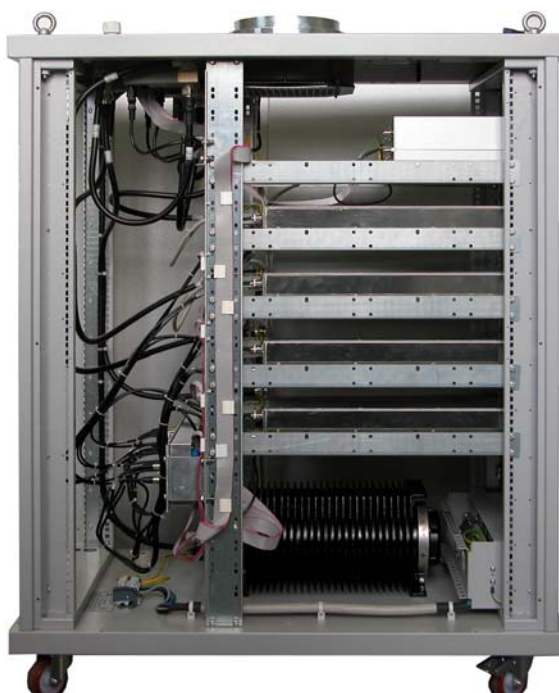


# COV24

## N+1 AUTOMATIC CHANGEOVER CONTROLLER





Rev. 1.0 - Nov. 18<sup>th</sup>, 2013

## Index

<b>1</b>	<b>Introduction .....</b>	<b>3</b>
<b>2</b>	<b>General description .....</b>	<b>3</b>
2.1	Controller specifications .....	3
2.2	Front panel .....	4
2.3	Rear panel .....	5
2.4	Internal view .....	6
2.5	The LF Matrix .....	7
2.6	The RF coax switch array .....	8
<b>3</b>	<b>Basic operations .....</b>	<b>9</b>
3.1	Initial start-up .....	9
3.2	Settings control and RS485 system bus on the Transmitter .....	9
3.3	Changeover policy .....	10
<b>4</b>	<b>Control and setup Menu .....</b>	<b>11</b>
4.1	Controller's menu system and navigation commands .....	11
4.2	Start up screens .....	12
4.3	Status / setup menus .....	13
4.4	Switch Setup mode menus and choices .....	15
4.5	Tx N Setup .....	16
4.6	Alarm and System log .....	16
4.7	Password setup .....	17
4.8	Ethernet setup .....	17
<b>5</b>	<b>Remote control on Internet .....</b>	<b>19</b>
5.1	SNMP control .....	19
5.2	WEB-server control .....	19
<b>6</b>	<b>Electrical diagrams and Technical Appendix .....</b>	<b>26</b>
6.1	E1390 - COV24 General wiring diagram .....	27
6.2	E1422 - N+1 System wiring diagram with COV24 Controller .....	28
6.3	E1422PS - N+1 System mains power wiring diagram .....	29
6.4	DM1484 – 7/8" Motorized coaxial switch data excerpt .....	30
6.5	Example of 3+1 1500W system .....	32

For quick reference, we can use symbols that attract immediate attention and efficiently advise and inform the user.

 **The symbol of the open hand stresses a description of the highest importance concerning technical assistance, dangerous situations, safety warnings, advice, and/or information of the highest importance. Where such symbol is not heeded, serious problems/consequences may arise.**

 **The written notebook represents practical, important advice that we recommend be followed in order to obtain the best possible performance from the device.**

We used the utmost care in making a complete manual with detailed, precise, and updated information; however, the contents herein cannot be regarded as binding towards our company.

Sielco Srl, in their constant commitment to improve the quality of their products, reserve the right to vary the device's technical features without prior notice. For updates, please visit our web-site [www.sielco.org](http://www.sielco.org) or contact our local dealer or agent.

The manufacturer will not be held responsible for any consequences caused by errors or improper handling and over which he has no direct control.

The described options may vary from model to model to meet the specific requirements of our customers.

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## 1 Introduction

This equipment is a part of a bigger transmitter system. This Manual describes in details only the controller of an N+1 system: for a more general view of the full system and interfacing of this controller to the RF and LF switches and to the transmitters please refer to its User and Operation Manual.

**CE Compliance:** this equipment complies to the same relevant norms as the FM transmitters to which it mates. In particular it conforms to EN60215: 1989 + A1: 1992 + A2: 1994 (low voltage) as safety norms and to EN55011: 2007 (ISM radio frequency equipment – Radio disturbance) for EMC norms.

## 2 General description

### 2.1 Controller specifications

COV24 N+1 Controller is based on a versatile common platform which is used also for other System Controllers of the actual modern SIELCO line like ASRFB10CON (High power RF Transmitter Controller), COV22 (Dual drive Transmitter Controller), COV23 (1+1 Transmitter Controller). All of these equipment share the same cabinet, the same 16 bit microcontroller based mainboard, front panel control and display interface, the internal architecture and most remote controller peripherals. They differ for specific interface board for the various systems.

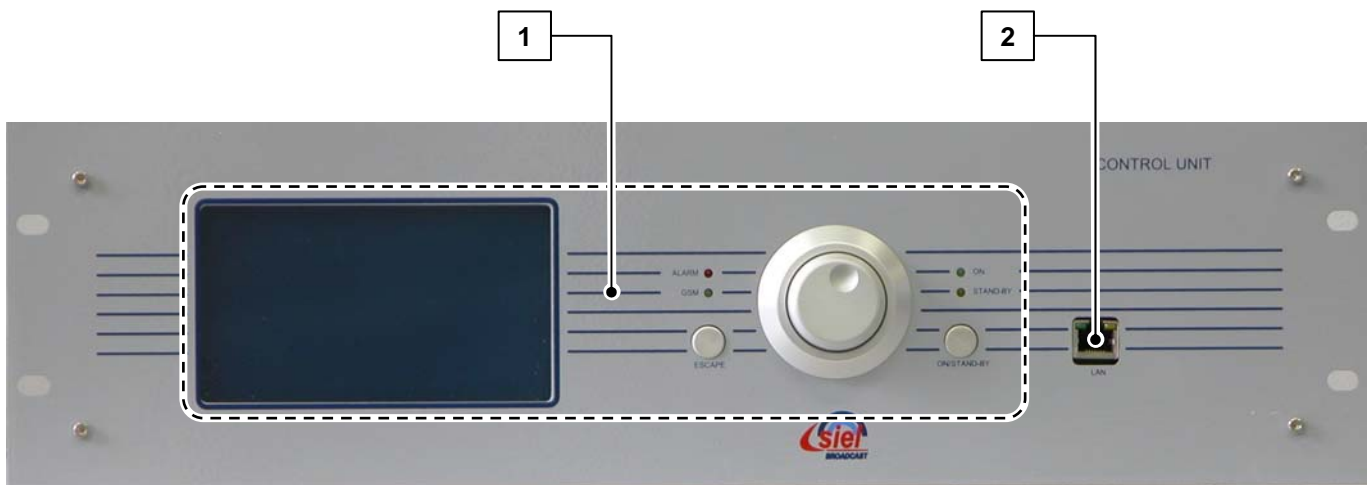
All this Controller series mates with –GT series SIEL/SIELCO Transmitters and Amplifiers which are controlled by a proprietary RS485 bus for the high level control and by the parallel remote port (one for each apparatus) which are common to all these equipment. This permits an easy, simple and reliable connection in the system but impedes functioning with most of other brands equipment.

COV24 N+1 Controller can manage up to 3 main transmitters and a reserve one in the basic configuration, externally connected to a single LF matrix switch and to 3 RF coaxial switches, one for each main channel. A software and hardware extension is available to drive up to 6 channels with an additional LF matrix and others RF coaxial switches. An external dummy load of suitable power is required to permit reserve or main Transmitters to be tested on live while the other equipment may either be in stand-by or fully in operation on air.

These are the principal functions managed by the Controller:

- Automatic management of the RF motorized switches with a precise power control to avoid wrong dangerous actions even in case of step-by-step manual operation
- Automatic frequency and power change of the reserve equipment to suit the main transmitter in case of automatic or manual switch to the antenna
- Automatic switch of the audio programme on the reserve transmitter
- Capacity to manage unsymmetrical arrays of transmitters of different power and model
- Possibility to manually switch-over any main transmitter with the reserve to permit maintenance with all the system on air with extremely small off-duty time (switch-over is usually accomplished in less than 10s from the command with most Transmitters)
- Common control center to set and display critical transmitters parameters (Frequency, power, temperature, alarms)
- Native remote TCP/IP port to permit either SNMP and/or simple web-based remote control on Internet. GSM control available on request
- Easy to exclude any channel at any time from the automatic switchover routine

## 2.2 Front panel



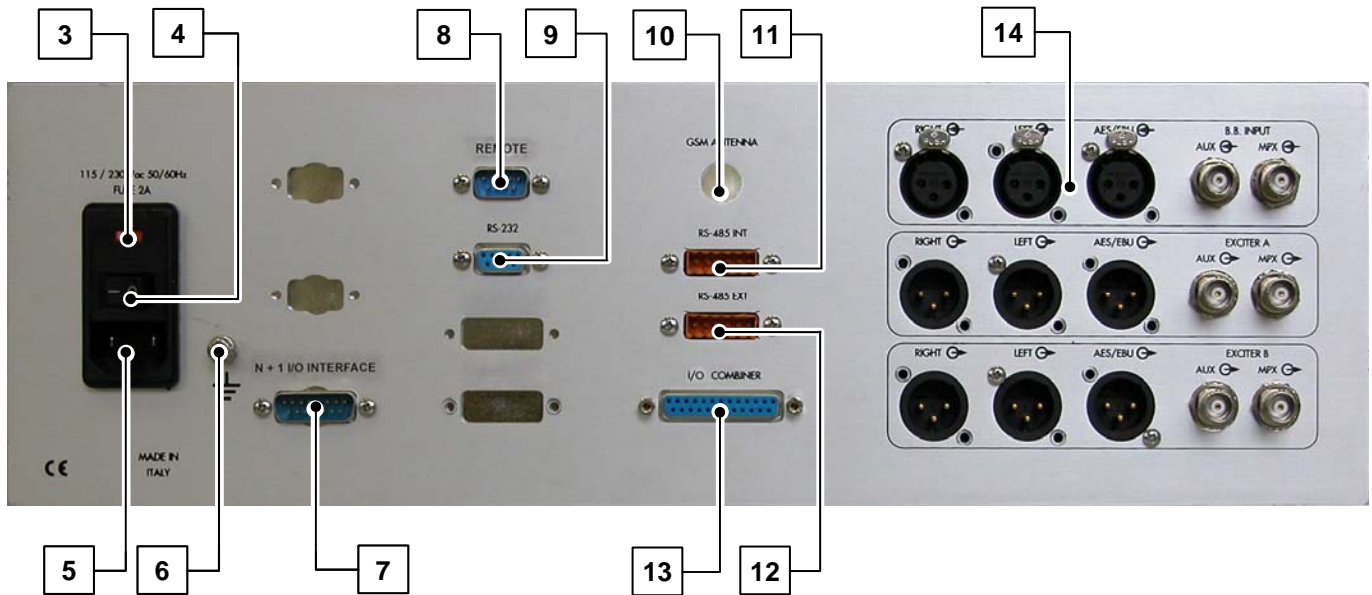
The Controller is contained in a small self-standing 19" 3 unity cabinet which is made to be inserted in a standard rack with the Transmitters, the LF matrix switch, the RF power switches and all the ancillary required equipment. On its front panel they are:

[1] The control panel area which allows to control the functions and set the parameters of the system. Main parts are:

- **LCD display** (Liquid Crystal Display) on which are shown the working parameters and the functions selected via the multifunction knob.
- **Multifunction knob (Jog)**: it allows the user to navigate the command menu in various ways:
  - If turned selects the various functions/operations for the system or the parameter values to be set.
  - If briefly pressed like a button, when inside a menu, activates the option currently selected.
  - If pressed for a longer time (>1s) it terminates the command or exit from the menu like the Escape button (see later)
- **ESCAPE button**: while navigating through a menu, pressing this button will return the user to the previous level or terminates the command with no change.
- **ON/STAND-BY button**: starts the system or puts it in stand-by mode. It is not available when in "Automatic" mode
- **ALARM indicator LED** (red) which glows when an alarm is detected.
- **GSM/LAN indicator LED** (yellow): this is relevant if a GSM modem is present. The LED is off when the modem is not present or disabled, it flashes whenever the modem is present and active while is fully on in case of GSM module malfunction (e.g.: SIM card missing).
- **ON indicator LED** (green): this LED is on when the system is enabled.
- **STAND-BY indicator LED** (yellow): this LED is on when the system is in stand-by mode.

[2] **LAN port**: connection to the Local Area Network for remote control via Internet. On some equipment or on request it may be located on the rear panel.

### 2.3 Rear panel

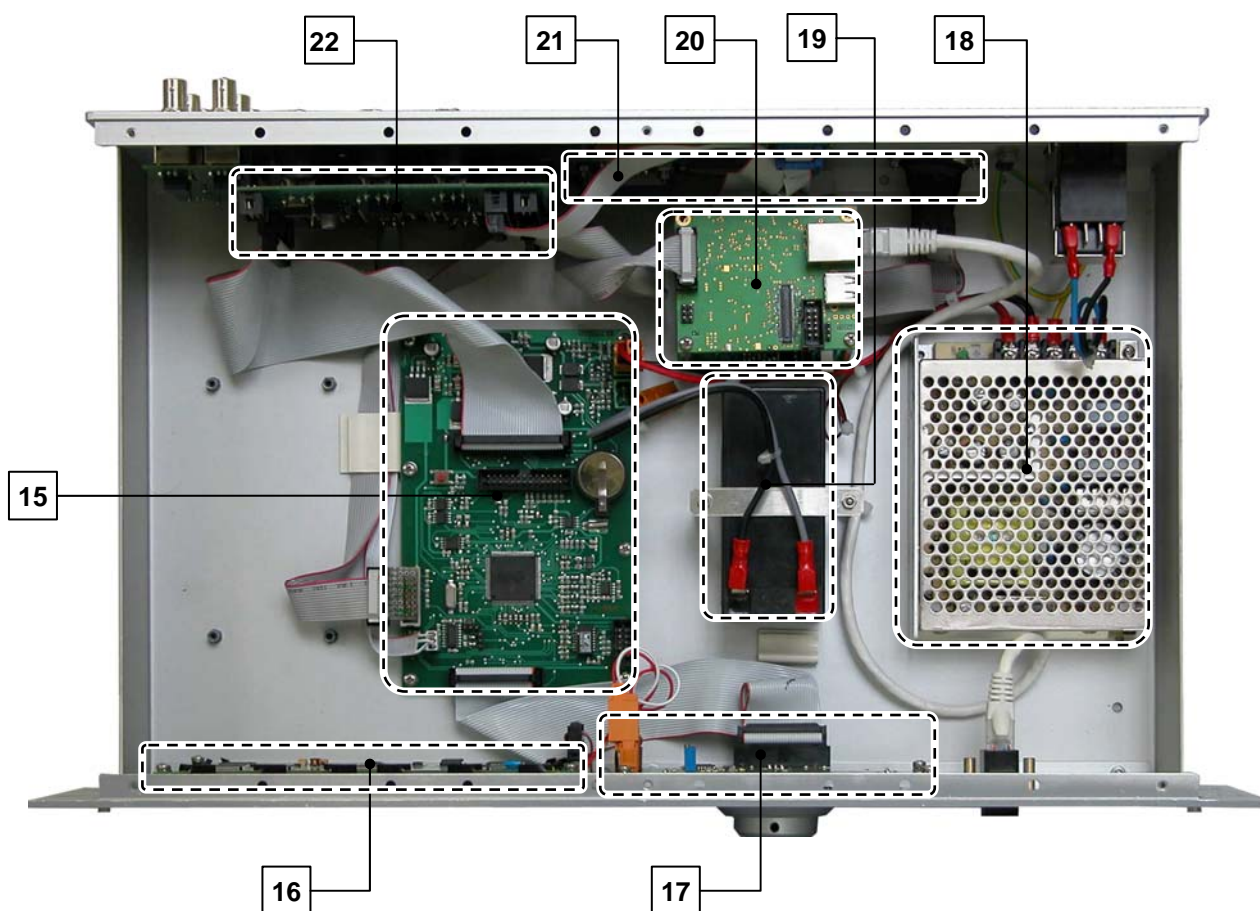


The rear panel allocates the mains input and power switch components and all the I/O connector:

- [3] Unit power switch
- [4] 2AF 5x20 Fuse holder
- [5] IEC320 Mains cord socket
- [7] LF/RF Matrix control bus
- [8] Parallel control auxiliary port
- [9] RS232 port of the unit
- [10] GSM antenna (optional)
- [11] RS485 internal control bus of the system
- [12] RS485 port of the unit for external control
- [13] Auxiliary I/O control port mainly used on 1+1 systems
- [14] Single channel 1+1 LF switch matrix (usually disabled on COV24)



## 2.4 Internal view



Inside the equipment are placed the following main parts:

[15] The CPU controller board SRFB10KCPU

[16] The graphic display panel

[17] The human interface control board (jog knob, buttons, LED) SRFB10KKEY

[18] The mains power supply regulator MODRS7524

[19] 12V 1.2Ah sealed lead acid backup battery (only with some option like GSM telemetry)

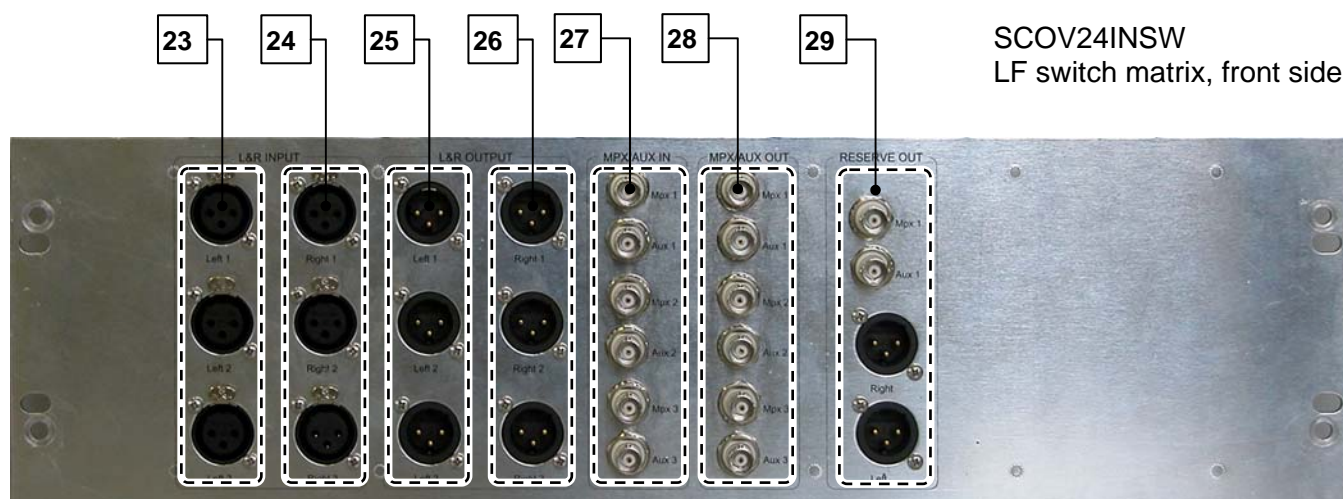
[20] The universal control board (Ethernet, RS485, GSM, upper board) SEXC30REMC. Below this board is also placed the N+1 LF Matrix control board SCOV24CON

[21] I/O interface ports

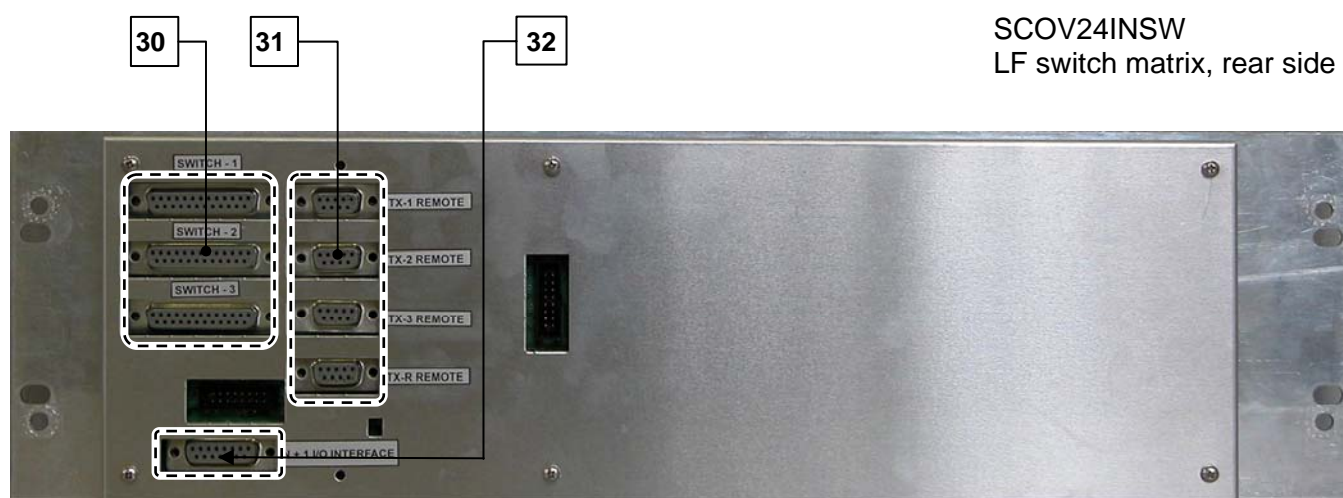
[22] The 1+1 switch board and I/O driver SCOV23INSP

## 2.5 The LF Matrix

The COV24 N+1 Controller requires at least one external LF Matrix which is driven by a single dedicated cable bus by the main Controller and on which are sited all the LF programme switches and the interface drivers of the power RF coaxial switches. This Matrix is situated internally in the system rack, on the back side. Each LF matrix controls up to 3 main channels and RF switches.



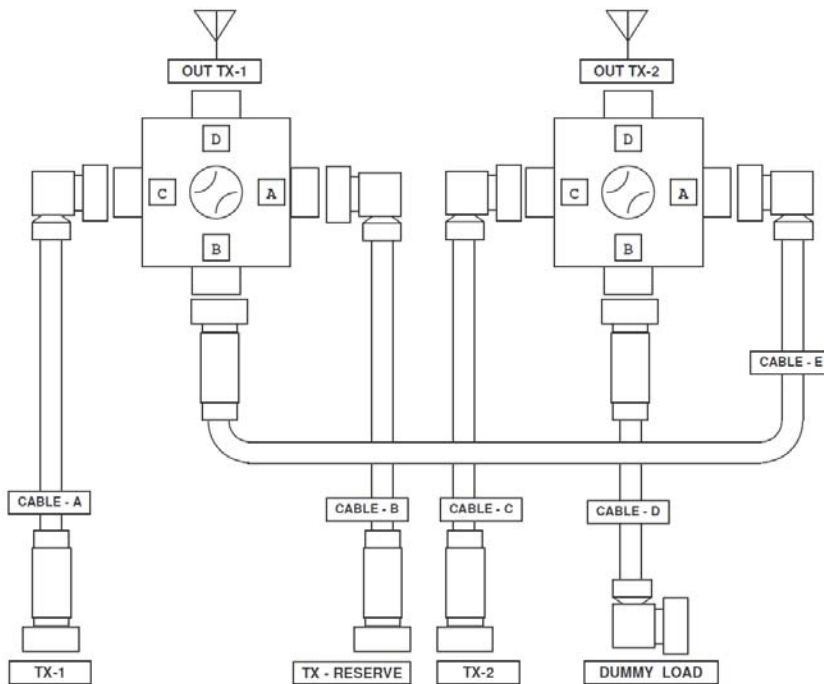
- [23], [24] Left and Right main programme balanced inputs
- [25], [26] Left and Right main programme balanced outputs to main transmitters
- [27] Mpx and RDS/Aux main programme unbalanced inputs
- [28] Mpx and RDS/Aux main programme unbalanced outputs to main transmitters
- [29] Programme outputs to the reserve transmitter



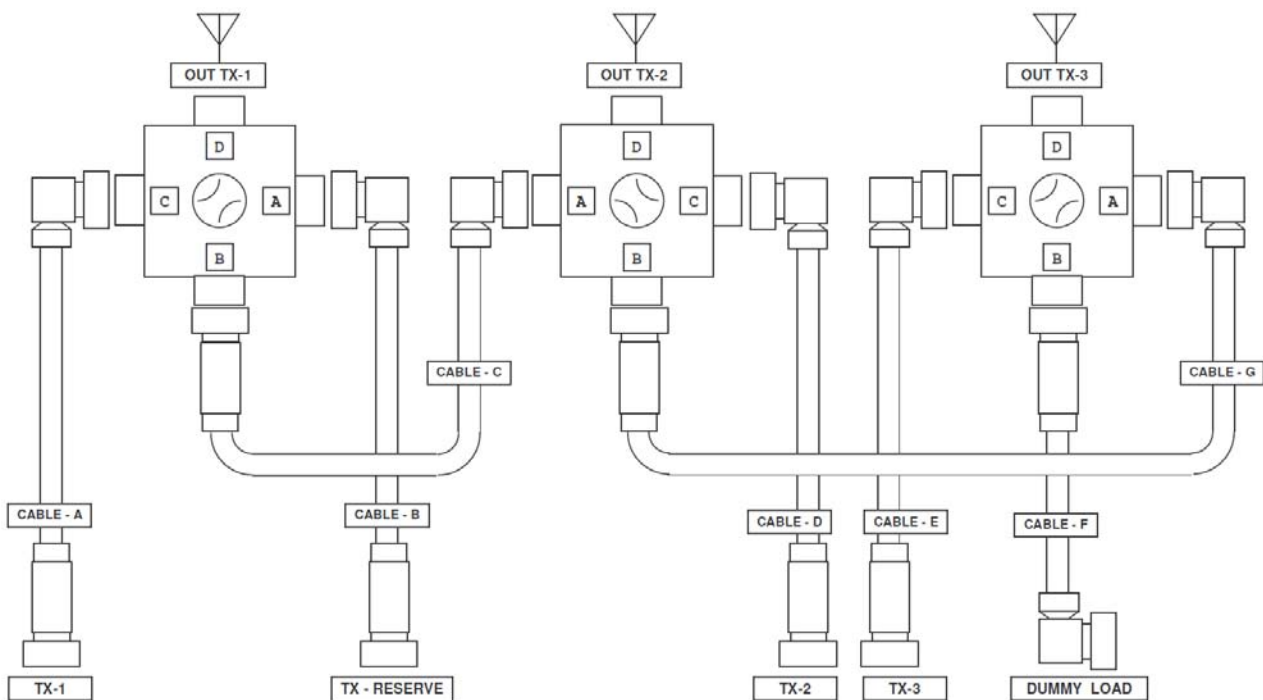
- [30] RF coax switch driver ports
- [31] transmitters command ports
- [32] LF Matrix I/O controller input

## 2.6 The RF coax switch array

The RF coax switch array is not a part of the Controller here described but it is an important component of the system which it directly drives though the LF Matrix. Each switch is driven by a dedicated 25 poles flat cable connected to the rear side of the Matrix. A detached mains power supply cord is also connected to each RF power relay switch. Here below is Coax switch configuration in a 2+1 and a 3+1 system: higher N+1 systems may easily be derived from these examples:



2+1 Coax switch array




3+1 Coax switch array



## 3 Basic operations

### 3.1 Initial start-up

1. Ensure the Controller is properly fixed on the System and securely connected to all the rest of the equipment and peripherals (control and power cables to LF matrix, RF switches, transmitters and power supply). This is utmost important when a factory prearranged system is shipped and installed for the first time on site. At beginning it may be safer the Controller is switched off by its rear power-on switch.
2. Separately turn on each Transmitter in the array and preset regular parameters like frequency, power transmission mode and LF sensitivity. Verify regular working parameters either by direct connection to the single equipment power output and through the preset RF switch.
3. Verify parameters and RS485 address on each Transmitter if not factory preset (see later §3.2)
4. When all the Transmitters are regularly on, turn-on also the Controller power switch on the rear
5. Via the LCD display of the Controller verify that the RS485 control bus (connecting the Control Unit to the modules) is correctly working and recognizes the connected equipment. In case of problems check again the settings of the RS485 system bus on each Transmitter and its correct connection to all the equipment
6. Verify the system settings though the Controller menu and preset the Control parameters as preferend.
7. Carry out some manual switch test to gain confidence with the system then put all main channels regularly on the air on the antenna and the reserve in stand by on dummy load and switch the Controller for "Automatic" attendance mode.

 For the adjustments to be directly carried out on the transmitters please refer to their user's manuals.

### 3.2 Settings control and RS485 system bus on the Transmitter

The first time the system is turned on or after some particular maintenance operations (e.g.: the installation of a new transmitter) it is important to verify the RS485 bus and control parameters on each transmitter. Here a brief remind: for details refer to the transmitter User Manual.

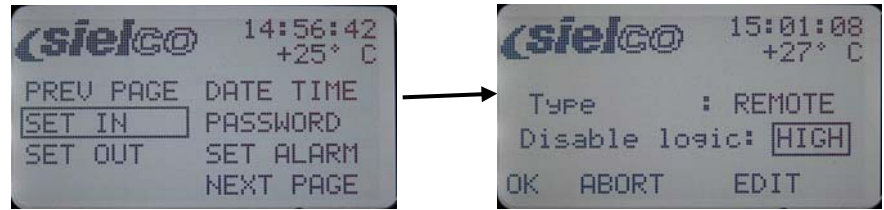
To set RS485 parameters on each transmitter, enter the **RS-485** menu in the setup section on it and verify the parameters as set on table 1



Module	Address	Baud rate
Transmitter #1	1	38400
Transmitter #2	2	38400
Transmitter #3	3	38400
Transmitter #N	N	38400
Reserve Transmitter	7	38400

Table 1:  
RS485 Tx parameters

You need also enter the **SET IN** menu and preset "REMOTE" control Type and "HIGH" as Disable logic input state. This will prevent user to tamper with single apparatus when driven from the Controller in the system



### 3.3 Changeover policy

To avoid as much as possible repetitive system switching in case of marginally critical failure or timely failure (e.g. Temperature alarms during hot days), quite a rigid policy is adopted on the changeover mechanism which assures a dependable result in every case:

- A fairly fast switch from an on air transmitter to the dummy load and of the reserve to the antenna whenever required, either automatically or manually, which assures minimum off duty time
- A programmable delay from the alarm acquisition to the system switch which can be set in the range 2 ÷ 180s, typically preset to 10s. If the alarm ceases during this time the changeover will not change the status of the system
- A priority scheme which will serve the highest critical transmitter in case of contemporary failure during the delay from alarm acquisition to system switch
- The Controller **do not automatically rearms**: it signalize its alarm status and waits for service or manual reset either locally or remotely. Until this reset is acknowledged no new alarm is processed. The priority assignment is simply determined by the RS485 address from #1 (the highest) to #N (the lowest)
- Any transmitter in the chain may be "excluded" by the automatic changeover surveillance at any time without any hardware change
- Great care was paid to avoid unnecessary switch action or off-duty time whenever passing from "Automatic" mode (the regular status) to "Manual" mode for any equipment adjustment or test while the system is on air

## 4 Control and setup Menu

### 4.1 Controller's menu system and navigation commands

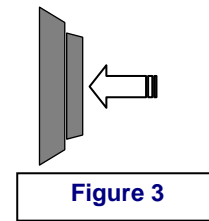
All the system's working and setup parameters and many of the single transmitter's ones are shown and/or may be preset on the Controller's display. An intuitive menu organization on the screen permits an easy and "natural" navigation through the various information and preset controls without the need to always refer to the User Manual once understood the simple navigation and control rules

Only 3 controls permit to navigate through the various menu screens and to interact with them:

- The **Multifunction knob**.
- The **ESCAPE** button.
- The **STAND-BY/ON** button

#### Multifunction knob

The multifunction knob is used to select the various menus that allow you to view or set the system's parameters and functions. It can be used in many ways:



- **When turned clockwise** (Figure 1), it shows the next menu (or next option).
- **When turned anti-clockwise** (Figure 2), it shows the previous menu (or previous option).
- **When pressed briefly like a button** (Figure 3), it acts as an "**ENTER**" key and allows the user to access the menu currently highlighted (or option currently highlighted) or to confirm the parameter just modified.
- **When pressed longer** it acts as an "**ESCAPE**" key and terminate the commands or exit the menu like the same key later described.

 In this manual we will use the phrase "press ENTER" or "ENTER" as "press the knob" and similarly "press ESCAPE" as push longer the knob or the button with the same name.

#### ESCAPE button

The **ESCAPE button** allows you to terminate the command with no variation or exit the menu and return to the first screen (**System Status**). Pressing again this button returns you to the **Default** screen.

## Stand-by/ON button

This button immediately turns on the System on air or in stand-by. For safety purpose this action is disabled on COV24 Controller for N+1 System or is active in "Manual" mode only. In this equipment Stand-by or ON action must be performed either automatically by the equipment or manually acting on each Transmitter controls by the Controller menu either locally or remotely.

📄 *Transmitters front panel controls are disabled when driven in an active system with the Controller*

## 4.2 Start up screens

At start-up the equipment shows some general info about the model, its functions and the firmware version on it:



Figure 4: start screen

Few seconds later the screen automatically change to the turn-on system status and soon after to the working status as the system was turned off the last time.

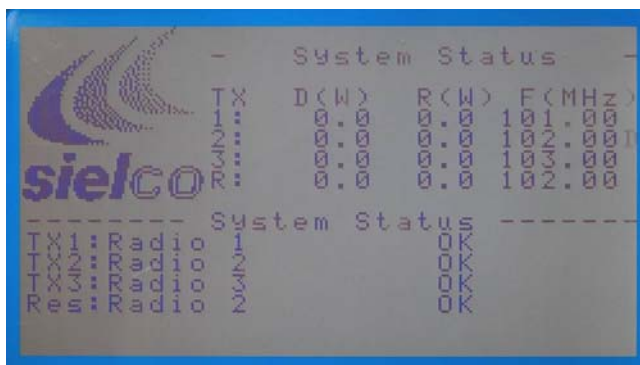


Figure 5: Sys status, turn-on in progress



Figure 6: Sys status, transmitters on air

By rotating the knob the screen will progressively show all the working and setup parameters. No action may be performed on them nor any setup may be changed if in "automatic " mode. A password mechanism is also present which will impede to vary the setup (level 2 grants) or even to show the detailed parameters (level 1 grants) if the corresponding level passwords are set: in this case the display will ask the user to enter the correct password to go on.

Once the password is entered the user is free to navigate and to interact with the system as soon as he continues to move. 2 or 3 minutes after the last action, the system will "freeze" and a new password request is made consequently to a control interaction.



### 4.3 Status / setup menus

Descending the menu tree by rotating the jog knob 5 different screen pages are shown before returning the System Status page (figure 6). They are all status and setup menu: setup mode will be entered by pressing “ENTER” on each screen. This will be covered later in details for some of them, the less intuitive ones and those with more choices.

- Switch setup status



Figure 7: Switch setup status

- Tx1 through Tx N and Reserve Tx status



Figure 8: Tx N status

- Alarm status

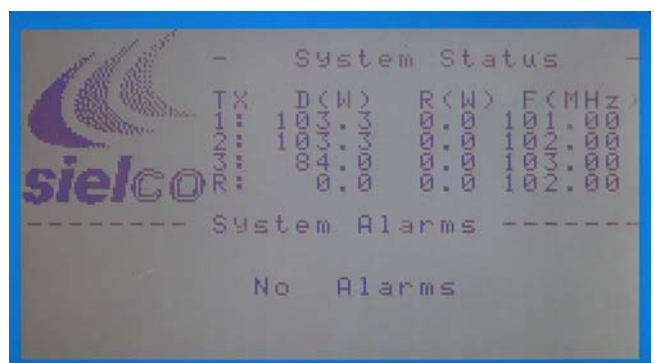


Figure 9: Alarm status and log

- Password status



Figure 10: Password status

- Clock and Time

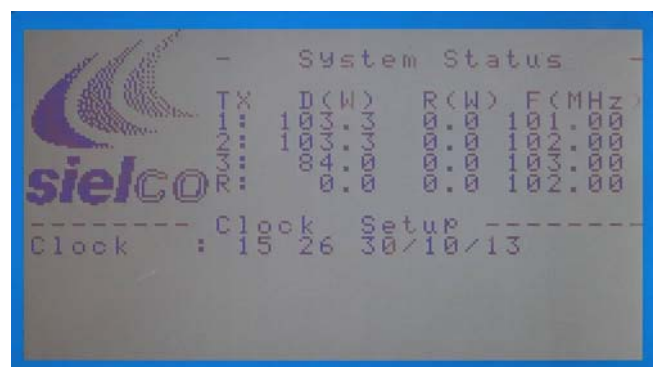


Figure 11: Clock and Time

- Ethernet parameters



Figure 12: Ethernet

As you may see from all these figures, all the screens keep the current main System Status on the upper half screen while showing the pertaining parameters on the lower half.

#### 4.4 Switch Setup mode menus and choices

By pressing “ENTER” on each status/setup screen you will enter in parameter change mode. You must be in “Manual mode” to be allowed to make any change. Press ENTER when on the “switch setup screen” (fig. 7) to enter on the setup choices in this menu shown by the leftmost rows on the bottom half of the screen. This is shown by a cursor on the right (fig. 13). By rotating the knob you will descend the rows to make your choices: go up to the latest one (Mode, fig. 14) and press ENTER again.



Figure 13: Entering in the setup mode

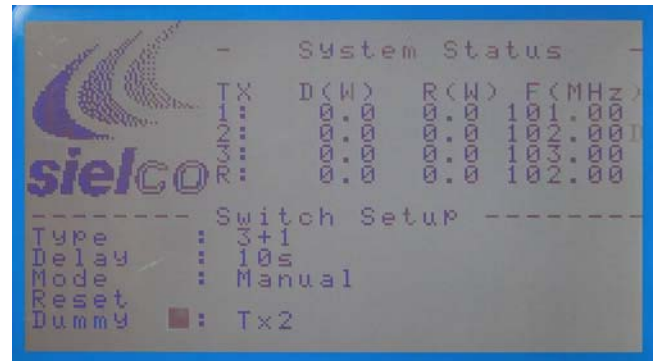


Figure 14: Going to “Dummy Load” setup

The cursor will move on the right and you will be allowed to choose between the proper choice for that row: in this case “Tx1” up to TxN” and “Reserve”. Confirm your choice by pressing ENTER once more (fig.16).



Figure 15: Entering dummy load setup



Figure 16: Reserve change on “Dummy”

Each Switch setup rows has its proper choices; they are:

- Type: 1+1, 2+1, 3+1 ... N+1
- Delay: 2 up to 180s
- Mode: Automatic, Manual
- Reset: Switch reset to the latest valid configuration
- Dummy: Tx1 up to TxN and Reserve

## 4.5 Tx N Setup

When in Tx N or Reserve status (ref. fig. 8) you are allowed to change the configuration parameters for that transmitter. As in previous chapter (Switch Setup) you enter setup mode by pressing “ENTER” once when in the desired Tx screen. You have then to choose the parameter you want to edit on the leftmost row by rotating the knob and pressing “ENTER” once more:

- Status (On the Air / Dummy load)
- Exclude (Yes / No)
- Frequency (87.5 – 108MHz)
- Power set (as the Transmitter’s range)
- RF Power (read only, direct / reflected Pw)
- Temperature/alarms (read only, current status)

In Figure 17 you see the RF power setup as example: in fact the cursor is moved to the right of the colon (:) character to indicate the parameter may be edited by rotating the knob and confirmed by a final “ENTER” or terminated with an “ESCAPE” with no variation.



Figure 17: TX1 power setup

All the Transmitter’s parameters which are not shown here must be adjusted directly on the Transmitter control panel either locally or remotely. The System must in Manual mode and the equipment unlocked from “remote only” control (§3.2)

## 4.6 Alarm and System log

This section is still in progress at firmware rev. 1.03. Here you see a summary of the alarms or the key system event recorded on the Controller memory, up to 60. By pushing ENTER in the main screen (fig.18) you descend in the alarm list which you can scroll up and down (fig. 19).



Figure 18: Alarm and Log screen



Figure 19: Alarm/logs list. Event #01 shown



If you press ENTER you are allowed to delete the whole list: another screen will ask you to confirm your action with a final ENTER. Press ESCAPE otherwise to exit with no action.

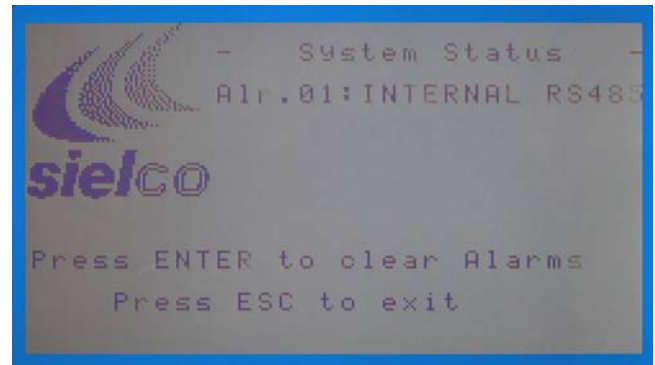


Figure 20: Final confirmation request for Alarm/Log list delete

#### 4.7 Password setup


As early declared, a password mechanism is present which will impede to access the setup (level 2 grants) or even to show the detailed parameters (level 1 grants) if the corresponding level password is set: in this case the display will ask the user to enter the correct password to go on.

To modify the factory preset (level 1 and level 2 password disabled) you should enter in this menu to enable/disable free level grants and to set the password for each level or only one of them, usually the second. A four alphanumeric character string is needed as password which is freely user editable.



Figure 21: Password screen

Password enabling is a harmful action because if you lose this word, you lose actual control over the System and you may need to reprogram the Controller firmware or to return it to the factory. A third security level is still present, whose password is "ABCD" which permits to gain access to the system and to delete the lower level password. This password too is editable: if you do that be **absolutely** sure to save it in your archive for any future needing.

 ***SIELCO cannot be held responsible for any damage or consequence resulting by improperly tampering with password system.***

#### 4.8 Ethernet setup

Like any other setup screen this too may be accessed with ENTER and all the parameters listed in fig.22 are freely adjustable to your internal LAN or site modem.

Exiting from a LAN (Local Area Network) to permit access on Internet for the web-server or the SNMP remote control requires proper programming of the IP address, Gateway and other parameters here. In addition, a static IP address is needed for the modem on site for the Ethernet connection to be

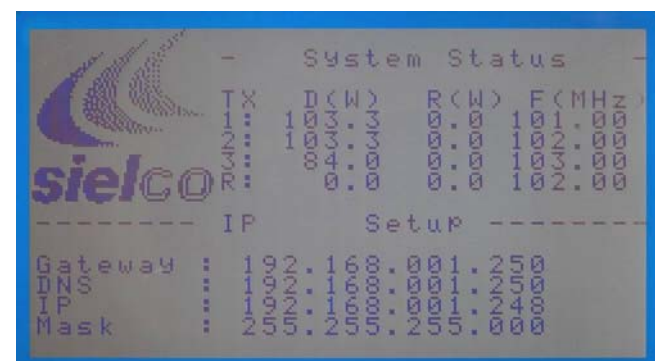


Figure 22: Ethernet parameters

externally accessed and an adequate routing of the equipment IP and standard ports, like the UDP 161 port for SNMP, is also necessary. This is not trivial nor SIELCO can manage this task: a skilled network administrator is needed to supervise these functions on site.

By properly programming the modem/router on site many equipment may be contemporary accessed, i.e. the System controller (this one here described) AND each single equipment in the system (i.e. each transmitter) in addition to other unrelated equipment. A simple external switch (a cheap LAN accessory readily available) is usually needed to concentrate all the equipment to the modem LAN connector. Not all the low-cost modems used for DSL/ADSL, especially those provided by the Telecom agencies for basic internet access, may be programmed as required.

## 5 Remote control on Internet

### 5.1 SNMP control

SNMP control for automatic surveillance with SCADA system managers or manual browsing / setup is available through the TCP/IP LAN port. SIELCO provides a proper MIB file tailored for this equipment. No other software or assistance is granted for the remote control which usually requires some adequate skill for anything else than simple browsing.

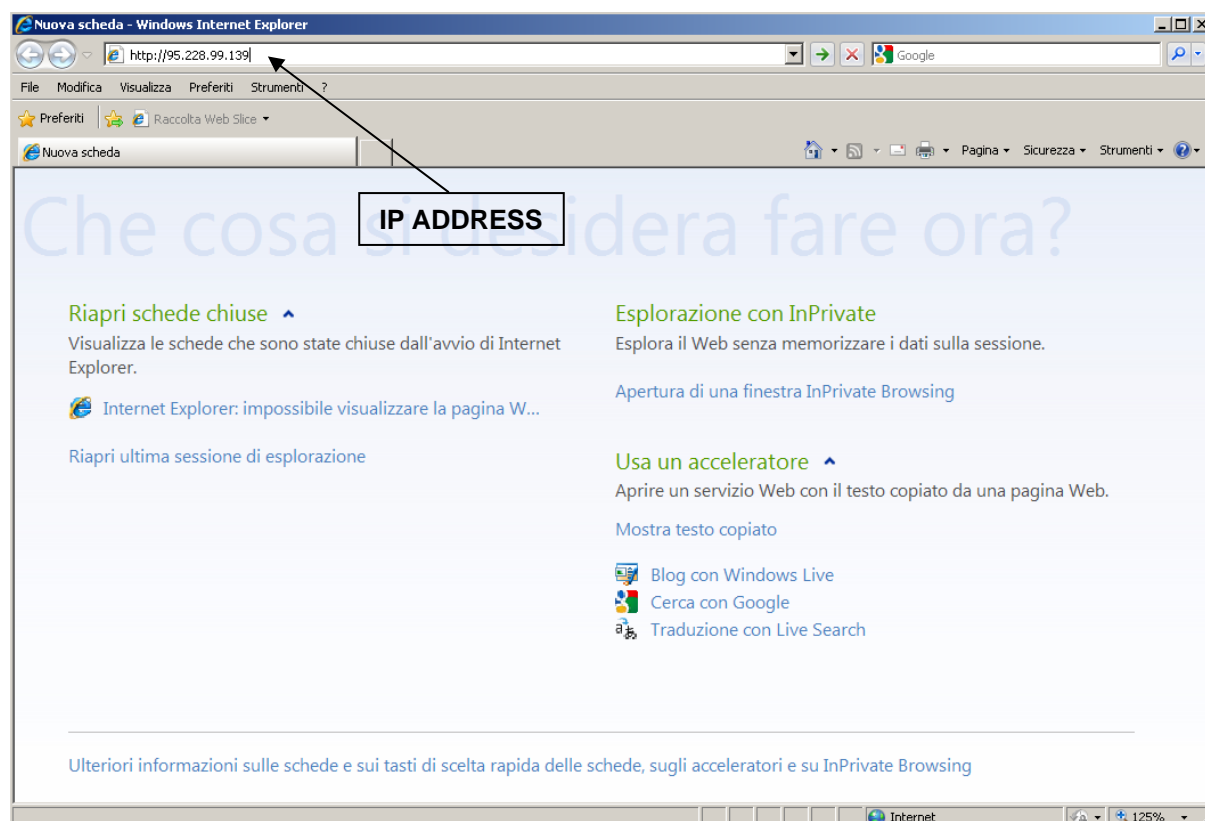
Low cost, demo and even free programs are available on the net like iReasoning MIB Browser ([www.ireasoning.com](http://www.ireasoning.com)), MG-SOFT ([www.mg-soft.com](http://www.mg-soft.com)) or JMibBrowser ([www.dwipal.com](http://www.dwipal.com)) and many others with absolutely no warranty or support from us. Please refer to their documentation on the net.

An SNMP basic control booklet is available on request from SIELCO as a general guide on the matter for the EXCxxGT series equipment.

### 5.2 WEB-server control

In addition to the more professional but more complex SNMP control, a simple remote control may be remotely performed on the Internet though most Internet browsers (Explorer, Safari, Chrome, Firefox and others) available on any PC and on most recent generation pocket smart-phone either Android, iOS or Win 8 based. Not all these devices are able to correctly decode the web page but 80% of them will do, so providing a fast, cheap easy and human-oriented way to control the remote equipment. No special software is needed to perform the control but, conversely, there is little room for automatic surveillance systems. The equipment must be correctly routed on Internet as described on §4.8, that is not a SIELCO task.

To access the web-server input the equipment assigned IP on the Internet browser site address as shown, in this case <http://95.228.99.139>, the SIELCO public IP address at the time being:



The input screen of the web site will soon be shown if the system is on line:



Click on “Enter N+1 Menu” and a system login screen will pop-up for that IP address:

The standard Factory programmed credentials are:

User name: **admin**

Password #1: **sielco** (read only rights)

Password #2: **sielco1** (read / write rights)



Either password you choose a system “Status” screen will appear. On this it is clearly shown the name of the site, possible pending alarms, the actual configuration of the system and the main parameters for each transmitter

The blue box **Status** flashes any time a screen request is performed, approximately at 1 screen/s rate

No operation may be performed from this screen other than access the “log” or “setup” screen if allowed by the proper read/write login password.

No logout button is present on the version here shown (v.3.0): you shall close the window to



	Status	Frequency	Dir.Pw	Ref1.Pw	MPX	Temp
Tx1	Antenna	101.00MHz	84.0W	0.0W	0kHz	36° C
Tx2	Antenna	102.00MHz	133.0W	0.0W	0kHz	37° C
Tx3	Antenna	103.00MHz	84.0W	0.0W	0kHz	35° C
Reserve	Dummy	101.00MHz	0.0W	0.0W	0kHz	35° C

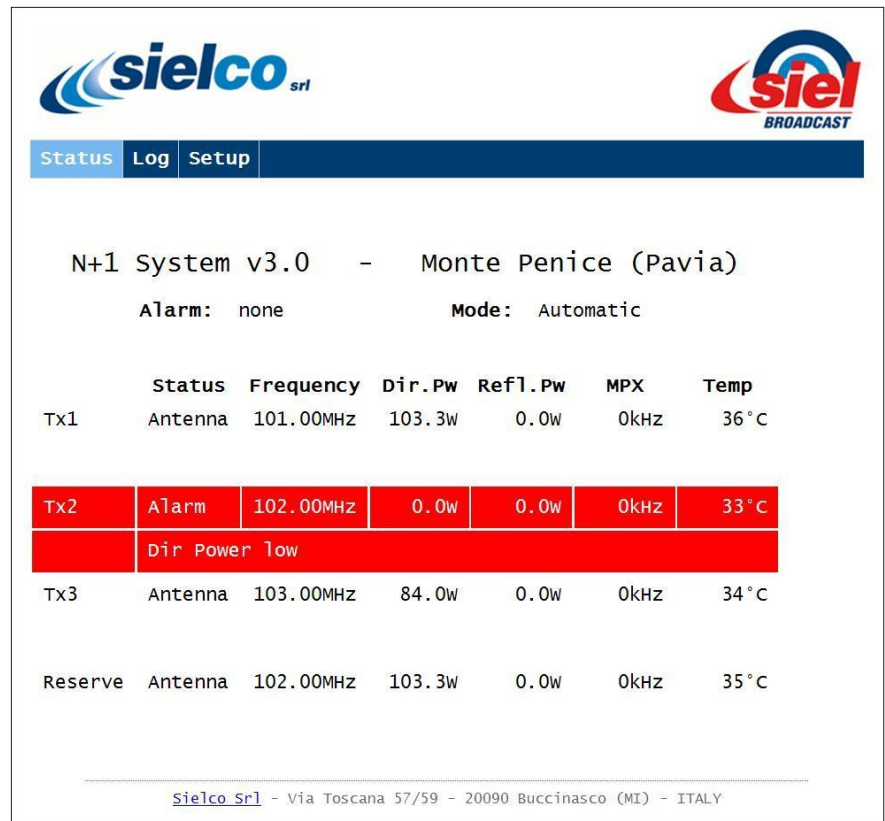
Sielco Srl - Via Toscana 57/59 - 20090 Buccinasco (MI) - ITALY



logout. On very next version a dedicated button will permit to properly logout without exiting from the site.

In case of an alarm or an improper setting, this is immediately shown on the Status screen in **red** as in the figure:

In this case there is no alarm pending but the Transmitter #2 delivers no RF power, probably caused by an improper preset.



In case of a manual setup with an usually improper preset, this is outlined in **yellow**.

In this case Transmitter #1 is operating on the dummy load and not on the antenna (Reserve is anyway on antenna for that channel)

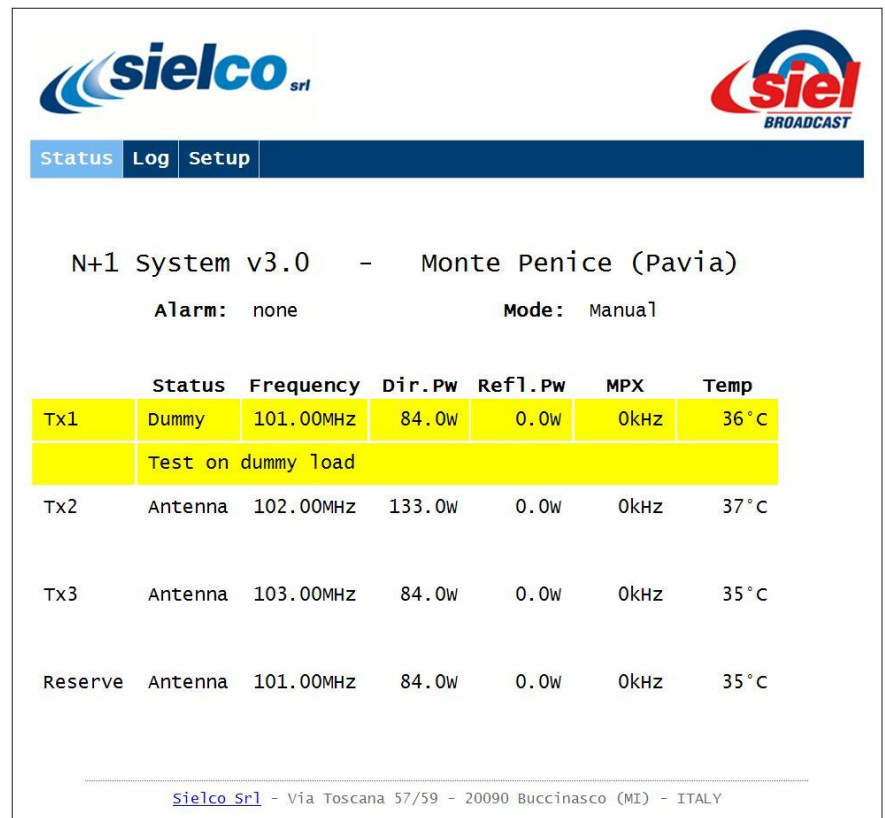




Figure 16: Reserve change on "Dummy"

If you click on the **Log** button, a system log screen appears where the system events or alarms are reported.

Like before, no setup or reset action may be performed directly on this screen.



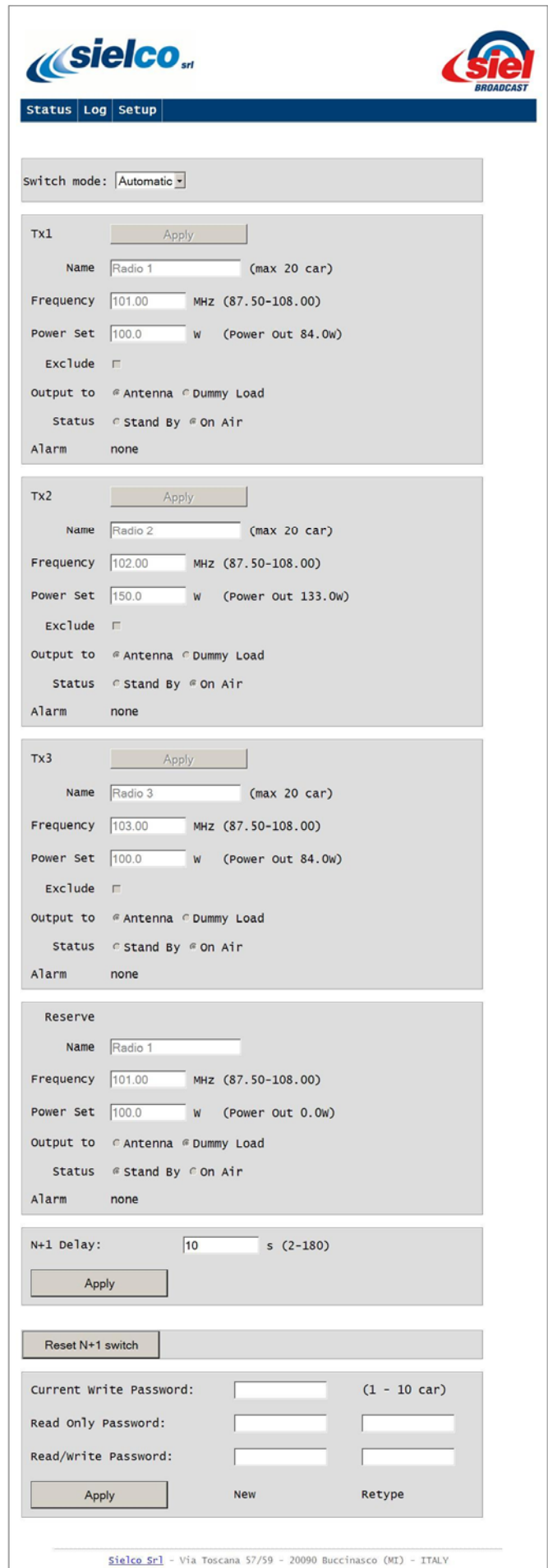
Status	Log	Setup
1-	29/10/13 18:56:47	System TX2 switch
2-	29/10/13 18:56:47	Tx2 Dir Power low
3-	29/10/13 18:56:47	System TX0 switch
4-	29/10/13 16:44:16	System TX2 switch
5-	29/10/13 16:44:16	Tx2 Dir Power low
6-	29/10/13 16:44:16	System TX0 switch
7-	29/10/13 16:44:16	Reserve Dir Power low
8-	29/10/13 16:44:16	System TX2 switch
9-	29/10/13 16:44:16	Tx2 Dir Power low
10-	29/10/13 16:44:16	System TX0 switch

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If you login with the read-write password, you are enabled to enter the setup screen by clicking on **Setup** button and to possibly vary the assignments to the system and to any transmitter in it.

Each transmitter has its own highlighted area and you can scroll the whole screen from top to bottom and vice-versa. The system controls (delay, reset and login credentials) are on the bottom while on the top is signalized the status “Automatic” or “Manual”. No change is allowed in the system before passing from “Automatic” to “Manual”.

The parameters you may change are black on white background: if they are not editable they are grey on white. Consequently, in “Automatic” mode as in the figure, they are all grey. When you apply any change to any parameter you have to terminate it with an “Enter” (↵) or click on “Apply” button: few seconds are needed for the command to be applied and for the remote feedback on screen. During this time you are not allowed to make other change.



**sielco srl** **siel BROADCAST**

Status Log Setup

Switch mode: Automatic

**Tx1** Apply

Name Radio 1 (max 20 car)

Frequency 101.00 MHz (87.50-108.00)

Power Set 100.0 W (Power Out 84.0w)

Exclude ☐

Output to ☒ Antenna ☐ Dummy Load

Status ☐ Stand By ☐ On Air

Alarm none

**Tx2** Apply

Name Radio 2 (max 20 car)

Frequency 102.00 MHz (87.50-108.00)

Power Set 150.0 W (Power Out 133.0w)

Exclude ☐

Output to ☒ Antenna ☐ Dummy Load

Status ☐ Stand By ☐ On Air

Alarm none

**Tx3** Apply

Name Radio 3 (max 20 car)

Frequency 103.00 MHz (87.50-108.00)

Power Set 100.0 W (Power Out 84.0w)

Exclude ☐

Output to ☒ Antenna ☐ Dummy Load

Status ☐ Stand By ☐ On Air

Alarm none

**Reserve**

Name Radio 1

Frequency 101.00 MHz (87.50-108.00)

Power Set 100.0 W (Power Out 0.0w)

Output to ☐ Antenna ☒ Dummy Load

Status ☐ Stand By ☐ On Air

Alarm none

N+1 Delay: 10 s (2-180)

Apply

Reset N+1 switch

Current Write Password: (1 - 10 car)

Read Only Password:

Read/Write Password:

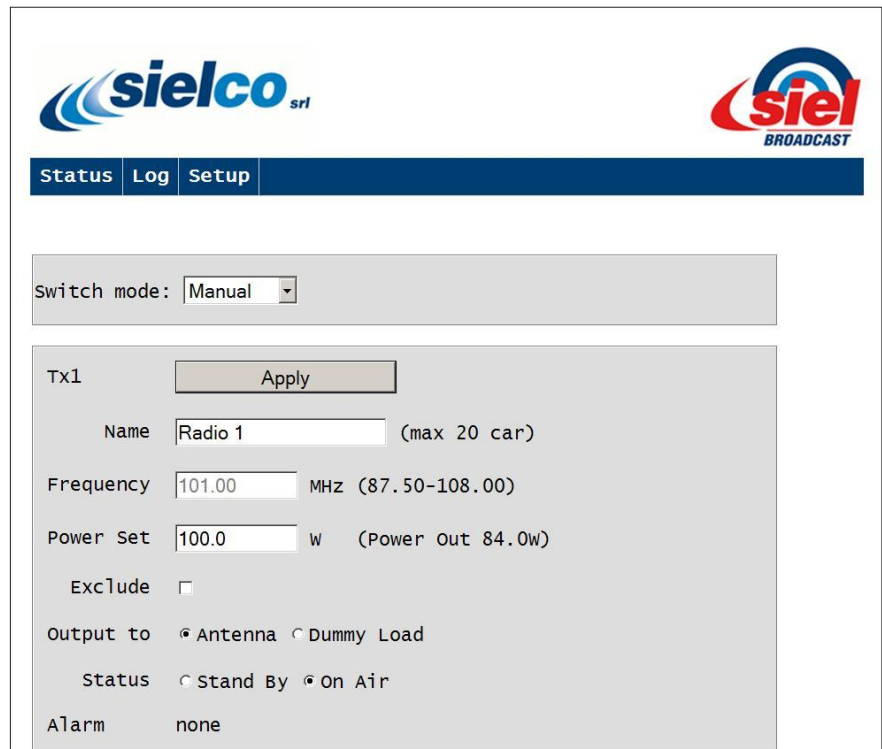
Apply New Retype

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As in on site setup on the system, when in “Manual”, you are remotely allowed to vary on any transmitter:

- The station name (Radio 1 in the example)
- The output power
- Switch from antenna to dummy load or vice versa
- Put the apparatus in stand-by or on air
- Exclude the transmitter from the automatic surveillance

For safety purpose no possibility is allowed in any case to change the frequency on any main transmitter by remote. This is partially allowed on reserve transmitter when on dummy load.



sielco srl

siel BROADCAST

Status Log Setup

Switch mode: Manual

Tx1 Apply

Name Radio 1 (max 20 car)

Frequency 101.00 MHz (87.50-108.00)

Power Set 100.0 W (Power Out 84.0w)

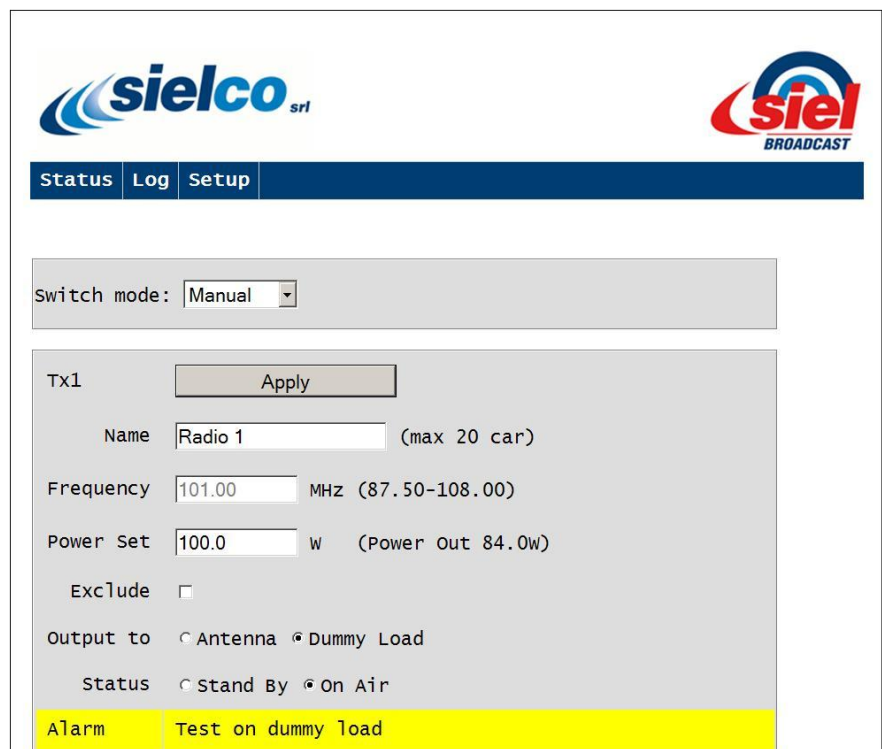
Exclude ☐

Output to ☒ Antenna ☐ Dummy Load

Status ☐ Stand By ☒ On Air

Alarm none

When the Transmitter is in alarm state, the bottom area of the transmitter is highlighted in red. When in warning state like in the example figure (the transmitter is not on antenna but on dummy load), it is highlighted in yellow as on Status screen.



sielco srl

siel BROADCAST

Status Log Setup

Switch mode: Manual

Tx1 Apply

Name Radio 1 (max 20 car)

Frequency 101.00 MHz (87.50-108.00)

Power Set 100.0 W (Power Out 84.0w)

Exclude ☐

Output to ☐ Antenna ☒ Dummy Load

Status ☐ Stand By ☒ On Air

Alarm Test on dummy load



As for the main transmitters you are not allowed to change the frequency on the reserve transmitter if on air on the antenna.

Note that, if the reserve transmitter is switched to antenna, it takes the name of that programme (Radio 1 in the figure) which it replaces.

Reserve

Name

Radio 1

Frequency

101.00

MHz (87.50-108.00)

Power Set

100.0

W (Power Out 84.0w)

Output to

☒ Antenna ☐ Dummy Load

Status

☐ Stand By ☒ On Air

Alarm

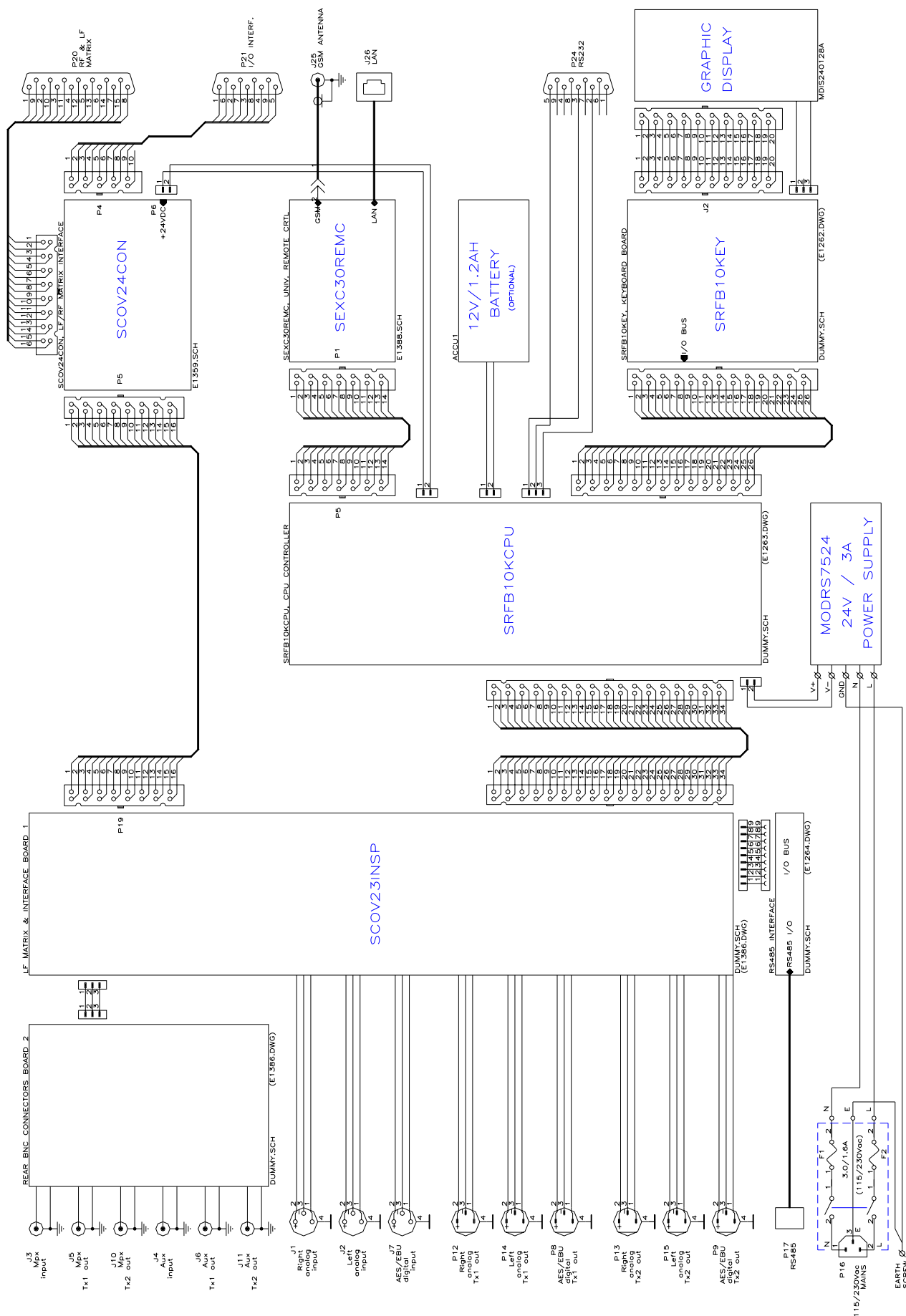
none

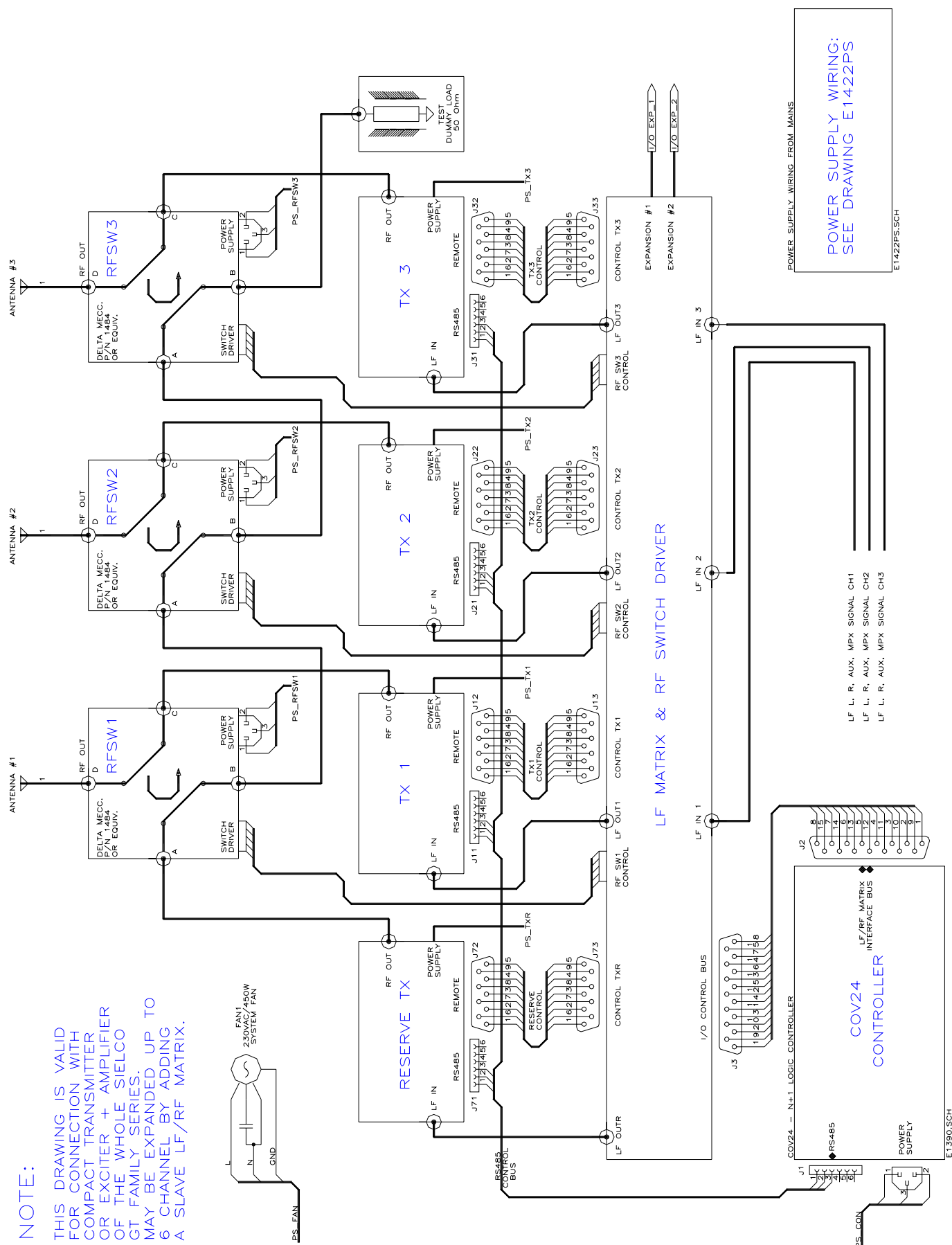
Apply

# COV24

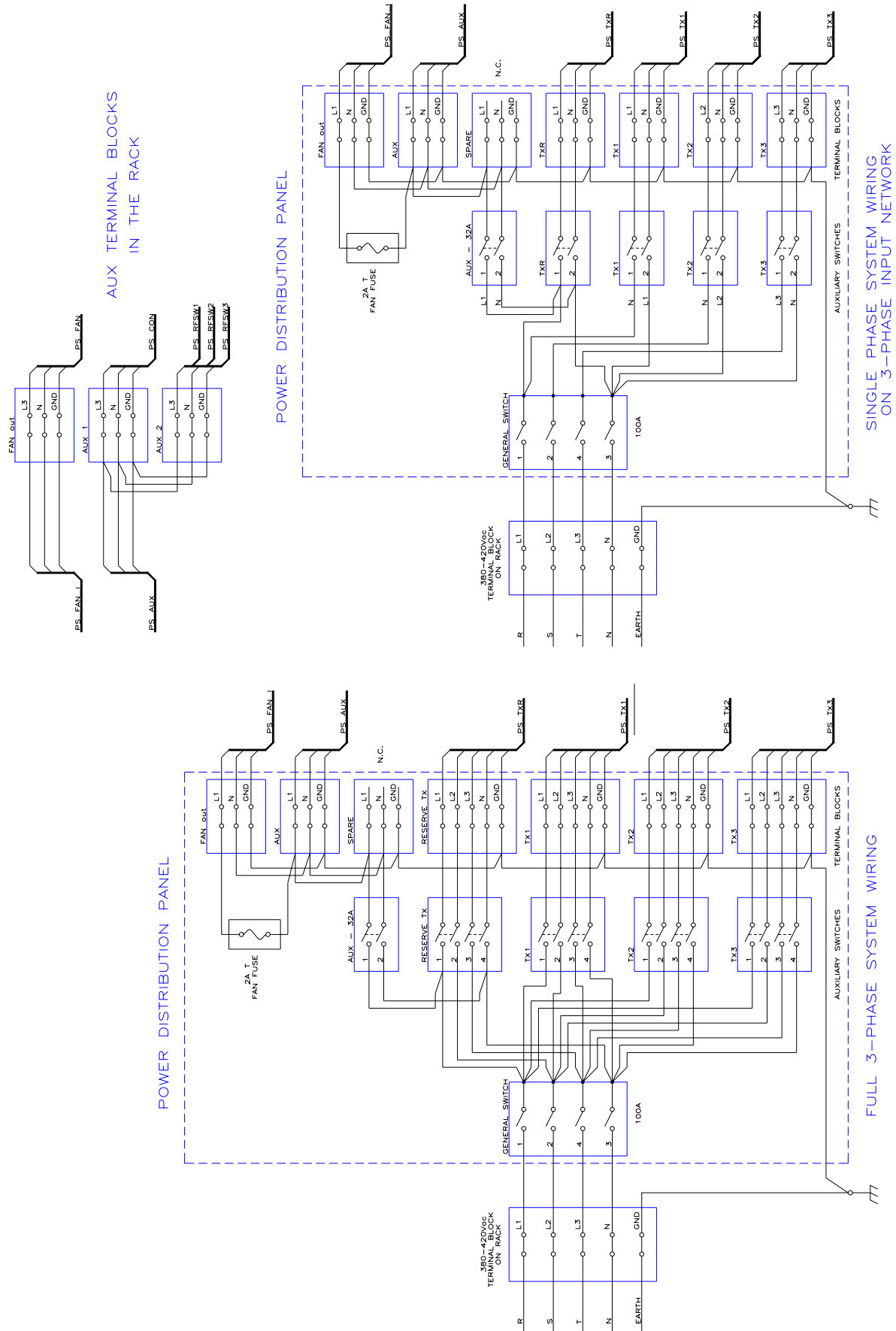
## 6 Electrical diagrams and Technical Appendix

### 6.1 E1390 - COV24 General wiring diagram





### 6.3 E1422PS - N+1 System mains power wiring diagram

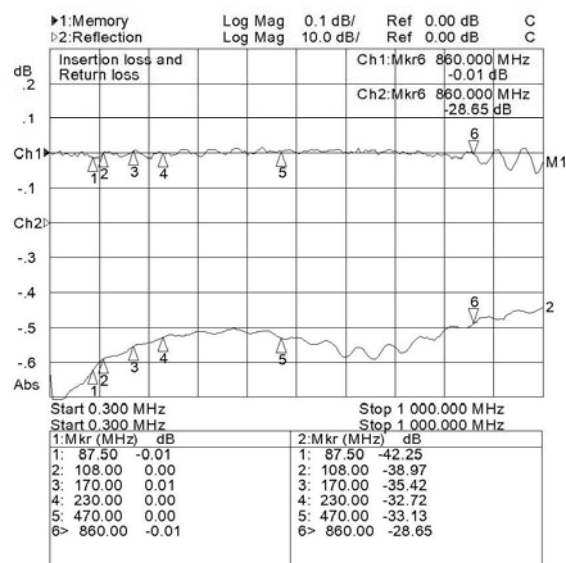




## 6.4 DM1484 – 7/8" Motorized coaxial switch data excerpt

DC ÷ 862MHz

Motorized Coaxial Switch 7/8"



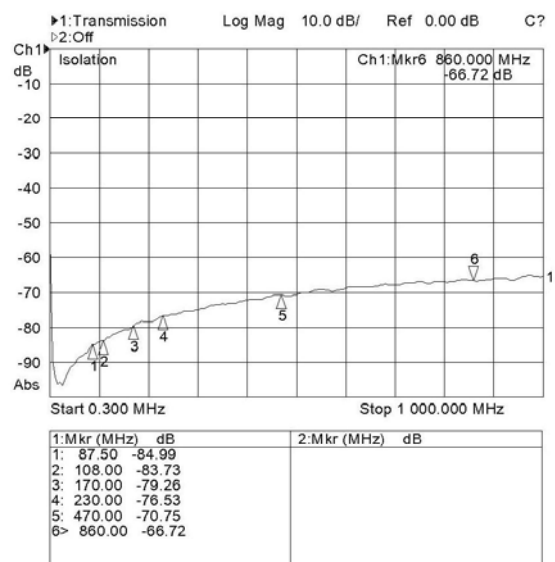
### Mechanical Characteristics

Connections	EIA 7/8"
Overall dimensions [WxDxH] [mm.]	167x167x168
Temperature range [C°]	-10 ÷ 50
Weight [kg.]	2.5

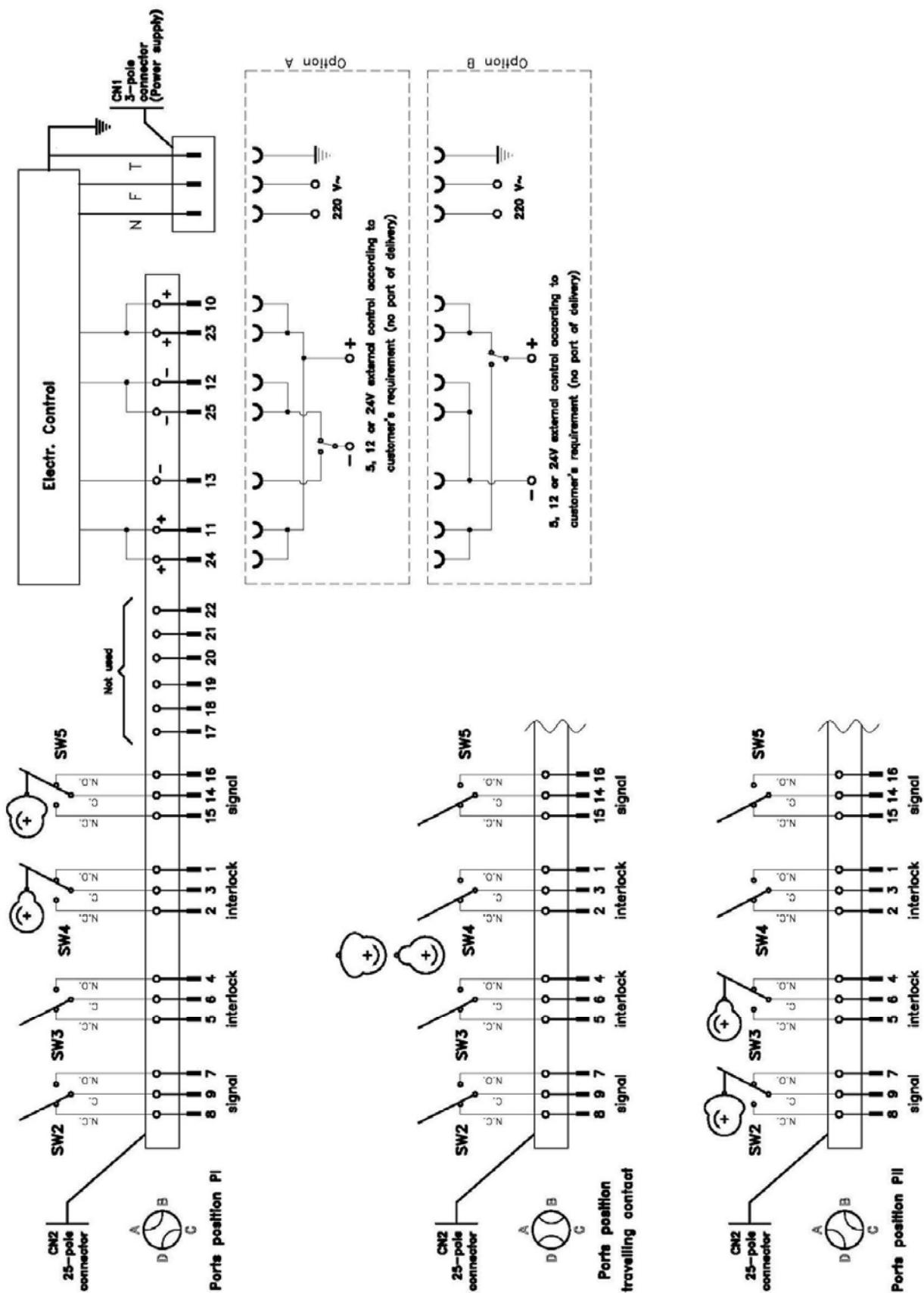
### Electrical Characteristics

Frequency Range [MHz]	DC to 862 MHz
Insertion Loss [dB]	< 0.05
Input/Output Impedance [Ohm]	50
Operating Voltage [Vac]	85÷264 / 47÷63Hz
Control Voltage [Vdc]	5, 12 or 24
Switch-over Time [s]	< 1

Frequency band	FM Radio	III	IV/V
Return loss [dB]	> 40	> 30	> 26
Insulation [dB]	> 80	> 75	> 65
Max. power [W]	5000	3500	2000



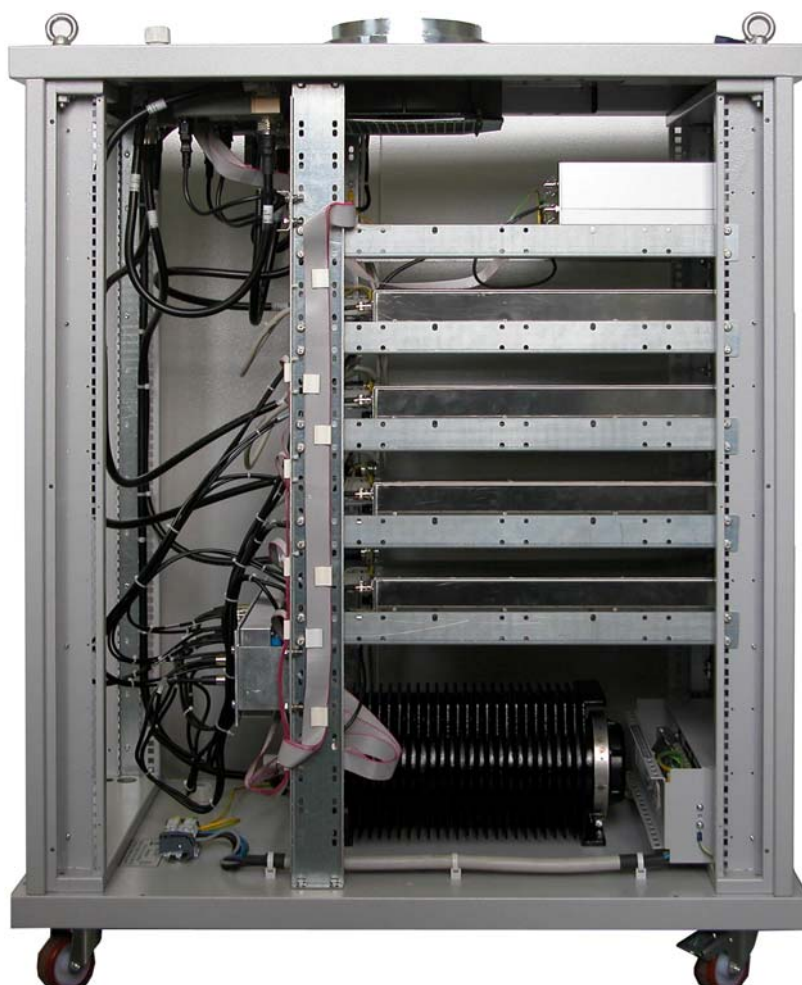
## Motorized Coax Switch Functional Diagram



## 6.5 Example of 3+1 1500W system



3+1 Front view

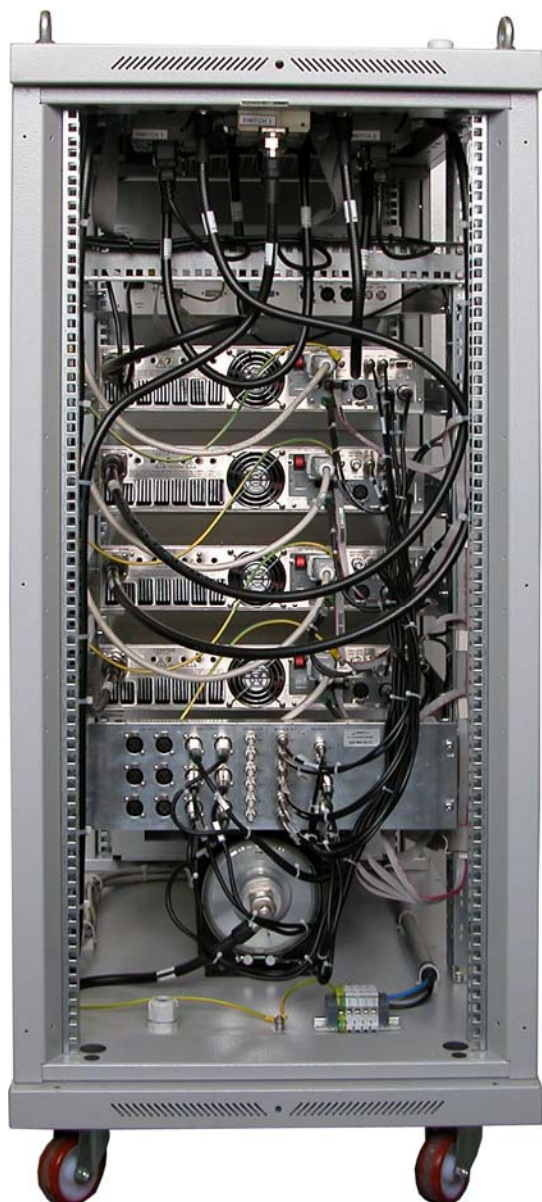


3+1 Left side open view





3+1 rear upper view – output and I/O details



3+1 Rear open view



3+1 rear upper internal view  
RF switches details