ET30000-5
ET25000-5
ET20000-5
ET15000-5
ET10000-5
ET5000
ET3500
ET2500

(list of variations available in the manual)

SOLID STATE FM TRANSMITTER

Rev. 01- 08/06/2022
Cod. MAN1029QUK

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
Ph : +39 0532 829965
Fax : +39 0532 829177
E-mail : info@elenos.com
Internet web site : www.elenos.com

Elenos USA
1315 nw 98th Ct. Suite 9, 33172 Miami (Florida), Ph 1-855-ELENOS-0 (1-855-353-6670)

Elenos APAC
53/64 Saracha Villa, Sansuk Muang Chonburi (Thailand), Ph +66 83 618-9333

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.

CE 0051

For details please refer to the “EC Marking” section.

Revisions

No.	Date	Description
00	25/11/2013	Original version
01	08/06/2022	Added FCC & Industry Canada Certification Information
		Added Additional RF Exposure Minimum Distance Warning

Series models

Transmitter	Amplifier	Amplifier middle stage	N° combiner way	Max output power	Driver
ET30000-5	E30000-5	E5000	6	30KW	ETG20
ET27000/30-5	E27000/30-5	E5000	6	Nominal value	ETG20
ET25000/30-5	E25000/30-5	E5000			
ET20000/30-5	E20000/30-5	E3500/5			
ET18000/30-5	E18000/30-5	E3000/5			
ET15000/30-5	E15000/30-5	E2500/5			
ET12000/30-5	E12000/30-5	E2000/5			
ET10000/30-5	E10000/30-5	E1800/5			
ET8000/30-5	E8000/30-5	E1500/5			
ET7000/30-5	E7000/30-5	E1200/5			
ET5000/30-5	E5000/30-5	E1000/5			
ET4000/30-5	E4000/30-5	E800/5			
ET3500/30-5	E3500/30-5	E800/5			
ET3000/30-5	E3000/30-5	E500/5			
ET25000-5	E25000-5	E5000	5	25KW	ETG20
ET20000/25-5	E20000/25-5	E4000/5	5	Nominal value	ETG20
ET18000/25-5	E18000/25-5	E4000/5			
ET15000/25-5	E15000/25-5	E3000/5			
ET12000/25-5	E12000/25-5	E2500/5			
ET10000/25-5	E10000/25-5	E2000/5			
ET8000/25-5	E8000/25-5	E1800/5			
ET7000/25-5	E7000/25-5	E1500/5			
ET5000/25-5	E5000/25-5	E1000/5			
ET4000/25-5	E4000/25-5	E800/5			
ET3500/25-5	E3500/25-5	E800/5			
ET3000/25-5	E3000/25-5	E800/5			
ET2500/25-5	E2500/25-5	E500/5			
ET20000-5	E20000-5	E5000	4	20KW	ETG20
ET18000/20-5	E18000/20-5	E5000	4	Nominal value	ETG20
ET15000/20-5	E15000/20-5	E4000/5			
ET12000/20-5	E12000/20-5	E3000/5			
ET10000/20-5	E10000/20-5	E2500/5			
ET8000/20-5	E8000/20-5	E2000/5			
ET7000/20-5	E7000/20-5	E1800/5			
ET5000/20-5	E5000/20-5	E1500/5			
ET4000/20-5	E4000/20-5	E1000/5			
ET3500/20-5	E3500/20-5	E1000/5			
ET3000/20-5	E3000/20-5	E800/5			
ET2500/20-5	E2500/20-5	E800/5			
ET2000/20-5	E2000/20-5	E500/5			

ET15000-5	E15000-5	E5000	3	15KW	ETG20
ET12000/15-5 ET10000/15-5 ET8000/15-5 ET7000/15-5 ET5000/15-5 ET4000/15-5 ET3500/15-5 ET3000/15-5 ET2500/15-5 ET2000/15-5	E12000/15-5 E10000/15-5 E8000/15-5 E7000/15-5 E5000/15-5 E4000/15-5 E3500/15-5 E3000/15-5 E2500/15-5 E2000/15-5	E4000/5 E3500/5 E3000/5 E2500/5 E1800/5 E1500/5 E1200/5 E1000/5 E1000/5 E800/5	3	Nominal value	ETG20
ET10000-5	E10000-5	E5000	2	10KW	ETG20
ET8000/10-5 ET7000/10-5 ET5000/10-5 ET4000/10-5 ET3500/10-5 ET3000/10-5 ET2500/10-5 ET2000/10-5	E8000/10-5 E7000/10-5 E5000/10-5 E4000/10-5 E3500/10-5 E3000/10-5 E2500/10-5 E2000/10-5	E4000/5 E3500/5 E2500/5 E2000/5 E1800/5 E1500/5 E1500/5 E1000/5	2	Nominal value	ETG20

ET5000	E5000	E5000	-	5KW	ETG20
ET4000/5 ET3500/5 ET3000/5 ET2500/5 ET2000/5 ET1800/5 ET1500/5 ET1200/5 ET1000/5 ET800/5 ET500/5	E4000/5 E3500/5 E3000/5 E2500/5 E2000/5 E1800/5 E1500/5 E1200/5 E1000/5 E800/5 E500/5	E4000/5 E3500/5 E3000/5 E2500/5 E2000/5 E1800/5 E1500/5 E1200/5 E1000/5 E800/5 E500/5	-	Nominal value	ETG20
ET3500	E3500	E3500	-	3.5KW	ETG20
ET3000/3.5 ET2500/3.5 ET2000/3.5 ET1800/3.5 ET1500/3.5 ET1200/3.5 ET1000/3.5 ET800/3.5 ET500/3.5	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	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	-	Nominal value	ETG20
ET2500	E2500	E2500	-	2.5KW	ETG20
ET2000/2.5 ET1800/2.5 ET1500/2.5 ET1200/2.5 ET1000/2.5 ET800/2.5 ET500/2.5	E2000/2.5 E1800/2.5 E1500/2.5 E1200/2.5 E1000/2.5 E800/2.5 E500/2.5	E2000/2.5 E1800/2.5 E1500/2.5 E1200/2.5 E1000/2.5 E800/2.5 E500/2.5	-	Nominal value	ETG20

Contents

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:
ET30000-5, ET27000/30-5, ET25000/30-5, ET20000/30-5, ET18000/30-5, ET15000/30-5, ET12000/30-5, ET10000/30-5, ET8000/30-5, ET7000/30-5, ET5000/30-5, ET4000/30-5, ET3500/30-5, ET3000/30-5
ET25000-5, ET20000/25-5, ET18000/25-5, ET15000/25-5, ET12000/25-5, ET10000/25-5, ET8000/25-5, ET7000/25-5, ET5000/25-5, ET4000/25-5, ET3500/25-5, ET3000/25-5, ET2500/25-5
ET20000-5, ET18000/20-5, ET15000/20-5, ET12000/20-5, ET10000/20-5, ET8000/20-5, ET7000/20-5, ET5000/20-5, ET4000/20-5, ET3500/20-5, ET3000/20-5, ET2500/20-5, ET2000/20-5
ET15000-5, ET12000/15-5, ET10000/15-5, ET8000/15-5, ET7000/15-5, ET5000/15-5, ET4000/15-5, ET3500/15-5, ET3000/15-5, ET2500/15-5, ET2000/15-5
ET10000-5, ET8000/10-5, ET7000/10-5, ET5000/10-5, ET4000/10-5, ET3500/10-5, ET3000/10-5, ET2500/10-5, ET2000/10-5
ET5000, ET4000/5, ET3500/5, ET3000/5, ET2500/5, ET2000/5, ET1800/5, ET1500/5, ET1200/5, ET1000/5, ET800/5, ET500/5
ET3500, ET3000/3.5, ET2500/3.5, ET2000/3.5, ET1800/3.5, ET1500/3.5, ET1200/3.5, ET1000/3.5, ET800/3.5, ET500/3.5
ET2500, ET2000/2.5, ET1800/2.5, ET1500/2.5, ET1200/2.5, ET1000/2.5, ET800/2.5, ET500/2.5
E30000-5, E27000/30-5, E25000/30-5, E20000/30-5, E18000/30-5, E15000/30-5, E12000/30-5, E10000/30-5, E8000/30-5, E7000/30-5, E5000/30-5, E4000/30-5, E3500/30-5, E3000/30-5
E25000-5, E20000/25-5, E18000/25-5, E15000/25-5, E12000/25-5, E10000/25-5, E8000/25-5, E7000/25-5, E5000/25-5, E4000/25-5, E3500/25-5, E3000/25-5, E2500/25-5
E20000-5, E18000/20-5, E15000/20-5, E12000/20-5, E10000/20-5, E8000/20-5, E7000/20-5, E5000/20-5, E4000/20-5, E3500/20-5, E3000/20-5, E2500/20-5, E2000/20-5
E15000-5, E12000/15-5, E10000/15-5, E8000/15-5, E7000/15-5, E5000/15-5, E4000/15-5, E3500/15-5, E3000/15-5, E2500/15-5, E2000/15-5
E10000-5, E8000/10-5, E7000/10-5, E5000/10-5, E4000/10-5, E3500/10-5, E3000/10-5, E2500/10-5, E2000/10-5

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 V1.6.1 ; 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: IMQ S.p.a.
Technical file held by : Elenos s.r.l

Place and Date: Ferrara September 05, 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.

FCC IDENTIFIER: DDE-XLLA0D
Name of Grantee: BEI Electronics LLC
Equipment Class: Licensed Broadcast Station Transmitter
Notes: FM Broadcast Transmitter

Grant Notes	FCC Rule Parts	Frequency Range (MHZ)	Output Watts	Frequency Tolerance	Emission Designator
	73	88.0 - 108.0	30000.0	17.0 Hz	406KF3E

CANADIAN CERTIFICATION

TECHNICAL ACCEPTANCE CERTIFICATE

Certification No. ➢ IC: 131A-XLLA0D

Issued To ➢ BEI Electronics, LLC
4100 N 24TH Street
PO Box 3606
Quincy, IL 32305
US

Tested By ➢ Timco Engineering, Inc.
Company No.: 2056A
849 NW State Road 45
Newberry, FL 32669
US
352-472-5500; testing@timcoengr.com

Type of Equipment ➢ BETS Device

Type of Service ➢ New Family Certification

Hardware Version Id Number (HVIN)
➢ 2LLA0D
➢ 3LLA0D
➢ 4LLA0D
➢ 5LLA0D
➢ 6LLA0D

Firmware Version Id Number (FVIN) ➢ N/A

Product Marketing Name: (PMN)
➢ 2LLA0D
➢ 3LLA0D
➢ 4LLA0D
➢ 5LLA0D
➢ 6LLA0D

Host Marketing (HMN) ➢ N/A

FREQUENCY RANGE	EMISSION DESIGNATIONS (NECESSARY BANDWIDTH & EMISSION CLASSIFICATION)	R.F. POWER	ANTENNA INFO	SPECIFICATION/ ISSUE & DATE	
88.0-108.0 MHz	159KF3E	24.945 95 W	Yagi 0 dBi	BETS-6	Issue 2; Aug. 2005

BEI Electronics, LLC Model xLLA0D
FCC ID: DDE-XLLA0D
IC: 131A-XLLA0D

Support: 217.224.9617 bdcast.com/support

3 Safety

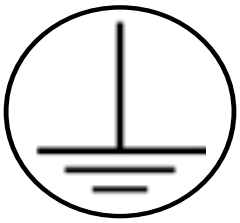
All ELENOS s.r.l products are compliant with the safety standards required for this type of equipment.

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 BERYLLUM 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.

RF Exposure Safety Distance Warning

According to ISED regulations: 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 42.9955 m (4299.55 cm) (141.061 Feet) for general uncontrolled exposure and general controlled exposure.

For FCC standards, a safety distance of 34.6641 m (3466.41 cm) (113.727 Feet) is declared.

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 42.9955 m (4299.55 cm) (141.061 Feet) pour les expositions générales non contrôlées et les expositions générales contrôlées.

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 disconnector (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 (lighting), 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.

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 **LIFEXTENDER** ® – 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]

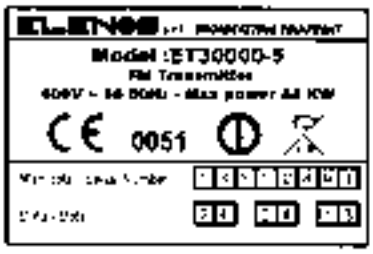
5 **NAMEPLATE** – Plate where the main characteristics of the equipment are reported: manufacturer, product model, power supply type, power consumption, EC marking, serial number, final test date, name of the tester. Warning: do not remove this nameplate.

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.

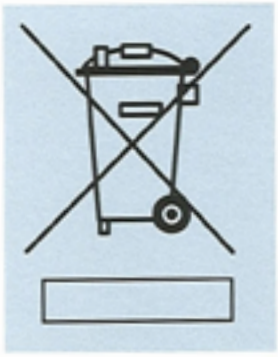
8 **WARNING LABEL** – Label indicating that the equipment must be used in the appropriate way.

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 Composition

The line includes devices transmitters (ET) of maximum power of 30KW, 25KW, 20KW, 15KW, 10KW, 5KW, 3.5KW and 2.5KW.

According to the Elenos standard ET30000-5, ET25000-5 and ET20000-5 are accommodated in a 40U rack with circuit breaker box and sinoptic panel; ET15000-5 and ET10000-5 are accommodated in a 32U rack with circuit breaker box and sinoptic panel; ET5000, ET3500 and ET2500 are supplied without racks.

ET30000-5, ET25000-5 and ET20000-5 are composed of a combiner/splitter unit (on 4U), a control logic unit (on 4U), two (or one) Indium series modulators (ETG20 model), n (with n from 6 to 4) Indium series amplifiers (E5000 model), a load.

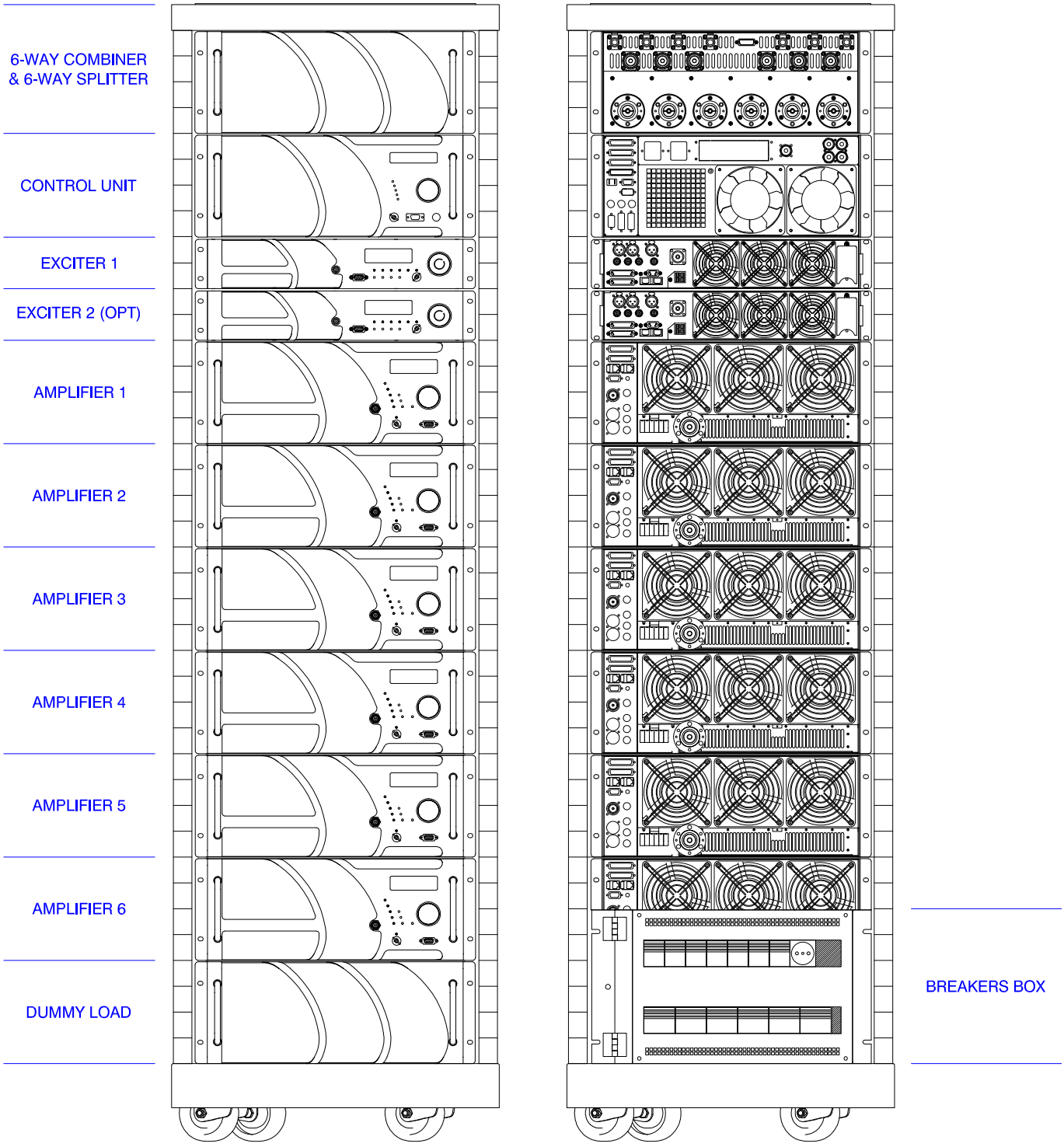
ET15000-5, ET10000-5 are composed of a control logic unit including combining section and load (on 4U), two (or one) Indium series modulators (ETG20 model), n (with n = 2 or 3) Indium series amplifiers (E5000 model).

ET5000 , ET3500 and ET2500 are composed of an Indium series amplifier (respectively E5000, E3500, E2500 model), two (or one) Indium series modulators (ETG20 model).

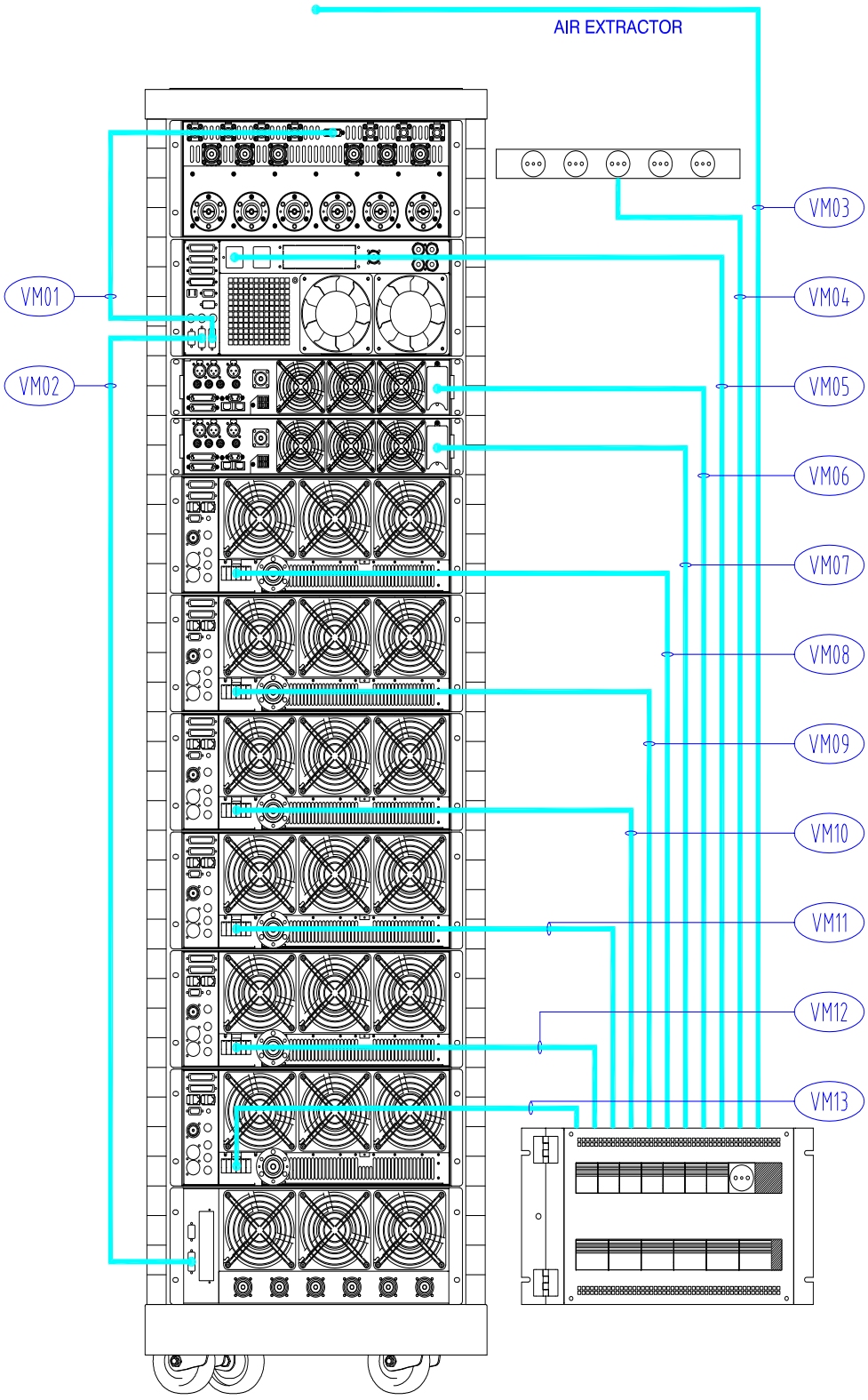
The fan is optional (it **should be explicitly required at time of order**).
If the system is operated without a fan the rear panels of the rack must be strictly removed.

4.2.1 ET30000-5

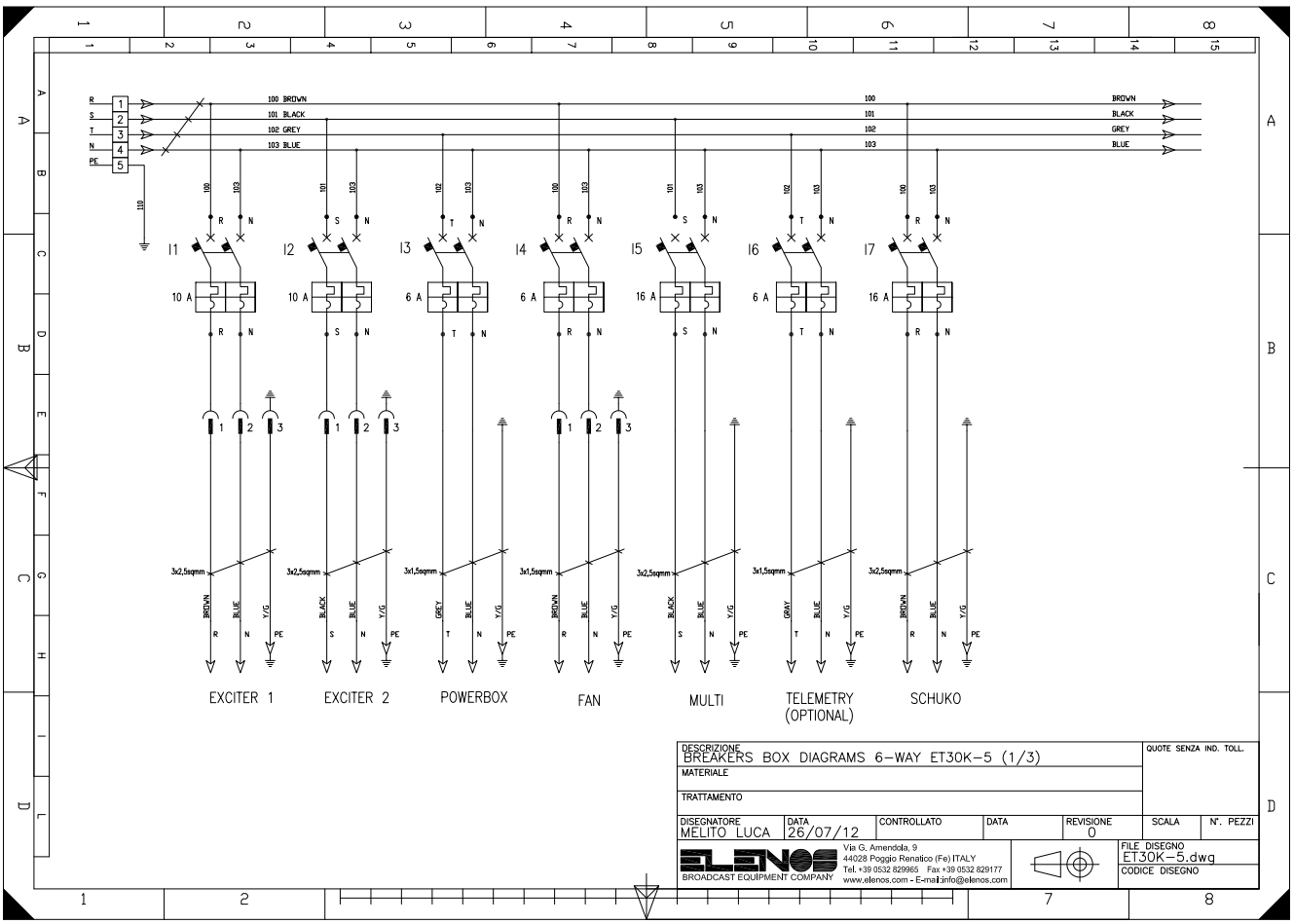
4.2.1.1 General view

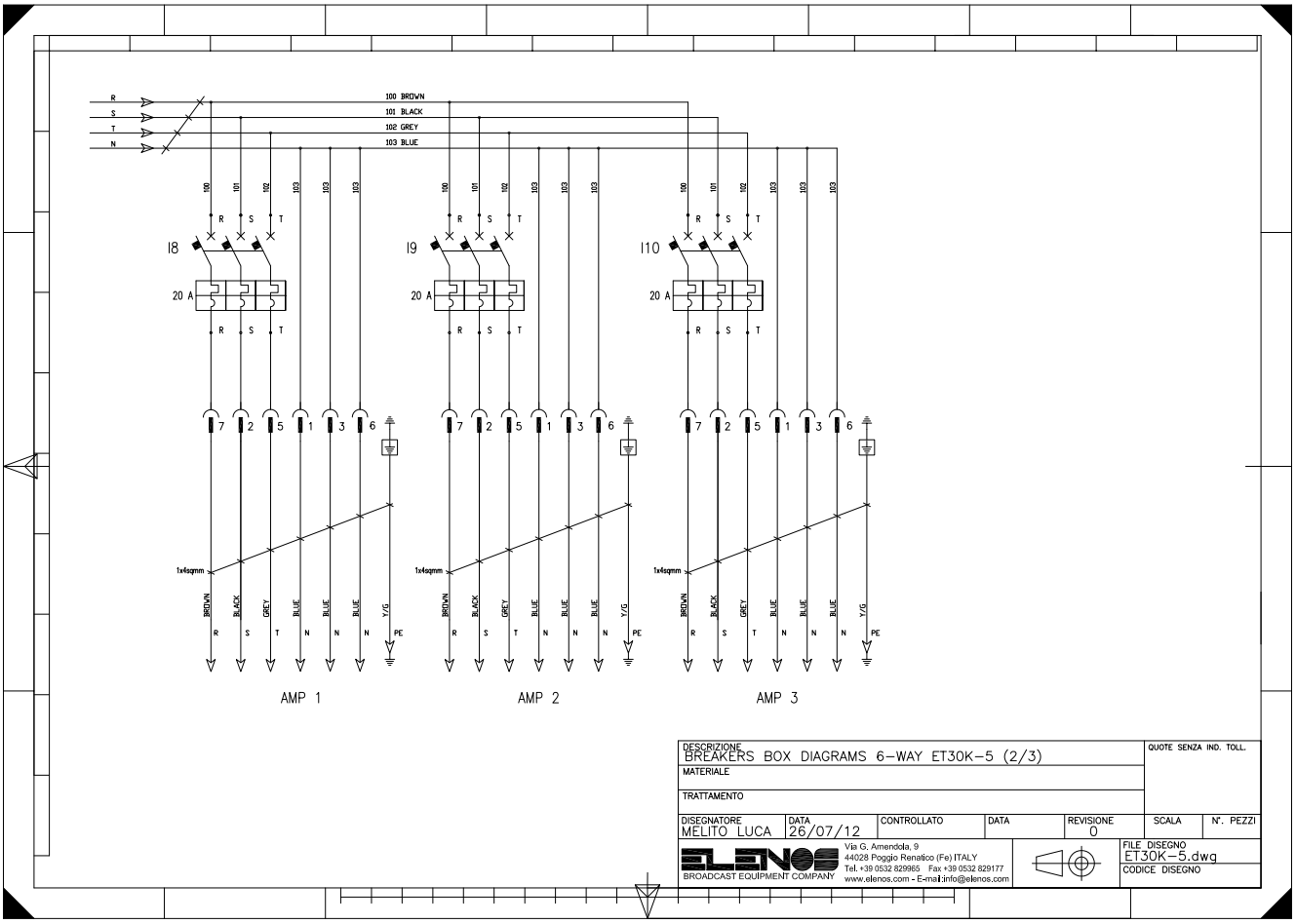


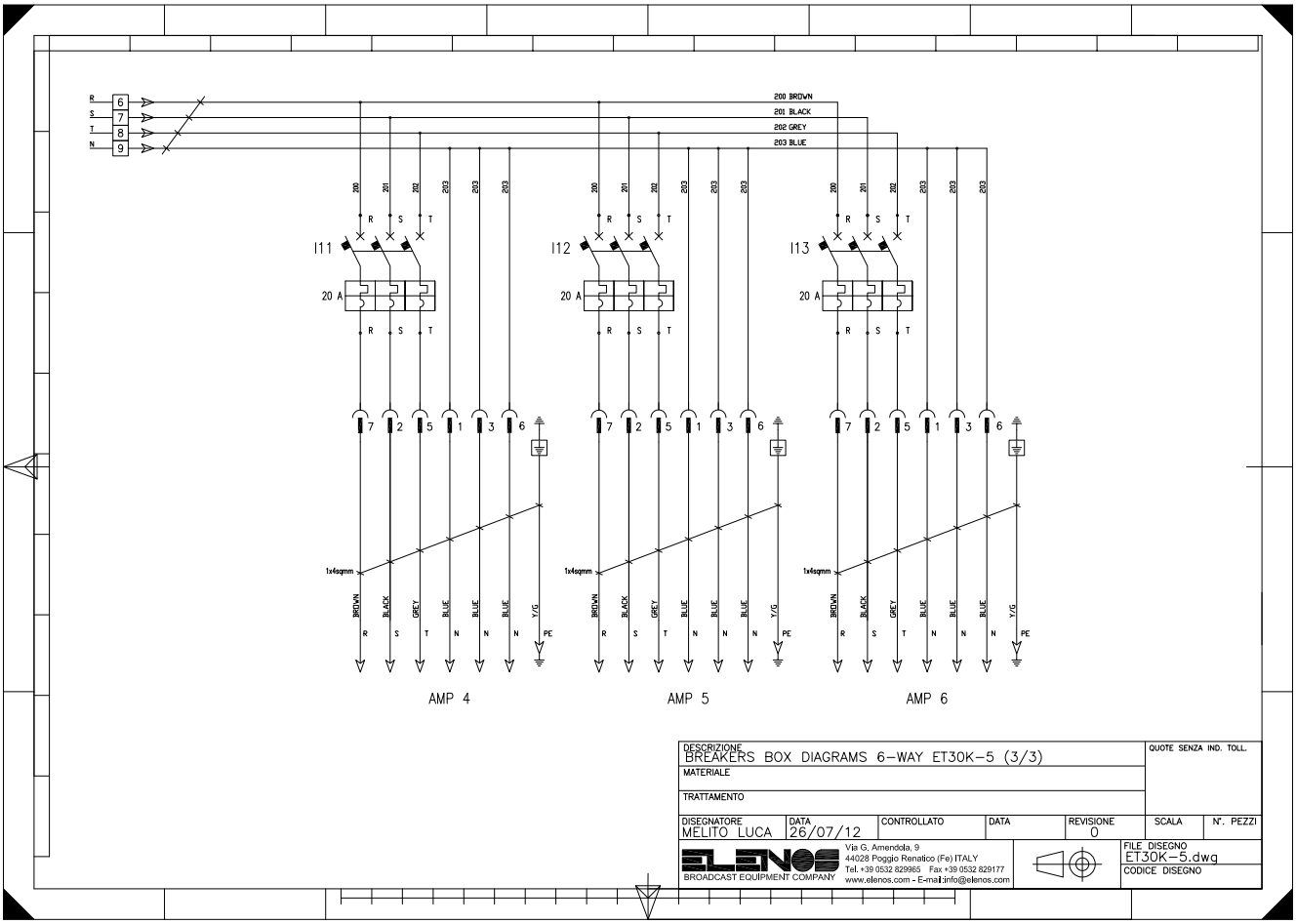
4.2.1.2 Mains connections



380V 3-ph star connection





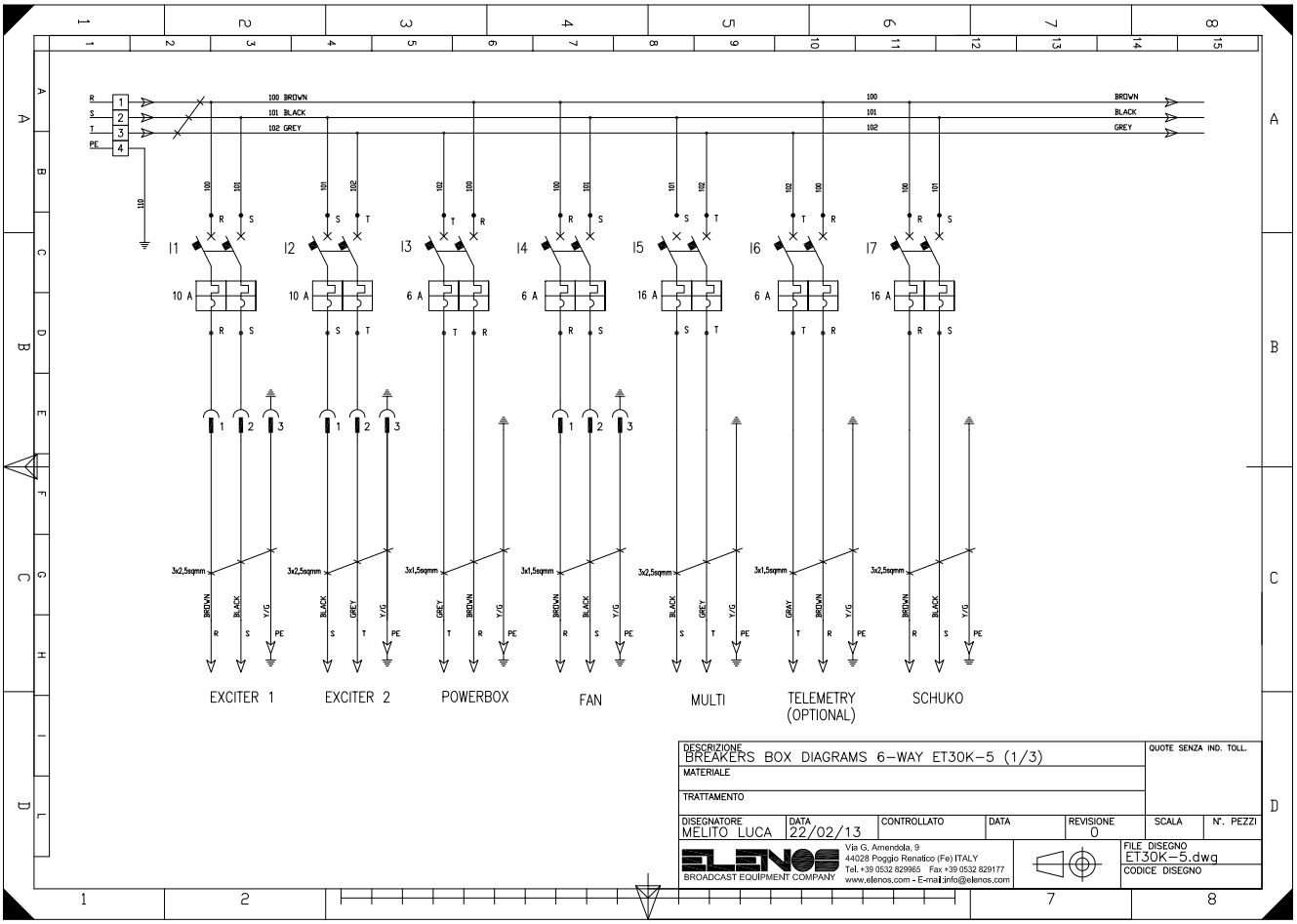


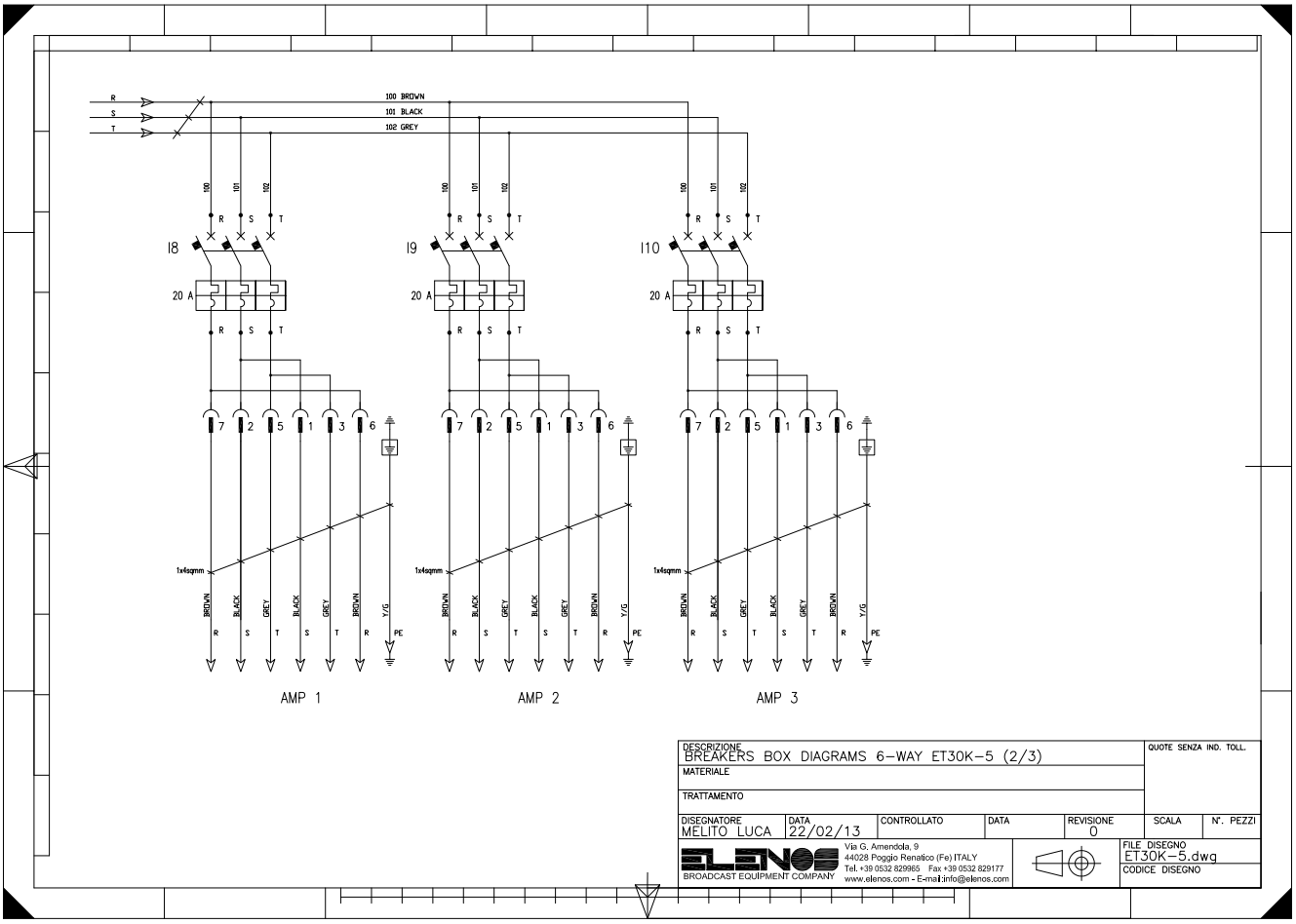
DESCRIZIONE: BREAKERS BOX DIAGRAMS 6-WAY ET30K-5 (3/3)						QUOTE SENZA IND. TOLL.
MATERIALE						
TRATTAMENTO						
DISEGNATORE: MELITO LUCA	DATA: 26/07/12	CONTROLLATO	DATA	REVISIONE: 0	SCALA	N°. PEZZI

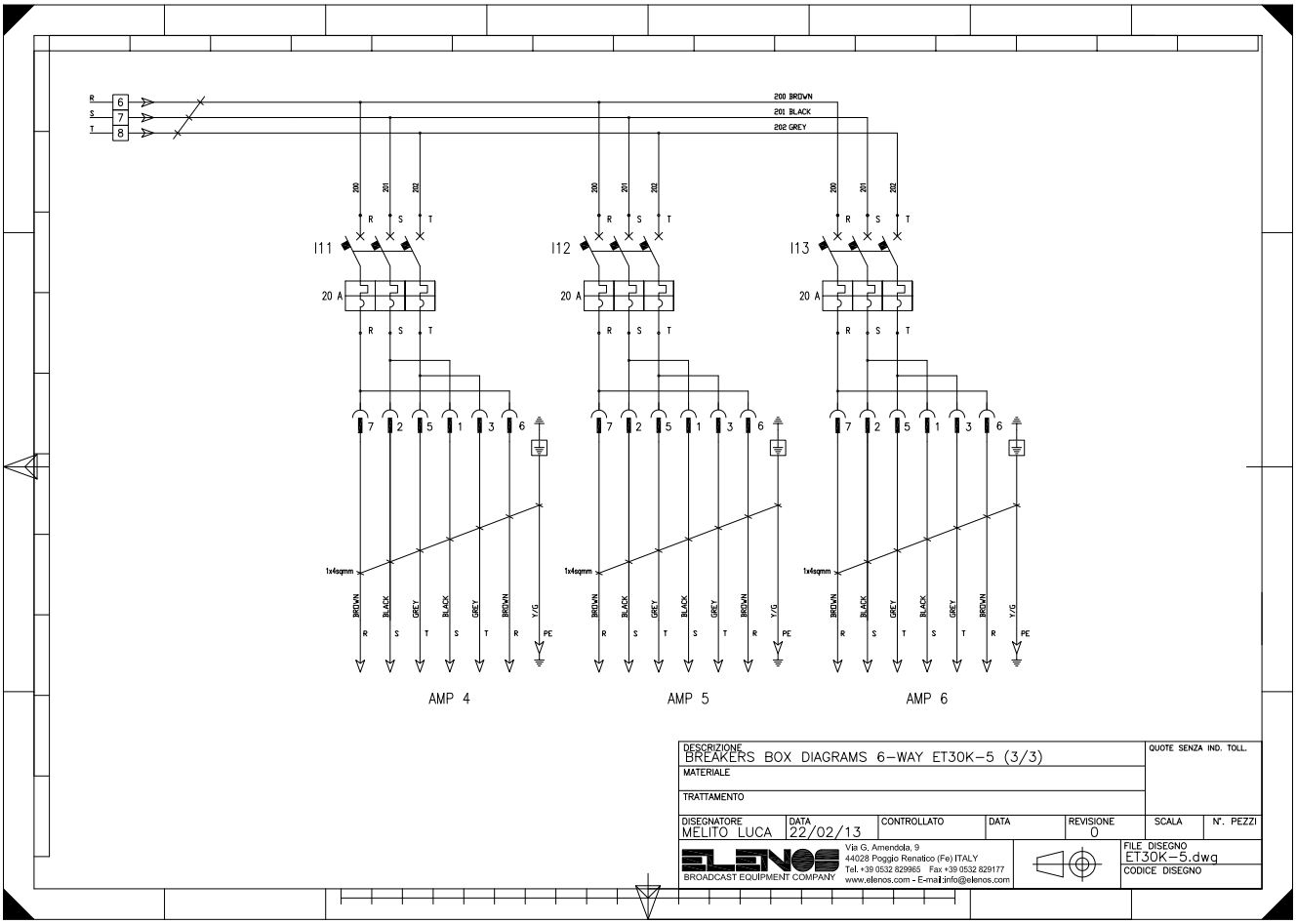
ELENOS BROADCAST EQUIPMENT COMPANY
Via G. Amendola, 9
44028 Poggio Renatico (Fe) ITALY
Tel. +39 0532 829965 Fax +39 0532 829177
www.elenos.com - E-mail:info@elenos.com

FILE DISEGNO: ET30K-5.dwg
CODICE DISEGNO

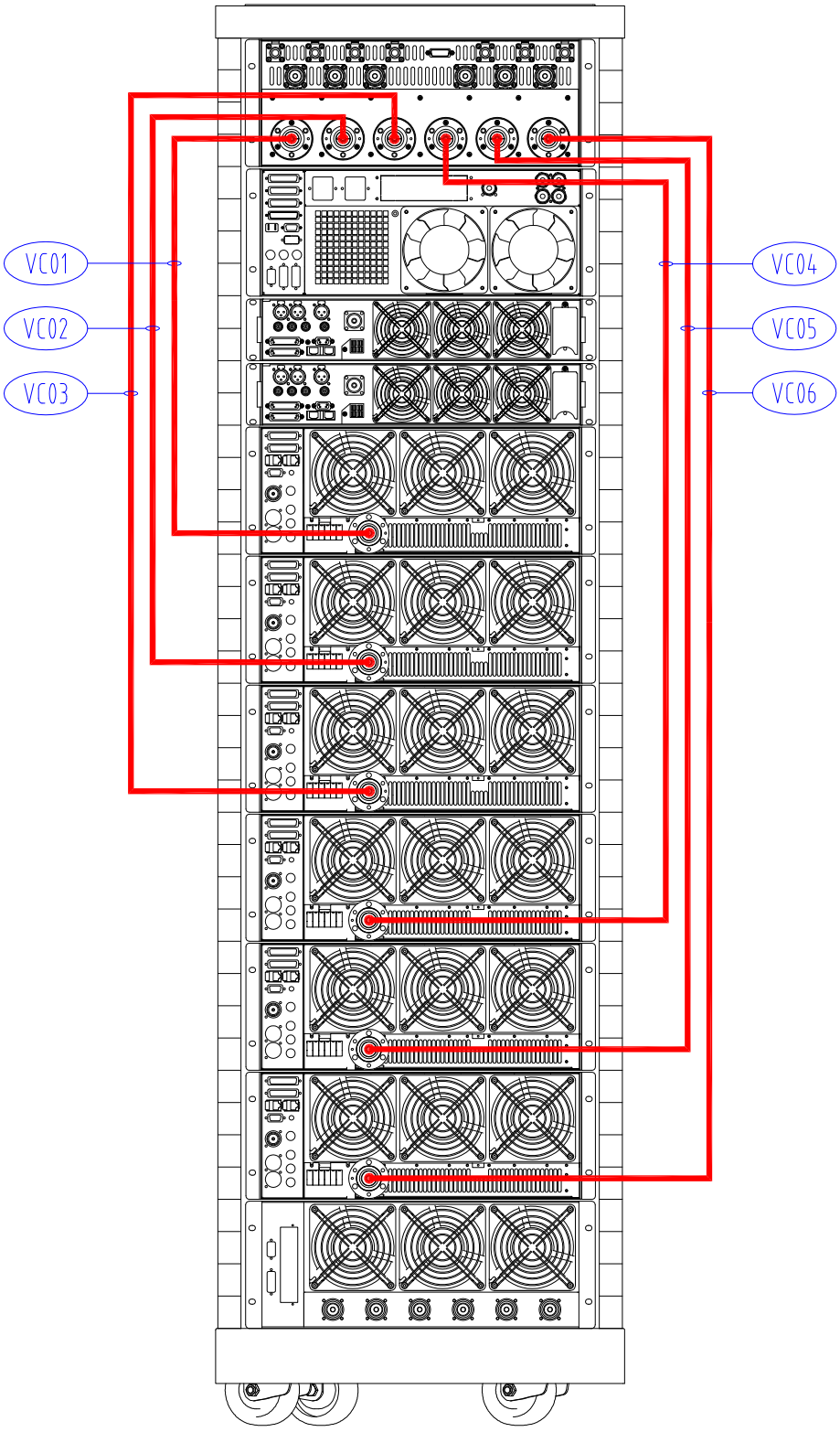
230V 3-ph triangle connection

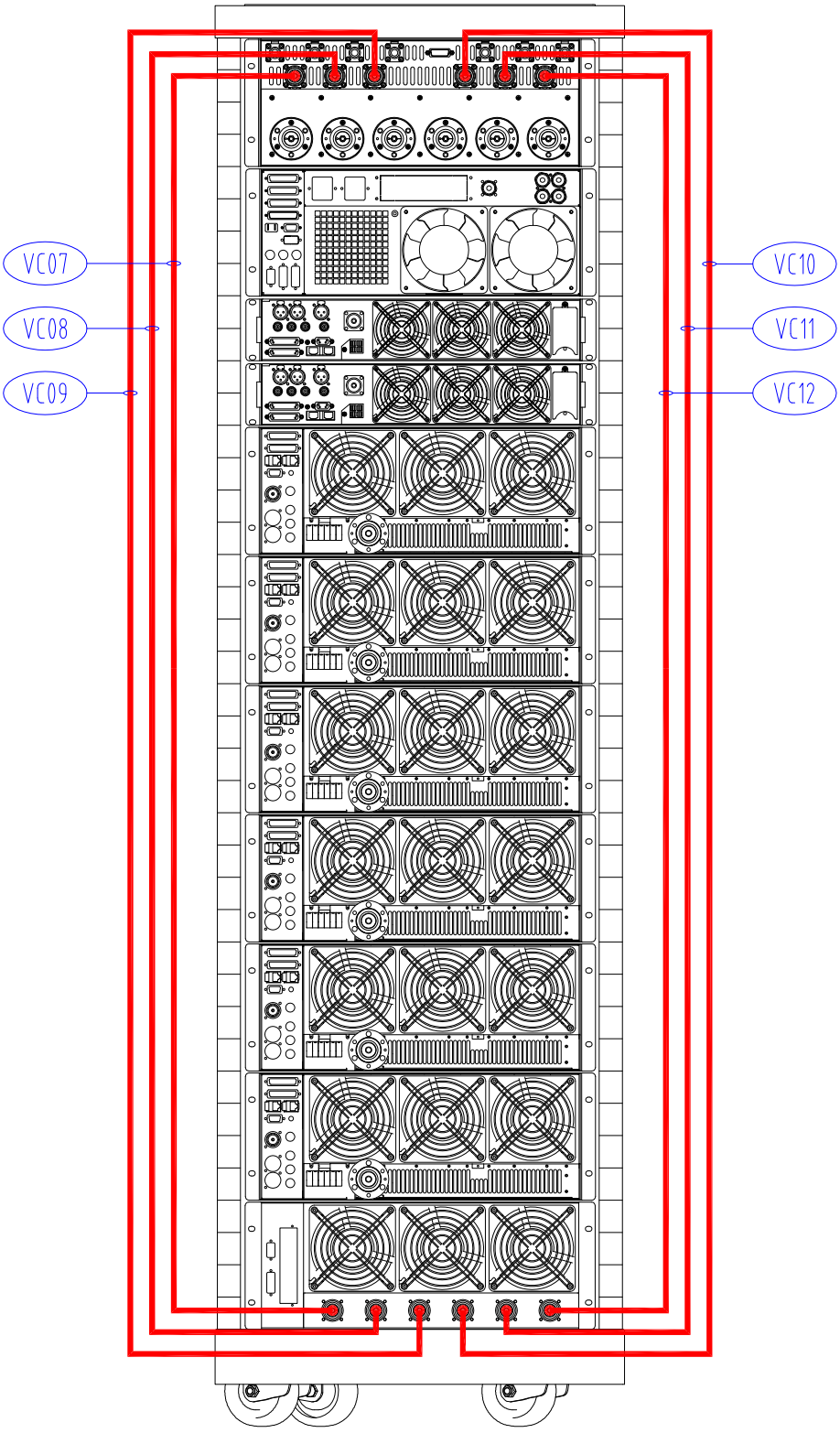


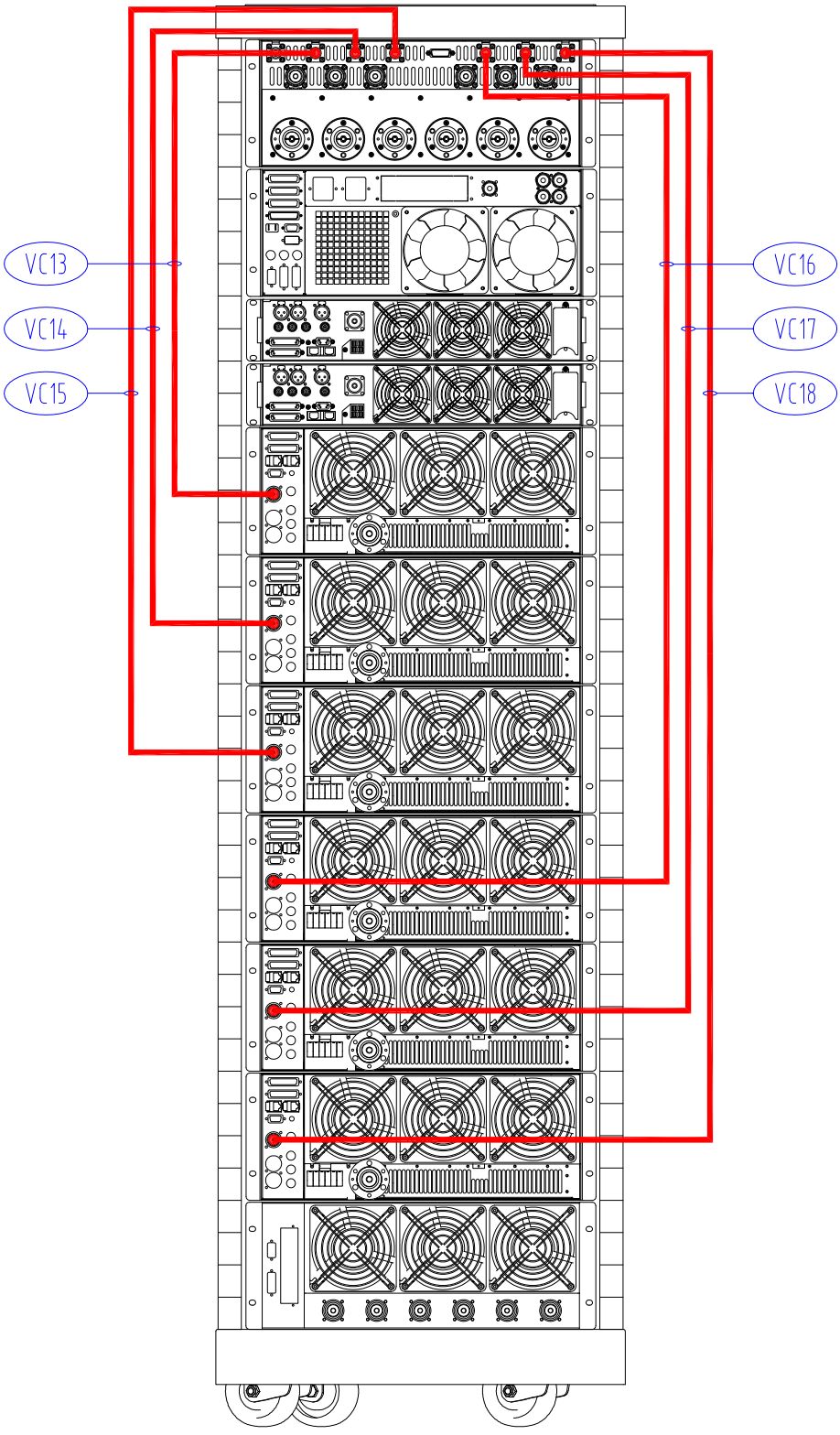


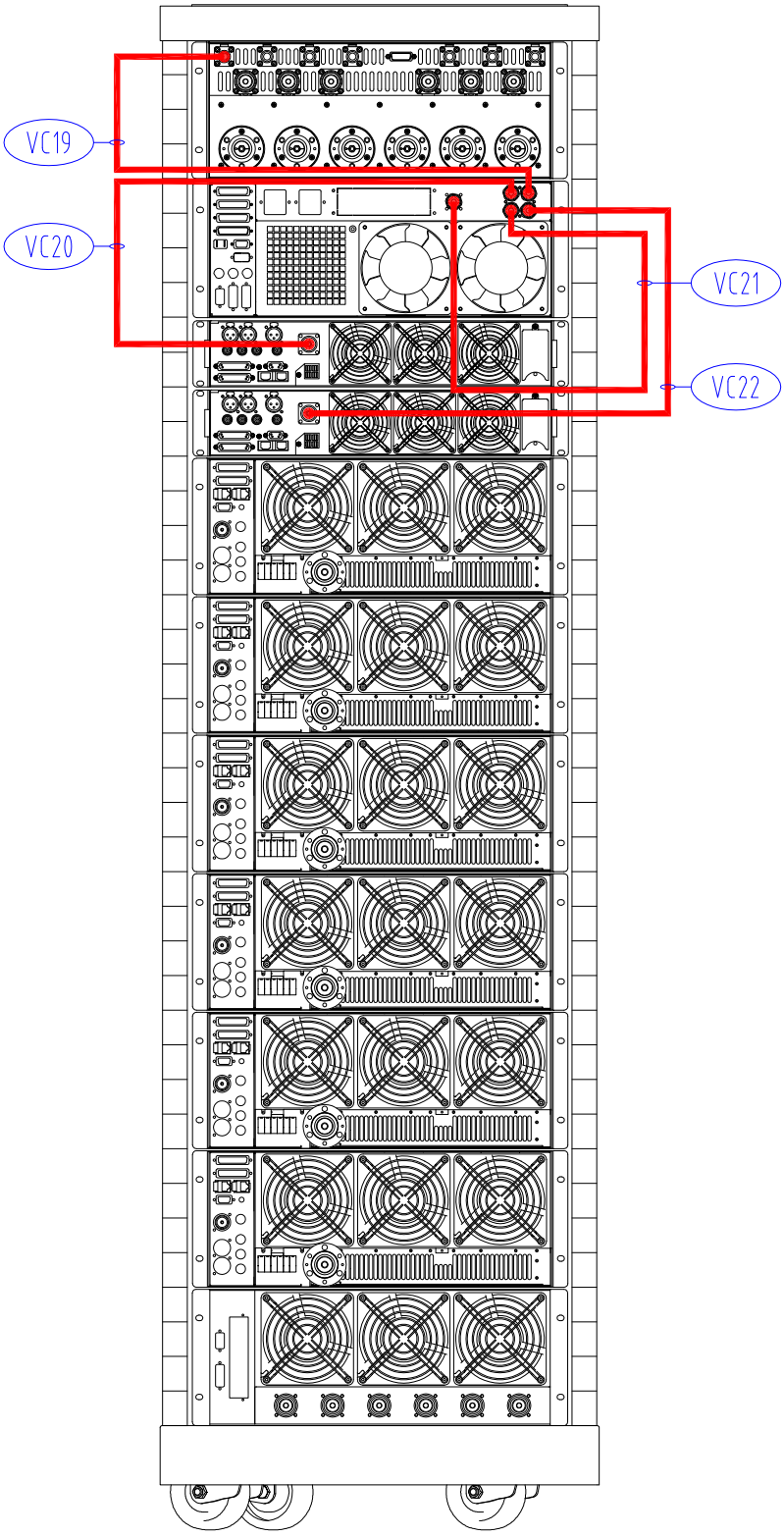

R
S
T
6
7
8
200 BROWN
201 BLACK
202 GREY
I11
I12
I13
20 A
1x4sqmm
AMP 4
AMP 5
AMP 6
DESCRIZIONE
BREAKERS BOX DIAGRAMS 6-WAY ET30K-5 (3/3)
QUOTE SENZA IND. TOLL.
MATERIALE
TRATTAMENTO
DISEGNATORE
MELITO LUCA
DATA
22/02/13
CONTROLLATO
DATA
REVISIONE
0
SCALA
N°. PEZZI
ELENOS
BROADCAST EQUIPMENT COMPANY
Via G. Amendola, 9
44028 Poggio Renatico (Fe) ITALY
Tel. +39 0532 829965 Fax +39 0532 829177
www.elenos.com - E-mail:info@elenos.com
FILE DISEGNO
ET30K-5.dwg
CODICE DISEGNO

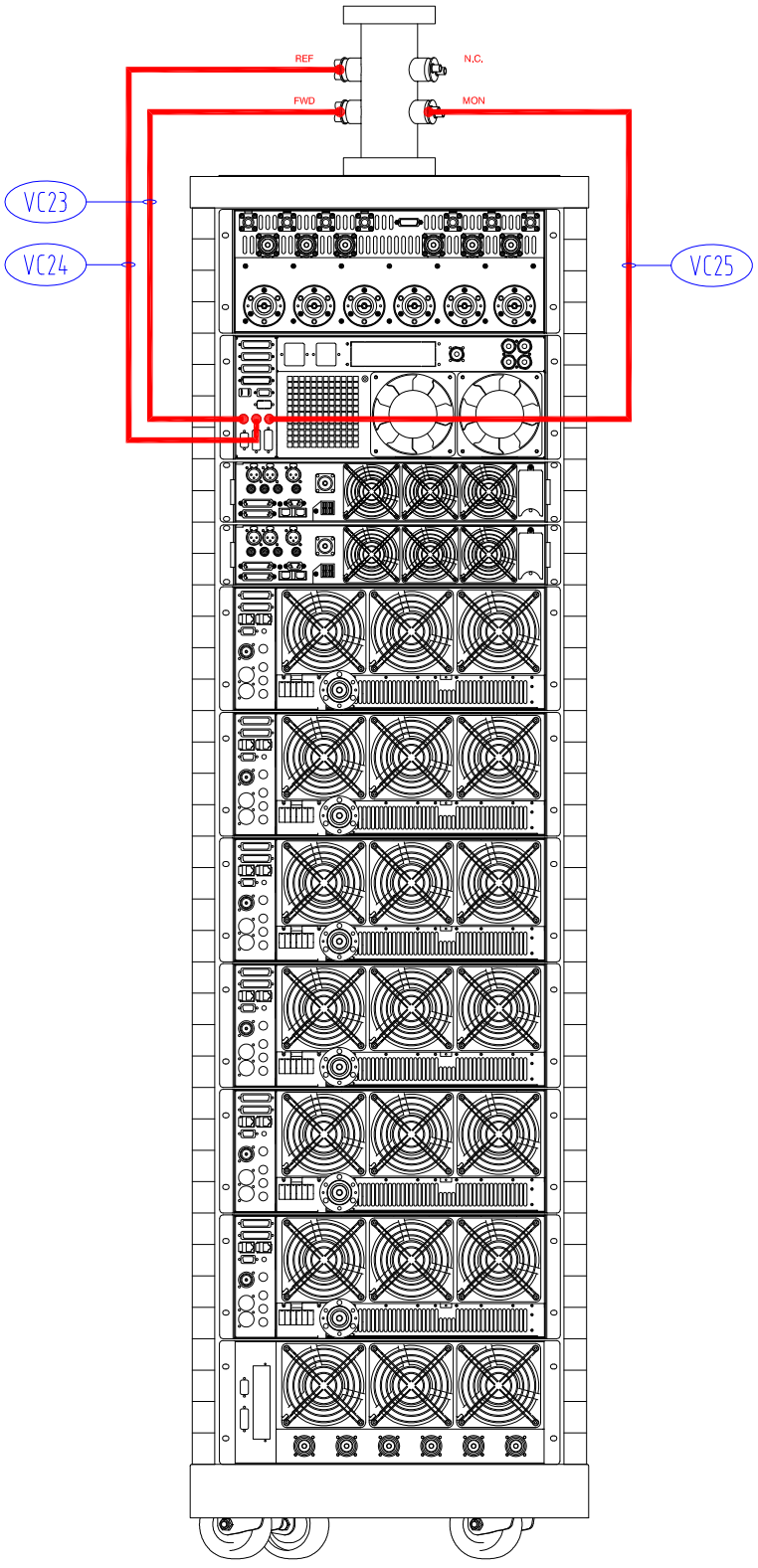
4.2.1.3 RF connections



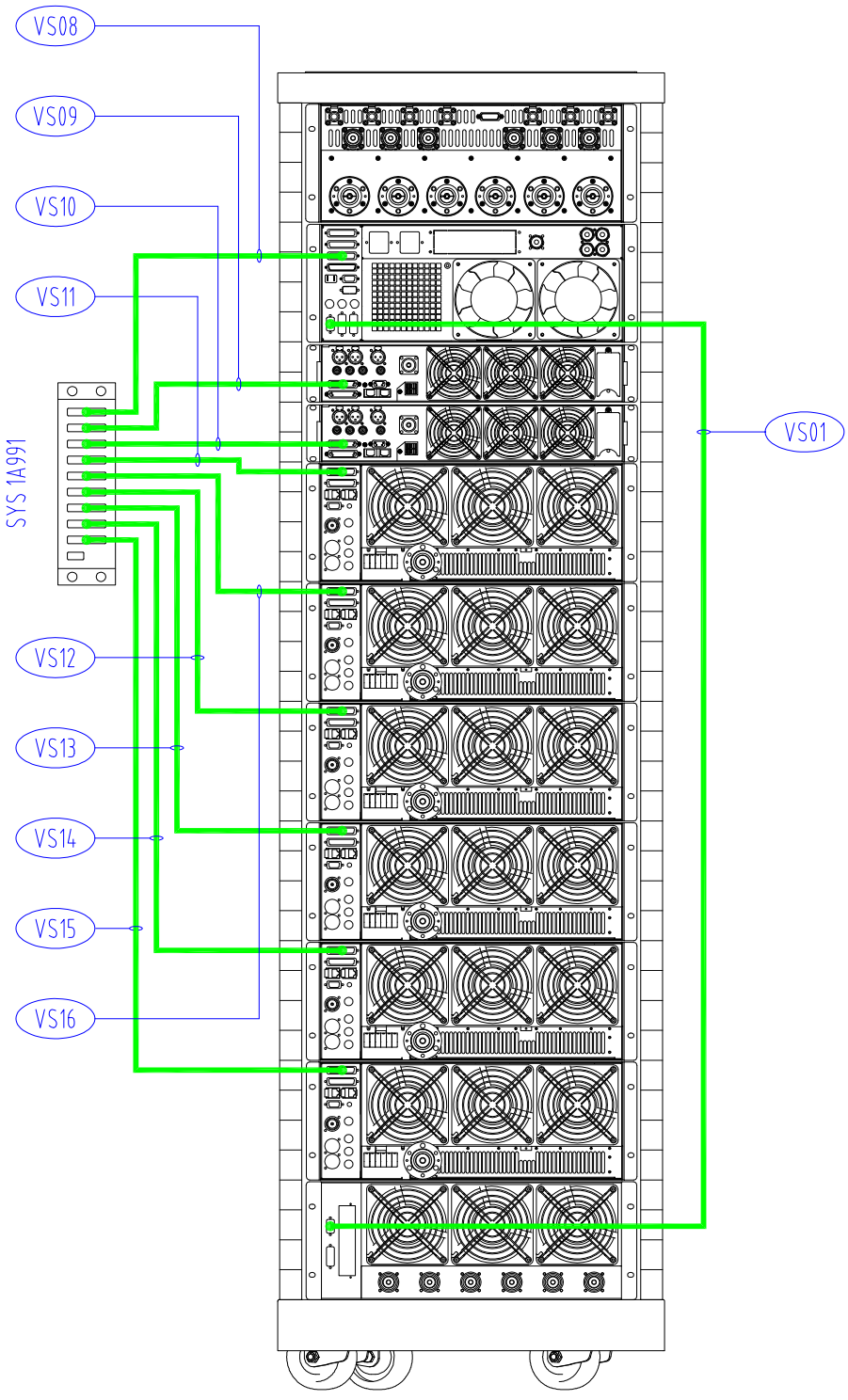

VC07
VC08
VC09
VC10
VC11
VC12

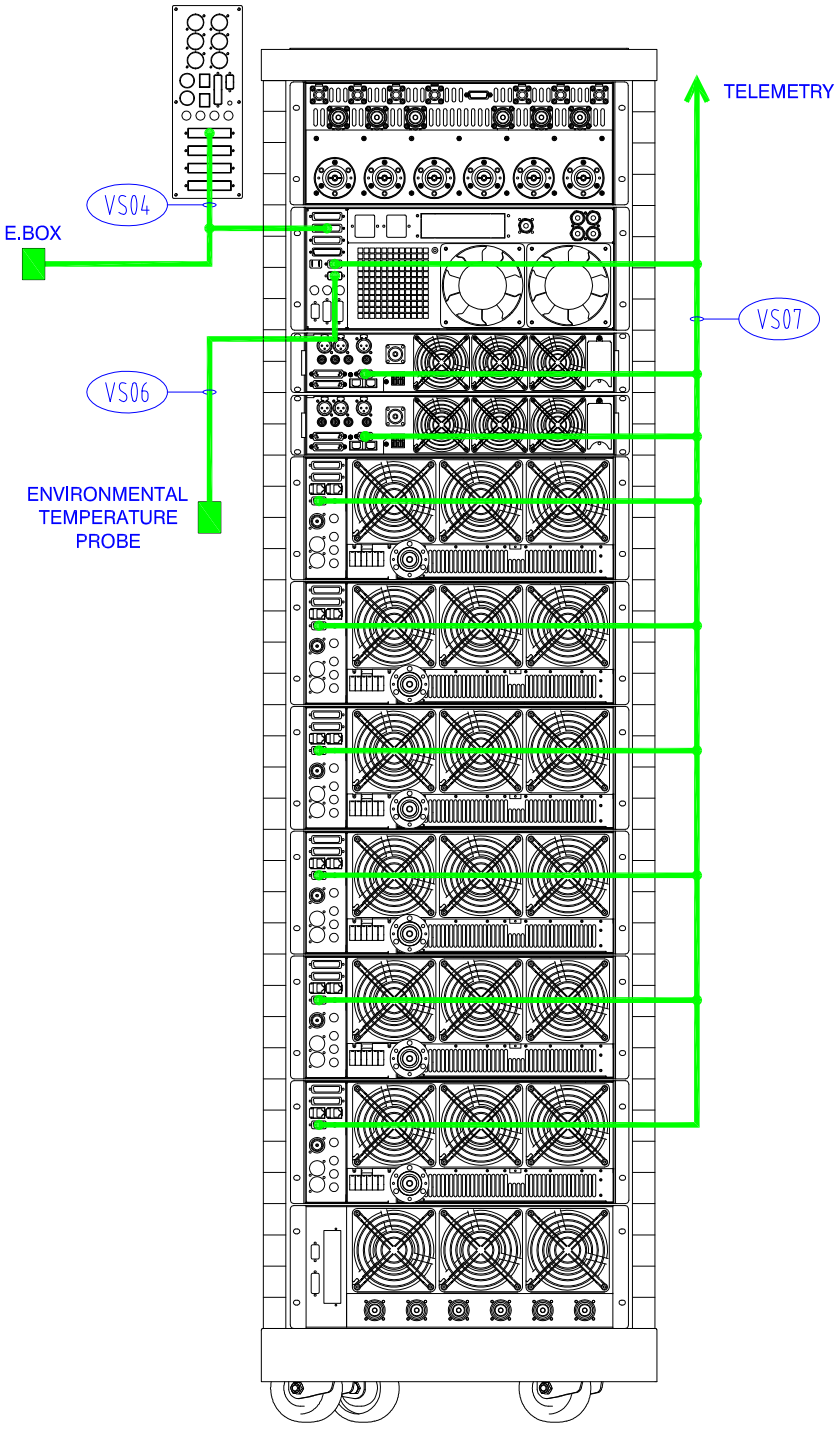

VC13
VC14
VC15
VC16
VC17
VC18


VC19
VC20
VC21
VC22

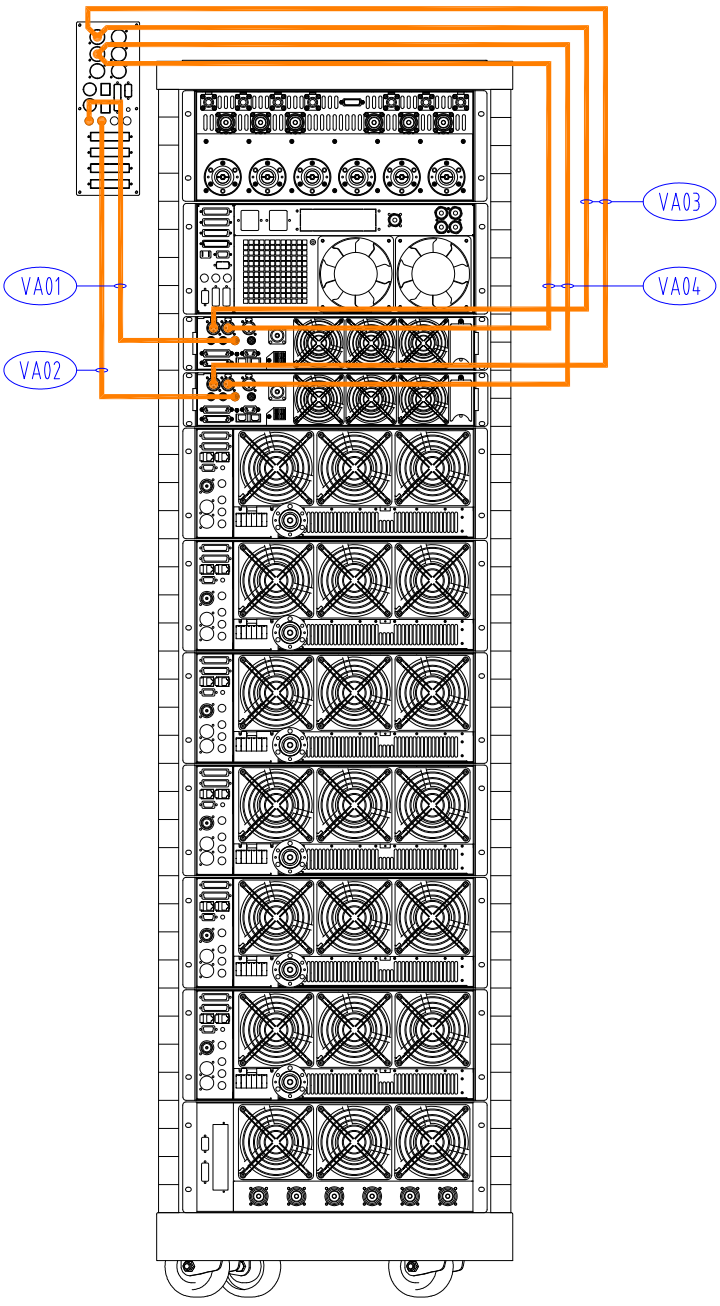

REF
N.C.
FWD
MON
VC23
VC24
VC25

4.2.1.4 Signal connections




TELEMETRY
VS04
E.BOX
VS07
VS06
ENVIRONMENTAL
TEMPERATURE
PROBE

4.2.1.5 Audio connections



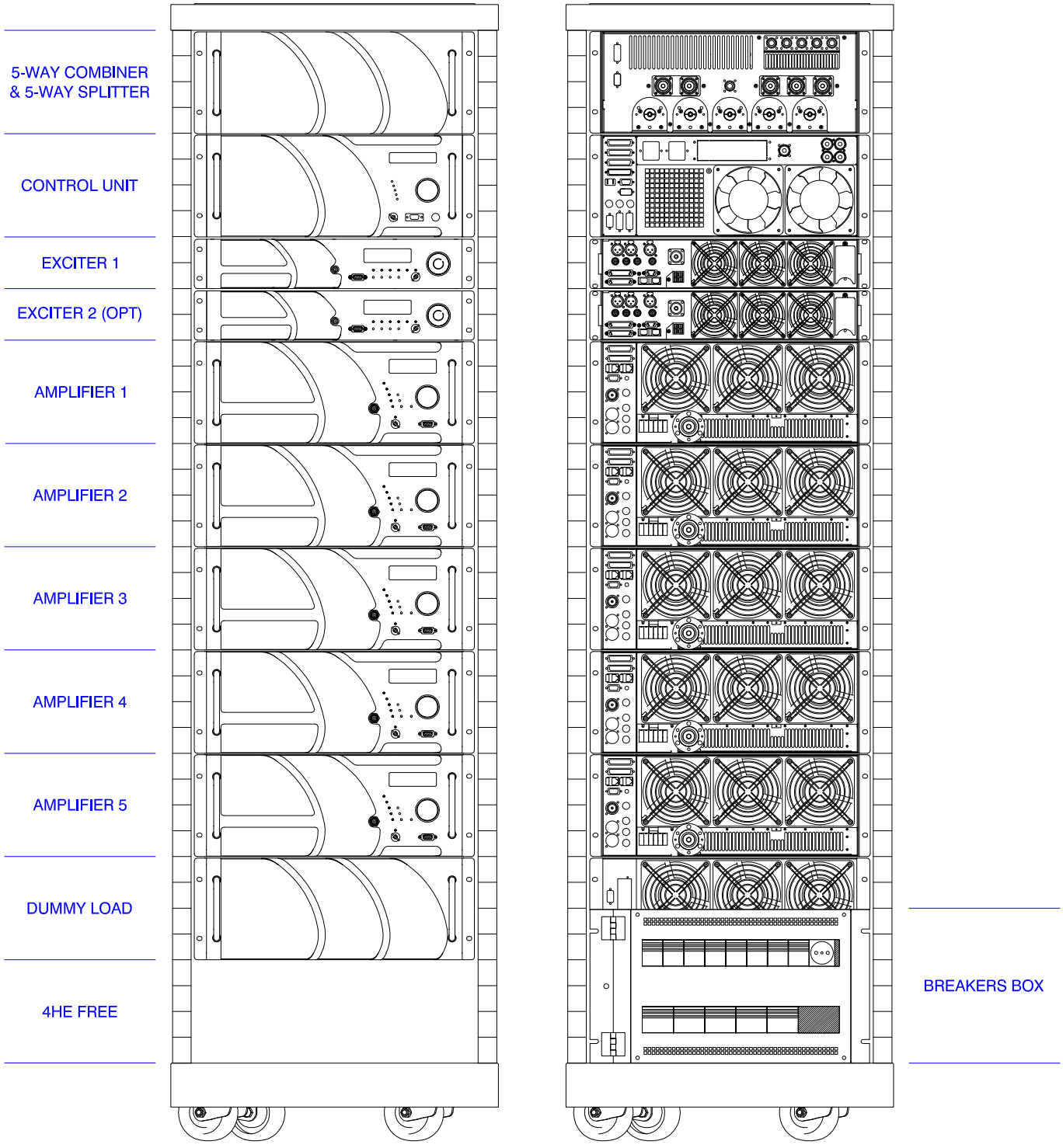
4.2.1.6 Cables convertion code table

Diagram code	Elenos code
VC01	CAB0584-0
VC02	CAB0584-0
VC03	CAB0584-0
VC04	CAB0584-0
VC05	CAB0584-0
VC06	CAB0584-0
VC07	CAB0262-0
VC08	CAB0262-0
VC09	CAB0262-0
VC10	CAB0262-0
VC11	CAB0262-0
VC12	CAB0262-0
VC13	CAB0217-0
VC14	CAB0217-0
VC15	CAB0217-0
VC16	CAB0217-0
VC17	CAB0217-0
VC18	CAB0217-0
VC19	CSF-0022
VC20	CSF-0022
VC21	CAB0522-0
VC22	CSF-0022
VC23	CAB0383-0
VC24	CAB0383-0
VC25	CAB0383-0
VS01	ETGSAL33
VS04	CAB0686-0
VS06	CAB0623-1
VS07	CAB0687-0
VS08	CAB0324-0
VS09	CAB0324-0
VS10	CAB0324-0

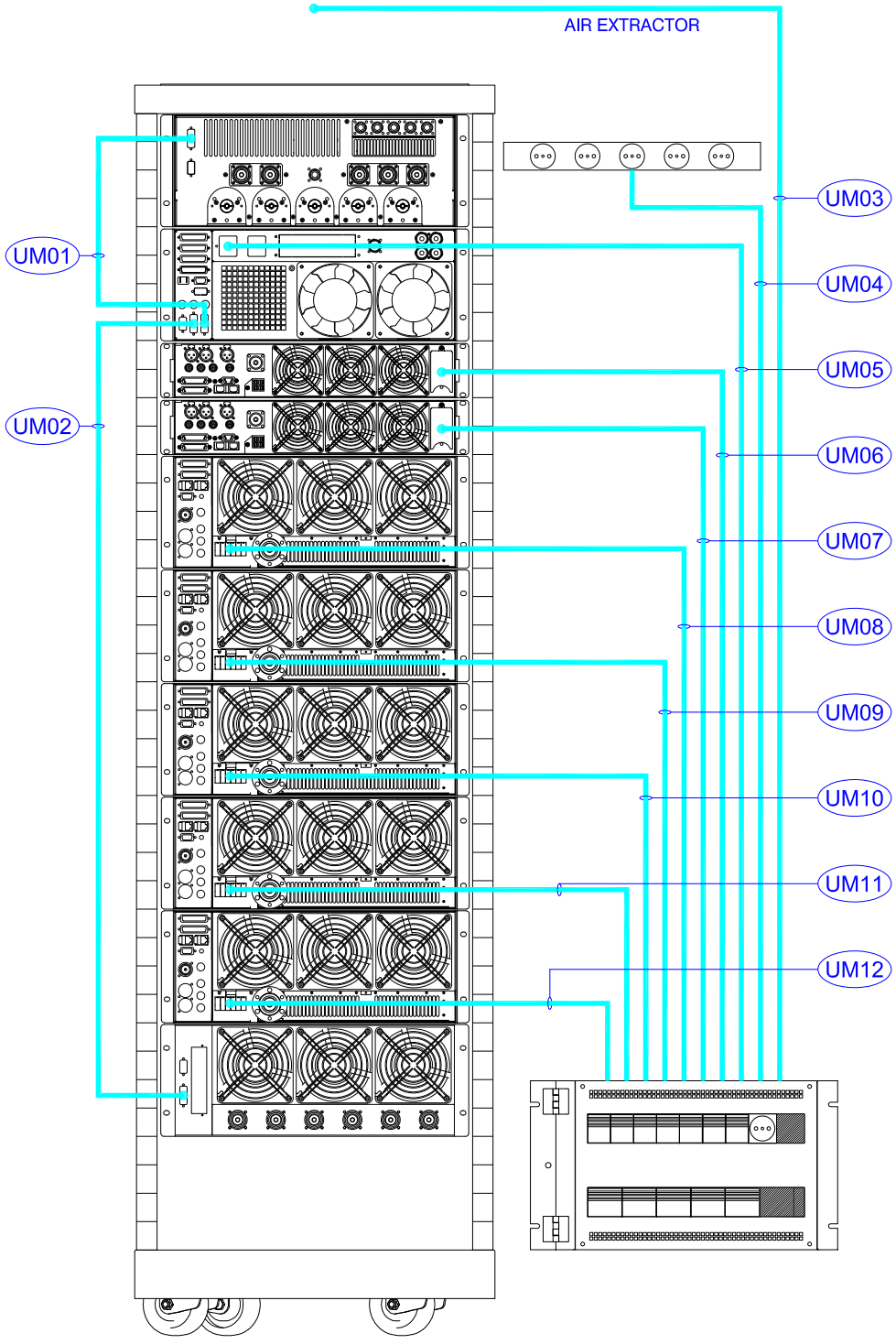
VS11	CAB0324-0
VS12	CAB0324-0
VS13	CAB0324-0
VS14	CAB0324-0
VS15	CAB0324-0
VS16	CAB0324-0
VA01	CAB0135-0
VA02	CAB0135-0
VA03	CAB0523-0
VA04	CAB0523-0
VM01	CAB0607-0
VM02	CAB0606-0

4.2.2 ET25000-5

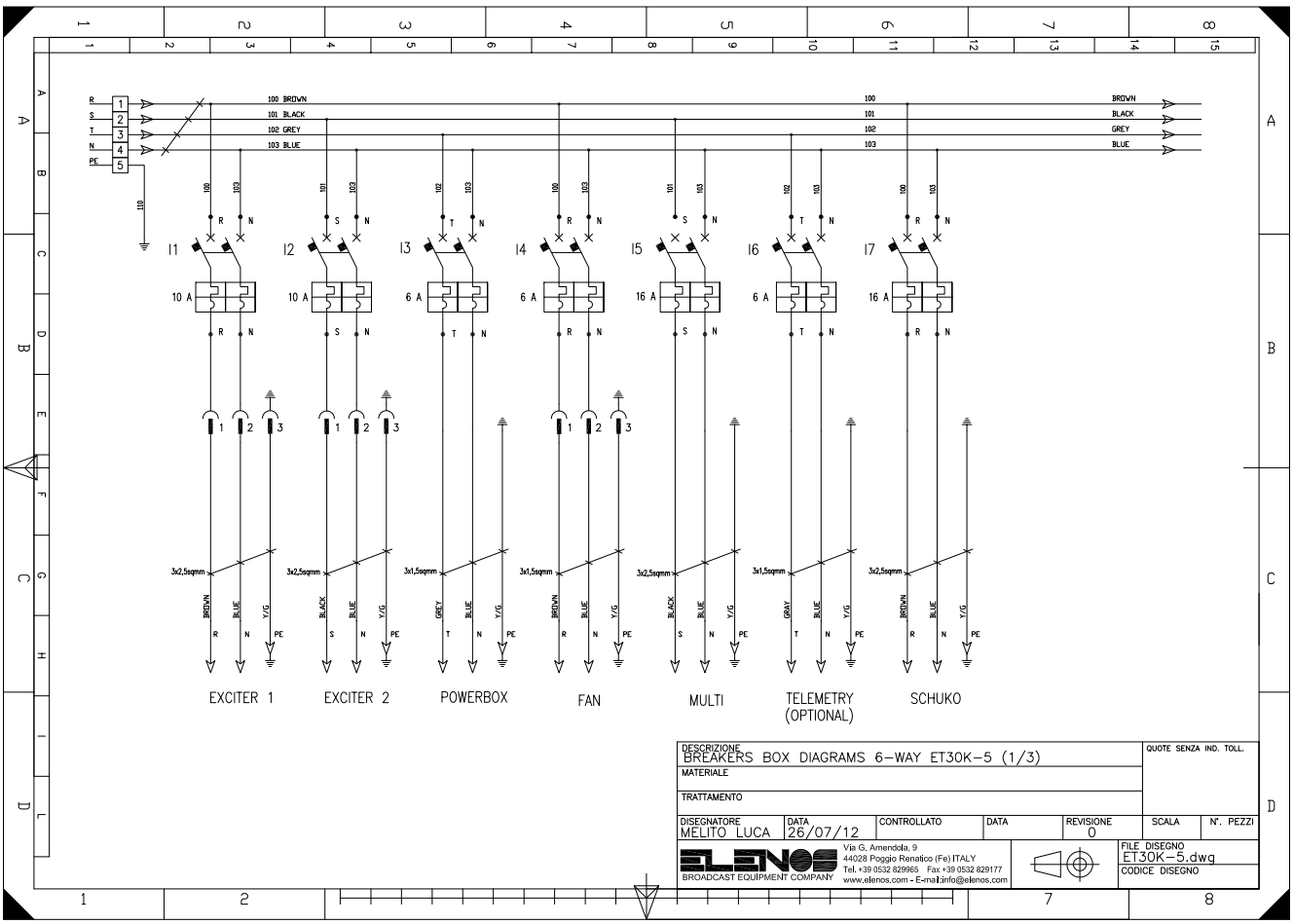
4.2.2.1 General view

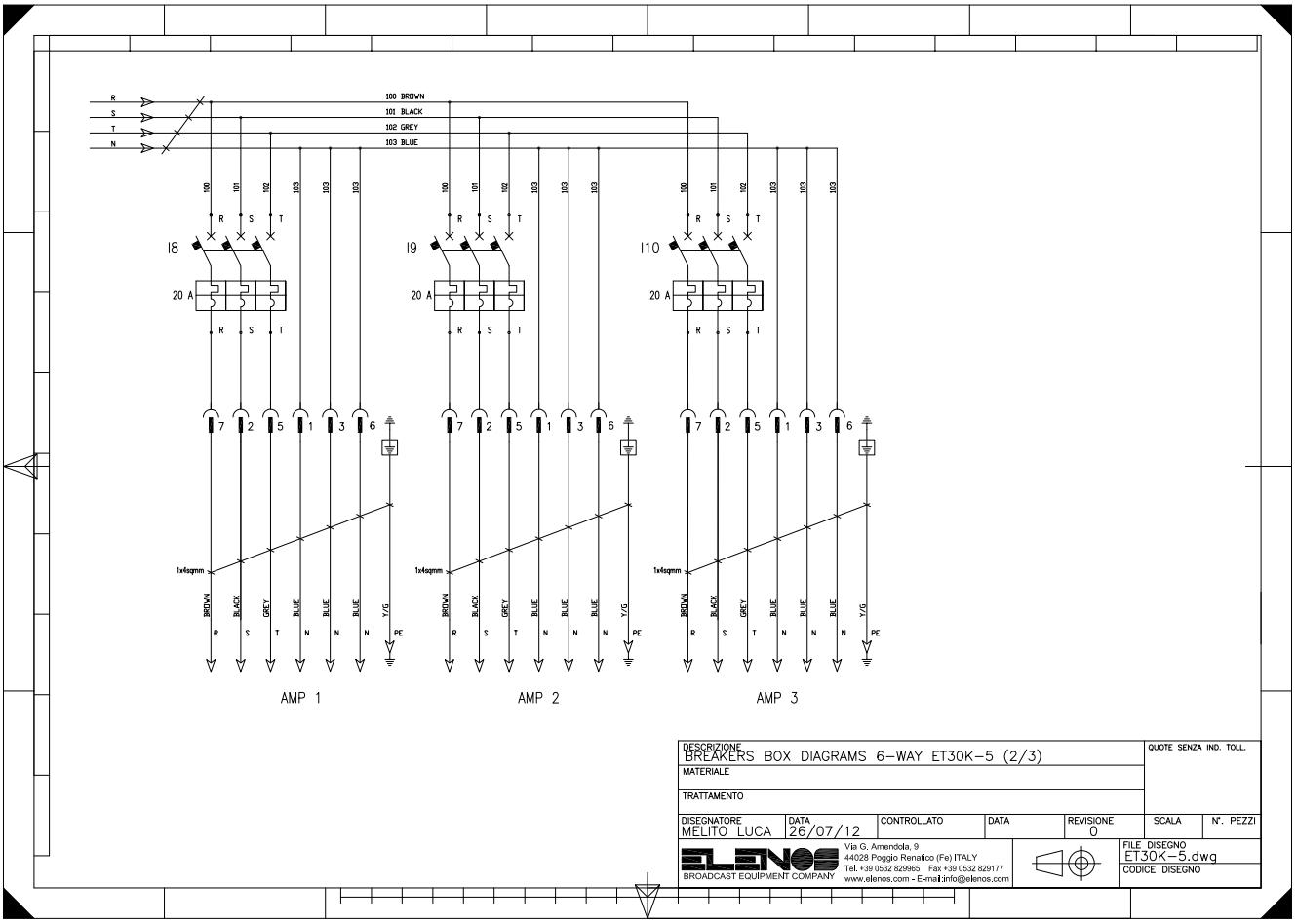


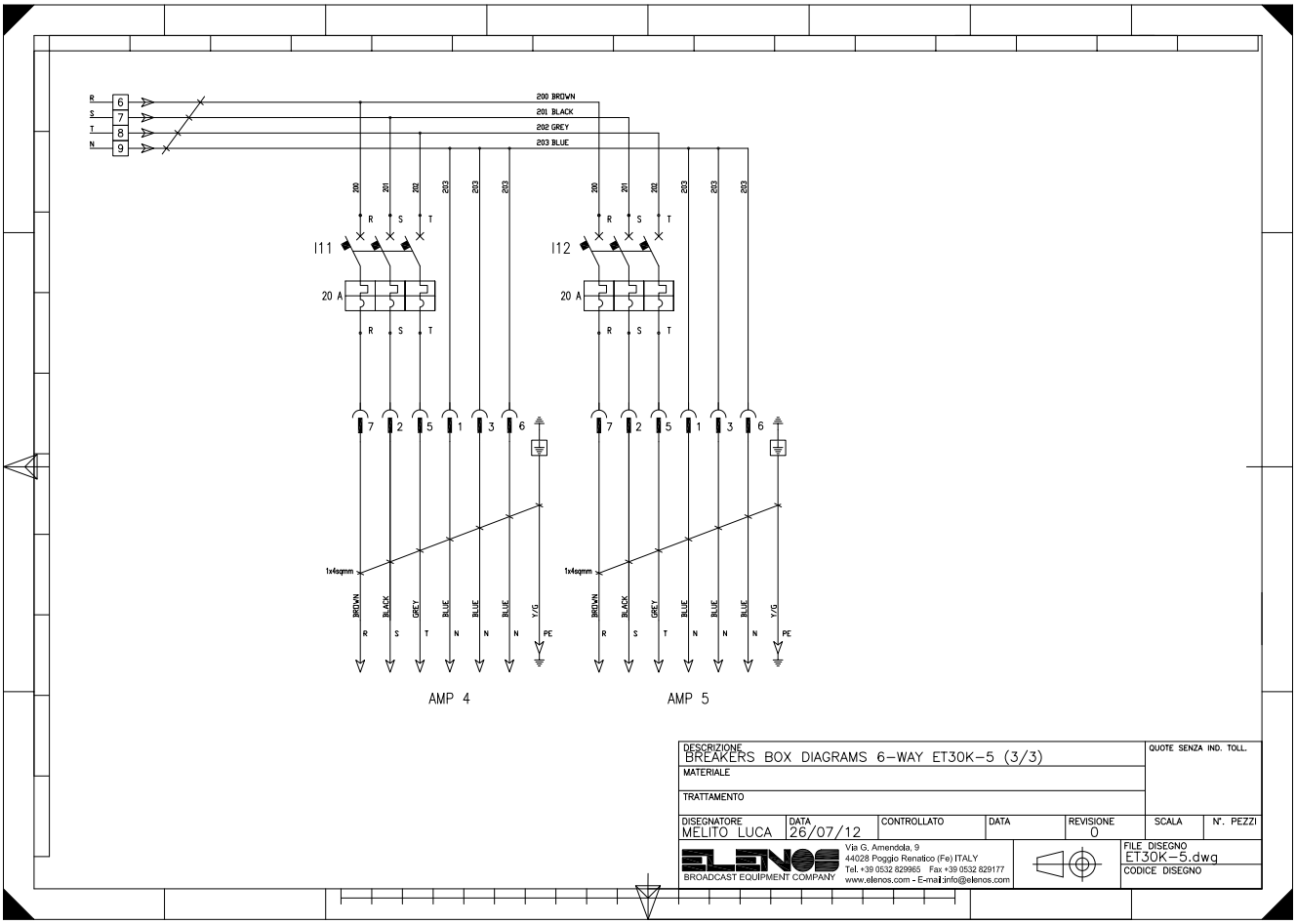
4.2.2.2 Mains connections



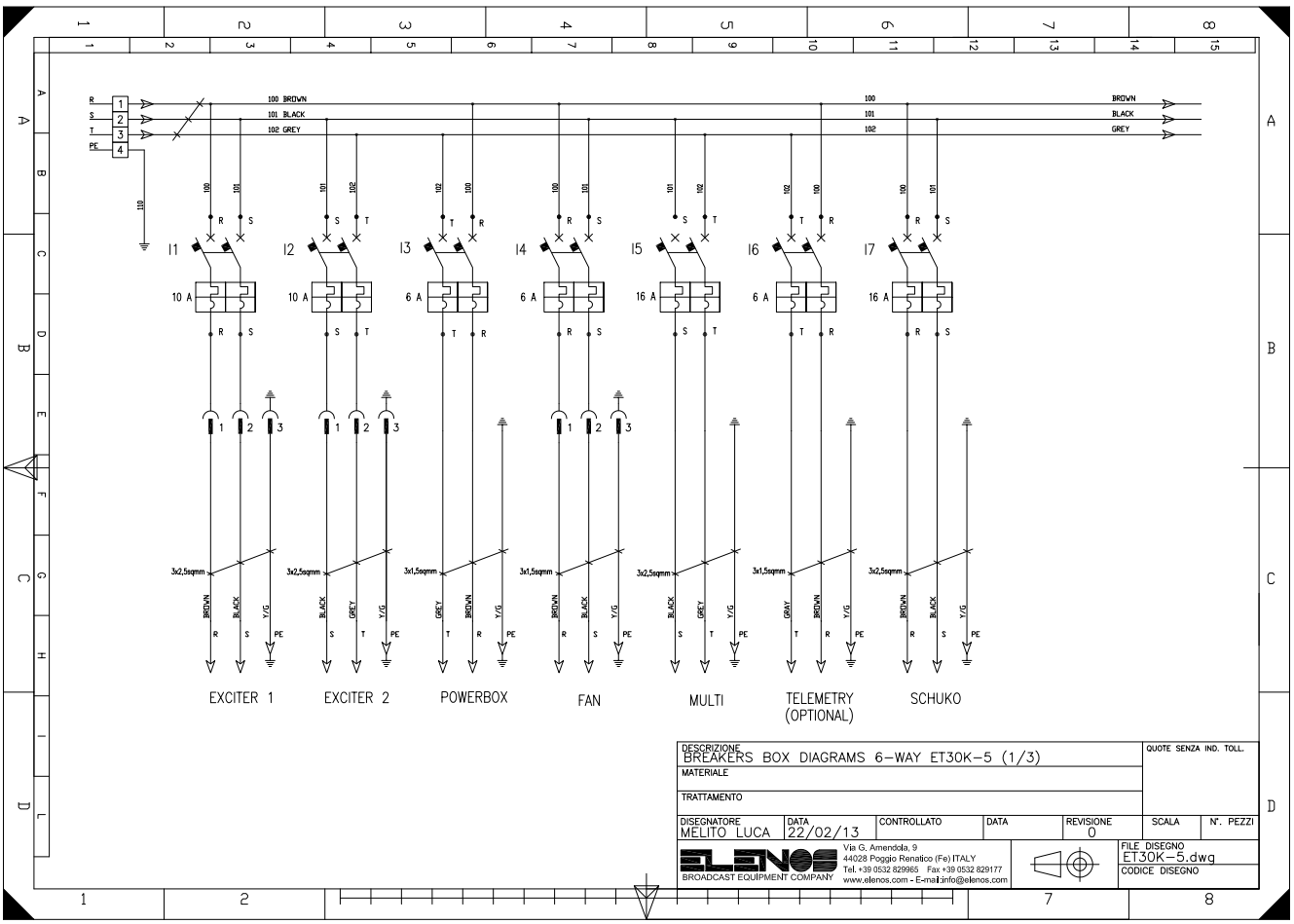
380V 3-ph star connection

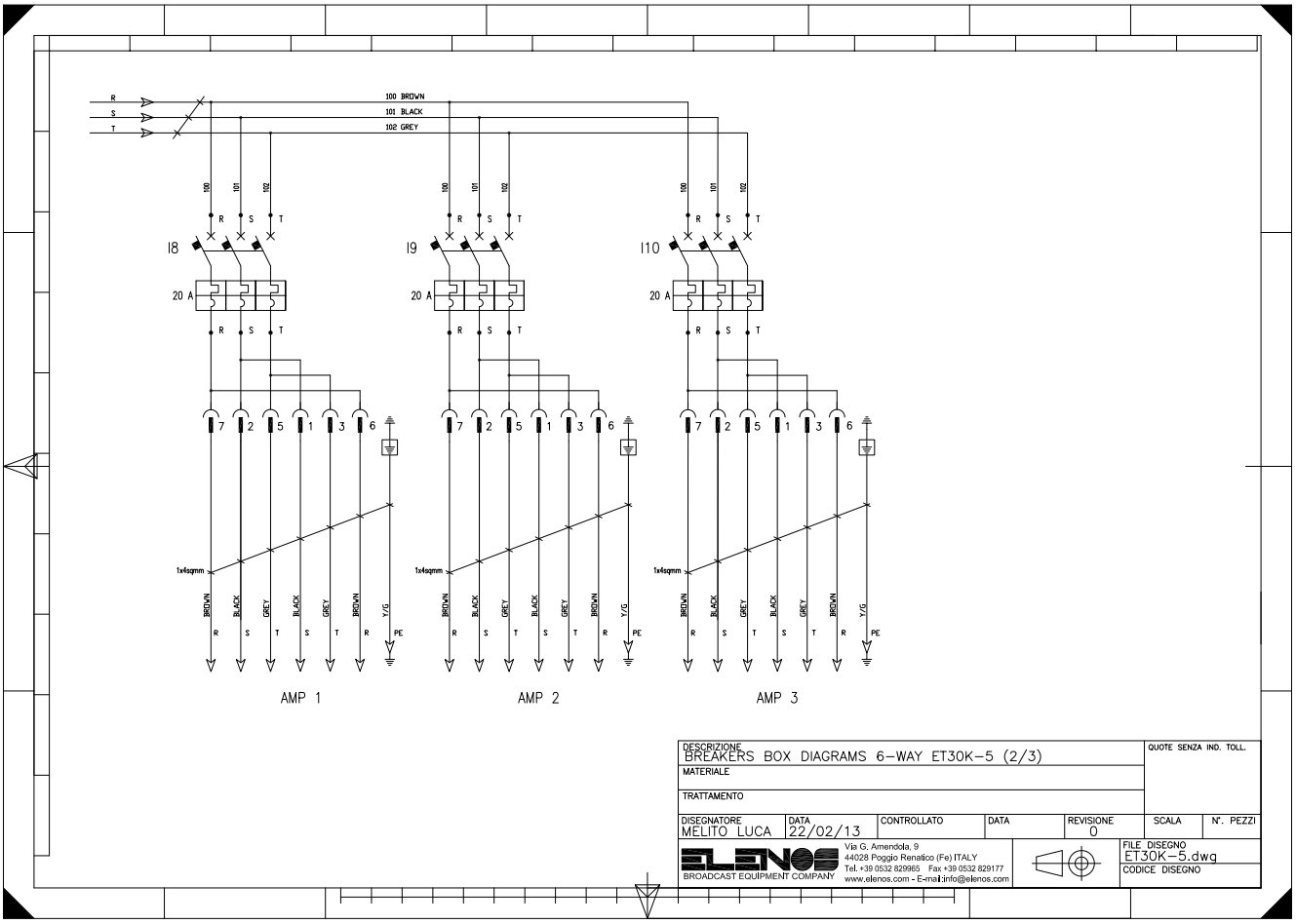


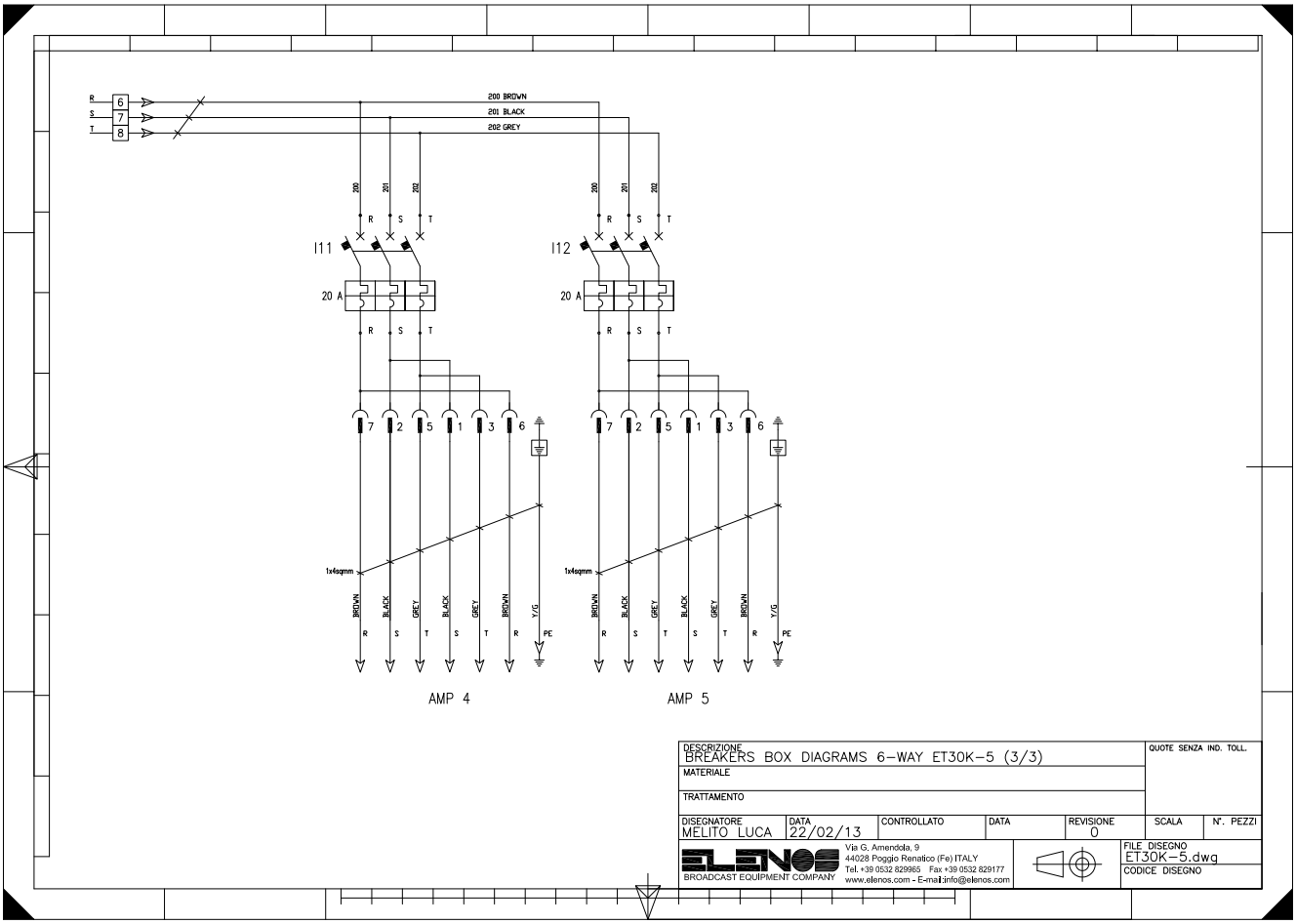



R 6
S 7
T 8
N 9
200 BROWN
201 BLACK
202 GREY
203 BLUE
I11
I12
20 A
1x4sqmm
BROWN
BLACK
GREY
BLUE
Y/G
PE
AMP 4
AMP 5
DESCRIZIONE
BREAKERS BOX DIAGRAMS 6-WAY ET30K-5 (3/3)
QUOTE SENZA IND. TOLL.
MATERIALE
TRATTAMENTO
DISEGNATORE
MELITO LUCA
DATA
26/07/12
CONTROLLATO
DATA
REVISIONE
0
SCALA
N°. PEZZI
ELENOS
BROADCAST EQUIPMENT COMPANY
Via G. Amendola, 9
44028 Poggio Renatico (Fe) ITALY
Tel. +39 0532 829965 Fax +39 0532 829177
www.elenos.com - E-mail:info@elenos.com
FILE DISEGNO
ET30K-5.dwg
CODICE DISEGNO

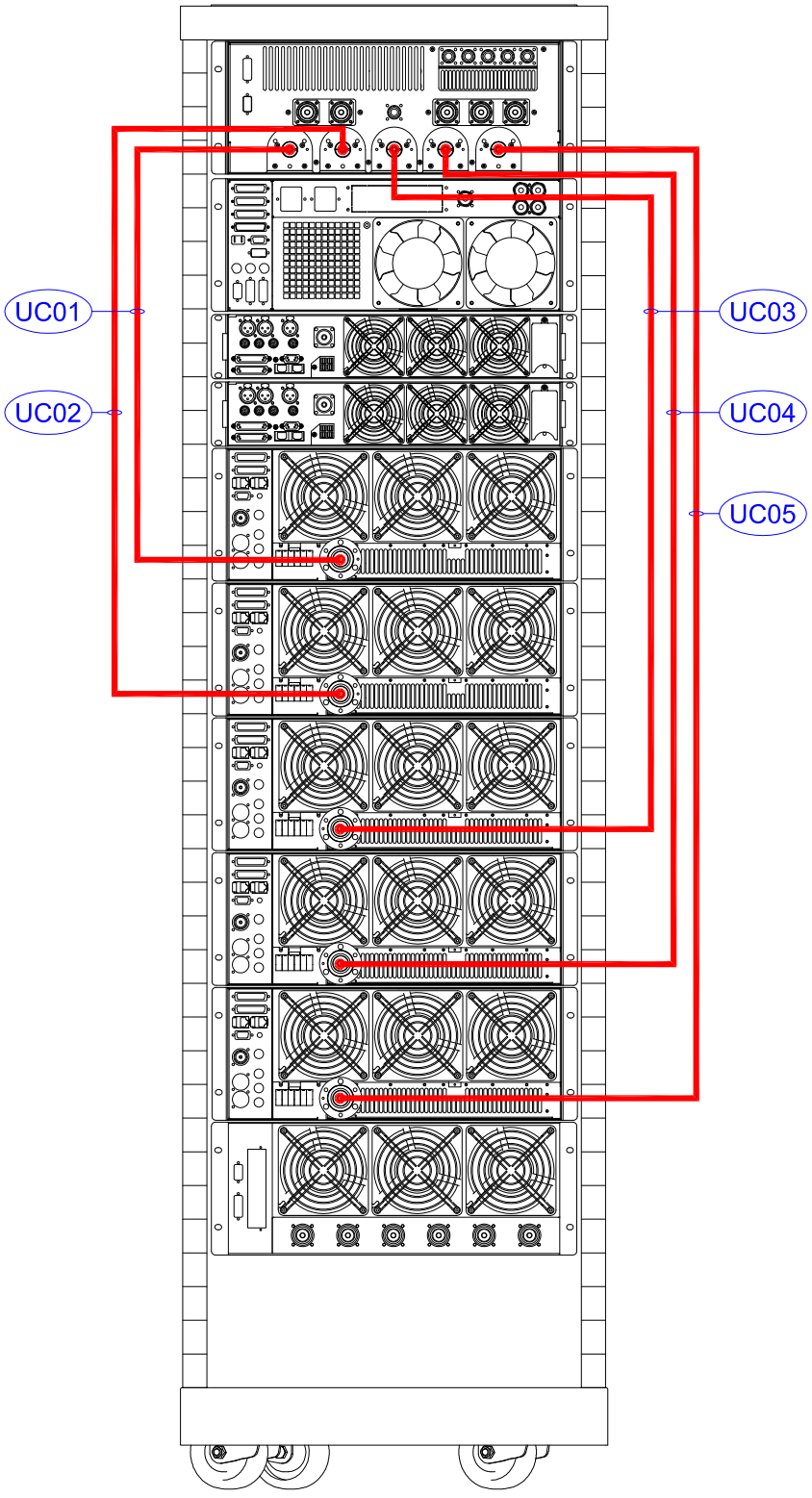
230V 3-ph triangle connection

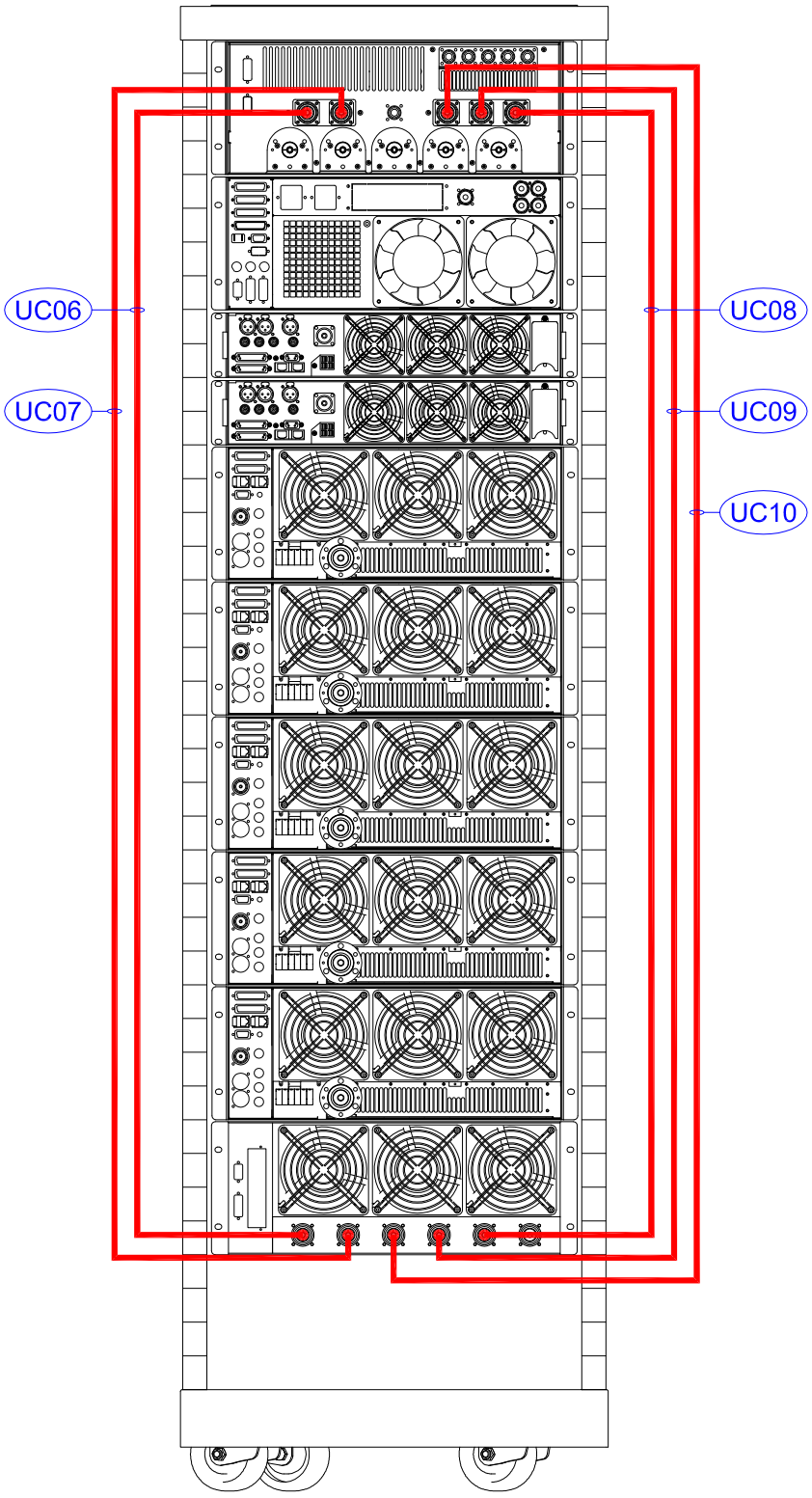


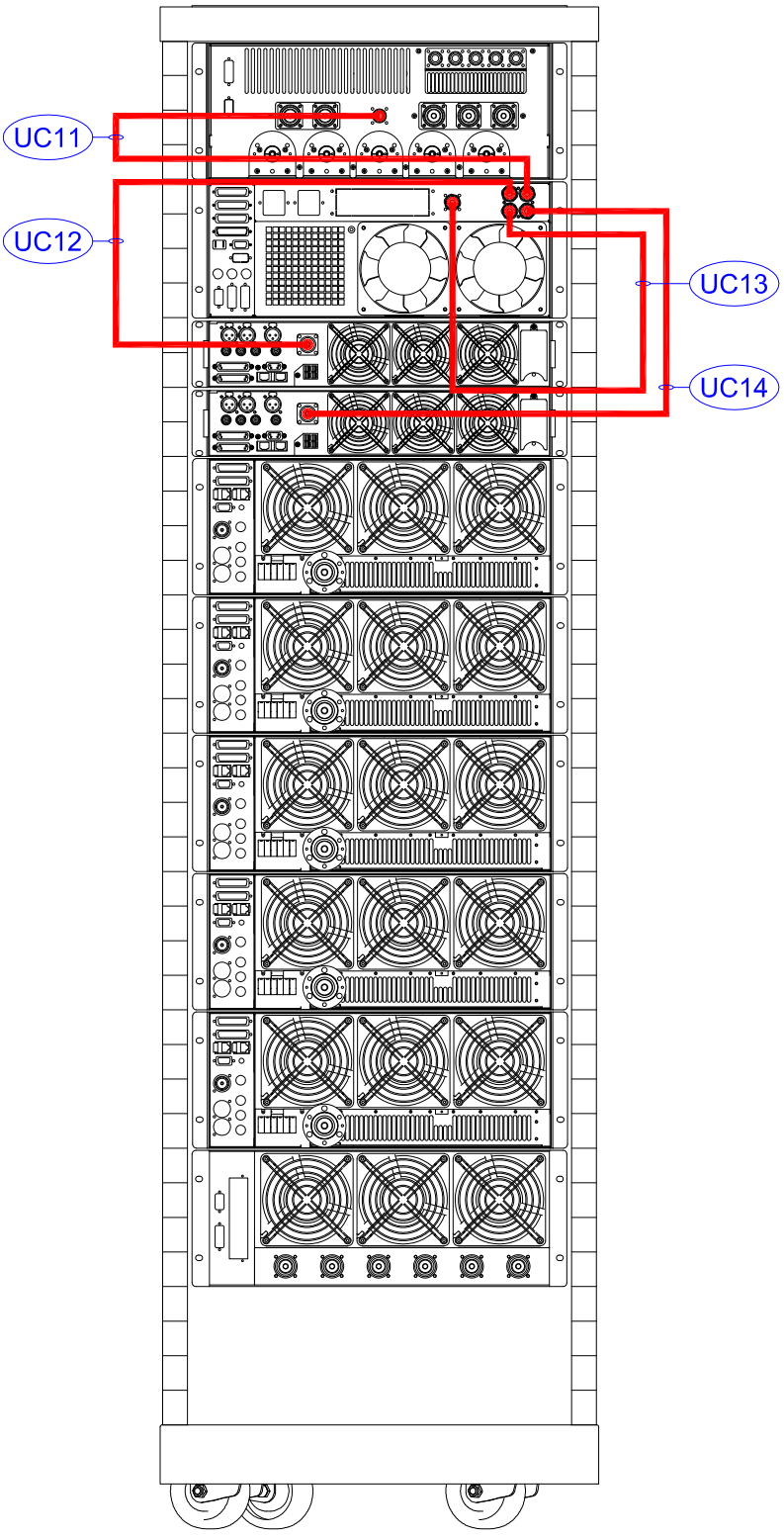


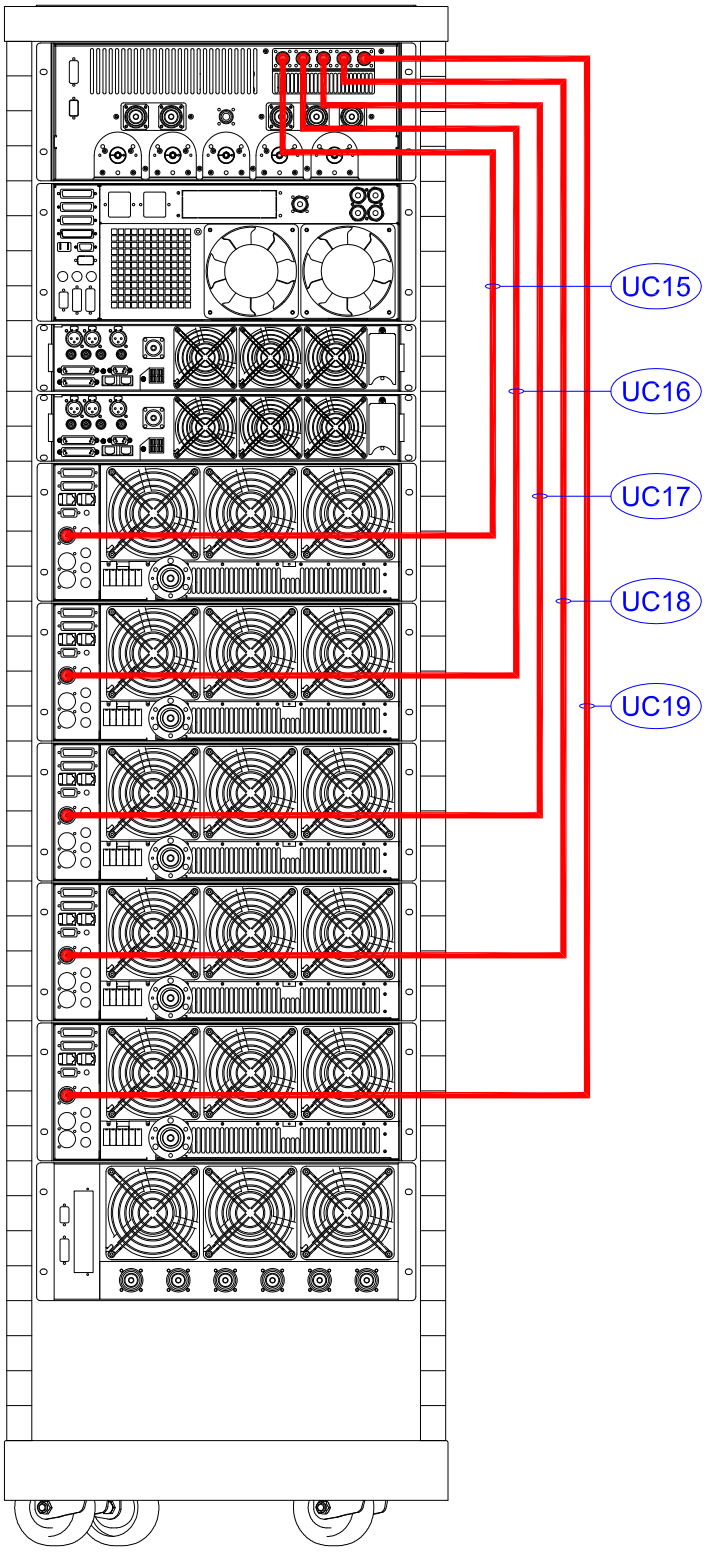

R 6
S 7
T 8
200 BROWN
201 BLACK
202 GREY
200 201 202
R S T
I11
I12
20 A
7 2 5 1 3 6
1x4sqmm
BROWN BLACK GREY BLACK GREY BROWN Y/G
R S T S T R PE
AMP 4
AMP 5
DESCRIZIONE
BREAKERS BOX DIAGRAMS 6-WAY ET30K-5 (3/3)
QUOTE SENZA IND. TOLL.
MATERIALE
TRATTAMENTO
DISEGNATORE
MELITO LUCA
DATA
22/02/13
CONTROLLATO
DATA
REVISIONE
0
SCALA
N°. PEZZI
ELENOS
BROADCAST EQUIPMENT COMPANY
Via G. Amendola, 9
44028 Poggio Renatico (Fe) ITALY
Tel. +39 0532 829965 Fax +39 0532 829177
www.elenos.com - E-mail:info@elenos.com
FILE DISEGNO
ET30K-5.dwg
CODICE DISEGNO

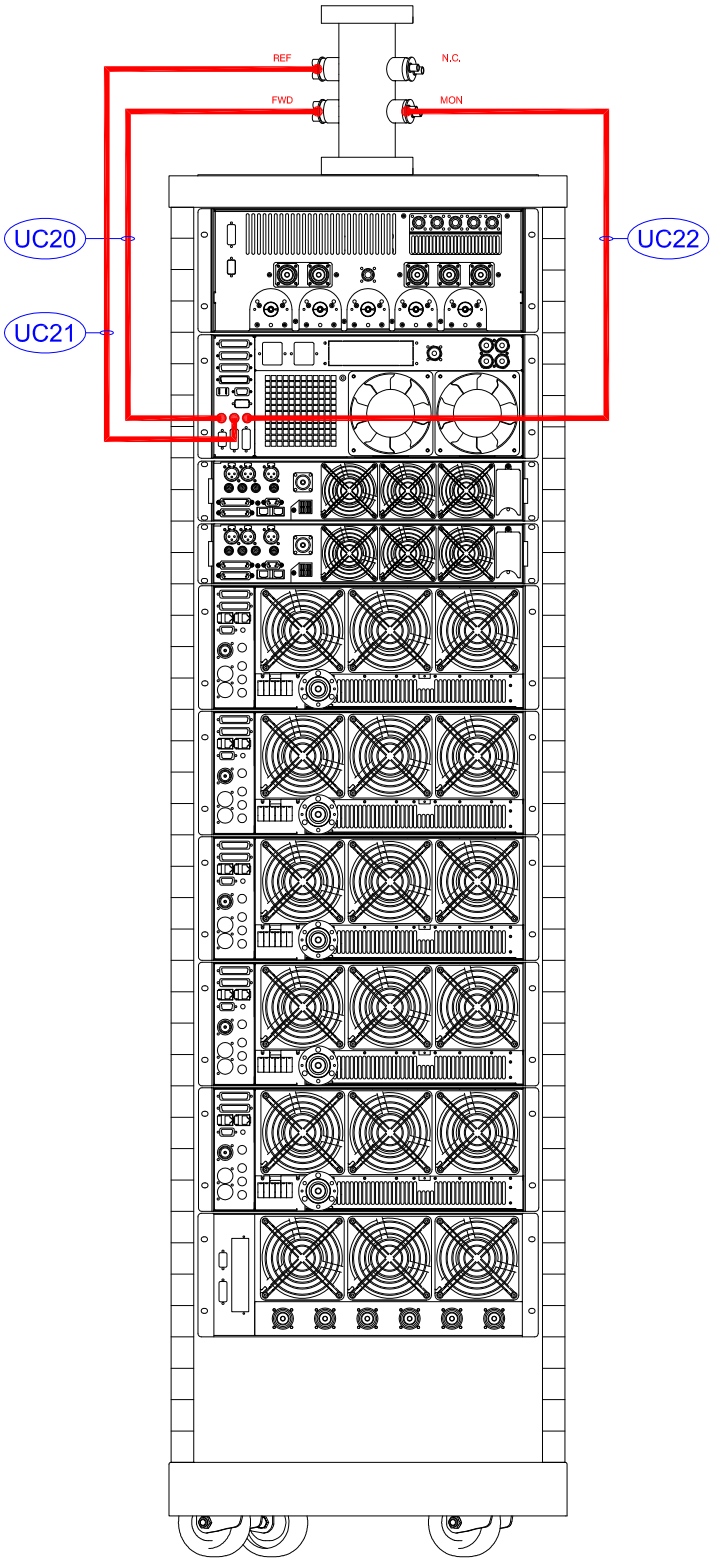
4.2.2.3 RF connections



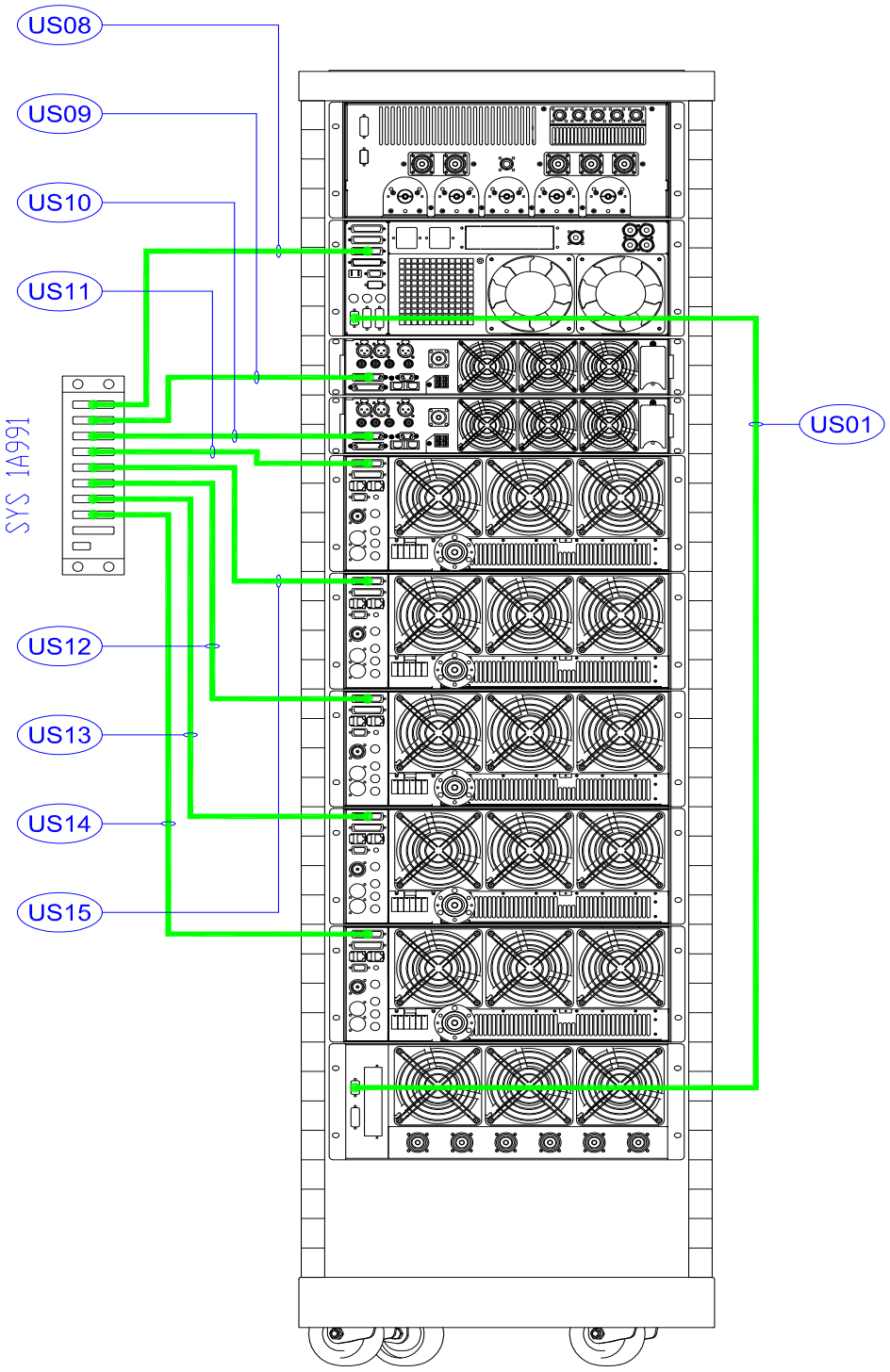

UC06
UC07
UC08
UC09
UC10

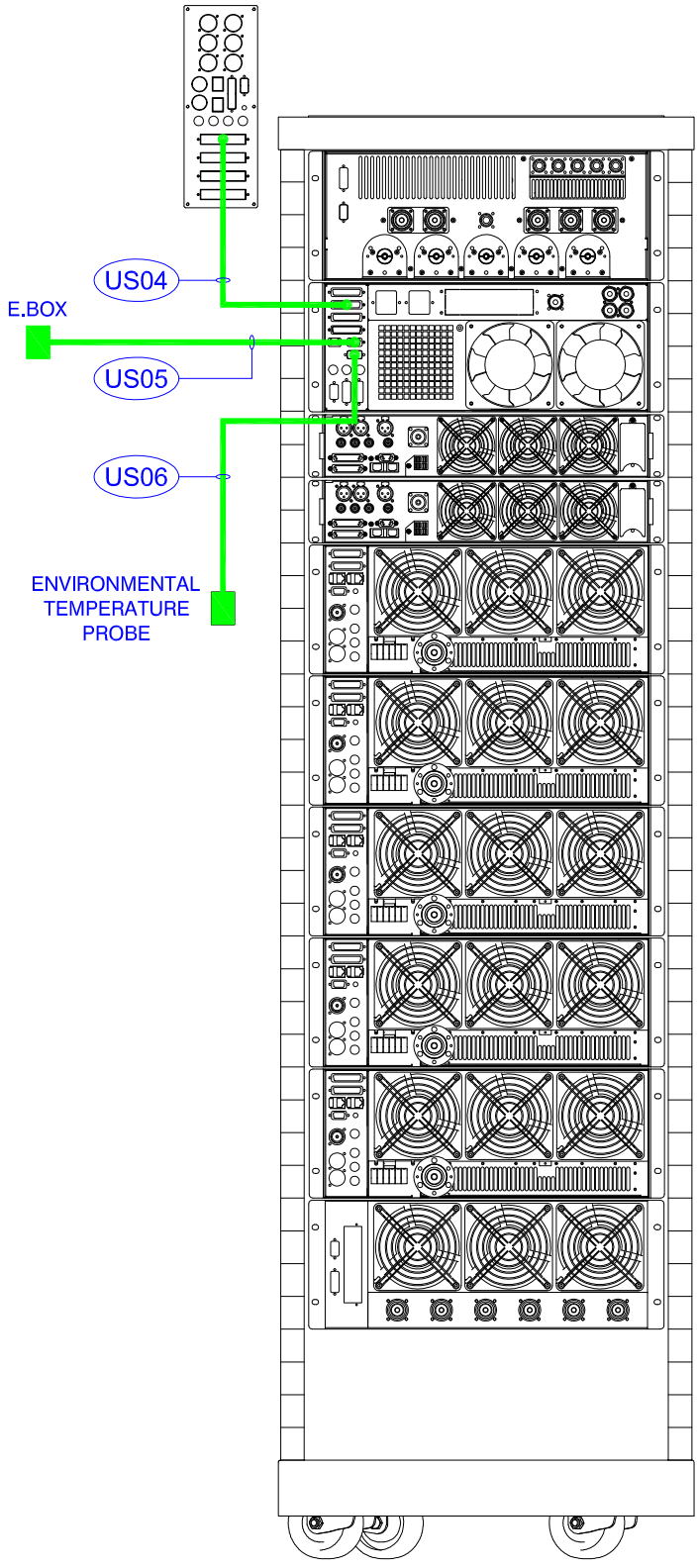

UC11
UC12
UC13
UC14


UC15
UC16
UC17
UC18
UC19

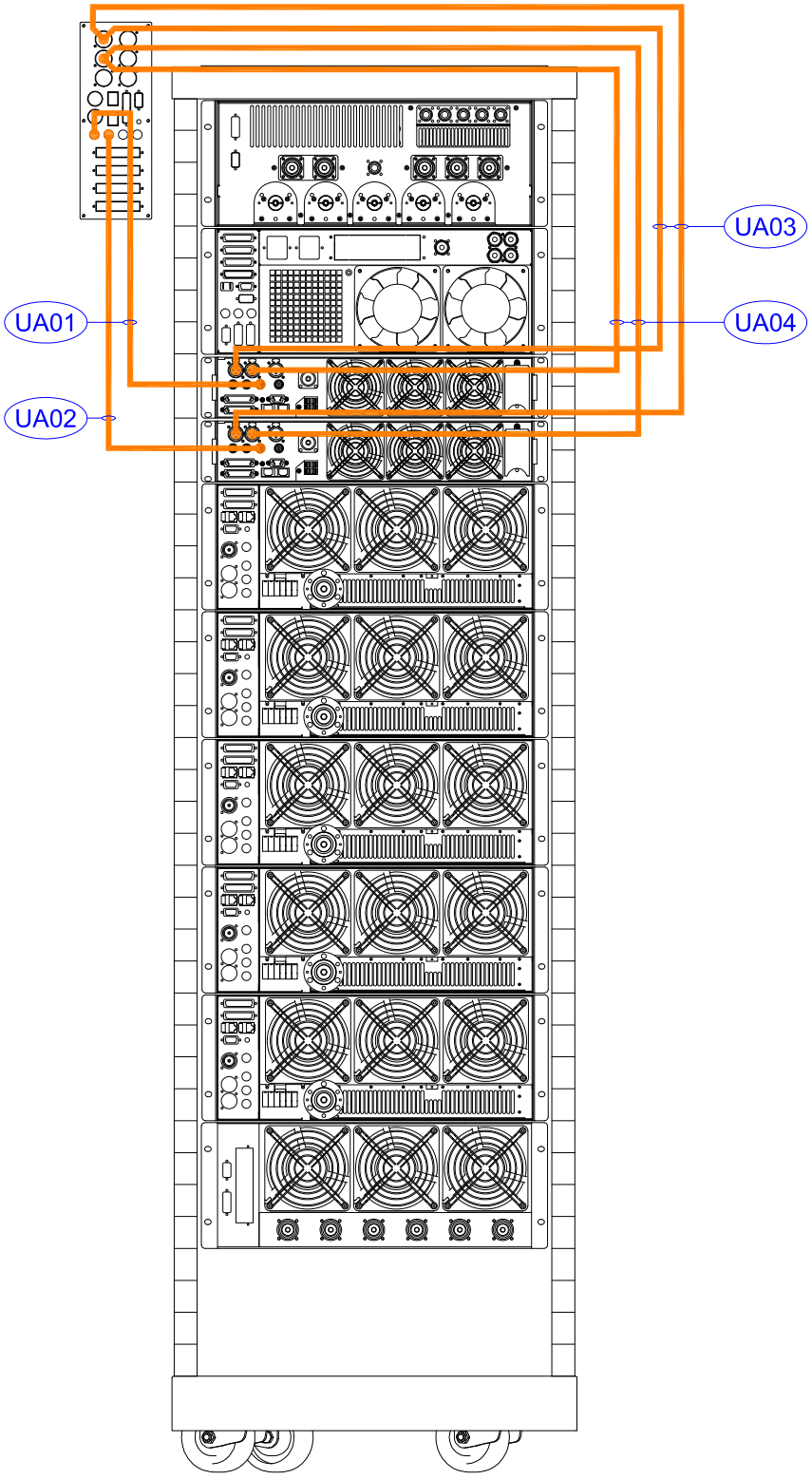

REF
N.C.
FWD
MON
UC20
UC21
UC22

4.2.2.4 Signal connections




US04
E.BOX
US05
US06
ENVIRONMENTAL
TEMPERATURE
PROBE

4.2.2.5 Audio connections



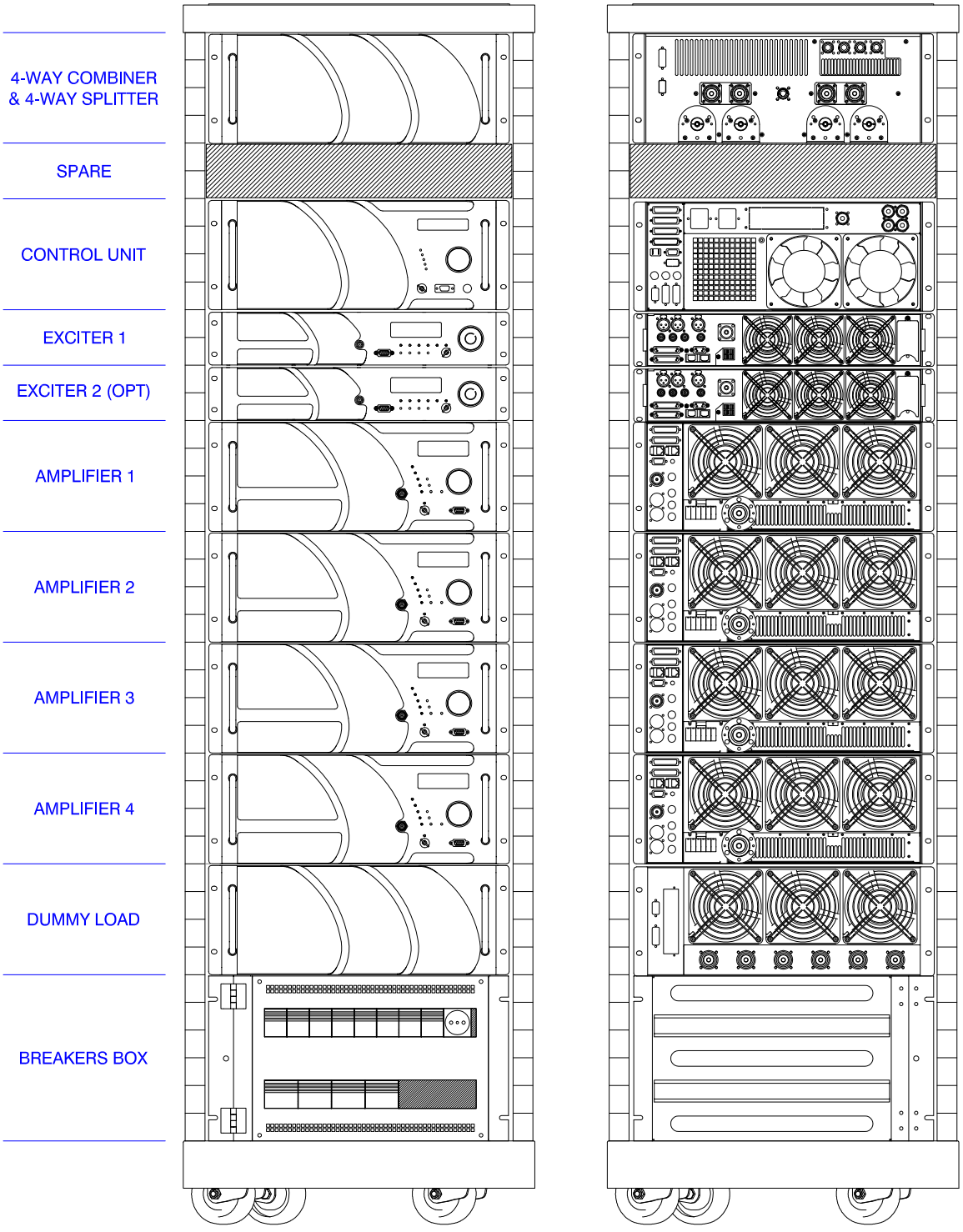
4.2.2.6 Cables convertion code table

Diagram code	Elenos code
UC01	CAB0584-0
UC02	CAB0584-0
UC03	CAB0584-0
UC04	CAB0584-0
UC05	CAB0584-0
UC06	CAB0262-0
UC07	CAB0262-0
UC08	CAB0262-0
UC09	CAB0262-0
UC10	CAB0262-0
UC11	CSF-0022
UC12	CSF-0022
UC13	CAB0522-0
UC14	CSF-0022
UC15	CAB0217-0
UC16	CAB0217-0
UC17	CAB0217-0
UC18	CAB0217-0
UC19	CAB0217-0
UC20	CAB0383-0
UC21	CAB0383-0
UC22	CAB0383-0
US01	ETGSAL33
US04	CAB0686-0
US05	ETGSAL33
US06	CAB0623-1
US08	CAB0324-0
US09	CAB0324-0
US10	CAB0324-0
US11	CAB0324-0
US12	CAB0324-0
US13	CAB0324-0

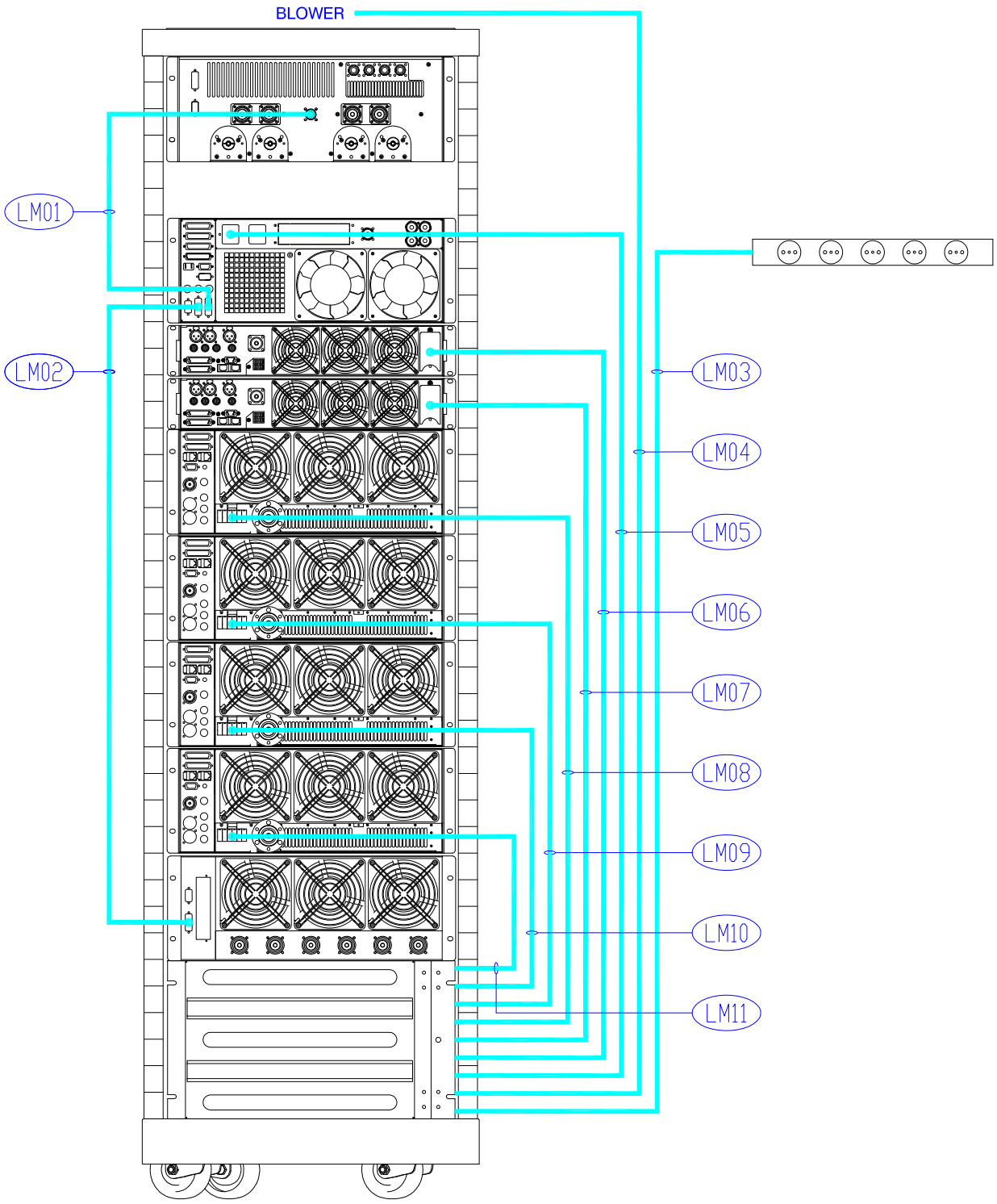
US14	CAB0324-0
US15	CAB0324-0
UA01	CAB0135-0
UA02	CAB0135-0
UA03	CAB0523-0
UA04	CAB0523-0
UM01	CAB0607-0
UM02	CAB0606-0

4.2.3 ET20000-5

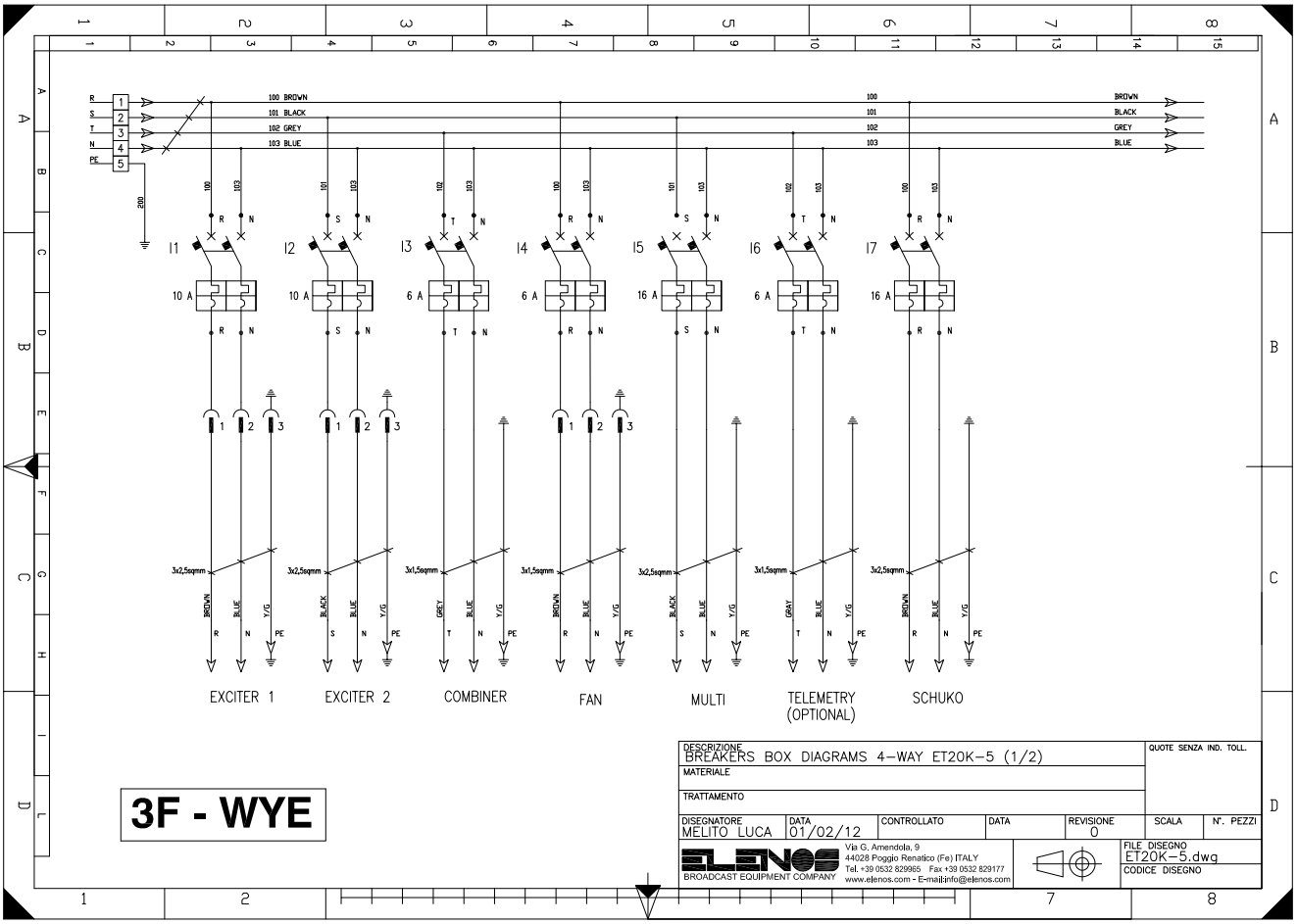
4.2.3.1 General view

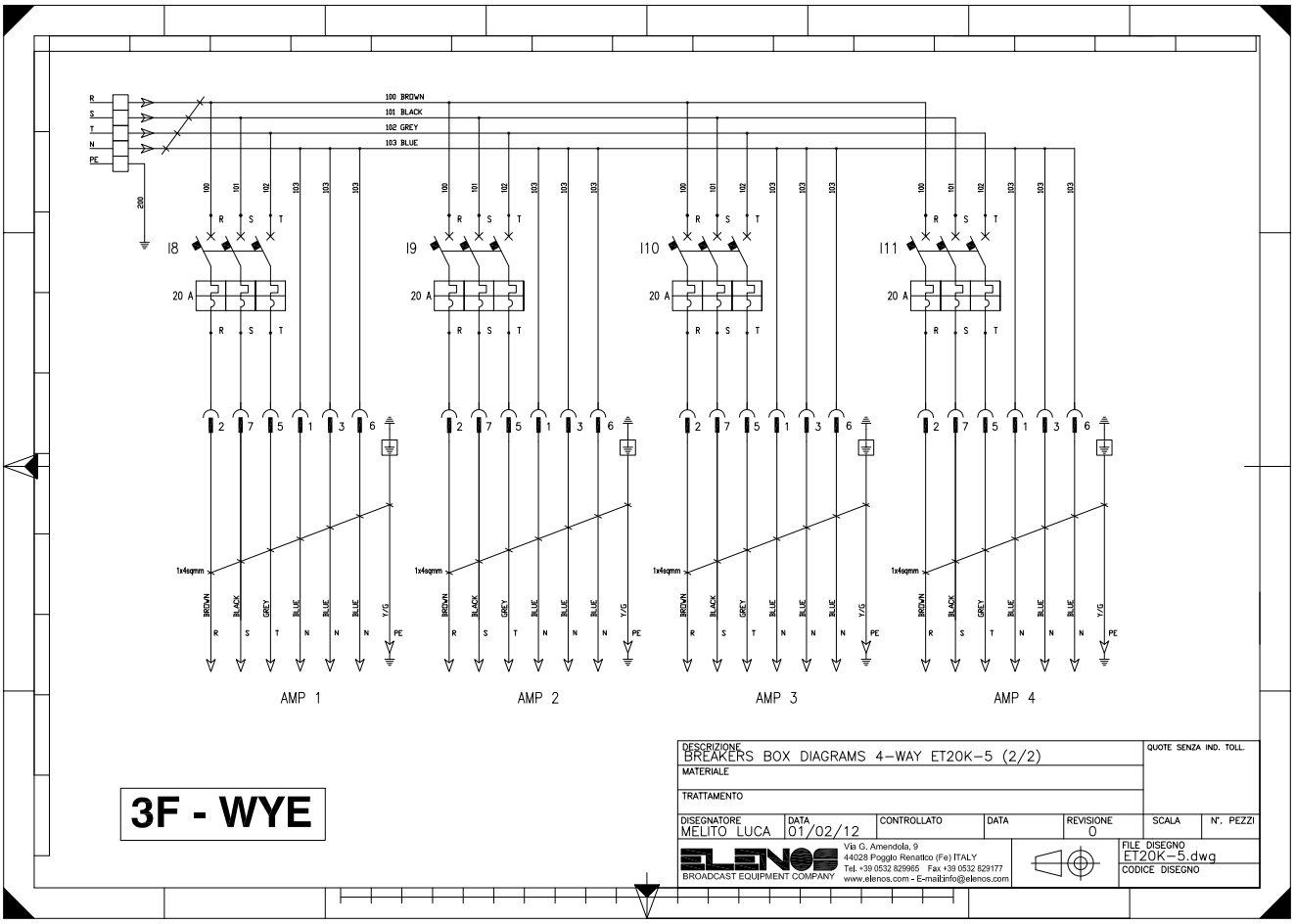


4.2.3.2 Mains connections

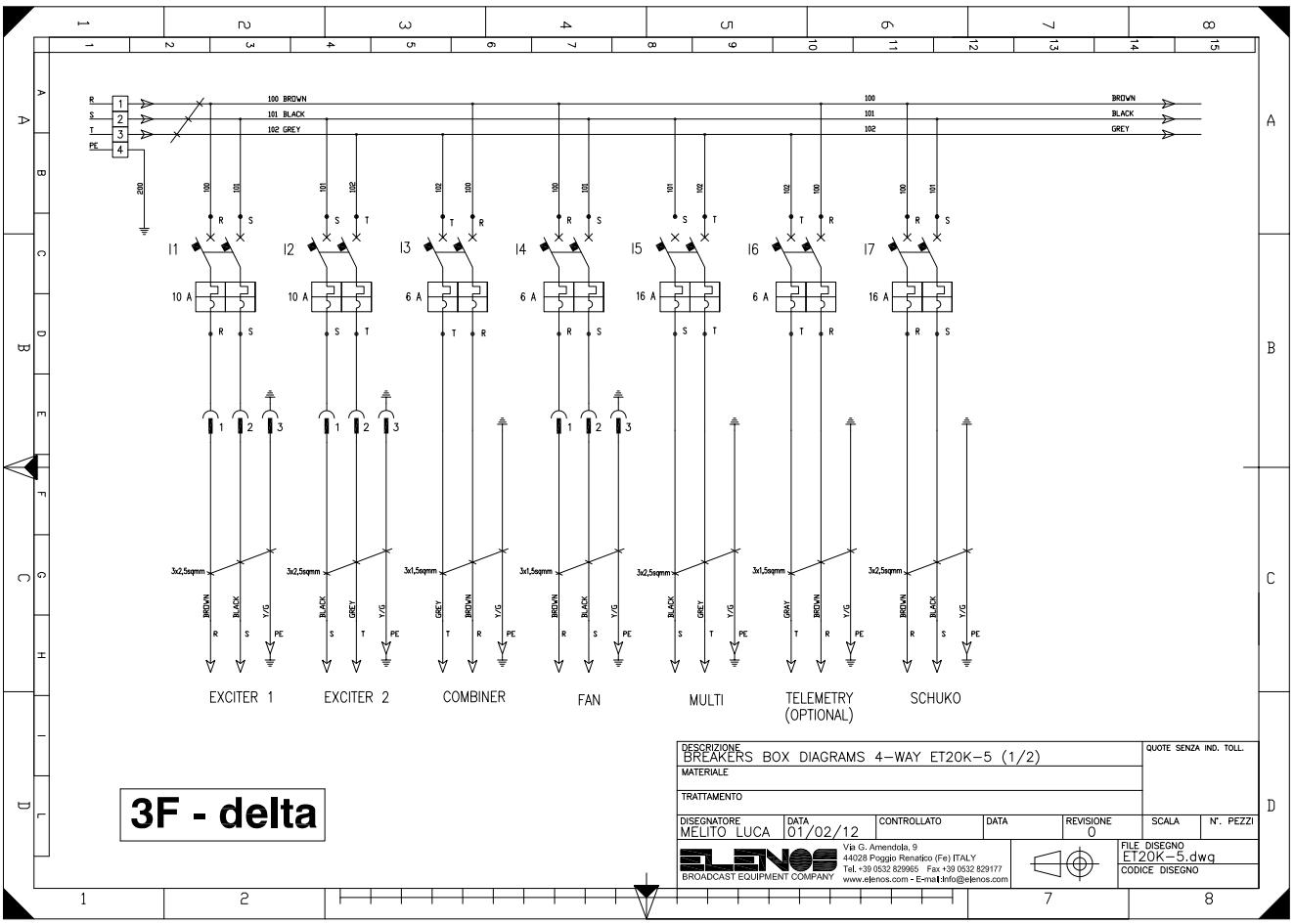


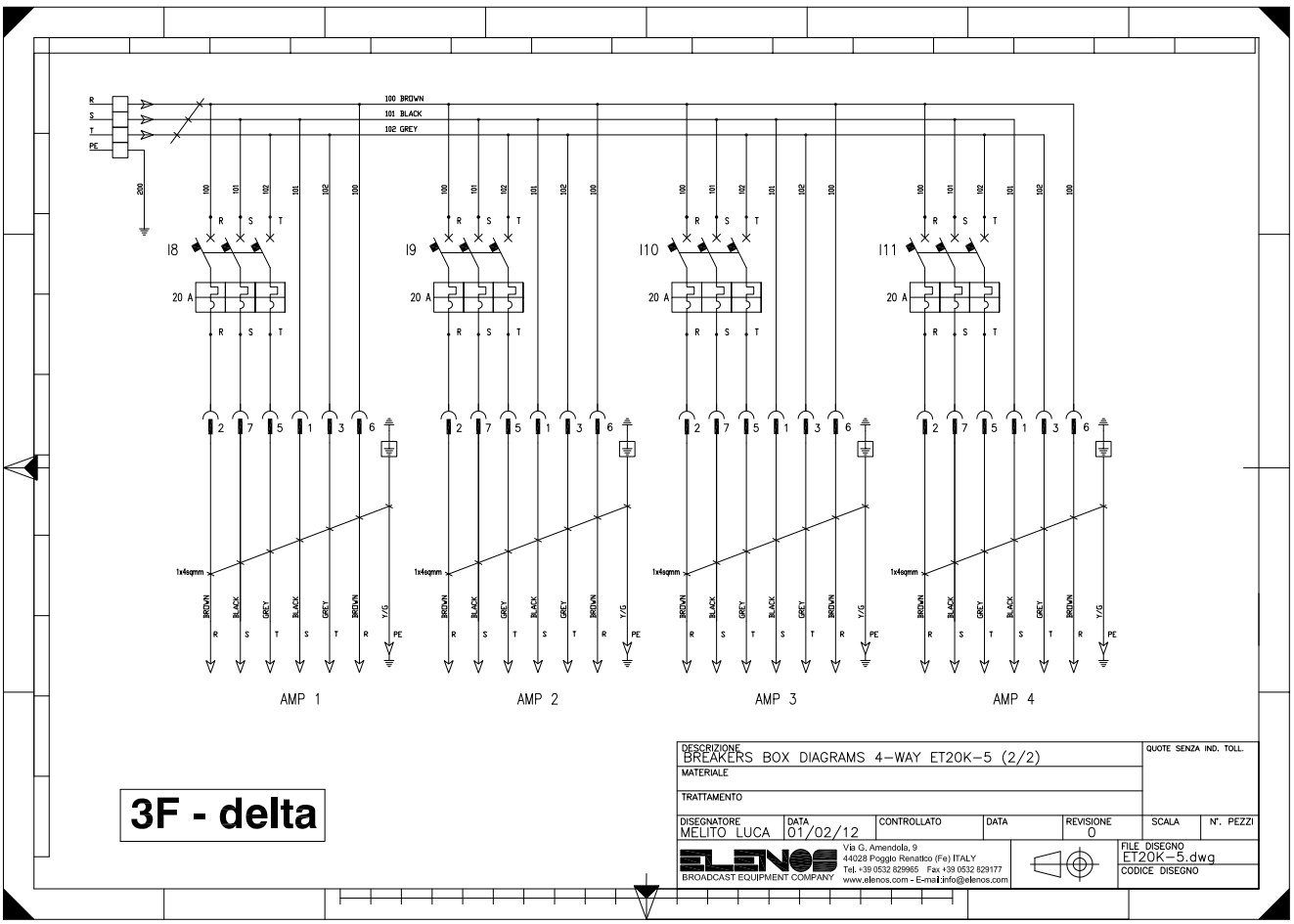
380V 3-ph star connection



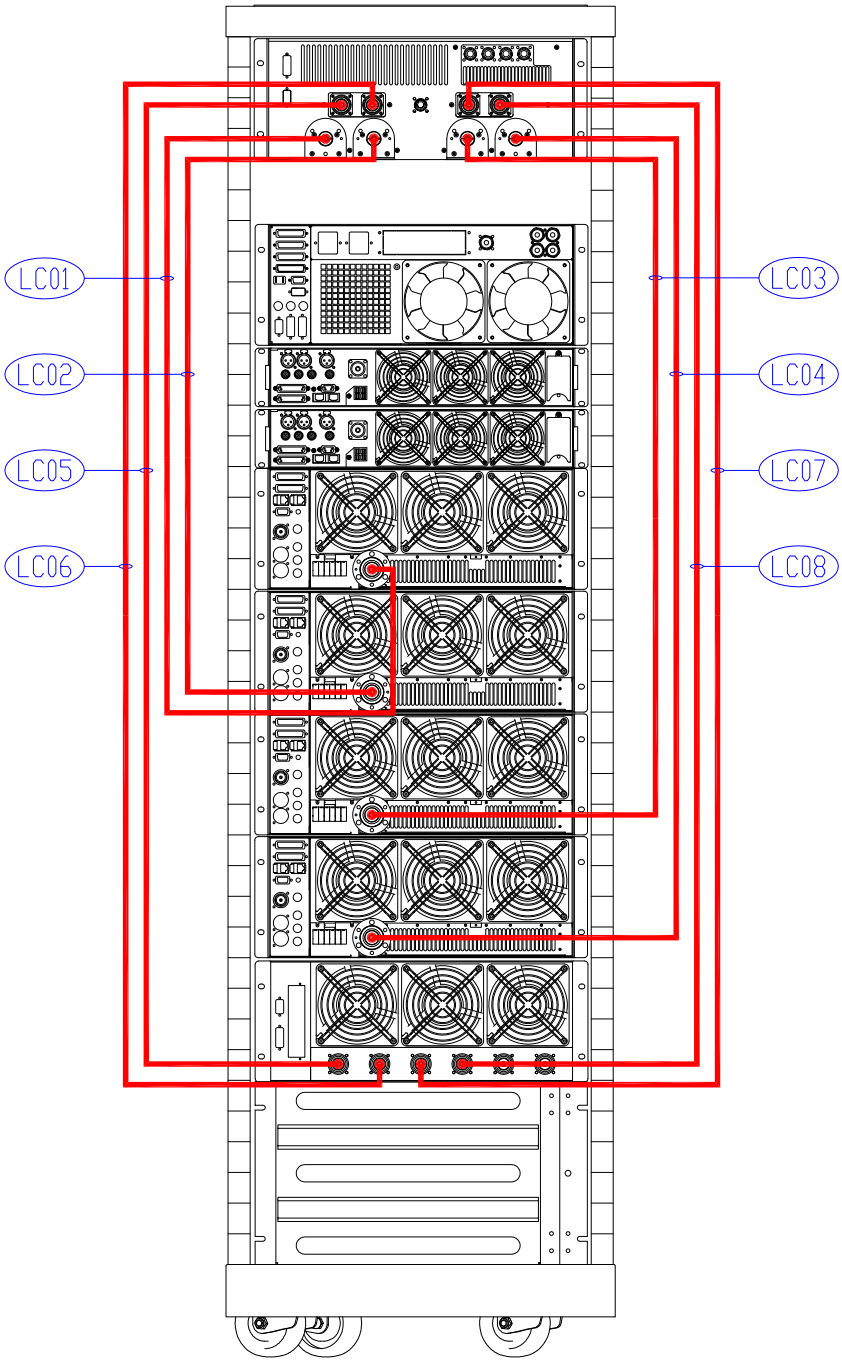


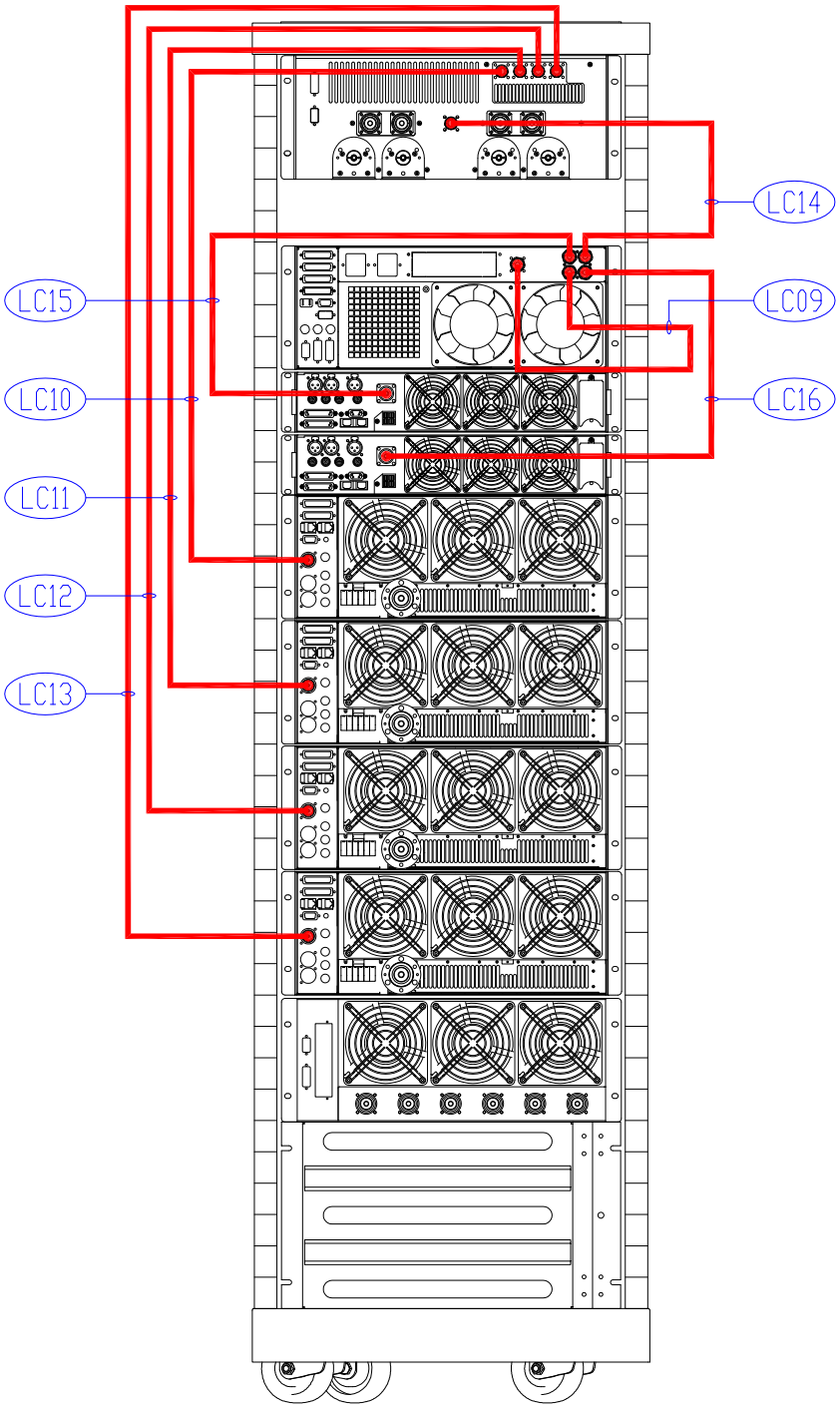
230V 3-ph triangle connection

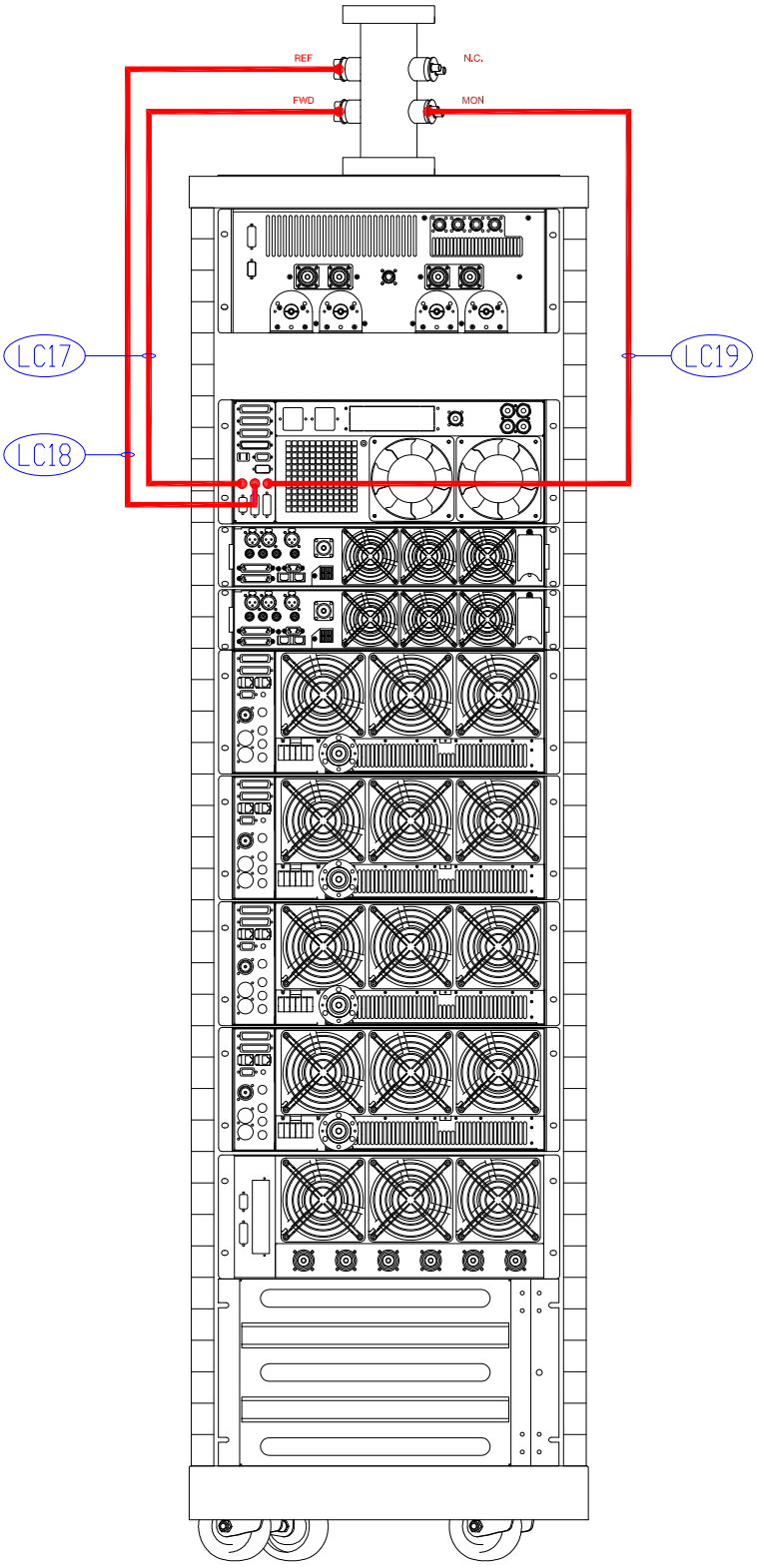




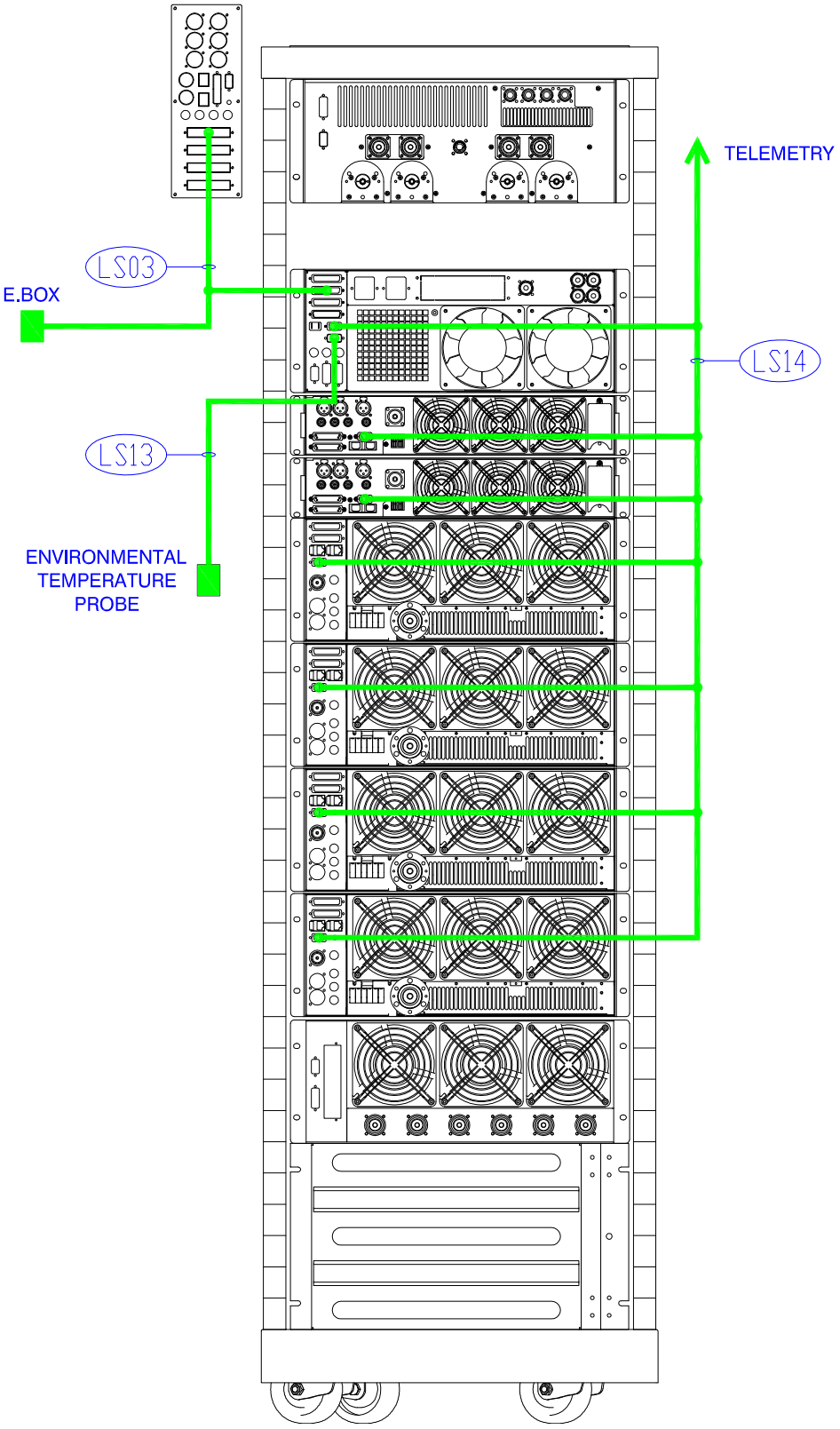
4.2.3.3 RF connections

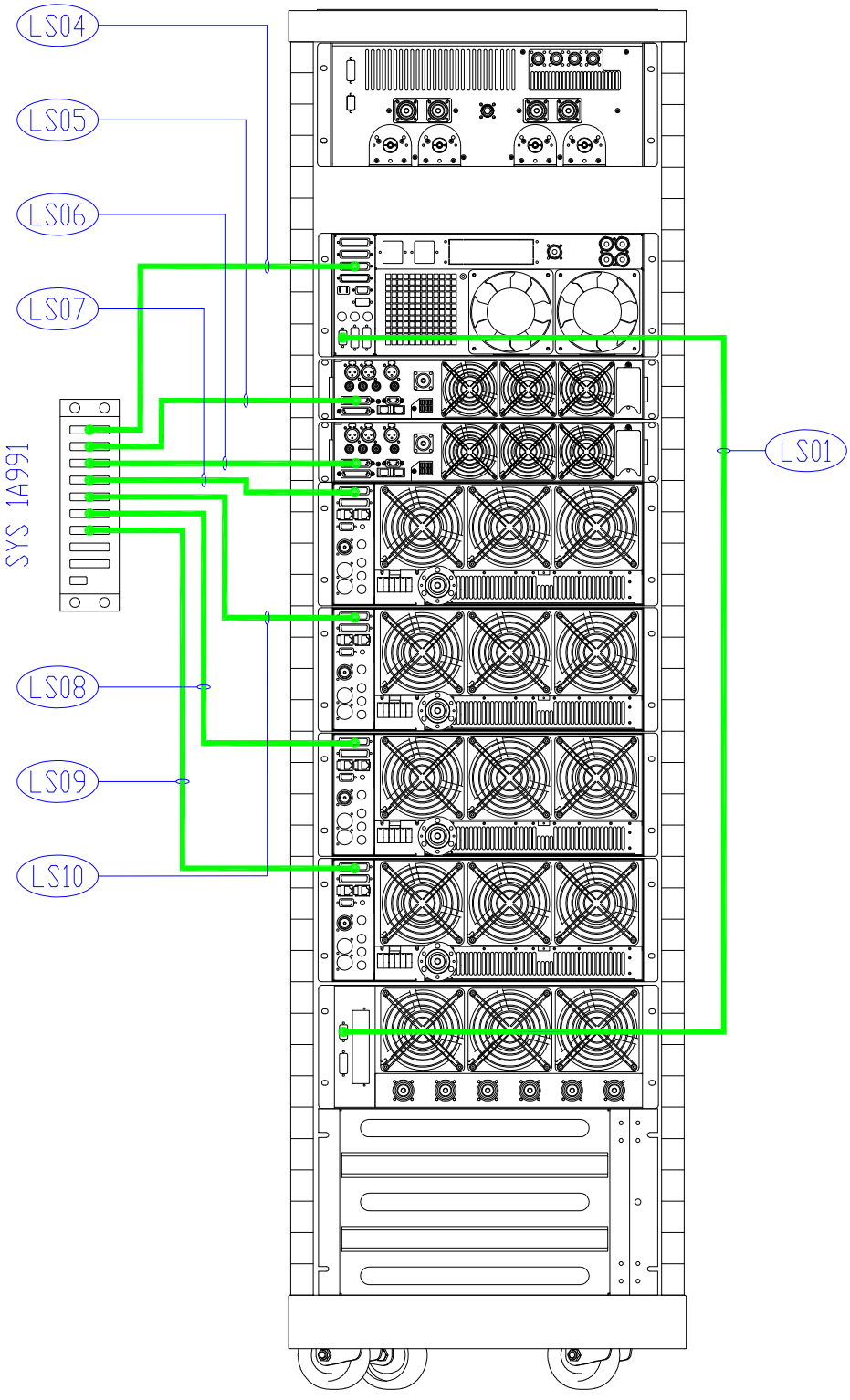



LC14
LC15
LC09
LC10
LC16
LC11
LC12
LC13

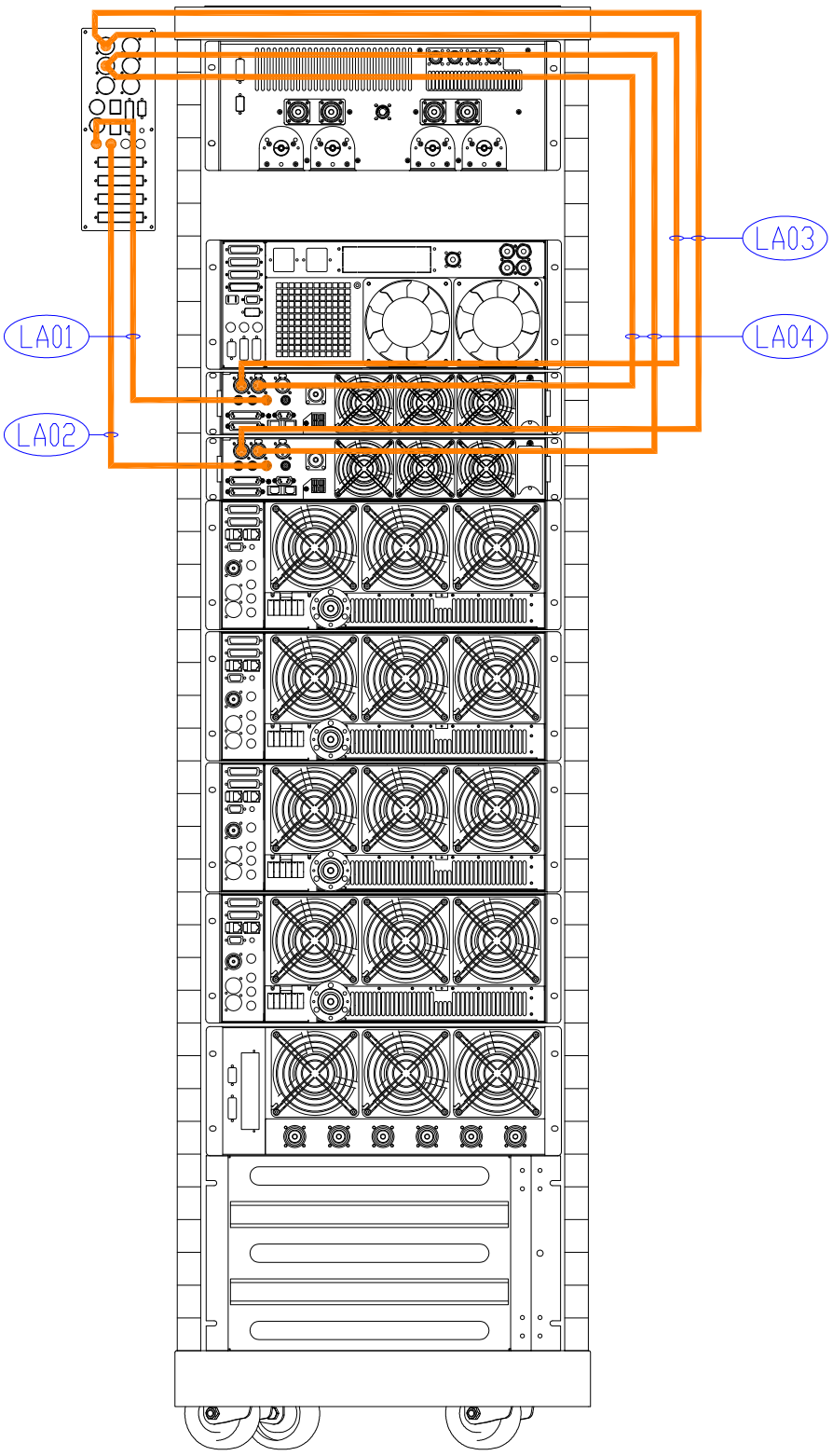

REF
N.C.
FWD
MON
LC17
LC19
LC18

4.2.3.4 Signal connections




LS04
LS05
LS06
LS07
SYS 1A991
LS01
LS08
LS09
LS10

4.2.3.5 Audio connections



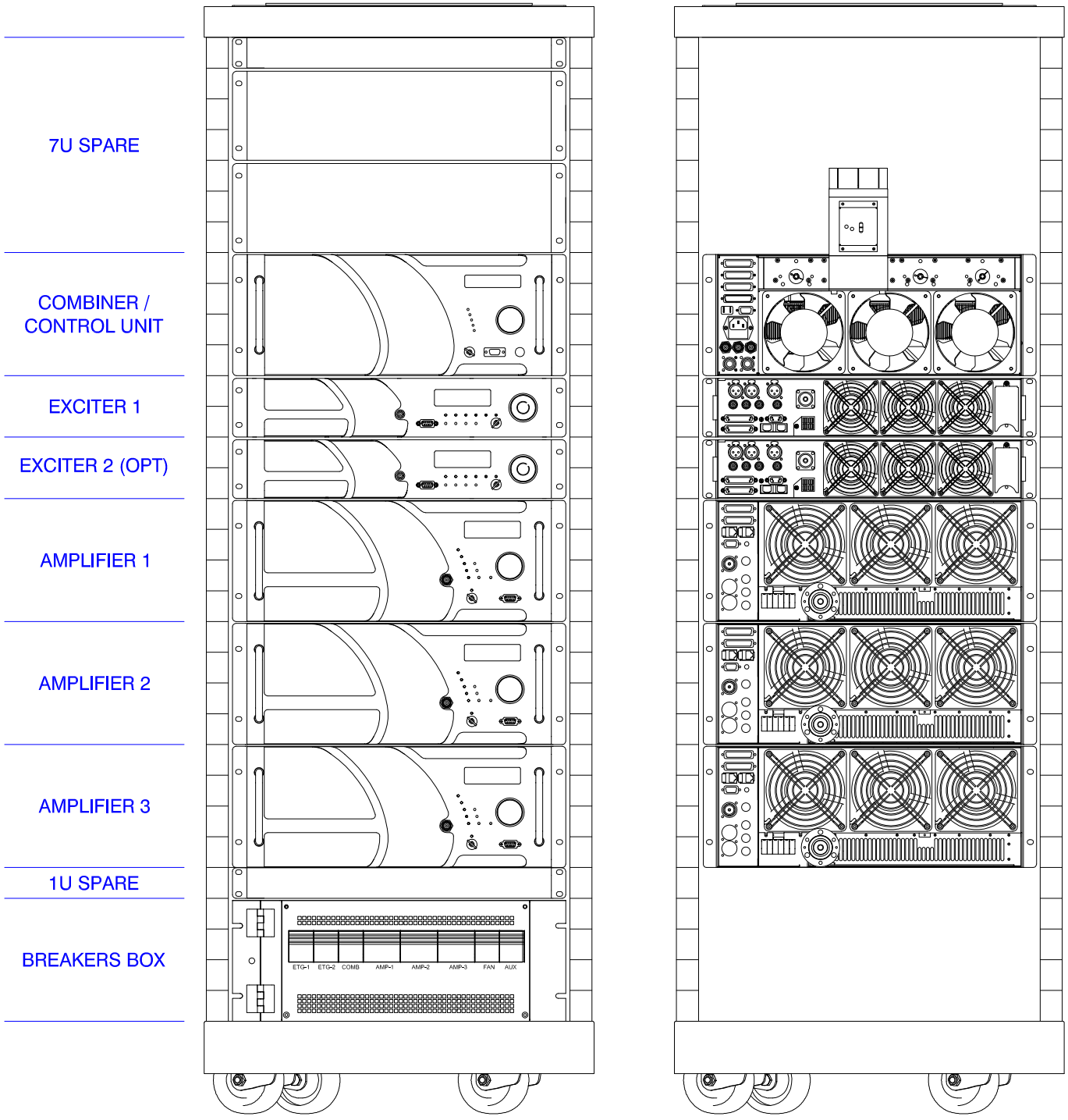
4.2.3.6 Cables convertion code table

Diagram code	Elenos code
LC01	CAB0584-0
LC02	CAB0584-0
LC03	CAB0584-0
LC04	CAB0584-0
LC05	CAB0262-0
LC06	CAB0262-0
LC07	CAB0262-0
LC08	CAB0262-0
LC09	CAB0522-0
LC10	CAB0217-0
LC11	CAB0217-0
LC12	CAB0217-0
LC13	CAB0217-0
LC14	CSF-0022
LC15	CSF-0022
LC16	CSF-0022
LC17	CAB0383-0
LC18	CAB0383-0
LC19	CAB0383-0
LS01	ETGSAL33
LS03	CAB0686-0
LS04	CAB0324-0
LS05	CAB0324-0
LS06	CAB0324-0
LS07	CAB0324-0
LS08	CAB0324-0
LS09	CAB0324-0
LS10	CAB0324-0
LS13	CAB0623-0
LS14	CAB0687-0

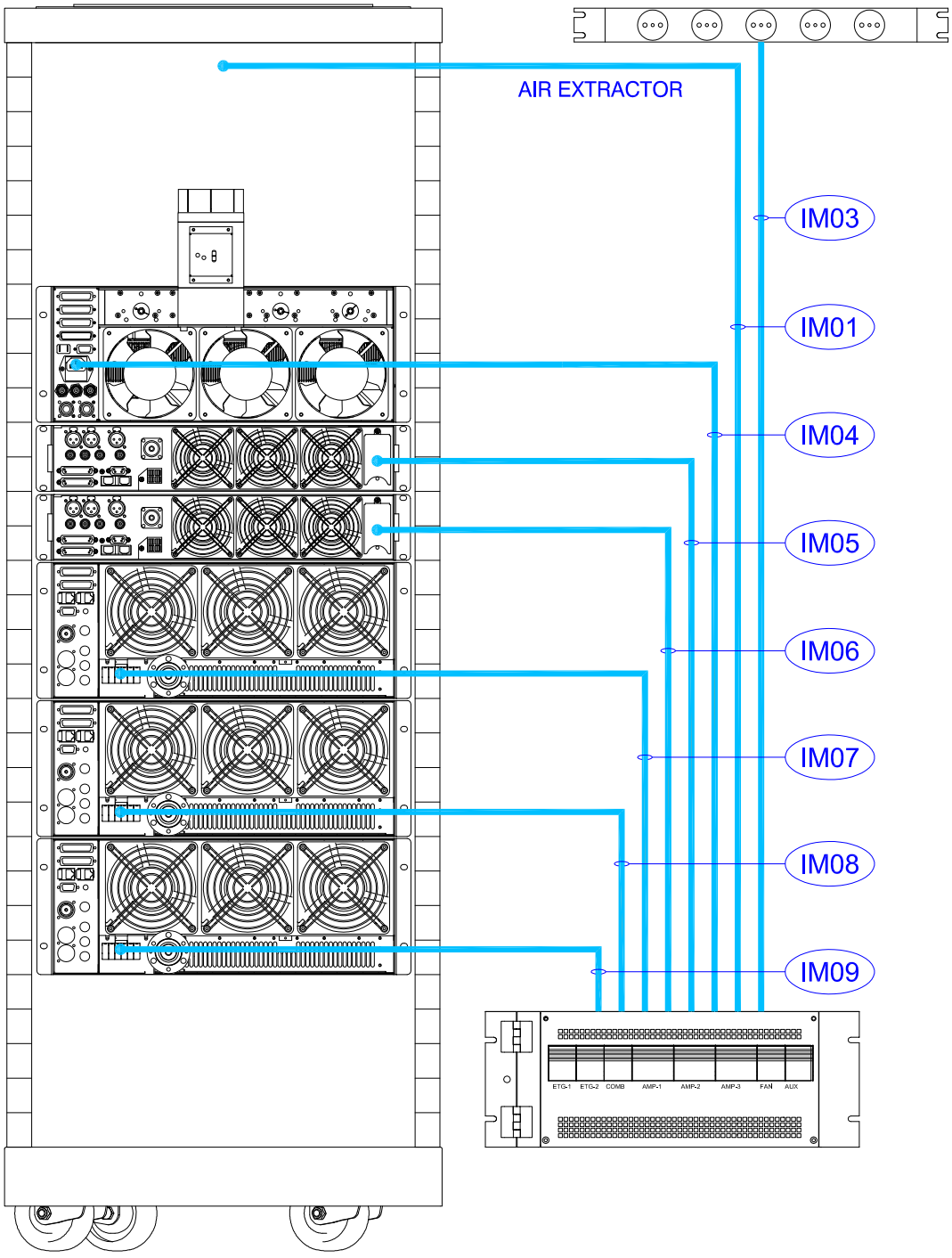
LA01	CAB0135-0
LA02	CAB0135-0
LA03	CAB0523-0
LA04	CAB0523-0
LM01	CAB0607-0
LM02	CAB0606-0
LM03	MULTI
LM04	3x1.5mmq VDE
LM05	3x1.5mmq VDE
LM06	CAB0565-0 + CAB0567-0
LM07	CAB0565-0 + CAB0567-0
LM08	CAB0564-0 + CAB0566-0
LM09	CAB0564-0 + CAB0566-0
LM10	CAB0564-0 + CAB0566-0
LM11	CAB0564-0 + CAB0566-0

4.2.4 ET15000-5

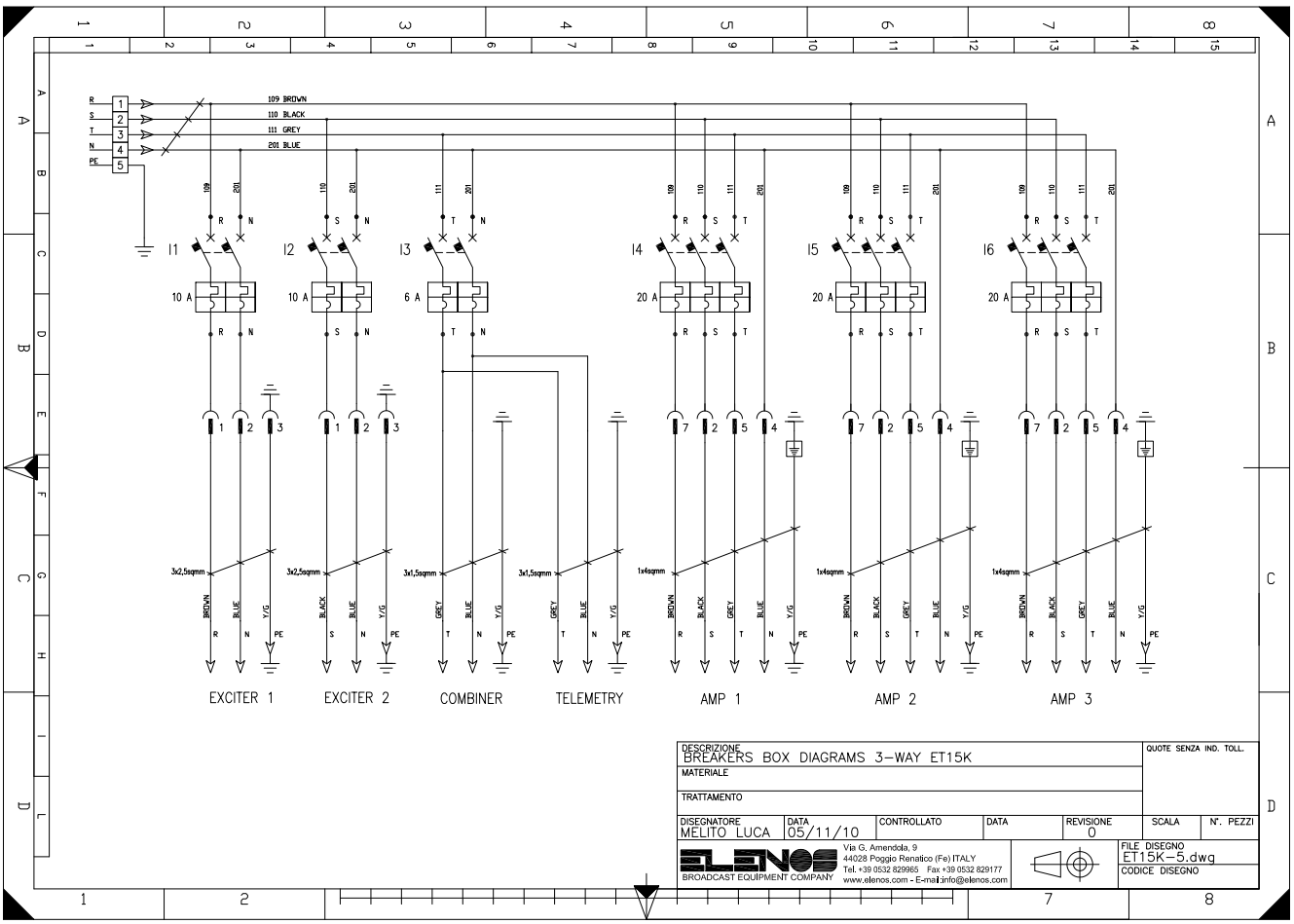
4.2.4.1 General view

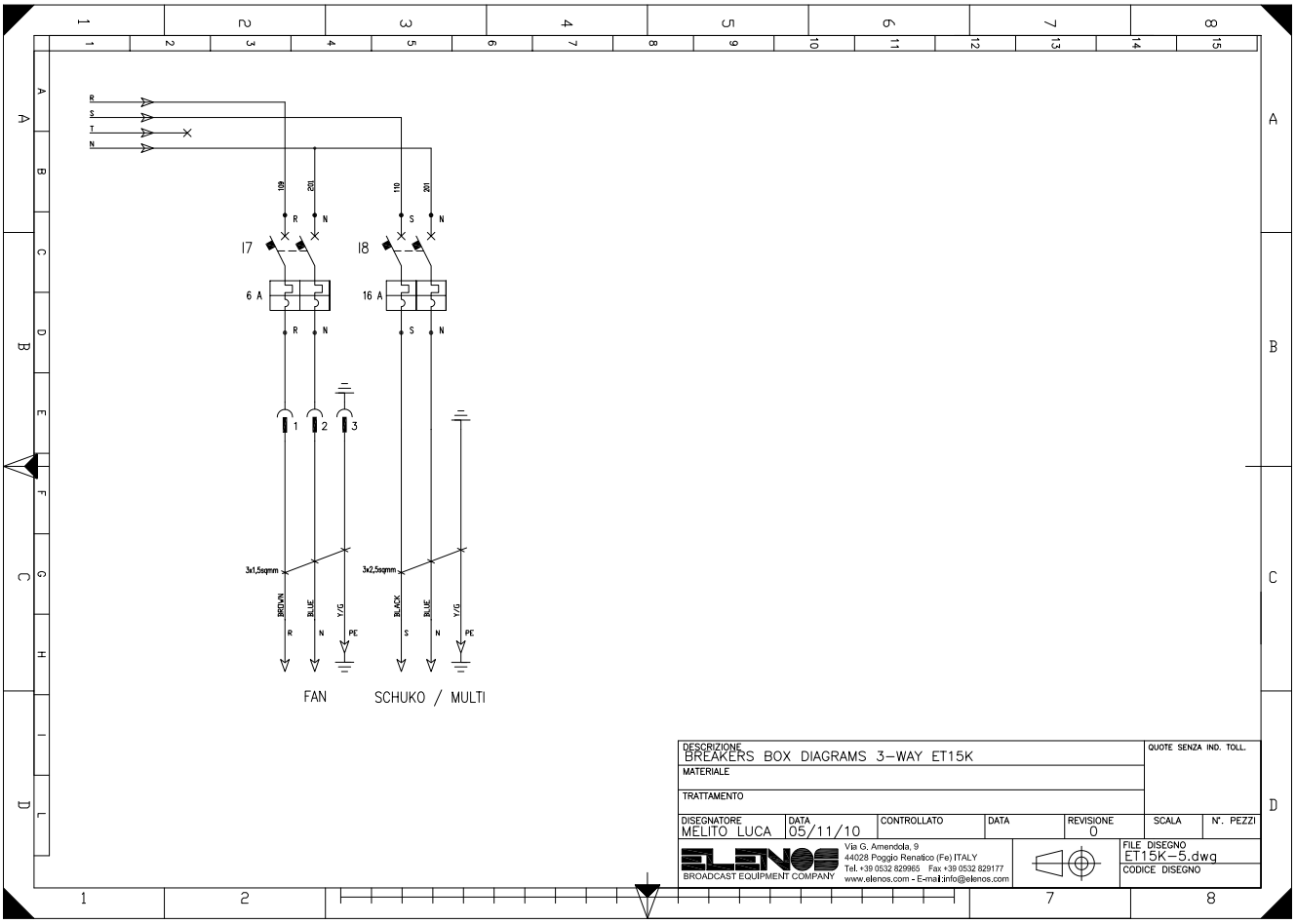


4.2.4.2 Mains connections

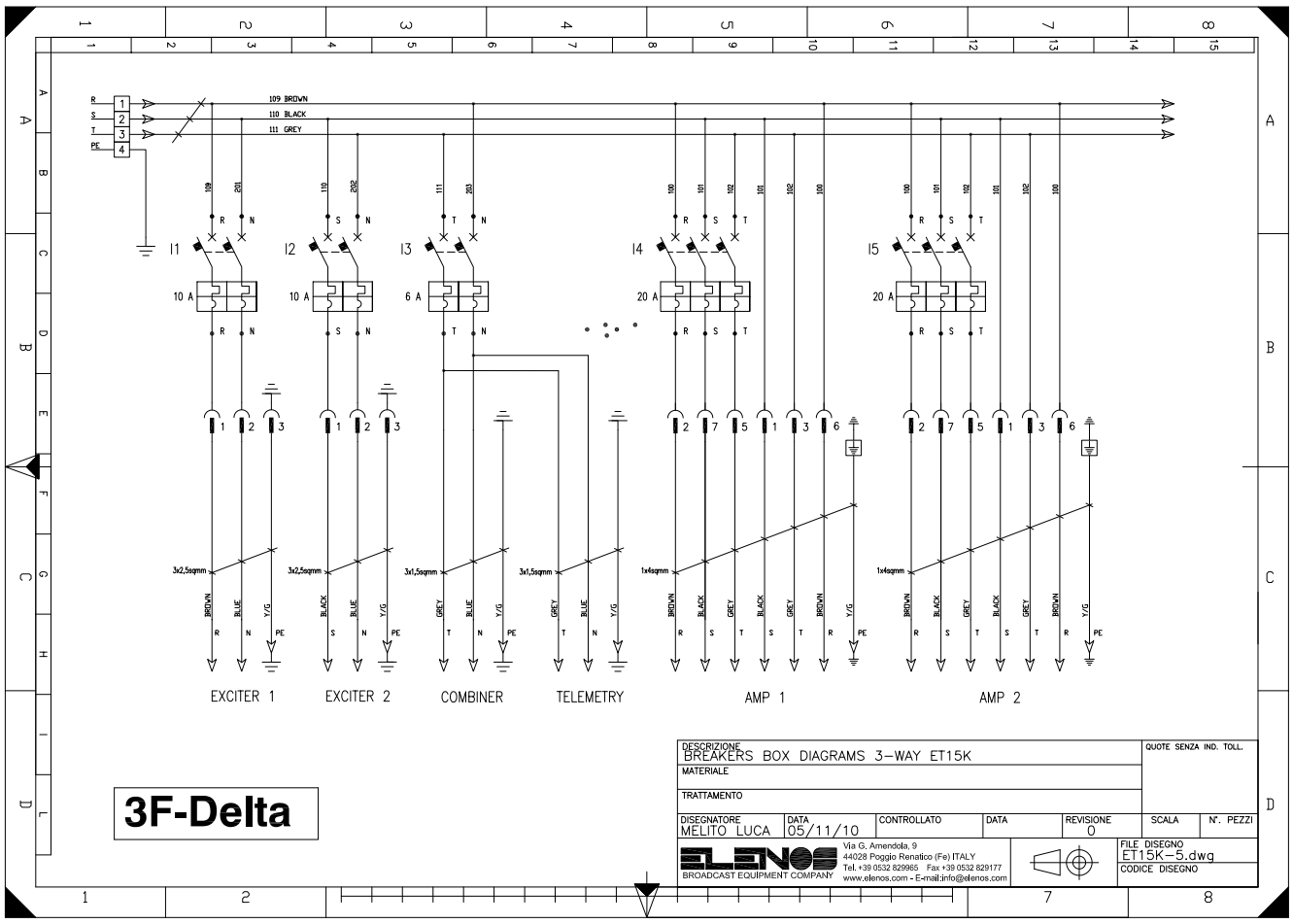


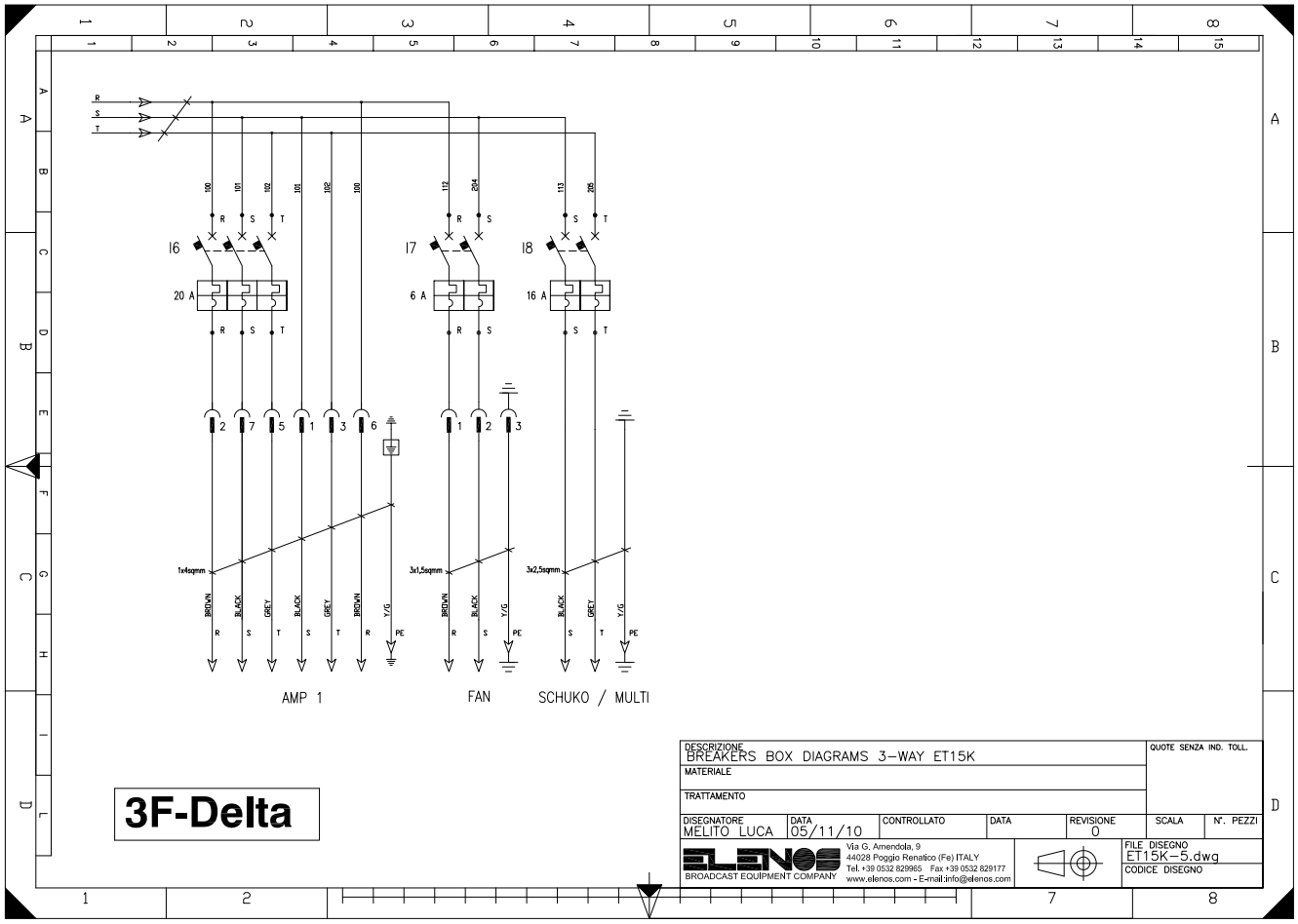
380V 3-ph star connection



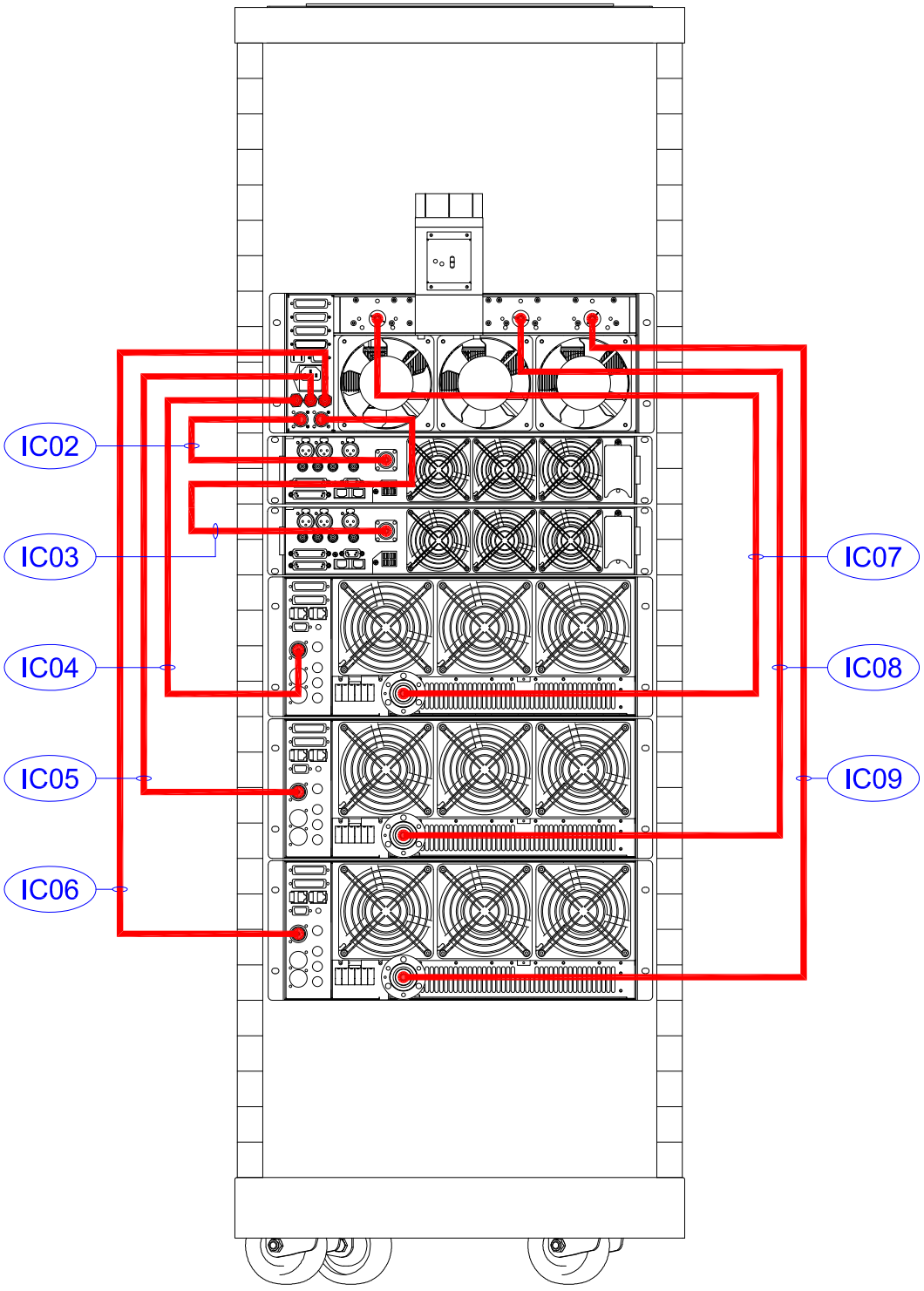


230V 3-ph triangle connection

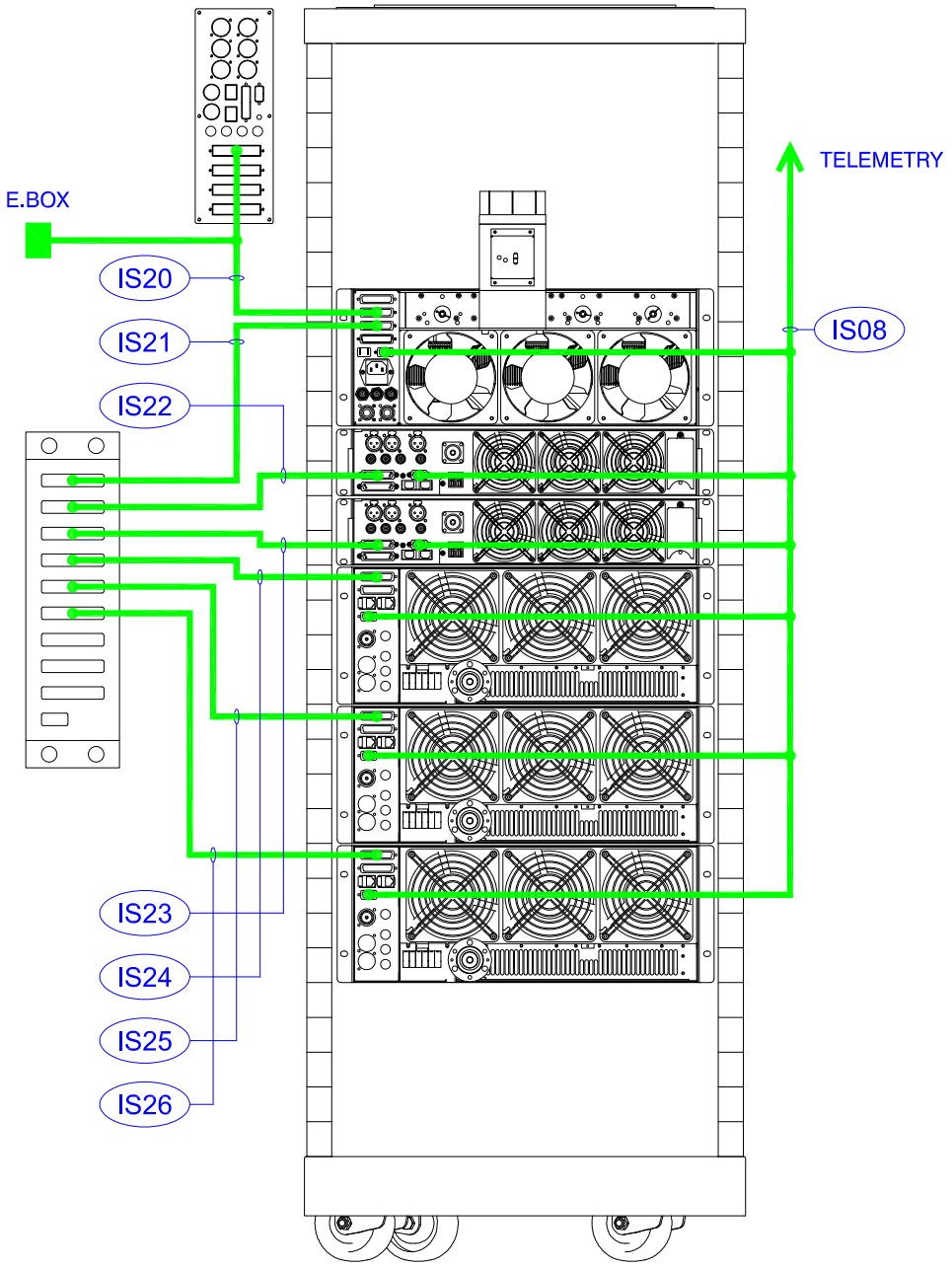




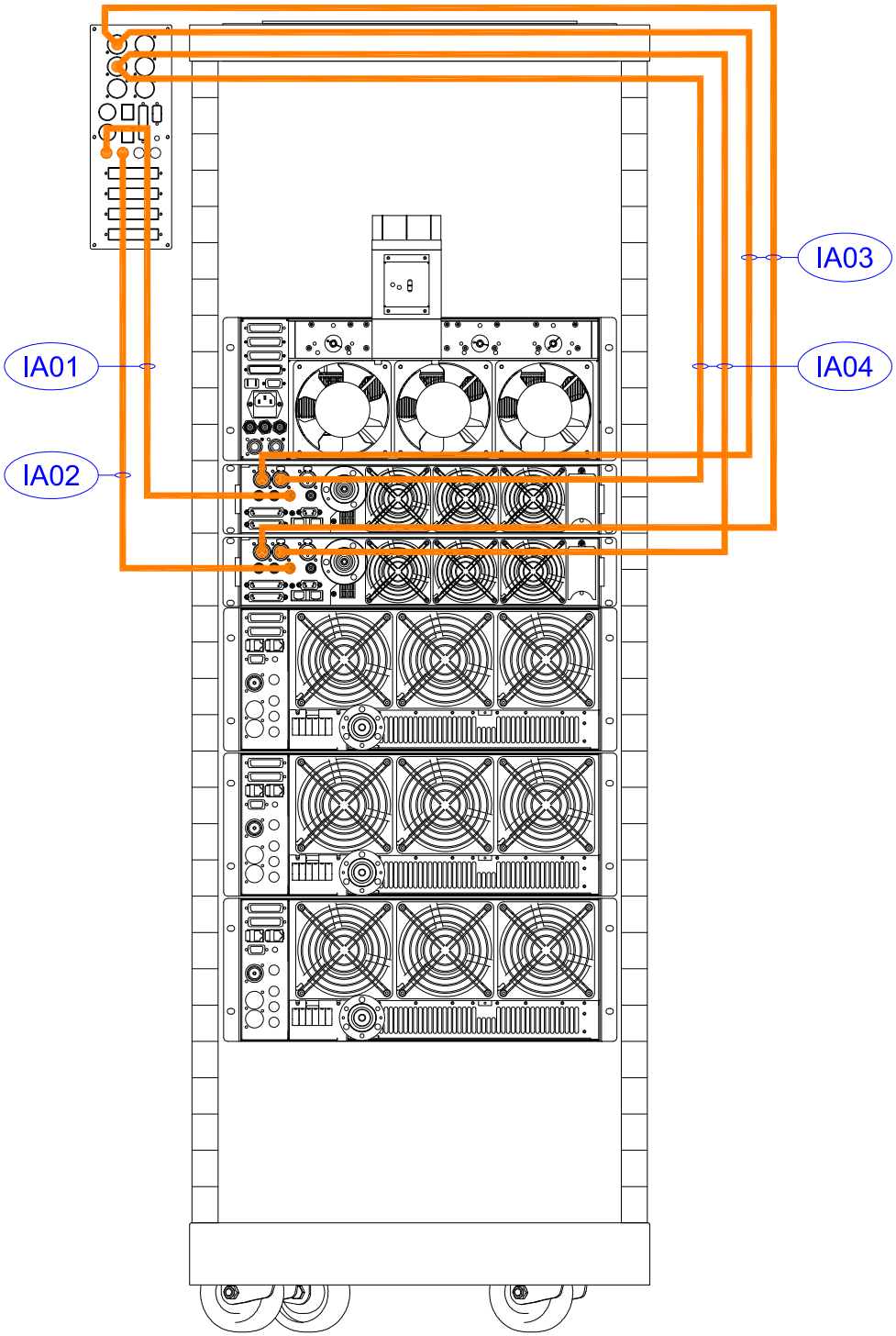
4.2.4.3 RF connections



4.2.4.4 Signal connections



4.2.4.5 Audio connections

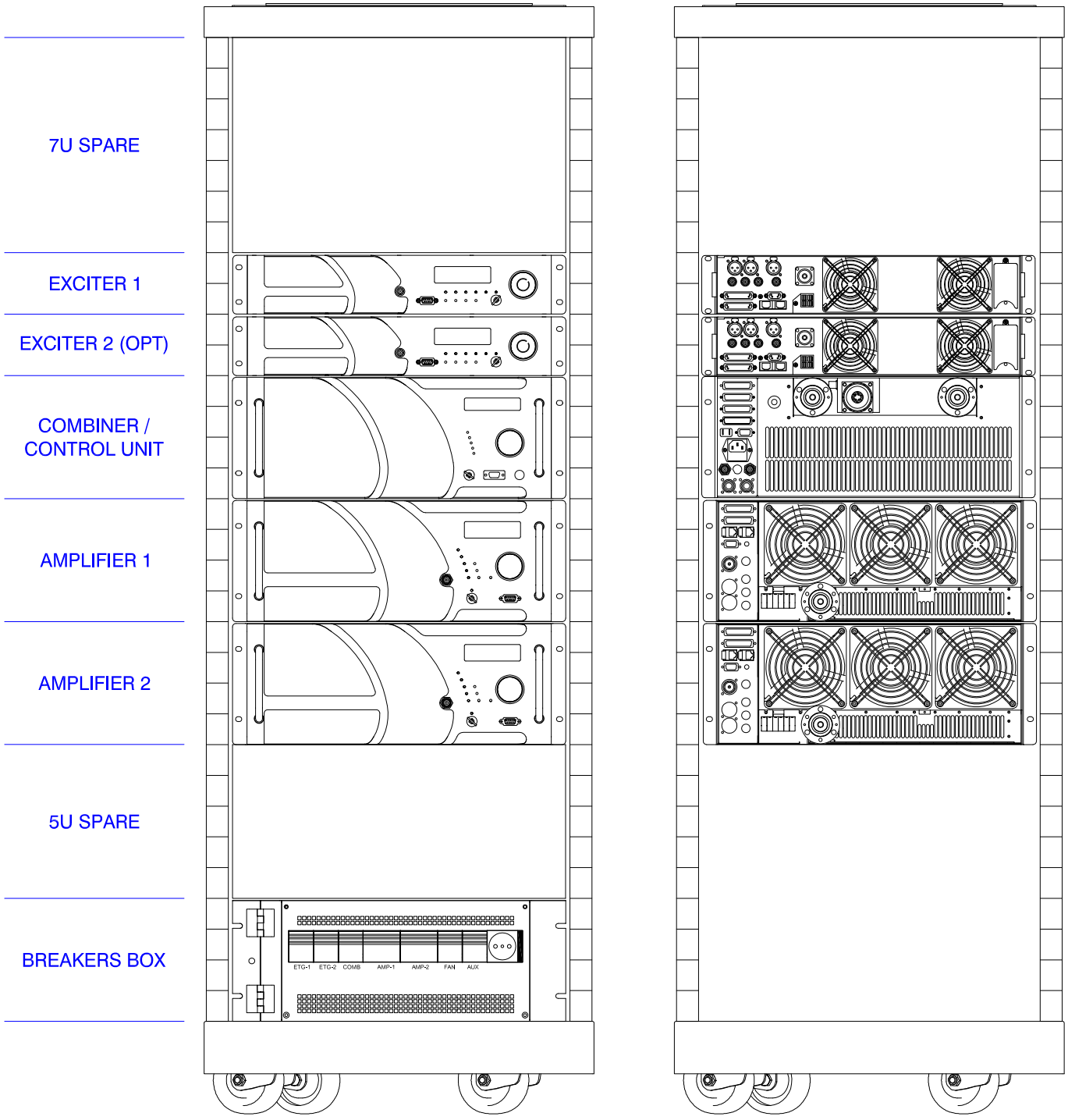


4.2.4.6 Cables convertion code table

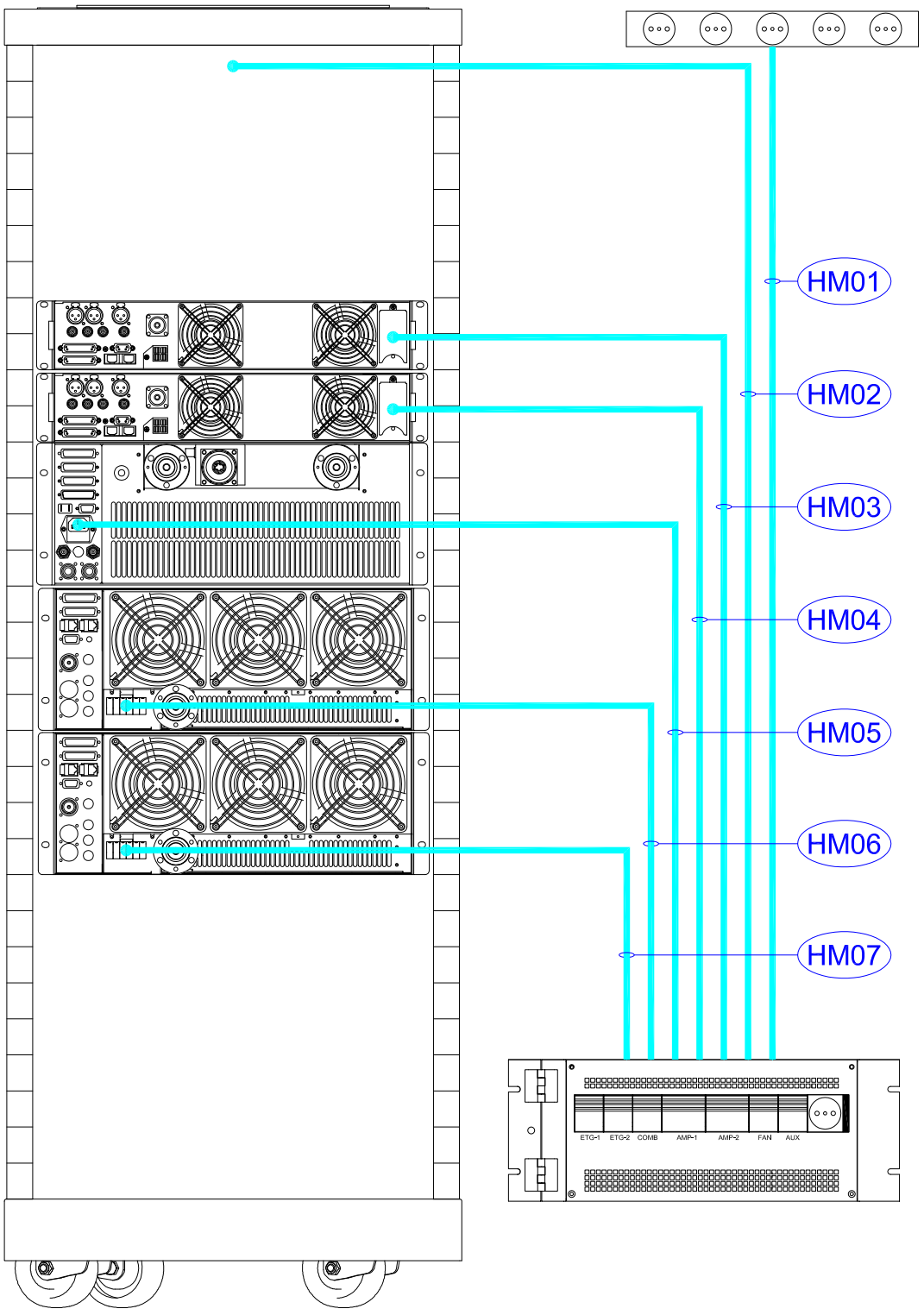
Diagram code	Elenos code
IS08	CAB0687-0
IS20	CAB0686-0
IS21	CAB0324-0
IS22	CAB0324-0
IS23	CAB0324-0
IS24	CAB0324-0
IS25	CAB0324-0
IS26	CAB0324-0
IC02	CAB0125-0
IC03	CAB0125-0
IC04	CAB0183-0
IC05	CAB0183-0
IC06	CAB0183-0
IC07	CAB0509-0
IC08	CAB0509-0
IC09	CAB0509-0
IA01	CAB0135-0
IA02	CAB0135-0
IA03	CAB0523-0
IA04	CAB0523-0

4.2.5 ET10000-5

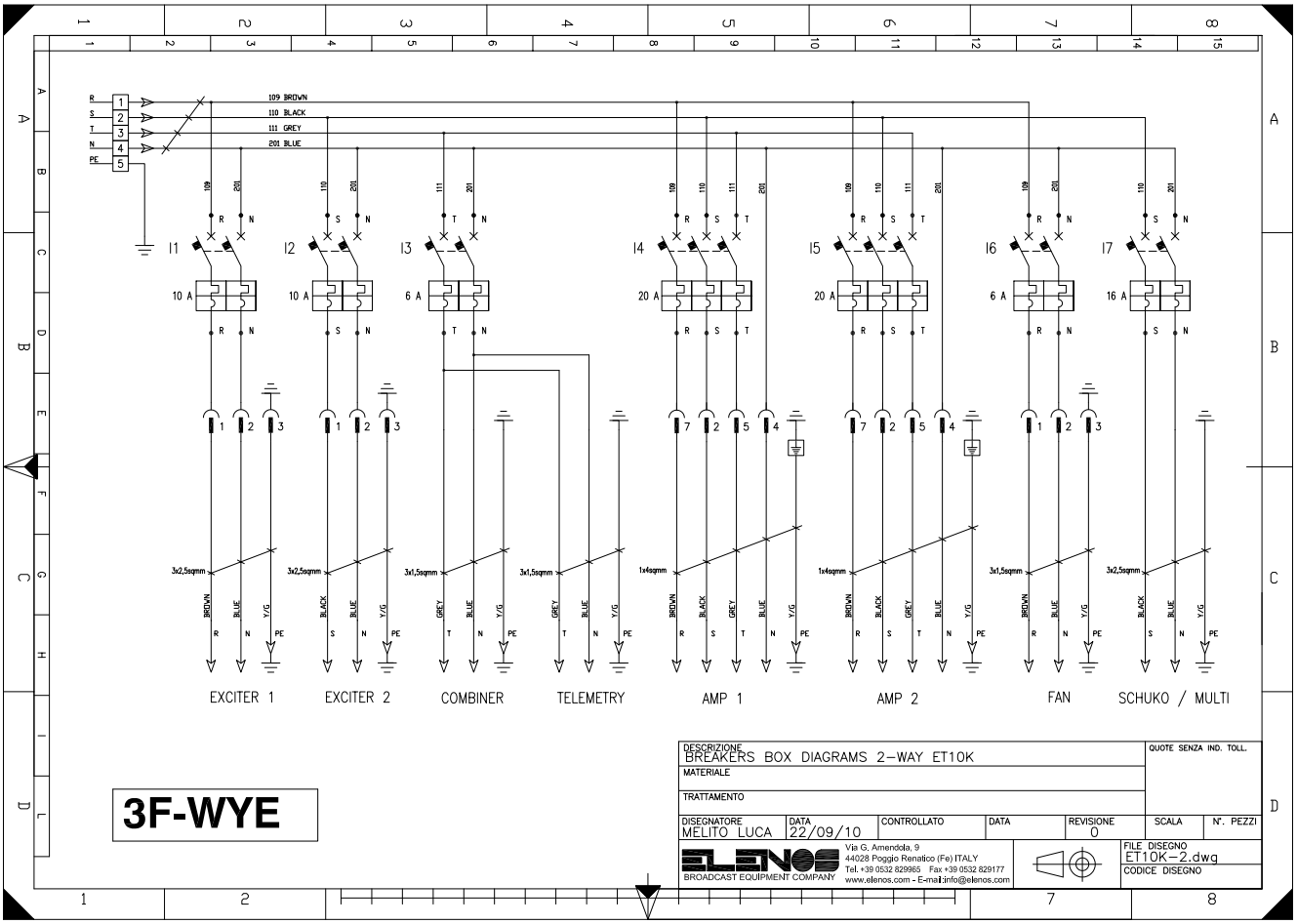
4.2.5.1 General view



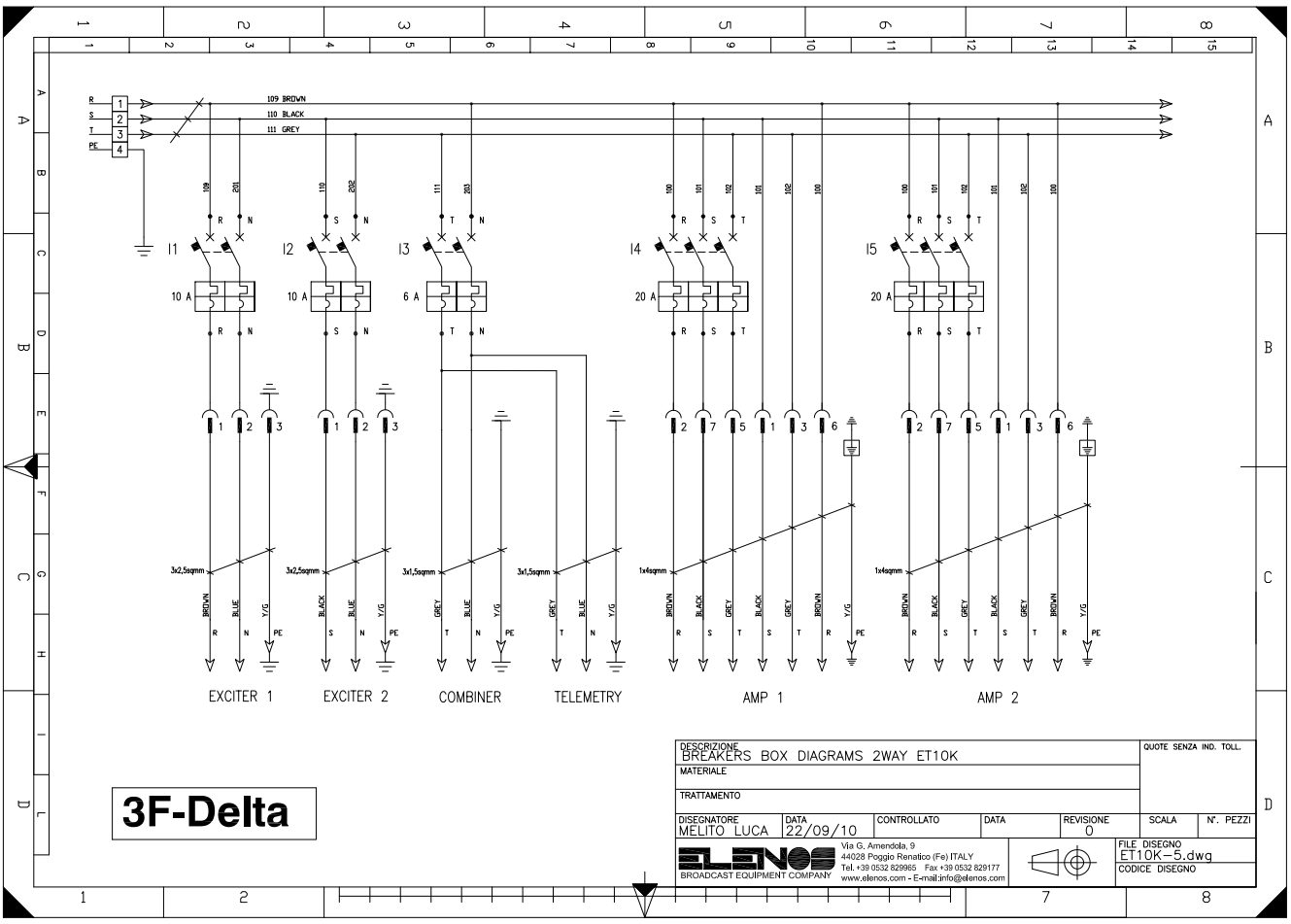
4.2.5.2 Mains connections

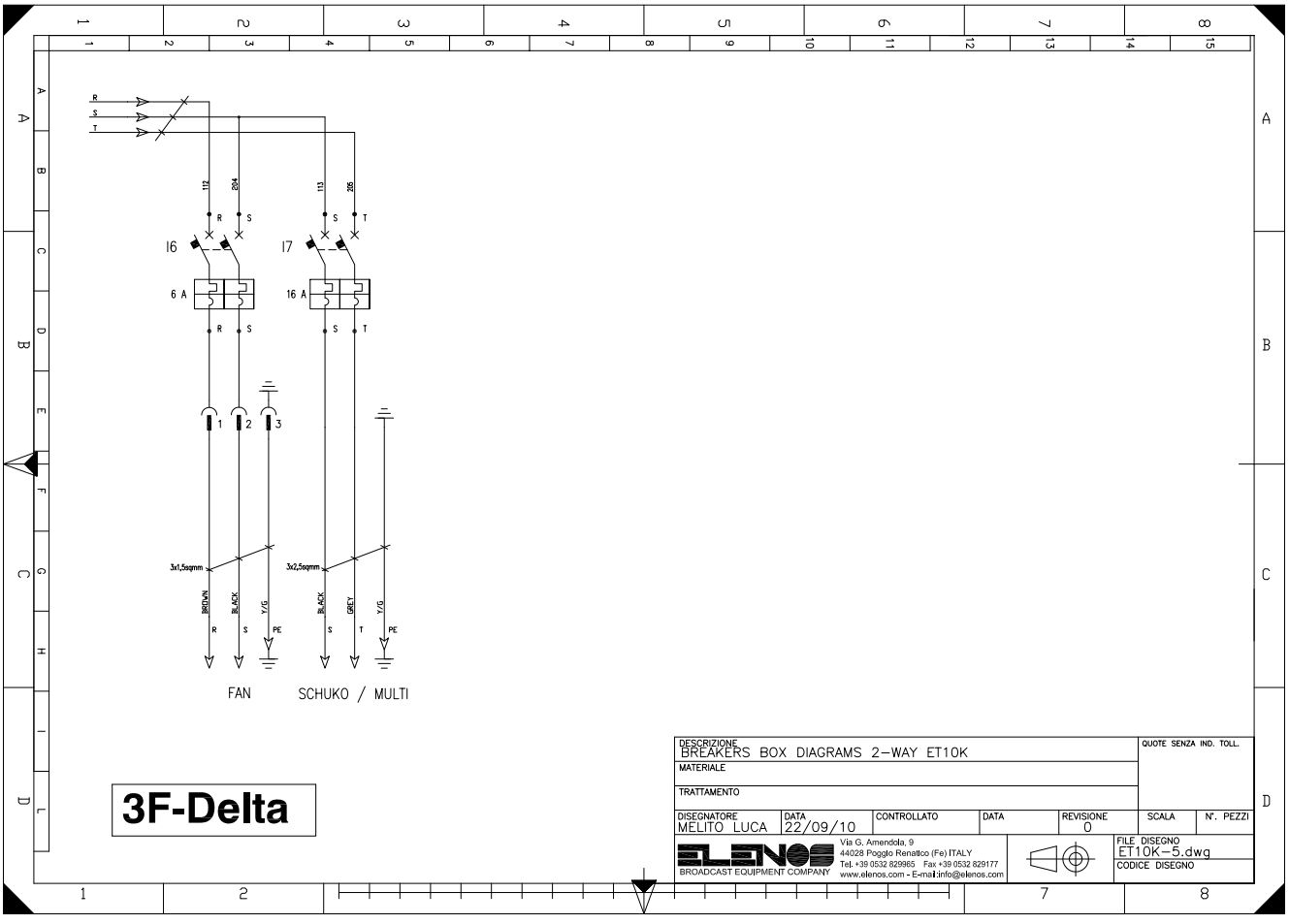


380V 3-ph star connection

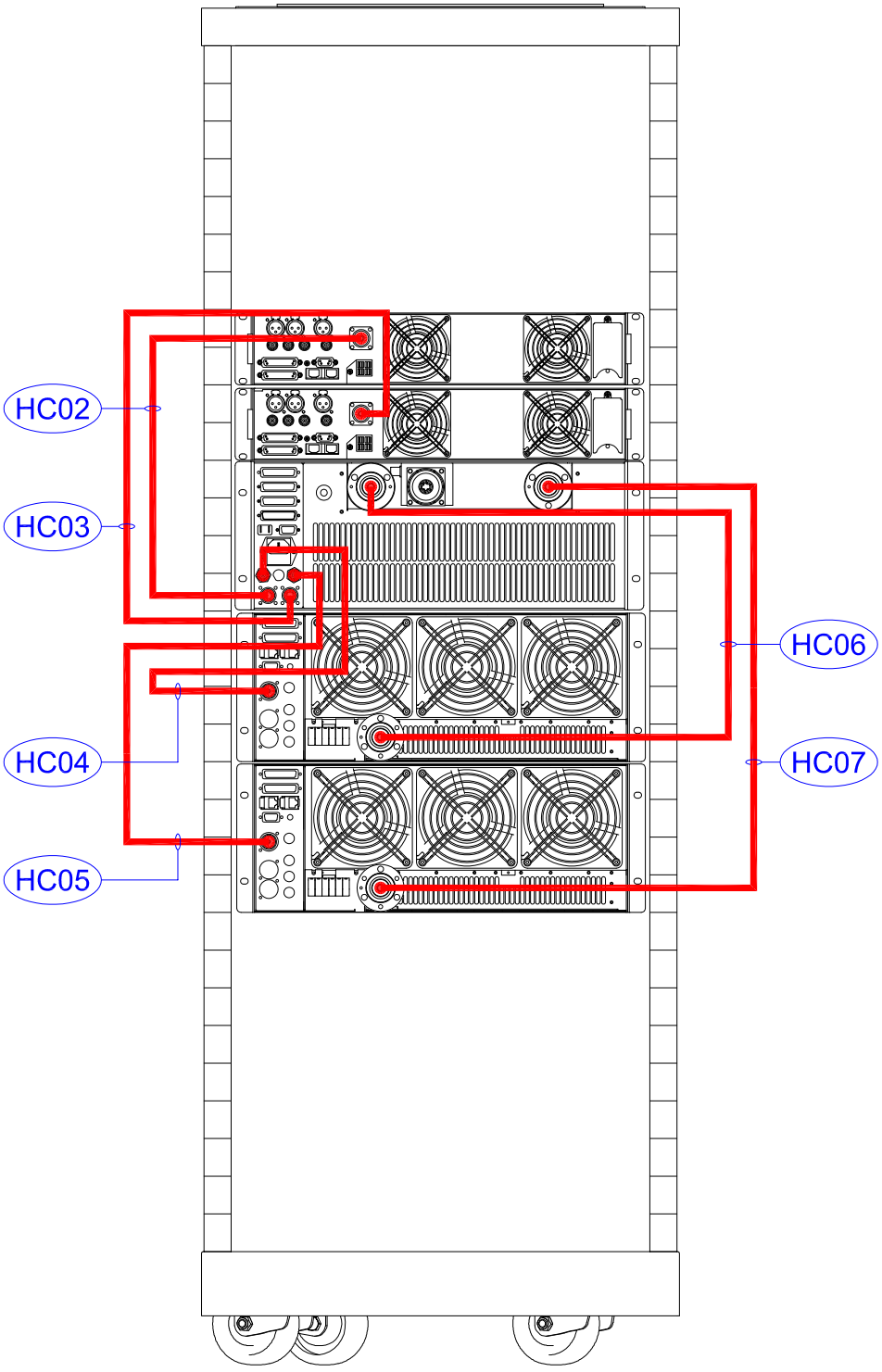


230V 3-ph triangle connection

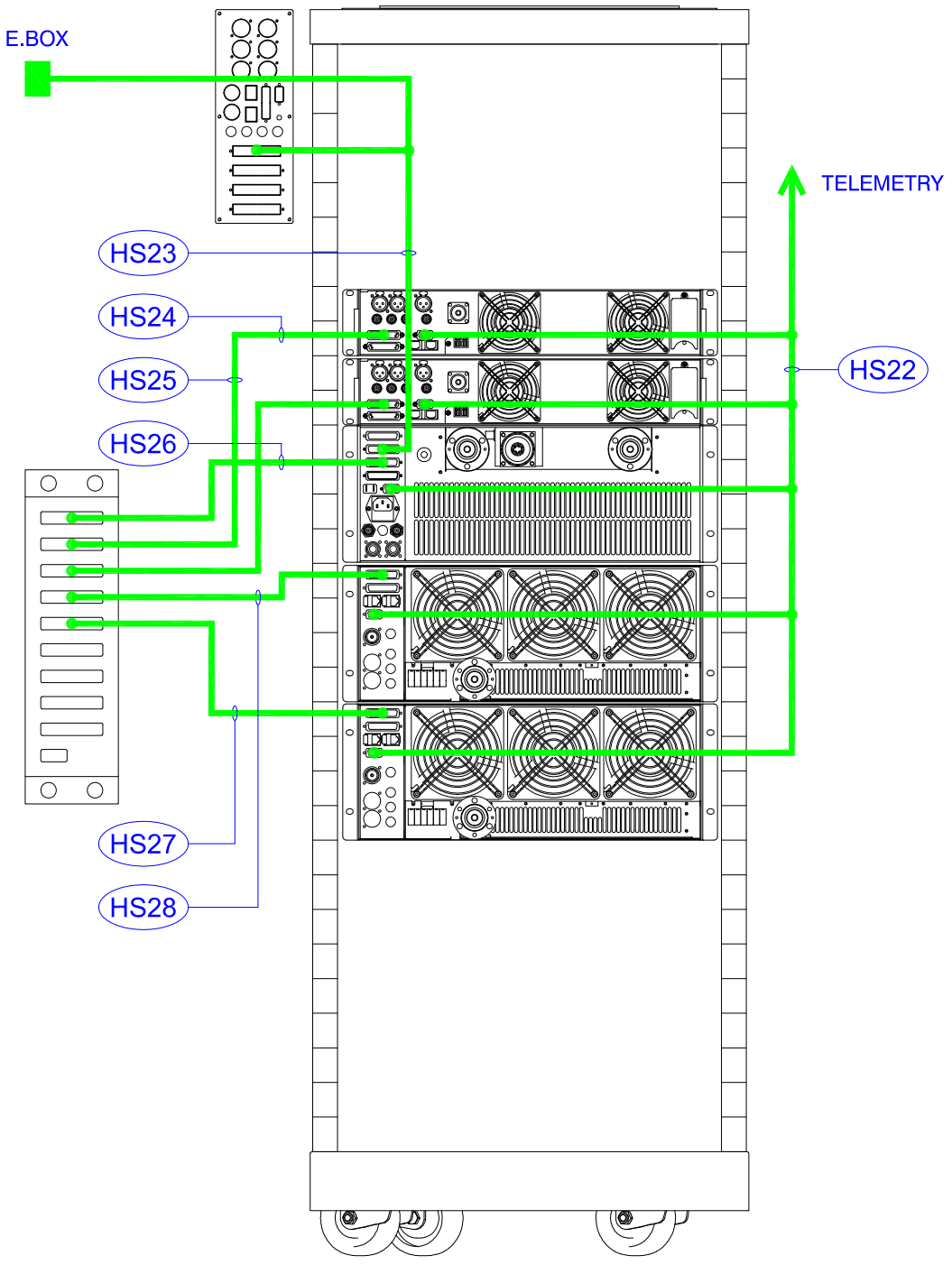




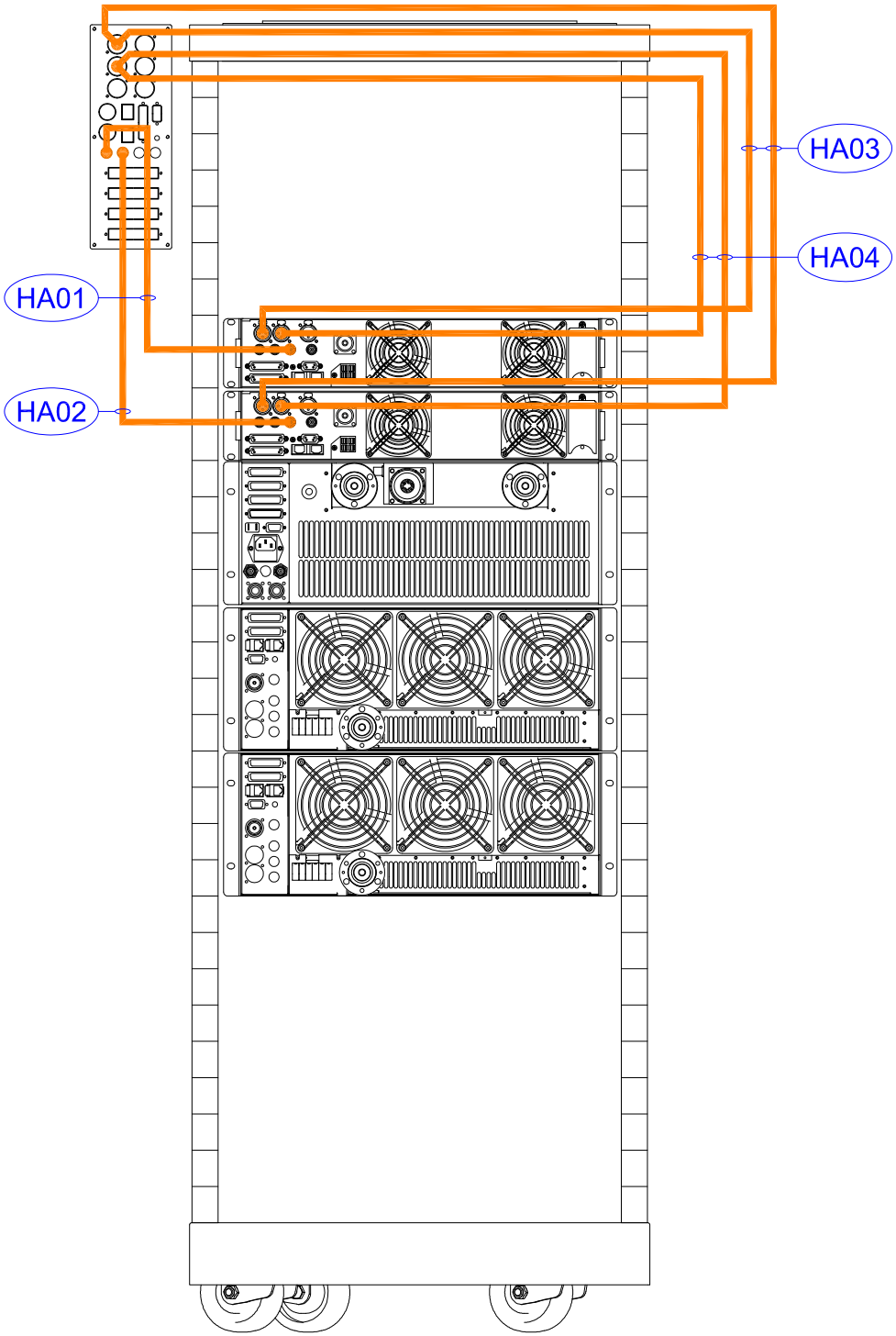
4.2.5.3 RF connections



4.2.5.4 Signal connections



4.2.5.5 Audio connections

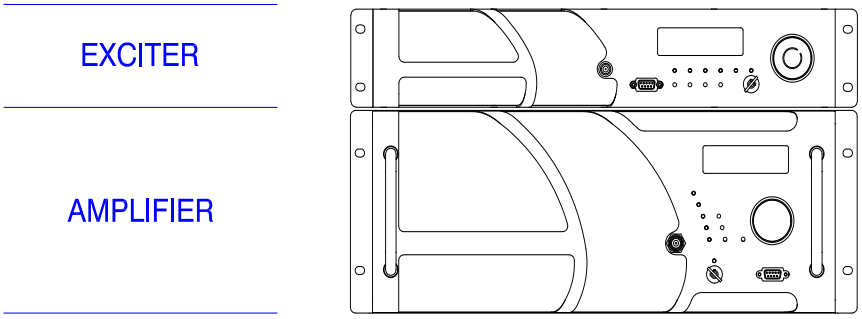


4.2.5.6 Cables convertion code table

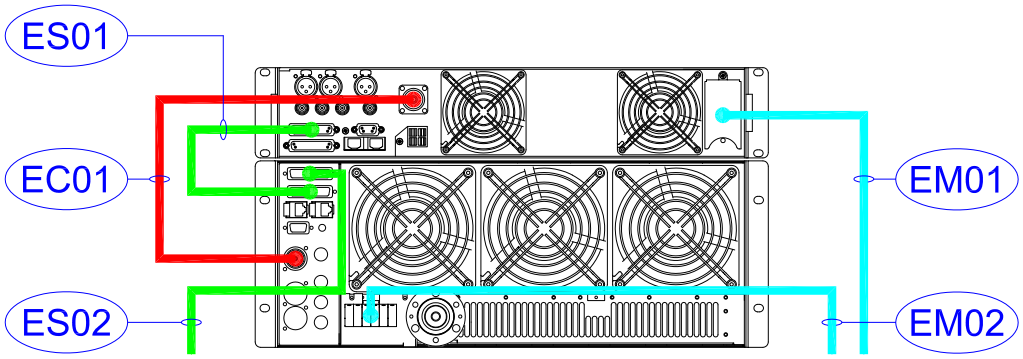
Diagram code	Elenos code
HS22	CAB0687-0
HS23	CAB0686-0
HS24	CAB0324-0
HS25	CAB0324-0
HS26	CAB0324-0
HS27	CAB0324-0
HS28	CAB0324-0
HC02	CSF-0022
HC03	CSF-0022
HC04	CAB0183-0
HC05	CAB0183-0
HC06	CAB0276-1
HC07	CAB0276-1
HA01	CAB0135-0
HA02	CAB0135-0
HA03	CAB0523-0
HA04	CAB0523-0
HM01	3x1.5mmq
HM02	3x1.5mmq
HM03	3x1.5mmq
HM04	3x1.5mmq
HM05	3x1.5mmq
HM06	3x1.5mmq
HM07	3x1.5mmq

4.2.6 ET5000 ET3500 ET2500

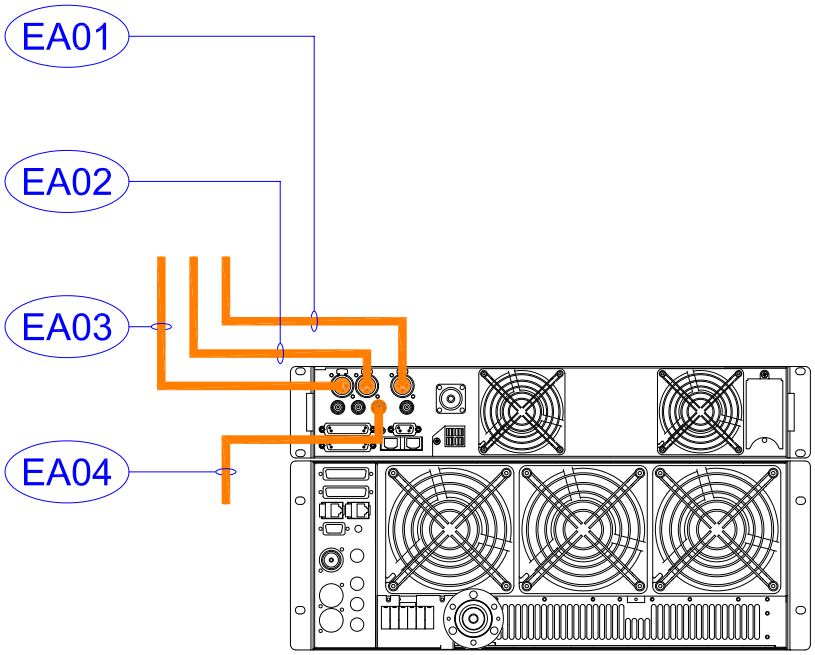
4.2.6.1 General view



4.2.6.2 Mains, RF and signal connections



4.2.6.3 Audio connections



4.2.6.4 Cables convertion code table

Diagram code	Elenos code
ES01	CAB0324-0
ES02	CAB0588-0
EC01	CSF-0022
EA01	CAB0396-0
EA02	CAB0396-0
EA03	CAB0396-0
EA04	CAB0135-0

5 Quick instructions for commissioning

5.1 Installation

If the equipment is delivered not completly assembled and/or with the connections between individual machines not completly made, and therefore, it is necessary to restore the structure, refer to the section “Composition” in the previous chapter.

After verifying the exact location in which to insert the modules in the rack, place these on the brackets to the stop with the side jambs.
Lock the module with the screws provided.

It is important 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.

About connections **you must always give priority to the grounding cable**.
For each module:

- enter phase and neutral conductors on the terminals. Secure the cables by tightening the screws with a screwdriver;
- engage RF output connectors and lock securely;
- engage RF input and signal cables into the connector.

Check that the mains voltage is appropriate.
Proceed with the c**onnection to the electrical panel of the workstation, making sure before that it is strictly unarmed.**
In the section “Composition” in the previous chapter we report the values of most common connections, **other configurations are independently managed by other countries.**
Upon request, Elenos can supply material kits for making them.
In any case, use cables of suitable section:

	ET30000-5	ET25000-5	ET20000-5	ET15000-5	ET10000-5
Power consumption	44KW	37KW	29KW	22KW	15KW
Overall efficiency (typical from -3dB to Pnom)	68%	68%	68%	68%	68%

Current consumption @ 230VAC/3-PH	110A	92A	73A	63A	42A
Current consumption @ 380VAC/3-PH	64A	53A	43A	36A	24A

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.

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

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.

Connect the desired audio cables.

Verify, on the rack, the presence of a connector already wired with a bridge. Without this wiring (interlock) the device will not work.

Proceed to arm breakers.

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	
Output power (TRG)	Maximum value
Frequency	98.000 MHz (unless it is communicated by the customer prior to Elenos another value)
Dual Driver configuration	D.D.Auto : T Retr 0 of 10 TX1 : ANT (on antenna) TX2 : LOAD (on dummy load)
L,R input sensitivity for +/-75 kHz deviation	0dBm
MPX input sensitivity for +/-75 kHz deviation	0dBm
AUX input sensitivity	0dBm
Stereo subcarrier 19kHz	OFF (MPX input mode)
Pre-emphasis	0uS (linear)
Clipper	OFF
“NO AUDIO” alarm	OFF, set with non-intervention thresholds (-25 dB for 600s)
VSWR/ROS foldback	ON, threshold protection
Interlock	External cable
TC/TS speed	57600 Bit per second (you can find set different values)
Address	Set as shown in the labels affixed to the rack

The equipment comes with the programming lever in 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 DIP. ON REMOTE : TRUE" is present (for details, refer to the paragraph "User interface" on the "Com. ID LC/RT disp. mode" screen).
To switch from LOCAL to REMOTE mode rotate the supplied key on the selector.
In LOCAL mode, the blue led turns on.

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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

In Indium combined systems the main unit on which to act, and which manages the whole operation is the control logic unit.

5.3.1 Exciter setting

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After arming the circuit breaker of the modulator, the only thing to do is proceed to verify that the power come to the same and the to set the level and audio signal parameters.
For the procedure please to refer to the manual of the exciter.
Leave the modulator in the state of RF OFF.
If this setting is done directly on the same you can set different audio values (after entering values to wait a few seconds, so the communication with the controller is successful) .
However, it can make the same settings directly from the control logic (if it is present on it the profiles boards) through, in this case, changing the profile; the setting will be written in the active audio parameters of both modulators.

Operating frequency and power, however, are managed directly by the control logic: the first can be set, the second goes to up automatically putting ON AIR the system (the default value is 2W * N° of amplifiers).
Operating frequency is set on the modulator only in the case of systems without control logic.

5.3.2 Amplifier setting

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After have to arm the circuit breaker of the amplifiers, it is sufficient to verify that the power comes to them, because after activation of the transmission, that occurs through the combiner, the power is already divided equally between amplifiers.

5.3.3 Control logic setting

After have to arm the circuit breaker of the combiner, you proceed to set the frequency, the target power and Dual Drive flags.

5.3.3.1 Frequency setting

In the “Frequency setting” screen press the encoder to make the editable value.
Turn it until the display reads the desired frequency, and then save the new value by pressing once.

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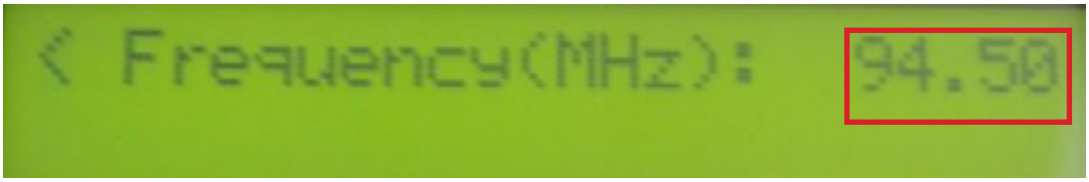

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5.3.3.2 Power setting

In the “Power setting” screen with the apparatus still in RF STBY turn the encoder to position the cursor under the last digit of the target power.
Press once to make this value editable.
Turn the encoder until the display reads the desired power, then save the new value by pressing once.

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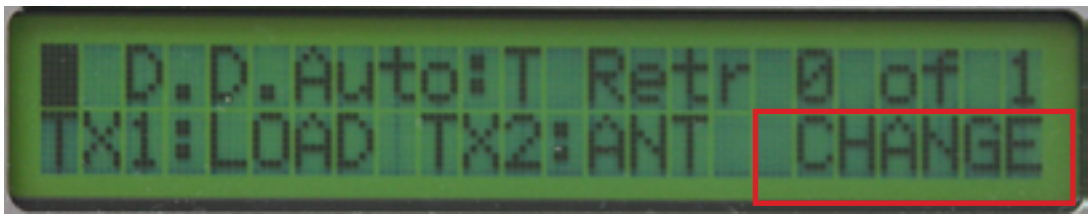
5.3.3.3 Dual driver setting

In the “Dual Drive” screen the default settings require that the first modulator (TX1) is routed to the antenna through the amplifiers, while the second (TX2) is diverted to a possible dummy load.
Rotate the encoder to position the cursor under the word CHANGE.
Press to activate the exchange.



5.3.4 Turn on

Before proceed with the activation of the transmission, check that the amplifiers and exciters are in Remote mode, and **before leaving the station, check that the control logic is set to that mode**, otherwise not be available SMS communication protocol and a good automatic management of transmitter modules.

If all settings have been properly implemented and wiring inspection did not reveal any abnormality it can now give the RF ON command at the control logic.
This will involve that the "master" exciter get in power. The exciter will rise to power in a short time.
In terms of driving power ok and driver enabled, it appears the message "051 PILOT PWR GOOD" and led EXCITER OK lit.
In conditions of driving power in a range lower or higher, however, next to the range of good operation, the driver remains enabled, but the warning "052 INCREASE PILOT PWR"/"053 DECREASE PILOT PWR" are shown and the led EXCITER OK flashing light.
Outside of these ranges above the driver is disabled and the FAULT led is active.
During this operation to see the control logic display and to check in real time that the forward power is correctly and that will not occur unexpected phenomena of ROS.
Normal operating condition are :

Exciter 1	Led MAINS on Led ON AIR on Led PLL LOCK on All others led off
Exciter 2 (if present)	Led MAINS on Led ST-BY on Led PLL LOCK on All others led off
Control logic (if present)	Led MAINS on Led ON AIR on All others led off
Amplifier 1	Led MAINS on Led ON AIR on Led EXCITER OK on All others led off
Amplifier 2 (if present)	Led MAINS on Led ON AIR on Led EXCITER OK on All others led off
Amplifier 3 (if present)	Led MAINS on Led ON AIR on Led EXCITER OK on All others led off
Amplifier 4 (if present)	Led MAINS on Led ON AIR on Led EXCITER OK on All others led off
Amplifier 5 (if present)	Led MAINS on Led ON AIR on Led EXCITER OK on All others led off
Amplifier 6 (if present)	Led MAINS on Led ON AIR on Led EXCITER OK on All others led off

16

In Dual Driver version can be a good rule, before leaving the station, a test to switch the reserve.
To do this, turn off the “master”exciter, disarming the breaker, and verify that the reserve exciter is activated, bringing the output power to target level.
Verify, then, the reverse step, turn on the “master” exciter and turn off the reserve.
Everything works properly when switching is performed on the first exciter and power levels return to those previous.
Now you can restore normal operation.

Warning: you should keep a copy of the key in a safe place of station.

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

6.2.1 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

6.3 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.
Sheets are available for modulator, amplifier and control logic.
The latter is the interface to analyze the entire operation of the transmitter, and therefore it must used to track any damage present also on load and/or combiner+splitter unit.

FAILURE SHEET EXCITER

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)					Iampl (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 EXCITER

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)					Iampl (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 AMPLIFIER

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)

		Targ (W)	
Profile		Fwd (W)	
		Refl (W)	
Eff. (%)		P.In. (W)	
		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)					Iampl (A)		
PSU (C)					Vds (V)		
Aux-->	VCC	+V1	-V1	Vdd	Tenv. (C)		
					Eff. (%)		

LEDs

MAINS	ON	OFF	EXCITER OK	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 AMPLIFIER

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)

		Targ (W)	
Profile		Fwd (W)	
		Refl (W)	
Eff. (%)		P.In. (W)	
		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)					Iampl (A)		
PSU (C)					Vds (V)		
Aux-->	VCC	+V1	-V1	Vdd	Tenv. (C)		
					Eff. (%)		

LEDs

MAINS	ON	OFF	EXCITER OK	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 AMPLIFIER

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)

		Targ (W)	
Profile		Fwd (W)	
		Refl (W)	
Eff. (%)		P.In. (W)	
		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)					Iampl (A)		
PSU (C)					Vds (V)		
Aux-->	VCC	+V1	-V1	Vdd	Tenv. (C)		
					Eff. (%)		

LEDs

MAINS	ON	OFF	EXCITER OK	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 AMPLIFIER

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)

		Targ (W)	
Profile		Fwd (W)	
		Refl (W)	
Eff. (%)		P.In. (W)	
		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)					Iampl (A)		
PSU (C)					Vds (V)		
Aux-->	VCC	+V1	-V1	Vdd	Tenv. (C)		
					Eff. (%)		

LEDs

MAINS	ON	OFF	EXCITER OK	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 AMPLIFIER

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)

		Targ (W)	
Profile		Fwd (W)	
		Refl (W)	
Eff. (%)		P.In. (W)	
		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)					Iampl (A)		
PSU (C)					Vds (V)		
Aux-->	VCC	+V1	-V1	Vdd	Tenv. (C)		
					Eff. (%)		

LEDs

MAINS	ON	OFF	EXCITER OK	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 AMPLIFIER

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)

		Targ (W)	
Profile		Fwd (W)	
		Refl (W)	
Eff. (%)		P.In. (W)	
		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)					Iampl (A)		
PSU (C)					Vds (V)		
Aux-->	VCC	+V1	-V1	Vdd	Tenv. (C)		
					Eff. (%)		

LEDs

MAINS	ON	OFF	EXCITER OK	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 POWER BOX

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 :	

EVENTS LIST (Main Menù) - Active alarms

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

EVENTS HISTORY (Main Menù) - Latest events

99)	
98)	
97)	
...	

POWER SETTING (Main Menù)

FWD :		REF :		
TRG :		RF :		Pr :

TEMPERATURES (Main Menù)

T (C) DL :		ENV (C) :	
EX R. LOAD:		Fan % :	

DUAL DRIVE (Main Menù)

D.D.AUTO :		RETR. :	of
TX1 :		TX2 :	

TEMPERATURES DL (Main Menù)

T(C) DL Max :			ENV :		

VOLTAGES (System Menù)

v. :		+12 :	

LEDs

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

The failure occurred: ( ) during start-up ( ) during normal operation ( ) after lightning
Voltage: .....VAC
Address and site name: .....
Maintenance repair technician: .....
Failure description: .....
.....
.....