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CENTRAL SYSTEM

CE100

USER INSTRUCTIONS

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		UT/BD	

CONTENTS

Introduction

The **CE100** gas Central System has been designed to be connected to up to 6 sensors and represent a useful instrument for monitoring and controlling areas where there might be the presence of flammable, toxic gases and oxygen.

Fig. 1

◎ 10 11 12 13 14 15 16 17 ◎	◎ 10 11 12 13 14 15 16 17 ◎	◎ 14 15 16 17 18 19 20 21 22 23 24 25 ◎	14 15 16 17 18	14 15 16 17 18
AL100 AL101 AL102 BA100	AL100 AL101 AL102 BA100	Tecnocontrol Srl CE100	CE101	CE101
1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9 10 11 12 13	1 2 3 4 5 6	1 2 3 4 5 6
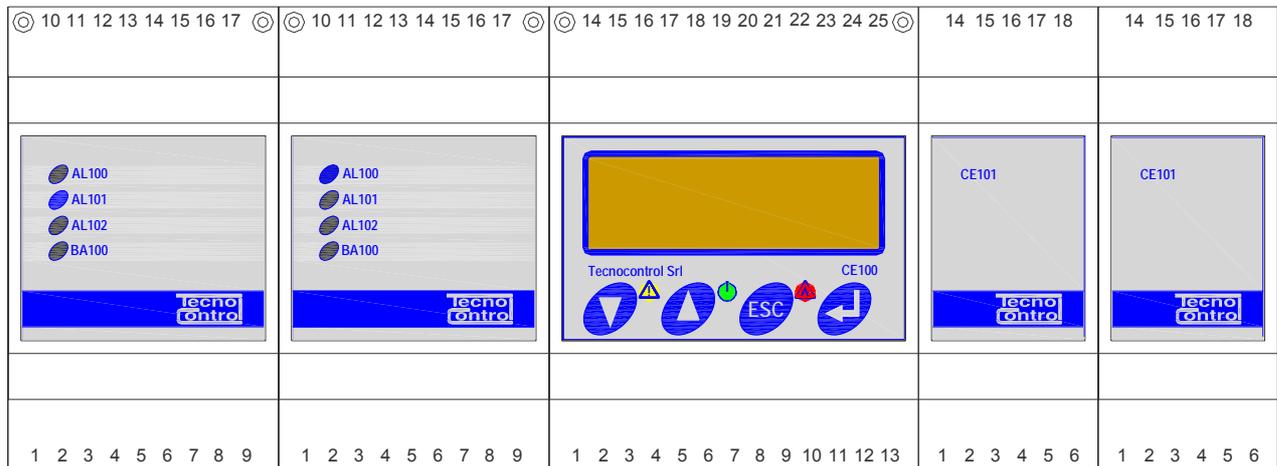
Description

The **CE100** Central System, realized in Rack DIN, is composed by a front unit for the data processing with keyboard, backlighted graphic display 122x32 pixel, and by a input/output card and power supply. . Power supply is 20 à 30Vcc; the sensors are 20Vcc powerd. The Central System is designed to accept a 12Vcc 3Ah or a lons-lithium battery 10.8Vcc 1,7Ah to maintain the system powered on in absence of Main power supply.

The **CE100** Central System is able to **manage up to 2 inputs for 4÷20mA sensors** and is able to pilot up to 4 relay output (U1, U2, U3, U4).
To the Central **CE100** can be connected up to **2 Expansion Card CE101** with 2 inputs each **for a total four additional input 4÷20mA sensors** (S3, S4, S5 ed S6)

- The **CE100** Central Unit can be connected to
  - Three-wires linear 4÷20mA transmitters for flammable gases series TS292K (IP65) or TS293K (Flameprrof) with 0÷20%LIE scale, or series TS293Px (Flameprrof) with 0÷100%LIE scale.
  - Three-wires linear 4÷20mA transmitters for flammable gases series with catalytic sensors for short distances series SE192K (IP44) or SE193K (Flameprrof ATEX) scale 0÷20%LIE
  - Two-wires linear 4÷20mA transmitters for toxic gas or oxygen, electro-chemical à sensors series TS210 (IP65) or TS220, scale according to type f gas and for oxygen :0÷25%.

The inputs can be set for any sensor with a signal of 4÷20 mA, with a power supply of 20Vcc.

- The measurement range of the inputs is divided into the following indications:
  FAULT- (<1 mA) - **UNDERFLOW** (from 1 to 3,5mA) - **NORM**al (from 3,5 to 21mA), or **PRE1**, **PRE2**, **ALL**arm, (setup levels) - **OVERFLOW** (from 21 to 24mA) - **FAULT+** (over the 24mA).

● Every sensor has 3 alarm levels available plus the fault adressable on any outpu.
Any output can be set as it follows:

- *delayed ON* up to 250 secondes after reaching the set alarm level.
- *delayed OFF* jusqu'à 250 secondes after the undergoing of the the set alarm level.
- *Time out* of 0 à 250 secondes for start up
- *memory*
- set in *positive logic* (relays normally activated) or in *negative logic* (relays normally disactivated)
• The internal *Buzzer* can be set, according to the choise, *in service* or *out service*.
• The internal *Buzzer* sounds a "*Bip*" every touch of the keyboard.

● Every detector can be *Excluded* without phisically disconnecting it from the system or deleting it from the programm. In this case the current value read from the system about that detector will be showed as well, with the "✳" symbol on the side of the detector number, but there will be no activity (alarms and outputs) on that value.

● ● There is also the possibility (and we suggest to always use it) to protect the configuration settings by a 4 digits "*Code*" (Password). To modify the *Outputs Configuration*, *Inputs Configuration, Code* or *Battery*, you will always need to insert the right password.

Central System Monitoring

Switching on the Central System, the display will show the following message for a period of 30 seconds. This is for stabilize the sensors and to avoid false alarms. The remaining time is showed by a contdown.
Than the Central System will show the situation of the connected detectors.
The Display shows all detectors (max 6).
.

```
┌─────────────────────────────┐
│                             │
│      TECNOCONTROL           │
│                             │
│     CE100  SW Rev1.26       │
│                             │
└─────────────────────────────┘
```

Pay Attention – important Note: *detectors inputs are protected against accidental wire breakings (connection between detectors and Central System) and against short circuits.* If a short circuit occurs, to avoid damages to the central system or to the sensor, the power supply to that input is automatically stopped (all others continue to work

```
┌──────────────┬──────────────┐
│ ███████      │        -3-    │
├──────────────┼──────────────┤
│ 1:0000 LIE   │  4:0000 LIE  │
│ 2:0000 LIE   │  5:0000 LIE  │
│ 3:0000 LIE   │  6:0000 LIE  │
└──────────────┴──────────────┘
```

properly). Simultaneously the yellow LED "FAULT" lights up and the correspondant relay is activated (if programmed). Only after having solved the short circuit problem (to test if the channel is no more in short circuit protection you need to mesure if there is voltage between the terminals "+" and "-" with a multimeter) it will be possible to restore normal operational conditions.
.

Alarms Reset

 From the main menu, press (ESC) to enter into the ***Select*** menu. Select ***Reset*** (the cursor should already be in that position) and press (⏎) to confirm.

```
┌─────────────────────────────┐
│ MENU PRINCIPAL              │
│▼1 Reset                     │
│ 2 Details                   │
│ 3 Enabling                  │
│ 4 Exclusion                 │
│ 5 Divers                    │
│ 6 Configuration             │
│ 7 Code                      │
│ 8 Menus protected           │
│ 9 Service                   │
└─────────────────────────────┘
```

The following message appears: ***Reset done***, than it will automatically appear the **Setup Menu**.
Press (ESC) to go back to the main menu.

```
┌─────────────────────────────┐
│  Reset                      │
│  Done                       │
│                             │
│                             │
└─────────────────────────────┘
```

This procedure has to be done to reset the stored relay outputs when the cause of the alarm has finished.

Sensor Details Viewing

From the main menu press (ESC) to enter to the **Main Menu.**

```
MAINMENU
▼ 1 Reset
  2 Détails
  3 Enable
```

With the ▽ key select **Détails** pressa gain on ⏎ to confirm.
All settings details about **Sensor 1** will appear.
Using mkeys " down " ▽ and "up" △
All **Détails** can be seen :
1st line: type of sensor, 2nd:name of sensor, 3rd scale set, 4th sensor status, 5th corrent in mA, than you se the values of the alarm levels (PRE1, PRE2, AL)

With thye key ⏎ you see the detail of the other sensors status . (If a sensor is not used , it will not appear)

Press (ESC) to go back to the *Setup* menu*.*

```
Détails
▼ Sensor n° 1
  TS292KM
  0020 LIE
  0000 LIE: Normal
  I = 04.0 mA
  0010 LIE : PRE 1
  0015 LIE : PRE 2
  0020 LIE : AL
```
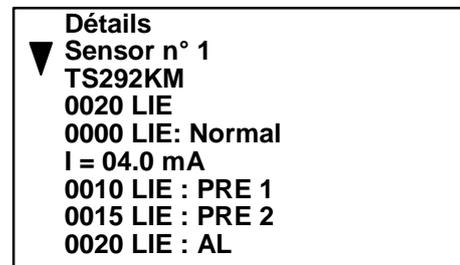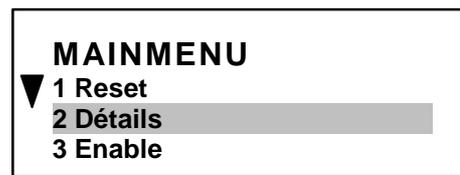
Enabling – Disabling Sensors

It is possibile to exclude a sensor without disconnecting it or erase it from programme. In this case, the voltage value read by the central system, about that sensor will be displayed with the ✳ on the side of the sensor number, but it will have no effect on the alarms and on the central system outputs.

```
MENU PRINCIPAL
▲ 2 Détails
  3 Habilitation
▼ 4 Exclusion
```

• Sélecti A with the keys "down" ▽ and "up" △ :
  Enabling or Disabling.

Press the keys "down" ▽ and "up" △ : to sélect the N° of sensor to be **Enabled or Disabled**.

Then pressing the key ⏎ the following message will appear **Senso enabled** or **Sensor disabled**:
Then the **Setup menu** will automatically come back.

Press the key (ESC) to exit from the menu and go back to the main menu.

```
Enabling
Sensor  n° 1
TS292KM
SENSOR ENABLED
```
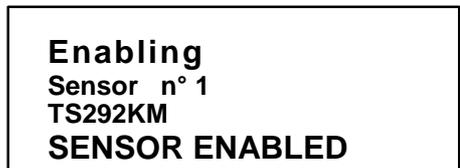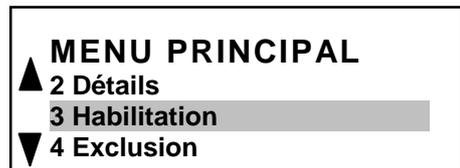
Buzzer Setting

From the main menu press (ESC) to go to the **Select** menu*.*
With the ▽ key select **Miscellaneous** and press the key ⏎

```
SETUP  MENU
▲ 3 Enabling
  4 Exclusion
▼ 5 Miscellaneous
```

With the "down" ▽ et "up" △ mkeys sélect **ON or OFF** on the grey line by the key ⏎ Pass to the following line*: **Buzzer ON,** means that in* case of alarm, the red LED and the internal buzzer will start.
In case of **Buzzer OFF,** the acustic alarm will not start.

Press twice the key (ESC) to go back to the *Setup* menu

```
Miscellaneous
BUZZER     :OFF
BATTERY    :ABSENT
EV STATUS :NO
```
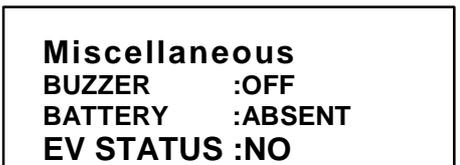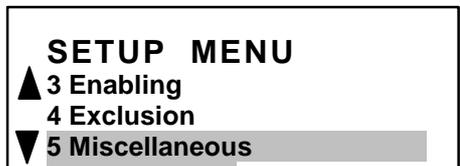
BATTERY ABSENT, this means that the CE100 has no emergency power supply in case in case of powere supply cut off.

```
Miscellaneous
BUZZER      :OFF
BATTERY     :ABSENT
EV STATUS :NO
```

BATTERY AL101, this means that the CE100 has a power supply for PB battery of une 13.8V 3Ah .

```
Miscellaneous
BUZZER      :OFF
BATTERY     :AL 101
EV STATUS :NO
```

BATTERY AL102, this means that the CE100 has a power supply for a l Lithium battery of 10.8V 1.7Ah .

```
Miscellaneous
BUZZER      :OFF
BATTERY     :AL 102
EV STATUS :NO
```

NOTE: NOTE: the central system CE100 makes a Battery functional test for a minute each 24 hours only if the Battey has been selected "**Installed**". If the Battery is down or in fault, the yellow Led will start flashing.
.

Press twice the key (ESC) to return to **Select Menu***.*

VALVE STATUS: This shows the valves status. Press twice on Key (ESC) to return to **Select Menu***.*

```
Divers
BUZZER      :NON
BATTERIE    :ABSENTE
ETAT EV     :OUI
```

IMPORTANT REMARK

INSTRUCTIONS CONTAINED IN THE MANUAL BELOW INCLUDE INSTALLATION AND SYSTEM SETUP PROCEDURES TO BE EXECUTED ONLY BY QUALIFIED AND AUTHORIZED PEOPLE.

CE100 INSTALLATION

The central unit and all connected moduls have to be clip mounted clipsage on DIN rail outside a cabinet.

Fig. 2

120mm

225mm
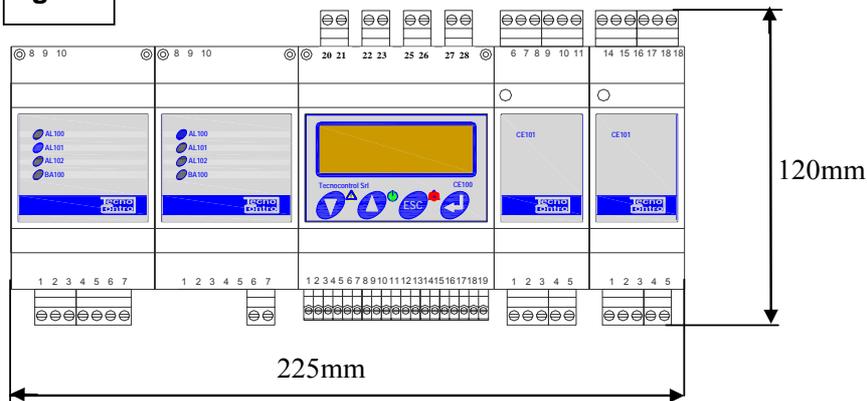
Electrical connections

All electrical connections have to be effected on the terminals. The supply "230Vac" is to be connected on terminals "L, N and hearth" (**Fig.4 / 5**).The 12V 3Ah (if installed)**battery** is to be connected to cables "B+" (Red) and "B-" (Black) (**Fig.4 /5**).

The terminals (**Fig.3**) are of "polarized inlet" type (1); we suggest to use lugs adequate to the conductors (2) and to fix the wires to the box structure to avoid excessive stress to the circuits and to the terminals. Use a screwdriver (3) of the right dimensions.

Connection diagrams showed in **Fig. 4, 5.6 and 7** to simplify, are always indicated with all sensors.

Inputs: keep into consideration that the *Central System CE100* disposes of 2 inputs 4÷20mA only (from S1 to S2).To get other 2 or 4 inputs (from S3 to S6), it is necessary to add the 1 or 2 other *Expansion Card CE101* (On the right of the drawing). Inputs "S1, S2 up to S6 accept any 4-20mA linear current signal, coming from 2-wires or 3-wires transmitters. (**See chapter *Sensors Connections***).

Output: The *Central System CE100* disposes of all exchange contacts relay outputs free from voltage. Contacts current carrying capacity is 3A at 250Vac. Each relay output contacts are indicated with "C" (common), "NC" (normally closed) and "NA" (normally open). ***This indication is referred to relays in "not powered" position, this means normally deactivated = Negative Logic.***
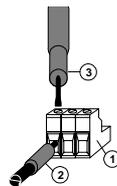
Fig.3 - -Borniers à entrées polarisées

Fig 4 – General connection

Sensors Input
S3,S4,S5,S6

230V 50Hz
Power suppy

Relay Output

S3 S4 S5 S6
+ - S + - S + - S + - S

8 9 10   8 9 10   20 21 22 23 25 26 27 28   6 7 8 9 10 11   14 15 16 17 18 18

L   N   L   N

AL100   AL100   CE101   CE101
AL101   AL101
AL102   AL102   Tecnocontrol Srl   CE100
BA100   BA100

Électrovalve
Contact

1 2 3 4 5 6 7   1 2 3 4 5 6 7   1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19   1 2 3 4 5   1 2 3 4 5

Battery Terminals
B+ B-

+ Red

- Black

Battery 12V – 3Ah

Supply
Electrovalve

+ - S   + - S
S1   S2

Fig 5 – Supply connection

8 9 10   8 9 10   20 21 22 23 24 25 26 27

AL101
Charger
Battery

AL100
Power supply

Terminal CE100
Display

1 2 3 4 5 6 7   1 2 3 4 5 6 7   1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

AL101

1	2	3	4	5	6	7
+	-	int	+	-	+	-

Contact NC
Electrovalve

AL100

6	7
+	-

20/30Vcc   GRD

Supply
Electrovalve

Terminal CE100 Display

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
+	-	+	-	int	+	-	S1	+	-	S2	+	-	S3	S4	+	-	S5	S6

int

12Vcc

GND

13.8Vcc
Batteries

Fig 6 – Connection with extensions
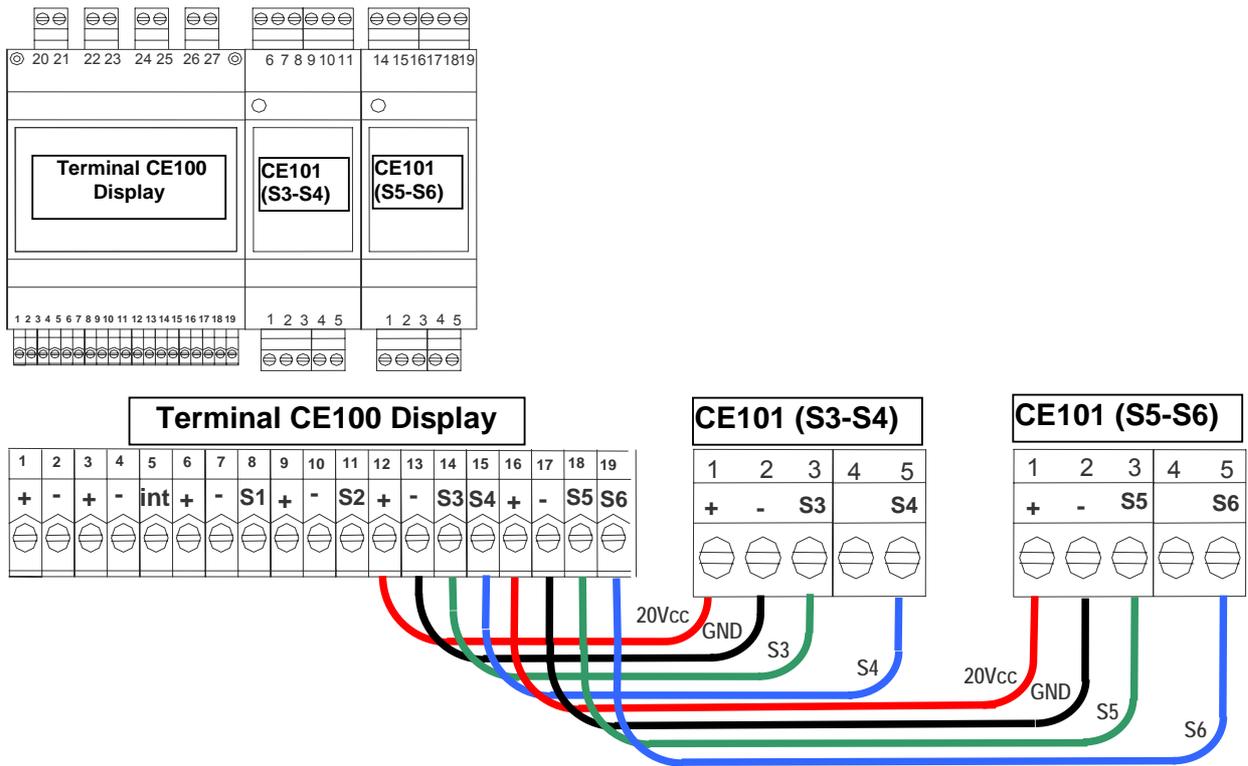
Fig 7 -   *Connection diagram with 2 wires sensors*
               series TS210E and TS220E
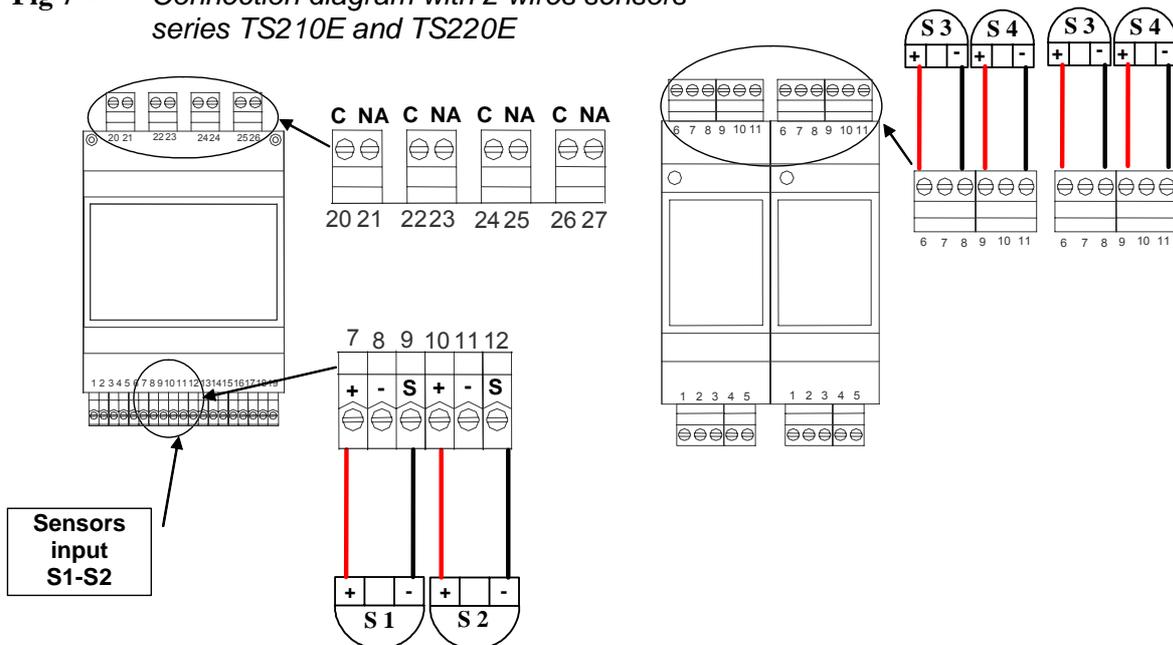
Fig 8   *Connection diagram with 3 wires sensors*
series TS292 et TS293 and SE 192 et SE 193
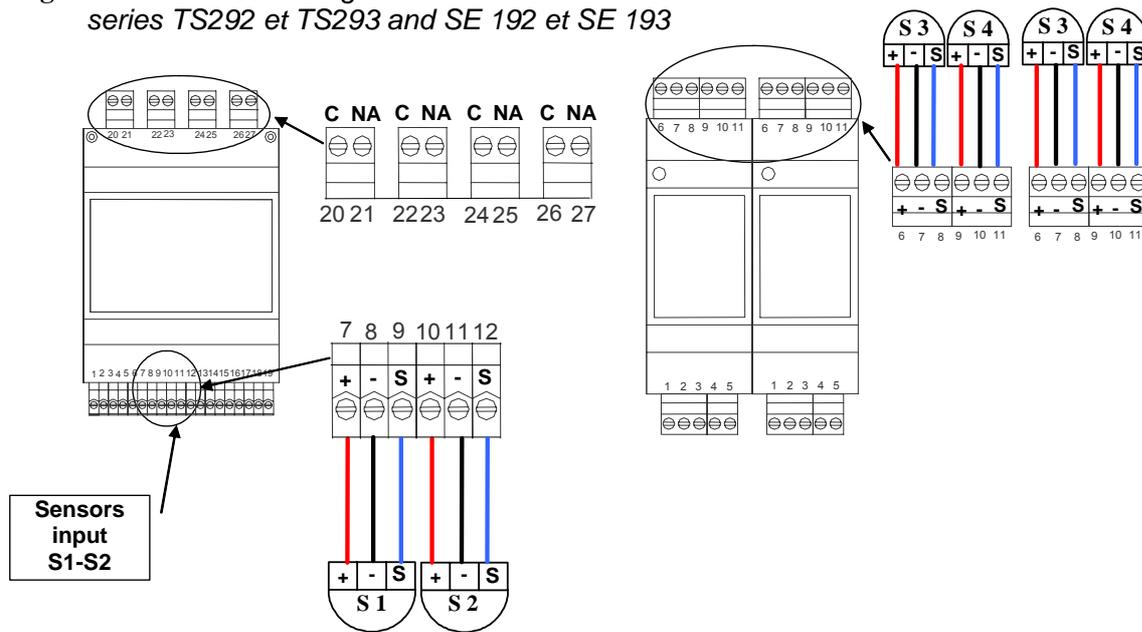
Sensors connection

Connection of 2-wires 4÷20mA transmitters

Connection of 2-wires 4÷20mA transmitters has to be made (Fig.7) between the "+" and "-" terminals of the transmitter and the correspondant "+" and "S" terminals of the Central System inputs card.

The section of the connection cables between sensors and central system has to be calculated in function of the distance as indicated in the table. Transmitters series TS210E and TS220E need a shielded cable.

Sensors series TS210E and TS220E	
Distance	Cable type
From 0 to 100 meters	3x0,5 mm^2 Shielded
From 100 to 200 meters	3x1 mm^2 Shielded
From 200 to 500 meters	3x1,5 mm^2 Shielded
From 500 to 1000 meters	3x2,5 mm^2 Shielded

The braiding has to be connected to the "-" of the input sensor terminal.

Connection of 3-wires 4÷20mA transmitters

Connection of 3-wires 4÷20mA transmitters has to be made (Fig.8) to the "+", "-" and "S" Terminals of the transmitter and the correspondant terminals of the Central System inputs card.

The section of the connection cables between sensors and central system has to be calculated in function of the distance and the used sensor, as indicated in the table. Sensors series TS292K, TS293K, TS293P, SE192 and SE193 don't need shielded cables.

Sensors series TS292K, TS293K and TS293P	
Distance	Cable type
From 0 to 300 meters	3x1.5 mm^2
From 300 to 600 meters	3X2.5 mm^2

Sensors series SE192K, SE193K	
Distance	Cable type
de 0 à 100 m.	3x1.5 mm^2

Transmitters Use

PAY ATTENTION: *Transmitters calibration is made with calibrated gases, sealed trimmers can be regulated only by authorized and trained people or by our technicians using calibrated gases*

Please see the specific Users Instructions of the Treansmitters

Please note that transmitters series TS292K, TS293K, TS293P and SE 192K, SE 193K for flammable gases, need a warm-up time, in clean air, for about 20 seconds. After this time they are able to detect gases, but they reach optimal stability after about 3 hours of continuous work, tests with sample gas should be done after this time.

Transmitters series TS210E and TS220E reach the optimal stability conditions, in clean air, after about 1-2 hours of continuous work.

Central System Setup

Keyboard Use and General Informations

The numbers to be changed or entered appear on the display highlighted by the *Cursor* (flashing black rectangle). To change or enter a number you can use:

Key △ to move up.

Key ▽ to move down.

Key (↵) to confirm.

Key (ESC) to entrer and get out of menus.

After having entered the firs sensor setup, the software is configured to propose this setup as the standard for all others sensors, in this case, if you are entring more sensors with the same setup, all operations will be much more easy and quick.

Sensors Setup

If no sensors have been already configured, the following message will be displaied:

Pressing the (ESC) key, you enter in the setup menu.

	-3-
1:---------	4:----------
2:---------	5:----------
3:---------	6:----------

With key ▽ select **Set up** *and press* on (↵)*,* for a further access, the **Code** of acces will be displaied.

Select **Sensor choise and press**r on (↵) to confirm.

At this point, indicate with key △ the corresponding to the input to which the sensor is connected and press key (↵) to confirm.

```
MAIN MENU
▲ 4 Exclusion
  5 Miscellaneous
▼ 6 Configuration
```

Exemple: if you want to setup sensor n°4, press the key △ till the number appears and then press on key (↵) to confirm.

Modèl of sensor will appear , reach the deisred one key △

And then pressr (↵) to confirm.

```
Set up
1 Sensor choise
  2 Sensor copy
▼ 3 Sensor exclusion
```

```
Sensor choise
Sensor n° 4
```

Exemple: if you want to setup sensor TS293Px with keys △ move cursor,then press (↵) to confirm.

The item **Valve** appear, press △ to reach it and choose **NC** if normally closed ru **NO** if normally open and press (↵) to confirm.

```
Choix sonde
Sonde n° 4
Model : TS293Px
```

You will be requested to confirm the Sensor by the key △ to move it on **YES** or on **NO** and press on (↵) to confirm.

```
Sensor choise
Sensor n° 4
Model: TS293Px
Valve  : NO
CONFIRM  ?  NO
```

All sensors are preset as described in the below table.

Sensors table
End of scale, Unit and alarm Level

MODEL	GAS	SCALE	UNITS	PRE1 LEVEL 1	PRE2 LEVEL 2	AL. LEVEL 3
TS220EA	NH_3	0-300	ppm	10	20	50
TS220EC	CO	0-300	ppm	50	100	200
TS220EH	H_2S	0-100	ppm	10	20	50
TS220EN	NO	0-100	ppm	10	20	50
TS220EO	O_2	0-25.0	% v/v	18.5	19.5	22.5
TS220ES	SO_2	0-100	ppm	10	20	50
TS292KG	GPL	0-20	%LIE	10	15	20
TS292KM	METHANE	0-20	%LIE	10	15	20
TS292Kx	INFLAM.	0-20	%LIE	10	15	20
TS293KG	GPL	0-20	%LIE	10	15	20
TS293KM	METHANE	0-20	%LIE	10	15	20
TS293Kx	INFLAM.	0-20	%LIE	10	15	20
TS292Px	INFLAM.	0-100	%LIE	10	15	20
TS293Px	EXPLOSIFS	0-100	%LIE	10	15	20
IR101	CO_2	0-2.00	% v/v	0.20	0.50	1
IR102	CO_2	0-2.00	% v/v	0.20	0.50	1
Génériques						

Parametres Table
Relays functions

MODEL	Relay PRE 1	Delay ON (sec)	Delay OFF (sec)	Positive Logic	MEM	Relays PRE 2	Delay ON (sec	Delay OFF	Positive Logique	MEM.	Relays AL.	Delay ON (sec)	Delay OFF (sec)	Delay OFF (sec)	Positive Logic	MEM.	Relaiys Dérang.	Delay ON (sec)	MEM.
TS220EA		1	1	NO	NO		1	1	NO	NO		30	1	1	SI	YES		30	YES
TS220EC		1	1	NO	NO		1	1	NO	NO		30	1	1	SI	YES		30	YES
TS220EH		1	1	NO	NO		1	1	NO	NO		30	1	1	SI	YES		30	YES
TS220EN		1	1	NO	NO		1	1	NO	NO		30	1	1	SI	YES		30	YES
TS220EO		1	1	NO	NO		1	1	NO	NO		30	1	1	SI	YES		30	YES
TS220ES		1	1	NO	NO		1	1	NO	NO		30	1	1	SI	YES		30	YES
TS292KG		1	1	NO	NO		1	1	NO	NO		30	1	1	NOTA 1	YES		30	YES
TS292KM		1	1	NO	NO		1	1	NO	NO		30	1	1	NOTA 1	YES		30	YES
TS292Kx	K1	1	1	NO	NO	K2	1	1	NO	NO	K3	30	1	1	NOTA 1	YES	K4	30	YES
TS293KG		1	1	NO	NO		1	1	NO	NO		30	1	1	NOTA 1	YES		30	YES
TS293KM		1	1	NO	NO		1	1	NO	NO		30	1	1	NOTA 1	YES		30	YES
TS293Kx		1	1	NO	NO		1	1	NO	NO		30	1	1	NOTA 1	YES		30	YES
TS292Px		1	1	NO	NO		1	1	NO	NO		30	1	1	NOTA 1	YES		30	YES
TS293Px		1	1	NO	NO		1	1	NO	NO		30	1	1	NOTA 1	YES		30	YES
IR101		1	1	NO	NO		1	1	NO	NO		30	1	1	NOTA 1	YES		30	YES
IR102		1	1	NO	NO		1	1	NO	NO		30	1	1	NOTA 1	YES		30	YES
Générique		1	1	NO	NO		1	1	NO	NO		30	1	1	NOTA 1	YES		30	YES

NOTE 1 **YES** if we choose *NC VAlve (normally closed valve)* or **NO** for *NO Valve (normally open valve)* or **NO VALVE.**
 TIME ON (sec) for all relays K1,K2, K3 et K4 is= 0

Sensors copy

From this page press on (ESC) to go to sub-menu **Sélect**.

With the key ▽ sélect **Setup** and press on (↵) to confirm.

Sélect with ▽ the choise of sensor and press on (↵) to confirm..

Sélect with △ the desired sensor we wish to cpy and then press on (↵) to confirm.

An arrow with a number reference on its right will appear.

Indicate by key △ the desired sensors to be inerted and then press on (↵) to confirm.

At the question *Corfirm?* △ indicate YES and then press on (↵) to confirm.

```
Setup
1 Sensor choise
2 Sensor copy
▼ 3 Sensor delete
```

```
Sensor copy
Sensor n° 1
TS292KM
```

```
Sensor copy
Sensor   n° 1  ⟶ 2
TS292KM
```

```
Sensor copy
Sensor   n° 1  ⟶ 2
TS292KM
CONFIRM ?  NO
```

Sensors Delete

From this page press on (ESC) to go to sub-menu **Sélect.**

With the key ▽ sélect **Setup** and press on (↵) to confirm.

Sélect with ▽ the desired sensor and press on (↵) to confirm.

Sélect with ▽ lthe sensor to be deleted and the press on (↵) to confirm.

At the question *Confirm?* △ indicate YES and then press on (↵) to confirm.

```
Setup
1 Sensor choise
2 Sensor copy
▼ 3 Sensor delete
```

```
Sensor delete
Sensor n° 2
TS292KM
```

```
Sensor delete
Sensor n° 2
TS292KM
CONFIRM ? NO
```

Modifying Sensors Setup

It is possible to modify a sensor already configured in two ways:

If you want simply modify some alarm settings or some outputs you can follow the procedure as for the sensor setup described in the above paragraph. After having entered the firs sensor setup, the software is configured to propose this setup as the standard for all others sensors, in this case, if you are entring more sensors with the same setup, all operations will be much more easy and quick.

If you want to change the sensor type it is recommended to delete first the setup of the sensor you want to change (See Chapter *Delete Sensors*), then you can setup the new sensor with the new configuration.

Sensor modification

From this page press on (ᴱˢᶜ) to go to sub-menu *Sélect.*

By the key ▽ sélect *Setup and press on* ⏎ to confirm.

```
Setup
▲ 2 Sensor copy
  3 Sensor delete
  4 Sensor modification
```

Sélect by key ▽ the sensor and press on ⏎ to confirm.

```
Sensor modification
Sensor n° 1
Model : TS292KM
```

Paramèters:

Ens of scale: modify by the keys ▽ △ then press on ⏎ to confirm.

Units : modify by the keys ▽ △ then press on ⏎ to confirm.

Level PRE1 : modify by the keys ▽ △ then press on ⏎ to confirm.

```
Sensor modification
Parameters
End of scale : 0020
```

Level PRE2 : modify by the keys ▽ △ then press on ⏎ to confirm.

Level AL : modify by the keys ▽ △ then press on ⏎ to confirm.

```
Sensor modification
Parameters
Level PRE 1 : 0010
```

Program the parameters according to PRE1

Delay ON: it is the time lenght (max 250 seconds) during which the output stay active when the gas concentration overpasses the alarm setting

```
Sensor modification
Outpu PRE1
Delay ON : 00'01''
```

Delay OFF: it is the delay time (max 250 seconds) of the output deactivation from the moment when the gas concentration returns under the alarm setting.

```
Sensor modification
Output PRE1
Delay OFF : 00'01''
```

Time ON: it is the time lenght (max 250 seconds) during which the output stay active from the moment when the gas concentration overpasses the

```
Sensor modification
Output PRE1
Positive Logic : NO
```
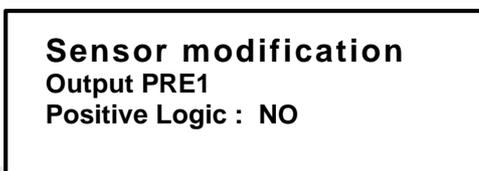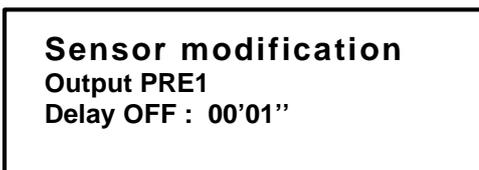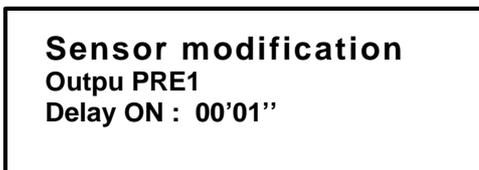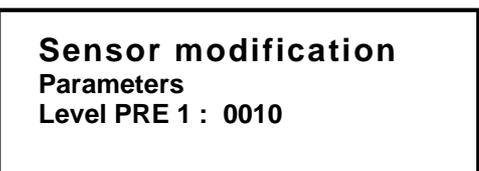
alarm setting. When this time has elapsed, the output returns to its original status even if the gas concentration is over the alarm setting.

Positive logic.: it indicates if the relay normally activated (Positive Logic) or normally deactivated (Negative Logic). The selection is made selecting "**NO**" (Negative or "**YES**" (Positive) with △ key.

```
┌─────────────────────────────────┐
│ Sensor modification             │
│ Output PRE1                     │
│ Latched Output:  NO             │
└─────────────────────────────────┘
```

Latched Output:: it indicates if you want to keep the output active even if the gas concentration returns under the alarm setting. Select "**NO**" or "**YES**" pressing the △ key.

```
┌─────────────────────────────────┐
│ Sensor modification             │
│ Sensor          n° 1            │
│ Model : TS292KM                 │
│ CONFIRM ?  NO                   │
└─────────────────────────────────┘
```

Proceed as below described for levels **PRE2, AL** and the **fault.**

To question **Confirm?** △ indicate **YES** and press on ⏎ to confirm.

Code Setup (Password)

The password is an access key that, if entered, protects the system settings from tampering by unauthorised or unqualified people. In case you want to change the output / input / code / battery setup, bifore you will have to digit the password correctly.

From the setup Menu press △ to select the Password Menu.

```
┌─────────────────────────────────┐
│ MAINMENU                        │
│ ▲ 5 Others                      │
│   6 Setup                       │
│ ▼ 7 Codes                       │
└─────────────────────────────────┘
```

Pressing key ⏎ i twill appear, Code level 1
use ▽ △ to select the level (1,2 or 3)
use ▽ △ to dial the **Level Code**,

re-confirm tyhe level code then press on ⏎.

```
┌─────────────────────────────────┐
│ Codes                           │
│                                 │
│ CODE LEVEL 1                    │
└─────────────────────────────────┘
```

Level 1 *for end users to access to menu 1,* RESET, 2 DETAILS, 8 PROTECTED MENUS.

Level 2 for installers to access to menu 1 RESET, 2 DETAILS, 3 ENABLING, 4 EXCLSIONS, 5 OTHERS

```
┌─────────────────────────────────┐
│ Codes                           │
│ INSERT CODE 1                   │
│                                 │
│ 0123456789#$%&-                 │
└─────────────────────────────────┘
```

Level 3 for maintenanco or installation teams to acces, To all menus

To modify the password enter the *Code* menu and repeat the latched output procédure to the level you want to modify.

```
┌─────────────────────────────────┐
│ PROTECTED MENU                  │
│ INSERT CODE 1                   │
│                                 │
│ 0123456789#$%&-                 │
└─────────────────────────────────┘
```

Once the codes are latched, enter the *Protected Menus* with the password to access to the different levels.

PREPROGRAMMED CODES:

	Level 1	code	**1111**
	Level 2	code	**2222**
	Level 3	code	3333

PAY ATTENTION: we suggest to write down and keep the Password in a safety place. In case you loose the Password get in contact with out technical support.

Backlight

The display will autamaticaaly switch off, when not used, after 30 seconds; pressing any key it light back again.

Appendix

List of anomaly messages and Alarms

NO SENSORS CONFIGURED	The central system is not configured.
FAULT-	The input signal is less than 1 mA.
	The sensor could be faulty, not connected or not powered.
UNDERFLOW	The input signal is between 1 and 3,5mA.
	The sensor could be out of calibration at the beginning of the scale.
PRE1	The preset alarm 1 value has been exceeded and the related output is active (if configured).
PRE2	The preset alarm 2 value has been exceeded and the related output is active (if configured).
AL	The alarm 3 value has been exceeded and the related output is active (if configured).
OVERFLOW	The input signal is between 21 and 24 mA.
	The sensor is detecting gas, but the full scale has been exceeded
FAULT+	The input signal is bigger than 24 mA.
	The sensor could be faulty, or it is detecting gas but it has exceeded its full scale.
▬▮	Mains 230Vac power supply is missing.
▱	Battery empty.
◀▶	Fault to the valve closing.
Display switched off	If the greed Led is lighted, the Display could be damaged or the contrast is too low, try to regulate it with the trimmer on the Board: ("Contrast ADJ" bottom right corner) placed in the front cover of the central system

List of Acoustic and Optical Signals

Intermittent Buzzer	One of the sensors has exceeded the alarm 3 level (AL3) or the AUX input is active
Green Led Continuosly on	Mains power supply ON.
Green Led Blinking	Powered by Battery; the Mains is OFF.
Red Led on	One of the sensors has exceeded the alarm 3 level (AL3).
Red Led Blinking	One of the sensors has exceeded the alarm 1 and 2 levels (AL1 and AL2); or one of the *Latched Output* relay has been activated.
Yellow Led Blinking	Battery is fault (Voltage less than 10 Vdc).10 Vcc).
Yellow Led on	One of the sensors is *FAULT+* or *FAULT-.*
Green Led and Display OFF	Mains power supply OFF, and battery has powered the central system till it got down. If the battery voltage get down under 10,8 Volts, it is automatically disconnected to avoid damages.

Operations Check "Test"

The CE100 Central System is equipped with a Test Program that allows the test of all central system operations and functionalities.

PAY ATTENTION: This procedure has to be made with extreme attention and by authorized and trained people; because starting this procedure it will start both Outputs (relays) causing the activation of connected alarm devices and the internal functions of the central system.

To enter into the Test Program it is necessary to disconnect the battery (if installed) and to switch off the central system cutting the Mains voltage.

```
MAIN MENU
▲ 5 Codes
  7 Protected Menus
▼ 9 Service
```

Input Test (sensors)

From main page press (ESC) to enterto sub-menu *Sélect*.
By the key ▽ Sélect **Service** and press on
⏎ to confirm.

Use ley △ to sélect **Input Test**

Then press key ⏎ to confirm.

All sensors values are in mA, an dit will appear values of non set sensors and the valves closing symbols.

```
Service
1 Test input
2 Test output
```

```
Test input
1=04.0mA     ◀▶   2=04.0mA
3=04.0mA           4=04.0mA
5=04.0mA           6=04.0mA
```

Output Test

 Frommain page press(ESC)to enterto sub-menu *Sélect*.
Service
Use key ▽ to select **Test output**.

Then press key ⏎ to confirm.

From this point a **Test** sequence will start allowing to activate (**ON**) and disactivate (**OFF**) all relays output, Led, Buzzer of the Central unit , if istalled.

Key ⏎ controls from **OFF** to **ON** and vice versa.

```
Test output

LGreen
```

OUTPUT 1 = LGreen
OUTPUT 2 = LYellow
OUTPUT 3 = LRed
OUTPUT 4 = Buzzer

OUTPUT 5= Relay 1 (AL1)
OUTPUT 6= Relay 2 (AL2)
OUTPUT 7= Relay 3 (AL3)
OUTPUT 8= Relay 4 (AL4)

OUTPUT 9= Tension of battery and activation of power resistors.

PB battery tension 12 V approx.
Lithium battery tension 10.5 V approx.
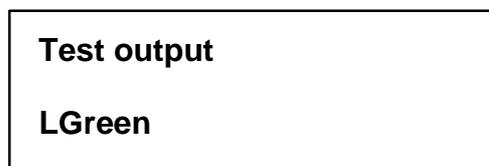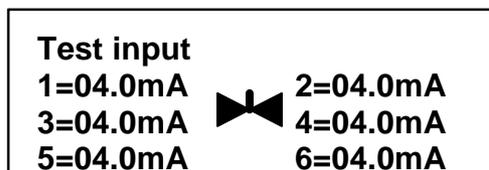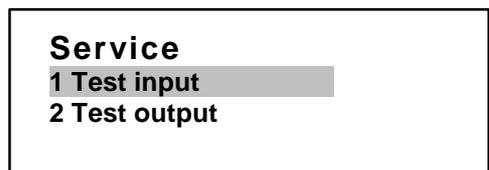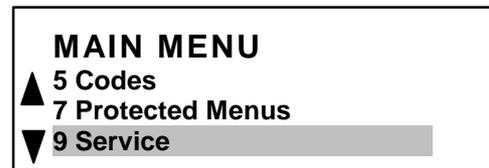
Technical Characteristics

Technical Characteristics central system Mod. CE100	
Main Power Supply	230 Vac (-15/+10%) - 50 Hz (±10%)
Minimum absorbed power at 230V	4VA without Sensors connected
Maximum absorbed power at 230V	12VA with 4 Sensors series TS293P
(*) Maximum absorbed power at 230V	18VA with 8 Sensors series TS293P
Inputs	4 analogic Linear 4÷20 mA (Max. scale 0÷9999) 1 ON/OFF active if Normally Closed
Internal Resistence of inputs charge	200 ohm
Input power supply (Sensors)	20 Vcc (–10/+15%)
Output	4 relays with Voltage free exchange contacts
Relay Capacity	3A (1A) - 230 Vac
Working Temperature with Battery	+5 ÷ +40 °C
Buffer Battery (on demand)	12 Vcc - 7 Ah (152 x 65 x 94mm)
Battery Life	about 6 hours with 4 Sensors (Series TS293P) (*) about 6 h at full charge (6 sensors seriesTS293P)
Display	Backlighted Graphic LCD
Keyboard	4 membrane keys
Dimensions (l x h x p)	
Weight	1 Kg approx

Technical Characteristics Expansion CE101 (*)	
Inputs	4 analogic Linear 4÷20 mA
Internal Resistence of inputs charge	200 ohm
Input power supply (Sensors)	20 Vcc (–10/+15%)
Dimensions (l x h x p)	
Weight	1 Kg approx

Technical Characteristics Supply Modul AL100	
Main Power Supply	230 Vac (-15/+10%) - 50 Hz (±10%)
Output supply	Vcc
Dimensions (l x h x p)	
Weight	Approx....

Technical Characteristics of Battery modular charger AL101	
Main Power Supply	230 Vac (-15/+10%) - 50 Hz (±10%)
Battery power tension	12Vcc
PB Batterie (on request)	12 Vcc - 3 Ah (152 x 65 x 94mm)
Battery life	approx 6 h with 6 sensors (série TS293P)
Dimensions (l x h x p)	
Weight	Approx ....

Technical Characteristics of Battery modular charger AL102	
Main Power Supply	230 Vac (-15/+10%) - 50 Hz (±10%)
Battery power tension	12Vcc
Lithium battery (on request)	10,8 Vcc - 7 Ah (152 x 65 x 94mm)
Batterie life	approx ....
Dimensions (l x h x p)	....
Weight	Approx.....................

Technical Characteristics of Lithium Battery Ba100	
Supplied Tension	10,8Vcc
Loading Tension	
....	....
Batterie life	approx .... (série TS293P)
Dimensions (l x h x p)	....
eight	approx

Configurable 4÷20 mA TRANSMITTERS Tables

				Suggested Alarm Levels		
MODEL	**GAZ**	**Scale**	**Unit**	**PRE1[2] Lev 1**	**PRE2 Lev 2**	**AL Lev 3**
TS220EA	NH_3	0-300	ppm	10 [3]	20	50
TS220EC	CO	0-300	ppm	25[2]-50	100	200
TS220EH	H_2S	0-100	ppm	10	20	50
TS220EN	NO	0-100	ppm	10	20	50
TS220EO	O_2	0-25.0	% v/v	18,5 [3] [4]	19.5[4]	22.5
TS220ES	SO_2	0-100	ppm	7 [3]	20	50
TS292KG	GPL	0-20	%LIE	6 [3]	15	20
TS292KM	METHANE	0-20	%LIE	7 [3]	15	20
TS292Kx	Inflammables	0-20	%LIE	6 [3]	15	20
TS293KG	GPL	0-20	%LIE	7 [3]	15	20
TS293KM	METHANE	0-20	%LIE	6 [3]	15	20
TS293Kx	Inflammables	0-20	%LIE	7 [3]	15	20
TS292Px[1]	Inflammables	0-100	%LIE	7 [3]	10÷15	20÷30
TS293Px[1]	EXPLOSIVE	0-100	%LIE	6 [3]	10÷15	20÷30
IR101	CO_2	0-2.00	% v/v	0.20	0.50	1
IR102	CO_2	0-2.00	% v/v	0.20	0.50	1
Others						

[1] All TS293P series sensors are calibrated with Full Scale 100%LEL, only the calibration gas changes. [2] If required. [3] We suggest to set lower alarm levels. [4] A decreasing Alarm.

Installation

the central units can be installed on DIN rail using components available on the market for this purpose and as described in the below fig.9.

Fig 9
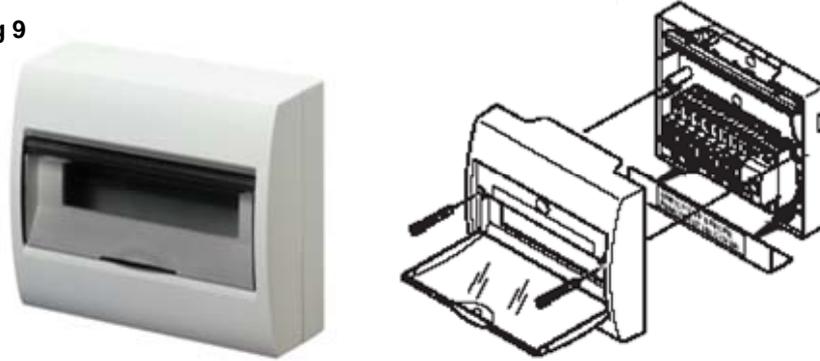
The central units dimension vary according to the configuration of the choosen CE100.The complete configuration wiyh lithium batterie Ions-lithium include 17 moduls.

ATTENTION: ***Do not install the CE100 moduls close to hot points such as circuit breakers or others.***

Setup Memorandum Tables

We suggest to fill in these tables as a memorandum of the configuration you set up. Moreover it will be better to make a copy of these datas, adding it to the central system (Eliminating the section "Code") and another complete copy to the central system documentation.

Sensors Setup

Sensor Number	CE100			
	S1	**S2**	**S3**	**S4**
Sensor Modèl				
FE Min. (Normal = 0)				
FE Max.				
Unit (ppm, LIE o %)				
Alarm (increasing↑ or Decreasing ↓ for Oxygen)				
Level 1 (**Pre-alarm 1**)				
Output 1 (Number of relay)				
Level 2 (**Pre-alarm 2**)				
Output 2 (Number of relay)				
Level 3 (Alarm)				
Output 3 (Number of relay)				
Fault (Number of relay)				

Output Setup

Output (Relay) Number	CE100				
	U1	**U2**	**U3**	**U4**	
Delay ON (in seconds)					
Delay OFF (in seconds)					
Time ON (in seconds)					
Positive Logic (No/YES)					
Mémorisation (No/YES)					

NOTES: _____

_____

_____

_____

_____

_____

_____

_____

_____

✂ ---

CODE (Password)	*Installation date*	*Serial Number*

PAY ATTENTION: we suggest to write down and store the code (max. 4 numbers) in a safety place. In case the Code get lost, contact our Service Dept. That will give an emergency Code.