

ETG5200
ETG5000
ETG3500
ETG2500

(list of variations available in the manual)

SOLID STATE FM TRANSMITTER

Rev. 02- 27/11/2013
Cod. MAN1008QUK

ELENOS
World Broadcast Experience

IDENTIFICATION AND QUICK START MANUAL



Via G. Amendola 9, 44028 Poggio Renatico Ferrara (Italy)
C.C.I.A.A. 101 216, Tax code and VAT reg. no. IT00415540384



UNI EN ISO 9001:2008 certified company
Certificate No.102222A

Please remember to register the product purchased on <http://www.elenos.com/product-registration/>

Please contact technical support service for information and assistance:

Elenos

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Elenos USA

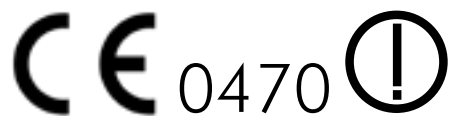
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Please complete the RMA form (ITA <http://www.elenos.com/it/elenos-rma/> or ENG <http://www.elenos.com/elenos-rma/>) and provide the equipment serial number (indicated on the nameplate).

Elenos s.r.l. declares that the equipment described in this document is compliant with the 1999/05/EC Directive.



For details please refer to the "EC Marking" section.

Revisions

No.	Date	Description
00	02/04/2012	Original version
01	07/05/2013	Validity for ETG3500-ETG2500 transmitters Warranty management reference 208V 2-ph mains configuration Grounding instructions for antenna system
02	27/11/2013	Warranty conditions

Series models

Transmitter	Number of modules	Number of drivers	Maximum output power
ETG5200	7	1	5200W
ETG5000	7	1	5000W
ETG4000/5 ETG3500/5 ETG3000/5 ETG2500/5 ETG2000/5 ETG1800/5 ETG1500/5 ETG1200/5 ETG1000/5 ETG800/5 ETG500/5	7	1	Equal to the rated value
ETG3500	5	1	3500W
ETG3000/3.5 ETG2500/3.5 ETG2000/3.5 ETG1800/3.5 ETG1500/3.5 ETG1200/3.5 ETG1000/3.5 ETG800/3.5 ETG500/3.5	5	1	Equal to the rated value
ETG2500	4	1	2500W
ETG2000/2.5 ETG1800/2.5 ETG1500/2.5 ETG1200/2.5 ETG1000/2.5 ETG800/2.5 ETG500/2.5	4	1	Equal to the rated value

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1 Informative letter

Dear Customer,

Thank you for choosing an Elenos product.

ELENOS s.r.l. produces solid state VHF/FM sound broadcasting transmitters ranging from minimum power of 10W to maximum power of 30kW, exchange units, remote control units, etc.

The equipment has been produced to ensure constant performance over time, provided all periodic checks and simple maintenance repairs required are carried out.

This equipment is very intuitive and user friendly. However, we recommend that the user reads this manual thoroughly as well as its attachments before carrying out any operation.

ELENOS s.r.l Management

1.1 Personnel in charge

This manual is an integral part of the equipment and **must be at hand for the personnel in charge of its installation, use and maintenance.**

The installation, use and maintenance of the device herein described **should be permitted to trained and experienced personnel only**, who have received the appropriate training on the use of the equipment and are aware of the risk connected to the use of a dangerous voltage device using high internal voltage generating radiofrequency at high power.

This manual should not be considered a comprehensive collection of the safety standards required for the use of the equipment.

The user and the maintenance technician must be aware of the content of this manual and its attachments.

This equipment can be used by holders of government licences and/or ministerial authorizations only.

This product must be used only by holders of Government Grant and is subject to National Regulations.



1.2 Warranty

The products sold to the Customer by Elenos Srl are covered by a 24-month warranty from the FOB date of shipment from Elenos Srl; this warranty covers both the customer and any subsequent purchasers of the product, as long as it is kept in excellent condition, and covers all types of faults due to defective parts on the product itself. An essential condition for the warranty issued by Elenos Srl to operate effectively is the registration of the product by the Customer through the website www.elenos.com/product-registration/.

Should the Customer encounter a fault while the warranty is in force, it must send immediate written notification to Elenos Srl and send the product to Elenos Srl or the nearest qualified Elenos Srl center at its own cost; Should the product purchased by the Customer fall within the category of "reduced mobility" products (weight over 50 kg), the maintenance or replacement of the defective part will take place in the place where the equipment is located by an engineer from the nearest qualified Elenos Srl center. All of the above is valid notwithstanding the judgment of the engineer appointed by Elenos Srl of the existence of one of the cases of exclusion from the warranty indicated above.

For details, please consult the Terms and Conditions documents.

1.3 Exclusion

The Customer expressly accepts the exclusion of Elenos Srl from the warranty of any faults caused by electric shocks, incorrect power supply voltages, negligence, carelessness or unskillfulness by the Customer, repairs, servicing or checks performed by unauthorized staff, installation or replacement of original parts with parts, systems or spare parts not supplied directly by Elenos Srl or by its authorized distributors, use of products other than those envisaged and any action or fact attributed to third parties who are granted availability of the products, or without the Customer being aware thereof, after the latter has received the delivery of the products.

The warranty expressly excludes the damage suffered by the products due to fires, floods or other natural disasters, wars, revolts, and in all cases in which the products are material object of a crime.

The warranty also expressly excludes damage suffered by products after the delivery of the goods by Elenos Srl to the carrier, the Customer being responsible for any risks connected with transport, whose time-frames, costs and methods are chosen and covered by the Customer.

For details, please consult the Terms and Conditions documents.

1.4 Exemption from liability

The Customer is responsible for the installation, maintenance and inspection of the products, as well as checking that the climatic and environmental conditions in which the products are placed for their use are suitable and do not compromise operation, all according to the Elenos Srl instruction manual delivered with the purchased product. Otherwise, should the Customer fail to observe the instructions contained in the instruction manual, and the minimum diligence required of normal users of the equipment, the warranty granted by Elenos Srl shall be invalid and the Customer takes full responsibility for the risk and any damage suffered by the products.

ELENOS s.r.l. reserves the right to modify parts, details and accessories should the company consider it necessary for the improvement of the equipment or for constructive or commercial purposes, at any time and without notice or without the need to update this manual immediately.

For details, please consult the Terms and Conditions documents.

2 EC Marking

For launching all its products on the market, **ELENOS s.r.l respects the procedures envisaged by the 1999/5/EC Directive.**

This includes the following:

- Technical documentation available exclusively to the Control Authority for 10 years after the launch on the market of the last equipment produced for that type. Such documentation contains the product description, the drawings, the electrical diagrams, circuits, etc., the standards to which it complies and the list of technical solutions guaranteeing observance and the reports of the technical tests performed, proof of respect for production standards.
- Declaration of Conformity - supplied with the product.
- EC marking indicated on the product and on the documentation.
- Written technical report from the European Notified Body, contained in the Technical file.
- Notification to the Authority of the member states where the product will be distributed.

ELENOS products comply with the essential requirements of relevant legislation,

i.e.:

a) The user or any other person's health and safety protection, including the objectives in terms of the safety requirements required by law no. 791 of 18 October 1977, amended by Legislative Decree no. 626 of 25 November 1996, but without the application of voltage limits;

b) Protection requirements in terms of electromagnetic compatibility according to Legislative Decree no. 615 of 12 November 1996;

c) According to the national frequency allocation plan, radio equipment is built so as to efficiently use the spectrum attributed to earth and space radiocommunications and to orbital resources, thus avoiding dangerous interference;

d) Other essential requirements are those set forth by the European Commission according to which equipment belonging to certain categories or types must be built so as to:

- interact with other equipment through networks and be able to be connected to interfaces of appropriate type;
- not to damage the network or its operation, nor misuse the network resources, thus generating an unacceptable deterioration of the service;
- contain safety elements in order to guarantee the user's or subscriber's private life and personal data protection;
- support special functions which allow fraud to be prevented;
- support special functions which allow access to the emergency services;
- support special functions which facilitate use by disabled users.

EC Declaration of Conformity

According to Directive 1999/5/EC (R&TTE)



We : **ELENOS s.r.l. - via G.Amendola, 9 – 44028 Poggio Renatico (FE) - Italy**

Declare under our sole responsibility that the product:

ETG5200, ETG5000, ETG4000/5, ETG3500/5, ETG3000/5, ETG2500/5, ETG2000/5, ETG1800/5, ETG1500/5, ETG1200/5, ETG1000/5, ETG800/5, ETG500/5

ETG3500, ETG3000/3.5, ETG2500/3.5, ETG2000/3.5, ETG1800/3.5, ETG1500/3.5, ETG1200/3.5, ETG1000/3.5, ETG800/3.5, ETG500/3.5

ETG2500, ETG2000/2.5, ETG1800/2.5, ETG1500/2.5, ETG1200/2.5, ETG1000/2.5, ETG800/2.5, ETG500/2.5

E5200, E5000, E4000/5, E3500/5, E3000/5, E2500/5, E2000/5, E1800/5, E1500/5, E1200/5, E1000/5, E800/5, E500/5

E3500, E3000/3.5, E2500/3.5, E2000/3.5, E1800/3.5, E1500/3.5, E1200/3.5, E1000/3.5, E800/3.5, E500/3.5

E2500, E2000/2.5, E1800/2.5, E1500/2.5, E1200/2.5, E1000/2.5, E800/2.5, E500/2.5

With intended purpose: VHF FM broadcast transmitters and amplifiers

And manufactured by: ELENOS s.r.l.

To which this declaration relates is in conformity with the essential requirements and other relevant requirements of the R&TTE Directive (1999/5/CE).

The product is in conformity with the following standards and/or other normative documents:

Health and safety requirements pursuant to Article 3.1.a

Standards applied: EN60215:1989+A1:1992+A2:1994

Protection requirements concerning electromagnetic compatibility pursuant to Article 3.1.b

Standards applied: EN 301 489-1 V1.9.2 ; EN 301 489-11 V1.3.1

Measures for the efficient use of the radio frequency spectrum pursuant to Article 3.2

Standards applied: EN 302 018-2 V1.2.1

Supplementary information :

Notified body involved: Nemko AS

Technical file held by : Elenos s.r.l and Nemko AS

Place and Date: Ferrara March 11, 2013

Responsible person : Leonardo Busi (Amministratore unico)

Tel. +39 0532 829965

e-mail: leonardobusi@elenos.com

Signature:

LIST OF COUNTRIES WHERE THIS APPARATUS CAN BE USED		
AT	FI	LV
BE	FR	MT
BG	GB	NL
CH	GR	NO
CY	HU	PL
CZ	IE	PT
DE	IS	RO
DK	IT	SK
EE	LT	SI
ES	LU	SE
AUTHORIZATION IS REQUIRED TO USE THIS EQUIPMENT		

Other types of certification are managed according to the apparatus use country.

3 Safety

All ELENOS s.r.l products are compliant with the safety standards required for this type of equipment.

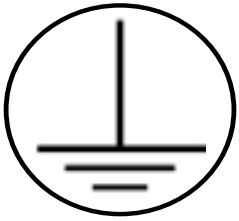
3.1 Precautions

The user must follow also the precautions listed below:

- The original configuration of the equipment must absolutely not be modified. Upon receipt, check that the supply is compliant with the order specifications and if not, report it to ELENOS s.r.l. immediately.
- Protective devices must not be disconnected, altered or modified without authorization (except for their replacement).
- Check all protective devices periodically and after a failure (e.g. devices against excess voltage, against excess currents, circuit breakers, etc.).
- For the safety of personnel and to guarantee the integrity of the equipment, it is absolutely forbidden to operate it and/or handle it with open doors and/or without its protection panels (even partially) and/or without the earth connection, which must always be of high quality and compliant to applicable laws. It is further forbidden to disconnect and/or alter the protective devices on the equipment.
- Before starting any operation, the equipment must be disconnected from the mains. Disconnection must be verified by a visual check.
- The equipment must be powered only at the appropriate voltage. Incorrect power voltage can cause irreparable damage to the equipment and the operator. This information can be found on the product nameplate, which is usually located on its casing. In no case must the nameplate be removed, even if the equipment is resold.
- The equipment must be powered by an electrical system which is compliant with applicable law.
- Other pictograms can be found on the equipment indicating the safety warnings which must be carefully followed by any operator. Failure to do so releases the Constructor from any liability for damages/injuries which may result to people or properties and makes the operator responsible for them.

Hazardous voltage





The equipment is directly connected to the "building installation"



Between the equipment and the "building connection" there is an interposed structure

- To ensure its correct operation do not cover the ventilation grids on the equipment. Do not place the equipment close to heat sources, flammable products or closed installations without appropriate ventilation.
- All firefighting and safety rules for the room where the equipment is located must be carefully followed.
- Avoid any contact between the equipment and liquids. Always disconnect the equipment before carrying out any cleaning operations. Do not use liquid or spray detergents.
- Some components contain TOXIC SUBSTANCES, such as for example BERYLLIUM OXIDE. Please be aware that in some countries rules for storing and disposing of hazardous materials may apply.
- Following a visual check, if any component seems damaged, fractured or not intact, apply maximum care to its removal by hand or other means.
- Please ensure that any person in charge of the maintenance or use of a transmitter with parts under hazardous voltage is able to perform artificial respiration and cardiac massage. All staff must be trained on first aid practices. It is recommended to hang in a visible position a panel with clear instructions of first aid procedures for people injured in a work accident and to supply rooms where electrical equipment is present with first aid kits. It is recommended to organize and make available to all staff an intervention plan for connections with local public institutions or private first aid facilities.

3.2 First aid

This paragraph is NOT a comprehensive guide to first aid procedures; it is intended as a summary to be used as a reference.

It is the duty of all staff using this device to perform appropriate first aid procedures in order to prevent avoidable deaths.



3.2.1 Treatment of electrical burns

3.2.1.1 Extensive burns and skin cuts

- Cover the area with a clean sheet or cloth.
- Do not break blisters, remove tissue, remove adhered particles of clothing, or apply any ointment.
- Treat the victim for shock as required.
- Arrange transportation to a hospital as quickly as possible.
- If arms and legs are injured, keep them raised.

WARNING:

If medical help will not be available within one hour and the victim is responsive and has no bouts of sickness, administer them a salt and soda solution: 1 full teaspoon of salt and half teaspoon of sodium bicarbonate for every 250 ml of tepid water (neither hot or cold), allow the victim to sip it slowly about 4 times (1/2 glass) over a period of 15 minutes.

Discontinue if the victim suffers bouts of sickness. Do not administer alcohol.

3.2.1.2 Less severe burns (1st and 2nd degree)

- Apply cool (not ice cold) compresses using the cleanest available cloth.
- Do not break blisters, remove tissue, remove adhered particles of clothing, or apply any ointment.
- If necessary, put on clean and dry clothes
- Treat the victim for shock as required.
- Arrange transportation to a hospital as quickly as possible.
- If arms and legs are injured, keep them raised.

3.2.2 Treatment of electric shocks

3.2.2.1 If the victim is unresponsive

Place victim flat on his back on a hard surface

A) Airways (fig. a):

- if the victim is not responsive open the airways
- push the forehead back
- open the mouth if necessary
- check breathing

fig.a



B) Respiration (fig. b):

- if the victim cannot breathe, perform artificial respiration
- incline the head
- close the nostrils
- place your mouth on the victim's mouth
- perform 4 quick blows
- remember to start breathing immediately

fig.b



fig.c1



fig.c2



fig.c3



C) Circulation (fig. c1):

- check the pulse (fig. c1)
- if absent, start cardiac massage (fig. c2)
- compress the chest every 1.5 - 2 seconds
- if a rescuer is present, perform 15 compressions in approximately 80 seconds, + 2 quick blows
- if there are two rescuers, perform 5 compressions in approximately 60 seconds, + 1 quick blow (fig. c3)

WARNING :

Do not interrupt the rhythm of compressions when the second person is performing artificial respiration.

3.2.2.2 If the victim is responsive

- cover the victim with a blanket
- keep them as calm as possible
- loosen their clothing and place them in a reclining position

WARNING :

CALL FOR MEDICAL ASSISTANCE AS SOON AS POSSIBLE IN ALL CASES

3.3 Workplace characteristics

3.3.1 Room characteristics

In order to work freely on the equipment and to be able to perform the relative installation or maintenance operations, it is necessary to keep a minimum distance from the walls on all sides of the machine.

The room must be equipped with an appropriate system of clean and dust-filtered air ventilation with a flow rate suitable for the characteristics of the equipment operating in the room itself.

Outgoing exhausted air must be conveyed directly outside. If the size or the length of the duct is such that a significant loss in the air flow can be anticipated, it is necessary to add an extraction device. Anti-intrusion devices must be provided at the conveyor outlet (for insects or other animals) and precautions must be taken to prevent the entrance of liquids or other materials.

The equipment can operate properly if the temperature ranges from -5°C to +45°C, with 95% RH non-condensing at +40°C.

3.3.2 Electrical system characteristics

The electrical system must comply with all applicable laws. The power supply network must allow the supply of the appropriate power according to the laws in force in the Country of installation on the quality of the electrical energy supply service.

It is highly recommended to use a transformer/network separator and a reduction network for discharging high voltage.

Provide a protected under load disconnecter (circuit breaker or fuses) with appropriate disconnection power and capacity according to the absorption characteristics of the

equipment model.

Use cables of an appropriate size with respect to the rated absorbed current.

Earth connection must be performed according to the applicable laws.

Special care must be applied to the earth connection of the antenna system since it is exposed to electrical atmospheric events.

Never forget that despite the earth connection of the equipment frame and the whole antenna system, it is always dangerous to operate on the equipment in the event of bad weather with atmospheric discharge. In fact, in the event of high energy discharge (lightning), the equipment frame can instantly reach very dangerous voltage levels, due to the earth connection inductance.

For this reason, the equipment should be installed in rooms accessible to maintenance personnel only and for the time necessary for repairs and checks only.

2.4.1.1 Electric field values (V/m) as a function of power (W) and distance.

Power transmitted by the source (ERP) in Watts	Distance from the source of the evaluation point								
	30m 98.4ft	50m 164ft	100m 328ft	300m 984ft	500m 1,640ft	1,000m 3,280ft	3,000m 9,840ft 1.864mi	5,000m 16,400ft 3.107mi	10,000m 32,800ft 6.214mi
1	0.18	0.11	0.05	0.02	0.01	--	--	--	--
30	1.00	0.60	0.30	0.10	0.06	0.03	--	--	--
50	1.29	0.77	0.39	0.13	0.08	0.04	0.01	--	--
100	1.82	1.09	0.55	0.18	0.11	0.05	0.02	0.01	--
300	3.16	1.90	0.95	0.32	0.19	0.09	0.03	0.02	0.01
500	4.08	2.45	1.22	0.41	0.24	0.12	0.04	0.02	0.01
1,000 (1k)	5.77	3.46	1.73	0.58	0.35	0.17	0.06	0.03	0.02
3,000 (3k)	10.00	6.00	3.00	1.00	0.60	0.30	0.10	0.06	0.03
5,000 (5k)	12.91	7.74	3.87	1.29	0.77	0.39	0.13	0.08	0.04
10,000 (10k)	18.25	10.95	5.48	1.82	1.09	0.55	0.18	0.11	0.05
30,000 (30k)	31.62	18.97	9.49	3.16	1.90	0.95	0.32	0.19	0.09
50,000 (50k)	40.82	24.49	12.25	4.08	2.45	1.22	0.41	0.24	0.12
100,000 (100k)	57.73	34.64	17.32	5.77	3.46	1.73	0.58	0.34	0.17
300,000 (300k)	100.00	60.00	30.00	10.00	6.00	3.00	1.00	0.60	0.30
500,000 (500k)	129.10	77.46	38.73	12.91	7.74	3.87	1.29	0.77	0.39
1,000,000 (1M)	182.57	109.54	54.77	18.26	10.95	5.48	1.82	1.09	0.55

Note: field values above 6V/m are highlighted in yellow; those ones that exceed 20V/m are highlighted in red.

Note: RF EXPOSURE SAFETY DISTANCE -

. RF Exposure Limits for Canada, according to IC regulation: setting to the maximum of the output power of the apparatus, to guarantee the limits of exposure declared within this document, it is necessary that the antenna gain used with this device should be 0dBi or less and all persons should maintain a minimum separation distance of 1809.68 cm for general uncontrolled exposure and general controlled exposure. Limites d'exposition RF: en réglant au maximum de la puissance de sortie de l'appareil, afin de garantir les limites d'exposition déclarées dans ce document, il est nécessaire que le gain d'antenne utilisé avec cet appareil doit être de 0 dBi ou moins et toutes les personnes doivent conserver une distance de séparation minimale de 1809.68 cm pour les expositions générales non contrôlées et les expositions générales contrôlées.

4 Product presentation

4.1 Marks and labels

1 ICEFET ® – Design technology of RF modules that ensures high efficiency in the whole range of output powers, at very low temperatures, hence increasing the life of MOS devices.

2 LIFEEXTENDER ® – Optional system within the equipment. Once operating, it allows safe operation even in extremely severe environmental conditions.

3 ECOSAVING ® (Energy consumption reduction) – The equipment’s operating characteristics ensure a great advantage for the environment and for operating costs.

4 INDIUM SERIES – Name of the series to which the transmitter belongs. The Indium series is a range of equipment featuring Indium noble metal characteristics. Indium has mechanical adaptation and thermal conductivity properties with exchange efficiency performance which does not change over time.



[1]



[2]



[3]



[4]

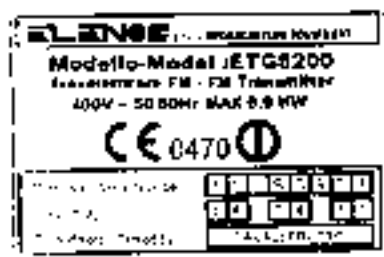
5 NAMEPLATE – Plate where the main characteristics of the equipment are reported: manufacturer, product model, power supply type, power consumption, EC marking, serial number, final test date, name of the tester.. Warning: do not remove this nameplate.

6 SUPPORT LABEL – Label indicating the details for Elenos support.

7 DISPOSAL LABEL – Label indicating that the equipment must be disposed of properly and according to the laws in force.

8 WARNING LABEL – Label indicating that the equipment must be used in the appropriate way.

9 WARRANTY SEAL - Unauthorized removal or tampering with these seals (place on the screws) makes the warranty null.



[5]



[6]



[7]



[8]



[9]

4.2 Front panel

1 OLED technology display – Graphic display showing the operating parameters and selected functions by means of an encoder.

2 Encoder – Multifunction handle allowing navigation through function menus and modification of operating parameters.

3 Key selector – It can be set on LOCAL (controllable through the front panel) or REMOTE (controllable through PC) mode, by rotating the key supplied with the equipment.

4 Warning lights– LED list :

- MAINS (green) _ this warning light is on when power is supplied;
- ON AIR (green) _ this warning light is on when the equipment is transmitting;
- ST-BY (yellow) _ this warning light is on when the equipment is not transmitting;
- LOCK (yellow) _ this warning light is on when the PLL is locked;
- FAULT (red) _ this warning light is on when the equipment is considered to be in "failure";
- LOCAL (light blue) _ this warning light is on during local programming.

5 Buttons/Controls– Button list :

- LIFEXTENDER _ This button displays the state of the LifExtender optional function (active/inactive, days of activity, critical days of activity);
- OFF _ this button allows the equipment to be put on Stand-by;
- ON_ this button allows the equipment to be put On Air;
- ESC _ this button moves the user back previous level in the menu.

6 EIA485 Connector/Telemetry – DB9 connector for connection with telemetry according to the EIA485 standard, or with a PC.

7 Monitor RF connector – BNC connector for connection with external measurement tools, allowing to collect the RF signal at low level (0dBm at scale bottom).

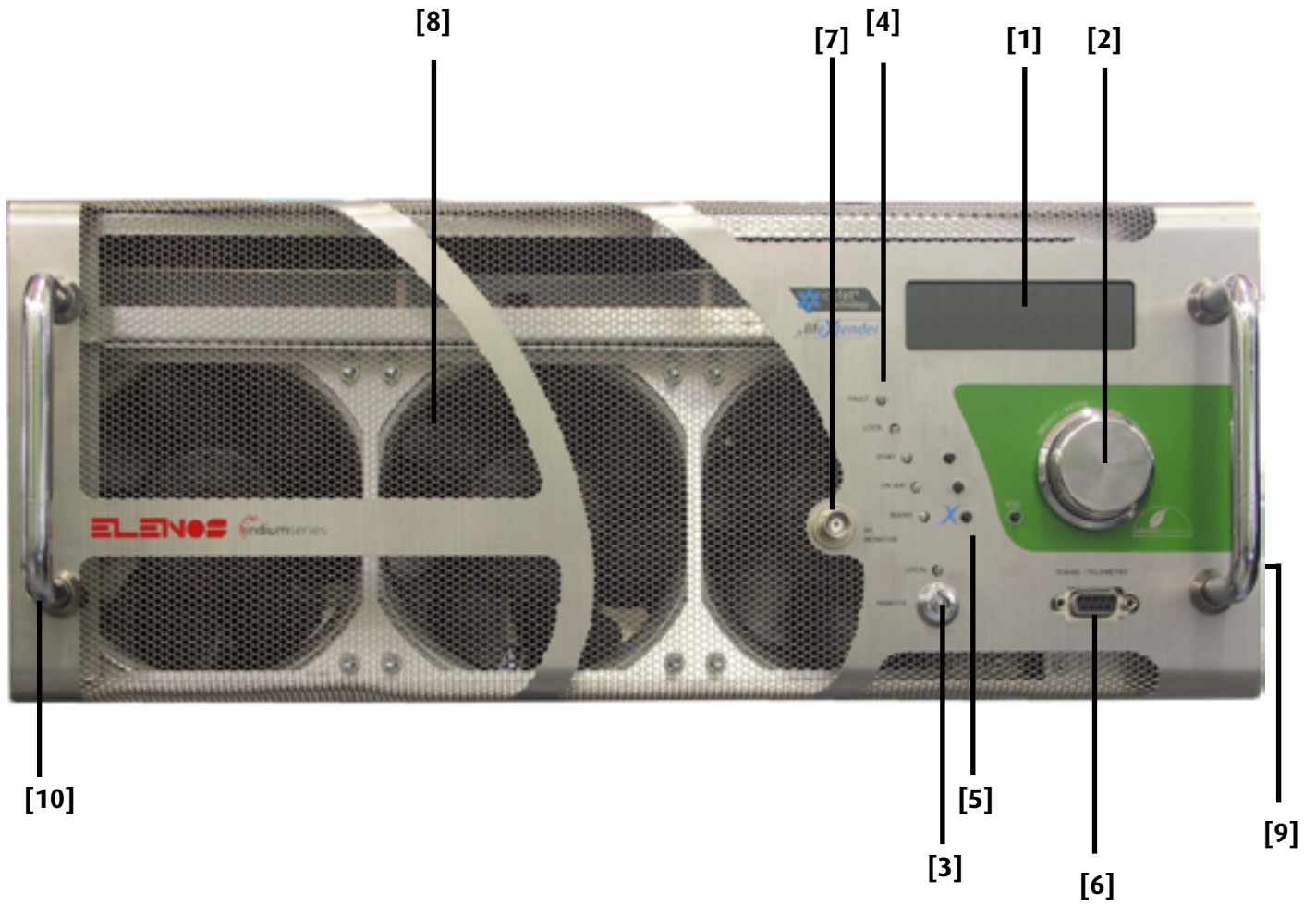
This monitor is not calibrated, therefore it is not guaranteed that the output level stays constant as the frequency changes.

It CANNOT be used for measuring the output power, nor for measuring the harmonic components.

8 Front fans– For cooling the equipment. There are 3 of them: sizes 120x120x38 mm, 12-28 VDC, 306 m3/h.

9 Programming lever – Located on the right hand side of the panel facing the machine. It can be moved by means of a flat screwdriver upwards (in program mode) and downwards (in running mode). For the detailed loading procedure of the software, ask the manufacturer for the technical bulletin No.125.

10 Handles- For easy handling of the equipment.



4.3 Rear Panel

1 Power supply terminal board – Terminal board with 6 contacts connecting the three internal power supplies. For details of the connection mode, please refer to section “Quick guide for commissioning”.

2 Earthing screw – Eyelet for earthing the equipment, located behind the flange of the output coaxial connector.

3 Rear fans– Fans for cooling the equipment. There are 3 of them: sizes 120x120x38 mm, 12-28 VDC, 306 m3/h.

4 RF connector – Type 7/8.

5 LEFT/RIGHT (or MONO) analog inputs – XLR connectors for left or right audio inputs. The RIGHT input can also be used as a MONO input.

6 AES/EBU digital input – XLR connector for AES/ EBU digital audio input. Available or not according to the equipment model.

7 AUX inputs – BNC connectors for auxiliary modulating channel input (RDS/SCA).

8 MPX input – BNC connector for stereo composite modulating signal input.

9 Monitor connector / 19kHz OUT – BNC output connector for monitoring the MPX, RDS or SCA signal, or for extracting the 19kHz signal of the stereo subcarrier for synchronisation.

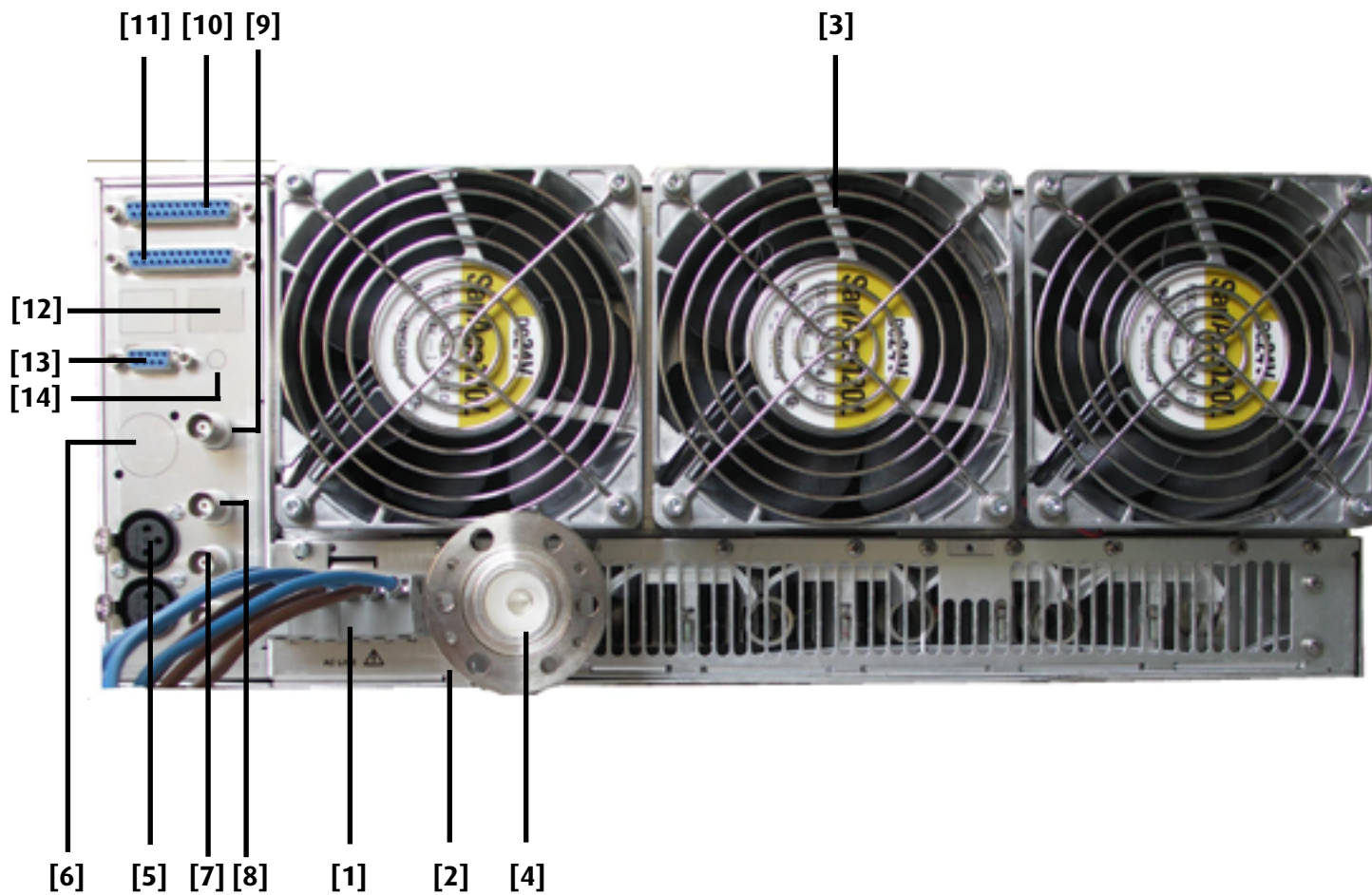
10 TC/TS connector – DB25 connector for the remote telecontrol and telesignaling of external devices.

11 Profiles connector – DB25 connector to be used as spare equipment in an N+1 system.

12 TCP/IP connector, RESERVED – Connector for remote connection functions.

13 EIA485 connector– DB9 connector for connection with telemetry according to the EIA485 standard.

14 EXT.REF 10MHz - To synchronise VCO with an external source (optional).



5 Quick instructions for commissioning

5.1 Installation



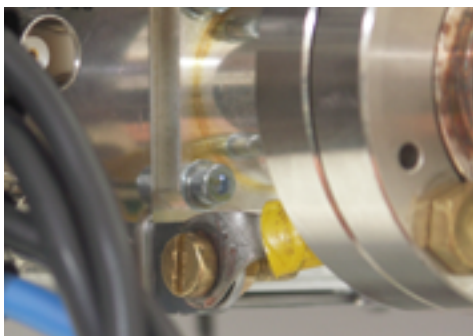
1

If you have a rack, insert and attach the equipment into it (use the fixing holes on the side fins).

If you don't have a rack, please make sure that:

- the equipment is located away from the room walls so that the installation and maintenance operations can be conveniently carried out;
- the ventilation grids are not clogged;
- the equipment is far from heat sources or flammable products;
- the equipment is isolated from contact with liquids.

Elenos recommends the **use of dehumidifiers** at the transmitter site to reduce moisture buildup in humid climates when the transmitter is turned off for extended periods.



2

Make sure the equipment is properly earthed.

This must be carried out at the eyelet located behind the flange of the output coaxial connector, indicated by the appropriate symbol.

3

Check that the mains voltage is appropriate, hence apply the phase conductors and neutral conductors to the power supply terminal board.

We report here the values of most common connections, **other configurations are independently managed by other countries.**

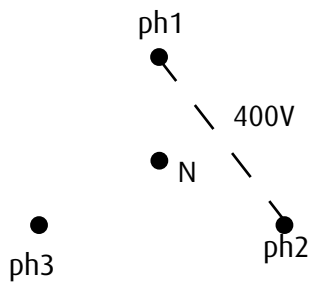
Upon request, Elenos can supply material kits for making them.



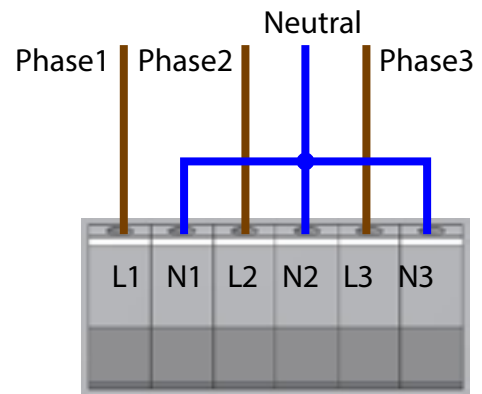
WARNING: the connection operations of the power supply cable to the equipment terminal boards must be performed with the cable UPLUGGED from the electrical mains or WITHOUT VOLTAGE exclusively.

Should the operator require to disconnect the equipment from the mains, go backwards always disconnecting first the electrical plug and then removing the terminals from the terminal board.

CONFIG.1



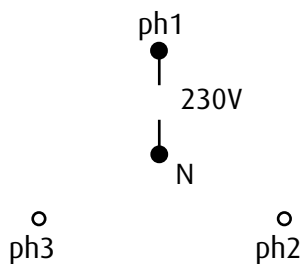
Network configuration available



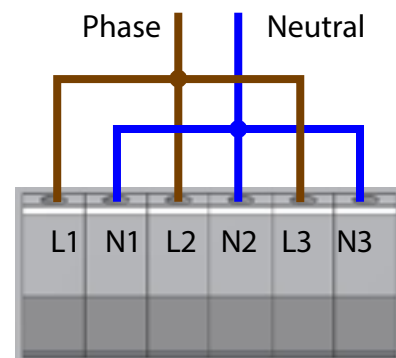
Configuration to be implemented on the transmitter terminal

The lines of the three power supplies (L1, L2, L3) must be connected to the three phases, while the three neutrals (N1, N2, N3) must be connected with the neutral of the electrical mains.

CONFIG.2



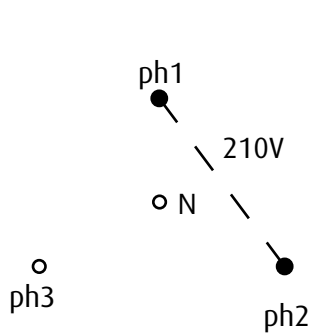
Network configuration available



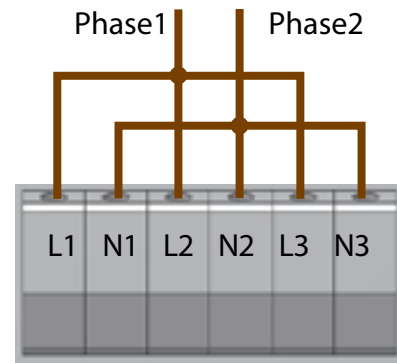
Configuration to be implemented on the transmitter terminal

The lines of the three power supplies (L1, L2, L3) must be connected together to the phase of the electrical mains, while the three neutrals (N1, N2, N3) must be connected together to the neutral of the electrical mains.

CONFIG.3



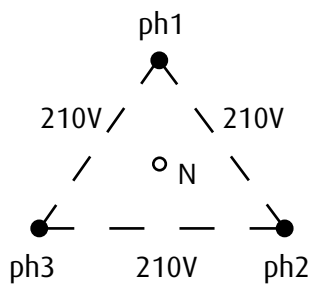
Network configuration available



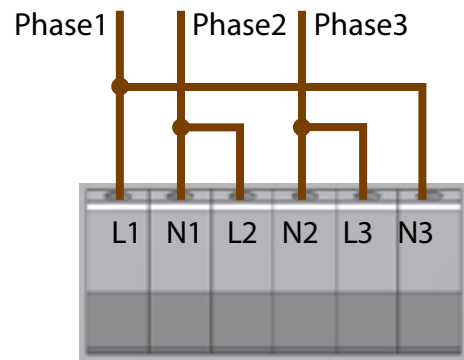
Configuration to be implemented on the transmitter terminal

The lines of the three power supplies (L1, L2, L3) must be connected together to the phase 1 of the electrical mains, while the three neutrals (N1, N2, N3) must be connected together to the phase 2 of the electrical mains.

CONFIG.4



Network configuration available

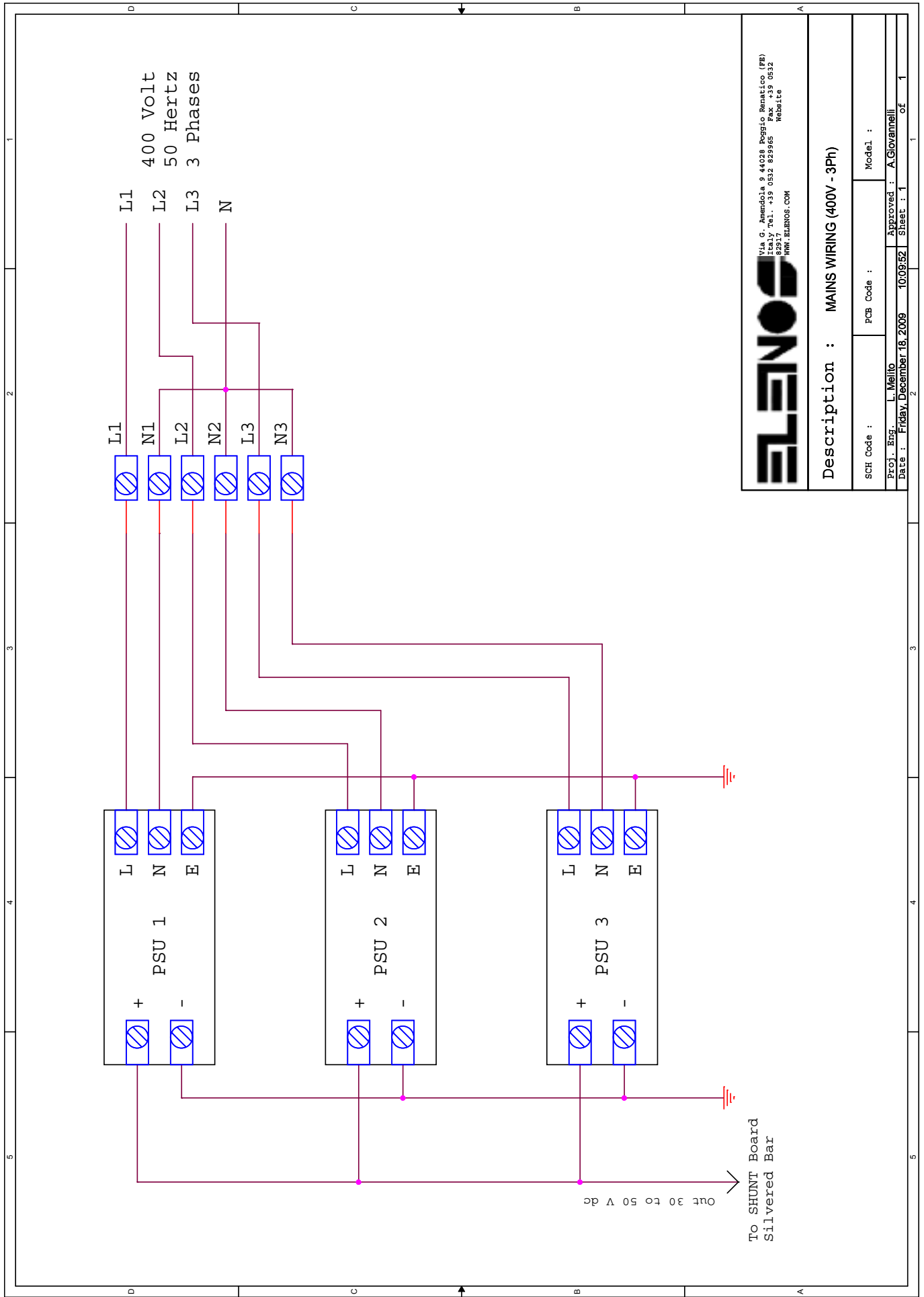


Configuration to be implemented on the transmitter terminal

The lines (L1, L2, L3) and neutrals (N1, N2, N3) of the three power supplies must be connected so that each of them is affected by a pair of different phases.

Elenos recommends the use of **surge suppression devices** for the AC lines to prevent high voltage damage due to lightning strike near the transmitter site.

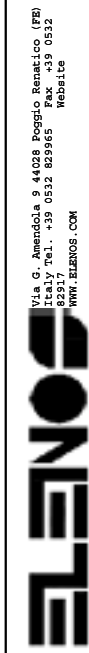
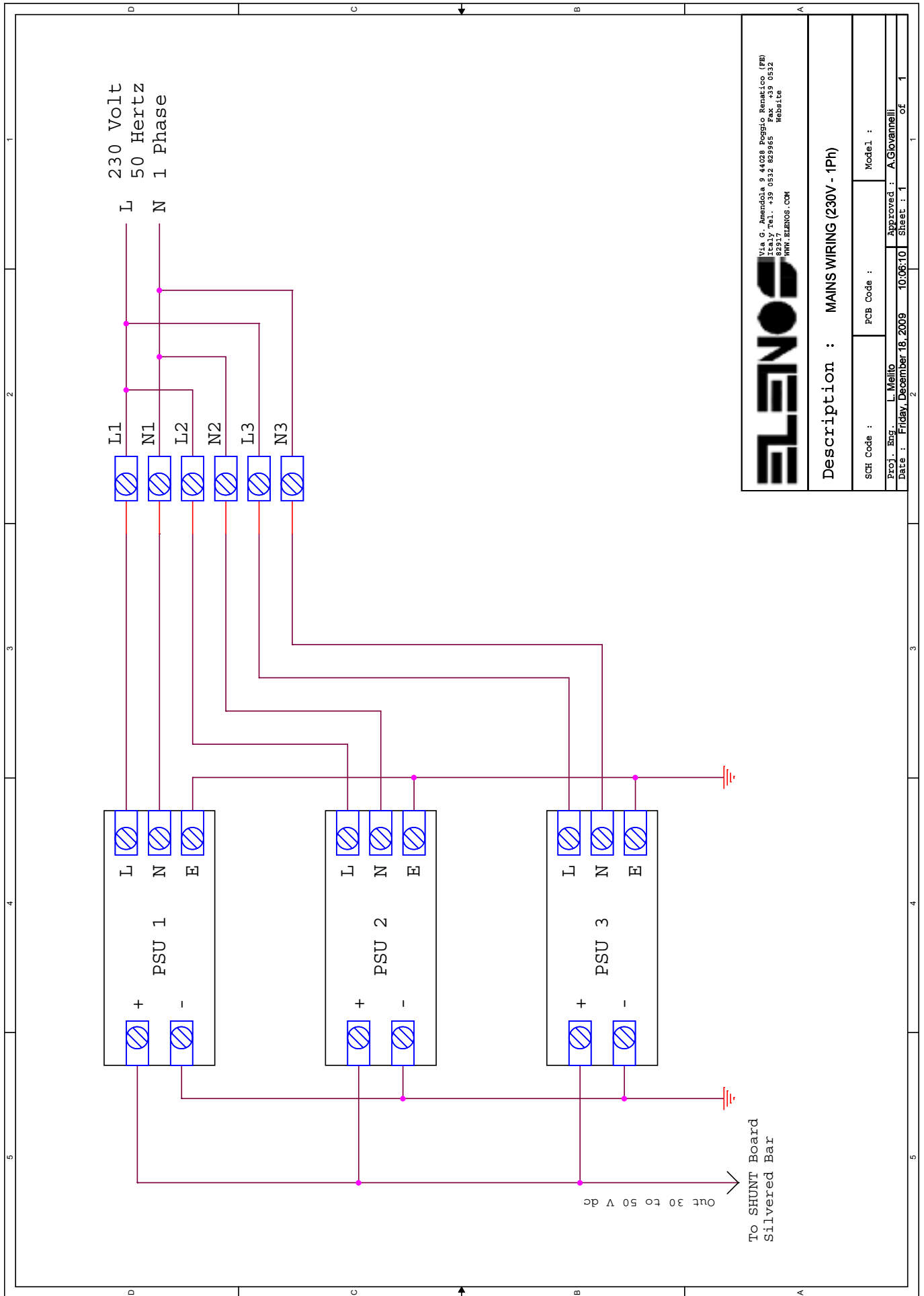




ELENOS
 Via G. Amendola, 8 44048, Reggio Emilia (RE)
 Italy Tel. +39 0522 022965 Website
 82317 WWW.ELENOS.COM

Description : MAINS WIRING (400V - 3Ph)

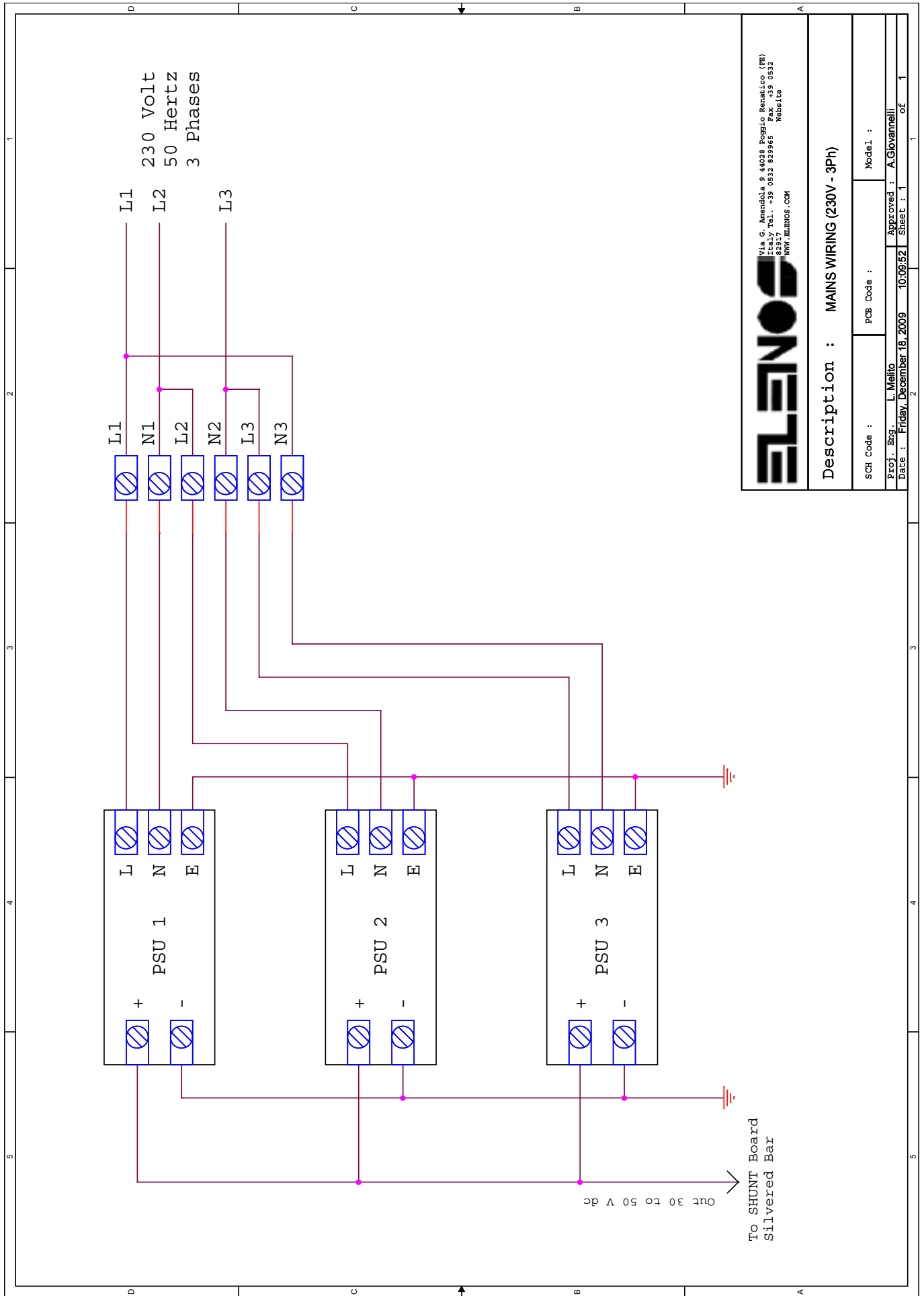
SCHE Code :	PCB Code :	Model :
Proj. Eng. : L. Mellito	Approved : A. Giovannelli	
Date : Friday, December 18, 2009	10:09:52	Sheet : 1 of 1



Via C. Amendola 8 41026 Poggio Renatico (PB)
 Italia Tel. +39 052 852965 Fax +39 052 852966
 41026 Poggio Renatico (PB) Italy Tel. +39 052 852965
 82217 Modugno (BA) Italy Tel. +39 080 4000000
 www.eleos.com

Description : MAINS WIRING (230V - 1Ph)

SCH Code :	PCB Code :	Model :
Proj. Eng. : L. Mellito	Approved : A. Giovannelli	of 1
Date : Friday, December 18, 2009 10:06:10	Sheet : 1	



ELENOS
 Via G. Amendola 6 10128, Poggio Renatico (BO)
 Italy Tel.: +39 052 052965 Fax: +39 052 0532
 82317 WebSite: WWW.ELENOS.COM

Description : MAINS WIRING (230V - 3Ph)

SCH Code :	PCB Code :	Model :
Proj. : Bug. L. Mellito	Approved : A. Giovannelli	
Date : Friday, December 18, 2009 10:09:52	Sheet : 1	of 1

4

Connect the equipment's RF output to the antenna cable (to check the equipment's performance it can be connected to a dummy load able to dissipate the power delivered by the equipment).

WARNING: Before connecting the Antenna System Cable to the Elenos transmitter, please make sure that the cable, connectors and antenna are grounded according to manufacturers recommendations. **Failure to have a proper Antenna Grounding System can result in damage to the transmitter!**



The failure on the Elenos transmitter caused on not properly ground antenna connection will be not cover to the warranty.

5

Connect the desired audio cables.

6

Insert the cable for the interlock in the TC/TS connector.

7

If the equipment is inside an Elenos rack, connect the power supply cable to the plug on the rack and check that the electromechanical drawer is appropriately cabled. Then, apply current enabling the special disconnectors. The equipment will automatically turn on in Stand-by mode.

If the Elenos rack is not available, connect the power supply cable to an appropriate socket.

WARNING: **NEVER have RF power supplied to the equipment before making the connection with the antenna.**

5.2 Factory settings

The equipment comes with the following default factory settings. If they correspond to your requirements, just put the machine in RF ON. Should you need to change the parameters, please refer to paragraph “Main parameter setup”.

FACTORY SETTINGS	ETG EQUIPMENT VERSION	
	With Stereo Coder board (it works in MPX, Stereo, Mono modes)	With Stereo Coder board + AES/EBU (it works in MPX, Stereo, Mono, AES/ EBU modes)
Output power (TRG)	Maximum value	Maximum value
Frequency	98.000 MHz	98.000 MHz
L,R input sensitivity for +/-75 kHz deviation	0dBm	0dBm
MPX input sensitivity for +/-75 kHz deviation	0dBm	0dBm
AUX input sensitivity	0dBm	0dBm
Stereo subcarrier 19kHz	OFF (MPX input mode)	OFF (MPX input mode)
Pre-emphasis	0uS (linear)	0uS (linear)
Clipper	OFF	OFF
“NO AUDIO” alarm	OFF, set with non-intervention thresholds (-25 dB for 600s)	OFF, set with non-intervention thresholds (-25 dB for 600s)
VSWR/ROS foldback	ON, threshold protection	ON, threshold protection
Interlock	External cable	External cable
Profile ID	1	1

The equipment comes with the programming lever factory-set downwards (running mode).

5.3 Main parameter setup

To set the parameters from the display the equipment must be in **LOCAL mode**.

It is also possible to partially view the menus in REMOTE mode, provided that the parameter "SHOW D. : ALWAYS" is present (for details, refer to the paragraph "User interface" on the "System config." screen).

To switch from LOCAL to REMOTE mode rotate the supplied key on the selector.

In LOCAL mode, the blue led turns on and the screen "TX control panel" is automatically displayed.

8



All navigation steps are carried out from the encoder located on the front panel. With the handle it is possible to perform the following actions:

- HIGHLIGHTED ITEM SELECTION: press the handle briefly.
- ITEM SCROLLING: rotate the handle clockwise/anticlockwise.
- INCREASING/DECREASING: rotate the handle clockwise/anticlockwise.
- GO BACK TO THE MAIN MENU: keep the handle pressed for at least 1 sec.).



SCROLLING



SELECTION

9

5.3.1 Frequency setup

In the "TX control panel" screen, rotate the encoder until it selects the frequency set. Press once to enter the adjustment mask.

The frequency range is now selected and can be modified: rotate the encoder clockwise/anticlockwise to increase/decrease the value respectively.

Press the encoder to confirm.

The dialog box will indicate the new operating frequency set.



5.3.2 Power setup

In the "TX control panel" screen, rotate the encoder until it selects the power set.
Press once to enter the adjustment mask.

The power field is now selected and can be edited: rotate the encoder clockwise/anti-clockwise to increase/decrease the value respectively.

Press the encoder to confirm.

The dialog box will indicate the new operating power set.



5.3.3 Audio signal setup

According to the type of audio signal used to modulate, select the relative input. In the "TX control panel" screen, rotate the encoder until it selects the fifth tab of the horizontal menu.

Press once to make the field editable.

Then, rotate the encoder to view the available options:

5.3.3.1 MUTE

Mode which mutes all inputs. It is usually used during technical interventions.

5.3.3.2 MPX

In order to use the MPX signal, select this mode on the display by rotating the encoder and then press it to confirm.

Apply the MPX signal to the relative BNC connector located on the rear panel.

5.3.3.3 STEREO

In order to use the STEREO signal, select this mode on the display by rotating the encoder and then press it to confirm.

Apply the STEREO signal to the relative XLR connectors located on the rear panel.

The audio signal can be balanced or unbalanced. In the latter case, there is a 3dB level reduction.

Select the pre-emphasis level to be used for the transmission from the fourth tab of the horizontal menu.

Press the encoder to make the field editable. Rotate the encoder to select the desired level. Press the encoder to confirm.

It is possible to choose from 0, 25, 50 and 75µS.

50 µS is usually the European standard, while 75 µS is the USA one.

5.3.3.4 MONO

In order to use the MONO signal, select this mode on the display by rotating the encoder and then press it to confirm.

Apply the MONO signal to the relative XLR RIGHT connector located on the rear panel.

The audio signal can be balanced or unbalanced. In the latter case, there is a 3dB level reduction.

It is to be noted that it is possible to use other inputs which cannot be set directly from the "TX control panel" screen.

5.3.3.5 AES/EBU

To use a AES/EBU signal, apply the signal to the relative XLR connector located on the rear panel.

The signal is automatically recognised.

For more detailed settings, see paragraph "User interface".

5.3.3.6 SEGNALI AUSILIARI (RDS/SCA)

To use an auxiliary signal, apply the signal to the relative BNC connector located on the rear panel.

For more detailed settings, see paragraph "User interface".



UTCR	FRQ	101.42MHz	LEV.	-3.5 dB	M I
E3dB	TRG	2000W			
CLIP	FWD	0W	REF	0W	
NOAU					
MENDI STBY REST 0 uS MPX PF 1					



UTCR	FRQ	101.42MHz	LEV.	-3.5 dB	M21
E3dB	TRG	2000W			
CLIP	FWD	0W	REF	0W	
NOAU					
MENDI STBY REST 0 uS MONO PF 1					

UTCR	FRQ	101.42MHz	LEV.	-3.5 dB	M21
E3dB	TRG	2000W			
CLIP	FWD	0W	REF	0W	
NOAU					
MENDI STBY REST 0 uS MUTE PF 1					



UTCR	FRQ	101.42MHz	LEV.	-3.5 dB	MLR
E3dB	TRG	2000W			
CLIP	FWD	0W	REF	0W	
NOAU					
MENDI STBY REST 0 uS STER PF 1					



5.3.4 Audio level setup

In the "TX control panel" screen, rotate the encoder until it selects the audio level set. Press once to make the field editable.

Rotate the encoder until the amplifier is at the minimum level (- 15dB).

Apply the audio signal.

Slowly increase the gain until the Vu-Meters reach 0dB level in accordance with the audio signal peaks.

Confirm the value by pressing the encoder.

During operation, the CLIPPER (CLIP) warning light should not turn on, since this would mean that the deviation is too high and that there is excess modulation.



13

5.3.5 Start-up

In the “TX control panel” screen, rotate the encoder until it selects the second tab of the horizontal menu to turn it on.

Press the encoder until the RFON message appears.

In LOCAL mode the following must occur to have a compliant situation:

- The 4 warning lights (ITLK, -3dB, CLIP, NOAU) must be off;
- The frequency set must be the desired one;
- The direct power must be the desired one;
- The reflected power must be null or low level;
- The Vu-Meters must be set to 0dB.

14

At the end of the installation and programming steps, switch the equipment to REMOTE mode by using the key switch.

In this mode the following must occur to have a compliant situation:

- The PLL LOCK LED must be on;
- The ON AIR LED must be on;
- The MAINS LED must be on;
- All remaining LEDs must be off;
- The display shows the corporate logo if the “SHOW D. : LOCAL” setting is present; the display will show the scrolling menu tree if the “SHOW D. : ALWAYS” setting is present.

Warning: it is recommended to keep a copy of the key switch in a safe place in the workstation.

6 Intervention inventory

6.1 Check list

Check date	Operation hours
Description	
Notes	Signature
Check date	Operation hours
Description	
Notes	Signature
Check date	Operation hours
Description	
Notes	Signature
Check date	Operation hours
Description	
Notes	Signature
Check date	Operation hours
Description	
Notes	Signature
Check date	Operation hours
Description	
Notes	Signature
Check date	Operation hours
Description	
Notes	Signature

6.2 Maintenance inventory

Maintenance date	Operation hours
Description	
Notes	Signature
Maintenance date	Operation hours
Description	
Notes	Signature
Maintenance date	Operation hours
Description	
Notes	Signature
Maintenance date	Operation hours
Description	
Notes	Signature
Maintenance date	Operation hours
Description	
Notes	Signature
Maintenance date	Operation hours
Description	
Notes	Signature
Maintenance date	Operation hours
Description	
Notes	Signature
Maintenance date	Operation hours
Description	
Notes	Signature
Maintenance date	Operation hours
Description	
Notes	Signature

6.3 Repair inventory

Repair date	Operation hours
Description	
Notes	Signature
Repair date	Operation hours
Description	
Notes	Signature
Repair date	Operation hours
Description	
Notes	Signature
Repair date	Operation hours
Description	
Notes	Signature
Repair date	Operation hours
Description	
Notes	Signature
Repair date	Operation hours
Description	
Notes	Signature
Repair date	Operation hours
Description	
Notes	Signature
Repair date	Operation hours
Description	
Notes	Signature

6.4 Intervention request sheet

The following pages report the sheets to be filled in and attached to the product should it need to be sent to ELENOS for checks and/or repairs. The correct and detailed completion of the sheet will allow us to detect the problem more quickly.

FAILURE SHEET

To be sent with the equipment to:
 ELENOS S.r.l. Via G. Amendola, 9
 44028 Poggio Renatico (FERRARA) Italy

Serial Number :	
Date of production :	

ALARMS LIST (Main Menù) - Active alarms

0) A	
1) A	
2) A	
3) A	
.. A	

EVENTS HISTORY (Main Menù) - Latest events

99)	
98)	
97)	
96)	
...	

VIEW TX PARAMETERS 1 (Main Menù)

Freq (MHz)		Targ (W)	
Profile		Fwd (W)	
Dev. (KHz)		Refl (W)	
Eff. (%)			
		Itot (A)	
WTime (h)		Vds (V)	
WFans(h)		Temp. (C)	
		FanSp (%)	

VIEW TX PARAMETERS 2 (Main Menù)

Device n.	1	2	3	4	5	6	7
Ampl (A)							
Ampl (C)							
PSU (A)					I PSU (A)		
PSU (V)					I ampl (A)		
PSU (C)					Vds (V)		
Aux-->	VCC	+V1	-V1	Bias	Tenv. (C)		
					Eff. (%)		

LEDs

MAINS	ON	OFF	LOCK	ON	OFF
ON AIR	ON	OFF	FAULT	ON	OFF
ST-BY	ON	OFF	LOCAL	ON	OFF

The failure occurred: () during start-up () during normal operation () after lightning

Voltage:VAC

Address and site name:

Maintenance repair technician:

Failure description:

.....

.....

FAILURE SHEET

To be sent with the equipment to:
 ELENOS S.r.l. Via G. Amendola, 9
 44028 Poggio Renatico (FERRARA) Italy

Serial Number :	
Date of production :	

ALARMS LIST (Main Menù) - Active alarms

0) A	
1) A	
2) A	
3) A	
.. A	

EVENTS HISTORY (Main Menù) - Latest events

99)	
98)	
97)	
96)	
...	

VIEW TX PARAMETERS 1 (Main Menù)

Freq (MHz)		Targ (W)	
Profile		Fwd (W)	
Dev. (KHz)		Refl (W)	
Eff. (%)			
		Itot (A)	
WTime (h)		Vds (V)	
WFans(h)		Temp. (C)	
		FanSp (%)	

VIEW TX PARAMETERS 2 (Main Menù)

Device n.	1	2	3	4	5	6	7
Ampl (A)							
Ampl (C)							
PSU (A)					I PSU (A)		
PSU (V)					I ampl (A)		
PSU (C)					Vds (V)		
Aux-->	VCC	+V1	-V1	Bias	Tenv. (C)		
					Eff. (%)		

LEDs

MAINS	ON	OFF	LOCK	ON	OFF
ON AIR	ON	OFF	FAULT	ON	OFF
ST-BY	ON	OFF	LOCAL	ON	OFF

The failure occurred: () during start-up () during normal operation () after lightning

Voltage:VAC

Address and site name:

Maintenance repair technician:

Failure description:

.....

FAILURE SHEET

To be sent with the equipment to:
 ELENOS S.r.l. Via G. Amendola, 9
 44028 Poggio Renatico (FERRARA) Italy

Serial Number :	
Date of production :	

ALARMS LIST (Main Menù) - Active alarms

0) A	
1) A	
2) A	
3) A	
.. A	

EVENTS HISTORY (Main Menù) - Latest events

99)	
98)	
97)	
96)	
...	

VIEW TX PARAMETERS 1 (Main Menù)

Freq (MHz)		Targ (W)	
Profile		Fwd (W)	
Dev. (KHz)		Refl (W)	
Eff. (%)			
		Itot (A)	
WTime (h)		Vds (V)	
WFans(h)		Temp. (C)	
		FanSp (%)	

VIEW TX PARAMETERS 2 (Main Menù)

Device n.	1	2	3	4	5	6	7
Ampl (A)							
Ampl (C)							
PSU (A)					I PSU (A)		
PSU (V)					I ampl (A)		
PSU (C)					Vds (V)		
Aux-->	VCC	+V1	-V1	Bias	Tenv. (C)		
					Eff. (%)		

LEDs

MAINS	ON	OFF	LOCK	ON	OFF
ON AIR	ON	OFF	FAULT	ON	OFF
ST-BY	ON	OFF	LOCAL	ON	OFF

The failure occurred: () during start-up () during normal operation () after lightning

Voltage:VAC

Address and site name:

Maintenance repair technician:

Failure description:

.....

.....

