

## Automatic Panel **AT205** for gasoline and diesel generators

Ith contactors with temperature $\leq 40^{\circ}\text{C}$	KVA/400V-3Ph	KVA-230V-3Ph	KVA-230V-1Ph
25	17	10	9
45	31	18	16
56	38	22	20
60	42	24	22



### THE PROJECT

*In the project of the automatic panel AT205, Tecnoelettra has committed to realize an highly industrialized product. Design has been minded in every detail. New materials for the frontal injection pressing have been used. Sturdiness has been kept by the metal bottom and a new remarkable electronic card has been created. This new electronic card has remarkable potentialities which are linked to an exceptional easiness in utilization.*

*To reduce delivery times the board is completely equipped with all the important accessories: emergency button, sound alarm Buzzer, 16A light switch with 230V exit for external load control such as emergency lamp, preheating, etc...*

### STANDARD COMPOSITION

- 1-metal case 15/10 thick painted by epoxy powder RAL7042
- 1-cover realized by injection pressing, in plastic material type PPVO, fire fighting and resistant to atmospheric agents.
- 2-mains-genset switching contactors both electrically and mechanically blocked
- 1-automatic device for battery charge-900mA maintenance
- 1-Buzzer
- 1-bright and 2 poles and 16A-230V switch
- 7-Protection fuses (3 monophas)
- 2-terminal boards for auxiliaries connection to engine
- 3-fairleads for connecting cables entry: mains, genset, user
- 1-control device with display (see functions description at page 5)



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# AUTOMATIC PANEL AT205 VIEW

Buzzer for sound alarm. It sounds both in case of alarm and to inform that the generator is going to be started by a remote signal.



On/Off switch from 16A-230V for exit control at 230V to be used for possible emergency lamp, pre-heating, etc...



900Ma automatic battery charger



Protection fuses for mains and generator auxiliaries input and battery positive

Terminal board for load connection

Emergency button

Amperometric transformers allows not only the current is shown on the display but it is also used to achieve overload protection by electronic board

Mains-generator switching by mechanical and electrical interlocking. Switching is standard 4 poles in order it can be also used in single phase by bonding the two poles. In this case, capacity of the contactor must be calculated multiplying the thermic current Ith x1,6

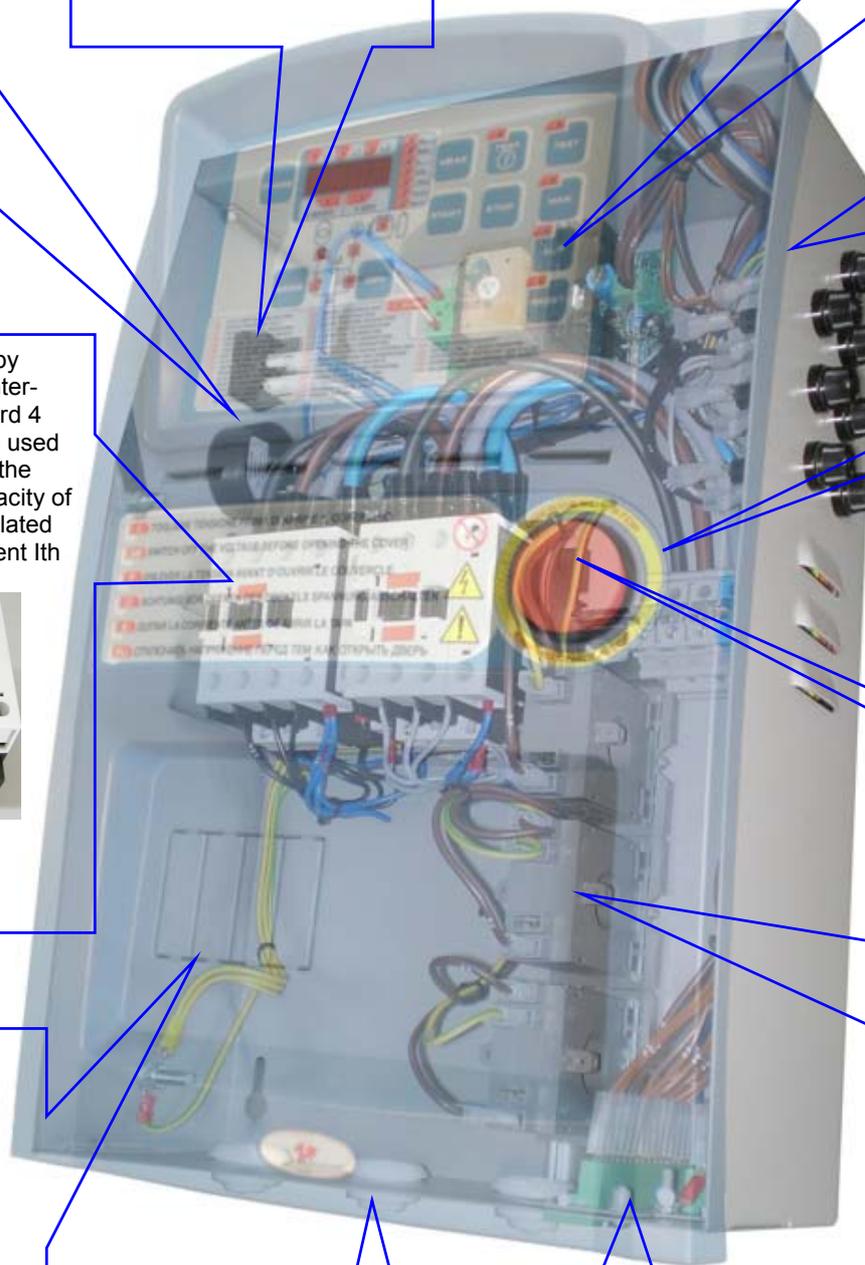


Arrangement for installation of circuit breaker for genset protection.



3 fairleads for power cables entry for mains, generator and user

2 connectors (provided with plugs) for connection of external engine signals and external controls such as start, remote stop, EJP, SCR.



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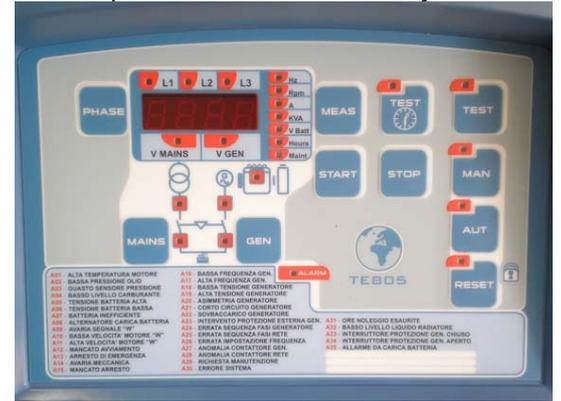
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# CONSTRUCTIVE FEATURES

Panel finishing with cover fixed to the bottom



Simple and intuitive control keyboard



Opening system with supporting bar in order to ease internal access



Finishing quality



Wide space for power cable connection and arrangements of components



Back view for fairleads which are positioned for power cables entry, terminal board for cables connection to the engine and terminal board for signals connection. Both are supplied with plugs



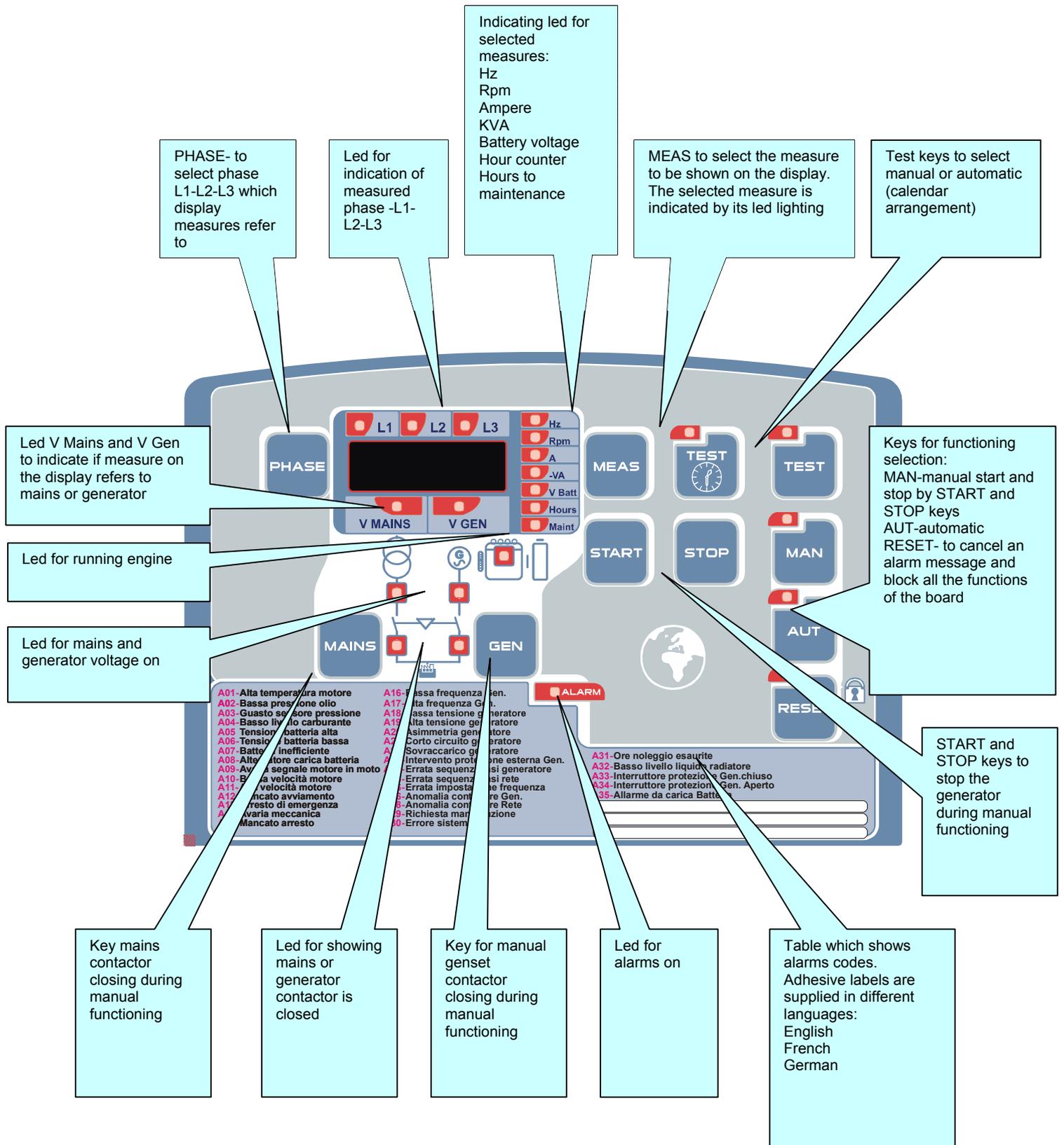
This connector allows customer to remote a general alarm signal or to control the board by remote signals for start and stop by a level sensor. Or, it is possible to block the panel by a switch or EJP or SCR



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# KEYBOARD DESCRIPTION



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## Functions description for control device with three-phase survey for genset and mains voltage

On the frontal part we find the following commands and indications:

*Display at 4 digit to have a look at some codes and alarm names, measures and parameters for setup*

### CODES AND ALARMS NAMES

#### VISUALIZATION

- **A01**-high engine temperature
- **A02**-low oil pressure (digital sensor)
- **A03**-pressure digital sensor failure
- **A04**-low fuel level (digital sensor)
- **A05**-high battery voltage
- **A06**-low battery voltage
- **A07**-inefficient battery
- **A08**-battery charger alternator failure
- **A09**- failure on signal for rev-counter survey
- **A10**-low engine speed
- **A11**-high engine speed
- **A12**-starting failure
- **A13**-emergency stop
- **A14**-unexpected stop (it means that the card having given the stop command does not survey the starting engine and therefore the stop is surely due to a mechanical problem)
- **A15**-stop failure
- **A16**-low generator frequency
- **A17**-high generator frequency
- **A18**-low generator voltage
- **A19**-high generator voltage
- **A20**-generator asymmetry
- **A21**-short circuit
- **A22**-generator overload
- Protection A21 and A22 take part according to some parameters set up in an proper Menu in which the following parameters are set up: rated current for generator; limit of maximum current in %; limit of current for immediate intervention in %; delay of the maximum current in seconds ;time for protection restoration in seconds
- **A23**-external generator protection intervention
- **A24**-incorrect generator phases sequence
- **A25**-incorrect mains phases sequence
- **A26**-wrong frequency system setup
- **A27**-generator contactor failure
- **A28**-mains contactor failure
- **A29**-request for maintenance
- **A30**-system error (it is a self-checking of the operating system of the card)
- **A31**-rent hours exhausted
- **A32**-low radiator liquid level
- **A33**- magnetothermic switch for closed genset protection
- **A34**-magnetothermic switch for open genset protection
- this function is important both in the manual and automatic functioning since it guarantee that switch is in the right position in both functioning systems
- **A35**-alarm from battery charger
- **UA1**-adjustable users alarm
- **UA2**- adjustable users alarm
- **UA3**- adjustable users alarm
- UA4**- adjustable users alarm

### ELECTRICAL MEASURES VISUALIZATION

- Generator and mains voltage phases on L1-L2-L3
- Generator and mains frequency
- Generator rev-counter
- Ampere for every phase of Generator and Mains on L1-L2-L3
- kVA
- battery volt
- Hourcounter
- hours to the maintenance

**Visualization of all the set up parameters through access with password to the following menu:**

**Menu 01-** Usefullness contains the parameters that refer to the calendar, the month and the year

**Menu 02-** General contains all the parameters that refer to the electrical parameters (TA; type of line L-L/L-n/L-L+L-N; frequency;ect

**Menu 03-** Battery to be used to set up all the parameters for battery control

**Menu 04-** motor starter allows to set up all the parameters that refer to engine starting both for diesel engines and petrol engines provided with compressed air systems

**Menu 05-**engine control are parameters that refer to all engine functioning limitssuch as minimum and maximum limit of speed, etc...

**Menu 06-** mains control to be used in order to set up all parameters for mains control like minimal and maximum voltage limit, maximum voltage, asymmetry, frequency etc...

**Menu 07-** generator control to be used to set up all the parameters of alternator control like minimal and maximum voltage, asymmetry, frequency, etc...

**Menu 08-** generator protection, to be used to set up all parameters for loading limits control for generator functioning, like rated current, minimum and maximum level, etc...

**Menu 09-** test and maintenance to be used to set up all parameters for test and maintenance of generator, like test qualification, test break, days where test is excluded, beginning time, test period with and without load, break for maintenance time, etc...

**Menu 10-** door and communication are parameters that refer to RS232 and RS485 utilization

**Menu 11-** several in this menu all standard and custom fuctions are provided (realized on specific customer's request) like generator threshold for starting and stopping according to mains kw; dummy load command with on/off treshold;rent hours; choosing functioning way (EJP;SCR etc);automatic block and test; Starter of the generator in case mains switch failure.

#### SPECIAL FUNCTIONS ( page 7)

- generator Start/Stop on mains kW threshold
- Dummy load Command
- Renting hours
- Block for automatic and test ways
- Engine Starting for TLGR failure
- Functioning mode exit
- Remote start
- SCR
- EJP



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## Technical Characteristics for Electronic circuit

Battery rated voltage	12 or 24VDC without distinction
Maximum current absorbed	250mA at 12VDC and 125mA at 24VDC
Maximum power consumption/dissipation	3W
Functioning range	9÷35VDC
Stand-by current	...mA to 12VDC and ...mA to 24VDC
<b>Digital input</b>	
Input type	negative
Current input	8mA
Low input signal	≤1,5V (typical 2,9V)
High input signal	≥5,3V (typical 4,3V)
Input signal delay	≥50ms
<b>Speed input "w" (terminal 2.3)</b>	
Input type	Coupling AC
Voltage range	5÷50Vpp
Frequency range	40÷2000Hz
<b>Input (500rpm) battery charger alternator with permanent magnets (terminal 2.1)</b>	
Functioning range	0÷40VAC
<b>Input (500rpm) for pre-excited battery charger alternator ( terminal 2.2)</b>	
Functioning range	0÷40VDC
Maximum input current	12mA
Maximum voltage at +D terminal	12 o 24VDC (battery voltage)
Pre-excitation current	170mA at 12VDC or 130mA at 24VDC
<b>Relay output for generator contactor terminals 5.1-5.2 (voltage free)</b>	
Contact type	1 NO
Utilization category	B300 30VDC 1A Auxiliary service
Voltage use	250VAC rated (440VAC max)
Rated capacity at 250VAC	8A in AC1 (2A in AC15)
<b>Relay output for mains contactor terminals 5.3-5.4-5.5 (voltage free)</b>	
Contact type	1 in switching
Category rating	B300 30VDC 1A Auxiliary service
Voltage use	250VAC rated
Rated capacity at 250VAC	8A in AC1 (2A in AC15)
<b>Relay output terminals 4.1-4.2-4.3 (voltage free)</b>	
Contact type	1 in switching
Category rating	B300 30VDC 1A Auxiliary service
Voltage use	250VAC rated
Rated capacity at 250VAC	8A in AC1 (2A in AC15)
<b>Relay output terminal 4.5-4.7-4.8-4.9 (Voltage on + battery)</b>	
Contact type	1 NO for relay and terminal in common
Category rating	30VDC 1A Auxiliary service
Voltage use	30VDC
Rated capacity at 30VDC	5A in DC1
Maximum current on common terminal of relays	12ADC
<b>Interface of communication with PC</b>	
Type of interface	RS232
Baud-rate	Adjustable 1200...38400bps
<b>Volt metric input for mains and generator</b>	
Maximum Ue rated voltage	100...480VAC L-L (277VAC L-N)
Measurement range	50...620V L-L (358VAC L-N)
Frequency range	45 ÷65Hz
Measuring type	True and effective value (TRMS)
Measuring input impedance	>1,1MΩ between L-L e >570kΩ between L-N
Wiring connections	1 phase, 2 phases, 3 phase with or without neuter
<b>Amperometric inputs</b>	
Rated current Ie	5A – feeded by external current transformer (low voltage)
Measurement range	0,05÷6A
Type of measure	True and effective value (RMS)
Permanent thermic limit	+20% Ie
Short thermic limit	50A for 1 second
Self-consumption	<0,3VA



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Measuring accuracy	
Measuring conditions	
Temperature	+23°C ±1°C
Relative humidity	45 ±15%
Voltage	0,1 ÷ 1.2 Ue
Current	0,2 ÷ 1.2 Ie
Voltage	±0,25% f.s. ±1digit
Current	±0,55% f.s. ±1digit
Frequency	±1digit
Apparent power	±0,5% f.s. ±1digit
Additional errors	
Relative humidity	±1digit 60% ÷ 90% R.H.
Temperature	±1digit -20° ÷ +60°C
Environmental functioning conditions	
Working temperature	-20 ÷ +60°C
Storage temperature	-30 ÷ +80°C
Relative humidity	<90%
Maximum pollution degree	degree 3
Connections	
Terminal type	extractable
Cable cross section (min and max)	0,2÷2,5 mmq (24÷12 AWG)
Tightening torque	0,5 Nm (4,5 LBin)
Standard references	
IEC/EN 60255-6, IEC 60664-1, IEC/EN 61000-4-5, IEC/EN 61000-4-4, IEC/EN 61000-4-3, IEC/EN 61000-4-6, IEC/EN 60255-22-2, IEC/EN 55011, IEC/EN 60255-21-2, IEC/EN 60068-2-6 (LROS-Lloyd's Register Of Shipping), IEC/EN 60068-2-52 (RINA), IEC/EN 60028-2-61, IEC/EN 61010-1 and UL 508/C22.2_N14-95 (cULus).	

## SERIES SPECIAL FUNCTIONS

There are some special functions that can be activated by entering a password in a special program menu called SET-Up. The functions are:

➤ **Start/Stop genset on mains threshold kW**

It allows setting up the minimal and maximum threshold of the kW when it wants to start or stop the generator with load switching from mains to genset

➤ **Dummy load command**

It allows inserting a fictitious load in order to avoid the generator on with low load. Its possible to set up the minimal and maximum threshold in kW of intervention with relative times and cycles.

➤ **Rent hours**

It allows to set up an overdue time for rent which stops the generators.

➤ **Block for Automatic and Test**

It can be used when it is necessary to use generator only in Manual mode .This function allows Automatic and Test functions turn off.

➤ **Engine Starter for TLGR failure**

In case the generator finds breakdown on mains contactor, the genset is automatically started and load is transferred under the genset contactor

➤ **Exit from functioning mode**

It is possible to activate an exit for indication for board functioning status

➤ **Remote start**

This function is on only on automatic functioning. it allows start and stop the generator by external contact opening and closing even if mains is on. Switching occurs only when lack of mains is surveyed.

➤ **SCR**

This function is on only during automatic functioning and it allows:

To start the generator through the closing of an external contact

To carry out the load switching on the generator when mains is on

To stop the generator when contactor opens and to switch the load to the mains

➤ **EJP**

It is a specific function for French market and it can be activated in two different ways:

EJP (standard) by closing an outside contact, then, after an adjustable time of 30', the generator will start.

The closing of a second contact controls the load switching to the generator

EJP/T- starter of the generator happens by closing an outside contact; the switching comes after an adjustable time of max 30'

**Note**

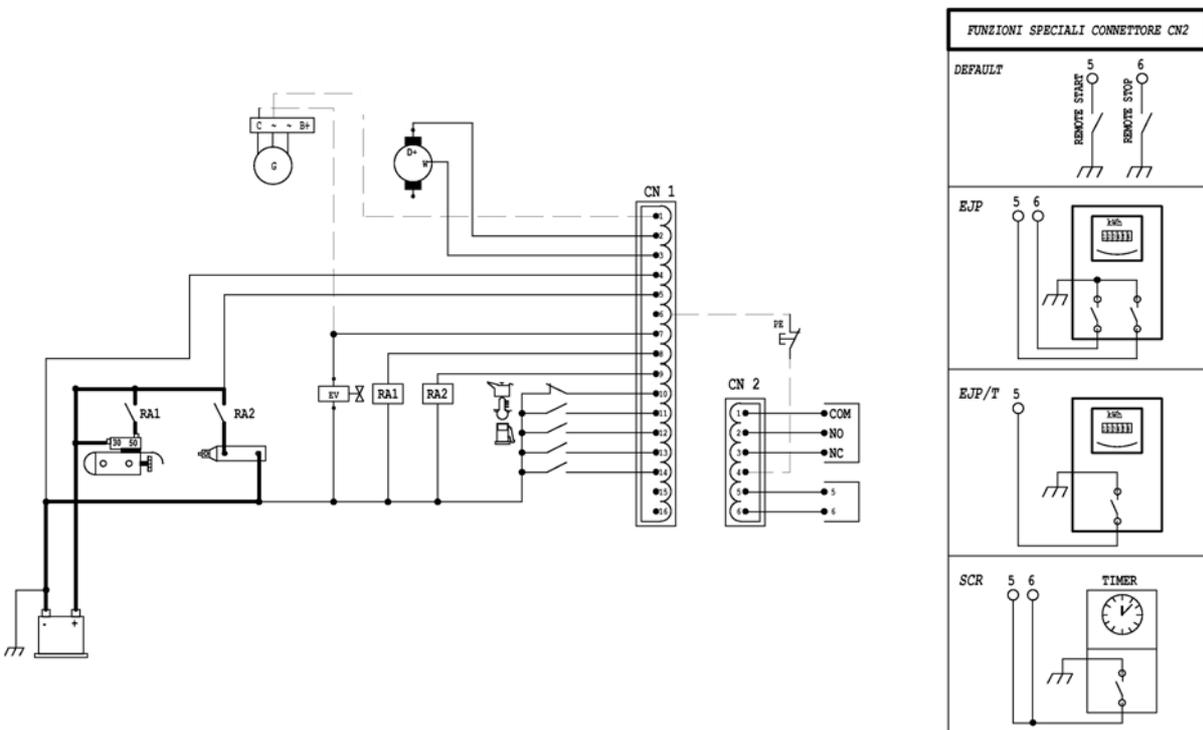
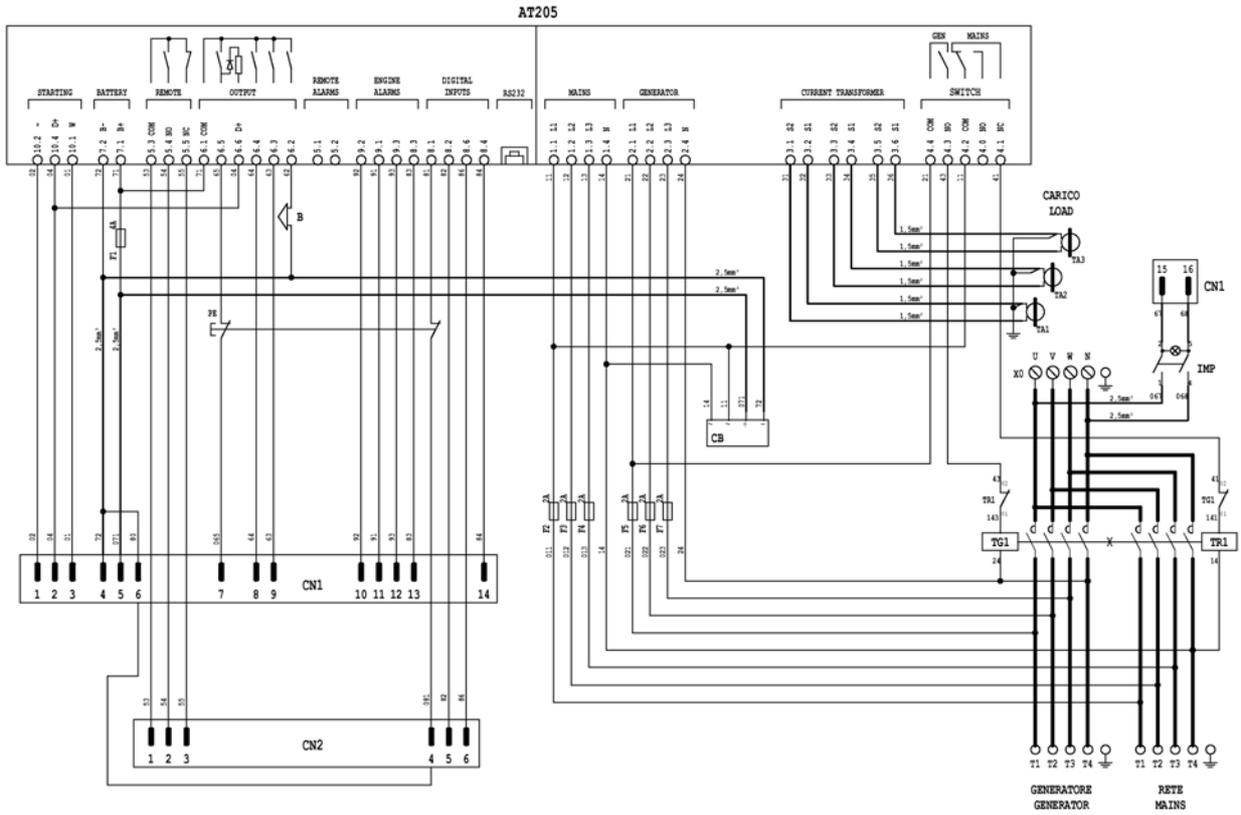
*In both case it is possible to select whether the load shall remain on the generator or if it has to be switched on the mains in case of generator failure,*



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# AT205 electrical scheme



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# General features

Protection degree	IP-20
Homologation references	CE

## Dimensions



## REFERENCES FOR ORDERS

Three-phase version-3Ph			Single phase version -1Ph	
KVA-400V	KVA-230V	code	KVA-230V	code
0-17	0-10	AT205400T17	0-9	AT205230M09
18-31	11-18	AT205400T31	10-16	AT205230M16
32-38	19-22	AT205400T38	17-20	AT205230M20
39-42	23-24	AT205400T42	21-22	AT205230M22

The capacity of the contactors refers to the lth with temperature  $\leq 40^{\circ}\text{C}$

## Packing

### Packing for 1 panel



Total dimensions of box:  
h-220xL-350xP-470

*Pallets can be supplied. Every standard pallet may contain 35 panels. Total dimensions of the pallet become 1560(Height) X 800(Large)*

### WEIGHT for SINGLE PACKING

6.5Kg

### WEIGHT for PALLET containing 35 panels (including the pallet)

251Kg

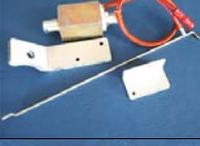
## Kit for series supplied accessories



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## Optionals

<b>PANEL TYPE</b> 	<b>MAGNETIC CIRCUIT BREAKER</b>		
	<b>AMPERE</b>	<b>2P SWITCH</b> 	<b>3P SWITCH</b> 
10	+157ATIM2P010	+157ATIM3P010	+157ATIM4P010
16	+157ATIM2P016	+157ATIM3P016	+157ATIM4P016
20	+157ATIM2P020	+157ATIM3P020	+157ATIM4P020
25	+157ATIM2P025	+157ATIM3P025	+157ATIM4P025
32	+157ATIM2P032	+157ATIM3P032	+157ATIM4P032
40	+157ATIM2P040	+157ATIM3P040	+157ATIM4P040
50	+157ATIM2P050	+157ATIM3P050	+157ATIM4P050
63	+157ATIM2P063	+157ATIM3P063	+157ATIM4P063
<b>SHEATS AND POWER CABLES FOR CONNECTION TO ALTERNATOR</b>			
	16A-Single phase-2P+T	1570516	
	32A- Single phase -2P+T	1570515	
	16A-Three-phase-3P+N+T	1570516B	
	32A-Three-phase -3P+N+T	1570515B	
<b>KIT for HONDA ENGINES GX390 and GX600</b>			
	<p>Kits allow Honda engines type <b>GX390</b> and <b>GX600</b> to be provided with all accessories which can assure the generator start automatically without any problem. Kits have been projected and tested in order to assure a fast and sure installation by preventing the necessity to buy other accessories, nor screws.</p> <p>A specific software which is included in AT panels controls closing and opening air (especially the re-opening at the right moment in order to avoid the engine loose its speed).</p> <p>Power sheath to be connected to the plug installed in the generator and engine sheath are included in kit proposal.</p> <p>Engine sheath is suitable to be added without any intervention on Honda engine..</p>		
<b>AUXILIARY SHEAT FOR CONNECTION TO THE ENGINE</b>			
	HONDA GX-390	1570514C	
	HONDA GX-600	1570514D	
<b>KIT STARTER AIR CONTROL</b>			
	HONDA GX-390	1570511	
	HONDA GX-600	1570512	
<b>KIT THERMOSTAT</b>			
	HONDA GX-390 E GX-600	1570513	



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