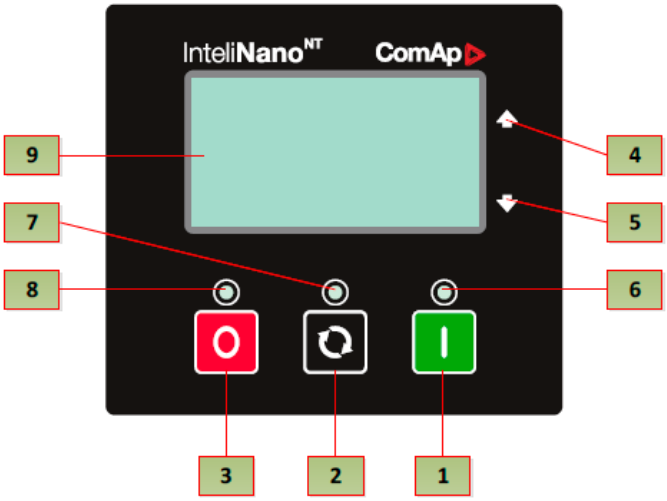
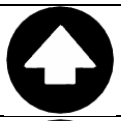
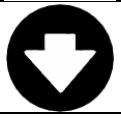
Carod

InteliNano

BASIC GUIDE

1. USER INTERFACE:



1		Start (START): START button. It only works in MANUAL mode. Press the button to initiate the engine starting sequence. This button is also used to select menus or values in the PROGRAMMING / SETUP.
2		Auto **(AUTO)**: OPERATION MODE selection button between AUTOMATIC and MANUAL.
3		STOP **(STOP)**: STOP button. It only works in MANUAL mode. Press the button to start the engine stop sequence. This button is also used to cancel the changes in the PROGRAMMING / SETUP, return from the menus or the message panel.
4		UP (▲): Arrow up. Scroll button up on screens and menus or increase a value in PROGRAMMING / SETUP.
5		DOWN (▼): Arrow down. Scroll down button on screens and menus or decrease a value in PROGRAMMING / SETUP.
6		MOTOR OPERATION LED: When the green LED is blinking, the engine is cranking, or cooling, or stopping. With the LED on the engine is running and ready to load.
7		OPERATION MODE LED: When the green LED is on, the controller is in AUTOMATIC operation mode. When the green LED is off, the controller is in MANUAL operating mode
8		ALARM LED: The LED will flash if one or more alarms or emergency stops are active. The LED stays on if there is an active emergency stop and the engine cannot be started.
9		Graphic Display Black/white, 128x64 pixels.

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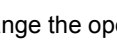
2. GENERATOR SET START/STOP:

2.1. OPERATING MODES:

The card has two operating modes. One, MANUAL (MAN), in which, the START / STOP of the engine is carried out by means of the buttons of the controller. The other one is the AUTOMATIC (AUT) mode in which the engine START / STOP is performed autonomously if certain conditions and / or measures registered by the Controller are met.

To change the operation mode, we will use the **(AUTO**  **)** button and the operation mode will be displayed by means of the LED (OPERATION MODE). See sections 2 and 7 of the user interface.

2.2. MANUAL (MAN) OPERATING MODE:

To start the engine, press the **(START)** button. The green LED above the button will blink; This LED blinks during startup. When the engine is correctly started and running, ready to load, the LED will be illuminated continuously. Pressing the **(START)** button again the group contactor (GCB) will close (ONLY if there is an output configured and the group contactor is connected).

Press the **(STOP)** button to stop the engine. Press once to open the GCB, and another one to start the stop process. Keep in mind that the controller is programmed to work about 30 seconds after giving the stop order to open the contactor and cool the alternator, by turning it without load, which will be hot after working on load. If we do not need to wait for this time, we can press **(STOP)** twice in a row for an immediate stop.

2.3. AUTOMATIC (AUT) OPERATING MODE:

2.3.1. GENERATOR SET WITH AUTOMATIC START BY CONTACT

The panels of the Generators sets can be prepared in two different ways: There are panels with two terminals that are marked as "AR". There are other electrical panels with a pair of RED and YELLOW / GREEN wires. By connecting in both cases a contact (potential free), the motor will start (contact closed) or stop (contact open) automatically.

Note I: For both cases, the contact must be maintained during the time in which the engine we want it to be on.
Note II: If in MANUAL mode, the contact is used, the power saving mode is disabled, which may affect the duration of the battery.

2.3.2. EMERGENCY / MAINS FAILURE GENERATOR SETS

The cards programmed for Mains failure order the engine to start when its parameters are outside the default values for it. When the engine is ready for loading. Opens the Network contactor and Close the Group contactor.

When the Mains parameters are within the preset values, after a preset time, the control unit will open the Group contactor and close the Network contactor. Then, the motor stop sequence will begin.

Nota I: From certain power, the CAROD transfer panels are made with motorized changeover switches ((POS. I) Mains / (POS. II) Group)
Nota II: The engine can be started or stopped using binary inputs ***I02 Remote Start/Stop*** (start/stop) ***I03 Remote Start And Load*** (start and transfer load).
ONLY UNDER PRIOR ORDER.

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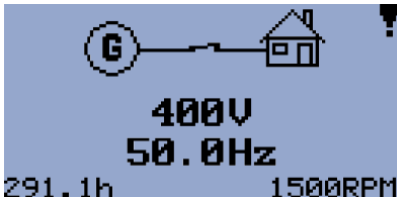
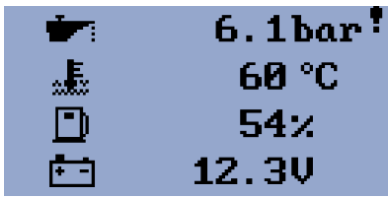
3. MAIN SCREENS

The main screens are viewable in any operating mode (MAN / AUT). To scroll between the different screens, use the arrows (▲) and (▼) of the controller (see sections 4-5 of the user interface table).

3.1. COMMON SCREENS

	▼	Main Screen: Voltage and Frequency (GROUP), working hours and r.p.m. In the top right corner, the sign "!" can be displayed. This means that there is an active advise.
	▼	GROUP electric values: Voltage of each one of the three phases and frequency.
	▼	Engine Sensors: Oil Pressure, Coolant Temperature, Fuel level and battery voltage. If the control of the oil pressure is made with a contact, the value displayed is (0 or 1). The pressure value will not be displayed .
		Registration Screen: Events/Warnings/Alarms: List any event produced in the Genset (01, 02, 03 ...) from most recent to least recent. The number on the right is the engine hours at which the event occurred. The symbol indicates what type of warning is being indicated (see point 4 of this guide). If the event is marked "BLACK" it means that it is still active. If it is marked "BLANK" it means that it happened but right now it is not active. Many messages that remain active can be deactivated by pressing the **(STOP)** button. If after pressing **(STOP)**, the warning remains "BLACK", it is because it is required to act on something that is giving a warning signal to the controller.

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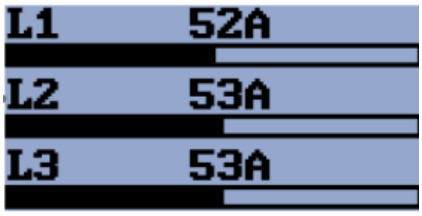
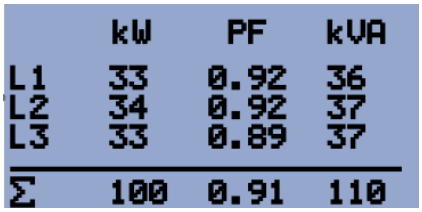
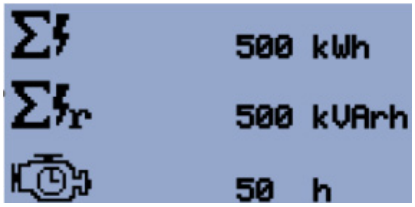
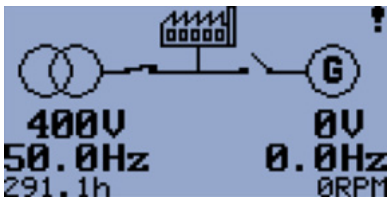
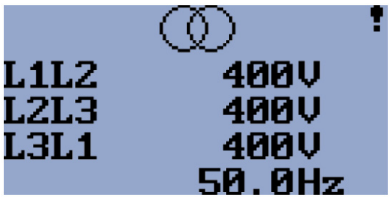
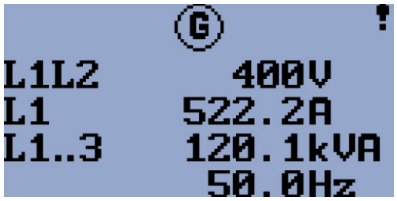
3.2. EXTRA SCREENS MRS3

	▼	Intensity Reading: This screen shows measured current of the three phases (numerically and with a bar chart). This screen is shown in third place in this controller.
	▼	Power Reading: This screen shows Real Power, Apparent Power and power factor (cos φ) of each phase and the total one. This screen is shown in 4th place in this controller.
	▼	Energy Counters: This screen shows the generated energy (real and reactive), it also shows the working hours of the genset. This screen is shown in 6th place in this controller.

3.3. EXTRA SCREENS NT-PLUS

	▼	Main Screen: Voltage and Frequency (MAINS and GROUP), working hours and r.p.m. In the top right corner, the sign "!" can be displayed. This means that there is an active advise.
	▼	MAINS electric values: Voltage of each one of the three phases and frequency. This screen is shown in second place in this controller.
	▼	GROUP electric values: Voltage, Intensity, Power generated and frequency. This screen is shown in third place in this controller.

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4. EVENTS, WARNINGS, ALARMS:

EVENTS		WARNINGS	
	Mains Return (*)		Maintenance Warning
	Mains Failure (*)		Low Battery
	Manual Start		Low Fuel level
	Remote Start		External Warning 1
	AMF Start (*)		External Warning 2
	Manual Stop		External Warning 3
	Remote Stop		Error Comunication ECU
	AMF Stop (*)		MCB Fail (*)
	AUT Mode - ON		Mains CCW rotation (*)
	AUT Mode - OFF		
	Power ON		
	Island operation		
	Start on Low Battery (**)		
	Stop after Chr. Cycle (**)		
ALARMS / SHUTDOWNS			
	Emergency Stop		Generator Underfrecuency
	Engine Overspeed		Generator Overload (**)
	Engine Underspeed		Generator CCW rotation
	Low Oil Pressure		Start Fail
	High Coolant Temperature		Stop Fail
	External Shutdown 1		Battery Flat
	External Shutdown 2		Voltage Autodetect (*)
	External Shutdown 3		Generator Short Circuit (*)
	CGB Fail		Fuel Level STD
	Generator Overvoltage		
	Generator Undervoltage		
	Generator Overfrecuency		

4.1. EXTERNAL SHUTDOWN 1 ALARM, POSSIBLE CAUSES:

FAULT	ENGINE/GENERATOR
Diferential Fault	20kVA<P<50kVA Open frame gensets
Diferential Fault	P<50kVA Sound proof gensets
Diferential Fault and/or Main switch Trip	P>50kVA Sound proof / Open Frame gensets
Air Filter Obstruction	Kohler KDI, Lombardini Water Deutz non electronic
Battery charge alternator Failure	All gensets with Battery charge alternator
Battery charge Magnetic Plate Failure	Lombardini LD
Broken belts	Deutz (only 912 series)
Coolant level	Deutz (water cool.), Iveco, Maxxforce 7.2, Doosan

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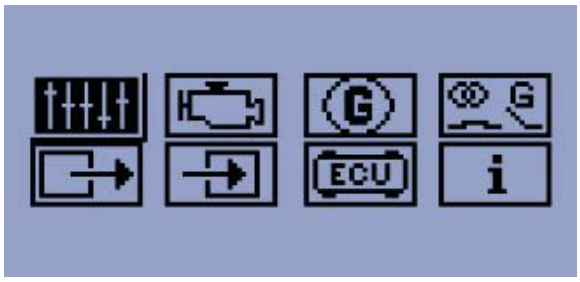
5. PROGRAMMING:

5.1. HOW TO ENTER IN PROGRAMMING MODE:

Before start, MAKE SURE that the engine is stopped and the controller is in MANUAL mode (green led over **(AUTO)** button is OFF).

To enter in Programming Mode do the following sequence with the buttons:

Press **(STOP)** button and KEEPING IT PRESSED, press once (▲) arrow, then press once (▼) arrow, and finally **(AUTO)** button**.** The following screen must be shown:



	Basic setting		Input Settings
	Engine Parameters	ECU	ECU Settings
G	Generator Paramenters	i	Information
	Output Settings	G	Mains Failure Settings.

To scroll between MENUS, use the arrows (▲) and (▼). Press **(START)** button to select a menu or a parameter.
To apply the changes, press **(STOP)** button to exit menu, exit programming mode and reboot the controller.

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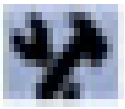
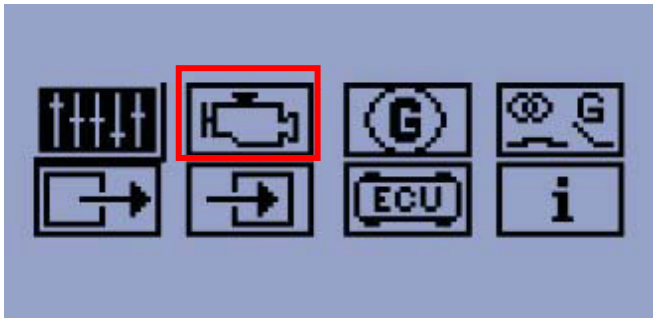
5.2. HOW TO RESET MAINTENANCE WARNING.



The maintenance warning is a timer that activates each time the engine is running, decreasing a set value, until it reaches zero y activates the warning. Being just a warning, the engine doesn't stop, the controller only shows an active warning with a (!) in the main screen and the led of the **(STOP)** button blinks.

This is a warning that indicates that the engine maintenance has to be done. (oil change, filters, etc.)

ONCE THE MAINTENANCE IS DONE, to delete the warning, enter in programming mode as indicated in point 5.1. Scroll in the maintenance MENU using the arrows (▲) / (▼) and choose Engine Parameters (see picture). Press **(START)** button to select this menu. Use the arrow (▼) until E07 parameter. Select it using **(START)** button and use the arrow (▲) to raise the value to 250h or the desired value. To apply the changes, press **(STOP)** button to exit menu, exit programming mode and reboot the controller.



WARNING:

Before deleting Maintenance warning, it's important to effect the engine maintenance (See maintenance data in the engine book of the genset)

The lack of maintenance can cause SERIOUS DAMAGE in the engine and/or the DESTRUCTION of itself.

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5.3. CONFIGURABLE PARAMETERS

BASIC PARAMETERS		
Parameter	**Parameter name**	**Values**
B01	Nominal Voltage (L-N)	80 - 480 Vac
B02	Nominal Voltage (L-L)	80 - 600 Vac
B03	Nominal Frequency	50 Hz (1) - 60 Hz (2)
B04	Type of Connection	Monophase(1), Double delta(2), 3F3wire (3), 3F4wire(4)
B05	Format of Units	Metric format (1), US format (2)
B06	AMF function (Mains Failure) (*)	Disable (1) - Enable (2)
B07	Zero Consumption Mode Delay	0 - 360 min
B08	Lighting Tower Mode	Disable (1) - Enable (2)
B09	Nominal Current	1 - 1000A
B10	Currebt Transformer ratio	1 - 5000A
B11	Nominal RPM	100 - 4000 r.p.m.
B13	Nominal Power (**)	1-500kW
B14	Gear Teeth (**)	0-300
ENGINE PARAMETERS		
Parameter	**Parameter name**	**Values**
E01	Pre-Start time	0 - 600s
E02	Maximun Cranking Time	0 - 80s
E03	Cooling Time	0 - 3600a
E04	Oil Pressure Stop	0 - 10 Bar
E05	Cooling Temperature Stop	0 - 150 ºC
E06	Low Battery Voltage	8 - 40 Vcc
E07	Maintenance Alarm	0 - 10000 h
E08	Pressure Start Detection	Disable (1) - Enable (2)
E09	Throttle time	0 - 3600s
E10	Minimum Stabilization Time	1 - 300s
E11	Starting RPM (**)	5-60%
E13	Low Battery Start (**)	Disable (1) - Enable (2)
E14	Low Battery Running Time (**)	1-240min
E15	Fuel Level Shutdown	0-20%
GENERATOR PROTECTIONS		
Parameter	**Parameter name**	**Values**
G01	Generator Overvoltage Shutdown	G02 - 200 %
G02	Generator Undervoltage Shutdown	0 - G01 %
G03	Generator Overfrequency Shutdown	G04 - 130 %
G04	Generator Underfrequency Shutdown	0 - G03 %
G05	Generator Short Circuit Shutdown	100 - 500 %
G06	Generator Short Circuit Delay	0 - 10s
G07	Generator Overload Shutdown (**)	70-130%
G08	Generator Overload Delay (**)	1-300s
MAINS FAILURE PROTECTIONS		
Parameter	**Parameter name**	**Values**
A01	Emergency Start Delay (*)	0 - 600s
A02	Mains Back Delay (*)	1 - 3600s
A03	Mains Overvoltage (*)	A04 - 150 %
A04	Mains Undervoltage (*)	50 - A03 %
A05	Mains Overfrequency (*)	A06 - 150 %
A06	Mains Underfrequency (*)	50 - A05 %

(*) Only ILNANO NT-PLUS / (**) Only ILNANO MRS-3

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5.4. CONFIGURABLE INPUTS/OUTPUTS LIST:

CODE	INPUT	TYPE	MRS-3 Terminal (**)	NT-PLUS Terminal (*)
I00	Not used	Binary	T08, T12, T13, T14, T15	T07, T11, T12, T13, T14, T15
I01	Emergency Stop	Binary	T04	T07, T11, T12, T13, T14, T15
I02	Remote Start/Stop	Binary	T12	T11
I03	Remote Start and Load	Binary	T12	T11
I04	Acces Lock	Binary	T08, T12, T13, T14, T15	T07, T11, T12, T13, T14, T15
I05	AMF Blocked (*)	Binary		T07, T11, T12, T13, T14, T15
I06	MCB Feedback (*)	Binary		T07, T11, T12, T13, T14, T15
I07	CGB Feedback	Binary	T08, T12, T13, T14, T15	T07, T11, T12, T13, T14, T15
I10	External Warning 1	Binary	T08, T12, T13, T14, T15	T07, T11, T12, T13, T14, T15
I11	External Warning 2	Binary	T08, T12, T13, T14, T15	T07, T11, T12, T13, T14, T15
I12	External Warning 3	Binary	T08, T12, T13, T14, T15	T07, T11, T12, T13, T14, T15
I13	External Shutdown 1	Binary	T08, T12, T13, T14, T15	T07, T11, T12, T13, T14, T15
I14	External Shutdown 2	Binary	T08, T12, T13, T14, T15	T07, T11, T12, T13, T14, T15
I15	External Shutdown 3	Binary	T08, T12, T13, T14, T15	T07, T11, T12, T13, T14, T15
I20	Low Fuel Level	Binary	T08, T12, T13, T14, T15	T07, T11, T12, T13, T14, T15
I21	Fuel Level Analog	Analog	T13, T14, T15	T13, T14, T15
I22	Low Oil Pressure	Binary	T08, T12, T13, T14, T15	T07, T11, T12, T13, T14, T15
I23	Oil Pressure Analog	Analog	T13, T14, T15	T13, T14, T15
I24	High Coolant Temperature	Binary	T08, T12, T13, T14, T15	T07, T11, T12, T13, T14, T15
I25	Coolant Temperature Analog	Analog	T13, T14, T15	T13, T14, T15
I29	Fuel level SD	Binary	T08, T12, T13, T14, T15	T07, T11, T12, T13, T14, T15
CODE	**OUTPUT**	**TYPE**	**MRS-3 Terminal (**)**	**NT-PLUS Terminal (*)**
O00	Not used	Binary	T05, T06, T07, T08, T09, T10	T04, T05, T06, T07, T08, T09
O01	Starter	Binary	T05	T04
O02	Fuel Solenoid	Binary	T06	T05, T06, T07, T08, T09
O03	Stop Solenoid	Binary	T07, T08, T09, T10	T05, T06, T07, T08, T09
O04	Alarm	Binary	T07, T08, T09, T10	T04, T05, T06, T07, T08, T09
O05	CGB Close/Open	Binary	T07, T08, T09, T10	T04, T05, T06, T07, T08, T09
O06	MCB Close/Open (*)	Binary		T04, T05, T06, T07, T08, T09
O07	Ready to Load	Binary	T07, T08, T09, T10	T04, T05, T06, T07, T08, T09
O08	Prestart	Binary	T07, T08, T09, T10	T04, T05, T06, T07, T08, T09
O09	ECU Power Relay	Binary	T07, T08, T09, T10	T04, T05, T06, T07, T08, T09
O10	Choke	Binary	T07, T08, T09, T10	T04, T05, T06, T07, T08, T09
O11	Glow Plugs	Binary	T07, T08, T09, T10	T04, T05, T06, T07, T08, T09
O14	Low Fuel Level Alarm (**)	Binary	T07, T08, T09, T10	
O15	Common Warning (**)	Binary	T07, T08, T09, T10	
O16	Common Shutdown (**)	Binary	T07, T08, T09, T10	
O17	Mode Auto (**)	Binary	T07, T08, T09, T10	

	Output Contact N.O.		Input Contact N.O.
	Output Contact N.C.		Input Contact N.C.

USER CURVES						
	1	2	3	4	5	X
I21	% VDO Level	% Datcom Level				Not selected
I23	VDO 5 Bar	VDO 10 Bar	Datcom 5 Bar	Datcom 7 Bar	Datcom 10 Bar	Not selected
I25	40-120ºC VDO	50-150ºC VDO	Datcom high	Datcom low		Not selected

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6. TECHNICAL INFORMATION:

CONTROLLER TECHNICAL DATA			
DIMENSIONS		**PREEXCITATION CIRCUIT OF CHARGE ALTERNATOR**	
Housing	118 x 108 x 40 mm	Excitation current	100 mA
Panel cut	96 x 96 mm	Charge failure threshold	80%
FUENTE ALIMENTACIÓN		**GENERATOR / MAINS MEASUREMENTS**	
Input Voltage	6-36 Vcc	Input measurements	Generator 1ph (intensity / voltage)
Drop voltage Inmunity	100 ms		Mains 3ph (voltage)
Energy consumption	35 - 295 mA	Type of measurement	RMS
Energy save mode consumption	52 - 344 μA	Voltage range	480Vac (L-L) (277Vac (L-N))
BINARY OUTPUTS		Maximum measured voltage	340Vac (L-N)
Low current outputs	500 mA	Voltage accuracy	1%
High current outputs	6A (permanente) / 10A (puntual)	Frequency range	40-70 Hz
Overall current output	10A (permanente) / 16A (puntual)	Frequency accuracy	1%
BINARY INPUTS		Current range	0-5 A
Input resistance	1,5 kΩ	Current accuracy	RMS
Close contact voltage	<2 V	**ENVIROMENTAL CONDITIONS**	
Open contact voltage	>3.5 V	Working temperature	-20 / +70 ºC
ANALOG INPUTS		Storage temperature	-30 / +80 ºC
Galvanic isolation	w/o isolation	Humidity conditions	95% w/o condensation
Resistance range	0-2500 kΩ	Pretection degree (panel with gasket)	IP65
Measurement Resolution	0.1 Ω	Pretection degree (panel w/o gasket)	IP50
Measured accuracy	2% ± 3Ω		

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Basic Guide
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