open (led off).
H	KR state led	Led that indicates if KR is closed (led on) or open (led off).
I	Help	It permits you to better understand the parameters and symbols in the actual page.
J	KR	Key control for mains contactor. Active only in manual mode.
K	STOP	To stop the generator immediately. Active only in manual mode.
L	START	To start the generator. Active only in manual mode.
M	MAN	Button to select the manual mode.
N	Navigation drive	Navigation drive composed by 4 arrows to scroll through the pages (left and right arrows) and increase or decrease the parameters inside the programming menu. It contains also a special button "i", to select an element on the screen or edit a parameter and confirm the new value. See paragraph 1-8.1 for more informations about the navigation through the display pages, and paragraph 2-2 for more informations about the navigation through the menus.
O	Mains state led	It shows if the mains is within limits (led on) or not (led off).
P	Generator state led	It shows if the generator is within limits (led on) or not (led off).
Q	General alarm led	It turns on if an alarm enabled as general alarm 1, 2 or 3 is present.
R	Battery state led	It turns on when the board is supplied.

1- 8 Display pages

1- 8.1 Navigation diagram

When you turn on the board, you will see the logo page. Then you will be in the stand-by page with engine OFF (Mains 1). When you start the generator, you will go in the starting page, that will disappear when the start is completed, and redirects you to the running page. When you stop the engine, you will see a stopping page, then you will return automatically to the page you were in when you pressed the stop button. With the left and right arrows, you can move through the different sections, and with the up and down arrows you can scroll the pages of the selected section. Pressing the "i" button in any page, you go to the index page, in which it's possible to directly select the desired section. Here you can see the organization diagram of the display pages. In the index page, If the HELP symbol is present, it means that there is at least one alarm active. Pressing the HELP button, you directly go to the active alarms page.



1- 8.2 Display pages - Mains

1- 8.2.1 Mains 1 (stand-by with engine OFF)

When you turn on the board, you will see the logo page. After 5 seconds you will be in this page, that is the stand-by page with engine OFF:

	V-Δ	V-n	Amp
L1	400	230	100
L2	400	230	100
L3	400	230	100
Lt	1000	+	13.1

- A) Mains Vac voltages L1-L2-L3
- B) Mains line voltages L1-L2-L3
- C) Mains currents L1-L2-L3
- D) Fuel level (Lt)
- E) Battery voltage (Vdc)

1- 8.2.2 Mains 2

	kVA	kW	PF
L1	11	10	0.9
L2	11	10	0.9
L3	11	10	0.9
Tot	32	30	0.9

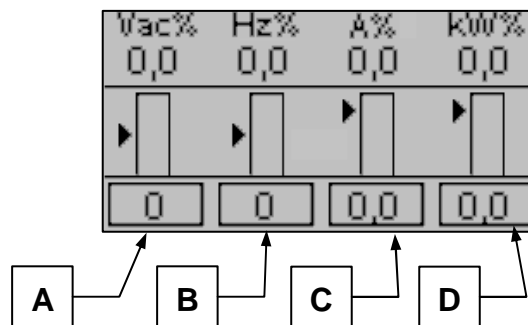
- A) Mains apparent power L1-L2-L3 and total
- B) Mains active power L1-L2-L3 and total
- C) Mains power factor L1-L2-L3 and total

1- 8.2.3 Mains 3

	kVAR	F _{Hz}
L1	1	50.0
L2	1	
L3	1	kW _{TOT}
Tot	3	23300

- A) Mains reactive power L1-L2-L3 and total
- B) Total kW
- C) Frequency of the mains

1- 8.2.4 Mains bar graphs



- A) Vac
- B) Hz
- C) A
- D) kW

1- 8.2.5 Mains stats

Stats Mains					
Vmin-Vmax-PFmin-Amax					
A	B	C	D	E	F
0	0	0.0	0	hh.mm.ss	dd/mm/yy

- A) Min Vac voltage L1-L2
- B) Max Vac voltage L1-L2
- C) Min PF
- D) Max current L1
- E) Hour of the selected measure
- F) Date of the selected measure

In this page, use the left and right arrows to select the measure, whose date and time of detection are shown in the squares C and F

1- 8.3 Display pages - Genset

1- 8.3.1 Genset 1

	V-Δ	V-n	Amp
L1	400	230	100
L2	400	230	100
L3	400	230	100
Lt	1000	+	13.1

- A) Generator Vac voltages L1-L2-L3
- B) Generator line voltages L1-L2-L3
- C) Generator currents L1-L2-L3
- D) Fuel level (Lt)
- E) Battery voltage (Vdc)

1- 8.3.2 Genset 2

In this page you can monitor other electrical measures about the generator:

	kVA	kW	PF
L1	11	10	0.9
L2	11	10	0.9
L3	11	10	0.9
Tot	32	30	0.9

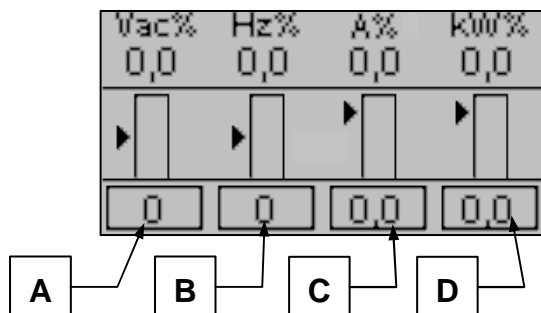
- A) Gen. apparent power L1-L2-L3 and total
- B) Generator active power L1-L2-L3 and total
- C) Generator power factor L1-L2-L3 and total

1- 8.3.3 Genset 3

	kVAR	FHz
L1	1	50.0
L2	1	
L3	1	
Tot	3	23300

- A) Gen. reactive power L1-L2-L3 and total
- B) Total kWh
- C) Generator frequency

1- 8.3.4 Genset bar graphs



- A) Vac
- B) A
- C) Hz
- D) kW

1- 8.3.5 Genset stats

Stats Genset			
Vmin-Vmax-Hzmin-Amax			
0	0	0,0	0
hh.mm.ss		dd/mm/yy	

- A) Min Vac voltage L1-L2
- B) Max Vac voltage L1-L2
- C) Min frequency
- D) Max current L1
- E) Hour of the selected measure
- F) Date of the selected measure

1- 8.3.6 Running page

After the engine has started, you will see directly this Running page:

Generator running ...			
V-Δ	Amp	ΣkW	ΣkVA
0	0	0	0
Oil Pressure	Engine Temp	Average Consumption	Hz
0,0	0,0	5,0	0

- A) Generator Vac voltage L1
- B) Generator current L1
- C) Total kW
- D) Total kVA
- E) Oil pressure
- F) Engine temperature
- G) Average consumption
- H) Generator frequency

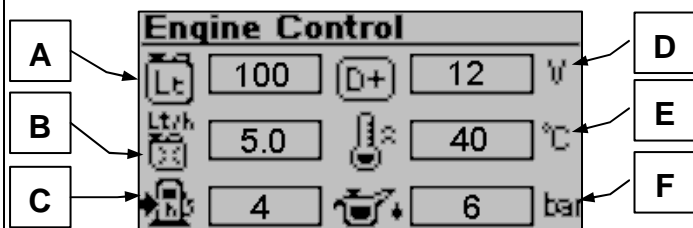
1- 8.4 Display pages - Engine

1- 8.4.1 Engine 1

Engine Control	
Vdc=	0,0
RPM=	0
H=	0

- A) Battery voltage
- B) RPM value
- C) Work hours

1- 8.4.2 Engine 2



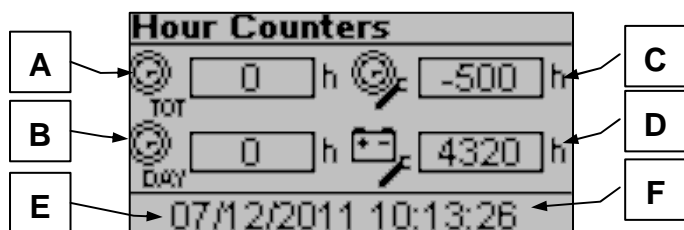
- A) Fuel level (Lt)
- B) Instant consumption (Lt/h)
- C) Autonomy level
- D) D+ voltage (Vdc)
- E) Engine Temperature (°C)
- F) Oil pressure (bar)

1- 8.4.3 Engine bar graphs



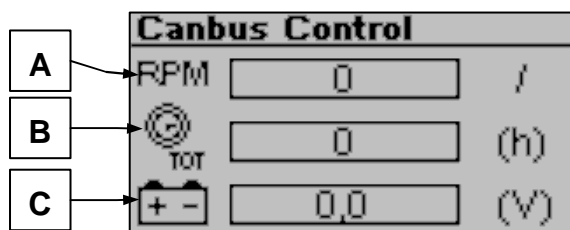
- A) Fuel level (%) bar graph
- B) Engine temperature (°C) bar graph
- C) Oil pressure (bar) bar graph

1- 8.4.4 Hours page



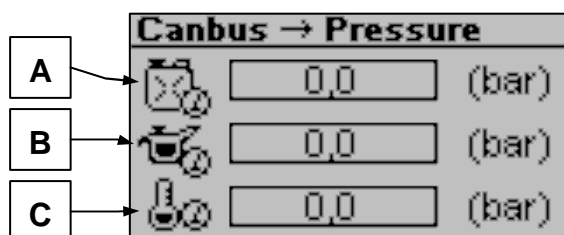
- A) Total work hours (h)
- B) Daily work hours (h)
- C) Time left to service (h)
- D) Time left to battery service (h)
- E) Date
- F) Time

1- 8.4.5 Canbus 1



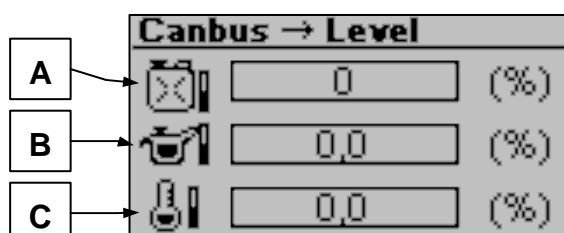
- A) RPM indicator
- B) Total work hours
- C) Battery voltage

1- 8.4.6 Canbus 2



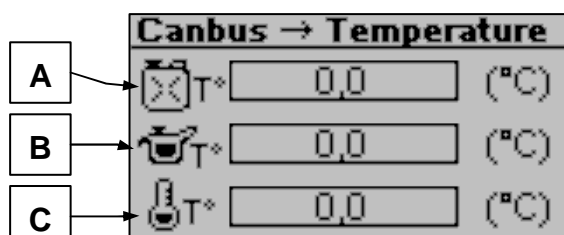
- A) Fuel pressure
- B) Oil pressure
- C) Coolant pressure

1- 8.4.7 Canbus 3



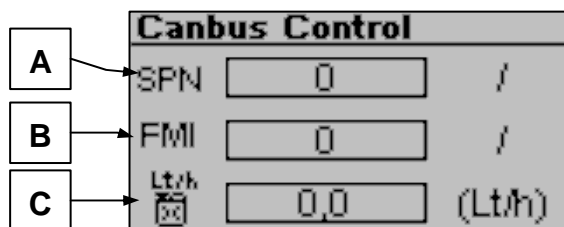
- A) Fuel level (%)
- B) Oil level (%)
- C) Coolant level (%)

1- 8.4.8 Canbus 4



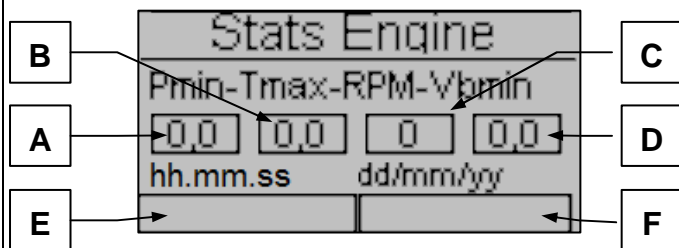
- A) Fuel temperature
- B) Oil temperature
- C) Coolant temperature

1- 8.4.9 Canbus 5



- A) SPN code (suspect parameter number)
- B) FMI code (failure mode indicator)
- C) Instant fuel consumption

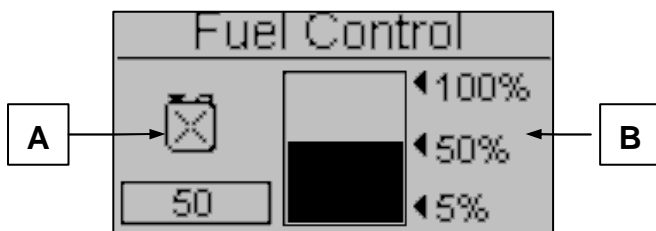
1- 8.4.10 Engine stats



- A) Min oil pressure
- B) Max engine temperature
- C) Max RPM
- D) Min battery voltage
- E) Hour of the selected measure
- F) Date of the selected measure

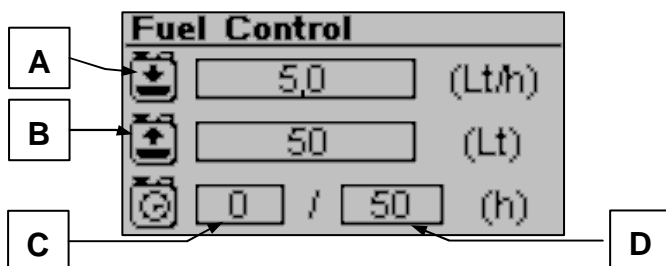
1- 8.5 Display pages - Fuel

1- 8.5.1 Fuel 1



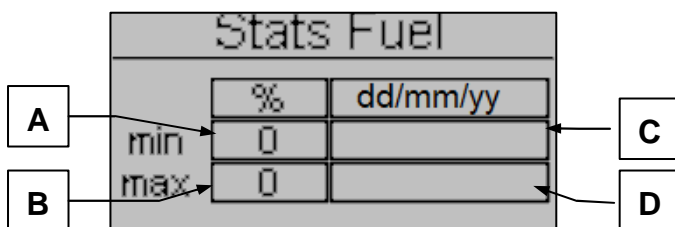
- A) Fuel level (%)
- B) Fuel level (bar graph)

1- 8.5.2 Fuel 2



- A) Average consumption in the work cycle
- B) Litres of last refilling
- C) Actual hours in the work cycle
- D) Duration of the work cycle

1- 8.5.3 Fuel stats



- A) Min level
- B) Max level
- C) Date of detection of the min level
- D) Date of detection of the max level

1- 8.6 Display pages - OpEx

1- 8.6.1 OpEx 1

	Opex	Lt	Total	\$Total
A	🔧	5	40	80
B	🚰	2	32	64
C	⚠️	12	20	40

- A) Losses for refillings not completed
- B) Losses for fuel leakages
- C) Losses for abnormal consumptions

For these 3 parameters, you can see the fuel litres that you lost for the last event (D), the total of the fuel litres lost (E), and the total money lost (F).

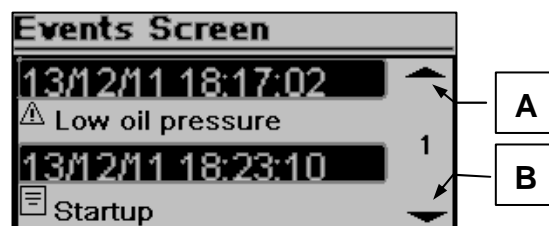
1- 8.6.2 OpEx 2

Opex	\$	AVG Cons. \$
A	🔧\$ 1300	20
B	🚰\$ 1400	Tot. Cons. \$
C	\$Total 2700	32

- A) Total money lost for fuel losses
- B) Total money spent for services
- C) Total money spent (A+B)
- D) Average fuel cost of the system
- E) Total fuel cost of the system

1- 8.7 Display pages - Events log

The events log page shows you the last alarms with the date and time.



Press the UP or DOWN button to select the up (A) or down (B) arrow, then press "i". This way you can scroll the events (up to 255 events).

1- 8.8 Display pages - System

1- 8.8.1 I/O digital

IO monitor			
Inputs		Outputs	
J4.4	○	J5.8	○
J4.5	○	J5.9	○
J4.6	○	J5.10	●
J4.7	○	J5.11	○
J4.8	○	J5.6	○
		J5.4	○
		J5.5	○
		J1.4	○
		J1.1	○

In this page you can see the state of all the 5 digital inputs (from J4.4 to J4.8) and the outputs D+ (J5.6), KG (J1.4), KR (J1.1), and the 6 programmable outputs (from J5.8 to J5.11, J5.4 and J5.5).

1- 8.8.2 I/O analog

IO Monitor Analog			
J6.2	0.0	J3.1	0
J6.3	0.0	J3.2	0
J6.4	0	J3.3	0
J7.1	0	J5.6	0.0

In this page you can see the state of all the 8 analog inputs.

1- 8.8.3 Clock and warranty



- A) Clock: date and time
- B) Warranty expiry

1- 8.8.4 System data

Data System	
PJ:	1.0.14
FW:	0.10.24A
SW:	4.0.2.42
DA:	11/5/2012

This page contains the the information about the project, the firmware and software version of the controller.

1- 8.8.5 Info page



This page contains the contacts data of the manufacturer – Telephone number, fax number, web address.

1- 8.9 Display pages - Start and stop

1- 8.9.1 Stopping page

When the engine is stopping, you will see this page that indicates that the engine is stopping.

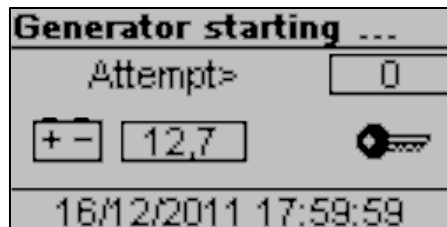
If the cooling procedure is active, you will see the text “cooling”, otherwise you will see the text “stopping”.

If you see the “warning” indication, it means that the stop is commanded by an alarm.



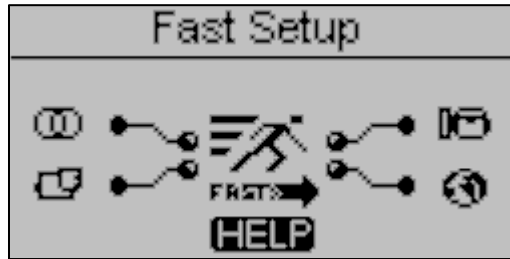
1- 8.9.2 Starting page

When you start the generator you will see this page with number of attempts and battery voltage that disappears after the starting, and redirects you to the Running page:



1- 8.10 Display pages - Fast setup

In the fast setup pages you can set the most important parameters for a quick installation of the machine. You can choose between 4 menus, with the parameters listed below:



1- 8.10.1 MX.1 – Fast Setup Mains

- Single phase mains (see parameter M1.J)
- Mains rated voltage (see parameter M1.A)
- Mains rated frequency (see parameter M1.D)

1- 8.10.2 MX.2 – Fast Setup Generator

- Single phase Generator (see parameter M2.M)
- Generator rated voltage (see parameter M2.A)
- Generator rated frequency (see parameter M2.D)
- Rated current (see parameter M2.G)
- CT ratio (see parameter M2.L)
- GE Ok delay (see parameter M2.K)

1- 8.10.3 MX.3 – Fast Setup Engine

- Tank capacity (see parameter M3.4I)
- Consumption no load (see parameter M3.4K)
- Consumption with 75% load (see parameter M3.4L)
- RPM nominal (see parameter M3.1J)
- Low DC voltage (see parameter M3.7B)
- High DC voltage (see parameter M3.7A)

1- 8.10.4 MX.4 – Fast Setup General

- Language (see parameter M4.1A)
- Test #1 enable (see parameter M4.3A)
- Test type (see parameter M4.3B)
- Day of the month (see parameter M4.3D)
- Day of the week (see parameter M4.3C)
- Starting hour (see parameter (M4.3E)

NOTE: If the HELP symbol is present, it means that there is at least one alarm active. Pressing the HELP button, you directly go to the active alarms page.

1- 9 Optional accessories

1- 9.1 Serial cable code 95-050

This cable is used to connect your TE809 with a PC for the remote control. It's a db9f-db9f null modem cable.



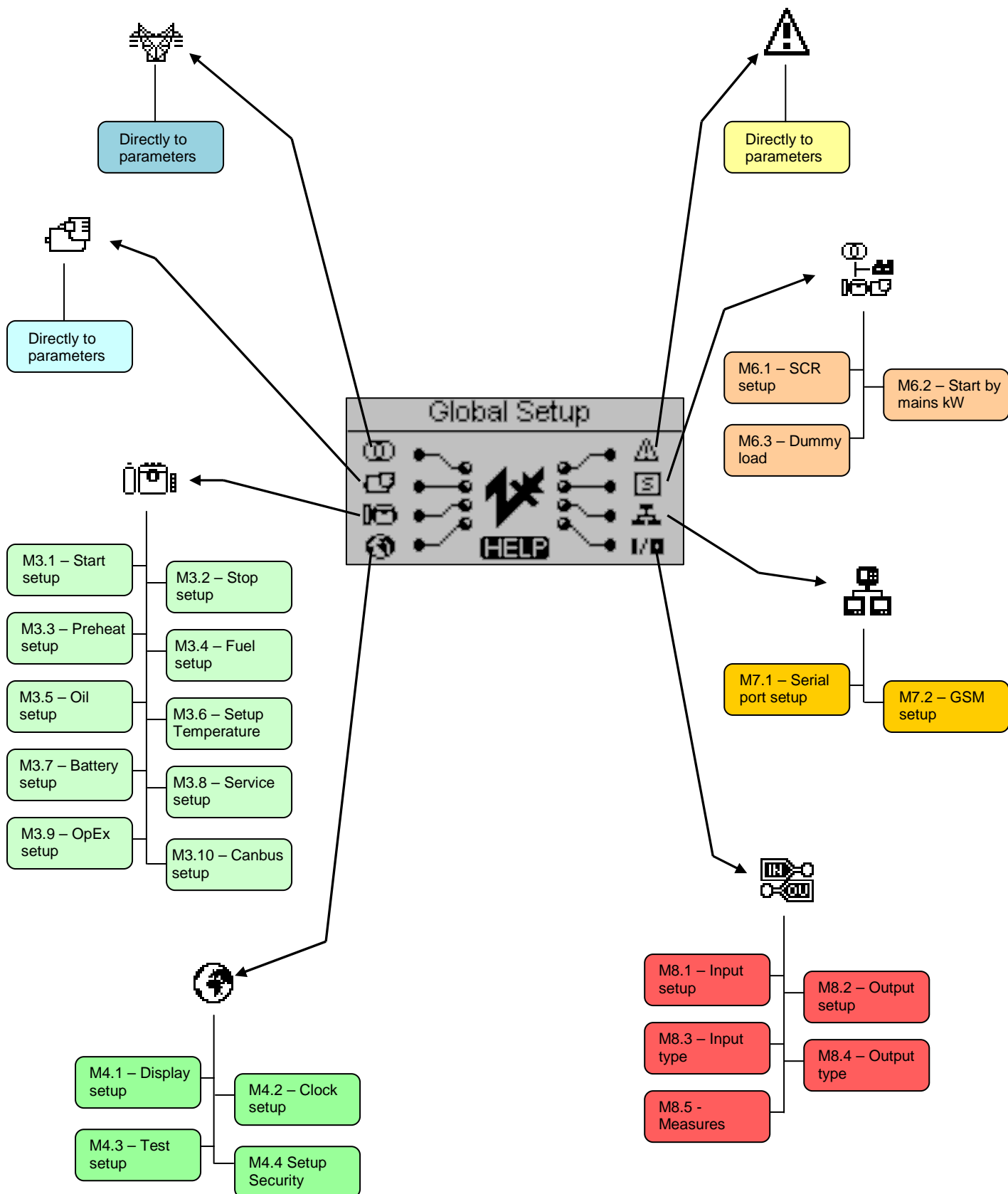
1- 9.2 GSM modem code 1571806B

This GSM/GPRS modem is used for GSM or GPRS communication. For GSM communication, you need to connect it to the TE809. For the GPRS data transferring it's necessary to connect one modem to the PC and one to the TE809. In both cases, the connection must be done with a normal male-female 9 poles serial cable (code 51C3).



2- PROGRAMMATION MENUS

2- 1 Navigation chart - Global Setup



2- 2 Navigation instructions

Entering global setup, pressing the MENU button, you have to insert the correct password to access to the programming menu. The password, by default, is 809. If you enter the wrong password, you will see the indication "wrong code" and you will not be able to enter inside the menu. To change the password, see the Security setup, M.4.4.

If the password is correct, press the DOWN arrow to select the icon (A) and confirm with "i" to enter in the programming menus.

The correct password is, by default, 809



From the main page you can choose 8 different menus:

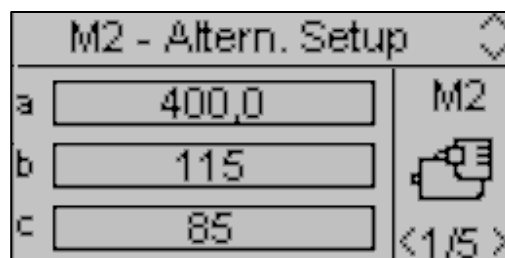
- A) Mains setup
- B) Alternator setup
- C) Engine setup
- D) General setup
- E) Alarms setup
- F) Special functions
- G) Connectivity
- H) I/O setup



If the HELP symbol is present, it means that there is at least one alarm active. Pressing the HELP button, you directly go to the active alarms page.

With the arrows you can select the menu. Once selected the desired menu, press the "i" button to confirm and enter or press "menu" to return to the previous screen. Then you will see a screen for the choice of the submenu (except for Alternator, Mains and Alarms, in which you will see directly the programming parameters). This screen is composed by 3 parts:

- A) The name of the submenu
- B) The icon of the submenu
- C) The page and the icon of the menu that contains the submenu



Press "i" to confirm and enter, or press the left or right arrows to see the next submenu, or press "menu" to return to the previous screen. In the submenus, the parameters are divided in different pages; choose the page with the left and right arrows, and choose the parameter with the up and down arrows. Then press "i" to confirm and modify the parameter. Then press "i" to confirm or "menu" to annul.

2- 3 M1 - Mains setup

Selecting the mains setup you access directly to the programming parameters about the mains, like voltage and frequency limits. All these parameters are shown in the following table:

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	Mains rated V	Allows you to set the rated voltage.	0-600 [Vac]	400
B	Mains high V	You can set the high threshold voltage; if the voltage measured is higher than this value, the mains is considered faulty and TE809 starts the generator.	100-200 [%]	115
C	Mains low V	You can set the low threshold voltage; if the voltage measured is lower than this value, the mains is considered faulty and TE809 starts the generator.	0-100 [%]	85
D	Mains rated F	Allows you to set the rated frequency.	50-60 [Hz]	50
E	Mains high F	You can set the high frequency threshold; if the frequency measured is higher than this value, the mains is considered faulty and TE809 starts the generator (in automatic mode).	100-200 [%]	110
F	Mains low F	You can set the low frequency threshold; if the frequency measured is lower than this value, the mains is considered faulty and TE809 starts the generator (in automatic mode).	0-100 [%]	90
G	KR delay	You can set a delay time for the closure of the mains contactor. This time starts from when the TE809 opens the generator contactor (software interlock function).	0-100 [s]	1
H	Mains OK	It is the delay time after which, if the mains returns within the limits set (see parameters B, C, E, F), it's considered stable and the mains contactor is closed, then begins the stop phase of the generator (in automatic mode).	0-600 [s]	5
I	Faulty mains	It is the delay time after which the mains is considered faulty, compared with the limits specified in parameters B, C, E, F. This parameter is used to filter any temporary instability of the mains.	0-600 [s]	5
J	System type	You can set the type of system: three-phase or single phase.	Three-phase Single phase	Three-phase
K	Start delay	Delay time to start the engine in automatic mode when faulty mains conditions are true.	0-59 [s]	0
L	Stop delay	Delay time to begin engine stop procedure in automatic mode when mains within limits conditions are true. Load switch on mains side does not wait this delay which affects only the engine behaviour.	0-59 [s]	0

2- 4 M2 - Alternator setup

Selecting the alternator setup you access directly to the programming parameters about the generator, like frequency, voltage and currents. All these parameters are shown in the following table:

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	GE rated V	Rated voltage of the generator.	0-600 [VAC]	400
B	GE high V	You can set the high threshold voltage; if the voltage measured is higher than this value, the generator is considered faulty and TE809 shows the "high gen. voltage" alarm.	100-200 [%]	115
C	GE low V	You can set the low threshold voltage; if the voltage measured is less than this value, the generator is considered faulty and TE809 shows the "low generator voltage" alarm.	0-100 [%]	85
D	GE rated F	Rated frequency of the generator.	40-70 [Hz]	50
E	GE high F	You can set the high threshold frequency; if the frequency measured is higher than this value, the generator is considered faulty and TE809 shows the "high generator frequency alarm".	100-200 [%]	110
F	GE low F	You can set the low threshold frequency; if the frequency measured is less than this value, the generator is considered faulty and TE809 shows the "low generator frequency alarm".	0-100 [%]	90
G	Rated current	You set the nominal operating current of the generator.	0-9999 [A]	100
H	I _{max} overload	You set the maximum overload admitted on the generator. If exceeded, an alarm message is shown.	0-1000 [%]	200
I	I _{max} short circuit	You set the value that permits to consider a short circuit on the generator. If exceeded, related alarm message is shown.	0-1000 [%]	300
J	KG delay	You can set a delay time for closing the generator contactor. This time starts from when the TE809 opens the mains contactor (software interlock function).	0-100 [s]	1
K	GE Ok delay	It is the delay time over which if the voltage and frequency are within limits (parameters B, C, E, F), the generator is considered stable and its contactor is closed.	0-65535 [s]	5
L	CT ratio	It sets the ratio of Current Transformers to read the current value (example: CT 100/5A, you must set it at 20, because 100: 5 = 20).	0-10000	20
M	System type	You can set the type of system: three-phase or single phase.	Three-phase Single phase	Three-phase
N	kWh	Here you can set the initial value of the kWh.	0-10E+8 [h]	0
O	Rated PF %	Here you can set the rated power factor of the installation. It's used to calculate the max kW shown in the bar graphs on the display pages.	0-100	80
P	Fast Switch 50Hz	<p>You can select this parameter to start the 50Hz system procedure: the value becomes = 1 and the following parameters will be programmed this way:</p> <ul style="list-style-type: none"> ▪ M2.D - GE Rated F = 50Hz ▪ M2.A - GE Rated V = 400V ▪ M3.1J - RPM nominal = 1500rpm ▪ M1.A - Mains Rated V = 400V ▪ M1.D - Mains Rated F = 50Hz <p>When the programming is done the value returns to 0. Those values are not saved inside flash memory and restarting the controller the parameters' value will be the one programmed in the standard way.</p>	0-1	0
Q	Fast Switch 60Hz	<p>You can select this parameter to start the 60Hz system procedure: the value becomes =1 and the following parameters will be programmed this way:</p> <ul style="list-style-type: none"> ▪ M2.D - GE Rated F = 60Hz ▪ M2.A - GE Rated V = 230V ▪ M3.1J - RPM nominal = 1800rpm ▪ M1.A - Mains Rated V = 230V ▪ M1.D - Mains Rated F = 60Hz <p>When the programming is done the value returns to 0. Those values are not saved inside flash memory and restarting the controller the parameters' value will be the one programmed in the standard way.</p>	0-1	0

2- 5 M3 - Engine setup

The engine setup is composed by 9 submenus:

- A) Start setup: Submenu that contains all the parameters about the starting, like the thresholds to consider the engine running, the RPM and the parameters of the starting attempts
- B) Stop setup: Submenu for the settings of the stop procedure, like modalities, times and setting of the cooling
- C) Preheat setup: Submenu for the settings of the preheating procedure, the modalities, times and types
- D) Fuel setup: Submenu with all the parameters about the fuel control and management of the wastes
- E) Oil setup: Submenu with all the parameters about the oil pressure, with the choice of the instrument and the thresholds
- F) Temperature setup: Submenu with all the parameters about the temperature, with the choice of instrument and thresholds
- G) Battery setup: Submenu where you can set the parameters about the battery, like the thresholds and time to battery service
- H) Service: Submenu that allows the setting of the parameters and hours about the services and warranty
- I) OpEx setup: Submenu to set the costs and parameters about the OpEx management
- J) CanBus: Submenu with the parameters for the CanBus communication

2- 5.1 M3.1 - Starting setup



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	Digital pressure signal	Permits to detect engine running status by the digital oil pressure sensor. It works only if connected to input J4.8.	On/Off	Off
B	D+ threshold	Permits to set the voltage of D+ of a battery charger alternator, over which the engine is considered started.	0-9999 [V]	10
C	W Threshold signal / pickup /	You set the frequency value measured on a permanent by a pickup or a "W" tachimetric sensor, over which the engine is considered started.	0-9999 [Hz]	Off
D	GE volt. ON	You set the voltage (% of the nominal voltage, see alternator menu) value measured of the power alternator, over which the engine is considered started.	0-100 [%]	20
E	GE freq. ON	You set the frequency (% of the nominal frequency, see alternator menu) value measured of the power alternator, over which the engine is considered started.	0-100 [%]	20
F	Engine ON	Length of the starting time during which the engine running conditions are evaluated.	0-20 [s]	3
G	Attempts number	You set the number of start attempts; when expired, the "starting failure" alarm is activated.	1-10	5
H	Attempt time	It is the maximum duration time of each starting attempt. When the engine is detected running, the crank output is de-activated.	1-10 [s]	5
I	Delay attempts	It is the time between a failed starting attempt and the next one.	1-10 [s]	5
J	RPM nominal	It is the nominal speed of the engine, used also as reference to set the limits on points K and L.	0-10000	1500
K	High RPM	You set the maximum value over which the alarm for high engine rpm appears.	0-200 [%]	120
L	Low RPM	You set the minimum value beyond which the alarm for low engine rpm appears.	0-100 [%]	80
M	RPM constant	This value multiplied with the frequency value of the engine gives you the RPM value.	0-100	30
N	ON alarm delay	It is the time delay from the engine running detection to the enable of the alarms; this time allows the generator to reach the nominal operating conditions.	0-1000 [s]	8
O	Siren time	It is the duration time of the acoustic advisor in case of alarm.	0-1000 [s]	20
P	Choke delay	It is the maximum time during which the Choke output is activated during the starting. The output is automatically deactivated when the voltage reaches the value at parameter Q. Remember to set one programmable output for the choke function.	0-59 [s]	8
Q	Choke limit	Voltage threshold that must be reached at the starting to deactivate automatically the choke output.	50-400 [V]	100

2- 5.2 M3.2 - Stop setup



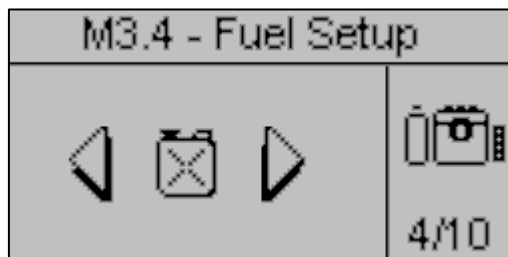
POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	Stop mode	You can select the logic used to stop the engine. Both means that fuel valve and electrosolenoid logic are active at the same time on two different outputs.	EV EM EV+EM	EV+EM
B	Stop time	You set the maximum time of the stop phase, after 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 permanent power supply.	0-99 [s]	8
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]	30

2- 5.3 M3.3 - Preheat setup



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	Preheat time	You set the glow plugs time before starting.	0-99 [s]	5
B	Preheat with EV	If ON, during preheating is also supplied the fuel electrovalve output. If OFF, during the preheating the fuel electrovalve output is not supplied.	On-Off	Off
C	Skip preheat	You can set the value of the engine temperature above which the preheat procedure is skipped, because the engine is already considered "warm".	-999 a 999 [°C]	70
D	Preheat type	You can select the type of procedure: Before start: the glow plugs output is active only before each starting attempt. During start: the glow plugs output is active before and during each starting attempt. During attempts: the glow plugs output is active before starting, during the starting and also during the pause between attempts.	- Before start - During start - During attempts	Before start

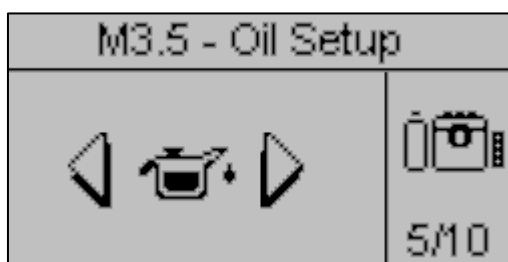
2- 5.4 M3.4 - Fuel setup



The fuel setup contains all the parameters (shown in the table) about the fuel management. See Appendix A for the table of the most common sensors.

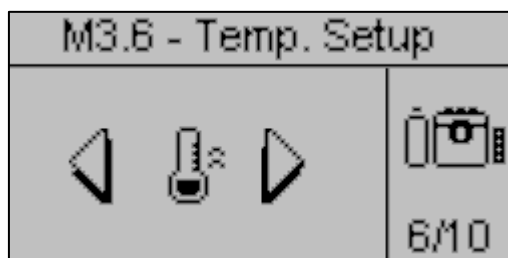
POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	Analog tool type	You select the type of transmitter used. The curves are referred to the relevant table in appendix A.	Vdo-Veglia -Datcon	Vdo
B	Low fuel level	Value beyond which the display shows a warning message that normally does not stop the generator.	0-100 [%]	20
C	Lack of fuel	Value beyond which the display shows an alarm message that normally shuts down the generator.	0-100 [%]	10
D	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 only if the TE809 is in AUT mode.	On-Off	Off
E	Start refuel	It sets the fuel level below which the automatic fuel refilling starts.	0-100 [%]	30
F	Start 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.	0-59 [s]	10
G	Stop refuel	It sets the fuel level that, when reached, stops the automatic refilling.	0-100 [%]	100
H	Stop timer	You set a time limit after which the filling 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.	0-59 [min]	5
I	Tank capacity	You set the capacity of the tank. Necessary for the fuel management.	0-20000 [Lt]	100
J	Min. autonomy	If the autonomy level is under this value, the autonomy alarm appears.	0-1000 [h]	5
K	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
L	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]	10
M	High cons.	When instant fuel consumption (calculated from load percentage and consumption parameters K and L) is greater than this value, an alarm will appear.	0-65535 [Lt/h]	15
N	Offset fuel	Adjust for the fuel level measure.	-10 – +10 [%]	0

2- 5.5 M3.5 - Oil pressure setup



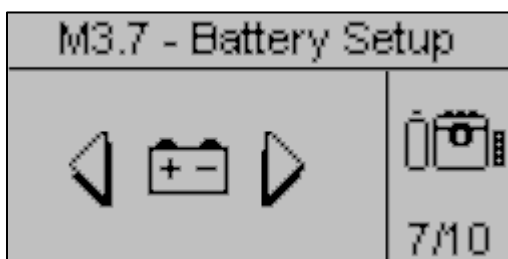
POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	Analog tool type	You select the type of transmitter used. The curves are referred to the relevant table in appendix B.	Vdo-Veglia - Datcon	Vdo
B	Oil pres. prealarm	Value beyond which the display shows a warning message that normally doesn't stop the generator	1-400 [bar]	3.0
C	Low oil pres.	Value beyond which the display shows an alarm message that normally stops the generator.	1-400 [bar]	2.0

2- 5.6 M3.6 - Temperature setup



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	Analog tool type	You select the type of transmitter used. <u>The curves are referred to the relevant table in appendix C.</u>	Vdo Veglia Datcon	Vdo
B	Temp. prealarm	Value over which the display shows a warning message that normally does not stop the generator.	40-999 [°C]	90
C	High temp.	Value over which the display shows an alarm message that normally stops the generator.	40-999 [°C]	100

2- 5.7 M3.7 - Battery setup



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	High DC voltage	It sets the maximum battery voltage; if the battery value measured is higher than this value, the "High battery alarm" is shown.	0-500 [V]	16
B	Low DC voltage	It sets the minimum battery voltage; if the battery value measured is lower than this value, the "Low battery alarm" is shown.	0-500 [V]	10
C	Timer enable	It permits to enable or disable the counter about battery service.	On-Off	Off
D	Timer liquid	You set the hours at which the manufacturer recommends checking the battery fluid. After expiration, the display will show a warning message for checking.	0-65535 [h]	4320
E	Reset counter	It shows you the hours left to battery maintenance expiration. If you select and confirm by the drive this box, the counter restarts from the value set at point D.	-	-
F	Remaining h	It shows the hours remaining before the battery service.	-	-

2- 5.8 M3.8 - Service setup



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	Service #1 hours	You can set the hours of the first service of the generator. See suggested time by the engine and alternator manufacturers.	0-65535 [h]	100
B	Next service	Set the hours for the next services. Confirm the parameter C to increase of this value the hours left to service.	0-2000 [h]	500
C	Add service	Confirm this option to add to hours left to service the value at parameter B.	-	Ok
D	Initial work hours	It is the starting value of generator working hours. Normally you can change this value when the controller is mounted on a generator that has already worked.	0-65535 [h]	0
E	Restore hours	By drive, you can confirm it to reset the working hours to the "initial work hours" value at point D.	-	Ok
F	Clear events log	If you confirm this option with "i" button, the event list is deleted.	-	Ok
G	Engine warranty time	When the work hours reach this value, you can see the alarm that the warranty has expired.	0-65535 [h]	1000

2- 5.9 M3.9 - OpEx management and warranty



OpEx (Operating Expenditure) is the necessary cost which must be considered to use correctly the machinery. This function allows to analyze and to confront the real cost of consumed fuel with the theoretical data provided by machine manufacturer (fuel consumption without load – or 75% load).

OpEx parameters can be used to evaluate the performances of the machine over time.

To have a complete management of the fuel consumptions and wastes, follow these instructions:

- Set parameters A, I, J, K in fuel menu (see menu M3.4): Parameters J and K are necessary to evaluate the instant and average expected fuel consumptions according to the load.
- If you want to monitor the fuel leakage, set param. E and G. If the fuel decreases more than the value at parameter G with engine not running in the time at point E, the controller shows the “fuel leakage” alarm.
- If you want to monitor the fuel high leakages or stealings, set parameter E and H. If the fuel decreases more than the value at parameter H in the time at point E, the controller shows the “fuel stealing” alarm.
- To evaluate the average consumptions, set parameters D and I. After a number of work hours equal to the value set at point D have passed, the controller compares the real amount of consumed fuel with the estimated one and gives an alarm if the difference in percentage is greater than the value at parameter I.
- To evaluate if the fuel refillings are completed, you can set a percentage value at parameter F. After a refilling, if the fuel level is lower than the value at parameter F, the alarm “refilling not completed” appears.
- The costs and wastages can be calculated setting the proper values at parameters B and C.

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	OpEx enable	Parameter to enable (On) or disable (Off) the visualization of the display pages about the OpEx function.	On-Off	Off
B	Fuel cost	Cost of the fuel in cents of \$ / liter.	0-65535 [c\$/Lt]	100
C	OpEx cost	Average monthly cost of the services.	0-65535 [\$ /month]	100
D	Work cycle	This is the limit to end a work cycle and evaluate consumption data.	0-65535 [h]	8
E	Fuel check timer	Sample timer to periodically detect the fuel level. After each countdown of the timer the level is stored and compared with the previous one. If the level decreased with stopped engine, a fuel leak alarm will appear. If the level decreased too much, a fuel steal alarm will appear.	0-59 [min]	5
F	Min. refilling	Fuel level in percentage that must be reached after every refilling. If the level is lower, you will see an alarm.	0-100 [%]	20
G	Fuel Leakage	If the fuel decreases more than this value with engine not running in the “fuel check timer” time (fuel menu, parameter E), the controller shows the fuel leakage alarm.	0-1000 [Lt]	5
H	Fuel steal	If the fuel decreases more than this value in the “fuel check timer” time (fuel menu, param. E), the controller shows the “fuel stealing” alarm.	0-1000 [Lt]	30
I	Unex. Cons.	After a number of work hours equal to the value set at point M have passed, the controller compares the real amount of consumed fuel with the calculated one and gives an alarm if the difference in percentage is greater than this value. <u>Example:</u> - Work cycle = 50 hours - Unexpected fuel consumption = 10% When 50 work hours have passed, the real fuel consumed is 60 Lt while the estimated one is 50. 20% is the exceeded consumption, so an alarm will appear on the display (“Unexpected fuel consumption”).	0-1000 [%]	10
J	Set leak waste	It permits to update the liters lost for leakages to this value.	0-9999 [Lt]	0
K	Set unex waste	It permits to update the liters lost for abnormal cons. to this value.	0-9999 [Lt]	0
L	Set refill waste	It permits to update the liters lost for not completed refillings to this value.	0-9999 [Lt]	0

2- 5.10 M3.10 - Canbus setup



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	Canbus Protocol	<p>Set the communication protocol of for engine canbus communication. Canbus available are:</p> <ul style="list-style-type: none"> - J1939 - SCANIA EMS - SCANIA EMS6 - SCANIA EMS8 - VOLVO EMS - VOLVO EMS2 - VOVLO EDC4 - PERKINS - JOHN DEERE - DEUTZ EMR1 - IVECO - CUMMINS - MTU ECU7 - DEUTZ EMR2 - TE80x <p>TE80x is a proprietary can protocol which allows the communication between different devices of TE809 and TE808 family.</p> <p>If set to "None", the display pages about the CanBus are not shown.</p>	None-TE80x	None
B	CAN baud-rate	Communication speed in bit per second for Canbus port	100 to 1000 [kbps]	250

2- 6 M4 - General setup

The general setup is composed by 4 submenus:

- A) Display setup: Submenu that contains all the parameters settings of the screen: language, contrast, etc
- B) Clock setup: Submenu with the general settings about the clock: date, time and day of the week
- C) Test setup: Submenu with the settings of the test operation mode, like the length and day of the programmable tests
- D) Security setup: Submenu to set the passwords for different levels that lock and unlock the various menus

2- 6.1 M4.1 - Display setup



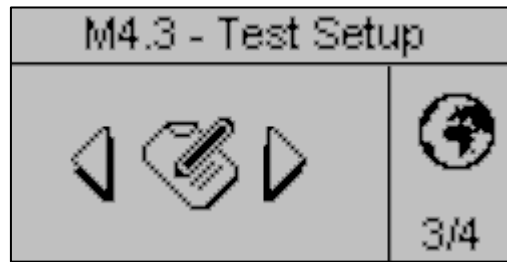
POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	Language	You select the language. On board are available the following languages: English and Italian. It's possible to request and install any language with any type of character (russian and greek included).	IT – EN	EN
B	Backlight	If no operations are done, after this time the display backlight turns off. It returns on automatically when an events occurs.	0-255 [s]	250
C	Reset stats	It permits to reset all the measures shown in the stats pages.	0-255	250
D	Contrast	To set the display contrast preferred for the TE809.	0-5	0
E	Cyclic alarms	It is the time of the cyclic indication of the active alarms. The new parameter is active at the next system startup.	0-255 [s]	3
F	Alarm Off delay	Set the delay time for the autoreset function of non-retentive stopping alarms.	Off-255 [s]	Off
G	Return to default	It is the time after which the controller automatically returns to the standby page (Mains 1) if no buttons are pressed.	Off-250 [s]	Off
H	Screen at start-up	At the power-on, if this parameter is set to ON, after 5 seconds the logo page disappears and you will see the Mains 1 page.	On-Off	On
I	Reset at start-up	If On, at the turn-on the board is automatically in reset mode. If Off, the board is instead in manual mode.	On-Off	On

2- 6.2 M4.2 - Clock setup



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

2- 6.3 M4.3 - Test setup



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	Enable test 1	Used to enable or disable the automatic test.	On-Off	Off
B	Test type	To set the type of test.	Daily-Weekly-Monthly	Weekly
C	Day of week	If the type of test is chosen weekly, it permits to set the day of the week in which the test should be done.	Mond., Tuesd., Wed., Thur., Frid., Sat, Sund.	Thur.
D	Day of month	If the type of test is chosen monthly, it permits to set the day of the month in which the test should be done.	1-31	1
E	Start hour	You set the hour of test starting.	0-23	9
F	Start min.	You set the minute of test starting.	0-59	30
G	Enable test 2	Used to enable or disable the automatic test.	On-Off	Off
H	Test type	To set the type of test.	Daily-Weekly-Monthly	Weekly
I	Day of week	If the type of test is chosen weekly, it permits to set the day of the week in which the test should be done.	Mond., Tuesd., Wed., Thur., Frid., Sat, Sund.	Thur.
J	Day of month	If the type of test is chosen monthly, it permits to set the day of the month in which the test should be done.	1-31	1
K	Start hour	You set the hour of test starting.	0-23	9
L	Start min.	You set the minute of test starting.	0-59	30

Also, you can set some parameters that are in common for the two tests:

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
M	Test lenght	You set the length time for the test.	0-59 [min]	5
N	Test with load	If you set it to ON, during the test, the switching between Mains and Genset should be done.	On-Off	Off
O	No remote stop	If ON, during the test the remote stop signal is not considered. If OFF, if the remote stop signal is active during the test, the engine is stopped and the test finishes automatically.	On-Off	Off
P	Test PT enable	Enable "Programmable Test" option, to finish the test at a specific end time (see programming time points Q and R), ignoring "Test length" parameter.	On-Off	Off
Q	End PT hour	Hours of end time about PT test	0-24 [h]	17
R	End PT minute	Minutes of end time about PT test	0-60 [min]	30

If the type of test is chosen Daily, you can set the days in which the test should be done:

POS.	NAME	DESCRIPTION
-	Sunday	If the tick is present, it enables the daily test on Sunday. If the tick is removed, on this day the test is not executed.
-	Monday	If the tick is present, it enables the daily test on Monday. If the tick is removed, on this day the test is not executed.
-	Tuesday	If the tick is present, it enables the daily test on Tuesday. If the tick is removed, on this day the test is not executed.
-	Wednesday	If the tick is present, it enables the daily test on Wednesday. If the tick is removed, on this day the test is not executed.
-	Thursday	If the tick is present, it enables the daily test on Thursday. If the tick is removed, on this day the test is not executed.
-	Friday	If the tick is present, it enables the daily test on Friday. If the tick is removed, on this day the test is not executed.
-	Saturday	If the tick is present, it enables the daily test on Saturday. If the tick is removed, on this day the test is not executed.

2- 6.4 M4.4 - Security setup



The security setup menu permits to enter 6 access codes the permit to lock/unlock the programming menus. By default, the 6 access codes are set correctly, so you can access to all the menus. You have the possibility to protect the programming menus entering wrong codes: this way the menus correspondent to the wrong code inserted are locked. When you want to unlock the menus, simply enter in this menu and set the codes to the correct values. The 6 codes are shown in the table.

POS.	NAME	DESCRIPTION	CODE
A	Mains password	Enter the password that locks/unlocks the mains setup. If you enter the code correctly to 60, the mains menu is completely unlocked. If you enter a wrong code, the menu is locked until the correct code will be inserted.	60
B	Genset password	Enter the password that locks/unlocks the alternator setup. If you enter the code correctly to 50, the alternator setup is completely unlocked. If you enter a wrong code, the menu is locked.	50
C	Engine password	Enter the password that locks/unlocks the engine setup. If you enter the code correctly to 40, the engine setup is completely unlocked. If you enter a wrong code, the menu is locked.	40
D	Special password	Enter the password that locks/unlocks the special functions setup. If you enter the code correctly to 30, the special functions setup is completely unlocked. If you enter a wrong code, the menu is locked.	30
E	Connectivity password	Enter the password that locks/unlocks the connectivity setup. If you enter the code correctly to 20, the connectivity setup is completely unlocked. If you enter a wrong code, the menu is locked.	20
F	I/O password	Enter the password that locks/unlocks the I/O setup. If you enter the code correctly to 10, the I/O setup is completely unlocked. If you enter a wrong code, the menu is locked.	10
G	Global code	This is the password to access to the programming menus. It's possible to change it, from 000 to 999.	809

2- 7 M5 - Alarms list



When you enter this menu, you have to insert the correct password: press 6 times the STOP button.

When you are in, select "exit" to return to the previous screen, or select "alarms list" to see enter the alarms setup.

For every alarm, you can program all the following features:

- Activation: Always (always enabled), Run (active only with engine running) or Off (disabled)
- Ritenitive: On (the alarm indication remains on display until you press the reset button, even if the cause has disappeared) or Off
- Siren: On or Off
- Global1: if On, the alarm activates the output programmed as Global alarm 1 (if present)
- Global2: if On, the alarm activates the output programmed as Global alarm 3 (if present)
- Global3: if On, the alarm activates the output programmed as Global alarm 3 (if present)
- Stop engine: Warning (only indication), Stop (the alarm stops the engine immediately) or Cooling (the alarms stops the engine with cooling)
- SMS: On (if a modem is connected, the board sends a SMS when the alarm appears) or Off

	Alarm code	Alarm description	Delay	Retentive	siren	Alarm relay			activation			Type of stop			SMS
						Global alarm 1	Global alarm 2	Global alarm 3	Always enabled	disabled	Enabled when running	Stop with cooling	Stop engine	Only indication signal	
1	20005	Low oil level	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
2	20006	Low coolant level	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
3	20007	Ground protection alarm	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		
4	20008	Test active	0						<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
5	20009	High fuel consumption	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
6	20012	Stop phase	0						<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
7	20013	Start phase	0						<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
8	20014	Battery maintenance	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
9	20015	Stop failure	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		
10	20016	Fuel low leakage	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	
11	20017	Fuel high leakage	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	
12	20018	Unexpected consumption	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
13	20019	Service	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
14	20020	Refueling timeout	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
15	20021	Remote start	1						<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
16	20022	Remote stop	1					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			
17	20023	Warranty expired	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
18	20024	Charger alternator failure	5		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	
19	20025	Faulty mains	2						<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
20	20026	SCR ON	0						<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
21	20027	Test failed	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		
22	20028	High temperature alarm (digital)	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
23	20029	Low fuel alarm (digital)	5		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
24	20030	Low oil pressure alarm (digital)	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		
25	20031	Battery charger alarm	5		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
26	20032	Emergency button	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		
27	20033	Feedback KG	5		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
28	20034	Feedback KR	5		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
29	20035	System locked	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		
30	20036	User alarm 1	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
31	20037	User alarm 2	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
32	20038	User alarm 3	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
33	1001	Faulty start	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
34	20015	Emergency arrest	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		
35	1201	Low frequency generator	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		
36	1202	High frequency generator	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		
37	1203	Low voltage generator	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		
38	1204	High voltage generator	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		
39	1205	Wrong phase sequence generator	0		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	
40	1206	Current overload	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
41	1207	Current short-circuit	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		
42	1208	Low frequency mains	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	
43	1209	High frequency mains	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
44	1210	Low voltage mains	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	
45	1211	High voltage mains	5		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
46	1212	Wrong phase sequence mains	0		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	
47	1101	High temperature prealarm	2		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	
48	1102	High temperature alarm (analog)	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			
49	1104	Low fuel prealarm	30		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	
50	1105	Low fuel alarm (analog)	30		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	
51	1107	Low oil pressure prealarm	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								<input checked="" type="checkbox"/>	
52	1108	Low oil pressure alarm (analog)	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>		
53	1110	High battery voltage	15		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
54	1111	Low battery voltage	15		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
55	1112	High rpm	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
56	1113	Low rpm	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
57	20039	Autonomy low	10		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	
58	20040	Protection contactor open	3	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
59	20041	External GE protection	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		
60	20042	Clogged air filter	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		
61	20043	Fuel tank full	5		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
62	20044	Low coolant level (via Canbus)	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
63	20045	Low oil pressure (via Canbus)	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
64	20046	High engine temperature (via Canbus)	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
65	20047	Battery-charger alternator failure (via Canbus)	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	

2- 7.1 M5 - Alarms description

	Alarm code	Alarm name	Alarm description
1	20005	Low oil level	Oil level digital input alarm
2	20006	Low coolant level	Coolant level digital input alarm
3	20007	Ground protection alarm	Ground protection digital input alarm
4	20008	Test active	Signalization active during test procedure
5	20009	High fuel consumption	This alarm indicates a fuel consumption greater than programmed value inside Fuel Setup
6	20012	Stop phase	Indicates an active stop procedure
7	20013	Start phase	Indicates an active start procedure
8	20014	Battery service	Indicates that the battery service timer has expired and the engine battery must be verified
9	20015	Stop failure	Indicates engine still detected running after a stop phase
10	20016	Fuel low leakage	Indicates a fuel level decrease with engine stopped
11	20017	Fuel high leakage	Indicates a detection of large fuel level decrease during both running and stopped engine
12	20018	Unexpected consumption	At the end of each work cycle the consumed fuel is compared with calculated fuel consumption, if these value differs too much this alarm will be displayed
13	20019	Service	Indicates that service timer has expired
14	20020	Refueling timeout	Indicates that the maximum time with refueling output active has been reached
15	20021	Remote start	Indicates remote start function from digital input
16	20022	Remote stop	Indicates remote stop function from digital input
17	20023	Warranty expired	Indicates that warranty timer has expired
18	20024	Charger alternator failure	Indicates an alternator d+ voltage under 4Vdc with engine running
19	20025	Faulty mains	Indicates that the mains is out of limits
20	20026	SCR ON	Indicates that the the remote start input (if programmed as SCR) is active
21	20027	Test failed	Indicates an unsuccessful test: in manual if mode the engine has not started after programmed attempts number; in automatic mode if a stopping alarm occurs during test procedure
22	20028	High temperature alarm (digital)	High temperature digital input alarm
23	20029	Low fuel alarm (digital)	Low fuel level digital input alarm
24	20030	Low oil pressure alarm (digital)	Low oil pressure digital input alarm
25	20031	Battery charger alarm	Battery charger digital input alarm
26	20032	Emergency button	It indicates that the input programmed as "emergency button" is active
27	20033	Feedback KG	If KG contactor output status is not equal to input status
28	20034	Feedback KR	If KR contactor output status is not equal to input status
29	20035	System locked	Internal system alarm which stops the generator for safety measures
30	20036	User alarm 1	Alarm that is present when the digital input programmed as user alarm 1 is active
31	20037	User alarm 2	Alarm that is present when the digital input programmed as user alarm 2 is active
32	20038	User alarm 3	Alarm that is present when the digital input programmed as user alarm 3 is active
33	1001	Faulty start	Indicates that the engine is not detected running after the start attempts in automatic mode
34	20015	External arrest	Indicates that all engine running detection signals are lost without a command from the controller to the engine
35	1201	Low frequency generator	Frequency values are under the programmed limits
36	1202	High frequency generator	Frequency values are over the programmed limits
37	1203	Low voltage generator	Voltage values are under the programmed limits
38	1204	High voltage generator	Voltage values are over the programmed limits
39	1205	Wrong phase sequence generator	Indicates wrong generator voltages sequence
40	1206	Current overload	Indicates a current consumption higher than the programmed limits
41	1207	Current short-circuit	Indicates a current consumption higher than the programmed limits
42	1208	Low frequency mains	Indicates that the mains frequency is under the programmed threshold
43	1209	High frequency mains	Indicates that the mains frequency is over the programmed threshold
44	1210	Low voltage mains	Indicates that the mains voltage is under the programmed threshold
45	1211	High voltage mains	Indicates that the mains voltage is under the programmed threshold
46	1212	Wrong phase sequence mains	Indicates a wrong phase sequence of the mains
47	1101	High temperature prealarm	Indicates analog engine temperature higher than programmed pre-alarm threshold
48	1102	High temperature alarm (analog)	Indicates analog engine temperature higher than programmed alarm threshold
49	1104	Low fuel prealarm	Indicates analog fuel level lower than programmed pre-alarm threshold
50	1105	Low fuel alarm (analog)	Indicates analog fuel level lower than programmed alarm threshold
51	1107	Low oil pressure prealarm	Indicates analog oil pressure lower than programmed pre alarm threshold
52	1108	Low oil pressure alarm (analog)	Indicates analog oil pressure lower than programmed alarm threshold
53	1110	High battery voltage	Indicates a battery voltage higher than programmed value
54	1111	Low battery voltage	Indicates a battery voltage lower than programmed value
55	1112	High rpm	Indicates an engine speed value higher than programmed value
56	1112	Low rpm	Indicates an engine speed value lower than programmed value
57	20039	Autonomy low	If autonomy hours calculated with load percentage, fuel consumption and fuel level are lower than the programmed value, the alarm will be shown
58	20040	Protection contactor open	"Protection contactor open" digital input alarm
59	20041	External GE protection	"External GE protection" digital input alarm
60	20042	Clogged air filter	"Clogged air filter" digital input alarm
61	20043	Fuel tank full	"Fuel tank full" digital input alarm
62	20044	Low coolant level via Canbus	Low coolant level alarm signalled via Canbus
63	20045	Low oil pressure via Canbus	Low oil pressure alarm signalled via Canbus
64	20046	High engine temperature via Canbus	High engine temperature alarm signalled via Canbus
65	20047	Charger alternator failure via Canbus	Charger alternator failure alarm signalled via Canbus

2- 8 M6 - Special functions

The TE809 permits three special functions active only in automatic mode: SCR, Start by mains kW and Dummy load. The relative parameters can be set in this menu. Here you can also set the type of use of all the programmable inputs and outputs. The submenus are the following:

- A) SCR (only automatic mode)
- B) Start by mains kW (only automatic mode)
- C) Dummy Load (only automatic mode)

2- 8.1 M6.1 - SCR



It permits to start the generator by a remote signal on one of the programmable inputs, that you have to set to remote start (see par. 2-10). When that input is closed to negative, after a START BY SCR DELAY time, the generator starts. Then:

- a) If SCR 2 ENABLE is set to OFF: when the KG DELAY time has elapsed, TE809 switches the changeover switch on generator side, even if the mains is detected.
- b) If SCR 2 ENABLE is set to ON: after the generator has started, you have to wait that the second programmable input (that you have to set to remote stop, see par. 2-10) is closed to negative, then after the KG DELAY time, TE809 switches the changeover switch on generator side, even if the mains is detected.

“No KR with SCR” option permits to inhibit, in case of generator alarm, the changeover switch on mains side.

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	SCR enable	If ON the function is enabled, if OFF the function is disabled.	On/Off	Off
B	Start delay	It is the delay time that elapses when you close to negative the terminal programmed as remote start before the generator starting.	0-59 [min]	1
C	KG delay	It is the delay time that elapses after the starting of the generator (if parameter D is OFF) or after the closure to negative of the input programmed as remote stop (if parameter D is ON) before the switching of the changeover switch.	0-59 [min]	1
D	SCR 2 input	If ON, it enables the changeover switch control by the remote stop terminal closed to negative; when closed and after the delay time at point C, the load switches to generator. If OFF, the remote stop input is disabled and is not used to control the changeover switch: changeover switch is automatically closed on generator side when the engine is started by the remote start input and after the delay time at point C.	On/Off	On
E	No KR with SCR	If ON, when SCR mode is active (remote start input active), the mains contactor opens and it's not possible to close it also if the generator is stopped by an alarm.	On/Off	Off

2- 8.2 M6.2 - Start by mains kW



Function that allows the generator's automatic start and stop, according to the maximum and minimum thresholds programmable on mains consumption. If the load consumption from the mains supplies exceeds the START THRESHOLD for a period of time longer then the TIME FOR START, TE809 starts the generator and switch the load for the generator. When the value of load's consumption is less than the STOP THRESHOLD at least for the TIME FOR STOP time, the load is commutated to the mains (if available) and the generator is stopped. If the mains is missing, the load remains on generator until the mains voltage is detected.

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	kW mains Enable	If ON the function is enabled, if OFF it is disabled.	On / Off	Off
B	Start power	Load supplied by the mains: if the power consumption exceeds this value (at least for the "time for start" at point C), the generator starts and the power switching moves on the generator.	0-5000 [kW]	100
C	Time for start	It is the delay time for which the load consumption must remain over the threshold value on the mains (point B); after this time the generator starts.	0-59 [s]	30
D	Stop power	Load is supplied by the generator: if the power consumption returns to be less than this threshold value set (at least for the "time for stop" at point E), the load switches to the Mains and the generator is stopped.	0-5000 [kW]	80
E	Time for stop	It's the delay time for which the load consumption must remain below the threshold value; after this time the load returns to the Mains and the generator is stopped.	0-59 [s]	30

2- 8.3 M6.3 - Dummy load



Function that allows to activate one of the programmable outputs, according to the maximum and minimum thresholds programmable on load consumption. If the load consumption is lower than the DUMMY ON for a period of time longer then the ON DELAY, the board activates all the outputs that you programmed for Dummy load function (see par. 2-10 for the programming of the outputs). When the value of load consumption is higher than the DUMMY OFF at least for the OFF DELAY time, the outputs are de-activated. To activate this function, you have to set at least one of the programmable outputs for "dummy load" (see par. 2-10), then you have to set the following parameters.

POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	Dummy enable	If ON the function is enabled, if OFF the function is disabled.	On / Off	Off
B	Dummy On	Load supplied by generator: if the power consumption is lower than this value (at least for the "On delay" at point C), the outputs programmed as "dummy load" are activated.	0-5000 [kW]	50
C	On delay	It is the delay time for which the load consumption must remain under the threshold value on the generator (point B); after this time the outputs are activated.	0-59 [s]	30
D	Dummy Off	Load is supplied by the generator: if the power consumption exceeds the threshold value set (at least for the "Off delay" at point E), the outputs programmed as "dummy load" are deactivated.	0-5000 [kW]	100
E	Off delay	It is the delay time for which the load consumption must remain over the threshold value on the generator (point D); after this time the outputs are deactivated.	0-59 [s]	30

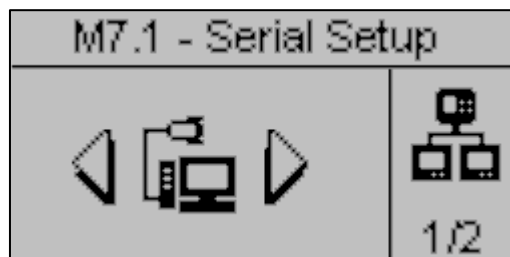
2- 9 M7 - Connectivity

The connectivity setup permits to set the parameters of the RS232/RS485 port and the GSM communication. In case of communication with the PC or another panel, remember to set on both sides the same baud rate.

It contains two submenus:

- A) Serial port setup
- B) GSM setup

2- 9.1 M7.1 - Serial port setup



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	Unit ID	It's the address of the board for RS485 communication.	0-255	1
B	RS485 protocol	Protocol type. Selectable: None: Serial port disabled. Modbus Master: if two boards are connected, this one is the priority. Modbus slave: when two boards are connected, this one is the secondary. TE809 must be set as Slave also for connection between controller and PC. GSM modem: connect this port to a GSM modem.	None Modbus Master Modbus Slave Gsm modem	None
C	RS485 baud-rate	Communication speed in kbit per second: for modem connections, it is recommended speed of 9600.	9600 to 115200 [kbps]	115200
D	RS232 protocol	Protocol type. Selectable: None: Serial port disabled. Modbus Master: if two boards are connected, this one is the priority. Modbus slave: when two boards are connected, this one is the secondary. TE809 must be set as Slave also for connection between controller and PC. GSM modem: connect this port to a GSM modem.	None Modbus Master Modbus Slave Gsm modem	Modbus Slave
E	RS232 baud-rate	Communication speed in kbit per second for RS232 port.	9600 to 115200 [kbps]	115200
F	Datalog enable	It permits to enable the data-logger function which registers periodically the fuel level (Lt), the average kW and the % of last refilling. For more informations, see the data-logger explanation in chapter 4.	True-False	False

2- 9.2 M7.2 - GSM Setup



POS.	NAME	DESCRIPTION	RANGE OF VALUES	DEFAULT SETTINGS
A	Engine running	If Ok, it sends a message when the engine is running.	On-Off	Off
B	KG active	If Ok, it sends a message when the generator contactor is closed.	On-Off	Off
C	KR active	If Ok, it sends a message when the mains contactor is closed.	On-Off	Off
D	Not automatic	If Ok, it sends a message when the TE809 is not in automatic mode.	On-Off	Off
E	Mains ok	If Ok, it sends a message when the mains is detected within the set limits.	On-Off	Off
-	Modem status	Status of the modem: initial (initializing phase), wait (waiting), ready (stand-by phase), send (sending a message), send wait (waiting the response).	-	-
-	Call Numbers	It shows the mobile phone numbers set (up to 5, the numbers in position 1, 2 and 3 are shown on display, the numbers in position 4 and 5 are hidden) that the controller must send messages to. See chapter 3 for more informations about the GSM.	-	-

2- 10 M8 - IO setup

The IO setup is composed by 5 submenus:

- A) Input setup: Submenu that contains all the parameters about the input functions available: select which digital input is connected with each function.
- B) Output setup: Submenu that contains all the parameters about the output functions available: select which function must performed by each digital output.
- C) Input type: Submenu for the settings of input type: you can select between disabled, normally open, normally closed or analog if the input allows it.
- D) Output type: Submenu for the settings of output type: you can select between disabled, normally open or normally closed
- E) Measures: Submenu to adjust voltage and current measures with a programmable offset.

2- 10.1 M8.1 - Input setup



The I/O menu permits to select the type of use of the 5+3 programmable digital inputs.

The inputs I4.4, I4.5, I4.6, I4.7, I4.8, I6.2 (digital / analog oil pressure), I6.3 (digital / analog water temperature), I6.4 (digital / analog fuel level) can be programmed as:

POS.	NAME	RANGE OF VALUES	DEFAULT SETTINGS
A	Low oil pressure	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	I6.2
B	High engine temperature	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	I6.3
C	Low fuel level	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	None
D	Emergency stop	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4 – I5.3 (output relays common pole)	I5.3
E	Remote start *	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	I4.6
F	Remote stop **	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	I4.7
G	Low coolant level	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	I4.4
H	Battery charger alarm	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	None
I	Low oil level	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	None
J	Ground protection	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	I4.5
K	Feedback KG	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	None
L	Feedback KR	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	None
M	User alarm 1	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	None
N	User alarm 2	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	None
O	User alarm 3	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	None
P	Input 50-60 ***	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	None
Q	Clogged air filter	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	None
R	Fuel tank full	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	None
S	Load contactor open	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	I4.8
T	External GE protection	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	None
U	External mains control ****	None – I4.4 – I4.5 – I4.6 – I4.7 – I4.8 – I6.2 – I6.3 – I6.4	None

* Remote start: in automatic mode, when closed to negative, commands the starting of the generator. When open the generators is stopped

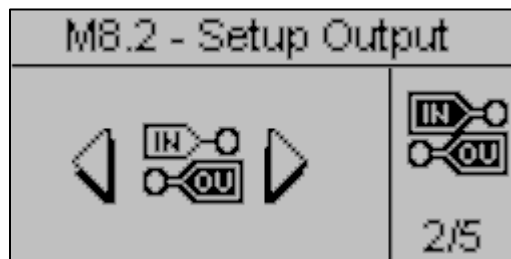
** Remote stop: the input, when closed to negative, commands the stop of the generator with priority on remote start input.

*** Input 50-60: if the selected input is active the setup programming is automatically converted for 60Hz system (F rated = 60Hz, Rpm rated = 1800 rpm, V rated = 230V). If selected input is inactive the setup programming is automatically converted for 50Hz systems (F rated = 50Hz, Rpm rated = 1500 rpm, V rated = 400V).

**** External mains control: if the selected input is active, the mains is detected within limits also if measurements of voltage and frequency are outside programmed values.

Important: if a digital input function is associated to an analog / digital input (for example: I6.4 fuel level) the input type must be programmed as Digital inside Input type menu. In this case the function associated with analog measure will be unavailable (remember that Opex function needs analog fuel measure to work). Same for analog oil pressure or analog engine temperature. If you want both digital and analog sensors, set the inputs 6.2, 6.3 and 6.4 for the analog sensors, and set other programmable inputs for the digital sensors.

2- 10.2 M8.2 - Output setup



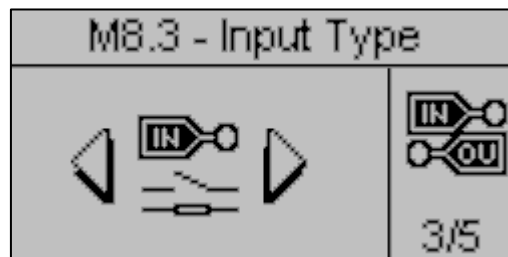
The Output setup permits to select the type of use of the 4 programmable outputs.

The outputs O5.8, O5.9, O5.10 and O5.11 can be programmed as:

- Start: the output is used to command the start.
- EV: the output is used to command the stop with EV.
- EM: the output is used to command the stop with EM.
- Preheat: 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.
- Engine ON: the output is activated when the generator is running.
- Test active: the output is used to signal that the test is active.
- 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.
- Dummy load: the output is used for the dummy load function. To have more informations about this function, see menu 2-8.3.
- Reset mode: indicates that the controller is in reset mode
- Auto mode: indicates that the controller is in automatic mode
- Man mode: indicates that the controller is in manual mode
- 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.
- KG ON: indicates that the generator contactor is closed
- KR ON: indicates that the mains contactor is closed
- Global alarm pressure: indicates that one alarm about the oil pressure is active
- Global alarm temperatures: indicates that one alarm about the engine temperature is active
- Global alarm level: indicates that one alarm about the fuel level is active
- Choke: output that is activated for the starting of Gasoline engines, with time and limits settable in the starting setup

POS.	NAME	RANGE OF VALUES	DEFAULT SETTINGS
A	O5.8	Start – EV – EM – Glow plugs – Siren – Global alarm 1 – Engine running – Test active – Refueling pump – Dummy load – Reset mode – Auto mode – Man mode – Global alarm 2 – Global alarm 3 – KG ON – KR ON – Global alarm pressure – Global alarm temperature – Global alarm level – Choke	Global alarm 1
B	O5.9	Same as parameter A	Glow plugs
C	O5.10	Same as parameter A	Siren
D	O5.11	Same as parameter A	Electro solenoid (EM)
E	O5.5 Start	Same as parameter A	Start
F	O5.4 EV	Same as parameter A	EV

2- 10.3 M8.3 - Input type



The input type setup permits to select the type of programmable inputs.

The inputs I4.4, I4.5, I4.6, I4.7, I4.8 can be programmed as:

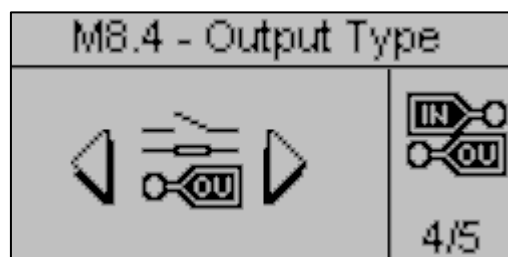
- Disabled: the input is not active
- Digital NO: the input is digital type normally open
- Digital NC: the input is digital type normally closed

The inputs I6.2, I6.3, I6.4 can be programmed as:

- Disabled: the input is not active
- Analog: the input is analog for a specific measure programmed by tool configuration
- Digital NO: the input is digital type normally open
- Digital NC: the input is digital type normally closed

POS.	NAME	RANGE OF VALUES	DEFAULT SETTINGS
A	I4.4	Disabled – Digital NO – Digital NC	Digital NO
B	I4.5	Disabled – Digital NO – Digital NC	Digital NO
C	I4.6	Disabled – Digital NO – Digital NC	Digital NO
D	I4.7	Disabled – Digital NO – Digital NC	Digital NO
E	I4.8	Disabled – Digital NO – Digital NC	Digital NO
F	I6.2-Oil	Disabled – Analog – Digital NO – Digital NC	Digital NO
G	I6.3-Temperature	Disabled – Analog – Digital NO – Digital NC	Digital NO
H	I6.4-Fuel	Disabled – Analog – Digital NO – Digital NC	Analog

2- 10.4 M8.4 - Output type



The output type setup permits to select the type of programmable outputs.

The outputs O5.8, O5.9, O5.10, O5.11 can be programmed as:

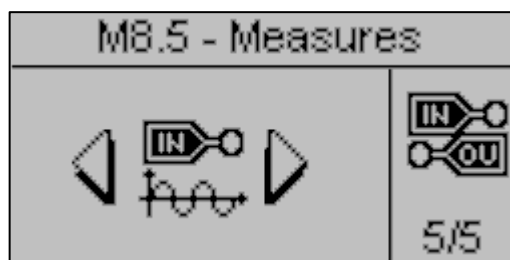
- Disabled: the output is not active
- Digital NO: the output is digital type normally open
- Digital NC: the output is digital type normally closed

The output O5.5 Start and O5.4 Ev can be programmed as:

- Disabled: the output is not active
- Digital NO: the output is digital type normally open

POS.	NAME	RANGE OF VALUES	DEFAULT SETTINGS
A	O5.8	Disabled – Digital NO – Digital NC	Digital NO
B	O5.9	Disabled – Digital NO – Digital NC	Digital NO
C	O5.10	Disabled – Digital NO – Digital NC	Digital NO
D	O5.11	Disabled – Digital NO – Digital NC	Digital NO
E	O5.4 Ev	Disabled – Digital NO	Digital NO
F	O5.5 Start	Disabled – Digital NO	Digital NO

2- 10.5 M8.5 - Measures



The measures setup allows to adjust the measured values for genset and mains voltages and load currents. For each measure it's possible to set an offset with 0.1V and 0.1A step for both voltage and current.

POS.	NAME	RANGE OF VALUES	DEFAULT SETTINGS
A	Offset VGR	-100 +100 (V/10)	0
B	Offset VGS	-100 +100 (V/10)	0
C	Offset VGT	-100 +100 (V/10)	0
D	Offset VMR	-100 +100 (V/10)	0
E	Offset VMS	-100 +100 (V/10)	0
F	Offset VMT	-100 +100 (V/10)	0
G	Offset IGR	-100 +100 (V/10)	0
H	Offset IGS	-100 +100 (V/10)	0
I	Offset IGT	-100 +100 (V/10)	0

3- GSM COMMUNICATION

3- 1 GSM Preliminary connection instructions

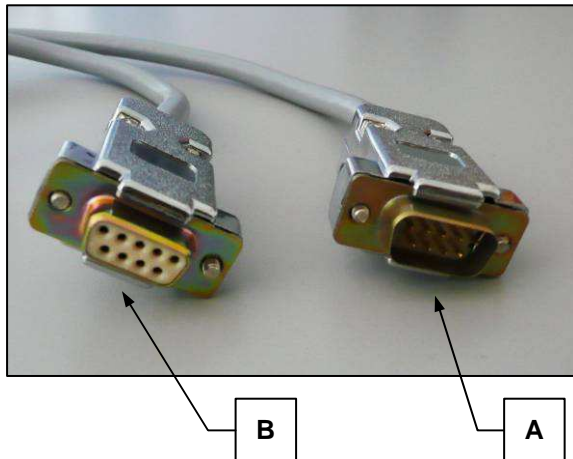
The controller is equipped with a TE809 GSM system easy to use.

3- 1.1 Serial cable connection

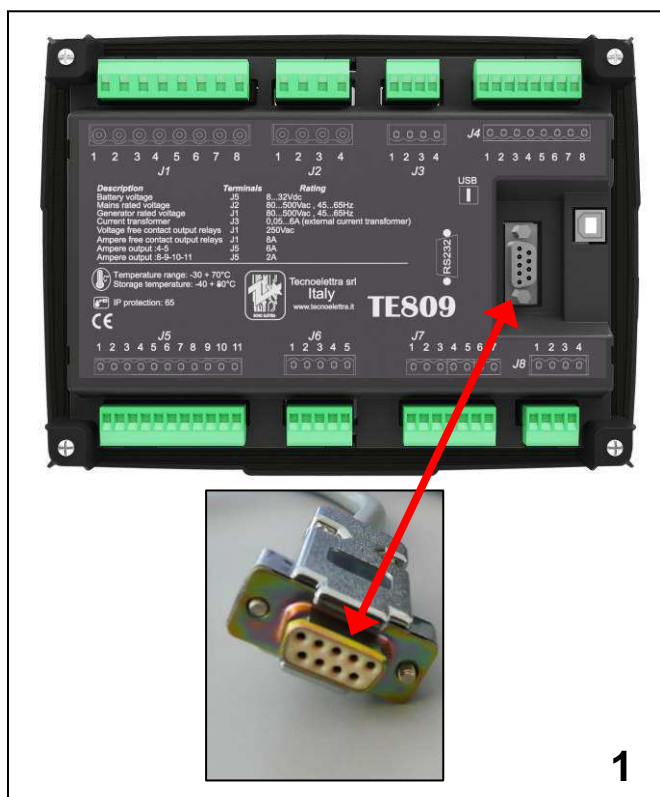
You can easily connect the GSM modem through the serial cable 9 poles female female

This cable consists of two connectors:

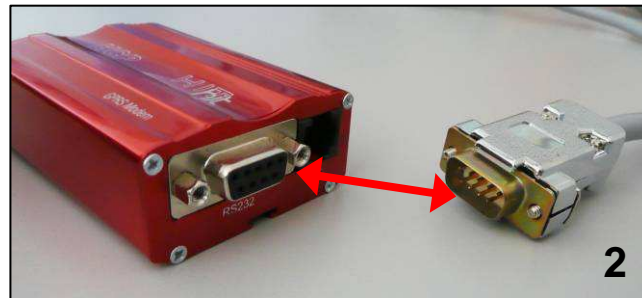
- the connector on the GSM modem
- TE809 side connector



Connect the cable as shown in the pictures 1 and 2: in figure 1 you can see the connection to the TE809.

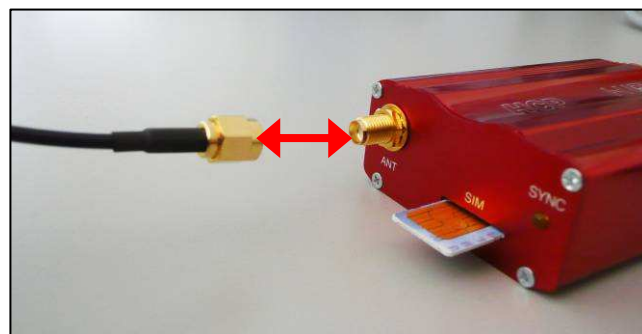


In figure 2 you can see the connection with the GSM modem.



3- 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.

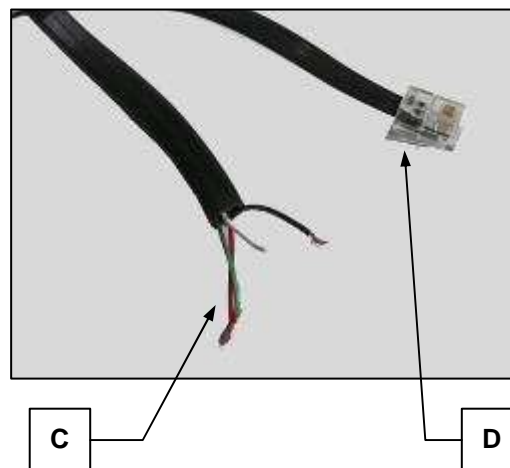


3- 1.3 Power connection

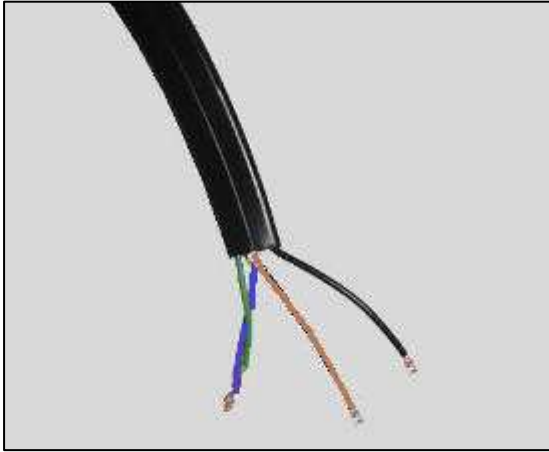
(8-32Vdc power supply)

Use the included power cord. These are the terminals of the power cord:

- free wires for power-on
- connector on the GSM side

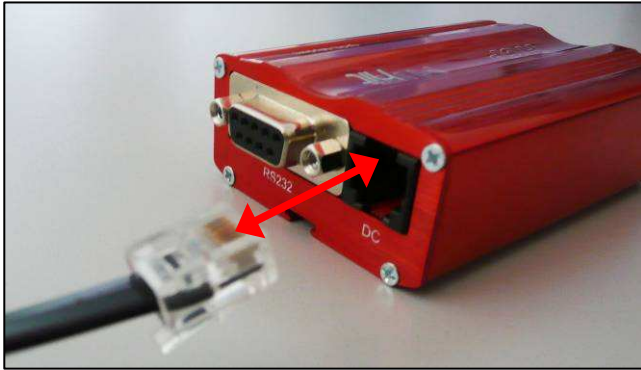


Connect the cables (figure below) to the power supply:



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:



3- 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.

3- 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

3- 1.6 On-board settings

It's necessary to configure the serial port of the TE809 for the GSM communication (see Connectivity setup, par 2-9):

If you use the RS232 port:

- Parameter D: Gsm modem
- Parameter E: 9600

If you use the RS485 port (if you have a RS232/RS485 converter, for example):

- Parameter B: Gsm modem
- Parameter C: 9600

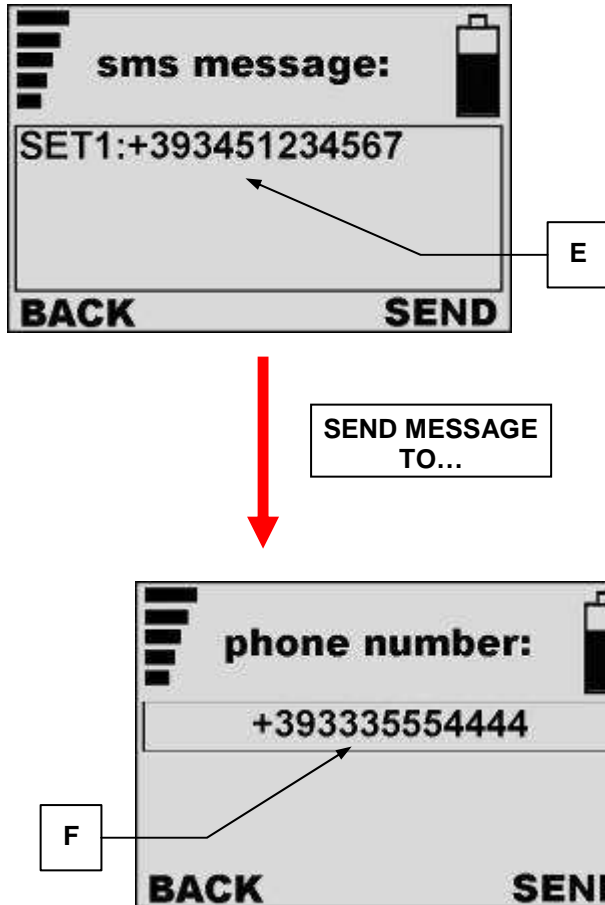
3- 2 SMS command and control

Automatically when the GSM modem and the controller TE809 are connected together, the TE809 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 TE809 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 TE809.

F) the number of the SIM card in the GSM modem. For information about these settings, the TE809 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:+11999999999; the former is automatically deleted and replaced.

If you want to permanently delete a phone number in the heading of TE809, you can send a message with an "empty number", for example "SET3:". TE809 receives the message and sets the third mobile number as empty, ie delete it.

3- 2.1 SMS commands

If you wish, you can also send commands to the TE809 which will then be automatically executed. This is the list of commands:

Man: It selects the manual mode on the TE809

Aut: It selects the automatic mode on the TE809

Test: TE809 passes to test mode

Off: It selects the Off mode on the TE809

Reset: It permits to reset the alarms of the TE809

Start: TE809 starts the generator in manual mode

Stop: TE809 stops the generator in manual mode

Info: TE809 responds with an SMS with all the important informations and measures about the system

Kr: TE809 closes the mains contactor

Kg: TE809 closes the generator contactor

Lock: TE809 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".

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 TE809 as:

Man;Start;Info

In this case, the TE809 will go into manual mode, starts the generator will then sends a message like "Info" to read the measurement.

The measures available in message "Info" are:

MODE: 0=Man, 1=Auto, 2=Reset/Off

VM: Mains voltages

VG: Generator voltages

FG: Generator frequency

Vb: Battery voltage

H: Work hours

KG: Generator contactor status (0 = open, 1 = closed)

En: State of the motor (0 = Stop, 1 = started)

KR: Mains contactor status (1 = open, 0 = closed)

Fuel: Amount of fuel in the tank (in percentage)

kW: Active power

4- REMOTE CONTROL SOFTWARE – TE MONITOR

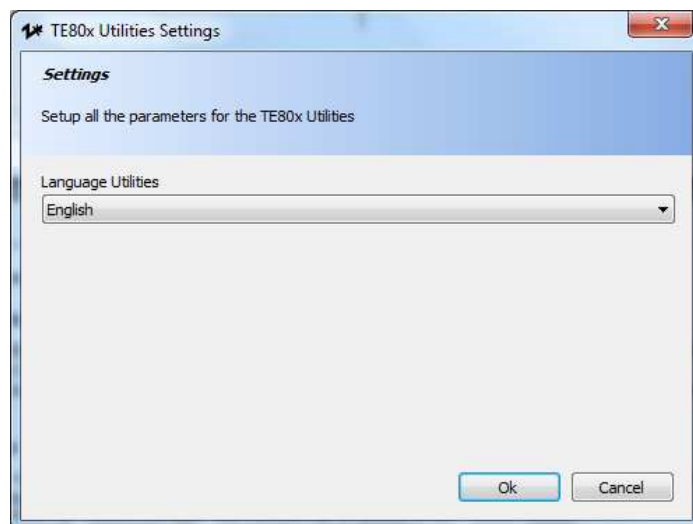
4- 1 TE809 Utilities installation

To install the TE809 remote control software ("TE809 Monitor"), you must install the "TE809 Utilities" pack. Start the setup.exe file that you find in the CDRom, in the folder TE.FW.Utilities.

When installed, you can find all the programs pressing Start -> All programs -> Tecnoelettra -> TE Utilities software from your softwares list.

4- 2 TE Settings

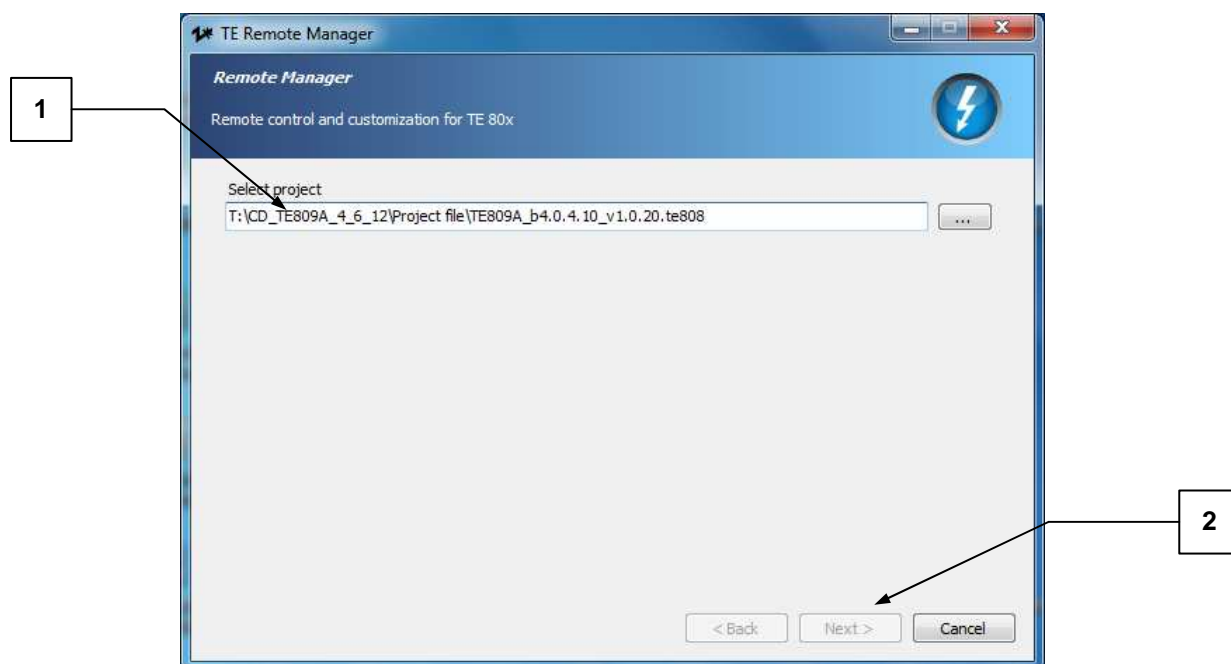
The first time you want to use the remote control for the TE809, it's useful to open the TE Settings program. This tool permits to choose the language of the TE Monitor.



4- 3 TE Monitor

Once you launch TE Monitor, follow the instructions by "TE809 Manager" tool that permits to access to the "TE809 monitor".

1. The software asks you the type of project installed on the TE809; find that file. You can find the version installed by factory on your TE809 in the CDRom, in the folder "Project file".
2. When selected, press "next" to go ahead.



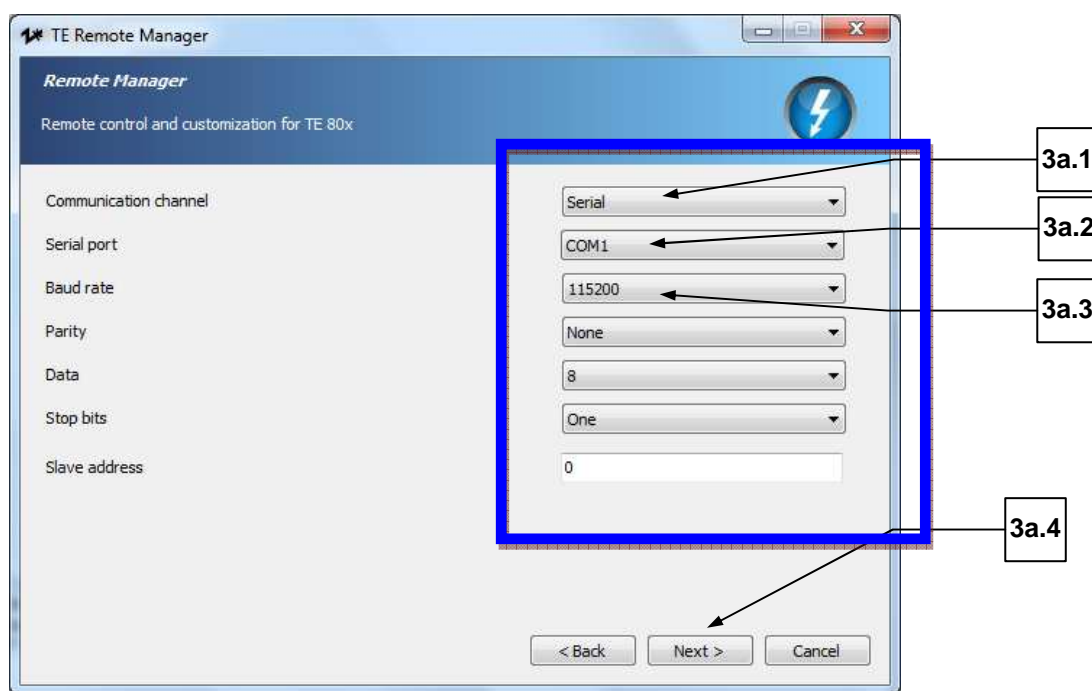
4- 3.1 Connection options

Then you will see a window for the choice of the type of connection between the PC and the TE809.

If you only want to prepare a setting file, you can select the "Offline" option. If you want to connect to the board and directly set the parameters or visualize the measures, choose a connection option (Serial, GSM, TCP/IP).

4- 3.1.1 Procedure for standard TE809 via serial cable connected to a PC

You must use cable code 95-050.



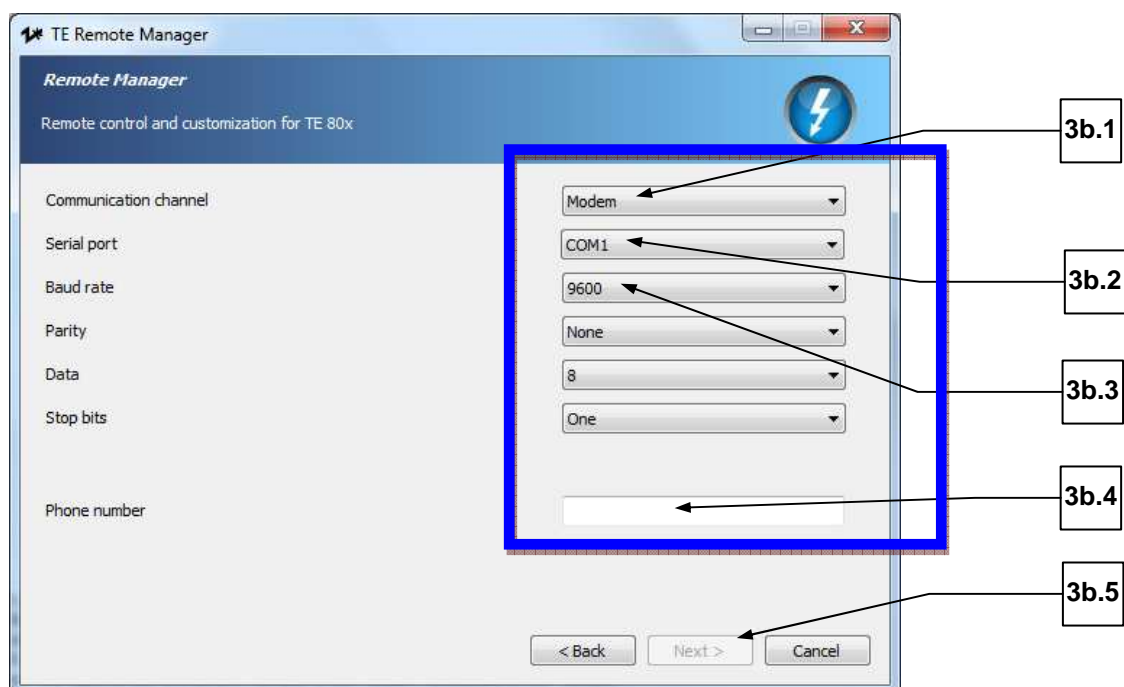
3a.1. Select "Serial" as type of connection;

3a.2. Select the COM port number;

3a.3. Select the speed (the same of baud rate in "Connectivity Setup" of TE809);

3a.4. Confirm "Next" to move forward;

4- 3.1.2 Procedure for communication via Modem



3b.1. Select Modem as type of connection;

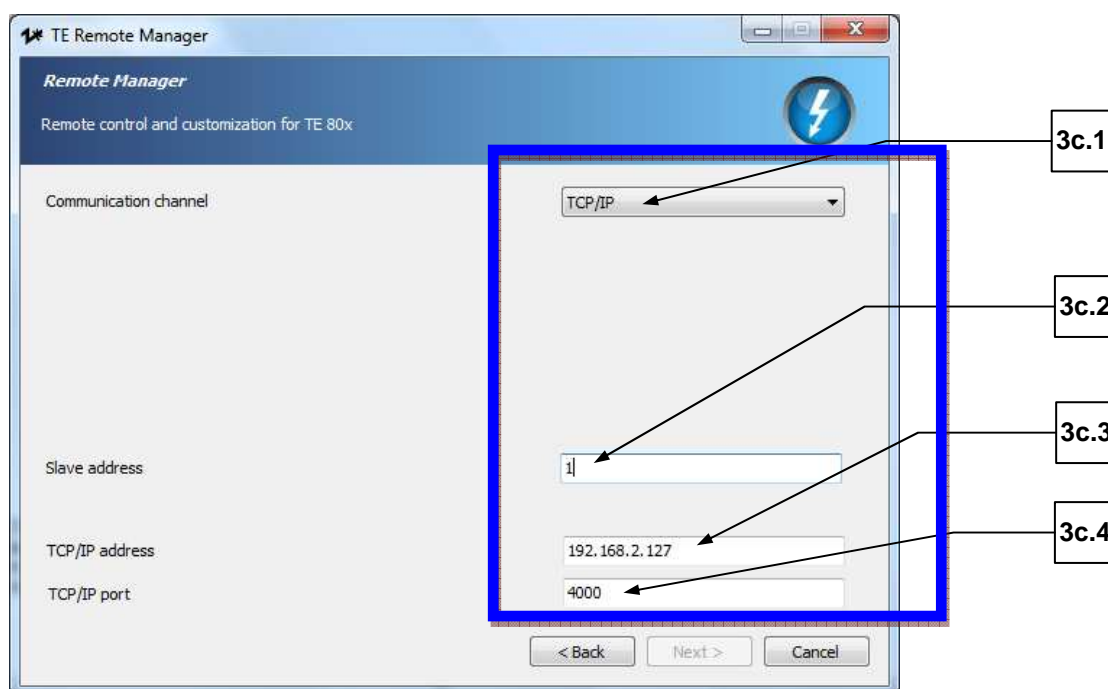
3b.2. Select the COM port number connected to the modem;

3b.3. Select the speed (the same of baud rate in "Connectivity Setup " on serial port RS232); in Connectivity setup also set the parameter D to GSM modem. The recommended speed is 9600 kbps;

3b.4. Digit the number you want to call (the phone number of the modem connected to the TE809);

3b.5. Confirm with "Next"

4- 3.1.3 Procedure for TE809 connection via TCP/IP converter (communication networks LAN / Ethernet)



- 3c.1. Select TCP/IP
- 3c.2. TE809 identification number (usually "1");
- 3c.3. IP address assigned to the network cable connected to the converter;
- 3c.4. Enter serial port number of the serial port on converter (always "4000");

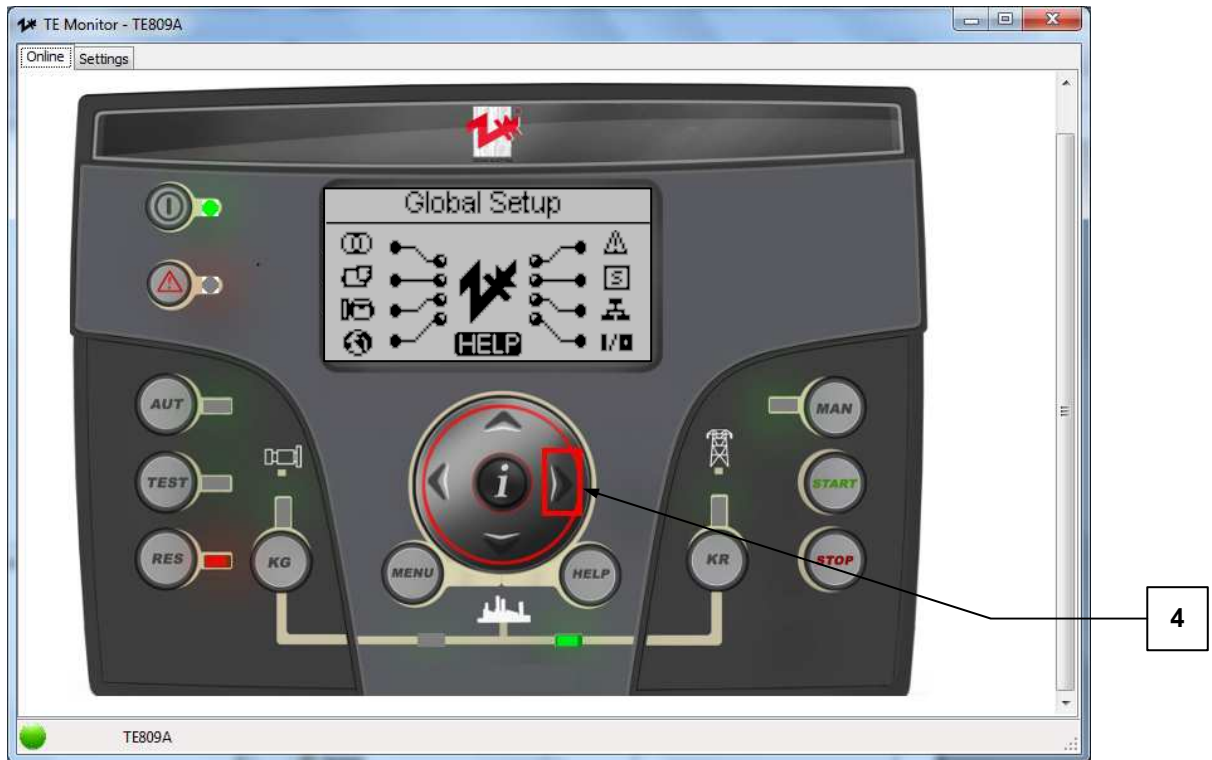
4- 3.2 On-line management

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 TE809; you should use the mouse to act on the buttons. A red box will help you locate the button you are selecting. The online management is selectable in the upper part of the window.

NOTE: The online option is not available if you select the Offline mode.

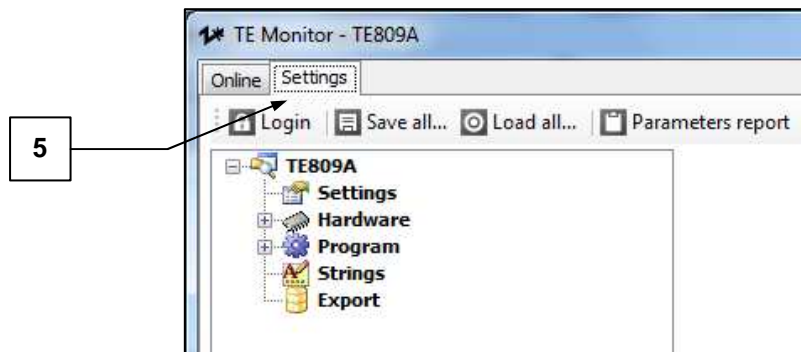


4. When you have your mouse cursor on buttons active, these are highlighted by a red square. Click the left mouse button to activate it.



4- 3.3 Settings and measures

5. When you change the mode to "Settings", you can check all the measurements, all the states of input / output settings and the list log. This option is available also if you selected the Offline mode.

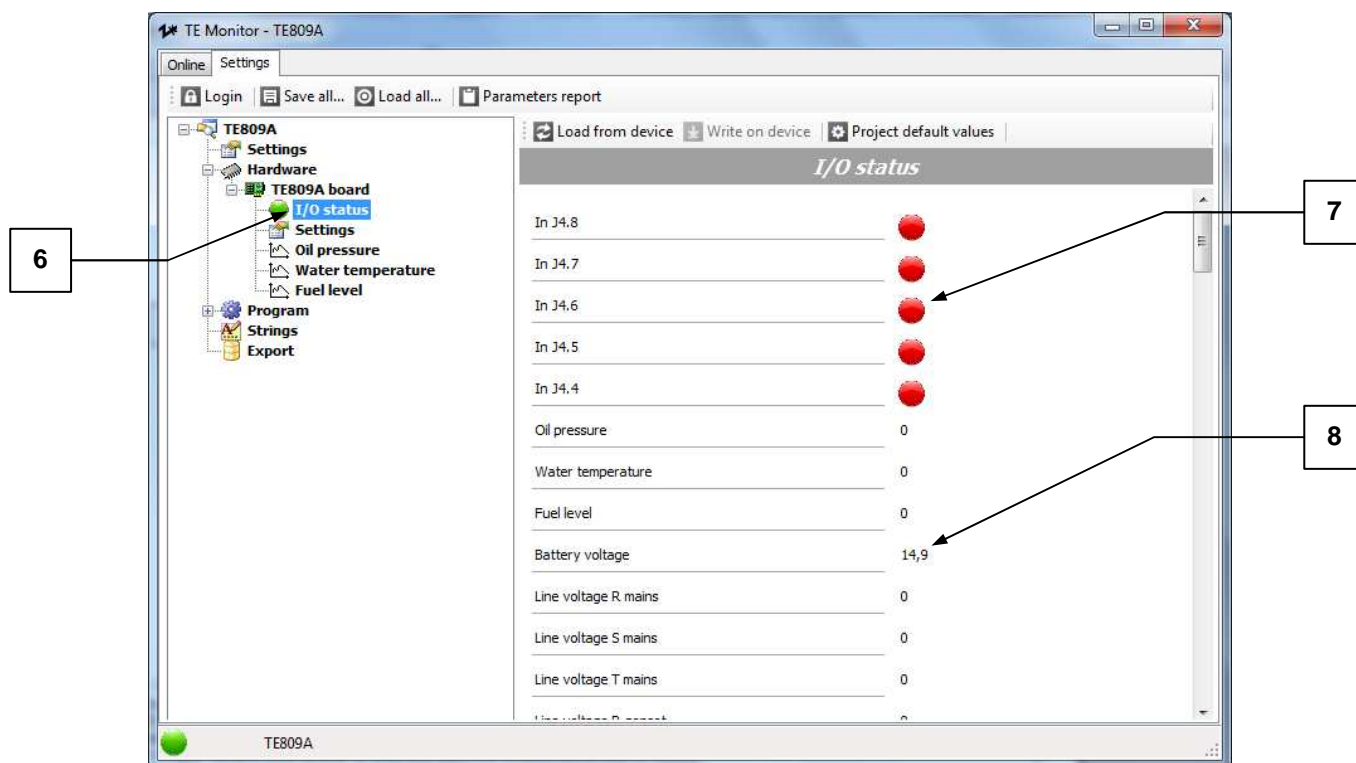


This window shows the name of the connected device (in this case TE809A), with 5 different sections:

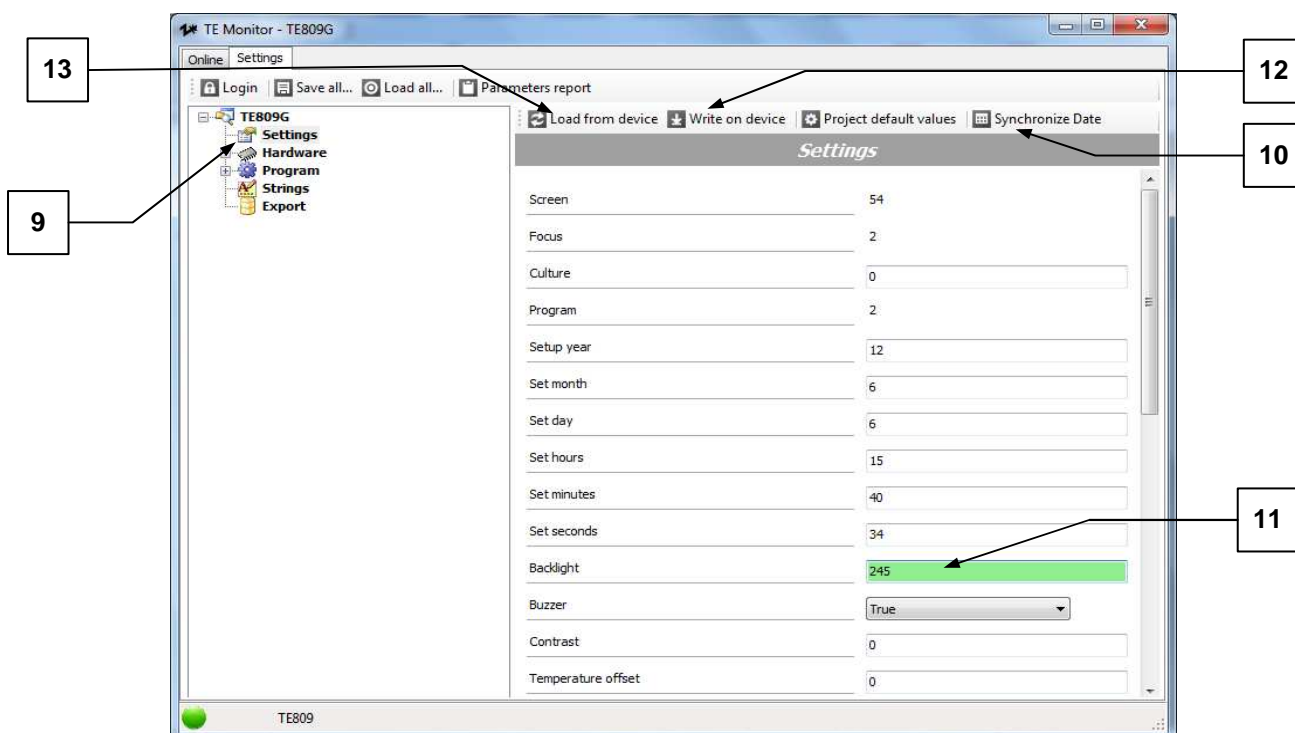
- Settings: this section contains the most general settings, like date, time, language and display settings. Only in this section there is the function "Synchronize date", that permits to directly set the PC date and time in the date and time parameters of the board;
- Hardware: this section contains the parameters of the communication ports (RS232 – RS485 – CanBus), the SMS numbers for eventual GSM communication, the offset of the voltage and current measures and the type of contact of the digital inputs and outputs. There is also the possibility to create the "custom" curve for the three different analog sensors;
- Program: this section contains all the other parameters not indicated in the "Settings" and "Hardware" sections. All the parameters are divided in menus like they appear in the programming menus of the TE809. Also, here you can find the data-logger section;
- Strings: this section contains the alarms strings that can be changed and translated in the different languages. It's useful for the user alarms, that can be named with the proper name or definition;
- Export: section to export the values of the most important measures in an excel table;

4- 3.3.1 Modification of the parameters

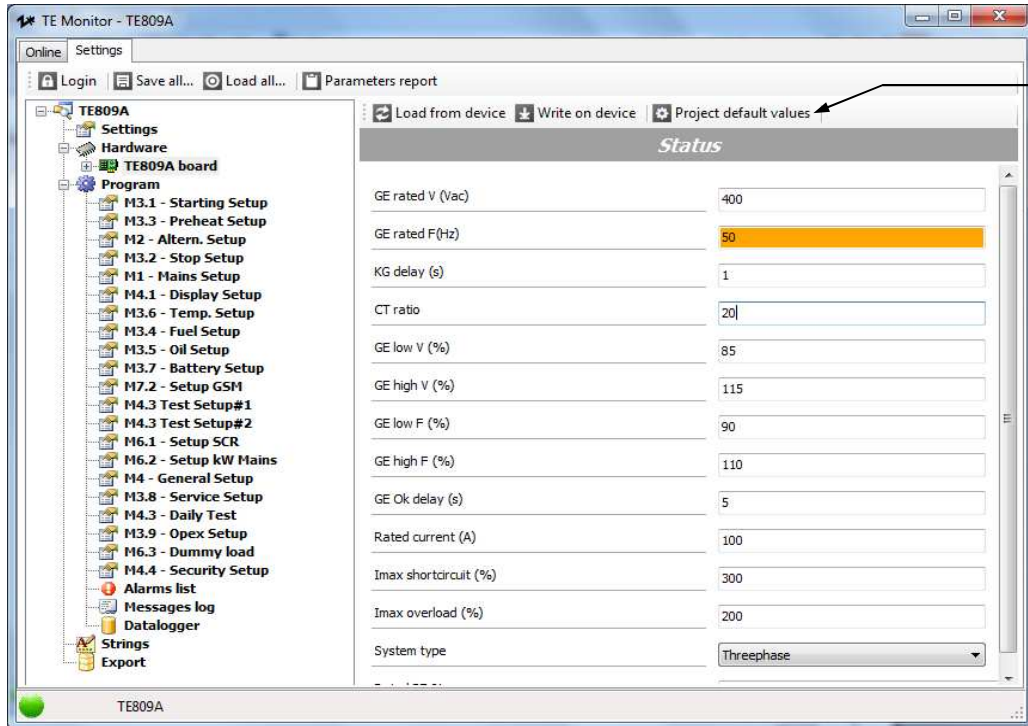
6. When you select, for example, the "TE809 board" -> "I/O status" to verify the state of I / O, you can see all inputs and outputs states of engine sensors and controls; this field is not shown if you chase the offline mode;
7. Virtual lamps show the status of the outputs and the digital inputs, red for input / output open, green for input / output closed;
8. Numbers show the values of analog measurements;



9. When you select, for example, "TE809 board" to check the "Settings", you can see all parameters that can be set. In this case you can change the general settings, language, date and time;
10. Press "Synchronize date" (available only in this "settings" section) if you want to set the date and time of the PC inside the board;
11. 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 TE809 (see point 12);
12. Press "Write on device" to write and store the modified parameters in the TE809;
13. It is also possible to press "Load from device" to read parameters actually set in the TE809 controller;



14. If you press "Project Default values" all the parameters that differ from the default become orange and show the default value; you can confirm one or more of them pressing the Enter key, they become green and you can write the parameters on the controller as described on point 11-12;



15. If you select "Log Messages" you have access to events list stored on the board. 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;

16. The events log can be reset by TE Monitor with the button Clear. It's also possible to print the events list with the Print button.

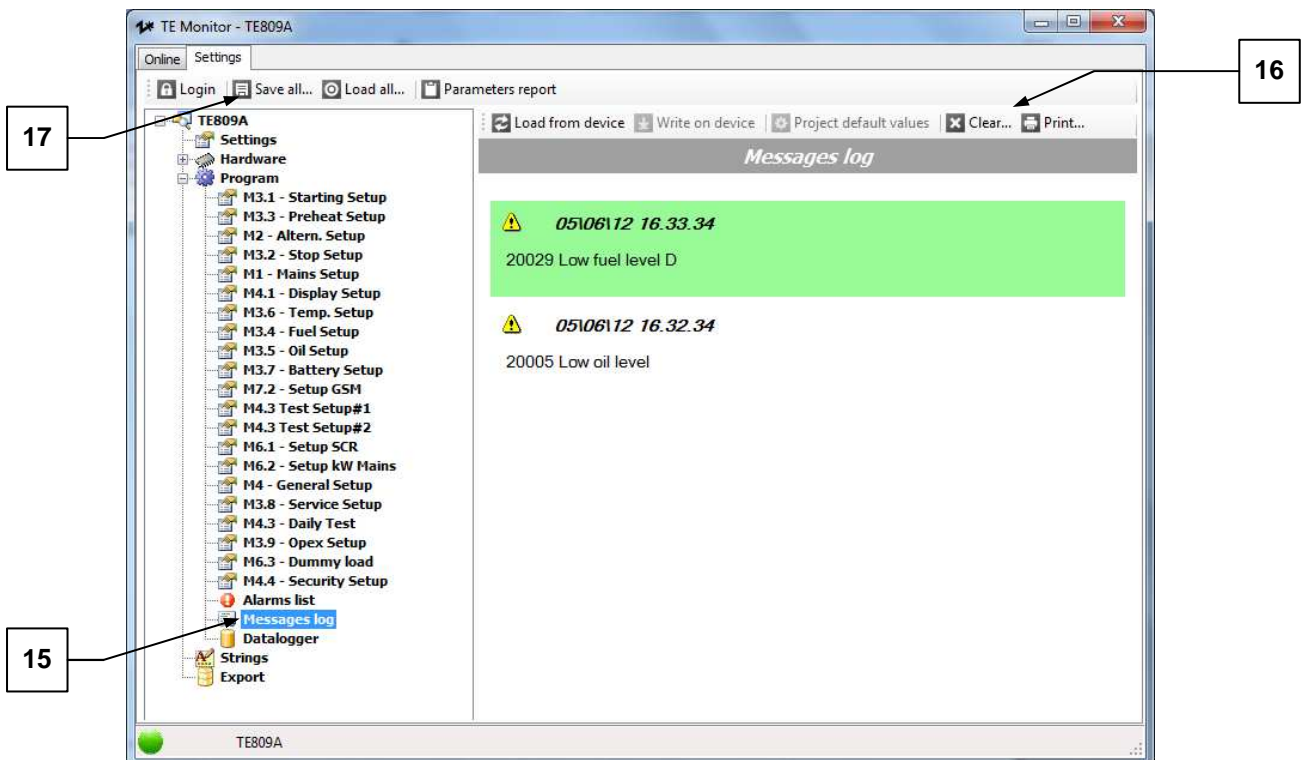
17. Functions of the Settings menu:

-Login: this function is available only if the loaded project has the TE Monitor protection. It's used to protect the important informations, and only inserting the correct username and password you can see and set all the parameters and measures;

-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, in html format;



4- 3.3.2 Strings

18. Selecting the “Strings” section, it’s possible to change the name and description of the user alarms, and the first characters of all the eventual alarms sent via SMS. After the modification of a string, press Enter then “Write on device”.

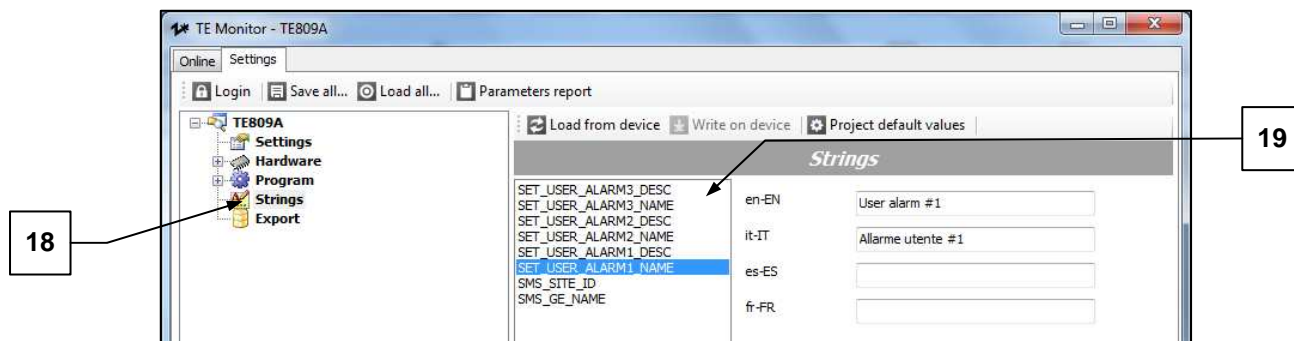
19. SET_USER_ALARMx_DESC is the description of the user alarm x when it appears on display

SET_USER_ALARMx_NAME is the name of the user alarm x when it appears on display

SMS_SITE_ID can be for example the name of the place in which there is the generator.

SMS_GE_NAME can be an identification symbol for the generator.

For example, SMS_SITE_ID = London, SMS_GE_NAME= G16, if appears the low coolant level alarm, the SMS message will be: London G16 20006 Low coolant level



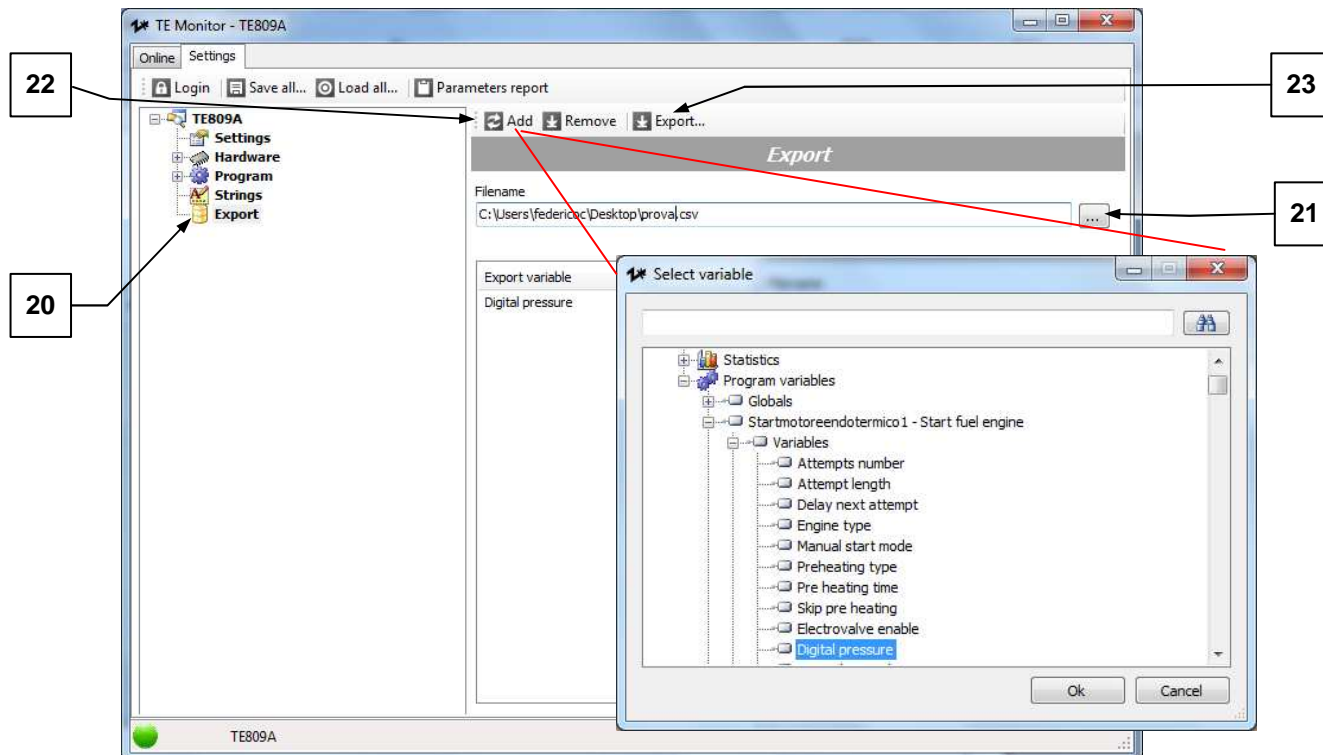
4- 3.3.3 Export

20. Selecting the “Export” section, it’s possible to save the state of any parameter or measure in an excel file.

21. Press the “...” button to create a .csv file that will contain the data.

22. Press “Add” to open a window for the choice of the parameter / measure that you want to monitor. You can repeat the operation to add any number of parameters / measures. The chosen variables are shown in the “export variables” field.

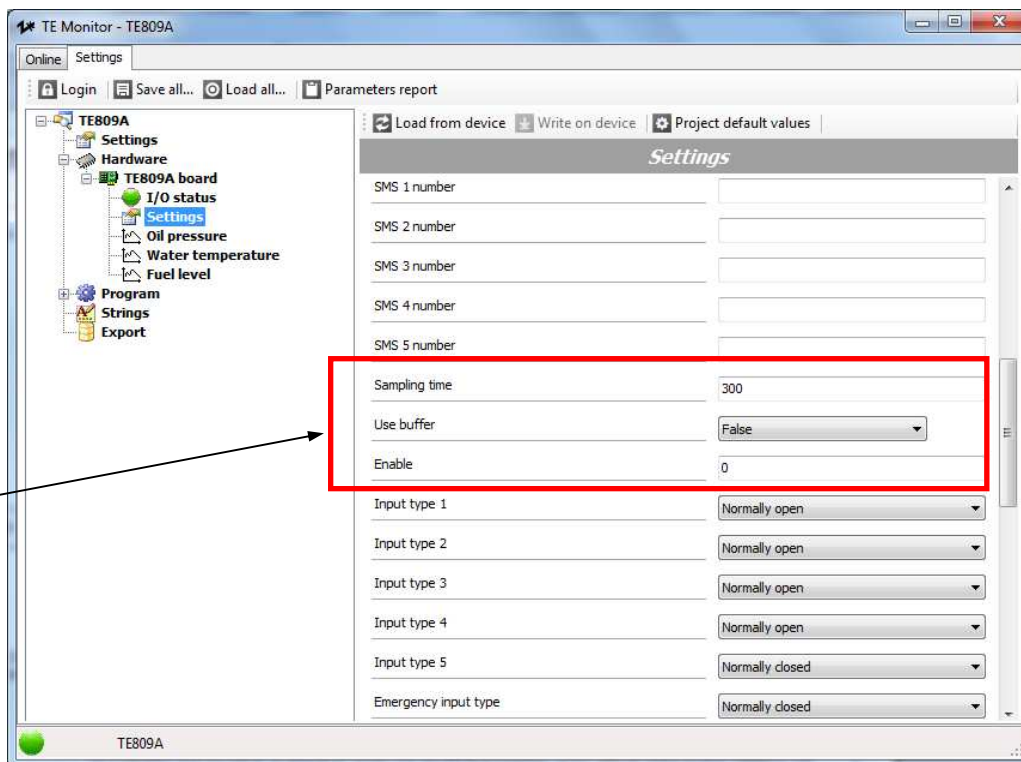
23. When you press “export”, TE Monitor saves the state of the variables in the .csv file, showing the date and time in the first column, and the value of the variables in the chosen order in the next columns. Every time you press “export”, TE Monitor adds a row in the .csv file.



4- 3.4 Data-logger function

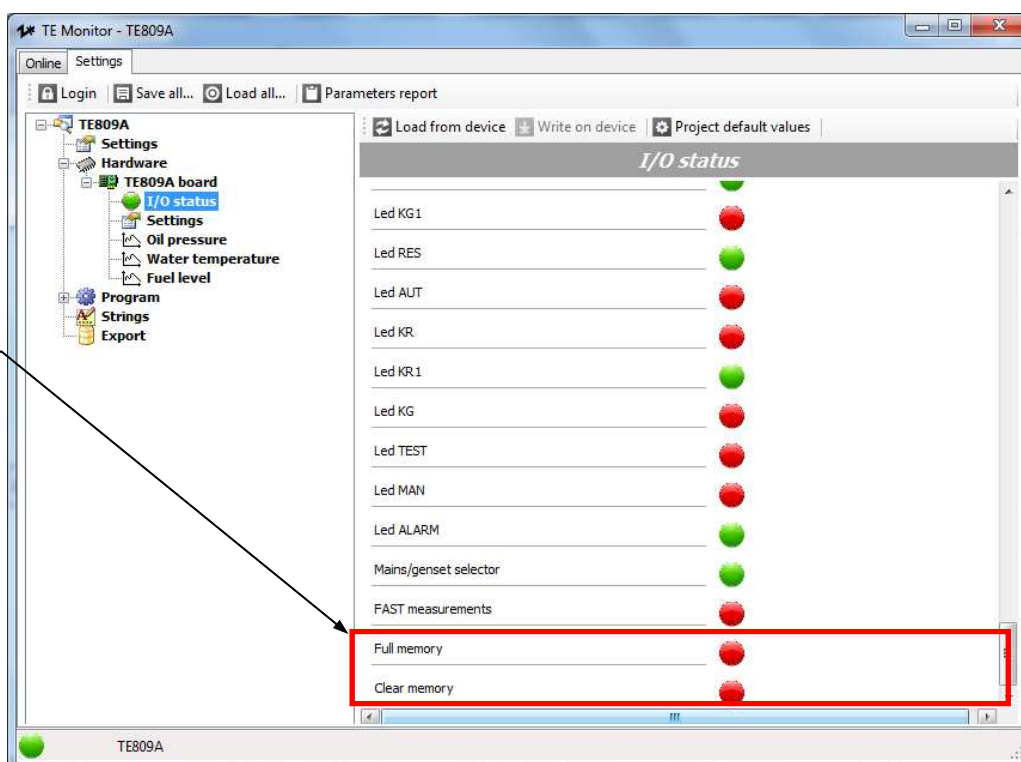
24. You can set the dedicated part of the memory for the data-logger function. The parameters, inside Hardware → TE809A board → Settings, are:

- Sampling time (5-65535s): you can program the number of seconds to detect datalogger values.
- Use buffer: if programmed at False, the memory will be filled FLAT MODE: each sampling timer cycle will trigger a data acquisition from datalogger; if programmed at True 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.



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

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



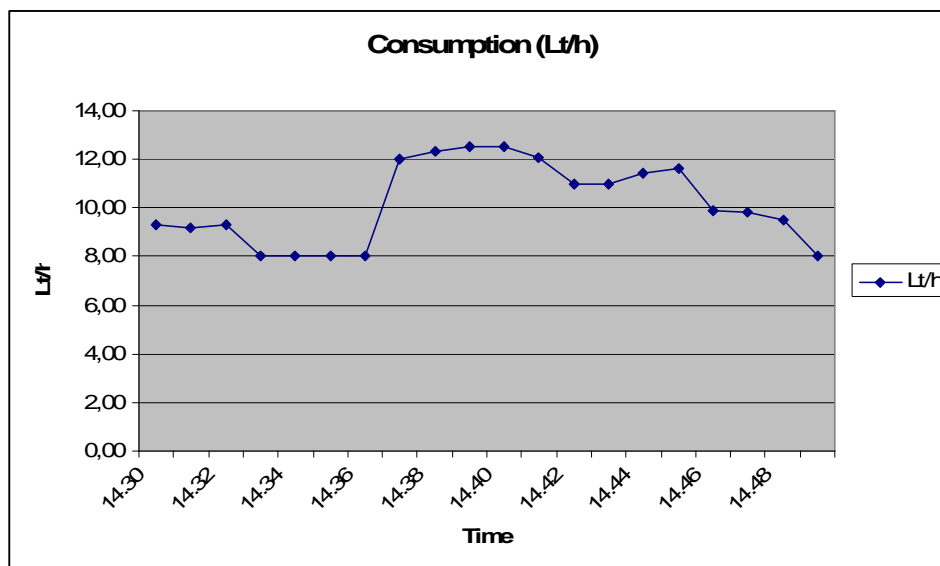
26. The data-logger section can be found inside the “Program” section. You can choose which of the available measures must be saved in the data-logger memory. Then, you can make the following actions:

- Press “Load from device” to send data request to connected TE809, if data-logger function is enabled, data samples will be received within few seconds.
- Press “Export for Excel” to export all data samples into an Excel compatible file. This way you can create trend graphics and stats;
- Press “Clear data” to clear data-logger memory.

26

The screenshot shows the TE Monitor - TE809A software interface. On the left, a tree view under 'Program' lists various setup options. The 'Datalogger' option is highlighted. On the right, the 'Datalogger' tab is active, displaying a table of logged data. The table has columns for Time, Fuel Level (Lt), Mains L1-L2 (V), and Genset L1-L2 (V). The data shows a sequence of measurements over time. At the bottom, it indicates 'Samples number: 12'.

Time	Fuel Level (Lt)	Mains L1-L2 (V)	Genset L1-L2 (V)
06/06/2012 11.14.02	0	0	0
06/06/2012 11.14.23	0	141,682	0
06/06/2012 11.14.43	0	140,209	0
06/06/2012 11.15.03	0	403,481	0
06/06/2012 11.15.23	0	403,221	0
06/06/2012 11.15.44	77	403,221	0
06/06/2012 11.16.04	75,75	404	0
06/06/2012 11.16.25	75	398,111	0
06/06/2012 11.16.45	75	403,394	0
06/06/2012 11.17.05	74	405,646	0
06/06/2012 11.17.26	74	405,04	0
06/06/2012 11.17.46	74	404,693	0



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	Avg cons. (Lt/h)	Partial average consumption during work cycle
E	Mains L1-L2 (V)	Mains instant voltage line 1
F	Genset L1-L2 (V)	Generator instant voltage line 1
G	Global alarm #1	Status of global alarm variable #1
H	Global alarm #2	Status of global alarm variable #2
I	Global alarm #3	Status of global alarm variable #3

4- 4 MODBUS RTU

The software protocol to be used for reading and writing of data is the **MODBUS RTU**.

As mentioned before, in the **TE808** all information are exported as Holding Registers, consequently the format of Modbus request on reading and writing is always like this:

Reading request

Function code	1 Byte	0x03
Starting Address	2 Bytes	from 0 to 9999
Quantity of registers	2 Bytes	from 1 to 16

Single writing request (Write single register)

Function code	1 Byte	0x06
Starting Address	2 Bytes	from 0 to 9999
Register value	2 Bytes	from 0 to 0xFFFF with the right convention

The value returned after a request , as well as the value to be used to update a data , depends on the characteristics of the variable specified above.

Var.Type:

- MB = Byte
- MR = Real
- MW = Word
- I = Input byte
- IR = Input real
- U = Output byte
- MD = Double word

○ **Visualization indicates if variable must be scaled or not:**

- DT_REAL_1, DT_NUMERIC_OFF_1 scaled by 10
- DT_REAL_2, DT_NUMERIC_OFF_2 scaled by 100
- DT_REAL_3, DT_NUMERIC_OFF_3 scaled by 1000

VARIABLE LIST

Project name: TE809A_b4.0.4.10_v1.0.22.te808

Project version: 1.0.22

TE Designer: 4.0.4.10

#	Var.Name	Var.Visual.	Var.Type	ID	R/W
1	GLOBALS.Program	DT_NUMERIC	MB3	40004	R
2	GLOBALS.Temperature offset	DT_NUMERIC	MR199	40022	R
3	GLOBALS.Current year	DT_NUMERIC	MB210	40035	R
4	GLOBALS.Current month	DT_NUMERIC	MB211	40036	R
5	GLOBALS.Current day	DT_NUMERIC	MB212	40037	R
6	GLOBALS.Current hour	DT_NUMERIC	MB213	40038	R
7	GLOBALS.Current minute	DT_NUMERIC	MB214	40039	R
8	GLOBALS.Current second	DT_NUMERIC	MB215	40040	R
9	GLOBALS.Current day of the week	DT_NUMERIC	MB216	40042	R
10	GLOBALS.Modem status	DT_NUMERIC	MB218	40043	R
11	TE809A_BOARD.In J4.8	DT_ONOFF	I0.0	40101	R
12	TE809A_BOARD.In J4.7	DT_ONOFF	I0.1	40102	R
13	TE809A_BOARD.In J4.6	DT_ONOFF	I0.2	40103	R
14	TE809A_BOARD.In J4.5	DT_ONOFF	I0.3	40104	R
15	TE809A_BOARD.In J4.4	DT_ONOFF	I0.4	40105	R
16	TE809A_BOARD.Battery voltage	DT_REAL_1	IR14	40109	R
17	TE809A_BOARD.Line voltage R mains	DT_NUMERIC	IR18	40110	R
18	TE809A_BOARD.Line voltage S mains	DT_NUMERIC	IR22	40111	R
19	TE809A_BOARD.Line voltage T mains	DT_NUMERIC	IR26	40112	R
20	TE809A_BOARD.Line voltage R genset	DT_NUMERIC	IR30	40113	R
21	TE809A_BOARD.Line voltage S genset	DT_NUMERIC	IR34	40114	R
22	TE809A_BOARD.Line voltage T genset	DT_NUMERIC	IR38	40115	R
23	TE809A_BOARD.Load current R	DT_NUMERIC	IR42	40116	R
24	TE809A_BOARD.Load current S	DT_NUMERIC	IR46	40117	R
25	TE809A_BOARD.Load current T	DT_NUMERIC	IR50	40118	R
26	TE809A_BOARD.Mains frequency	DT_REAL_1	IR54	40119	R
27	TE809A_BOARD.Genset frequency	DT_REAL_1	IR58	40120	R
28	TE809A_BOARD.Active power R	DT_REAL_1	IR62	40121	R
29	TE809A_BOARD.Active power S	DT_REAL_1	IR66	40122	R
30	TE809A_BOARD.Active power T	DT_REAL_1	IR70	40123	R
31	TE809A_BOARD.Mains phase voltage	DT_REAL_1	IR74	40124	R
32	TE809A_BOARD.Genset phase voltage	DT_REAL_1	IR78	40125	R
33	TE809A_BOARD.Apparent power R	DT_REAL_1	IR82	40126	R
34	TE809A_BOARD.Apparent power S	DT_REAL_1	IR86	40127	R
35	TE809A_BOARD.Apparent power T	DT_REAL_1	IR90	40128	R
36	TE809A_BOARD.Reactive power R	DT_REAL_1	IR94	40129	R
37	TE809A_BOARD.Reactive power S	DT_REAL_1	IR98	40130	R
38	TE809A_BOARD.Reactive power T	DT_REAL_1	IR102	40131	R
39	TE809A_BOARD.Total reactive power	DT_REAL_1	IR106	40132	R
40	TE809A_BOARD.Power factor R	DT_REAL_2	IR110	40133	R
41	TE809A_BOARD.Power factor S	DT_REAL_2	IR114	40134	R
42	TE809A_BOARD.Power factor T	DT_REAL_2	IR118	40135	R
43	TE809A_BOARD.Phase sequence mains	DT_ONOFF	I0.5	40136	R
44	TE809A_BOARD.Phase sequence genset	DT_ONOFF	I0.6	40137	R
45	TE809A_BOARD.Emergency	DT_ONOFF	I0.7	40138	R
46	TE809A_BOARD.Total apparent power	DT_REAL_1	IR122	40139	R
47	TE809A_BOARD.Total active power	DT_REAL_1	IR126	40140	R
48	TE809A_BOARD.Total power factor	DT_REAL_2	IR130	40141	R
49	TE809A_BOARD.Higher phase current	DT_REAL_1	IR134	40142	R
50	TE809A_BOARD.PICKUP (Hz)	DT_NUMERIC	IR138	40143	R
51	TE809A_BOARD.D+ voltage	DT_REAL_1	IR142	40144	R
52	TE809A_BOARD.Phase voltage R mains	DT_NUMERIC	IR146	40145	R
53	TE809A_BOARD.Phase voltage S mains	DT_NUMERIC	IR150	40146	R
54	TE809A_BOARD.Phase voltage T mains	DT_NUMERIC	IR154	40157	R
55	TE809A_BOARD.Phase voltage R genset	DT_NUMERIC	IR158	40148	R
56	TE809A_BOARD.Phase voltage S genset	DT_NUMERIC	IR162	40149	R
57	TE809A_BOARD.Phase voltage T genset	DT_NUMERIC	IR166	40150	R
58	TE809A_BOARD.Rpm (SPN 190)	DT_NUMERIC	IR300	40151	R
59	TE809A_BOARD.Oil pressure (SPN 100)	DT_REAL_1	IR304	40152	R
60	TE809A_BOARD.Engine temperature (SPN 110)	DT_REAL_1	IR308	40153	R
61	TE809A_BOARD.Fuel temperature (SPN 174)	DT_REAL_1	IR312	40154	R
62	TE809A_BOARD.Oil temperature (SPN 175)	DT_REAL_1	IR316	40155	R
63	TE809A_BOARD.Fuel pressure (SPN 094)	DT_REAL_1	IR320	40156	R
64	TE809A_BOARD.Oil level (SPN 098)	DT_REAL_1	IR324	40157	R
65	TE809A_BOARD.Carter pressure (SPN 101)	DT_REAL_1	IR328	40158	R
66	TE809A_BOARD.Coolant pressure (SPN 109)	DT_REAL_1	IR332	40159	R
67	TE809A_BOARD.Coolant level (SPN 111)	DT_REAL_1	IR336	40160	R
68	TE809A_BOARD.Total work hours (SPN 247)	DT_NUMERIC	IR340	40161	R
69	TE809A_BOARD.Turbo pressure (SPN 102)	DT_REAL_1	IR344	40162	R
70	TE809A_BOARD.Turbo temeprature (SPN 105)	DT_NUMERIC	IR348	40163	R

71	TE809A_BOARD.Instant consumption (SPN 183)	DT_REAL_1	IR352	40164	R
72	TE809A_BOARD.Torque (SPN 513)	DT_NUMERIC	IR356	40165	R
73	TE809A_BOARD.Torque request (SPN 512)	DT_NUMERIC	IR360	40166	R
74	TE809A_BOARD.Water level (SPN 97)	DT_NUMERIC	IR364	40167	R
75	TE809A_BOARD.Accelerator position (%) (SPN 91)	DT_NUMERIC	IR368	40168	R
76	TE809A_BOARD.Load percentage (SPN 92)	DT_NUMERIC	IR372	40169	R
77	TE809A_BOARD.Battery voltage (SPN 158)	DT_REAL_1	IR376	40170	R
78	TE809A_BOARD.Aspiration pressure (SPN 106)	DT_REAL_1	IR380	40171	R
79	TE809A_BOARD.Atmospheric pressure (SPN 108)	DT_REAL_1	IR384	40172	R
80	TE809A_BOARD.Discharge temperature (SPN 173)	DT_REAL_1	IR388	40173	R
81	TE809A_BOARD.DTC - SPN	DT_NUMERIC	IR392	40174	R
82	TE809A_BOARD.DTC - FMI	DT_NUMERIC	IR396	40175	R
83	TE809A_BOARD.Start output	DT_ONOFF	U0.0	40176	R
84	TE809A_BOARD.EV output	DT_ONOFF	U0.1	40177	R
85	TE809A_BOARD.Genset contactor	DT_ONOFF	U0.2	40178	R
86	TE809A_BOARD.Mains contactor	DT_ONOFF	U0.3	40179	R
87	TE809A_BOARD.Excitation	DT_ONOFF	U0.4	40180	R
88	TE809A_BOARD.Out J5.11	DT_ONOFF	U1.0	40181	R
89	TE809A_BOARD.Out J5.10	DT_ONOFF	U1.1	40182	R
90	TE809A_BOARD.Out J5.9	DT_ONOFF	U1.2	40183	R
91	TE809A_BOARD.Out J5.8	DT_ONOFF	U1.3	40184	R
92	TE809A_BOARD.Led ON/OFF	DT_ONOFF	U2.0	40185	R
93	TE809A_BOARD.Led KG1	DT_ONOFF	U2.1	40186	R
94	TE809A_BOARD.Led RES	DT_ONOFF	U2.2	40187	R
95	TE809A_BOARD.Led AUT	DT_ONOFF	U2.3	40188	R
96	TE809A_BOARD.Led KR	DT_ONOFF	U2.4	40189	R
97	TE809A_BOARD.Led KR1	DT_ONOFF	U2.5	40190	R
98	TE809A_BOARD.Led KG	DT_ONOFF	U2.6	40191	R
99	TE809A_BOARD.Led TEST	DT_ONOFF	U2.7	40192	R
100	TE809A_BOARD.Led MAN	DT_ONOFF	U3.0	40193	R
101	TE809A_BOARD.Led ALARM	DT_ONOFF	U3.1	40194	R
102	TE809A_BOARD.Full memory	DT_ONOFF	I800.0	40197	R
103	TE809A_BOARD.COM protocol	DT_SERIAL_PROTOCOLS	MB250	40050	R
104	TE809A_BOARD.Baud rate COM	DT_SERIAL_BAUDRATE	MB251	40051	R
105	TE809A_BOARD.RS485 protocol	DT_SERIAL_PROTOCOLS	MB255	40055	R
106	TE809A_BOARD.Baud rate RS485	DT_SERIAL_BAUDRATE	MB256	40056	R
107	TE809A_BOARD.Bit rates	DT_CAN_BITRATES	MB267	40060	R
108	TE809A_BOARD.CAN protocol	DT_CAN_PROTOCOLS	MB268	40061	R
109	TE809A_BOARD.Address	DT_NUMERIC	MB260	40062	R
110	TE809A_BOARD.Centre SMS	DT_STRING	MW270	40063	R
111	TE809A_BOARD.SMS 1 number	DT_STRING	MW272	40064	R
112	TE809A_BOARD.SMS 2 number	DT_STRING	MW274	40065	R
113	TE809A_BOARD.SMS 3 number	DT_STRING	MW276	40066	R
114	TE809A_BOARD.SMS 4 number	DT_STRING	MW278	40067	R
115	TE809A_BOARD.SMS 5 number	DT_STRING	MW280	40068	R
116	TE809A_BOARD.Sampling time	DT_NUMERIC	MW430	40069	R
117	TE809A_BOARD.Enable	DT_NUMERIC_OFF	M432.1	40071	R
118	TE809A_BOARD.Input type 1	DT_DIO_TYPES	MB535	40077	R
119	TE809A_BOARD.Input type 2	DT_DIO_TYPES	MB536	40078	R
120	TE809A_BOARD.Input type 3	DT_DIO_TYPES	MB537	40079	R
121	TE809A_BOARD.Input type 4	DT_DIO_TYPES	MB538	40080	R
122	TE809A_BOARD.Input type 5	DT_DIO_TYPES	MB539	40081	R
123	TE809A_BOARD.Output type EV	DT_DIO_TYPES	MB540	40083	R
124	TE809A_BOARD.Output type AVV	DT_DIO_TYPES	MB541	40084	R
125	TE809A_BOARD.Output type 1	DT_DIO_TYPES	MB542	40085	R
126	TE809A_BOARD.Output type 2	DT_DIO_TYPES	MB543	40086	R
127	TE809A_BOARD.Output type 3	DT_DIO_TYPES	MB544	40087	R
128	TE809A_BOARD.Output type 4	DT_DIO_TYPES	MB545	40088	R
129	TE809A_BOARD.Analog type 1	DT_ANI_TYPES	MB546	40089	R
130	TE809A_BOARD.Analog type 2	DT_ANI_TYPES	MB547	40090	R
131	TE809A_BOARD.Analog type 3	DT_ANI_TYPES	MB548	40091	R
132	TE809A_BOARD.Offset VRR	DT_NUMERIC	MR549	40092	R
133	TE809A_BOARD.Offset VRS	DT_NUMERIC	MR553	40093	R
134	TE809A_BOARD.Offset VRT	DT_NUMERIC	MR557	40094	R
135	TE809A_BOARD.Offset VGR	DT_NUMERIC	MR561	40095	R
136	TE809A_BOARD.Offset VGS	DT_NUMERIC	MR565	40096	R
137	TE809A_BOARD.Offset VGT	DT_NUMERIC	MR569	40097	R
138	TE809A_BOARD.Offset IR	DT_NUMERIC	MR573	40098	R
139	TE809A_BOARD.Offset IS	DT_NUMERIC	MR577	40099	R
140	TE809A_BOARD.Offset IT	DT_NUMERIC	MR581	40100	R
141	GLOBAL_VARIABLES.Generator nominal voltage	DT_REAL_1	MR1998	40380	R
142	GLOBAL_VARIABLES.Generator nominal frequency	DT_REAL_1	MR2002	40381	R
143	GLOBAL_VARIABLES.Stop mode	DT_NUMERIC	MB1967	40383	R
144	GLOBAL_VARIABLES.Electrovalve output	DT_NUMERIC	M1957.5	40385	R
145	GLOBAL_VARIABLES.D+ output	DT_NUMERIC	M30.0	40386	R
146	AlarmsManger1.In alarm	DT_NUMERIC	M20.0	40387	R
147	AlarmsManger1.Siren	DT_NUMERIC	M20.1	40388	R

148	AlarmsManger1.Global alarm #1	DT_NUMERIC	M20.2	40388	R
149	AlarmsManger1.Global alarm #2	DT_NUMERIC	M20.3	40389	R
150	AlarmsManger1.Global alarm #3	DT_NUMERIC	M20.4	40390	R
151	AlarmsManger1.Siren time	DT_NUMERIC_OFF	MB6	40393	R
152	GLOBAL_INPUTS.Engine temperature	DT_REAL_1	MR102	40333	R
153	GLOBAL_INPUTS.D+ input	DT_REAL_1	MR114	40335	R
154	GLOBAL_INPUTS.Pick up input	DT_REAL_1	MR118	40336	R
155	GLOBAL_INPUTS.Oil pressure	DT_REAL_1	MR110	40339	R
156	GLOBAL_INPUTS.Fuel level percentage	DT_REAL_1	MR106	40341	R
157	GLOBAL_INPUTS.Voltage	DT_REAL_1	MR138	40344	R
158	GLOBAL_INPUTS.Frequency	DT_REAL_1	MR142	40345	R
159	GLOBAL_RUNTIME.Active alarm	DT_NUMERIC	MW4	40346	R
160	GLOBAL_RUNTIME.Stopping alarm	DT_NUMERIC	M39.1	40348	R
161	GLOBAL_RUNTIME.Alarm stop with cooling	DT_ONOFF	M20.6	40349	R
162	GLOBAL_RUNTIME.Start phase	DT_NUMERIC	MB1965	40375	R
163	StartDieselEngine1.Stop phase	DT_NUMERIC	MB1964	40376	R
164	StartDieselEngine1.Starter engine output	DT_NUMERIC	M432.2	40422	R
165	StartDieselEngine1.Pre heating output	DT_NUMERIC	M1966.4	40425	R
166	StartDieselEngine1.IsON	DT_NUMERIC	M1596.4	40439	R
167	StartDieselEngine1.IsNotStopped	DT_NUMERIC	M2006.7	40445	R
168	StopDieselEngine1.Electro magnet output	DT_NUMERIC	M6662.7	40466	R
169	GensetManager1.Mains nominal voltage	DT_NUMERIC	MW7706	40474	R
170	GensetManager1.Mains nominal frequency	DT_NUMERIC	MB7708	40475	R
171	GensetManager1.KWh	DT_NUMERIC	MR7728	40508	R
172	GensetManager1.KVARh	DT_NUMERIC	MR7732	40509	R
173	EngineControl1.RPM	DT_NUMERIC	MW5450	40536	R
174	SRModbusMan.IsON	DT_NUMERIC	M8063.5	40546	R/W
175	SRModbusAuto.IsON	DT_NUMERIC	M8063.7	40551	R/W
176	SRModbusReset.IsON	DT_NUMERIC	M3362.1	40552	R/W
177	SRModbusStart.IsON	DT_NUMERIC	M8060.1	40561	R/W
178	SRModbusStop.IsON	DT_NUMERIC	M8060.2	40566	R/W
179	SRModbusTest.IsON	DT_NUMERIC	M8060.3	40571	R/W
180	SRModbusKG.IsON	DT_NUMERIC	M8060.4	40576	R/W
181	SRModbusKR.IsON	DT_NUMERIC	M3437.6	40577	R/W
182	BatteryTimer.Left hours	DT_NUMERIC	MW2808	40602	R
183	Test.IsON	DT_NUMERIC	M7560.6	40695	R
184	Refueling.IsON	DT_NUMERIC	M8059.6	41142	R
185	WorkHours.Actual value	DT_NUMERIC	MD3086	41557	R
186	AvgKWatt.Average	DT_REAL_2	MR3494	41950	R
187	ServiceHours.Result	DT_NUMERIC	MR3522	41968	R
188	FilteredFuelPerc.Value	DT_NUMERIC	MR3546	41980	R
189	FuelLT.Result	DT_NUMERIC	MR3656	42022	R
190	InstantCons.Result	DT_REAL_1	MR3758	42064	R
191	RealAutonomy.Result	DT_NUMERIC	MR3776	42071	R
192	CalcConsFuel.Result	DT_REAL_1	MR3904	42148	R
193	CycleHours.Result	DT_REAL_1	MR3942	42163	R
194	DeltaFuel.Result	DT_REAL_1	MR4386	42279	R
195	SRDummyLoad.IsON	DT_NUMERIC	M8062.7	42580	R
196	TotalServiceCosts.Result	DT_NUMERIC	MR4848	42748	R
197	ExpectedRefilling.Result	DT_REAL_3	MR4868	42760	R
198	TotalWastes.Result	DT_NUMERIC	MR4932	42786	R
199	WastesSum.Result	DT_NUMERIC	MR4950	42793	R
200	ServiceCount.Actual value	DT_NUMERIC	MD5472	43062	R
201	CycleConsumption.Result	DT_REAL_1	MR5524	43083	R
202	LastRefillingLiters.Result	DT_REAL_1	MR5560	43097	R
203	StoreAverageKW.Value	DT_NUMERIC	MR5564	43098	R
204	DailyHours.Result	DT_NUMERIC	MR5618	43122	R
205	CountTestStart.Actual value	DT_NUMERIC	MD6534	43556	R
206	LockCount.Actual value	DT_NUMERIC	MD6680	43670	R
207	ManualLock.IsON	DT_NUMERIC	M6662.2	43674	R/W
208	TotalConsumptionCost.Result	DT_NUMERIC	MR7148	43875	R
209	CalcWarranty.Result	DT_REAL_3	MR7166	43890	R
210	ActFastSet50.IsON	DT_NUMERIC	M7258.2	43945	R/W
211	ActFastSet60.IsON	DT_NUMERIC	M7420.0	44043	R/W

APPENDIX

Appendix A: Fuel sensor curves

Fuel level value (%)	VDO-Ohm	VEGLIA-Ohm	DATCON-Ohm
0	10	304	240
5	20	279	223
10	31	254	206
15	42	229	190
20	52	205	173
25	61	181	159
30	70	159	146
35	79	137	135
40	88	116	124
45	97	97	114
50	105	80	105
55	113	65	97
60	121	51	89
65	129	40	82
70	137	30	75
75	144	22	69
80	152	15	62
85	159	10	55
90	167	7	49
95	174	4	38
100	181	2	27
105	188	0	15

Appendix B: Oil pressure sensor curves

Oil pressure value	VDO-ohm	VEGLIA-ohm	DATACON-ohm
0	10	305	240
0,100	18	285	227
1	27	264	213
1,200	35	243	199
1,799	47	214	180
2	51	204	174
2,200	55	196	168
2,799	66	166	152
3	70	157	146
3,200	73	148	141
3,799	84	122	127
4	87	114	123
4,199	91	107	119
4,800	101	87	107
5	105	81	103
5,199	108	75	100
5,800	119	58	91
6	122	53	88
6,199	126	48	85
6,800	135	35	77
7	138	31	75
7,199	141	28	72
7,800	150	16	64
8	153	12	62
8,199	156	12	60
8,800	164	12	52
6	122	53	88
6,199	126	48	85
6,800	135	35	77
7	138	31	75
7,199	141	28	72
7,800	150	16	64
8	153	12	62
8,199	156	12	60
8,800	164	12	52
9	167	12	50
9,199	170	12	47
9,800	178	12	40
10	181	12	37

Appendix C: Temperature sensor curves

Engine temperature value	VDO-ohm	VEGLIA-ohm	DATACON-ohm
24	605	1050	650
28	530	1050	650
32	455	1050	650
36	380	1050	650
40	325	1050	650
44	277	935	586
48	237	815	520
52	200	695	455
56	170	585	398
60	145	495	345
64	123	425	300
68	104	365	262
72	90	320	229
76	75	280	200
80	65	245	172
84	57	210	147
88	50	185	126
92	44	160	109
96	38	140	93
100	35	125	80
104	31	110	70
108	28	100	63
112	26	93	58
116	24	87	54
120	22	80	49
124	20	73	45
128	18	67	41
132	17	60	38
136	16	55	34
140	15	50	30

Tecnoelettra S.r.l

Via Dima Vioni 5, S.Rocco di Guastalla
42016 RE - ITALY

Tel: +39 0522 832004

Fax: +39 0522 832012

E-Mail: info@tecnoelettra.it

Website: www.tecnoelettra.it

Authorized distributor

