TECHNICAL MANUAL

RIVERRF

Radio concentrator with serial line interface for intrusion detection systems

090030430

IMQ-SISTEMI DI SICUREZZA

EL.MO. SPA

FOREWORD

FOR THE INSTALLER:

Comply strictly with current standards governing the installation of electrical systems and security systems, and with the manufacturer's directions given in the manuals supplied with the products.
Provide the user with full information on using the system installed and on its limitations, pointing out that there are different levels of security performance that will need to suit the user's requirements within the constraints of the specific applicable standards. See that the user looks through the warnings given herein.

FOR THE USER:

Check the system's operation thoroughly at regular intervals, making sure the equipment can be armed and disarmed properly.
Make sure the system receives proper routine maintenance, employing the services of specialist personnel who meet the requirements prescribed by current regulations.
Ask your installer to check that the system suits changing operating conditions (e.g. changes in the extent of the areas to be protected, change in access methods, etc...).

This device has been designed, built and tested with the utmost care and attention, adopting test and inspection procedures in accordance with current legislation. Full compliance of the working specifications is only achieved in the event the device is used solely for its intended purpose, namely:

Radio concentrator with serial line interface for intrusion detection systems

The device is not intended for any use other than the above and hence its correct functioning in such cases cannot be assured.
Consequently, any use of the manual in your possession for any purpose other than those for which it was compiled - namely for the purpose of explaining the product's technical features and operating procedures - is strictly prohibited.
Production processes are closely monitored in order to prevent faults and malfunctions. However, the componentry adopted is subject to an extremely modest percentage of faults, which is nonetheless the case with any electronic or mechanical product.
Given the intended use of this item (protection of property and people), we invite you to adapt the level of protection offered by the system to suit the actual situation of risk (allowing for the possibility of impaired system operation due to faults or other problems), while reminding you that there are specific standards for the design and production of systems intended for this kind of application.

We hereby advise you (the system's operator) to see that the system receives regular routine maintenance, at least in accordance with the provisions of current legislation, and also check on as regular a basis as the risk involved requires that the system in question is operating properly, with particular reference to the control unit, sensors, sounders, dialler(s) and any other device connected. You must let the installer know how well the system seems to be operating, based on the results of periodic checks, without delay.

Work involved in the design, installation and maintenance of systems incorporating this product should be performed only by personnel with suitable skills and knowledge required to work safely so as to prevent any accidents. It is vital that systems be installed in accordance with current legislation. The internal parts of certain equipment are connected to the mains and therefore there is a risk of electrocution when maintenance work is performed inside without first disconnecting the primary and emergency power supplies. Certain products include batteries, rechargeable or otherwise, as an emergency backup power supply. If connected incorrectly, they may cause damage to the product or property, and may endanger the operator (explosion and fire).

EU DECLARATION OF CONFORMITY

Hereby, EL.MO. S.p.A. declares that the radio equipment RIVERRF is in compliance with Directive 2014/53/EU.
The full text of the EU declaration of conformity is available at the following Internet address: elmospa.com – registration is quick and easy.

DISPOSAL INSTRUCTIONS - INFORMATION FOR THE USER

IT08020000001624

In accordance with Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), please be advised that the EEE was placed on the market after 13 August 2005 and must be disposed of separately from normal household waste.

This product needs batteries for correct functioning. Exhausted batteries have to be delivered to dumping grounds authorized for battery collection. The materials used for this product are very harmful and polluting if dispersed in the environment.

1. GENERALS

The intrusion detection control units ET4PLUS, NET series, ETR series, ETR G2 series, VilleggioBasic and VilleggioDomo, VIDOMOBTRX, TITANIA series, PREGIO series, can control a high number of zones connected either directly to the main board, either to different expansion modules called *concentrators*. The RIVERRF concentrator will be managed also by other expressly compatible products in the future.
To optimize the installation and the cable routing operations, concentrators operating via serial line are used.
The concentrators are placed in remote positions from the main board, and can provide different options for zones wiring.

This manual refers to a specific concentrator model exclusively used for reception of the radio signals from Helios system accessory devices. Pay particular attention to the use of this concentrator for what concerns the necessary programming operations and the managed events, that vary according to the specific control unit in use.

2. FEATURES

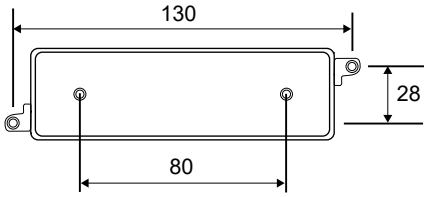
Model	RIVERRF
Performance level	I
Power supply voltage	12 VDC (from 7.5 to 15 V).
Current consumption	30 mA in stand-by; 45 mA maximum, with alarm from all the radio sensors and no output connected.
Number of devices	Depending on the set operating mode: 6 radio devices in REDUCED MODE for ET4PLUS, NET4, NET432, ETR; 8 radio devices in COMPLETE MODE for NET5, NET832, NET9, VIBASIC, VIDOMO, VIDOMOBTRX, VIDOMO2K, ETRG2 series, TITANIA series, PREGIO series.
Outputs	Depending on the set operating mode: 4 non-programmable outputs for diagnostics, 4 outputs can be used for control only by ETR control units. 8 outputs can be controlled by the following control units in COMPLETE MODE: NET5, NET832, NET9, VIBASIC, VIDOMO, VIDOMOBTRX, VIDOMO2K, ETRG2 series, TITANIA series, PREGIO series. The outputs are open-collector-type with 100 mA maximum current consumption.
Outputs meaning	Depending on the set operating mode, see related chapter.
Output connector	10-pole standard connector for CP8/REL and UNIREL boards use **only**.
Selections	Dipswitch selector for programming, setting the operating mode, walk-test, radio signal attenuation. Dipswitch selector for concentrator address setting. Jumpers for display LED enabling, Tamper protection disabling and board reset.
Function keys	Function key “SEL/SPEC” for programming and browsing during display mode on.
Housing	ABS plastic.
Housing protection	Microswitch for protection against cover opening.
LED indications	For displaying the eight radio zones (with different meanings depending on the operative/programming concentrator status), the radio signal intensity, the transmitted data, the RS485 serial line activity, the Tamper protection status.
Operating frequency	The concentrator uses the band used by LPD devices.
RF section	High-sensitivity receiving circuit equipped with helicoidal antenna with horizontal polarization.
Radio signal range	80 m in open space for reception of signals generated by detectors or perimetral transmitters; 50 m in open space for remote control transmissions.
Range limitation	Particular environment conditions may reduce the radio signal level.
Compatible devices	Detectors, perimetral transmitters and Helios 4th series remote controls.
Cable type	Standard 2 × 0.75 mm^2 + 2 × 0.22 mm^2 shielded cable (power supply + signal), for long distances use 2 × 1 mm^2 + 2 × 0.5 mm^2 sections or higher.
Serial line	Maximum length: 1000 m.
Parts supplied	Technical manual, 680 Ω resistor, side fixing brackets (not assembled), 2 screws to close the housing (2,9 × 16 mm).
Dimensions	See next picture.
Operating temperature and humidity level	-10° / +55°C certified by the manufacturer - 93% Rh
Weight	100 g.

RIVERRF is an accessory of expressly compatible devices.
Note: for compliance with the EN50131-1 regulation, the supervision time must be set to 30 minutes and only the radio devices belonging to the Helios system, 4th and 5th series, shall be used.

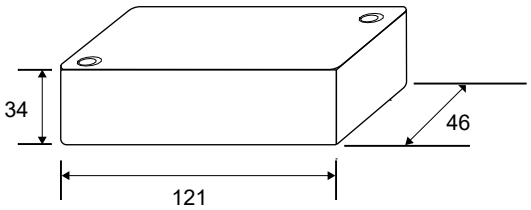
2.1 Assembling

View of the housing

BOTTOM:

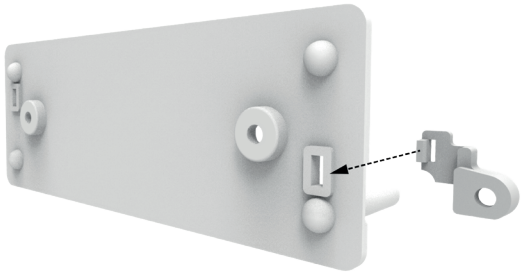


COVER:



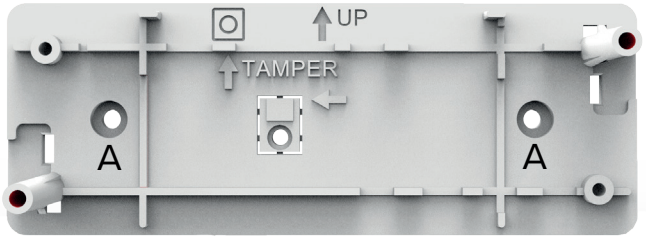
DIMENSIONS IN mm

Side bracket assembling (optional)
Slot each bracket into its designated area.
See picture below.

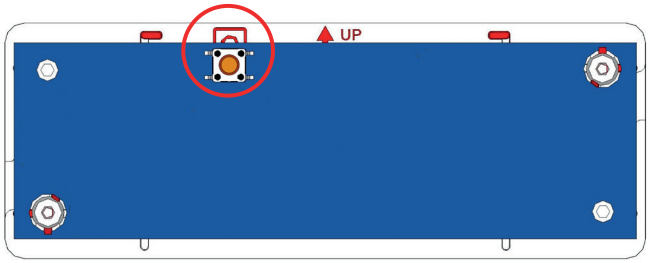


Cable feeding
Remove the plastic from one of the areas indicated below (on the inner side of the cover).

Assembling operations

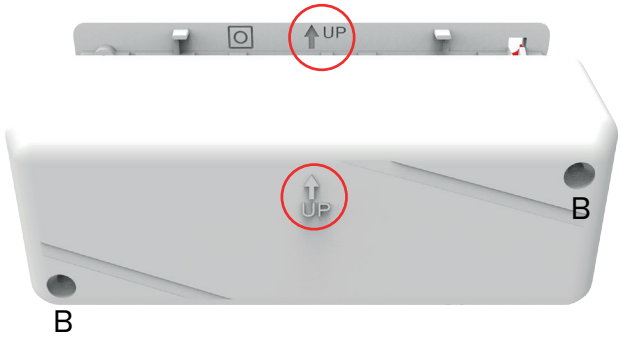


Fix the case base to the mounting surface with screws and plugs, using holes A.
Make sure the UP arrow is on the upper side.



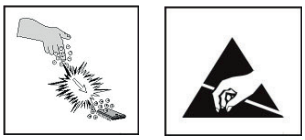
Insert the PCB on the plastic supports (the board in the picture is for reference only).

Make sure the tamper switch against opening (on board top) is on the upper side as indicated by the symbol reported on case base.



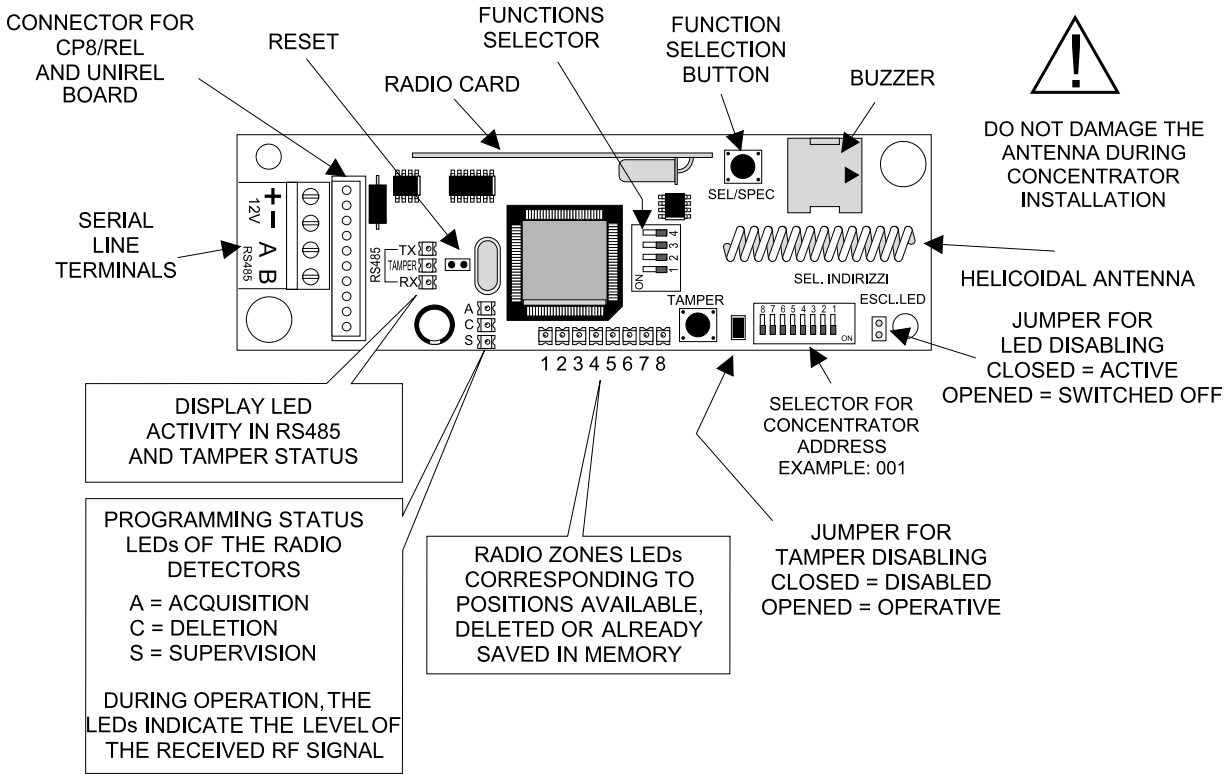
Position the cover on the base.
Make sure the arrow on the cover is on the upper side, like the one on the base.
Insert screws on B holes to close the cover. Make sure the spring for tamper protection fits properly.

3. ELECTRICAL WIRING



The electronic board can be damaged by electrostatic discharge.
The installer shall free himself of electrostatic charges before opening the housing and he shall keep free from electrostatic charges during the whole installation or maintenance process.

View of the electronic board:



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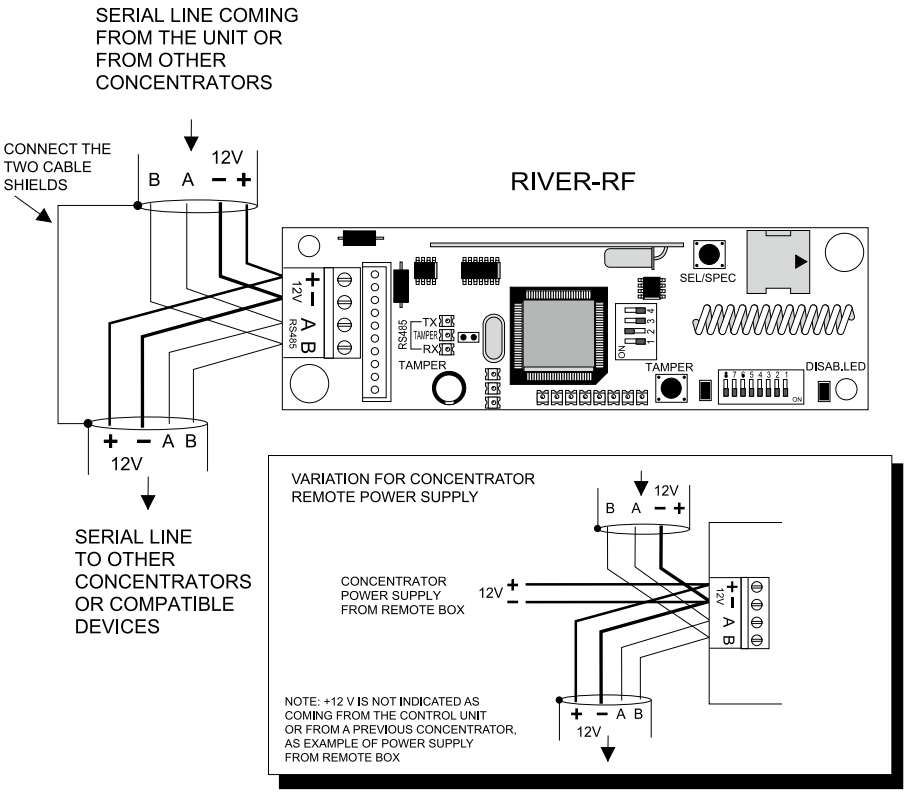
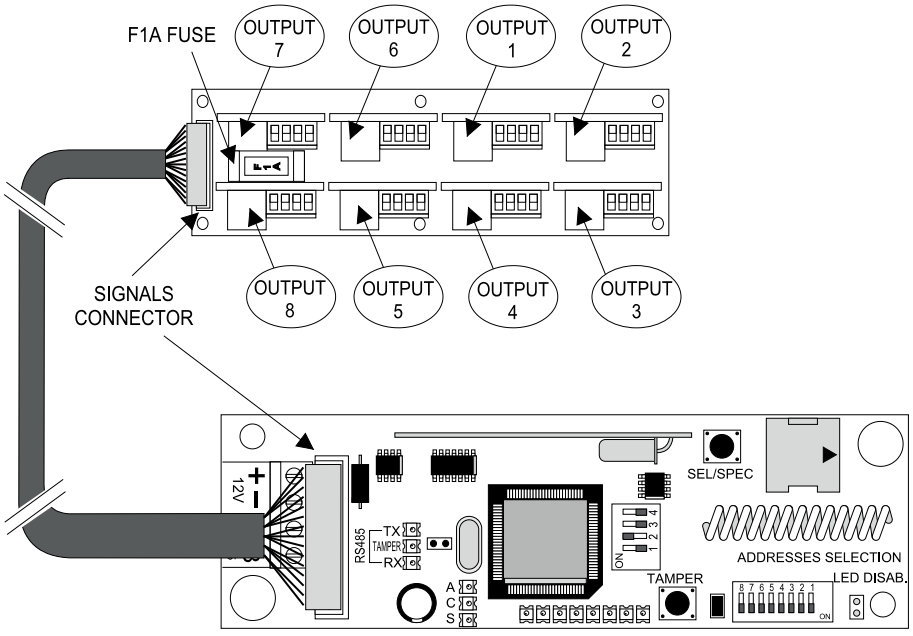
Concentrator wiring, example of ETR serial line:



CP8/REL board and UNIREL small relay boards wiring.



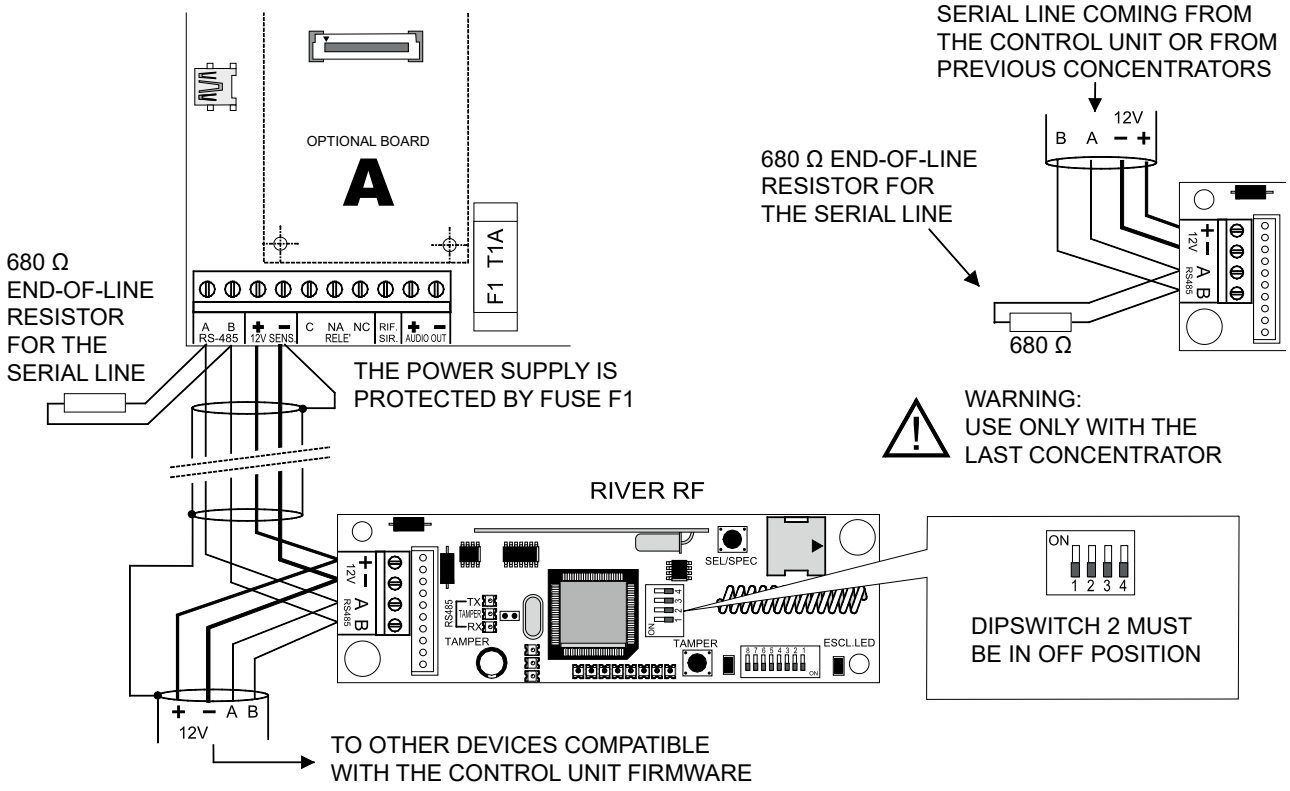
NOTE: THE CP8/REL GROUP AND THE EIGHT UNIREL BOARDS CANNOT BE REPLACED BY THE ETR/REL BOARD.
IT MUST BE INSERTED INTO APPROPRIATE HOUSING PROVIDED WITH TAMPER PROTECTION.

Note: before using the UNIREL small board, move jumper **S1** in position **1**.
The number of UNIREL small boards to be connected and their function in operating mode depend on the concentrator settings. For further details see “9. ELECTRONIC OUTPUTS” section on page 25.

4. SELECTIONS

4.1 Serial line termination

In order to realize a correct serial line termination, connect the 680 Ω resistor supplied with RIVERRF as indicated below. The diagram shows an example of connection to VIBASIC, VIDOMO, NGTRX/2K series control units.



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4.2 Addresses selector

General note: the number representing the concentrator ID with the enumeration of its 8 zones considerably changes according to the capacity of the control unit to which the concentrator is connected.
Configuration of the dipswitch address selector for correct management of the concentrator radio zones.
Compatible units: VILLEGGIO NG-TRX, PREGIO, PROXIMA.

Addresses range	ON dips
1 - 8	1 2 3 4 5 6 7 8
9 - 16	- 2 3 4 5 6 7 8
17 - 24	1 - 3 4 5 6 7 8
25 - 32	- - 3 4 5 6 7 8
33 - 40	1 2 - 4 5 6 7 8
41 - 48	- 2 - 4 5 6 7 8
49 - 56	1 - - 4 5 6 7 8
57 - 64	- - - 4 5 6 7 8
65 - 72	1 2 3 - 5 6 7 8
73 - 80	- 2 3 - 5 6 7 8
81 - 88	1 - 3 - 5 6 7 8
89 - 96	- - 3 - 5 6 7 8
97 - 104	1 2 - - 5 6 7 8
105 - 112	- 2 - - 5 6 7 8
113 - 120	1 - - - 5 6 7 8
121 - 128	- - - - 5 6 7 8
129 - 136	1 2 3 4 - 6 7 8
137 - 144	- 2 3 4 - 6 7 8
145 - 152	1 - 3 4 - 6 7 8
153 - 160	- - 3 4 - 6 7 8
161 - 168	1 2 - 4 - 6 7 8
169 - 176	- 2 - 4 - 6 7 8
177 - 184	1 - - 4 - 6 7 8
185 - 192	- - - 4 - 6 7 8
193 - 200	1 2 3 - - 6 7 8
201 - 208	- 2 3 - - 6 7 8
209 - 216	1 - 3 - - 6 7 8
217 - 224	- - 3 - - 6 7 8
225 - 232	1 2 - - - 6 7 8
233 - 240	- 2 - - - 6 7 8
241 - 248	1 - - - - 6 7 8
249 - 256	- - - - - 6 7 8
257 - 264	1 2 3 4 5 - 7 8

Addresses range	ON dips
265 - 272	- 2 3 4 5 - 7 8
273 - 280	1 - 3 4 5 - 7 8
281 - 288	- - 3 4 5 - 7 8
289 - 296	1 2 - 4 5 - 7 8
297 - 304	- 2 - 4 5 - 7 8
305 - 312	1 - - 4 5 - 7 8
313 - 320	- - - 4 5 - 7 8
321 - 328	1 2 3 - 5 - 7 8
329 - 336	- 2 3 - 5 - 7 8
337 - 344	1 - 3 - 5 - 7 8
345 - 352	- - 3 - 5 - 7 8
353 - 360	1 2 - - 5 - 7 8
361 - 368	- 2 - - 5 - 7 8
369 - 376	1 - - - 5 - 7 8
377 - 384	- - - - 5 - 7 8
385 - 392	1 2 3 4 - - 7 8
393 - 400	- 2 3 4 - - 7 8
401 - 408	1 - 3 4 - - 7 8
409 - 416	- - 3 4 - - 7 8
417 - 424	1 2 - 4 - - 7 8
425 - 432	- 2 - 4 - - 7 8
433 - 440	1 - - 4 - - 7 8
441 - 448	- - - 4 - - 7 8
449 - 456	1 2 3 - - - 7 8
457 - 464	- 2 3 - - - 7 8
465 - 472	1 - 3 - - - 7 8
473 - 480	- - 3 - - - 7 8
481 - 488	1 2 - - - - 7 8
489 - 496	- 2 - - - - 7 8
497 - 504	1 - - - - - 7 8
505 - 512	- - - - - - 7 8

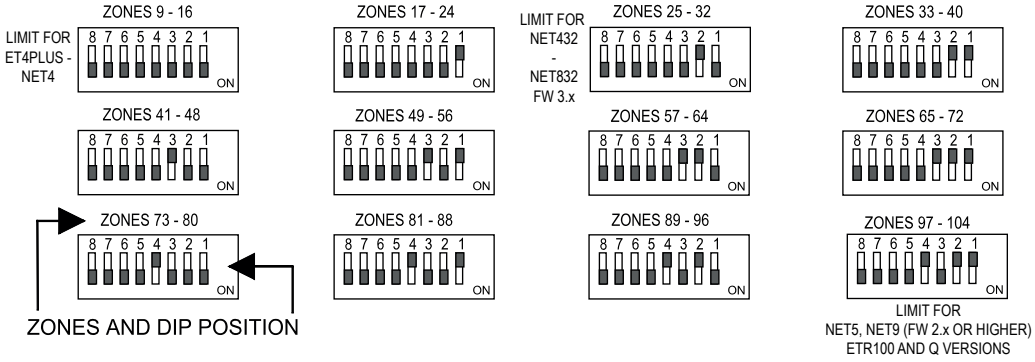
Addresses range	ON dips
513 - 520	1 2 3 4 5 6 - 8
521 - 528	- 2 3 4 5 6 - 8
529 - 536	1 - 3 4 5 6 - 8
537 - 544	- - 3 4 5 6 - 8
545 - 552	1 2 - 4 5 6 - 8
553 - 560	- 2 - 4 5 6 - 8
561 - 568	1 - - 4 5 6 - 8
569 - 576	- - - 4 5 6 - 8
577 - 584	1 2 3 - 5 6 - 8
585 - 592	- 2 3 - 5 6 - 8
593 - 600	1 - 3 - 5 6 - 8
601 - 608	- - 3 - 5 6 - 8
609 - 616	1 2 - - 5 6 - 8
617 - 624	- 2 - - 5 6 - 8
625 - 632	1 - - - 5 6 - 8
633 - 640	- - - - 5 6 - 8
641 - 648	1 2 3 4 - 6 - 8
649 - 656	- 2 3 4 - 6 - 8
657 - 664	1 - 3 4 - 6 - 8
665 - 672	- - 3 4 - 6 - 8
673 - 680	1 2 - 4 - 6 - 8
681 - 688	- 2 - 4 - 6 - 8
689 - 696	1 - - 4 - 6 - 8
697 - 704	- - - 4 - 6 - 8
705 - 712	1 2 3 - - 6 - 8
713 - 720	- 2 3 - - 6 - 8
721 - 728	1 - 3 - - 6 - 8
729 - 736	- - 3 - - 6 - 8
737 - 744	1 2 - - - 6 - 8
745 - 752	- 2 - - - 6 - 8
753 - 760	1 - - - - 6 - 8
761 - 768	- - - - - 6 - 8
769 - 776	1 2 3 4 5 - - 8

Addresses range	ON dips
777 - 784	- 2 3 4 5 - - 8
785 - 792	1 - 3 4 5 - - 8
793 - 800	- - 3 4 5 - - 8
801 - 808	1 2 - 4 5 - - 8
809 - 816	- 2 - 4 5 - - 8
817 - 824	1 - - 4 5 - - 8
825 - 832	- - - 4 5 - - 8
833 - 840	1 2 3 - 5 - - 8
841 - 848	- 2 3 - 5 - - 8
849 - 856	1 - 3 - 5 - - 8
857 - 864	- - 3 - 5 - - 8
865 - 872	1 2 - - 5 - - 8
873 - 880	- 2 - - 5 - - 8
881 - 888	1 - - - 5 - - 8
889 - 896	- - - - 5 - - 8
897 - 904	1 2 3 4 - - - 8
905 - 912	- 2 3 4 - - - 8
913 - 920	1 - 3 4 - - - 8
921 - 928	- - 3 4 - - - 8
929 - 936	1 2 - 4 - - - 8
937 - 944	- 2 - 4 - - - 8
945 - 952	1 - - 4 - - - 8
953 - 960	- - - 4 - - - 8
961 - 968	1 2 3 - - - - 8
969 - 976	- 2 3 - - - - 8
977 - 984	1 - 3 - - - - 8
985 - 992	- - 3 - - - - 8
993 - 1000	1 2 - - - - - 8
1001 - 1008	- 2 - - - - - 8
1009 - 1016	1 - - - - - - 8
1017 - 1024	- - - - - - - 8

Limitations:
- VIDOMO2K up to 64 zones;
- PREGIO500 up to 24 zones, PREGIO1000 up to 48 zones, PREGIO2000 up to 104 zones;
- PRX128 up to 128 zones, PRX256 up to 256 zones, PRX1024 up to 1024 zones.

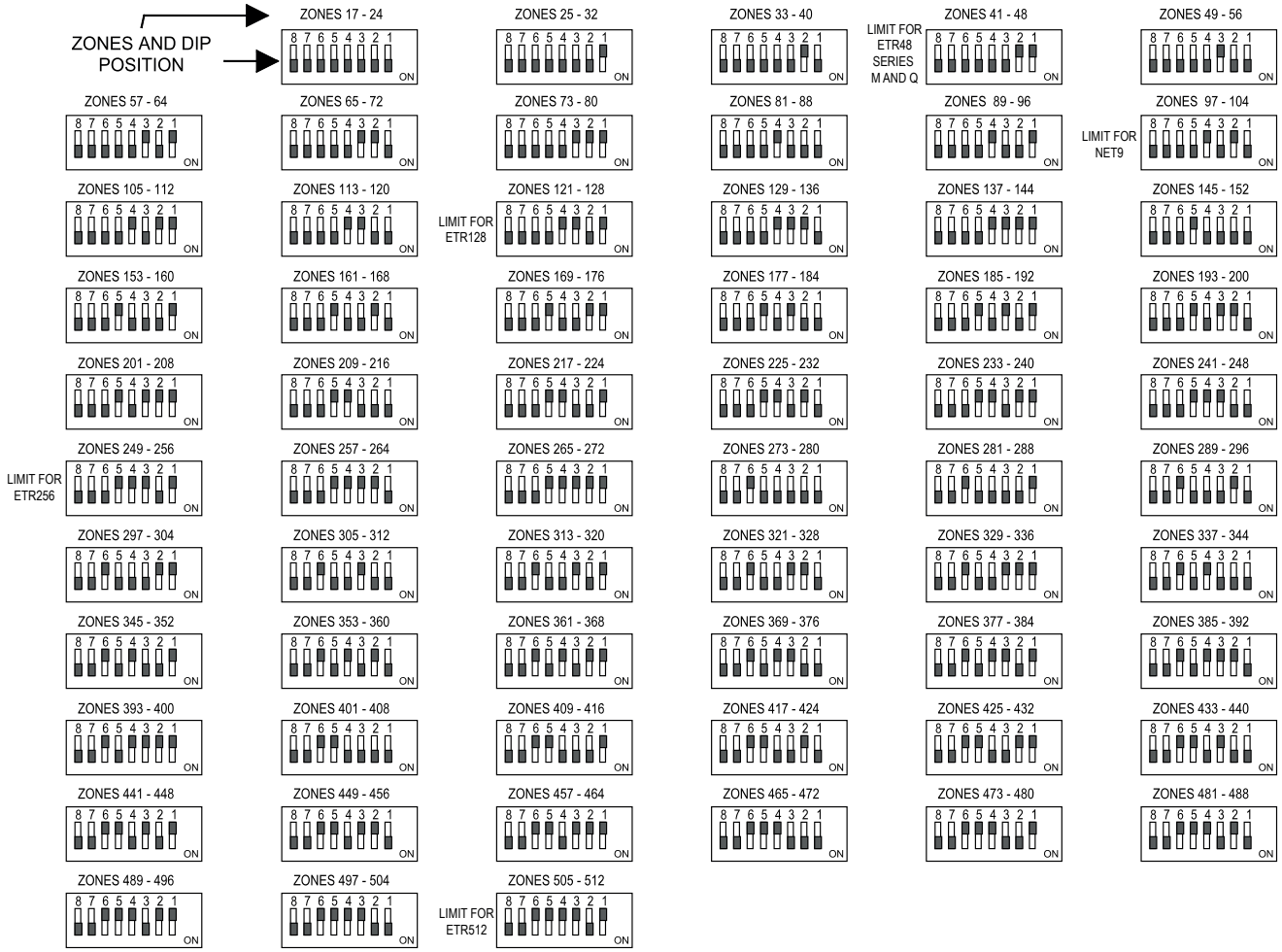
Note: for all the devices memorized in RIVERRF concentrators connected to NGTRX/2K control units, the default protocol **H** (Helios) must be set.

- For use with **ET4/PLUS**, **NET4**, **NET432**, **NET5**, **NET832** (from fw version 3.x on), **NET9** (from fw version 2.x on), **ETR100** control units:



IMPORTANT: DO NOT SET ID CODES CORRESPONDING TO ZONES WHICH ARE NOT MANAGED BY THE CONTROL UNIT IN USE.

- For use with **ETR48M and Q versions**, **ETR128**, **ETR256**, **ETR512**, **NET832 and Q versions** (from fw version 2.x on), **NET9 and Q versions** (from fw version 1.x on) control units:

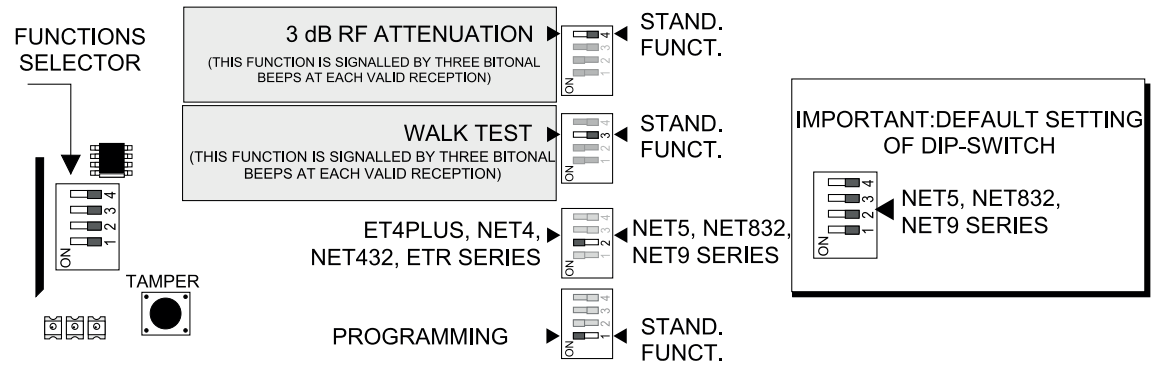


IMPORTANT: DO NOT SET ID CODES CORRESPONDING TO ZONES WHICH ARE NOT MANAGED BY THE CONTROL UNIT IN USE.

- For use with **TITANIA** control units, consult the corresponding technical manual.

4.3 Functions selector

View and meanings of the function dipswitch selector.



4.4 Selection jumpers

RIVERRF is equipped with some jumpers performing the following functions:

LEDs disable = disable the concentrator LED indications and reduce consumption.

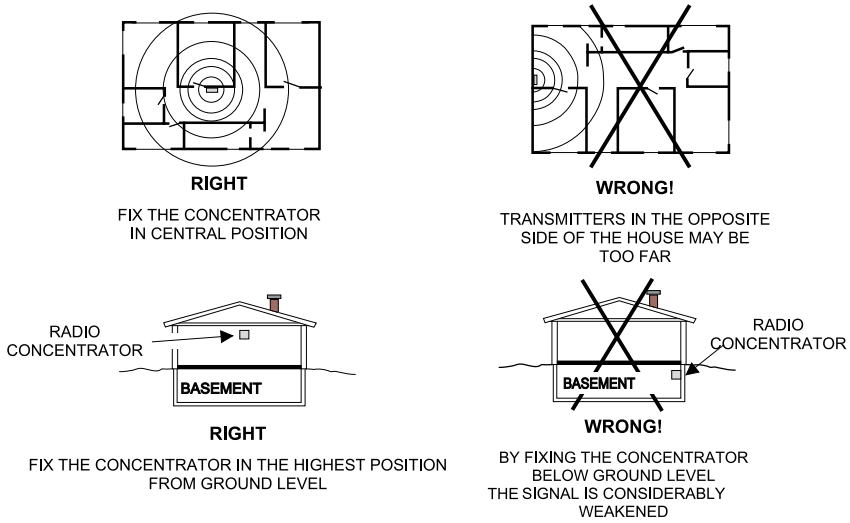
Tamper disable = only use this jumper during programming; the exclusion of the Tamper protection against cover removal is not permitted by the ICE 79-2 regulation.

Reset = this jumper has to be temporarily closed before the concentrator reset operations (see chapter 10).

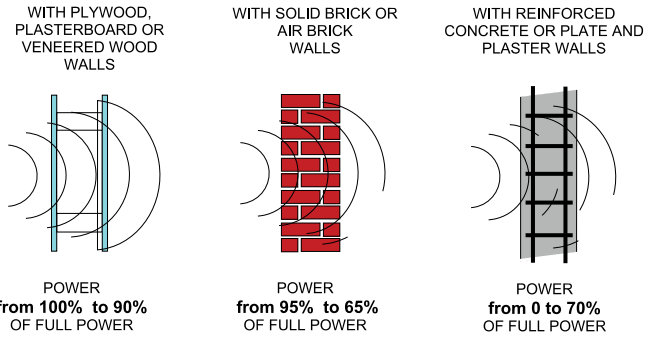
5. INSTALLATION

The installation of the RIVERRF concentrator must still comply with certain rules to avoid performance drops due to positioning errors. Indeed, it is very important to define with the utmost care the operating area of the receiving system in which the detector is installed, the actual coverage of the sensors and the correct installation mode, especially concerning the nature of the materials used in the building construction.
The following drawings show some examples of right and wrong installation positions, objects that might weaken the RF signal and attenuation in some typical building materials.

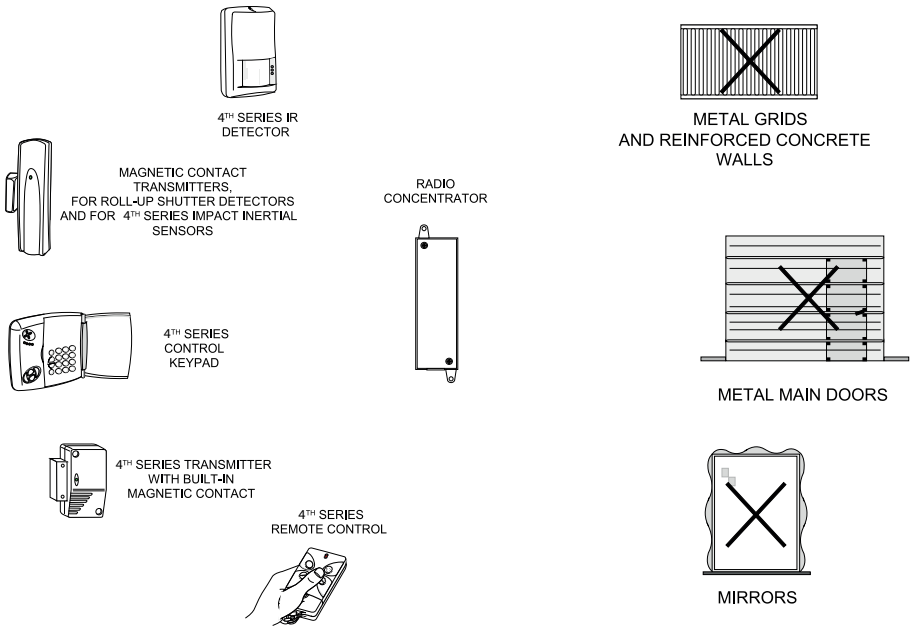
Installing situations.



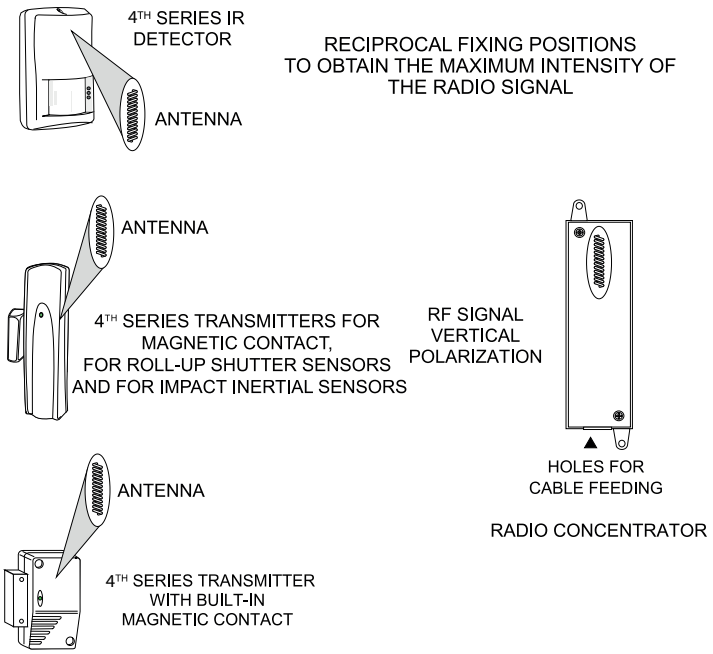
Radio signal attenuation in some construction materials.



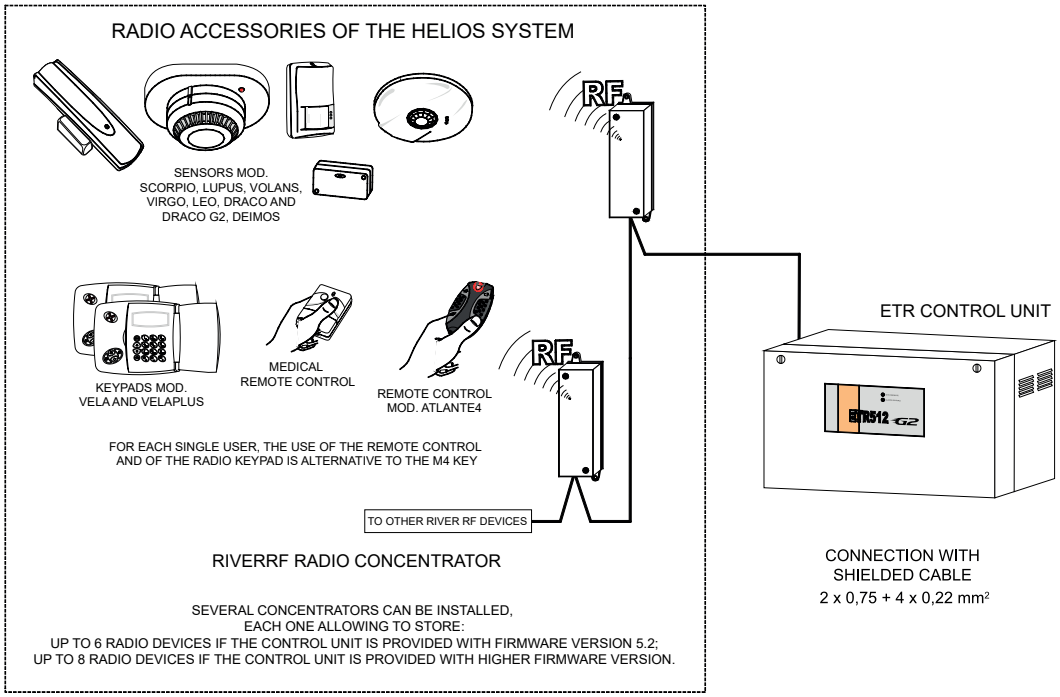
Conditions and objects which may affect the operating range.



Correct concentrator position.

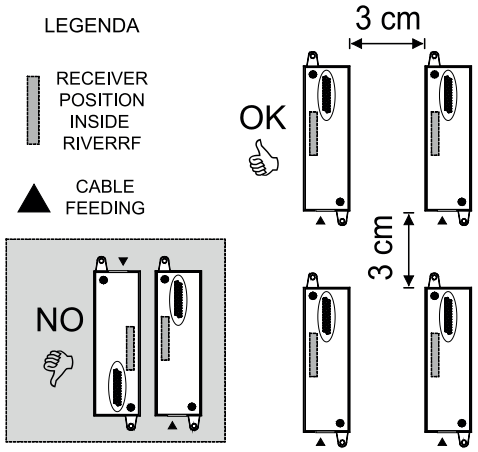


Installation of two or more RIVERRF concentrators next to each other, with ETR control unit.



Note: the picture on the right includes some advice useful in case of installation of two or more RIVERRF concentrators in narrow areas.

WARNING: do not position RIVERRF in metal containers.



Note: the indicated wiring complies with the EN50131-3 regulation at degree 1. In case RIVERRF concentrators are used, the ETRxxx G2 control unit complies with the EN50131 regulation only if the following conditions are simultaneously fulfilled:

- Supervision time = 30 min;
- All the RF sensors are supervised;
- Only 4TH series devices are used;
- RF interference check = YES.

The ETRG2 control unit with firmware version 1.x allows an "extended" management of the RIVERRF concentrators, concerning the indications of low battery, fault and missed supervision, for any radio sensor, either volumetric or perimetral, stored in the concentrator. **The 24H radio sensors and the remote controls are not managed**.

The low battery, fault and missed supervision information is stored in the history log (and possibly sent using one of the direct connection or CEI79-5,6 protocols), and it is signalled through the yellow anomaly LED blinking in the control unit panel. The information can be accessed by pressing the ↑ arrow key.

16 RIVERRF devices maximum can be managed:

- In case of use with the ETR128 control unit, all the available concentrator zones are used;
- In case of use with ETR256 and ETR512 control units, the zones from 17 to 144 can be used.

The sensors acquired in the control unit through the HALLEY additional wireless unit can be simultaneously used. These sensors take priority over those managed by the RIVER concentrators (RF or normal).

Example: if some radio sensors acquired in the control unit through the HALLEY wireless unit are stored in the 17, 18, 19 zones, you can connect a RIVERRF with address 1 (i.e. from 17 to 24), but only use the zones from 20 to 24.

Note: upon each arming of areas associated to at least one of the RIVERRF zones in missed supervision, the RIVERRF memories of anomaly are reset; this implies the removal of the possible states of fault and low battery.

IMPORTANT: set dipswitch 2 to NET9 mode in order to achieve the complete management of RIVERRF with ETR G2.

Conversely, by leaving the dipswitch in ETR position, the following zones will be managed: 6 radio zones + 1 zone for the low battery state + 1 zone for missing supervision of the 6 zones.

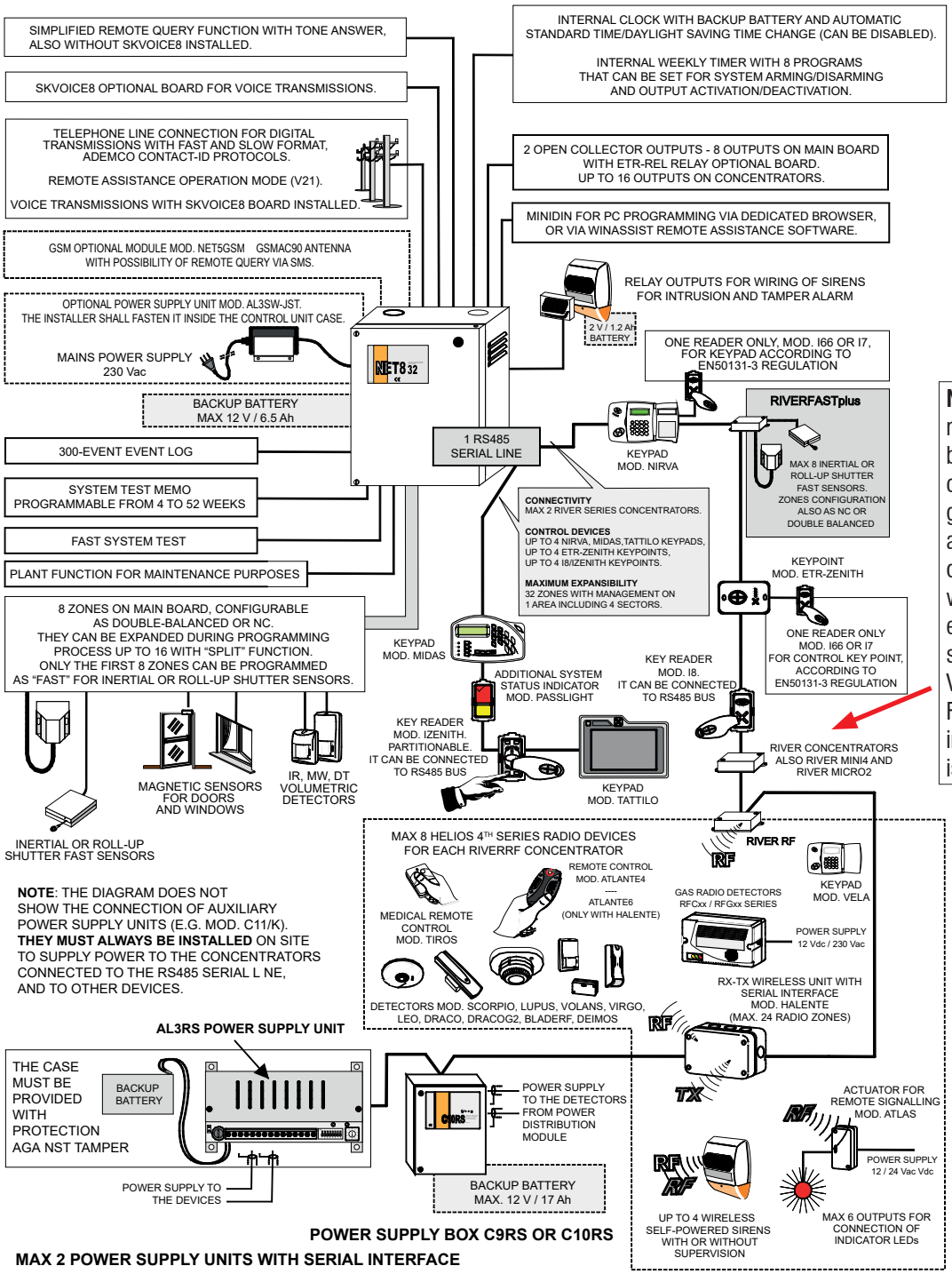
FUNCTIONS SELECTOR

ET4 - ETR (MOD. 6+2) SERIES ◀ ON 1 2 ▶ DEFAULT NET5 - NET9 SERIES ETR G2 SERIES (EXTENDED MODE)

Note: the new Pregio and Titania control units (fw version 5.x or higher) manage RIVERRF in complete mode.

6. EXAMPLES OF WIRING

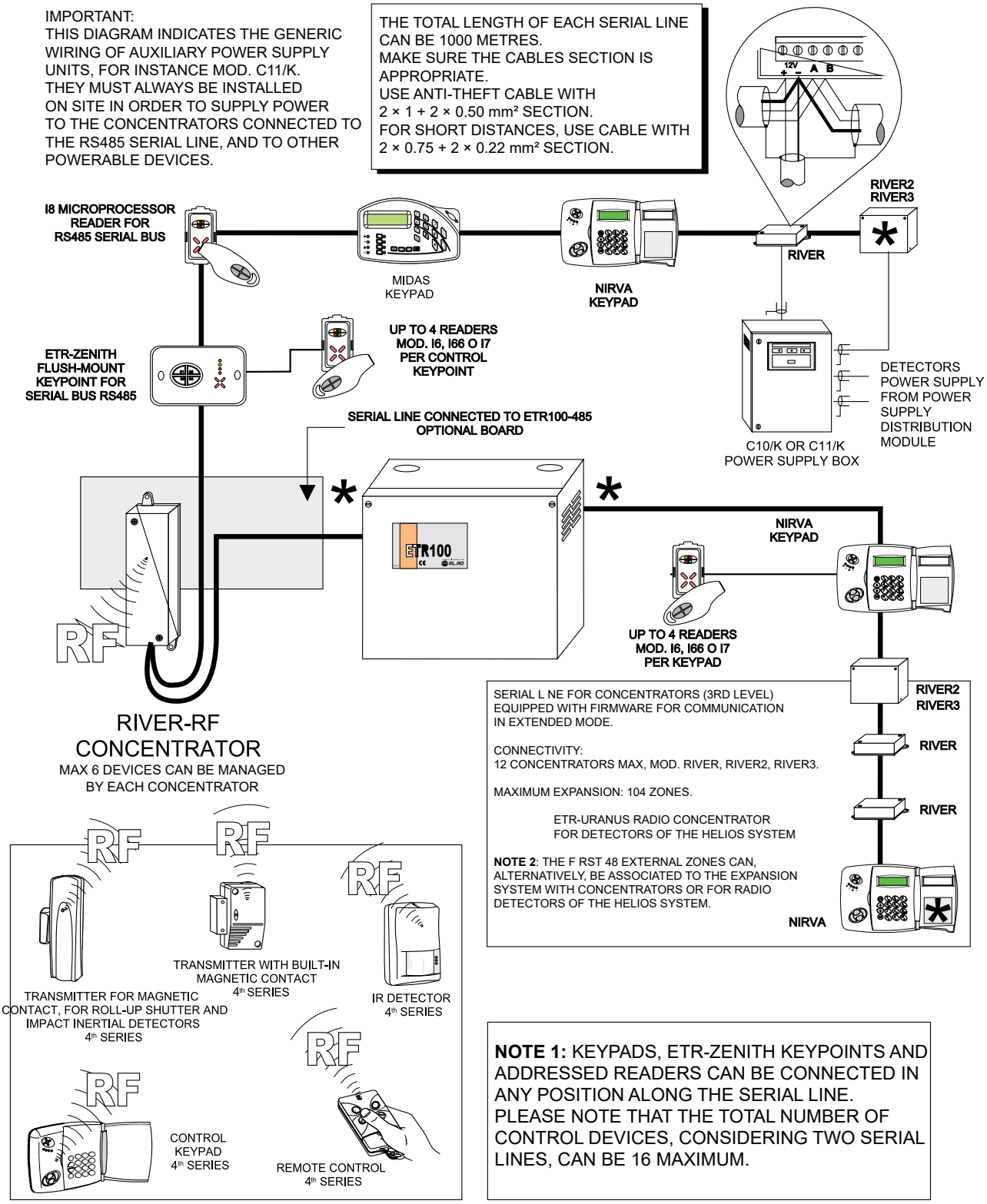
General wiring diagram for a NET832 control unit.



Note: the radio devices reported in this area must be intended as examples only: new models will be gradually introduced. Pay attention: the new radio devices will be equipped with double transmission encoding, **H** (for Helios system devices) or **V** (for Villeggio system devices). For the sake of an easier installation, the H protocol is set by default.

Note: the pictures are intended as examples. They may not include all the currently available accessories.

General wiring diagram for ETR control units (example with ETR100).

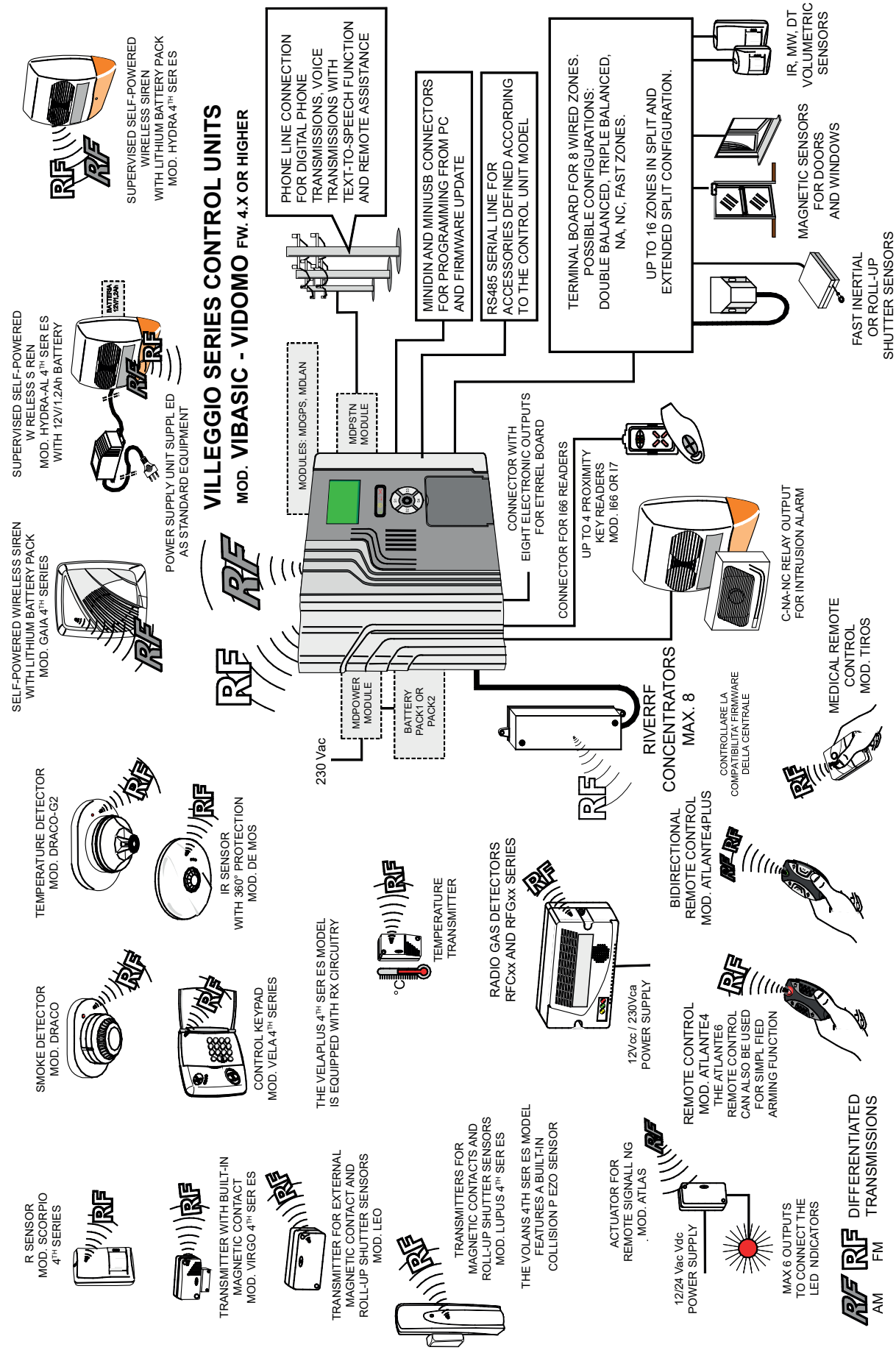


* THE MARKED DEVICES MUST BE EQUIPPED WITH SERIAL LINE TERMINATION

WARNING: the minimum distance between RIVERRF concentrators must be 2 metres.

Note: the radio devices reported in this area must be intended as examples only: new models will be gradually introduced. Pay attention: the new radio devices will be equipped with double transmission encoding, **H** (for Helios system devices) or **V** (for Villeggio system devices). For the sake of an easier installation, the H protocol is set by default.

Use of the concentrator in the radio section of a VIBASIC or VIDOMO control unit.



Note: the radio devices reported in this area must be intended as examples only; new models will be gradually introduced. Pay attention: the new radio devices will be equipped with double transmission encoding, **H** (for Helios system devices) or **V** (for Villeggio system devices). For the sake of an easier installation, the H protocol is set by default.

7. PROGRAMMING

RIVERRF can be used as radio receiver with serial interface **EXCLUSIVELY** with ET4PLUS, NET series, ETR series, ETR G2 series, VIDOMO, VIBASIC, VIDOMOBTRX, Pregio series, Titania series (and derivative versions) control units. RIVERRF will be able to manage a different number of sensors and to provide different information according to the control unit model chosen during the programming process.

> **WARNING**: we suggest that the radio devices manageable by the concentrator belong to the 4TH SERIES, for compliance with the EN50131 regulation. Check the CE label for each one.

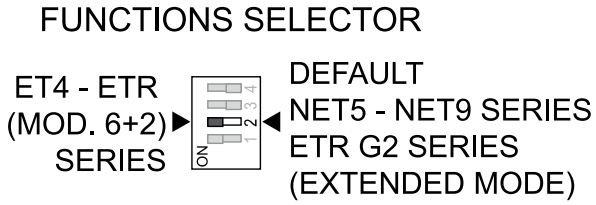
> **WARNING**: in case of operation in ET4PLUS, NET4 or NET432/ETR mode, all the alarm events are recognised as intrusion or tamper alarms: the control unit will have to manage them properly.

> **WARNING**: in case of operation in ET4PLUS, NET4 or NET432/ETR mode, the remote controls are recognised only after selection in the control unit, i.e. by declaring the corresponding lines as KEY ZONES. **In that case, the pressure of any remote control key will cause sector arming/disarming. Remote controls cannot manage sector partitioning.**

> **WARNING**: due to the peculiarity of the key lines (commutation of the associated sector status in case of idle/alarm/idle change), the effective status commutation will actually occur after releasing the remote control key.
> For correct tamper management of an IR detector, the information on tamper reset must be managed by the detector itself, therefore we suggest the use of SCORPIO 4th series.
> **In case you use SCORPIO 2nd series, the update on tamper reset will occur upon the first supervision or valid alarm signal.**

7.1 Programming operations

If RIVERRF is programmed for use in **ET4PLUS, NET4, NET432, ETR (up to firmware version 4.x) mode**,



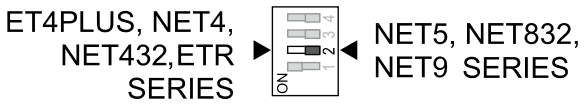
it will manage the following features:

- **6 radio devices** including remote controls and detectors with single management of alarm/tamper information.
- Information on low battery and information on missing supervision are general and correspond respectively to zone 7 alarm and zone 8 alarm (all on RS485 serial line).
- **4 fixed outputs** for diagnostics which cannot be controlled (RF interference, unknown remote controls, unknown detector, failure).
- **4 commands executable** through activation of the other 4 outputs (only from compatible ETR control units) for: anomalies deletion, RF anomalies deletion, remote controls block, attenuation 3 dB.
- The following commands can be manually configured and are displayed through the on-board LEDs: RF device acquisition \ RF device deletion \ generic and RF anomalies deletion\ supervision time setting \ selection of detectors to be supervised, as well as all the status \ events visualizations.

In order to have compatibility with the RIVER protocol, the events of all the RF devices are converted to intrusion or tamper alarms, so that:

Total armed	**PULSE TYPE INTRUSION ALARM**
Partial armed 1	
Partial armed 2	
Disarmed from remote control	
Panic alarm generated with remote control	**PULSE TYPE TAMPER ALARM**
Tamper alarm from single-technology detector (IR)	**STATUS TYPE TAMPER ALARM**
Blinding alarm from single-technology detector (IR)	
Blinding alarm from double-technology detector	
Flood alarm from 24H detector	**STATUS TYPE INTRUSION ALARM**
Toxic gas alarm from 24H detector	
Explosive gas alarm from 24H detector	
Fire alarm from 24H detector	
Alarm	**STATUS ACTIVATION OF LOCAL FAILURE OUTPUT (ON SIGNAL CONNECTOR)**
Failure of double-technology detector	
Failure to 24H detector	
Failure to single-technology detector	
Low battery, double-technology detector	**STATUS TYPE INTRUSION ALARM FROM ZONE 7**
Low battery, 24H detector	
Low battery, single-technology detector	
Low battery, remote control	
Missing supervision of double-technology detector	**STATUS TYPE INTRUSION ALARM FROM ZONE 8**
Missed supervision of 24H detector	
Missing supervision of single-technology detector	

If RIVERRF is programmed for use in **NET5, NET832 (firmware version 2.x), NET9, ETR G2 mode**

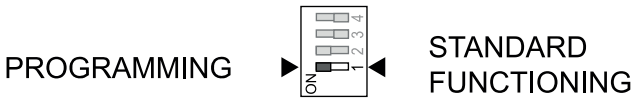


it will manage the following features:

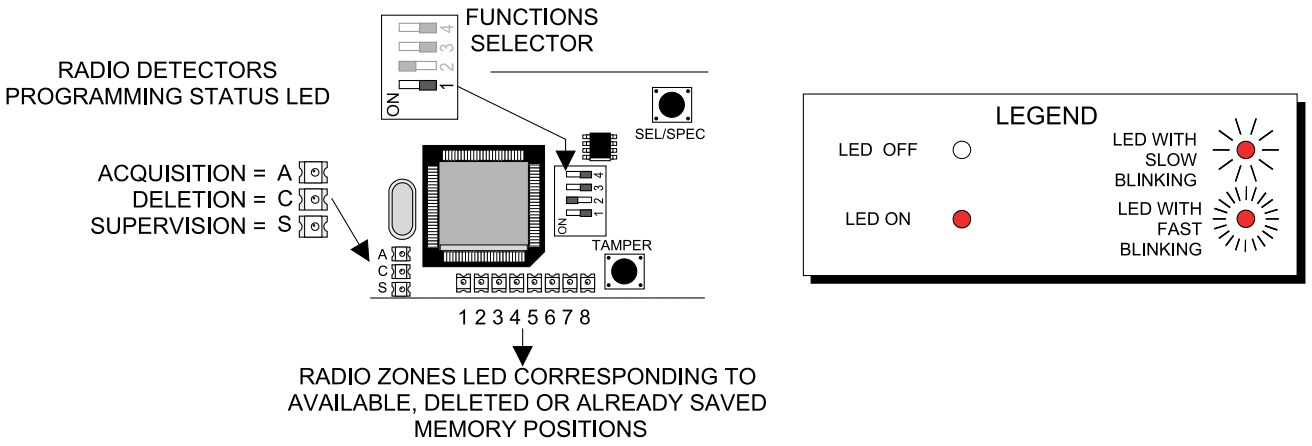
- **8 radio devices** including remote controls and detectors with complete management via compatible control unit of all specific events (via RS485 serial line).
  Note for ETRG2: in complete mode, only the sensors are managed; switch to reduced mode if the remote control memorization is required.
- 8 outputs on concentrator board (Signals + CP8/REL and UNIREL), controllable from the control unit.
- Complete management of the RF anomalies (unknown detector code, unknown remote control codes, RF interference) via RS485 serial line.
- Complete management of the commands (RF device acquisition \ RF device deletion \ alarms and tampers deletion \ anomalies deletion \ RF anomalies deletion \ remote control block \ 3 dB attenuation) via RS485 serial line.
- Complete management of the supervision settings (supervision time and detectors to be supervised) via RS485 serial line.
- Complete management of each single event.
- Complete management of the partitions from remote control.

7.2 Access to programming

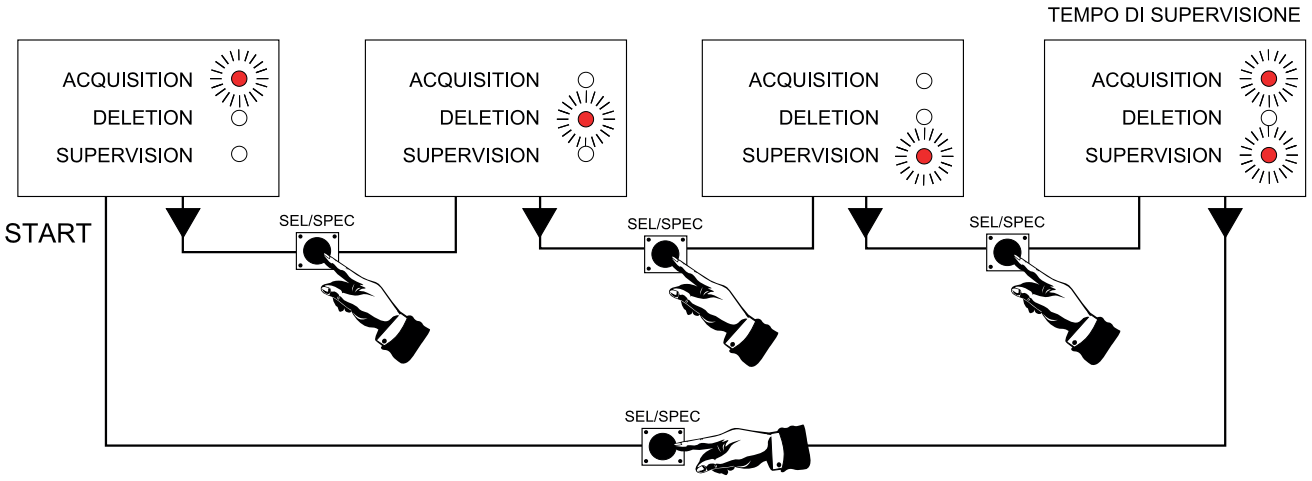
To access programming, set dipswitch 1 to ON as indicated in the following picture:



The correct acquisition will be signalled by a beep tone of the concentrator internal buzzer and by the indications from the LEDs corresponding to the detectors already stored in memory (already acquired).



From this state, upon each pressure of the “SEL” key a different specific programming mode will be accessed, as indicated in the picture below.



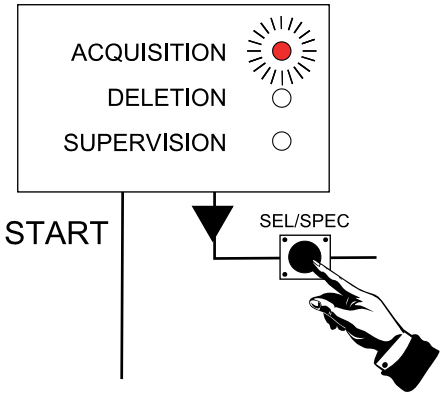
During the phases of acquisition / deletion / supervision / supervision time setting, the LEDs of the radio zones (from 1 to 8) will give the following indications:

Slow blinking	Fast blinking	LED OFF	LED steadily on
The cursor is in a free position.	The cursor is in a busy position.	Free position with no cursor present.	Busy position with no cursor present.

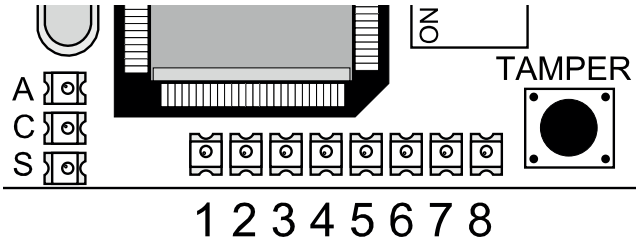
WARNING: the LED positions 7 and 8 are not available if the concentrator is set for ET4PLUS, NET4, NET432/ETR functioning.

7.3 Acquisition of a detector / remote control

The first programming step is displayed as follows.



To start the acquisition of a radio detector or remote control, keep the “SEL” key pressed for about 2 s:
1. The concentrator emits a beep tone.
2. The acquisition LED (A) starts blinking slowly.
3. By pressing the “SEL” key again, you can choose the radio zone position to associate to the code which is being stored.

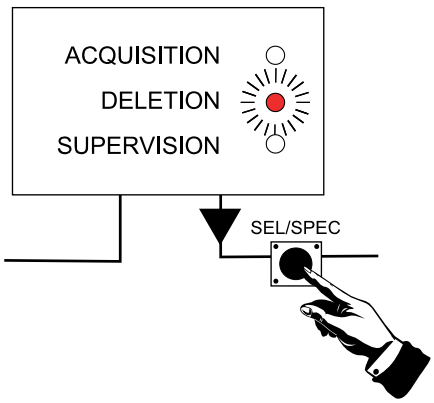


If no free position is available, the buzzer emits an error beep tone.
Press the “SEL” key to move the cursor.
If one or more free positions are available:
1. Press the “SEL” key until you reach the position where you wish to save the new detector.
2. Press and keep the “SEL” key pressed for at least 2 s.
3. A beep is emitted by the buzzer and the LED of the selected radio zone blinks rapidly while waiting for a detector transmission.
4. Once a valid code is received, a confirmation beep is emitted by the buzzer.

To exit this programming step and proceed with the programming process, press the “SEL” key again and again until the “DELETION” LED starts blinking.

7.4 Deletion of a detector / remote control previously saved

The second programming step is displayed as follows.

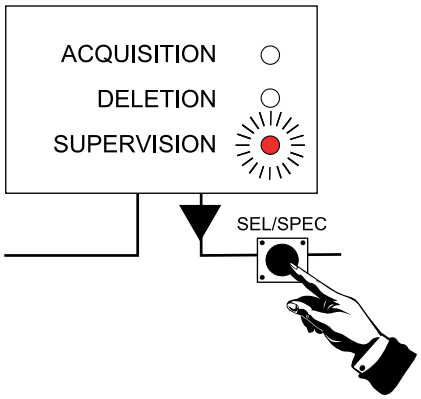


To access this function, press the “SEL” key twice when you start the programming process.
If there is no busy position, the buzzer emits an error beep tone.
If there is one or more busy position:
1. Press the “SEL” key until you reach the position of the detector/remote control you wish to delete.
2. Press the “SEL” key and keep it pressed at least for 2 s.
3. A beep is emitted by the buzzer and the radio zone LED blinks slowly: the detector code has been deleted, the position is now available for a new storage.

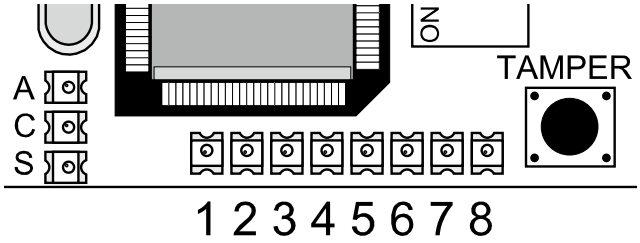
To exit this programming step and proceed with the programming process, press the “SEL” key again and again until the “SUPERVISION” LED starts blinking.

7.5 Detectors to supervise

The third programming step is displayed as follows.



To access this function, press the “SEL” key three times when you start programming.

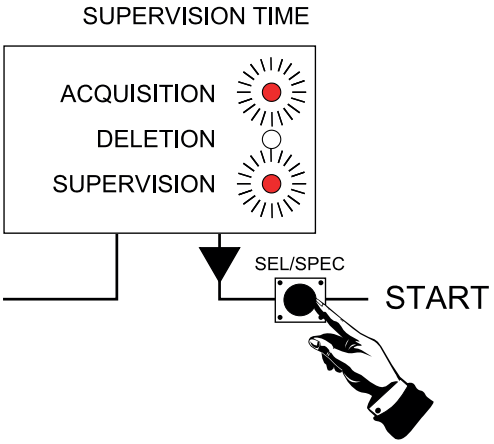


With reference to the above picture, the radio zone LEDs will indicate the supervision status as follows:
- Single LED switched on indicates that the corresponding detector can be supervised (YES).
- Single LED switched off indicates that the corresponding detector cannot be supervised (NO).
- Press the “SEL” key and keep it pressed for at least 2 s if you wish to change the supervision status of a detector from “supervision enabled” to “supervision disabled” and viceversa.
- Press the “SEL” key until you reach the position where you wish to define the supervision status of the corresponding detector.

To exit this programming step and proceed with the programming process, press the “SEL” key again and again until the “ACQUISITION” and “SUPERVISION” LEDs will start blinking as indicated in the following section.

7.6 Definition of supervision time

The fourth programming step is displayed as follows.



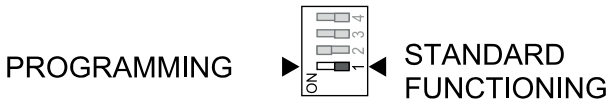
To reach this function, press the "SEL" key four times when you start the programming process.
You can choose among 5 default preset timings, displayed through the radio zone LEDs, according to the operative necessities.
Press the "SEL" key until you reach the desired timing value.

1 2 3 4 5 6 7 8	**MEANINGS**
○ ○ ○ ○ ○ ○ ○ ○	NO SUPERVISION
● ○ ○ ○ ○ ○ ○ ○	30 minutes (set this to comply with the EN50131 regulation). With this configuration, **only** the detectors and remote controls belonging to the 4th series can be used.
● ● ○ ○ ○ ○ ○ ○	90 minutes (set this to comply with CEI 79-16).
● ● ● ○ ○ ○ ○ ○	3 hours.
● ● ● ● ○ ○ ○ ○	12 hours.

In order to save the selection made and exit this menu, keep the "SEL" key pressed for 2 s.
The "missing supervision" event will be generated after a time equal to twice the selected time.
The supervision timer is reset upon each transmission for correctly received supervision.
The supervision timer is automatically reset anytime the memories are deleted or the supervision time is modified.

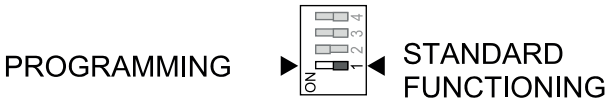
7.7 Exit from programming

To leave the programming state, set dipswitch 1 to OFF (STANDARD FUNCTIONING position).



8. OPERATION

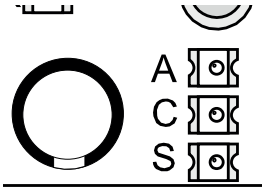
To start operation, move dipswitch 1 to OFF (STANDARD FUNCTIONING position) as indicated in the picture on the right.



8.1 Displayed information

8.1.1 Intensity of the received radio signal

The same LEDs that blink in the acquisition/deletion/supervision programming process, are used to provide information on the received RF signal intensity during normal operation.
These LEDs are normally off; they switch on with the following meaning:



Green LED = adequate

Yellow LED = good

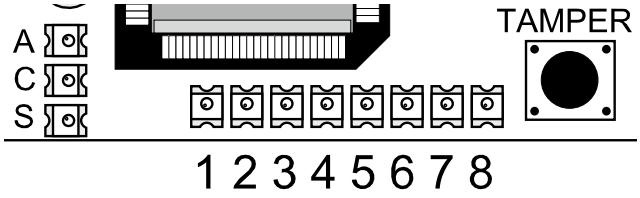
Red LED = excellent

8.1.2 Unknown codes

Upon reception of an unknown detector or remote control code (i.e. a code that was not stored in the concentrator), the yellow led blinks rapidly for 1 s.

Yellow LED = rapidly blinking for 1 s in case of unknown code

8.1.3 Detectors/remote controls status



The radio zone LEDs indicate the following conditions:
- **LED OFF** = normal;
- **LED steadily ON** = alarm (if detector) or command sending (if remote control);
- **LED blinking rapidly** = tamper (if detector) or panic event sending (if remote control);
- **LED blinking slowly** = anomaly (detector or remote control low battery, supervision or detectors failure).

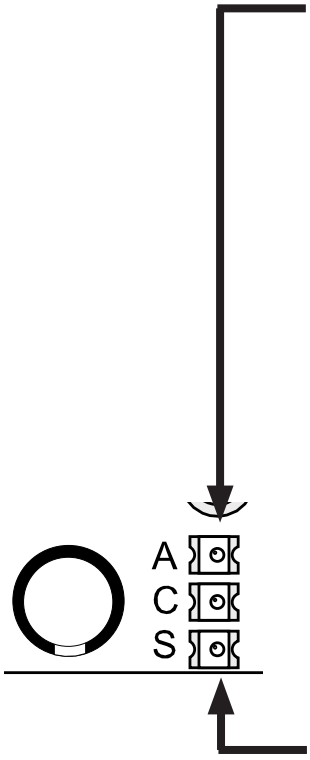
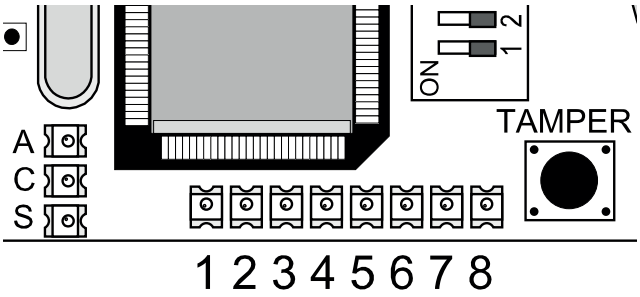
Note: LEDs 7 and 8 are only used in ET4PLUS, NET4, NET432/ETR configuration.

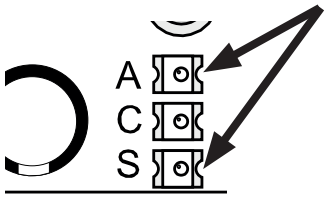
- **LED 7 OFF** = normal, **steadily ON** = low battery of at least one detector or remote control.
- **LED 8 OFF** = normal, **steadily ON** = missed supervision of at least one detector.

The information is displayed in importance order: tamper - alarm - anomaly.

8.1.4 Specific events

By pressing the “SEL” key in normal operation mode, you can access a specific visualization mode in which the RF signal LEDs provide the following indications:

<table>
<tr>
<td rowspan="3"> 
</td>
<td>Green LED blinking slowly = concentrator status and RF interference presence.
In this case, the detectors LEDs
 

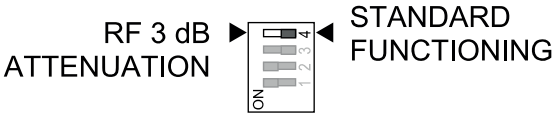
have the following meaning:
1 ON = RF interference.
2 ON = unknown detector code.
3 ON = unknown remote control codes attempts.
4 ON = 3 dB attenuation activated.
5, 6, 7, 8 = for future use.</td>
</tr>
<tr>
<td>Yellow LED blinking slowly = detector/remote control batteries status.
Each radio zone LED displays the battery status of the corresponding device:
ON = low battery.</td>
</tr>
<tr>
<td>Red LED blinking slowly = missing reception of detectors supervision transmissions.
Each radio zone LED displays the supervision status of the corresponding device:
ON = missed supervision.</td>
</tr>
<tr>
<td> 
</td>
<td>Green + red LEDs blinking slowly = detectors failure status.
Each radio zone LED displays the failure status of the corresponding device:
ON = sensor failure.</td>
</tr>
</table>

Note: there is a security timeout of 30 s for the visualization of each event.

8.1.5 Events deletion

During the visualization of the events, it is possible to delete them by keeping the “SEL” key pressed for long.

Note: the attenuation state can only be reset by setting dipswitch 4 to STANDARD FUNCTIONING, as indicated here below.



When using the concentrator in NET5 mode, the attenuation function can be activated through the corresponding command sent via RS485 serial line.

8.2 Output events

8.2.1 Output event for unknown detector code

Upon reception of an unknown detector code (i.e. a code that was not stored in the concentrator), RIVERRF:
- activates the “Unknown detector code” output if it is operating in ET4PLUS, NET4, NET432/ETR mode; the output is pulse-type and the pulse lasts 4 s.
- generates a “Unknown detector code” event if it is operating in NET5, NET832, NET9 mode.

8.2.2 Output event for unknown remote control code

In case of transmissions received from remote controls that had not been previously stored in the concentrator, RIVERRF starts counting the transmissions.
After 10 unknown remote control transmissions have been performed and counted within 10 minutes, RIVERRF triggers:
- the activation of the “Unknown remote control code” output if RIVERRF is operating in ET4PLUS, NET4, NET432/ETR mode; the output is stored in memory. The output can only be reset by activating output 7 (“RF interference deletion”).
- the “Unknown remote control code” event if RIVERRF is operating in NET5, NET832, NET9 mode. This condition can only be reset through the corresponding command sent via RS485 serial line.

8.2.3 Output event for RF interference

In case of interfering RF transmission, RIVERRF triggers:
- the activation of the “RF interference” output if RIVERRF is operating in ET4PLUS, NET4, NET432/ETR mode; the output is stored in memory. The output can only be reset by activating output 7 (“RF interference deletion”).
- the event “RF interference” if RIVERRF is operating in NET5, NET832, NET9 mode. This condition can only be reset through the corresponding command sent via RS485 serial line.

8.2.4 Output event for failure

In case of failure of at least one detector, RIVERRF triggers:
- the activation of the “Failure” output if RIVERRF is operating in ET4PLUS, NET4, NET432/ETR mode; the output is stored in memory. The output can only be reset by activating output 6.
- the “Detector x failure” event if RIVERRF is operating in NET5, NET832, NET9 mode. This condition can only be reset through the corresponding command sent via RS485 serial line.

Note: the activation of output 6 also deletes the LOW BATTERY and MISSED SUPERVISION anomalies.

8.3 Commands

8.3.1 Remote controls blocking

It is possible to block all the remote controls at the same time for 90 s. You can proceed as follows:
- activate output 8 (“Remote controls blocking”), if RIVERRF is operating in ET4PLUS, NET4, NET432/ETR mode.
- send the appropriate command via RS485 serial line, if RIVERRF is operating in NET5, NET832, NET9 mode.

8.3.2 Remote controls unblocking

While a remote control is blocked, it is possible to unblock it immediately proceeding as follows:
- disable output 8 if RIVERRF is operating in ET4PLUS, NET4, NET432/ETR mode.
- send the appropriate command via RS485 serial line, if RIVERRF is operating in NET5, NET832, NET9 mode.

8.3.3 Sensitivity 3 dB reduction

In case you need to perform radio effective range test, it is possible to reduce the sensitivity of the concentrator receiver by 3 dB, so as to simulate adverse RF conditions.
If RIVERRF is operating in ET4PLUS, NET4, NET432/ETR mode, you can reduce the sensitivity in either way:
- by activating output 5 (“Sensitivity 3 dB reduction”).

- by setting dipswitch 4 to ON.

If RIVERRF is configured as NET5, NET832, NET9, you can reduce the sensitivity in either way:

- by sending the appropriate command via RS485 serial line.
- by setting dipswitch 4 to ON.

9. ELECTRONIC OUTPUTS

If RIVERRF is operating in ET4PLUS, NET4, NET432/ETR mode, the electronic outputs perform specific functions for concentrator diagnostics and control.
The outputs correspondences are shown in the following table:

Output No.	MEANING	
1	RF Interference	The first 4 outputs are dedicated to arranged local events and diagnostics, therefore they cannot be controlled in ET4PLUS, NET5, NET832, NET9 mode.
2	Unknown remote control code	
3	Unknown detector code	
4	Failure	
5	Sensitivity 3dB reduction	These 4 commands can be sent only with the ETR series (not from ET4PLUS), by activating the corresponding output.
6	Anomalies deletion (missed supervisions, low batteries, failures)	
7	RF interference deletion (RF interference, unknown remote control or unknown detector)	
8	Remote controls blocking	

IMPORTANT: the activation of the 4 outputs corresponding to the 4 commands activate only the commands, not the outputs physically.

Note: In case RIVERRF is used in configuration NET5, NET832, NET9, the 8 on-board electronic outputs can be freely controlled as for a classic RIVER concentrator.

10. CONCENTRATOR RESET

10.1 Special reset

"SEL" key pressed at RIVERRF powering on, or Reset jumper closed at RIVERRF powering on. Effects:
- reset of the RIVERRF states;
- reset of the outputs states (the control unit will have to restore them);
- reset of the setup settings (codes, supervision times and sensors which may be supervised).

Close the Reset jumper for a few seconds and then reopen it. Effects:
- reset of the RIVERRF states;
- reset of the output states (the control unit will have to restore them);
- the setup settings (codes, supervision times and sensors which may be supervised) are kept in non-volatile memory.

Send a reset command via RS485 (e. g. when the unit is reset). Effects:
- the RIVERRF states are maintained as they were just before the reset operation;
- reset of the output states (the control unit will have to restore them);
- the setup settings (codes, supervision times and sensors which may be supervised) are kept in non-volatile memory.

NOTES

11. TABLE OF CONTENTS

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