



CE



EL.MO.

GLOBAL SECURITY SOLUTIONS

**Serial concentrator
mod. ETR-TRAI
TECHNICAL MANUAL**

FOREWORD

FOR THE INSTALLER:

Please follow carefully the specifications relative to electric and security systems realization further to the manufacturer's prescriptions indicated in the manual provided.

Provide the user the necessary indication for use and system's limitations, specifying that there exist precise specifications and different safety performances levels that should be proportioned to the user needs. Have the user view the directions indicated in this document.

FOR THE USER:

Periodically check carefully the system functionality making sure all enabling and disabling operations were made correctly.

Have skilled personnel make the periodic system's maintenance. Contact the installer to verify correct system operation in case its conditions have changed (e.g.: variations in the areas to protect due to extension, change of the access modes, etc...)

.....

This device has been projected, assembled and tested with the maximum care, adopting control procedures in accordance with the laws in force. The full correspondence to the functional characteristics is given exclusively when it is used for the purpose it was projectJHed for, which is as follows:

Serial concentrator

Any use other than the one mentioned above has not been forecasted and therefore it is not possible to guarantee its correct operativeness.

The manufacturing process is carefully controlled in order to prevent defaults and bad functioning. Nevertheless, an extremely low percentage of the components used is subjected to faults just as any other electronic or mechanic product. As this item is meant to protect both property and people, we invite the user to proportion the level of protection that the system offers to the actual risk (also taking into account the possibility that the system was operated in a degraded manner because of faults and the like), as well reminding that there are precise laws for the design and assemblage of the systems destined to these kind of applications.

The system's operator is hereby advised to see regularly to the periodic maintenance of the system, at least in accordance with the provisions of current legislation, as well as to carry out checks on the correct running of said system on as regular a basis as the risk involved requires, with particular reference to the control unit, sensors, sounders, dialler(s) and any other device connected. The user must let the installer know how well the system seems to be operating, based on the results of periodic checks, without delay.

Design, installation and servicing of systems which include this product, should be made by skilled staff with the necessary knowledge to operate in safe conditions in order to prevent accidents. These systems' installation must be made in accordance with the laws in force. Some equipment's inner parts are connected to electric main and therefore electrocution may occur if servicing was made before switching off the main and emergency power. Some products incorporate rechargeable or non rechargeable batteries as emergency power supply. Their wrong connection may damage the product, properties and the operator's safety (burst and fire).

YOUR DEALER:

1. GENERALS

The ETR-TRAI serial concentrator has been conceived in order to be compatible with analogue addressable fire detecting systems featuring series ETRxxx and ET8/48 intrusion detection control units, models CP80, CP90, CP100 and version CP100/PRO.

ETR-TRAI is connected to the above mentioned control units through a RS485 serial line. It can control up to 64 analogue addressable detector addresses; to detect the intrusion the detectors must be taken off from the addresses.

As the serial line of ETR control units uses a communication protocol that is more extended in comparison to the other control units, it is necessary to operate on the selector ETR/ET8/48xx-CP8x present on the board.


The management of the loop of the devices is operated through the use of FX/EXP01 (the same used in fire detection systems FX/20 and FX/50), that communicates the detected analogue values.

On the keyboard of the control unit it will be displayed the status of FIRE ALARM or FIRE FAULT.

Input modules (NAM-AS2B, NAM-AS4B), call points (ST-NCP-AS2, ST-NCP-E, ST-NCP-IP), optical smoke detectors (ST-H-AS) may be connected to the loop of the devices; in case output modules are used, it is possible to connect only one module, choosing between OCM-AS2B and SCM-AS2B.

The concentrator features a small-dimensioned metal housing, it is also available the only-board version for the installation in already existing systems attaching it inside the housings of RIVER2 or RIVER3 or CP8/TR8B.

2. FEATURES

Model:	ETR-TRAI	Maximum load applicable to the loop:	500 mA.
Protection level:	IP3X	Connection terminal boards of the board:	To the serial line of compatible control units. 24V output for field devices. Fault relay (C - NA - NC Contacts' capacity max. 3A@AC120V/24V). Key input for fault reset.
Performance level:	II° level	Connection terminal boards of the board FX/EXP01:	Clockwise loop. Anti clockwise loop. Shield of the loop.
Supply voltage:	12V  (10,8 / 15V)	Displays:	Three 7 segments displays. Two loop control leds on board FX/EXP01.
Current consumption @12V:	156 mA (with loop controller on idle status). 470mA as above but with 100 mA load applied to the 24V output. 1740 mA with loop controller with a maximum load of 500 mA.	Programmings:	Four programming buttons on the board.
Maximum current consumption @12V:	2150 mA	Selection jumpers:	S2 for termination of the serial line, S3 for selection of communication protocol.
Compatibility:	With FX/EXP01 production series board installed.	Operating temperature<:	From -10 to +45°C guaranteed by the manufacturer. 93% R.H.
		Dimensions and weight:	L 240 x H 176 x D 99 mm. Only board L 175 x H 130 x D 60 mm. 1,6 Kg, only board 270g.
		Parts supplied:	Board FX/EXP01, module OSCTRAI already mounted, technical manual.

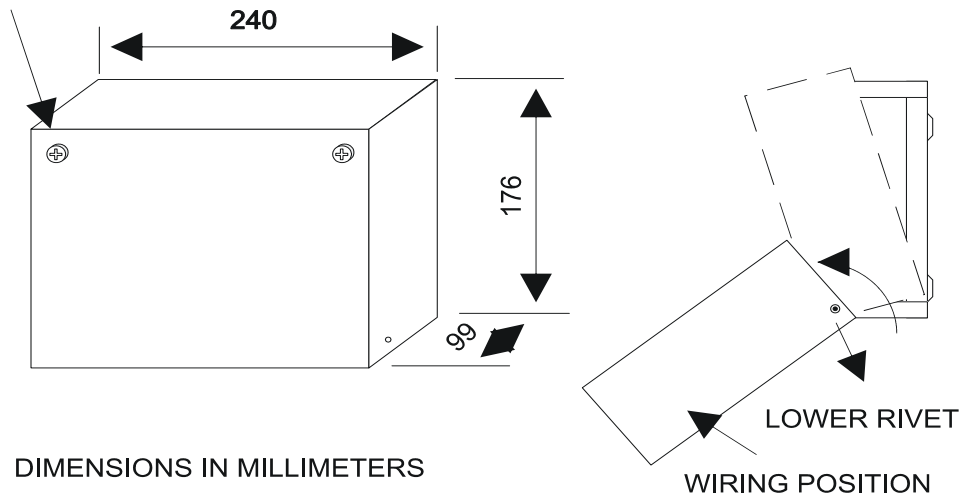
The concentrator ETR-TRAI has passed tests carried out in accordance with EMC 89/336/CEE with tests made in accordance with EN 50130-4 + A1 + A2 regulation concerning immunity and with EN 61000-6-3 regulation concerning electromagnetic emissions.

For electrical security aspects, regulations of LVD73/23/CEE directive have been respected.

3. HOUSING

View of the metal housing.

FRONT SCREWS FOR
CLOSING THE HOUSING

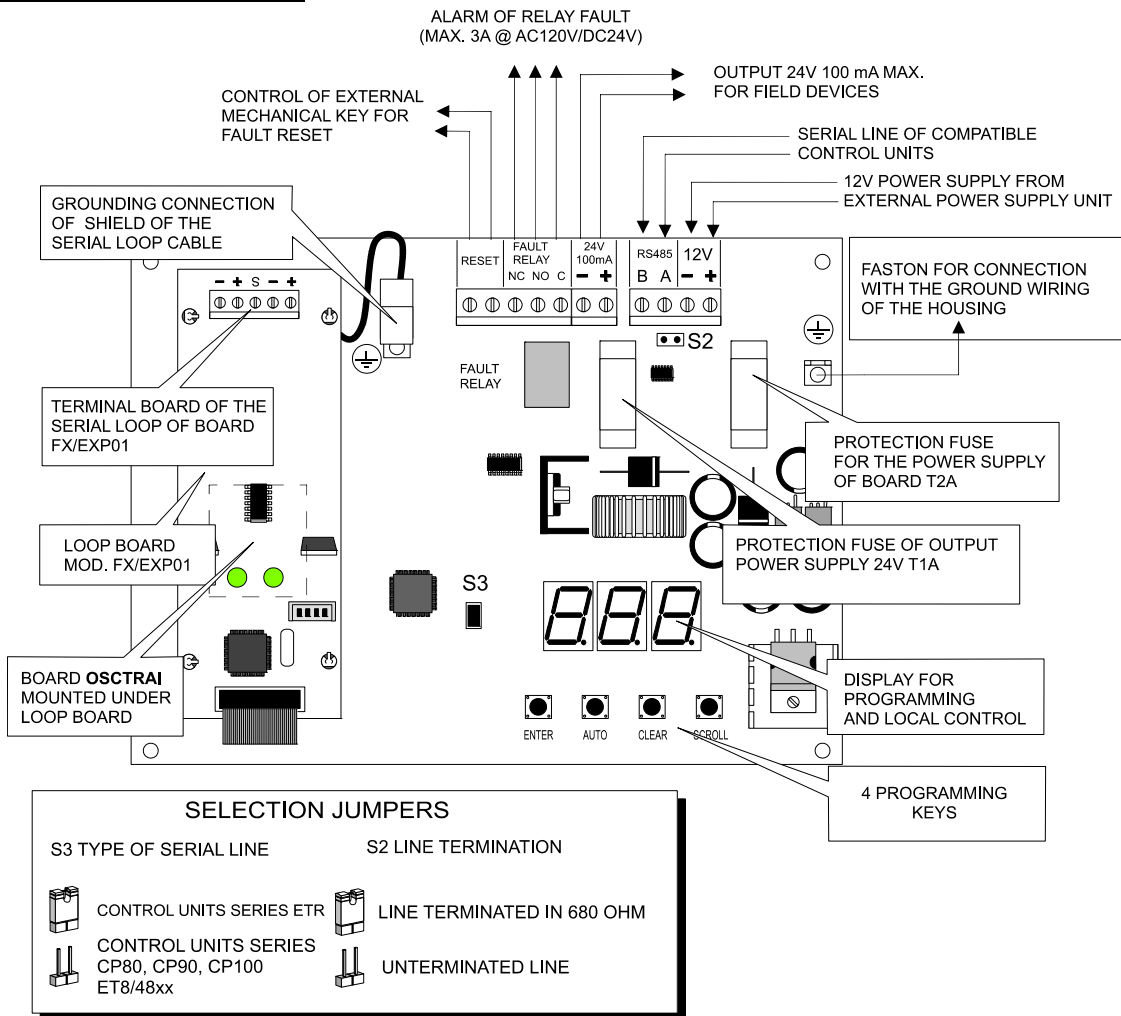


DIMENSIONS IN MILLIMETERS

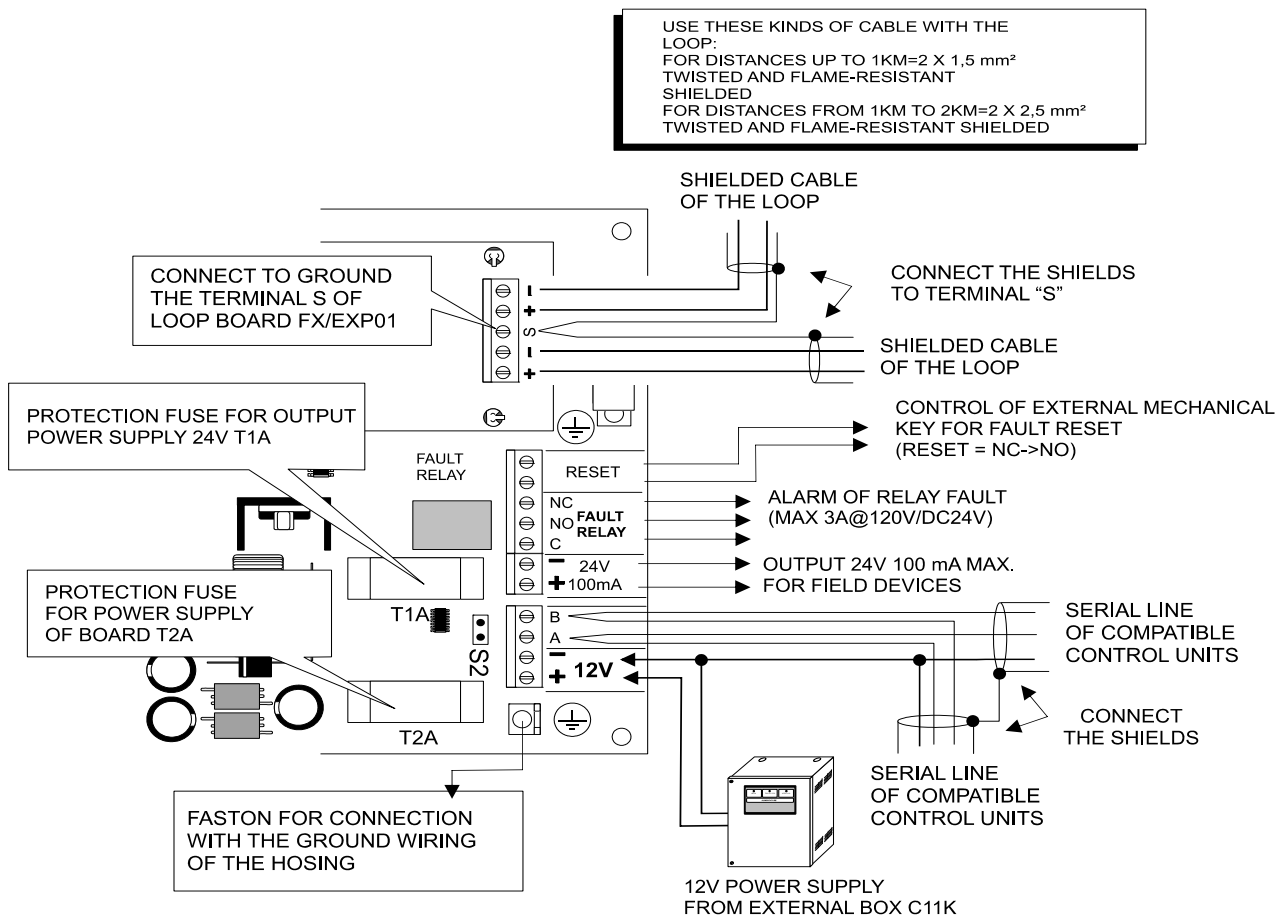
WIRING POSITION

4. ELECTRICAL WIRINGS

4.1 Explanations of the board



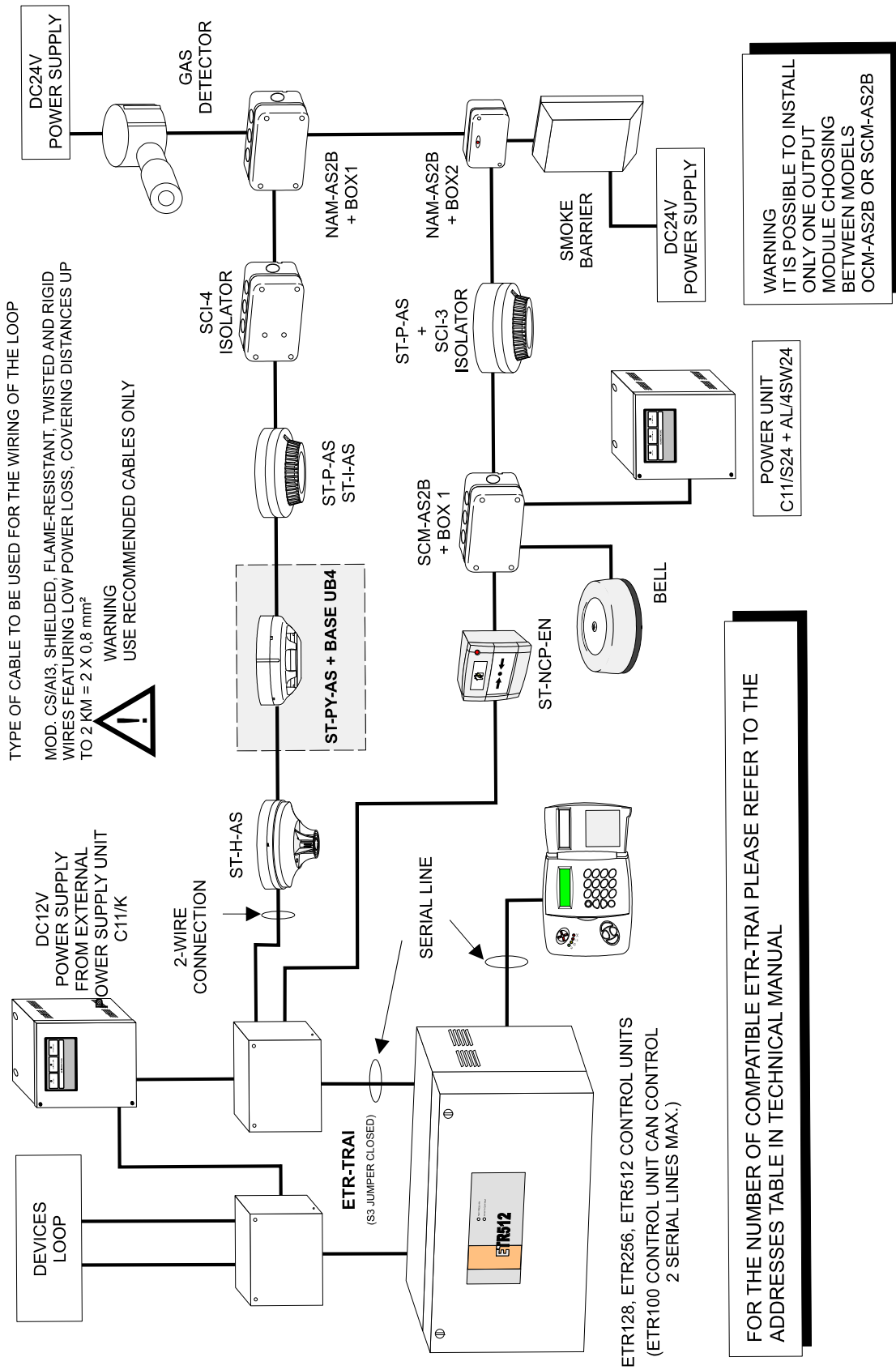
Detail of the terminal boards.



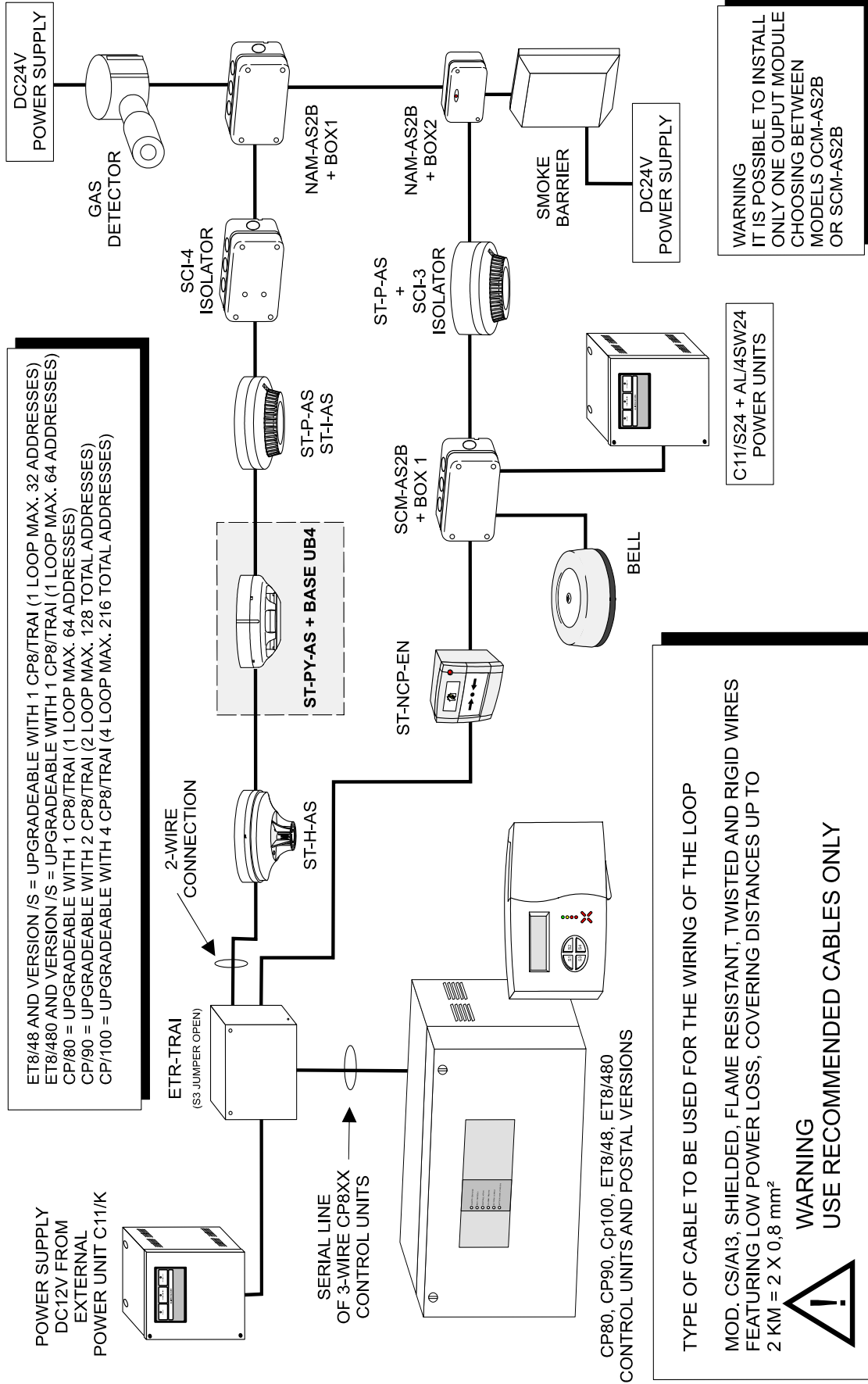
Note: the product is handed comprehensive of the metal housing. The latter features Tamper protections against opening and removal, that should be wired to the first available concentrator.

5. GENERAL DIAGRAMS

5.1 General diagram with ETR series control units



5.2 General diagram with CP80, ET8/48xx series control units



ET8/48 AND VERSION /S = UPGRADEABLE WITH 1 CP8/TRAI (1 LOOP MAX. 32 ADDRESSES)
 ET8/480 AND VERSION /S = UPGRADEABLE WITH 1 CP8/TRAI (1 LOOP MAX. 64 ADDRESSES)
 CP/80 = UPGRADEABLE WITH 1 CP8/TRAI (1 LOOP MAX. 64 ADDRESSES)
 CP/90 = UPGRADEABLE WITH 2 CP8/TRAI (2 LOOP MAX. 128 TOTAL ADDRESSES)
 CP/100 = UPGRADEABLE WITH 4 CP8/TRAI (4 LOOP MAX. 216 TOTAL ADDRESSES)

POWER SUPPLY
 DC12V FROM
 EXTERNAL
 POWER UNIT C11/K

SERIAL LINE
 OF 3-WIRE CP8XX
 CONTROL UNITS

CP80, CP90, Cp100, ET8/48, ET8/480
 CONTROL UNITS AND POSTAL VERSIONS

TYPE OF CABLE TO BE USED FOR THE WIRING OF THE LOOP

MOD. CSI/AI3, SHIELDED, FLAME RESISTANT, TWISTED AND RIGID WIRES
 FEATURING LOW POWER LOSS, COVERING DISTANCES UP TO
 2 KM = 2 X 0,8 mm²



WARNING
 USE RECOMMENDED CABLES ONLY

C11/S24 + AL/4SW24
 POWER UNITS

WARNING
 IT IS POSSIBLE TO INSTALL
 ONLY ONE OUTPUT MODULE
 CHOOSING BETWEEN
 MODELS OCM-AS2B
 OR SCM-AS2B

6. PROGRAMMING

6.1 Selection of the operating mode

ETR/TRAI has been conceived to be compatible with control units of series ETR but it is also possible to use it with control units CP80, CP90, CP100 and series ET8/48xx. The selection of the interfacing mode is operated by opening jumper **S3** near to the microprocessor as shown in paragraph 4.1.

Position of jumper S3	Control units compatible with ETR/TRAI
Engaged	Series ETRxxx
Disengaged	CP80, CP90, CP100 and control units seriesj ET8/48xx

The selection of the operating mode should be carried out when the device is off. The operating mode can be modified at any time, following this procedure:

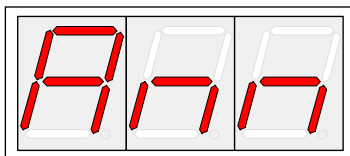
- Remove power supply from the board
- Engage or disengage jumper
- Supply the board again

If the module is connected with ETRxxx series control units, it needs a board address, that can be set through the 7 segment display.

The module supports 64 analogue addressable devices, with addresses from 1 to 64. The quantity of supported devices comes from the need of compatibility with the previous product ETR-TRAI, both for operation and for power supply aspects.

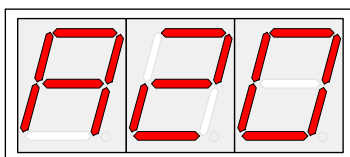
6.2 Setting of ETR-TRAI address

The board address normally appears on the 7 segment display, as



where "nn" stands for the board address.

For example, if the address is 20, this image will be displayed



Clicking on SCROLL key, it is possible to browse through the 64 locations, verifying the devices and their status, starting from location 01. By clicking on CLEAR key, or avoiding to click any key for 20 seconds, it is possible to return to the display of the former board address.

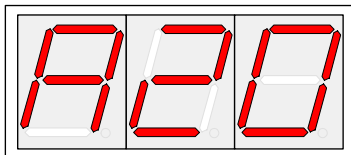
If, on the contrary, ETR-TRAI module has an operating mode which is compatible with CP80, CP90, CP100 and series ET8/48xx control units, it is not necessary to set a board address.

The address of the board is set through the 7 segment display and it is written in the EEPROM of the microprocessor.

It is possible to enter the "address programming" mode when ETR-TRAI is operating with series ETRxxx control units (**S3** jumper engaged).

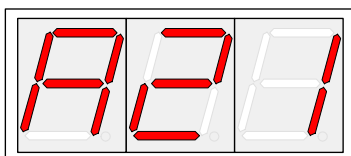
You enter the "address programming" mode by pressing the key **ENTER** and supplying the module at the same time. The power supply of the module generates a reset cycle.

Once you have entered the programming mode, the 7 segment display will show the current address of the board. For example, assuming it is 20, it will display:

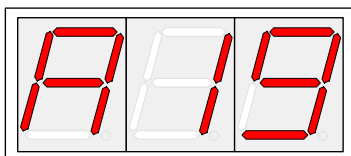


At this point, by pressing the key **ENTER** you quit the address programming mode, without modifying the address.

By pressing the keys **SCROLL** and **AUTO** you browse through the values of the addresses in an increasing and decreasing sense respectively, starting from the address of the board. In the above mentioned example, by pressing **SCROLL** you have:



While by pressing **AUTO** you have:



After having pressed the keys **SCROLL** o **AUTO** (that is after the display of an address different from the stored one), if you press the key **ENTER** you will save in EEPROM the displayed address.

Pressing the key **CLEAR** and operating on the couple of **RESET** inputs of the terminal board (that corresponds to the reset control) does not affect the address programming process.

Unlike the case in which the EEPROM is not initialized, you can exit automatically from the address programming status, keeping the last address that has been saved.

This happens by avoiding to press any key for 20 seconds.

6.3 How to determine the address of the board

Up to 62 devices can be connected to the bus of ETR (with addresses from 1 to 62), each one with 8 in/out.

Instead, up to 64 addresses can be connected to ETR-TRAI, therefore an ETR-TRAI board can take up to 8 addresses on the bus.

The first busy address is the one that is set as the address of the board, the others are the following 7. Every address corresponds to 8 devices.

If all the in/out that corresponds to an address are empty, the address is to be considered as non-busy and, therefore, can be assigned to another module connected to the bus.

The connection between the addresses of ETR-TRAI and the addresses of the devices seen by ETR is determined by the following chart:

ETR-TRAI address	Addresses of the devices as seen by ETR							
A01	17	18	19	20	21	22	23	24
A02	25	26	27	28	29	30	31	32
A03	33	34	35	36	37	38	39	40
A04	41	42	43	44	45	46	47	48
A05	49	50	51	52	53	54	55	56
A06	57	58	59	60	61	62	63	64
A07	65	66	67	68	69	70	71	72
A08	73	74	75	76	77	78	79	80
A09	81	82	83	84	85	86	87	88
A10	89	90	91	92	93	94	95	96
A11	97	98	99	100	101	102	103	104
A12	105	106	107	108	109	110	111	112
A13	113	114	115	116	117	118	119	120
A14	121	122	123	124	125	126	127	128
A15	129	130	131	132	133	134	135	136
A16	137	138	139	140	141	142	143	144
A17	145	146	147	148	149	150	151	152
A18	153	154	155	156	157	158	159	160
A19	161	162	163	164	165	166	167	168
A20	169	170	171	172	173	174	175	176
A21	177	178	179	180	181	182	183	184
A22	185	186	187	188	189	190	191	192
A23	193	194	195	196	197	198	199	200
A24	201	202	203	204	205	206	207	208
A25	209	210	211	212	213	214	215	216
A26	217	218	219	220	221	222	223	224
A27	225	226	227	228	229	230	231	232
A28	233	234	235	236	237	238	239	240
A29	241	242	243	244	245	246	247	248

Limit for ETR100
(see note at the end of the chart)

Limit for ETR128

A30	249	250	251	252	253	254	255	256
A31	257	258	259	260	261	262	263	264
A32	265	266	267	268	269	270	271	272
A33	273	274	275	276	277	278	279	280
A34	281	282	283	284	285	286	287	288
A35	289	290	291	292	293	294	295	296
A36	297	298	299	300	301	302	303	304
A37	305	306	307	308	309	310	311	312
A38	313	314	315	316	317	318	319	320
A39	321	322	323	324	325	326	327	328
A40	329	330	331	332	333	334	335	336
A41	337	338	339	340	341	342	343	344
A42	345	346	347	348	349	350	351	352
A43	353	354	355	356	357	358	359	360
A44	361	362	363	364	365	366	367	368
A45	369	370	371	372	373	374	375	376
A46	377	378	379	380	381	382	383	384
A47	385	386	387	388	389	390	391	392
A48	393	394	395	396	397	398	399	400
A49	401	402	403	404	405	406	407	408
A50	409	410	411	412	413	414	415	416
A51	417	418	419	420	421	422	423	424
A52	425	426	427	428	429	430	431	432
A53	433	434	435	436	437	438	439	440
A54	441	442	443	444	445	446	447	448
A55	449	450	451	452	453	454	455	456
A56	457	458	459	460	461	462	463	464
A57	465	466	467	468	469	470	471	472
A58	473	474	475	476	477	478	479	480
A59	481	482	483	484	485	486	487	488
A60	489	490	491	492	493	494	495	496
A61	497	498	499	500	501	502	503	504
A62	505	506	507	508	509	510	511	512

Limit for ETR256

Limit for ETR512

Note: for the use of ETR100 control unit the correspondence "address of ETR-TRAI / addresses of the devices" is the following:

A01 = from 09 to 16 up to **A12** = from 97 to 104.

6.3.1 Examples of programming of ETR-TRAI

Example 1

16 devices are connected to ETR-TRAI, with addresses from 1 to 6, and in ETR the addresses from 17 to 32 are free.

The address of the board of ETR-TRAI that is to be set is "1": doing so, the device that in ETR-TRAI has address 1, in ETR will correspond to address 17, the one that in ETR-TRAI has address 2, in ETR will correspond to address 18, and so on.

Example 2

64 devices are connected to ETR-TRAI and in ETR the addresses from 145 to 192 are free.

The address of the board of ETR-TRAI that is to be set will be "17".

The device that in ETR-TRAI has address 1, in ETR will have address 145, the one that in ETR-TRAI has address 9, in ETR will have address 153, the one that in ETR-TRAI has address 64, in ETR will have address 192, and so on.

On the bus, ETR-TRAI takes up addresses 17, 18, 19, 20, 21, 22.

Note: the address of the board may go from 1 to 62, that is it may be any of the addresses of the bus. Anyway, as it is the first of the 8 addresses that can be occupied by ETR-TRAI, if it is higher than 55, some of the groups of 8 in/out may not be used, because they will not be addressable. The following chart shows, as an example, the case in which the address of the board is 57.

ADDR (address busy on bus)	Addresses of the analogue-addressable devices (seen from ETR-TRAI)
57	1 – 8
58	9 - 16
59	17 - 24
60	25 - 32
61	33 - 40
62	41 - 48
--	49 - 56
--	57 - 64

The module ETR-TRAI can occupy only the addresses of the bus up to 62, therefore the last 16 in/out will not have any available address of the bus to correspond to and, thus, they will not be usable.

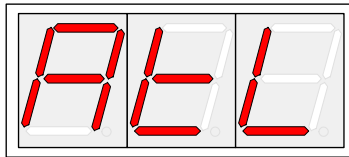
6.4 Coding of the addresses of fire detectors

It is necessary to code the addresses of anti-theft and fire detectors of the control unit so as to avoid overlap of addresses that may lead to anomalies.

6.5 Self-learning of the devices

After having connected the devices to the loop and having coded them correctly (ETR-TRAI accepts addresses included between 1 and 64), you can proceed with the phase of intelligent self-learning that detects the detectors and the possible connected modules, identifies them automatically, and catalogues them per type.

To start the "Self-learning procedure" press the key "AUTO".



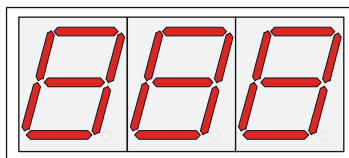
Atl: abbreviation of "AUTOLEARN"

At the end of the procedure, you can have two results:

- 1 - Positive result
- 2 - Negative result

6.5.1 POSITIVE RESULT

If the sequence has been carried out without detecting errors, a summing up of the detected devices is displayed, in this form



1° DISPLAY 2° DISPLAY 3° DISPLAY

↑ ↙ ↘
TYPE OF QUANTITY
DETECTED OF DETECTED
DEVICE DEVICES

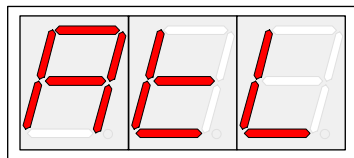
The code of the types of the detected device, is shown in the following chart:

CODES OF DISPLAY OF THE DEVICES		
Device (Class of devices)	Code	Display
Button	ST-NCP-AS2 ST-NCP-E ST-NCP-IP	C
Ionization smoke detector	NAM-AS-G	i
Optical smoke detector	ST-P-AS ST-PY-AS	o
Heat detector	ST-H-AS	T
Relay output module	OCM-AS2B	1
Input module	NAM-AS2B	2
Loop bell module	LPS	4
Bells output module	SCM-AS2B	5
Available for future applications	-	3
No device	-	F

The "SCROLL" key allows to browse through the different devices to verify if the detected quantities correspond to the ones that are actually present.

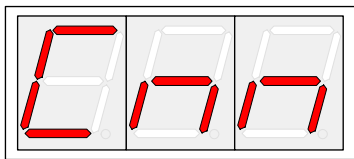
In summary:

Start self-learning:



>>>>> **AUTO** key >>>>>

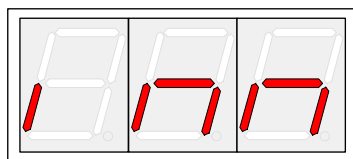
At the end of self-learning, if the result is positive you obtain the following displays:



Device: **Buttons**

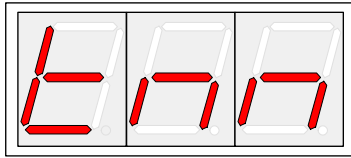
Where ***n n*** indicates the quantity of detected devices.

SCROLL key



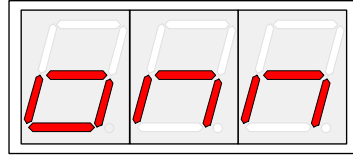
Device: **Ionization
smoke detectors**

SCROLL key



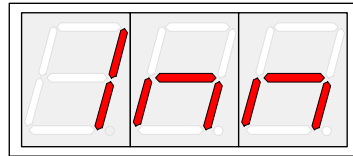
Device: **Heat detector**

SCROLL key



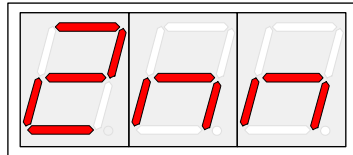
Device: **Optical smoke detector**

SCROLL key



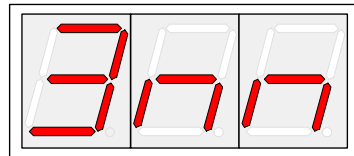
Device: **Relay output modules**

SCROLL key



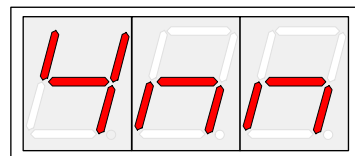
Device: **Input modules**

SCROLL key



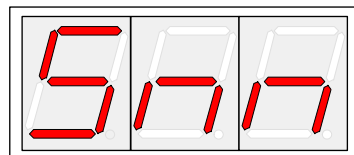
Device: **Available for
future applications**

SCROLL key



Device: **Loop bell module**

SCROLL key



Device: **Bells output module**

SCROLL key

7. PROGRAMMING OF AN OUTPUT MODULE CONNECTED TO THE LOOP

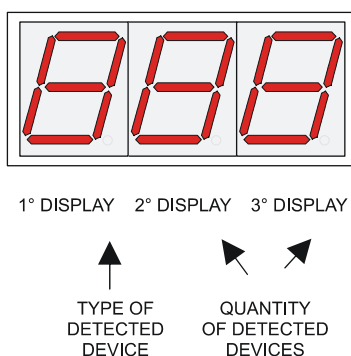
The control unit can enable an output module connected to the loop (relay output module, bells output module or loop bell module), through appropriate programming.

- From the menu "Tempi e Modi Allarme" (Alarm Time and Mode) select the event "INCENDIO" (fire) and enter the configuration clicking on "OK".
- Browse through every menu until you arrive to "USCITA ASSOCIATA" (associated output), click on "OK" and select the chosen address with the aid of the arrows, moving upwards or downwards; at the end click on "STOP". At this point you will be requested to associate the output function: the function "Stato Zona" (zone status) must be selected, always through the aid of the arrows.

In this way the "INCENDIO" (fire) alarm output has been repeated on the loop module, and in case of alarm this output will be enabled and will keep this status until a "reset" is operated, through the "RESET" input of ETR-TRAI.

8. OPERATIVENESS

When operating, the two green leds of FX/EXP01 are on, while the three displays show the following image:

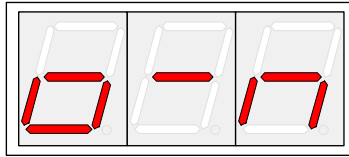


Addresses of the devices: included between 01 e 64

Type of detected device: it displays through a code the detected device. To identify the type of detected device, please refer to the following chart.

DISPLAY CODES OF THE DEVICES		
Device (Class of devices)	Code	Display
Button	ST-NCP-AS2 ST-NCP-E ST-NCP-IP	C
Ionization smoke detector	NAM-AS-G	i
Optical smoke detector	ST-P-AS ST-PY-AS	o
Heat detector	ST-H-AS	T
Relay output module	OCM-AS2B	1
Input module	NAM-AS2B	2
Loop bell module	LPS	4
Bells output module	SCM-AS2B	5
Available for future applications	-	3
No device	-	F

Using the key “**SCROLL**” it is possible to see the current addresses. By clicking on “**ENTER**” it is possible to verify the status of the device that is being examined, in the following "o-n" form,



Where "o" represents the status of the output (of relay and bells modules), and "n" the condition code; its meanings are summed up in the following chart.

CONDITION CODE OF THE DEVICE	
Code	Meaning
0	Normal operation
1	Alarm
2	Fault

9. FAULT CONDITIONS AND ERROR SIGNALLING

There are two kinds of fault:

- 1- Fault deriving from the device (detected through the analogue value)
- 2- Fault deriving from the loop module (open loop, short-circuited loop, etc.)

9.1 Fault deriving from the device

All the faults that are detected through the reading of the analogue value, must last at least 10 seconds before they are accepted. The only exception regards the fault for failed reply of the device, which follows a different procedure and is accepted almost instantly.

9.2 Fault deriving from the loop module

The types of fault that are directly detected by the loop module (open loop, short-circuited loop, loop fault and double address) are shown on the three displays of ETR-TRAI, through the codes reported in the chart "Fault Coding" here below, and they enable the fault relays of the module.

FAULT CODING	
Message displayed	Meaning
Er1	Open loop
Er2	Short-circuited loop
Er3	Loop fault (does not communicate)
Er4	Double address (only in self-learning)
Er5	Addresses of devices in non-usable locations (information valid only for ETR series control units)
Err	An error not foreseen by the system has occurred

Note: the control of Er5 error code is carried out:

- During the reset, when ETR-TRAI does not enter the programming mode.
- When **ENTER** is pressed to memorize a new board address.
- When **ENTER** is pressed in the first page of the address programming mode, to exit from that mode without having changed address.
- At the end of a self-learning operation, before a possible saving in EEPROM.
- When **CLEAR** is pressed after a self-learning operation. This operation, namely, refuses the result of a self-learning, therefore the addresses that the devices had occupied previously must be recovered; this occupation was overwritten by the control at the end of self-learning.
- During the timeout exit from the address programming mode.

10. DISPOSAL INSTRUCTIONS

Dispose of ETR-TRAI in accordance with current city regulations and by leaving the device in a dumping ground that is authorized for the disposal of electronic products. If required, please contact the appropriate city office for additional information.

The material used for this product is very harmful and polluting if dispersed in the environment.

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Product specifications as described above do not bind the manufacturer and may be altered without prior notice.

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