Алматы (7273)495-231 Ангарск (3955)60-70-56 Архангельск (8182)63-90-72 Астрахань (8512)99-46-04 Барнаул (3852)73-04-60 Белгород (4722)40-23-64 Благовещенск (4162)22-76-07 Брянск (4832)59-03-52 Владивосток (423)249-28-31 Владикавказ (8672)28-90-48 Владимир (4922)49-43-18 Волаград (844)278-03-48 Волоград (844)278-03-48 Волоград (8472)26-41-59 Воронеж (473)204-51-73 Екатеринбург (343)384-55-89 Иваново (4932)77-34-06 Ижевск (3412)26-03-58 Иркутск (395)279-98-46 Казань (843)206-01-48 Калининград (4012)72-03-81 Калуга (4842)92-23-67 Кемерово (3842)65-04-62 Киров (8332)68-02-04 Коломна (4966)23-41-49 Кострома (4942)77-07-48 Краснодар (861)203-40-90 Красноядек (391)204-63-61 Курск (4712)77-13-04 Куран (3522)50-90-47 Липецк (4742)52-20-81

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Технические характеристики на панели управления для бортовых электрогенераторов, для автоматических генераторных установок NTM-109, NTM-120, SGM-109, SGM-120, HSGM-109, HSGM-120, NTE-335, STE-335, HSTE-335 компании ELCOS

ON-BOARD PANELS FOR AUTOMATIC GENERATING SETS

type NTE come equipped with the CAM-335 control unit

The automatic panels are set up to be coupled with the LTS-LEM and LTS-NEC panel series.

INSTALLATION MANUAL



NTE

PANEL COMPOSITION

- Epoxy powder-coated electrogalvanized sheet metal structure
- Vibration-dampers
- Control unit electronic type CAM-335
- Automatic battery charger 1A
- Emergency button
- Start-up control and glow plug power relay
- Terminal for engine connections
- Terminal for connection to the LTS-LEM and LTS-NEC panels

ACCESSORIES INSTALLED ON REQUEST

Installation of accessories does not change the panel type or code

Rain protection for thermal-magnetic circuit breakers and differential devices up to 125 A

	COMPONENTS LIST						
Sigla	Description	Code Manufacturer	Code Elcos	Manufacturer			
AP1	BASE BM-450 MATT BLACK RAL 9005 TEXTURED	40750751	40750751	ELCOS			
AP1	COVER BM-450 MATT BLACK RAL 9005 TEXTURED	40750752	40750752	ELCOS			
AP1	FRONT BM-450/145 MATT BLACK RAL 9005 TEXTURED	40750753	40750753	ELCOS			
AP1	FALSE POLE 17873 CARD OF 24 MODULES JP024	17873	70551300	GEWISS			
FU1	FUSES 10,3X38 10A gG	5400110	70400306	WIMEX			
FU1	FUSES HOLDERS 2P 10,3X38 FOR DIN BAR	5450103S	70450835	WIMEX			
FU2	FUSES 10,3X38 1A gG	5400101	70400301	WIMEX			
FU2	FUSES HOLDERS 1P 10,3X38 FOR DIN BAR	5450101S	70450833	WIMEX			
FU3	FUSES 10,3X38 1A gG	5400101	70400301	WIMEX			
FU3	FUSES HOLDERS 3P 10,3X38 FOR DIN BAR	5450104S	70450836	WIMEX			
FU4	FUSES 10,3X38 1A gG	5400101	70400301	WIMEX			
FU4	FUSES HOLDERS 3P 10,3X38 FOR DIN BAR	5450104S	70450836	WIMEX			
S1	RELEASE EMERGENCY BUTTON, 40mm, RED 2NC 5A 300V	1SFA619550R1051	70100881	ABB			
SC1	CONTROL UNIT P/CAM-335	40242262	40242262	ELCOS			
562	BATTERY CHARGER P/CBS-010 12V	40010101	40010101	ELCOS			
SCZ	BATTERY CHARGER P/CBS-010 24V	40010102	40010102	ELCOS			
\$62	BOARD SE/SEA-STE 12V	40941367	40941367	ELCOS			
305	BOARD SE/SEA-STE 24V	40941368	40941368	ELCOS			
X1	THROUGH TERMINAL	CBC.4/GR	70421784	CABUR			
X3	THROUGH TERMINAL	CBC.4/GR	70421784	CABUR			
X4	CABUR CLAMP TERMINAL BLOCK	BT007	70421934	CABUR			
X4	THROUGH TERMINAL	CBC.2/GR	70421782	CABUR			
X4	THROUGH TERMINAL	CBC.4/GR	70421784	CABUR			
X4	THROUGH TERMINAL	CBC.6/GR	70421785	CABUR			
X4	EARTH CONNECTOR	TEC.6/O	70421783	CABUR			
X5	THROUGH TERMINAL	CBC.4/GR	70421784	CABUR			

TECHNICAL SPECIFICATIONS					
Power supply battery					
Admissible for batteries		12Vdc	24Vdc		
Operating range		(8 ÷ 48) Vdc			
Absorption (engine not running)		220 mA @ 12 Vdc	120 mA @ 24 Vdc		
Battery charge					
Maximum current supplied		1Adc			
Self-consumption in a blackout		12mAdc			
Mains and generator voltmetric inputs					
Mains / generator rated voltage		400Vac ±10%			
	Mains voltage terminal	500Vac			
Rated insulation voltage	Genset voltage terminal	500Vac			
	Battery voltage terminal	48Vac			
Insulation class		CLASS 1			
Generator frequency		50 ÷ 60Hz			
Heater outputs					
Rated insulation voltage		230Vac			
Maximum power		1500W			
Digital outputs					
Output type		Positive (battery voltage)			
	Terminal X4-11, X4-24	0,25A			
Max load of the outputs:	Terminal X4-10	1,5A			
	Terminal X4-8, X4-9	20A			
Uscite comando contattori X4-29, X4-30, X	4-31, X4-32				
Output type		Clean contact	Clean contact		
Maximum displayable current		275 Vac			
Max load		3 A (AC1)			
Ambient conditions					
Operating temperature		(-20 ÷ 40) °C			
Storage temperature		(-20 ÷ 60) °C			
Relative humidity		≤ 80 % @ 40 °C			
Max altitude		1000m s.l.m.			
Degree of protection					
Degree of protection					
		FOR INTERNAL USE			
Uperation					
Plant system to which it is connected		110-11-11			
NTE-235		11Κα			
NIL-333		TING			

CONNECTIONS

You must connect the panel with the MAINS SWITCHED OFF and the BATTERY DISCONNECTED, and follow the electrical diagram shown in this manual. Multi-polar cables with EPR (flame resistant) insulation and scratch proof PVC sleeves must be used, nominal voltage 450/750V.

The panel must be connected to the existing earth unit, via a YELLOW/GREEN cable with cpn insulation and with a minimum section equal to the phase conductor. The panel contains the electronic card for protection of the engine-generator unit (see OPERATION).

The panel is suitable for installation in an area where the prospective short circuit current is $lcp \leq 10$ kA.

Alternatively, you can install it in an area with a short circuit conditional current of Icc \leq 17kA.

The installer must ensure protection against direct/indirect contact on the unit line according to the legislation in force on electrical user systems up to 1000V in AC and 1500V in DC (for Italy CEI 64-8).

Protective devices against direct/indirect contact on the genset line must be installed according to the provisions described in the standard CEI 64-8.



BEFORE SUPPLING VOLTAGE:

- Make sure that the live parts are inaccessible.
- Check the earth connection.
- Finally, check that the indicators, the block and alarm devices and the remote switch function correctly.

WARNING! THIS ELECTRICAL PANEL IS NOT SUITABLE FOR USE WHERE THE FOLLOWING CONDITIONS ARE PRESENT:

- Temperatures, relative humidity values and altitudes which differ from those specified;
- in places where the temperature and pressure variations are so rapid that they produce exceptional condensation inside the panel;
- in places where there are high levels of pollution due to dust, fumes, corrosive or radioactive particles, vapours and salts;
- where there is exposure to high temperature due to solar radiation or furnaces;
- where attacks from mould or small animals are possible;
- in places where there is the risk of fires or explosions;
- subjection to strong vibrations or knocks;
- inside installations where the current throughput or interruption power could be influenced by certain conditions (e.g. equipment incorporated in machinery).

RUNNING AND MAINTENANCE

WARNING: LIVE PARTS AT DANGEROUS VOLTAGE

We recommend that the following maintenance operations be carried out weekly:

- manual starting;
- checking of operation of the warnings;
- checking of starter batteries;
- checking of tightness of the conductors and condition of the terminals.

The inside of the switchboard may be accessed only by suitably trained staff put in charge for the purpose. No operations may be carried out inside the switchboard unless the system is disconnected from the generator set.

As a protection measure, we recommend grounding and short-circuiting the phases.

Making an exception to the above, only suitably trained staff in charge may access the internal equipment while the system is live, to carry out the following operations.

- visual inspection of equipment;

- visual inspection of the connections and of the identification marks;
- measurement of the voltage and/or current values.

These operations must in any case be carried out using a tool that ensures appropriate electrical protection.

Warning: Adhere closely to the following advice

- Make sure that the mains and generator conductors are correctly connected to the terminal board.
- Check that the consumption of the connected equipment are compatible with the described technical characteristics.
- Install in such a way that there is always adequate heat disposal.
- The equipment must be earthed via the relevant terminal.
- Handle and connect without mechanically stressing the electronic control unit.
- Make sure that copper conductor cuttings or other waste material do not fall inside the panel.
- If necessary, the fuses must only be replaced with the same type as the original.
- Never disconnect the terminals of the battery with running engine.
- Never use a battery charger for the emergency start-up; the electronic circuit board could be damaged.
- In order to safeguard people and equipment, before connecting an external battery charger, disconnect the electrical system terminals from the battery poles.

NOTICE: The genset unit will restart automatically, when there is a mains failure or in test mode.

WARNING! Before performing any technical interventions on the genset unit, for the safety of the operators, terminal "50" of the start motor (start command) must be disconnected, the connections to the unit must be disconnected, and the emergency push-button must be pressed.

ELECTROMAGNETIC COMPATIBILITY

This control unit operates correctly only if it is fitted in systems that comply with CE marking regulations. In fact, the unit itself complies with the immunity requirements of standard EN 61326-1, but this does not rule out malfunctioning in extreme cases that can occur in particular situations. The fitter is responsible for verifying the absence of disturbance levels higher than those provided for by the regulations.

NOTE CONCERNING CONNECTION OF COMMAND AND SAFETY DEVICES TO THE PANEL

With the direct connection of engine protection probes and remote control and command contacts to the panel, particular anomalous situations (earth anomalies or interruption of electrical connections) could block the start-up or provoke its early activation.

To reduce these risks, if he believes it to be necessary, the installer can take on the responsibility of applying that which is described in paragraphs 9.4.2.1 and 9.4.2.2 of standard CEI EN60204-1(CEI 44-5) to the said connections.

UNLESS WE HAVE ISSUED A WRITTEN DECLARATION TO THE CONTRARY, THIS CONTROL UNIT IS NOT SUITABLE FOR OPERATION AS A CRITICAL COMPONENT OF EQUIPMENT OR SYSTEMS AFFECTING THE LIFE OF PERSONS AND HUMAN BEINGS.

Any use which differs from that which is indicated in this operating and instruction manual must be authorized by us.

DATA FOR ORDERING					
Туре	Code (battery 12V)	Codice (battery 24V)			
NTE-335	00022037	00022038			

ON-BOARD PANELS FOR AUTOMATIC GENERATING SETS

type STE HSTE come equipped with the CAM-335 control unit

The automatic panels are set up to be coupled with the LTS-LEM and LTS-NEC panel series.

INSTALLATION MANUAL





- Epoxy powder-coated electrogalvanized sheet metal structure
- Vibration-dampers
- Control unit electronic type CAM-335
- Automatic battery charger 1A
- Thermal-magnetic circuit breaker
- Emergency button
- Start-up control and glow plug power relay
- 2X12 way connector kit for engine connections
- •Terminal boards for connection to the LTS-LEM and LTS-NEC panels



ACCESSORIES INSTALLED ON REQUEST

Installation of accessories does not change the panel type or code

- 24-pole watertight connector for engine connections
- 16 A 2P+E socket with 16 A sectionable fuse
- 32A 3P+N+T socket
- 32 A 4P thermal-magnetic circuit breaker (socket protection
- 4P differential module up to 120 A 300 mA
- Differential kit from 160 A to 630 A made up of: toroid, adjustable differential relay and release coil
- Rain protection for thermal-magnetic circuit breakers and differential devices up to 125 A
- fuel pump control from reserve tank to fuel tank
- Power cables: 1 m length from panel, complete with 700 mm-long protection

sheath and cable terminals for alternator connection

А	Cables size, mm ²
32	6
63	10
80	16
100	25
125	35
160	50
200	70
250	95
	A 32 63 80 100 125 160 200 250

Version panels

Type STE-335

HSTE

COMPONENTS LIST							
Switchboard	Item	Description	Туре	Code	Manufacturer	Q.ty	
	SC1	Control unit	P/CAM-335	40242262	ELCOS	1	
	ELL	Fuses holders	10,3X38		WIMEX	12	
	10	Various types fuses	10,3X38		WIMEX	12	
	502	Battery charger	P/CBS-010 12V	40010101	01 ELCOS 1		
	502	Battery charger	P/CBS-010 24V	40010102	ELCOS	1	
		Terminals	CBC2	70421782	CABUR	5	
	X1	Terminals	CBC4	70421784	CABUR	8	
		Terminals	CBC6	70421785	CABUR	2	
	S1	Mushroom-head push-button-2NC-	1SFA619550R1051	70100881	ABB	1	
	КЗ. К4	Relay	AV-04 80A12V	40370343	EXPANSION	_ 2	
		Relay	AV-08 60A 24V	40340344	EXPANSION		
	Connector KIT	2x12 way		40804507	ELCOS	1	
STE-335/11E	Q1	BREAKER 4P 16A - S204 C16 6KA	S529211	70100961	ABB	1	
	TA1,TA2,TA3	CURRENT TRANSFORMER TAIBB D21/16*12.5 40/5	TAIBB 40/5	70512399	IME	3	
STF-335/17F	Q1	BREAKER 4P 25A - S204 C25 6KA	S529235	70100963	ABB	1	
512 555, 172	TA1,TA2,TA3	CURRENT TRANSFORMER TAIBB D21/16*12.5 40/5	TAIBB 40/5	70512399	IME	3	
STF-335/22F	Q1	BREAKER 4P 32A – C32 C16 6KA	S529242	70100964	ABB	1	
512 555/222	TA1,TA2,TA3	CURRENT TRANSFORMER TAIBB D21/16*12.5 40/5	TAIBB 40/5	70512399	IME	3	
STE 225/295	Q1	BREAKER 4P 40A - S204 C40 6KA	S529259	70100965	ABB	1	
51E-555728E	TA1,TA2,TA3	CURRENT TRANSFORMER TAIBB D21/16*12.5 50/5A	TAIBB 50/5A	70512400	IME	3	
STE-335//0F	Q1	BREAKER 4P 63A - S204 C63 6KA	S551113	70100967	ABB	1	
31E-333/40E	TA1,TA2,TA3	CURRENT TRANSFORMER TAIBB D21/16*12.5 60/5A	TAIBB 60/5	70512401	IME	3	
STE 225/555	Q1	BREAKER 4P 80A - S804B C80 16KA	S804BC80	70100975	ABB	1	
51E-555/55E	TA1,TA2,TA3	CURRENT TRANSFORMER TAIBB D21/16*12.5 100/5A	TAIBB 100/5A	70512403	IME	3	
STE 225/605	Q1	BREAKER 4POLI 100A – S804B C100 16KA	S804BC100	70100976	ABB	1	
316-333/096	TA1,TA2,TA3	CURRENT TRANSFORMER TAIBB D21/16*12.5 100/5A	TAIBB 100/5A	70512403	IME	3	
STE-335/86E	Q1	BREAKER 4POLI 125A – S804B C125 16KA	S804BC125	70100977	ABB	1	
HSTE-335/86E	TA1,TA2,TA3	CURRENT TRANSFORMER TAIBB D21/16*12.5 150/5A	TAIBB 150/5A	70512404	IME	3	
STE-335/111E	Q1	BREAKER 4POLI 160A – XT2N 160 4P FF 36KA	XT2N160TMG	70100905	ABB	1	
HSTE-335/111E	TA1,TA2,TA3	CURRENT TRANSFORMER TA327 D27/32*10,5 250/5	TA327 250/5A	70512407	IME	3	
STE-335/138E	Q1	BREAKER 4POLI 250A – XT3N 250 4P FF 36KA	XT3N250TMG	70100907	ABB	1	
HSTE-335/138E	TA1,TA2,TA3	CURRENT TRANSFORMER TA327 D27/32*10,5 250/5	TA327 250/5A	70512407	IME	3	
STE-335/156E	Q1	BREAKER 4POLI 250A – XT3N 250 4P FF 36KA	XT3N250TMG	70100907	ABB	1	
HSTE-335/156E	TA1,TA2,TA3	CURRENT TRANSFORMER TA327 D27/32*10,5 250/5	TA327 250/5A	70512407	IME	3	
STE-335/218E	Q1	BREAKER TMAX T5N 4P 400A PR221DS-LS/I 36kA	1SDA054325R1	70100909	ABB	1	
HSTE-335/218E	TA1,TA2,TA3	CURRENT TRANSFORMER TA540 400/5	TA540 400/5A	70512454	IME	3	
STE-335/277E	Q1	BREAKER TMAX T5N 4P 400A PR221DS-LS/I 36kA	1SDA054325R1	70100909	ABB	1	
HSTE-335/277E	TA1,TA2,TA3	CURRENT TRANSFORMER TA540 400/5	TA540 400/5A	70512454	IME	3	
STE-335/436E	Q1	BREAKER TMAX T5N 4P 630A PR221DS-LS/I 36kA	1SDA054400R1	70100911	ABB	1	
HSTE-335/436E	TA1,TA2,TA3	CURRENT TRANSFORMER TAS64 800/5	TAS64 800/5A	70512456	IME	1	

COMPONENTS LIST UPON REQUEST (MANAGEMENY OF FUEL)						
Description	Туре	Code	Manufacturer	Q.ty		
PUMP CONTACTOR	AF09-30-10-13	70100810	ABB	1		
FUSE HOLDER	10X38	70450833	WIMEX	3		
FUSES	10,3X38 10A	70400306	WIMEX	3		
TERMINALS	CBC-4	70421784	CABUR	3		
RELAY	MY2 12VDC	70354665	OMRON	1		
RELAY	MY 24 VDC	70354663	OMRON	T		
THERMAL- RELAY 3P 2,3A A 3,1A	TF42-3,1	70100861	ABB	1		





		THERMAL-MAGNETIC CIRCUIT BREAKER (1) Bain protection upon			Dimensions mm STE without vibration-dampers HSTE without brackets corne		
	1.1	request	1/1/4	₽∃			
			KVA				
					mm LxHxP	r	
		A		V	STE	HSTE	
STE-335/11E		⁽¹⁾ 16	11				
STE-335/17E		(1) 25	17				
STE-335/22E		⁽¹⁾ 32	22				
STE-335/28E		⁽¹⁾ 40	28				
STE-335/40E		(1) 63	40				
STE-335/55E		(1) 80	55	-	455X300X355		
STE-335/69E		(1) 100	69			460X980X250	
STE-335/86E	HSTE-335/86E	⁽¹⁾ 125	86				
STE-335/111E	HSTE-335/111E	112÷160	111				
STE-335/138E	HSTE-335/138E	175÷250	138				
STE-335/156E	HSTE-335/156E	175÷250	156				
STE-335/218E	HSTE-335/218E	280÷400	218	12/24			
STE-335/277E	HSTE-335/277E	280÷400	277	24	555X425X470		
STE-335/436E	HSTE-335/436E	252÷630	436	24			

TECHNICAL SPECIFICATIONS				
Power supply battery				
Admissible for batteries		12Vdc	24Vdc	
Operating range		8 ÷ 48Vdc		
Absorption (engine not running)		130mA@12Vdc	90mA@24Vdc	
Battery charge				
Maximum current supplied		1Adc		
Self-consumption in a blackout		12mAdc		
Mains and generator voltmetric inp	uts	·		
Mains / generator rated voltage		400Vac ±10%		
	Mains voltage terminal	450Vac		
Rated insulation voltage	Genset voltage terminal	450Vac		
	Battery voltage terminal	32Vac		
Insulation class		CLASS 1		
Overvoltage category		CATEGORY 3		
Mains and generator frequency		50 ÷ 60Hz		
Heater outputs				
Rated insulation voltage		230Vac		
Maximum power		1000W		
Digital outputs				
Output type		Positive (battery voltage)		
Ambient conditions				
Operating temperature		-20 ÷ 40°C		
Storage temperature		-20 ÷ 60°C		
Relative humidity		≤ 80% without condensate 40°C		
Max altitude		1000m s.l.m.		
Degree of protection				
Degree of protection		IP 31 whit rain protection IP33		
		FOR INTERNAL USE whit rain protection for external use- (MAX IP33)		
Electrical characteristics				
Operation				
Plant system to which it is connected		IN-II-II		
STE-335/11E- STE-335/17E- STE-335/22	E- STE-335/28E- STE-335/40E- STE-335/55E-	11Kg		
STE-335/69E- STE-335/86E		11Kg		
STE-335/111E		12Kg		
STE-335/138E- STE-335/156E		16kg		
STE-335/218E- STE-335/277E		27kg		
STE-335/436E		30kg		
HSTE-335/86E- HSTE-335/111E-		34kg		
HSTE-138E-HSTE-335/156E		39kg		
HSTE-218E-HSTE-277E		40kg		
HSTE-436E		45kg		

MAINS CONNECTIONS

You must connect the panel with the MAINS SWITCHED OFF and the BATTERY DISCONNECTED, and follow the electrical diagram shown in this manual. Multi-polar cables with EPR (flame resistant) insulation and scratch proof PVC sleeves must be used, nominal voltage 450/750V.

The panel must be connected to the existing earth unit, via a YELLOW/GREEN cable with cpn insulation and with a minimum section equal to the phase conductor. The panel contains the electronic card for protection of the engine-generator unit (see OPERATION).

The panel is suitable for installation in an area where the prospective short circuit current is $lcp \le 10$ kA.

Alternatively, you can install it in an area with a short circuit conditional current of Icc \leq 17kA.

The installer must ensure protection against direct/indirect contact on the unit line according to the legislation in force on electrical user systems up to 1000V in AC and 1500V in DC (for Italy CEI 64-8).

Protective devices against direct/indirect contact on the genset line must be installed according to the provisions described in the standard CEI 64-8.



BEFORE SUPPLYING VOLTAGE:

- Make sure that the live parts are inaccessible.
- Check the earth connection.
- Finally, check that the indicators, the block and alarm devices and the remote switch function correctly.

WARNING! THIS ELECTRICAL PANEL IS NOT SUITABLE FOR USE WHERE THE FOLLOWING CONDITIONS ARE PRESENT:

- Temperatures, relative humidity values and altitudes which differ from those specified;
- in places where the temperature and pressure variations are so rapid that they produce exceptional condensation inside the panel;
- in places where there are high levels of pollution due to dust, fumes, corrosive or radioactive particles, vapours and salts;
- where there is exposure to high temperature due to solar radiation or furnaces;
- where attacks from mould or small animals are possible;
- in places where there is the risk of fires or explosions;
- subjection to strong vibrations or knocks;
- inside installations where the current throughput or interruption power could be influenced by certain conditions (e.g. equipment incorporated in machinery).

RUNNING AND MAINTENANCE

ATTENZIONE: PARTI SOTTO TENSIONE PERICOLOSA The following maintenance operations should be performed each week:

- automatic start with switching;
- check that indicators function;

It is advisable to perform the following voltage-free operations:

- check that the conductors are tight, check the condition of the terminals;
- visual inspection of the connections and the markings;
- visual inspection of the equipment.

The opening of the panel for whatever reason, including manual mains-genset switching without turning off the power to the panel, implies the performance of work in the "vicinity zone" under the standard EN 50110-1, and therefore must only be performed by electrically "instructed" or "skilled" personnel and in compliance with the procedures under the standard itself.

NOTICES

Warning: Adhere closely to the following advice

- Pay attention to connection the main and generator conductors.
- Check that the absorption and consumption of the connected equipment are compatible with the described technical characteristics.
- Install in such a way that there is always adequate heat disposal.
- The equipment must be earthed via the relevant terminal.
- Handle and connect the unit without mechanically stressing the electronic control unit.
- Make sure that copper conductor cuttings or other waste material do not fall inside the panel.
- If necessary, the fuses must only be replaced with the same type as the original.
- Strictly avoid using a battery charger for emergency starting: the control unit may get damaged.

NOTICE: The genset unit will restart automatically, when there is a mains failure or in test mode.

WARNING! Before performing any technical interventions on the genset unit, for the safety of the operators, terminal "50" of the start motor (start command) must be disconnected, the connections to the unit must be disconnected, and the control unit mounted on the generator set in "OFF" stop mode.

ELECTROMAGNETIC COMPATIBILITY

This panel functions correctly only if inserted in plants which conform with the CE marking standards; it meets the exemption requirements of the standard EN61326-1 but it cannot be excluded that malfunctions could occur in extreme cases due to particular situations. The installer has the task of checking that the disturbance levels are within the requirements of the standards.

NOTE CONCERNING CONNECTION OF COMMAND AND SAFETY DEVICES TO THE PANEL

With the direct connection of engine protection probes and remote control and command contacts to the panel, particular anomalous situations (earth anomalies or interruption of electrical connections) could block the start-up or provoke its early activation.

To reduce these risks, if he believes it to be necessary, the installer can take on the responsibility of applying that which is described in paragraphs 9.4.2.1 and 9.4.2.2 of standard CEI EN60204-1(CEI 44-5) to the said connections.

UNLESS WE MAKE A WRITTEN DECLARATION STATING THE CONTRARY, THIS PANEL IS NOT SUITABLE FOR USE AS A CRITICAL COMPONENT IN EQUIPMENT OR PLANTS RESPONSIBLE FOR KEEPING PERSONS OR OTHER LIVING BEINGS ALIVE.

Any use which differs from that which is indicated in this instruction and user manual must be authorized by us.

DATA FOR ORDERING						
Туре	Code (12V battery)	Code (24V battery)				
STE-335/11E	00021981	Unavailable				
STE-335/17E	00021983	Unavailable				
STE-335/22E	00021985	Unavailable				
TE-335/28E	00021987	Unavailable				
STE-335/40E	00021989	Unavailable				
STE-335/55E	00021991	Unavailable				
STE-335/69E	00021993	Unavailable				
STE-335/86E	00021995	Unavailable				
STE-335/111E	00021997	Unavailable				
STE-335/138E	00021999	Unavailable				
STE-335/156E	00022001	Unavailable				
STE-335/218E 12V	00022007					
STE-335/218E 24V		00022008				
STE-335/277E		00022004				
STE-335/436E		00022006				
HSTE-335/86E	00022021					
HSTE-335/111E	00022023					
HSTE-335/138E	00022025					
HSTE-335/156E	00022027					
HSTE-335/218E 12V	00022019					
HSTE-335/218E 24V		00022020				
HSTE-335/277E		00022030				
HSTE-335/436E		00022032				

ON-BOARD PANELS FOR MANUAL GENERATING SETS type SGM HSGM come equipped with the CAM-109 or CAM-120/10 controls units INSTALLATION MANUAL



PANEL COMPOSITION

- Epoxy powder-coated electrogalvanized sheet metal structure
- Vibration-dampers
- Control unit electronic type CAM-109 or CAM-120/10
- Thermal-magnetic circuit breaker
- starter lockout circuit breaker
- Emergency button
- Start-up control and glow plug power relay
- 2X12 way connector kit for engine connections

SGM

ACCESSORIES INSTALLED ON REQUEST

Epoxy powder-coated electrogalvanized sheet metal structure

- Vibration-dampers
- Control unit electronic type CAM-109 or CAM-120/10
- Thermal-magnetic circuit breaker
- starter lockout circuit breaker
- Emergency button
- Start-up control and glow plug power relay
- 2X12 way connector kit for engine connections of- toroid, adjustable differential relay and release coil
- Rain protection for thermal-magnetic circuit breakers and differential devices up to 125 A
- Power cables: 1 m length from panel, complete with 700 mm-long protection
- sheath and cable terminals for alternator connection

Α	Cable size, mm ²
32	6
63	10
80	16
100	25
125	35
160	50
200	70
250	95
	A 32 63 80 100 125 160 200 250



Height adjustable brackets

HSGM

LIST OF COMPONENTS							
Panel	Item	Description	Туре	Code	Brand	Q.ty	
		Structure 455x300x355	BM-450 (VERSION 11-173)	40750736			
		Structure 555x425x470	BM-550 (VERSION 277-436)	40750742	ELCOS	1	
		Fuses holders	10.3X38		WIMEX	4	
	FU	Fuses of various types	10,3X38		WIMEX	4	
	X1	Terminal (SGM)	CBC2	70421782	CABUR	5	
	5.61	Electronic control unit CAM-109	CAM-109	40242284	ELCOS	1	
	SCI	Electronic control unit CAM-120/10	CAM-120/10	40242285	ELCOS	1	
	S1	Mushroom-head push-button 2NC ⁻	1SFA619550R1051	70100881	ABB	1	
	S2	Start key 2 relay position	Q13010	70602501	AMA	1	
		Relay	AV-04 80A 12V	40370343	EVENNERON		
	кз, к4	Relay	AV-08 60A 24V	40370344	EXPANSION	2	
	KIT conector	2x12 vie		40804507	ELCOS	1	
SGM-109/11E	Q1	MAGNETOTHERMAL SWITCH 4P 16A - S204 C16 6KA	S529211	70100961	ABB	1	
SGM-120/11E	TA1,TA2,TA3	CURRENT TRANSFORMER TAIBB D21/16*12.5 40/5	TAIBB 40/5	70512399	IME	3	
SGM109/17E	Q1	MAGNETOTHERMAL SWITCH 4P 25A - S204 C25 6KA	\$529235	70100963	ABB	1	
SGM-120/17E	TA1,TA2,TA3	CURRENT TRANSFORMER TAIBB D21/16*12.5 40/5	TAIBB 40/5	70512399	IME	3	
SGM-109/22E	Q1	MAGNETOTHERMAL SWITCH 4P 32A – C32 C16 6KA	S529242	70100964	ABB	1	
SGM-120/22E	TA1,TA2,TA3	CURRENT TRANSFORMER TAIBB D21/16*12.5 40/5	TAIBB 40/5	70512399	IME	3	
COM 400 /007	Q1	MAGNETOTHERMAL SWITCH 4P 40A - S204 C40 6KA	S529259	70100965	ABB	1	
SGM-109/28E	Q2	MAGNETOTHERMAL SWITCH 4P. 32A – S204 C32 6KA-	S529242	70100964	ABB	1	
3GIVI-12U/28E	TA1,TA2,TA3	CURRENT TRANSFORMER TAIBB D21/16*12.5 50/5A	TAIBB 50/5A	70512400	IME	3	
	Q1	MAGNETOTHERMAL SWITCH 4P. 32A – S204 C32 6KA- SOCKET 4P 63A - S204 C63 6KA	\$551113	70100967	ABB	1	
SGM-109/40E SGM-120/40E	Q2	MAGNETOTHERMAL SWITCH. 4P. 32A – S204 C32 6KA- SOCKET. 4POLI 32A – S204 C32 6KA- SOCKET	S529242	70100964	АВВ	1	
	TA1,TA2,TA3	CURRENT TRANSFORMER TAIBB D21/16*12.5 60/5A	TAIBB 60/5	70512401	IME	3	
	Q1	THERMAL-MAGNETIC CIRCUIT BREAKER 4P 80A - S804B C80 16KA	S804BC80	70100975	ABB	1	
SGM-109/55E	Q2	MAGNETOTHERMAL SWITCH 4P.32A – S204 C32 6KA- SOCKET	\$529242	70100964			
SGM-120/55E	TA1,TA2,TA3	CURRENT TRANSFORMER TAIBB D21/16*12.5 100/5A	TAIBB 100/5A	70512403	IME	3	
	Q1	MAGNETOTHERMAL SWITCH 4P. 100A – S804B C100 16KA	S804BC100	70100976	ABB	1	
SGM-109/69E	Q2	MAGNETOTHERMAL SWITCH 4P. 32A – S204 C32 6KA- SOCKET	\$529242	70100964	ABB		
SGIVI-120/69E	TA1,TA2,TA3	CURRENT TRANSFORMER TAIBB D21/16*12.5 100/5A	TAIBB 100/5A	70512403	IME	3	
SGM-109/86E	Q1	MAGNETOTHERMAL SWITCH 4P.125A – S804B C125 16KA	S804BC125	70100977	ABB	1	
SGM-120/86E	Q2	MAGNETOTHERMAL SWITCH 4P.32A – S204 C32 6KA- SOCKET	S529242	70100964	ABB	1	
HSGM-109/86E HSGM-120/86E	TA1,TA2,TA3	CURRENT TRANSFORMER TAIBB D21/16*12.5 150/5A	TAIBB 150/5A	70512404	IME	3	
SGM-109/111E	Q1	MAGNETOTHERMAL SWITCH 4P. 160A – XT2N 160 4P FF 36KA	XT2N160TMG	70100905	ABB	1	
SGM-120/111E	Q2	MAGNETOTHERMAL SWITCH 4P. 32A – S204 C32 6KA- SOCKET	S529242	70100964	ABB	1	
HSGM-120/111E HSGM-109/111E	TA1,TA2,TA3	CURRENT TRANSFORMER TA327 D27/32*10,5 250/5	TA327 250/5A	70512407	IME	3	
SGM-109/138E	Q1	MAGNETOTHERMAL SWITCH 4P. 250A – XT3N 250 4P FF 36KA	XT3N250TMG	70100907	ABB	1	
SGM-120/138E	Q2	MAGNETOTHERMAL SWITCH 4P. 32A – S204 C32 6KA- PRESA	S529242	70100964	ABB	1	
HSGM-109/138E HSGM-120/138E	TA1,TA2,TA3	CURRENT TRANSFORMER TA327 D27/32*10,5 250/5	TA327 250/5A	70512407	IME	3	
SGM-109/156E	Q1	MAGNETOTHERMAL SWITCH 4P. 250A – XT3N 250 4P FF 36KA	XT3N250TMG	70100907	ABB	1	
SGM-120/156E	Q2	MAGNETOTHERMAL SWITCH 4P. 32A – S204 C32 6KA- SOCKET	\$529242	70100964	ABB	1	
HSGM-109/156E HSGM-120/156E	TA1,TA2,TA3	CURRENT TRANSFORMER TA327 D27/32*10,5 250/5	TA327 250/5A	70512407	IME	3	
SGM-109/218E	01	MAGNETOTHERMAL SWITCH TMAX T5N 4P 400A PR221DS-LS/I		70100000		1	
SGM-120/218E	QI	36kA	15DA054325R1	70100909	АВВ	1	
HSGM-109/218E	Q2	MAGNETOTHERMAL SWITCH 4P 32A – S204 C32 6KA- SOCKET	S529242	70100964	ABB	1	
HSGM-120/218E	TA1,TA2,TA3	CURRENT TRANSFORMER TA540 400/5	TA540 400/5A	70512454	IME	3	
SGM-109/277E	Q1	THERMAL-MAGNETIC CIRCUIT BREAKER TMAX T5N 4P 400A PR221DS-LS/I 36kA	1SDA054325R1	70100909	ABB	1	
HSGM-109/277F	Q2	MAGNETOTHERMAL SWITCH 4P.32A – S204 C32 6KA- SOCKET	\$529242	70100964	ABB	1	
HSGM-120/277E	TA1,TA2.TA3	CURRENT TRANSFORMER TA540 400/5	TA540 400/5A	70512454	IME	3	
SGM-109/436E	Q1	MAGNETOTHERMAL SWITCH TMAX T5N 4P 630A PR221DS-LS/I	1SDA054400R1	70100911	ABB	1	
SGM-120/436E	02	MAGNETOTHERMAL SWITCH ΔΡ 32Δ - \$20Δ C32 6ΚΔ- \$0CKET	\$529242	70100964	ABB	1	
HSGM-120/430E			TAS64 800/5A	70512456	IME	2	
130101-120/4302	1A1,1A2,1A3	CONNENT INANSFURINER TASU4 800/3	1A304 000/3A	70312430	INC	5	

		THERMAL-			Dim	iensions
		MAGNETIC			mm	
	le le	CIRCUIT BREAKER		₽ _=	SGM without vi	bration-dampers
		(1) Rain protection	KVA		HSGM without	orackets corner
and the second second	-	upon request			mm LxHxP	
		A		V	STE	HSTE
SGM-109/11E	SGM-120/11E	(1) 16	11		455X300X355	
SGM-109/17E	SGM-120/17E	⁽¹⁾ 25	17	-		
SGM-109/22E	SGM-120/22E	(1) 32	22			
SGM-109/28E	SGM-120/28E	(1) 40	28			
SGM-109/40E	SGM-120/40E	(1) 63	40	12		
SGM-109/55E	SGM-120/55E	(1) 80	55	12		
SGM-109/69E	SGM-120/69E	(1) 100	69			4600000000
SGM-109/86E	SGM-120/86E	⁽¹⁾ 125	86			460X980X250
SGM-109/111E	SGM-120/111E	112÷160	111			
SGM-109/138E	SGM-120/138E	175÷250	138			
SGM-109/156E	SGM-120/156E	175÷250	156			
SGM-109/218E	SGM-120/218E	160÷400	218	12/24		
SGM-109/277E	SGM-120/277E	160÷400	277	12/24	555X425X470	
SGM-109/436E	SGM-120/436E	252÷630	436	24	1	

TECHNICAL SPECIFICATIONS					
Battery power supply					
Suitable for batteries		12Vdc	24Vdc		
Operating range		8 ÷ 48Vdc			
Absorption with engine not running		190mA@12Vdc	110mA@24Vdc		
Generator voltmetric inputs		-			
Mains / generator rated voltage		400Vac ±10%			
Rated insulation voltage	Genset voltage terminal	450Vac			
	Battery voltage terminal	32Vac			
Insulation class		CLASS 1			
Overvoltage category		CATEGORY 3			
Mains and generator frequency		50 ÷ 60Hz			
Digital outputs					
Type of output		Positive (battery voltage)			
Environmental conditions					
Operating temperature		-20 ÷ 40°C			
Storage temperature		-20 ÷ 60°C			
Maximum relative humidity		≤ 80% without condensate at 40°C			
Maximum altitude		1000m s.l.m.			
Protection class					
Protection class		IP 31—rain protection IP33			
Installation conditions		For internal use - whit rain protection for external use (MAX IP33)			
Electrical specifications					
Operation		STAND ALONE			
Power systems to which it is connected		IN-II-II			
Panel Weight	1475 CCN4 120/175 CCN4 100/225 CCN4	11/-			
SGM-109/11E- SGM-120/11E- SGM-109	//1/E- SGIVI-120/1/E - SGIVI-109/22E- SGIVI-	likg			
120/22E SGM-109/28E- SGM-120/28E S	GM-109/40E- SGM-120/40E SGM-109/55E-				
SGM-120/55E SGM-109/69E- SGM-120/ SGM-109/11E- SGM-120/11E SGM-109/86E-					
SGM-120/86E					
SGM-109/111E- SGM-120/111E		12Kg			
SGM-109/138E- SGM-120/138E SGM-109/156E- SGM-120/156E		16Kg			
HSGM-109/86E HSGM-120/86E HSGM-109/111E HSGM-120/111E		З4Кg			
HSGM-109/138E HSGM-120/138E HSGM-109/156E HSGM-120/156E		39kg			
SGM-109/218E- SGM-120/218E SGM-109/277E- SGM-120/277E		27kg			
HSGM-109/218E HSGM-120/218E HSGM-109/277E HSGM-120/277E		40kg			
SGM-109/436E- SGM-120/436E		30kg			
HSGM-109/436E HSGM-120/436E		45kg			

CONNECTIONS

You must connect the panel with the MAINS SWITCHED OFF and the BATTERY DISCONNECTED, and follow the electrical diagram shown in this manual.

Multi-polar cables with EPR (flame resistant) insulation and scratch proof PVC sleeves must be used, nominal voltage 450/750V.

The panel must be connected to the existing earth unit, via a YELLOW/GREEN cable with cpn insulation and with a minimum section equal to the phase

conductor. The panel contains the electronic card for protection of the engine-generator unit (see OPERATION).

The panel is suitable for installation in an area where the prospective short circuit current is $lcp \le 10$ kA. Alternatively, you can install it in an area with a short circuit conditional current of $lcc \le 17$ kA.

The installer must ensure protection against direct/indirect contact on the unit line according to the legislation in force on electrical user systems up to 1000V in AC and 1500V in DC (for Italy CEI 64-8).

Protective devices against direct/indirect contact on the genset line must be installed according to the provisions described in the standard CEI 64-8.



BEFORE SUPPLYING VOLTAGE:

- Make sure that the live parts are inaccessible.
- Check the earth connection.
- Finally, check that the indicators, the block and alarm devices and the remote switch function correctly..

WARNING! THIS ELECTRIC SWITCHBOARD IS NOT SUITABLE FOR OPERATION IN THE FOLLOWING OPERATING CONDITIONS:

- at temperature, relative humidity and altitude values different from those specified;
- in places where air temperature and pressure variations occur so rapidly as to produce exceptional condensation inside the switchboard;
- in places of operation having a high level of pollution due to dust, smoke, corrosive or radioactive particles, vapours and salts;
- where there is exposure to high temperatures because of solar radiation or ovens;
- where attacks by mould or small animals are possible;
- in places where there is a danger of explosion or fire;
- where there can be strong vibrations or knocks;

- within installations in which the current capacity or the breaking capacity can be affected by particular conditions (e.g. equipment incorpo rated in machinery).

OPERATION AND MAINTENANCE

WARNING: LIVE PARTS AT DANGEROUS VOLTAGE

The following weekly maintenance operations are recommended:

- automatic start-up;
- signal operation check;
- start-up battery check.

Furthermore, we recommend you carry out the following operations with the power switched off:

- a check for conductor tightness and terminal status;
- a visual inspection of the equipment;
- a visual inspection of the connections and markings.

The opening of the panel for whatever reason, including manual mains-genset switching without turning off the power to the panel, implies the performance of work in the "vicinity zone" under the standard EN 50110-1, and therefore must only be performed by electrically "instructed" or "skilled" personnel and in compliance with the procedures under the standard itself.

WARNING: Adhere closely to the following advice

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

NOTICE: the genset uni twill restart automatically, when there is a mains failure or in test mode.

WARNING! Before performing any technical interventions on the genset unit, for the safety of the operators, terminal "50" of the start motor (start command) must be disconnected, the connections to the unit must be disconnected, and the emergency push-button must be pressed.

ELECTROMAGNETIC COMPATIBILITY

This control unit operates correctly only if it is fitted in systems that comply with CE marking regulations. In fact, the unit itself complies with the immunity requirements of standard EN 61326-1, but this does not rule out malfunctioning in extreme cases that can occur in particular situations. The fitter is responsible for verifying the absence of disturbance levels higher than those provided for by the regulations.

NOTE CONCERNING CONNECTION OF COMMAND AND SAFETY DEVICES TO THE PANEL

With the direct connection of engine protection probes and remote control and command contacts to the panel, particular anomalous situations (earth anomalies or interruption of electrical connections) could block the start-up or provoke its early activation.

To reduce these risks, if he believes it to be necessary, the installer can take on the responsibility of applying that which is described in paragraphs 9.4.2.1 and 9.4.2.2 of standard CEI EN60204-1(CEI 44-5) to the said connections.

UNLESS WE HAVE ISSUED A WRITTEN DECLARATION TO THE CONTRARY, THIS CONTROL UNIT IS NOT SUITABLE FOR OPERATION AS A CRITICAL COMPONENT OF EQUIPMENT OR SYSTEMS AFFECTING THE LIFE OF PERSONS AND HUMAN BEINGS.

Any use which differs from that which is indicated in this operating and instruction manual must be authorized by us.

INFORMATION FOR ORDERING				
Туре	Code (battery a 12V)	Code (battery a 24V)		
SGM-109/11E	00021775	Unavailable		
SGM-109/17E	00021777	Unavailable		
SGM-109/22E	00021779	Unavailable		
SGM-109/28E	00021781	Unavailable		
SGM-109/40E	00021783	Unavailable		
SGM-109/55E	00021785	Unavailable		
SGM-109/69E	00021787	Unavailable		
SGM-109/86E	00021789	Unavailable		
SGM-109/111E	00021791	Unavailable		
SGM-109/138E	00021793	Unavailable		
SGM-109/156E 12V	00021794	Unavailable		
SGM-109/218E 12V	00021878	Unavailable		
SGM-109/218E 24V	Unavailable	00021879		
SGM-109/277E 24V	Unavailable	00021797		
SGM-109/436E 24V	Unavailable	00021799		
HSGM-109/86E	00021891	Unavailable		
HSGM-109/111E	00021893	Unavailable		
HSGM-109/138E	00021895	Unavailable		
HSGM-109/156E 12V	00021897	Unavailable		
HSGM-109/218E 12V	00021904	Unavailable		
HSGM-109/218E 24V	Unavailable	00021905		
HSGM-109/277E 24V	Unavailable	00021900		
HSGM-109/436E 24V	Unavailable	00021902		
SGM-120/11E	00021800	Unavailable		
SGM-120/17E	00021802	Unavailable		
SGM-120/22E	00021804	Unavailable		
SGM-120/28E	00021806	Unavailable		
SGM-120/40E	00021808	Unavailable		
SGM-120/55E	00021810	Unavailable		
SGM-120/69E	00021812	Unavailable		
SGM-120/86E	00021814	Unavailable		
SGM-120/111E	00021816	Unavailable		
SGM-120/138E	00021818	Unavailable		
SGM-120/156E 12V	00021820	Unavailable		
SGM-120/218E 12V	00021880	Unavailable		
SGM-120/218E 24V	Unavailable	00021881		
SGM-120/277E 24V	Unavailable	00021823		
SGM-120/436E 24V	Unavailable	00021825		
HSGM-120/86E	00021917	Unavailable		
HSGM-120/111E	00021919	Unavailable		
HSGM-120/138E	00021921	Unavailable		
HSGM-120/156E 12V	00021923	Unavailable		
HSGM-120/218E 12V	00021930	Unavailable		
HSGM-120/218E 24V	Unavailable	00021931		
HSGM-120/277E 24V	Unavailable	00021926		
HSGM-120/436E 24V	Unavailable	00021928		

ON-BOARD PANELS FOR MANUAL GENERATING SETS type NTM-109 NTM-120 come equipped with the CAM-109 or CAM-120

Panels without thermal magnetic circuit breaker

INSTALLATION MANUAL



PANEL COMPOSITION

- Epoxy powder-coated electrogalvanized sheet metal structure
- Vibration-dampers
- Control unit electronic type TIPO CAM-109 or CAM-120/10
- Circuit breaker exclusion key switch
- Emergency button
- Start-up control and glow plug power relay
- 2X12 way connector kit for engine connections

ACCESSORIES INSTALLED ON REQUEST

Epoxy powder-coated electrogalvanized sheet metal structure

• 16 pole watertight connector for engine connections

ΝΤΜ

LIST OF COMPONENTS					
Item	Description	Туре	Code	Brand	Q.ty
	Structure	BM-450	40493359	ELCOS	1
	Structure	BM-450/145	40750753		1
SC1	Electronic control unit	P/CAM-109	40242284	51 606	1
	Electronic control unit	P/CAM-120/10	40242285	ELCOS	
FU	Fuses holders	10,3X38		WIMEX	2
X1 Terminal Terminal Terminal	Terminal	CBC.10	70421786	CABUR	2
	Terminal	CBC.4	70421784		2
	Terminal	CBC.2	70421782		5
SC1	Electronic control unit	P/CAM-120/10	40242285	ELCOS	1
FU	Fuses holders	10,3X38	70450833	WIMEX	4
	Terminal	CBC.10	70421786		4
	Terminal	CBC.4	70421784	CABUR	4
	Terminal	CBC.2	70421782]	5
КЗ, К4	Relay	AV-04 80A 12V	40370343		2
	Relay	AV-08 60A 24V	40340344	EXPANSION	
S1	Mushroom-head push-button 2NC	1SFA619550R1051	70100881	ABB	1
S2	Starting lock key	2 Posiz.	70602501	A.M.A.	1

TECHNICAL SPECIFICATIONS					
Battery power supply					
Suitable for batteries		12Vdc	24Vdc		
Operating range		8 ÷ 48Vdc			
Absorption with engine not running		130mA@12Vdc	90mA@24Vdc		
Generator voltmetric input					
Mains / generator rated voltag		400Vac ±10% frequency 50 ÷	400Vac ±10% frequency 50 ÷ 60 Hz		
Rated insulation voltage	Genset voltage terminal	500Vac			
	Battery voltage terminal	48Vac			
Insulation class		CLASS 1			
Overvoltage category		CATEGORY 3			
Digital outputs					
Type of output		Positive (battery voltage)			
	17 (Stop)	1,5A			
Max load of the outputs	6 (Glow plugs) 15 (Start-up)	40A			
	19 (key), 70 (Alarm)	0,25A			
Environmental conditions					
Operating temperature		-20 ÷ 40°C			
Storage temperature		-20 ÷ 60°C	-20 ÷ 60°C		
Maximum relative humidity		≤ 80% without condensate at 40°C			
Maximum altitude		1000m s.l.m.	1000m s.l.m.		
Protection class					
Protection class		IP 31	IP 31		
Electrical specifications					
Operation		STAND ALONE			
Power systems to which it is connected		TN-IT-TT			
Panel weight					
NTM-109 NTM-120		10Kg			
Dimensions		L455XH300XP355 mm			

CONNECTIONS

You must connect the panel with the BATTERY DISCONNECTED, and follow the electrical diagram shown in this manual.

Multi-polar cables with EPR (flame resistant) insulation and scratch proof PVC sleeves must be used, nominal voltage 450/750V.

The panel must be connected to the existing earth unit, via a YELLOW/GREEN cable with cpn insulation and with a minimum section equal to the phase

conductor. The panel contains the electronic card for protection of the engine-generator unit (see OPERATION).

The panel is suitable for installation in an area where the prospective short circuit current is $lcp \le 10$ kA.

Alternatively, you can install it in an area with a short circuit conditional current of $Icc \le 17$ kA.

The installer must ensure protection against direct/indirect contact on the unit line according to the legislation in force on electrical user systems up to 1000V in AC and 1500V in DC (for Italy CEI 64-8).

Protective devices against direct/indirect contact on the genset line must be installed according to the provisions described in the standard CEI 64-8.



BEFORE SUPPLING VOLTAGE:

- Make sure that the live parts are inaccessible.
- Check the earth connection.
- Finally, check that the indicators, the block and alarm devices and the remote switch function correctly.

WARNING! THIS ELECTRICAL PANEL IS NOT SUITABLE FOR USE WHERE THE FOLLOWING CONDITIONS ARE PRESENT:

- Temperatures, relative humidity values and altitudes which differ from those specified;
- in places where the temperature and pressure variations are so rapid that they produce exceptional condensation inside the panel;
- in places where there are high levels of pollution due to dust, fumes, corrosive or radioactive particles, vapours and salts;
- where there is exposure to high temperature due to solar radiation or furnaces;
- where attacks from mould or small animals are possible;
- in places where there is the risk of fires or explosions;
- subjection to strong vibrations or knocks;
- inside installations where the current throughput or interruption power could be influenced by certain conditions (e.g. equipment incorporated in machinery).

RUNNING AND MAINTENANCE

WARNING: LIVE PARTS AT DANGEROUS VOLTAGE

We recommend that the following maintenance operations be carried out weekly:

- starting;
- checking of operation of the warnings;
- checking of starter batteries;
- checking of tightness of the conductors and condition of the terminal.

The inside of the switchboard may be accessed only by suitably trained staff put in charge for the purpose.

No operations may be carried out inside the switchboard unless the system is disconnected from the mains and generator set.

As a protection measure, we recommend grounding and short-circuiting the phases.

Making an exception to the above, only suitably trained staff in charge may access the internal equipment while the system is live, to carry out the following operations.

- visual inspection of equipment;
- visual inspection of the connections and of the identification marks;
- measurement of the voltage and/or current values.

These operations must in any case be carried out using a tool that ensures appropriate electrical protection.

Warning: Adhere closely to the following advice

- Make sure that the mains and generator conductors are correctly connected to the terminal board.
- Check that the consumption of the connected equipment are compatible with the described technical characteristics.
- Install in such a way that there is always adequate heat disposal.
- The equipment must be earthed via the relevant terminal.
- Handle and connect without mechanically stressing the electronic control unit.
- Make sure that copper conductor cuttings or other waste material do not fall inside the panel.
- If necessary, the fuses must only be replaced with the same type as the original.
- Never disconnect the terminals of the battery with running engine.
- Never use a battery charger for the emergency start-up; the control panel could be damaged.
- In order to safeguard people and equipment, before connecting an external battery charger, disconnect the electrical system terminals from the battery poles.

WARNING! Before performing any technical interventions on the genset unit, for the safety of the operators, terminal "50" of the start motor (start command) must be disconnected, the connections to the unit must be disconnected, and the emergency push-button must be pressed.

ELECTROMAGNETIC COMPATIBILITY

This control unit operates correctly only if it is fitted in systems that comply with CE marking regulations. In fact, the unit itself complies with the immunity requirements of standard EN 61326-1, but this does not rule out malfunctioning in extreme cases that can occur in particular situations. The fitter is responsible for verifying the absence of disturbance levels higher than those provided for by the regulations.

NOTE CONCERNING CONNECTION OF COMMAND AND SAFETY DEVICES TO THE PANEL

With the direct connection of engine protection probes and remote control and command contacts to the panel, particular anomalous situations (earth anomalies or interruption of electrical connections) could block the start-up or provoke its early activation.

To reduce these risks, if he believes it to be necessary, the installer can take on the responsibility of applying that which is described in paragraphs 9.4.2.1 and 9.4.2.2 of standard CEI EN60204-1(CEI 44-5) to the said connections

UNLESS WE HAVE ISSUED A WRITTEN DECLARATION TO THE CONTRARY, THIS CONTROL UNIT IS NOT SUITABLE FOR OPERATION AS A CRITICAL COMPONENT OF EQUIPMENT OR SYSTEMS AFFECTING THE LIFE OF PERSONS AND HUMAN BEINGS.

Any use which differs from that which is indicated in this operating and instruction manual must be authorized by us.

DATA FOR ORDERING			
Туре	Code (battery 12V)	Codice (battery 24V)	
NTM-109	00022039	00022058	
NTM-120	00022040	00022059	

Алматы (7273)495-231 Ангарск (3955)60-70-56 Архангельск (8182)63-90-72 Астрахань (8512)99-46-04 Барнаул (3852)73-04-60 Белгород (4722)40-23-64 Благовещенск (4162)22-76-07 Брянск (4832)59-03-52 Владивосток (423)249-28-31 Владикавказ (8672)28-90-48 Владимир (4922)49-43-18 Волоград (844)278-03-48 Волоград (8172)26-41-59 Воронеж (473)204-51-73 Екатеринбург (343)384-55-89 Иваново (4932)77-34-06 Ижевск (3412)26-03-58 Иркутск (395)279-98-46 Казань (843)206-01-48 Калининград (4012)72-03-81 Калуга (4842)92-23-67 Кемерово (3842)65-04-62 Киров (8332)68-02-04 Коломна (4966)23-41-49 Кострома (4942)77-07-48 Краснолар (861)203-40-90 Красноларс (391)204-63-61 Курск (4712)77-13-04 Куран (3522)50-90-47 Липецк (4742)52-20-81 Магнитогорск (3519)55-03-13 Москва (495)268-04-70 Мурманск (8152)59-64-93 Набережные Челны (8552)20-53-41 Нижний Новгород (831)429-08-12 Новокузнецк (3843)20-46-81 Ноябрьск (3496)41-32-12 Новосибирск (383)227-86-73 Омск (3812)21-46-40 Орел (4862)44-53-42 Оренбург (3532)37-68-04 Пенза (8412)22-31-16 Петрозаводск (8142)55-98-37 Псков (8112)59-10-37 Пермь (342)205-81-47 Ростов-на-Дону (863)308-18-15 Рязань (4912)46-61-64 Самара (846)206-03-16 Саранск (8342)22-96-24 Санкт-Петербург (812)309-46-40 Саратов (845)249-38-78 Севастополь (8692)22-31-93 Симферополь (3652)67-13-56 Смоленск (4812)29-41-54 Сочи (862)225-72-31 Ставрополь (8652)20-65-13 Суррут (3462)77-98-35 Сыктывкар (8212)25-95-17 Тамбов (4752)50-40-97 Тверь (4822)63-31-35 Тольятти (8482)63-91-07 Томск (3822)98-41-53 Тула (4872)33-79-87 Тюмень (3452)66-21-18 Ульяновск (8422)24-23-59 Улан-Удэ (3012)59-97-51 Уфа (347)229-48-12 Хабаровск (4212)92-98-04 Чебоксары (8352)28-53-07 Челябинск (351)202-03-61 Череповец (8202)49-02-61 Чита (3022)38-34-83 Якутск (4112)23-90-97 Ярославль (4852)69-52-93

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