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REMOTE UNIT

CE380UR

For gas central units
CE700

USER'S MANUAL

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IMPORTANT NOTE

**Please read and keep care of this manual
and the manual of installed sensors too.**

All documentation relating to gas detection plant should be preserved, because it contains the procedures to be used during the routines verification and / or during the periodic calibration.

We recommend that you always complete the Setup Memorandum Tables in the CE700 user's manual. This will facilitate any possible change to the configuration and / or in case of additional sensors and / or during the periodic maintenance.

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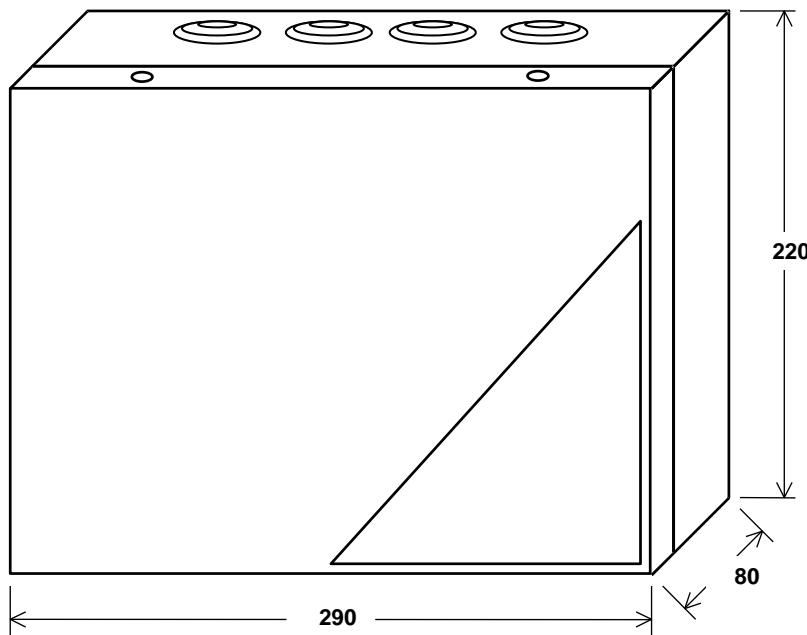
Oggetto / Subject : Unità Remota CE380UR con scheda ES380

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0	08/09/2005	UT/FG	Emesso documento
A	02/02/2010	UT/FG	Aggiornato per CE700 con ID170/DG2005
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DESCRIPTION

The **CE380UR** are the remote units for the central unit series CE700, for acquisition and transmission data of the gas detectors, via RS485 serial line, that guarantees a maximum transmission distance of 1 Km. The units are made of wall mounting metal housing with IP54 protection degree.

Each CE380UR is able to power and manage up to 8 inputs for gas detectors with output 4-20mA linear and to be equipped, according to the installation requirements, up to two cards each one with 4 output relays ES380UR fully addressable from the CE700.



- **Compatibility with the Gas Central:** the Central CE380UR are compatible with standard CE300H Gas produced up to December 2000, with the CE700 series produced since January 2001 to December 2009 and those in production since January 2010.
- **The CE380UR have the internal power supply** with 230 Vac input, with output for sealed lead acid battery, 12V-3Ah size 134x67x62, available on request or can be installed by the user.
- **Each CE380UR can handle two expansions ES380UR** each card has 4 output relays fully addressable from the CE700 and can be fitted depending on the installation requirements.
- **The CE380UR, can be connected to the following gas detectors:**

Three-wire, 4-20mA linear transmitters with "Replaceable Cartridge Sensor" for:

Flammable gases with Catalytic sensor: TS292K (IP65) or TS293K (Ex "d") series with 0÷20%LEL range.

Flammable gases with Pellistor sensor: TS292P (IP65) or TS293P (Ex "d") series with 0÷100%LEL range.

Toxic gases with electrochemical cell: TS220E (IP65) or TS293E (Ex "d") series

Oxygen with electrochemical cell: TS220EO e TS293EO (Ex "d") series with 0÷25%O₂ range.

For parking with double sensor for toxic gases and / or flammable series TS255

NOTE: should be connecting all models produced up to December 2008. Three-wire 4-20mA linear transmitters for flammable gas TS292K (IP65) or TS293K (Ex "d") series, with 0 to 20%LIE range, or TS293P (Ex "d") series, with 0 to 100% LIE range.

WARNING: inputs are configurable for 4-20mA transmitters with reported current to ground and operating characteristics same as our products (unit in %LEL or ppm, minimum operating voltage, absorption, load resistance etc.). **We accept no liability for malfunctions or failures caused by not compatible products.**

INSTALLATION INSTRUCTIONS

The **CE380UR** is for wall mounting, the electrical connections to be made, are those for the 230V mains supply, for the detectors, the output relay (if installed ES380UR) and the RS485 serial connection.

Placement and Mounting

Positioning: The CE380UR position must be determined according to the geometry of the environment to be monitored and to the type of sensors used, in order to optimize the electrical system. We recommend placing the unit near the group of sensors which must be connected to minimize the distance from the unit. It is recommended to place the CE380UR so you can easily do future controls and battery replacement.

Cover Opening: open the CE380UR by unscrewing the 4 screws located on the upper and lower edge of the cover. Be careful when removing the cover, since it is connected with the ground wire to the terminal mains.

Mounting: the CE380UR is to be mounted on the wall fixing it with 3 wall plugs, using the 3 holes on the housing base. We recommend marking and fixing, first the one above in the center of the base, and then mark those below after adjusting horizontally the housing.

Battery: to ensure the CE380UR operation even in the absence of mains, can be installed inside the central a sealed lead acid battery, 134x67x62 about 12V/3Ah size (fig. 5). The range is about 2 hours at maximum load (see the specifications table).

Drawing of position of the PCB into the CE380UR housing

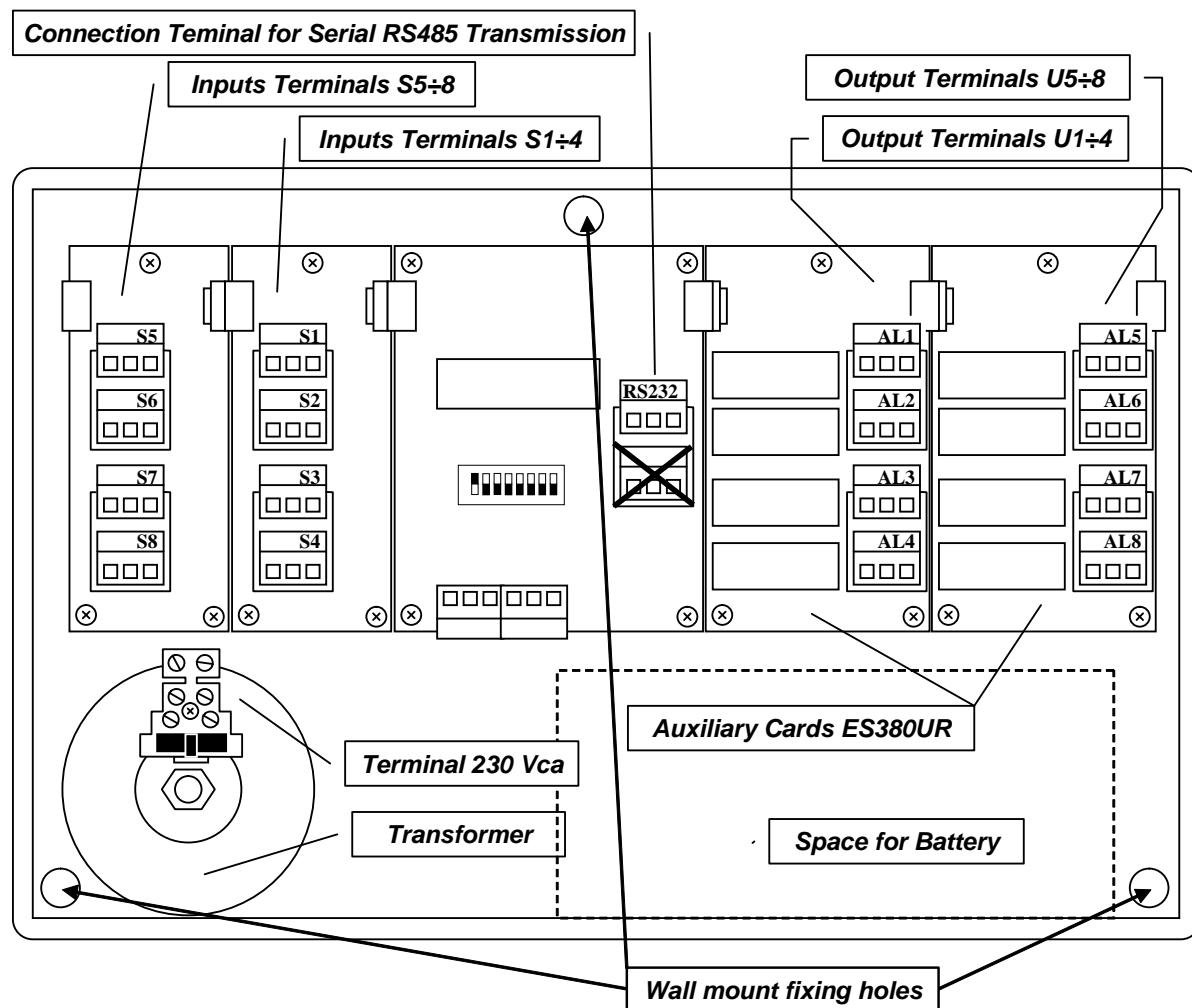


Fig 1 –Internal bottom view CE380 complete of 2 ES380

Electrical connections

The connections should be made inside the cabinet, [in Fig. 8 and 9](#), for simplicity, are shown all the 8 detectors and all 8 outputs relay (No. 2 ES380UR expansion cards).

Cables: The sections of the wires to be used depend on the type of detectors used and the loads applied to the outputs of the used relays. More information can be found [on page 9](#) and into the specific instructions of the used detectors

Terminals: ([fig.2](#)) those for the sensors and the relays are polarized type plug-in (1), we recommend to use appropriate cable lugs for each wire, to avoid problems of false contacts or short circuits (2) and anchor the cables to the cabinet structure avoid excessive stress to the circuit and the terminals themselves.

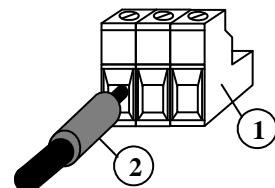
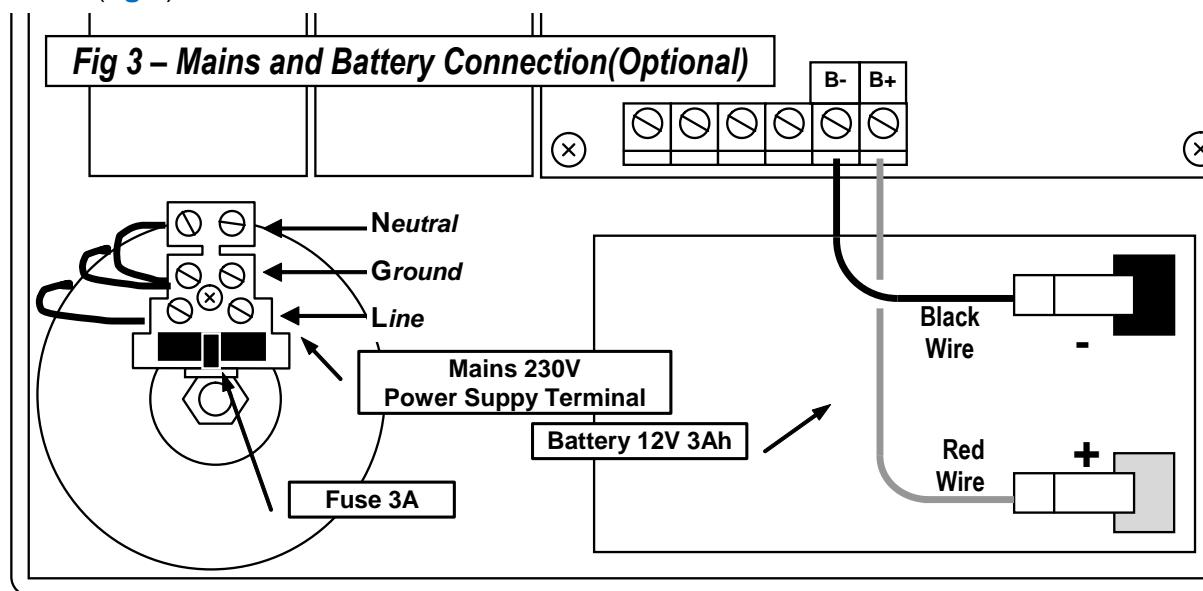


Fig.2 - Polarized removable terminals

The 230V mains should be connected to **L**, **N** and **Earth** Power Supply terminals ([fig.3](#)).

The Pb 12V/3Ah battery, if required, must be connected to cables red "BAT +" and black "BAT -" ([fig.3](#)).



RS485 SERIAL CONNECTION TO CENTRAL UNIT CE700 SERIES

ALSO REFER TO THE SPECIFIC CE700P USER'S MANUAL

The CE700R Central Unit can be connected to a maximum of 23 remote units CE380UR

The cable should be used is a three-wire shielded section of not less than 0.35 mm². The maximum distance to connect the last remote unit CE380UR is 1 Km.

Connection with the CE700P central unit (Produced from January 2010)

The connection should be made between the **serial port COM2 RS485** (three poles terminal), on the board mounted in the CE700P door and the terminal of the first CE390UR remote unit, then between the first remote unit and terminal of the second remote unit, and so on until the last CE380UR remote unit ([See below fig.4](#))

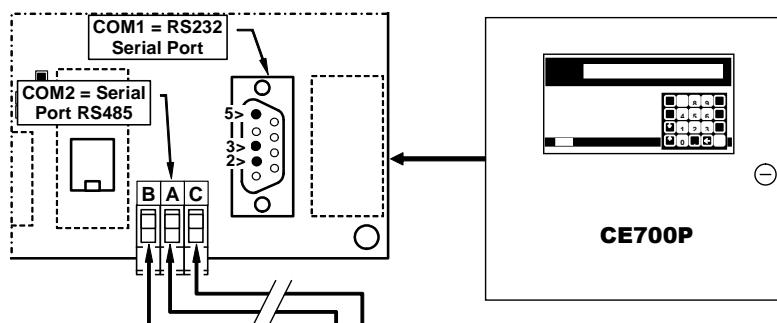
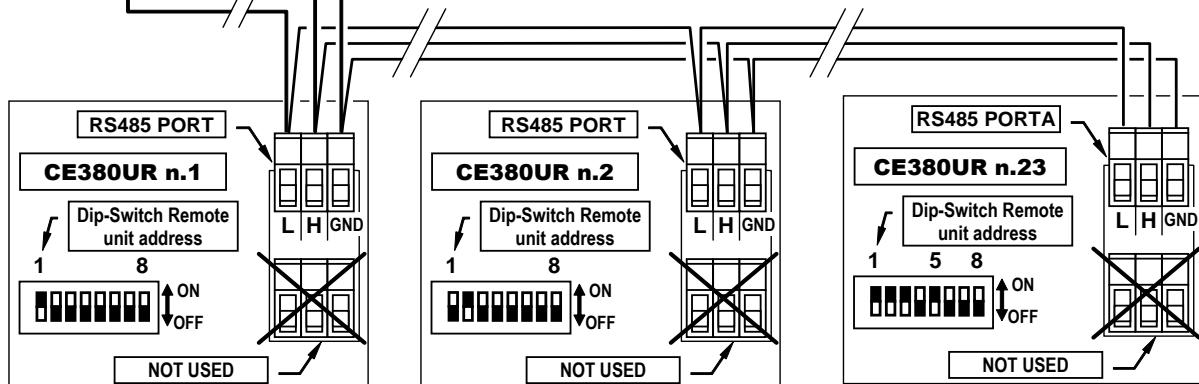


Fig 4 – CE700P connection with CE380UR remote units



Connection with the CE700R central unit (Produced from January 2010)

The connection should be made between the **COM2 serial port RS485** (DB9 male connector), on the CE700R back panel and the terminal of the first CE380UR remote unit, then between the first remote unit and terminal of the second remote unit, and so on until the last CE380UR remote unit.

The **COM2 Serial Port RS485** is on the CE700R back panel. Using the DB9 female connector, soldered to pin 1 signal **H** (HIGH) to pin 6 signal **L** (LOW) and to pin 5 to the **Ground** (see below fig. 5 and 6).

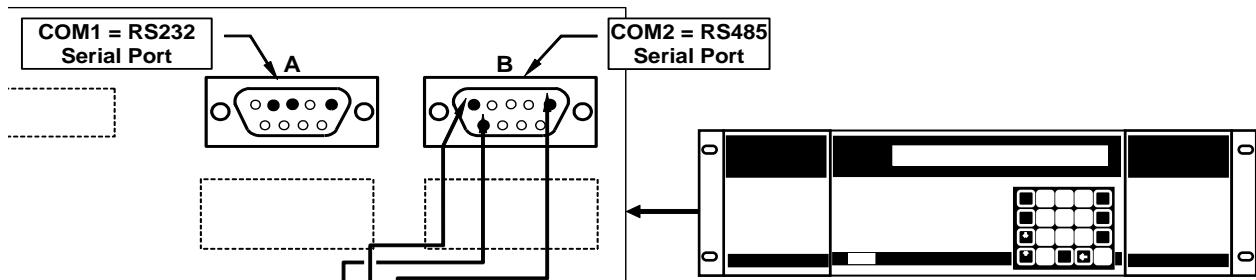
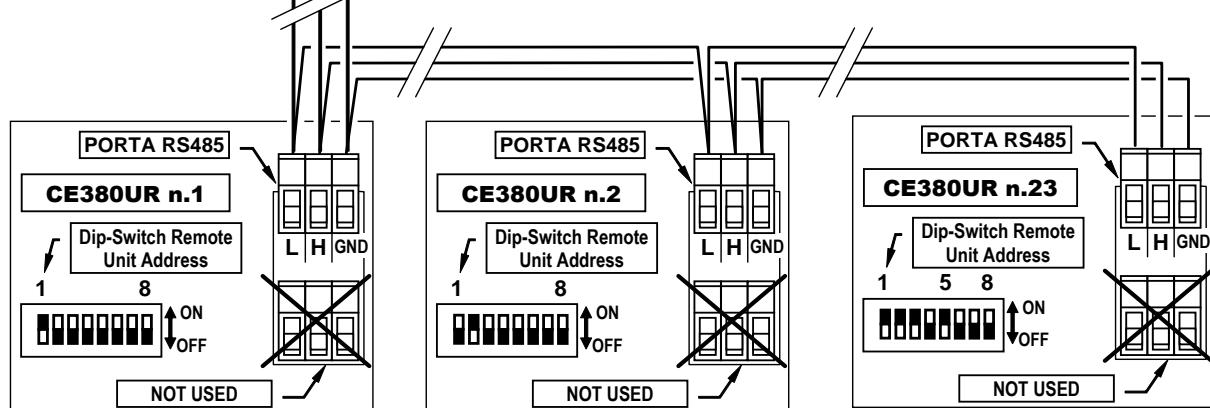
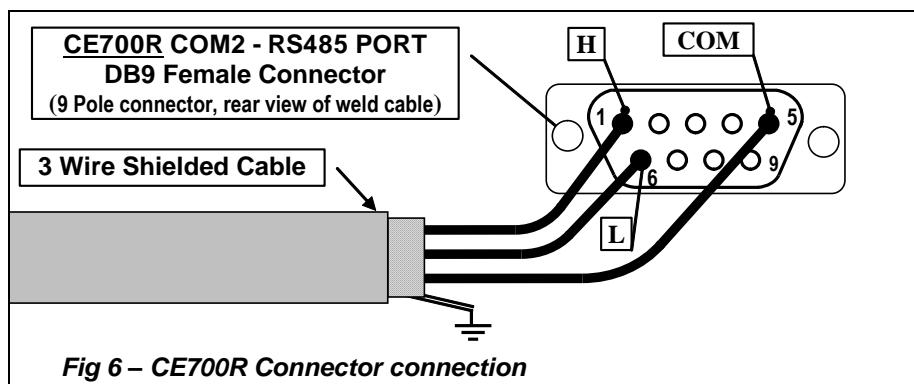


Fig 5 – CE700R connection with CE380UR remote units





Addressing of the CE380UR remote unit

On Card RS485 of CE380UR there is an 8 way dip-switch (see fig. 1 and 7), which is used to determine the address, that allows to recognize the remote units CE380UR (Max No.23) connected to the central unit CE700. As default, the dip-switch is configured as number 1.

IMPORTANT INFORMATION: the Dip-switches should be positioned as shown in the following Table, with the CE380UR switch off (disconnect the battery if it is present and then remove the fuse from the mains terminal). After having positioned the dip-switch to switch on the CE380UR relocate the fuse and then reconnect the battery. Then power on also the Central unit CE700, already settled up the configuration, as indicated in the specific user manual.

CE380UR number	Dip-Switch							
	1	2	3	4	5	6	7	8
1	ON	OFF						
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
5	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF
6	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF
7	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
8	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
9	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF
10	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF
11	ON	ON	OFF	ON	OFF	OFF	OFF	OFF
12	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
13	ON	OFF	ON	ON	OFF	OFF	OFF	OFF
14	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
15	ON	ON	ON	ON	OFF	OFF	OFF	OFF
16	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
17	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
18	OFF	ON	OFF	OFF	ON	OFF	OFF	OFF
19	ON	ON	OFF	OFF	ON	OFF	OFF	OFF
20	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF
21	ON	OFF	ON	OFF	ON	OFF	OFF	OFF
22	OFF	ON	ON	OFF	ON	OFF	OFF	OFF
23	ON	ON	ON	OFF	ON	OFF	OFF	OFF

NOTE: Dip switches no. 6, 7 and 8 must remain in the OFF position (automatic data transmission speed)

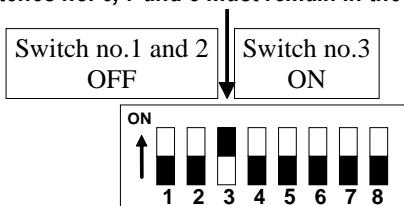


Fig. 7 - Example of Dip-switch position for CE380UR number 4 (switch 3 ON)

CONNECTION WITH THREE WIRE 4÷20mA GAS DETECTORS

ALSO REFER TO THE SPECIFIC GAS DETECTORS USER'S MANUAL

The 8 inputs accept any three-wire linear 4-20mA current signal (relative to -). (NOTE: For the connection of old two-wire 4-20mA gas detectors, see the chart in Appendix).

The Gas Detectors, with three-wire linear 4-20mA output and "Replaceable Cartridge Sensor" that may be used are:

Flammable gases with Catalytic sensor: TS292K (IP65) or TS293K (Ex"d") series with 0÷20%LEL range.

Flammable gases with Pellistor sensor: TS292P (IP65) or TS293P (Ex"d") series with 0÷100%LEL range.

Toxic gases with electrochemical cell: TS220E (IP65) or TS293E (Ex"d") series

Oxygen with electrochemical cell: TS220EO e TS293EO (Ex"d") series with 0÷25%O₂ range.

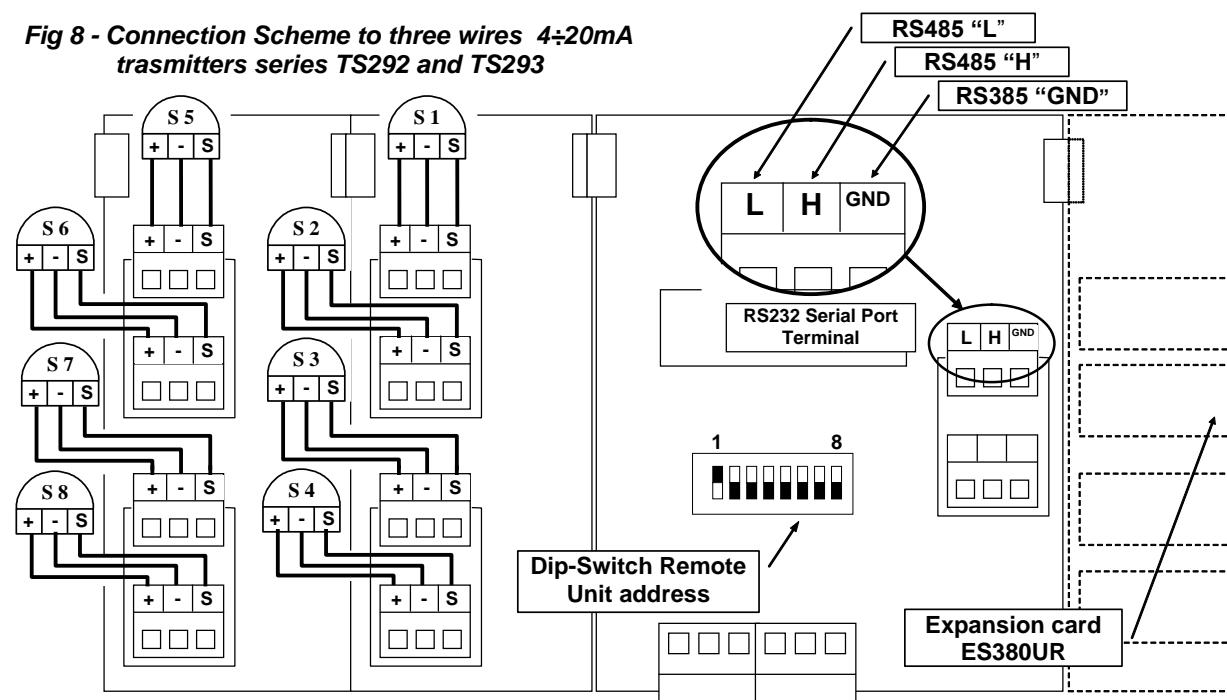
For parking with double sensor for toxic gases and / or flammable series TS255

Connection is carried out (fig. 8) between the terminals "+, - and S" terminals of the detector and their placed on the boards of CE380UR inputs (from IN to IN-1-8).

The section of the connecting cables between the unit and the sensors must be appropriate to the distance and the type of sensor used, as shown below in the Table.

Cable Size	Cable Resistance [Single wire]	The max distance to install each detector from the CE380UR is
0,75 mm ²	26 Ω/km	300 m
1 mm ²	20 Ω/km	400 m
1,5 mm ²	14 Ω/km	500 m
2,5 mm ²	8 Ω/km	800 m

Fig 8 - Connection Scheme to three wires 4÷20mA transmitters series TS292 and TS293



CONNECTION WITH THE EXPANSION CARD ES380UR

The outputs are relays with voltage free changeover contacts. In the CE380UR may be inserted up to No. 2 ES380UR expansion cards, for a total of 8 outputs. The contact is 3A (resistive) at 250Vac.

The contacts of each relay output is marked with a "C" (common), "NC" (normally closed) and "NA" (=NO normally open). ***This indication refers to the relay in resting position or non-powered, in other words normally off, normally condition called "Negative Logic".***

IMPORTANT NOTE: the 4 jumpers on the 1st ES380UR card, (Output relays from no.1 to no.4) must be placed on all "A", while the 4 jumpers on the 2nd ES380UR card (output relays from no.5 to no.8) to be moved on "B" as shown below in [figure 9](#).

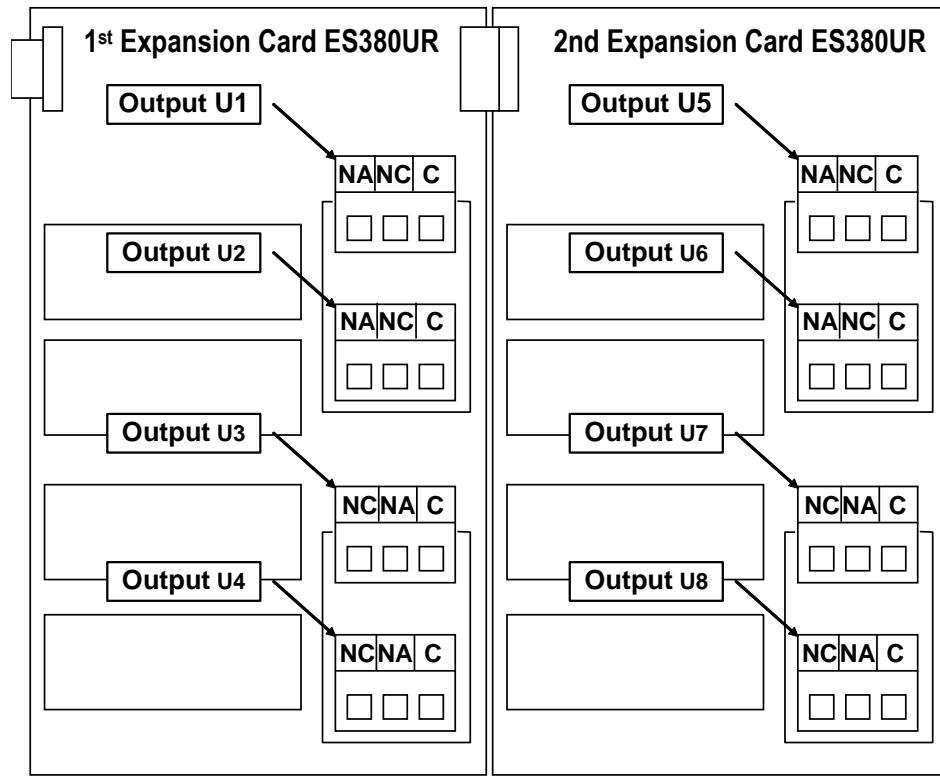


Fig 9 - ES380 Expansion Card Output relay Scheme

APPENDIX

CE380UR Technical Specifications	
<i>Power Supply</i>	230 Vac (-15/+10%) - 50 Hz ($\pm 10\%$)
<i>Minimum power at 230V</i>	2VA without detectors
<i>Maximum power at 230V</i>	10VA with no.4 detectors TS293P series
<i>(*Maximum power at 230V</i>	16VA with no.8 detectors TS293P series
<i>Data interface</i>	Serial port RS485 (Max length 1 Km)
<i>Inputs</i>	No.8 linear 4-20 mA
<i>Internal input load resistor</i>	200 ohm
<i>Detectors power supply</i>	20 Vdc (-10/+15%)
<i>Protection of each input</i>	Against short-circuit and / or break wires and input current limiter (S)
<i>(* Outputs (optional)</i>	Max no.2 ES380UR (max no.8 relays output)
<i>Working temperature with battery</i>	+5 \div +40 °C
<i>Pb Buffer battery (on request)</i>	12 Vdc - 3 Ah
<i>Battery Dimensions</i>	134 x 67 x 62 mm
<i>Battery Life</i>	About 3 hours' full charge with no.4 detectors (TS293P series) (* about 2 hours' full charge with no.8 detectors (TS293P series)
<i>Dimensions</i>	285 x 230 x 130 mm
<i>Weight</i>	about 3 Kg

ES380UR (*) Output Expansion Card Technical Characteristics (*)	
<i>Outputs</i>	no.4 relays with voltage free changeover contacts
<i>Relay Rating</i>	3 A (resistive) 1 A (Inductive) - Max 250 Vac

Table of 4-20 mA Gas Detectors connectable to CE380UR**Toxic Gas Detectors**

MODEL	GAS	Scale	Unit
TS220EA (TS293EA)	NH ₃	0-300	ppm
TS220EC (TS293EC)	CO	0-300	ppm
TS220EH (TS293EH)	H ₂ S	0-100	ppm
TS220EN (TS293EN)	NO	0-100	ppm
TS220ES (TS293ES)	SO ₂	0-20.0	ppm
TS220EX (TS293EX)	HCN	0-10.0	ppm
TS220EN2 (TS293EN2)	NO ₂	0-30	ppm

Oxygen Detector

MODELLO	GAS	Scala	Unità
TS220EO (TS293EO)	O ²	0-25.0	% vol

Flammable Gas Detectors

MODEL	GAS	Scale	Unit
TS292KG	LPG	0-20	%LIE
TS292KM (TS292KB, TS292KI)	Methane	0-20	%LIE
TS292KB (TS293KB)	Petrol	0-20	%LIE
TS292KI (TS293KI)	Hydrogen	0-20	%LIE
TS293KG	LPG	0-20	%LIE
TS293KM	Methane	0-20	%LIE
TS292Px ⁽¹⁾ (TS292PM, TS292PG, TS292PI, TS292PB)	Flammable	0-100	%LIE
TS293Px ⁽¹⁾ (TS293PX-S, TS293PX-H, TS293PE, TS293PS)	Flammable	0-100	%LIE
IR101 - IR102	CO ₂	0-2.00	% vol

Other Detectors

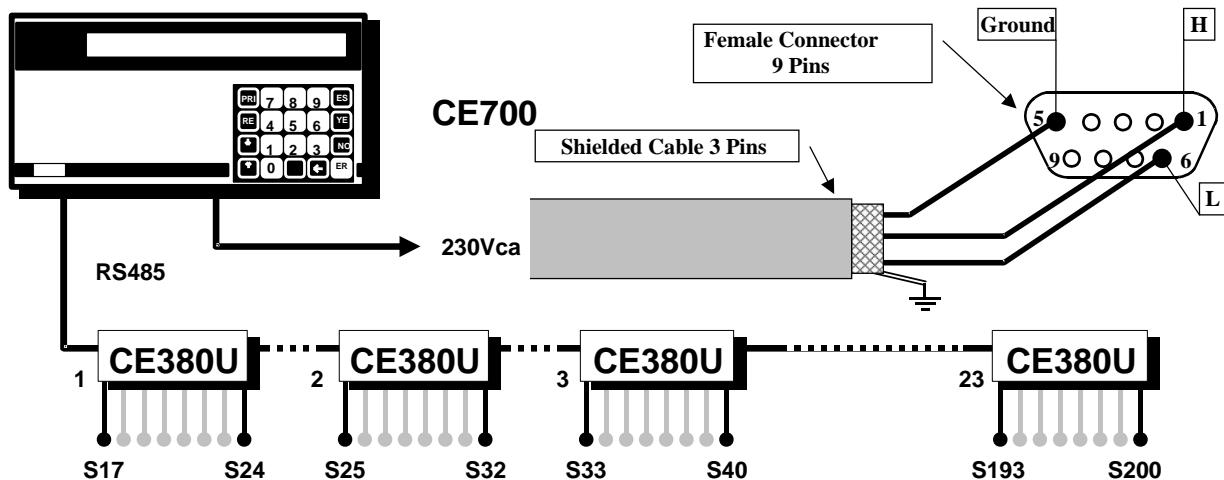
MODEL	GAS	Scale	Unit
TS255CB (TS250CB)	CO	0-300	ppm
Output for CO	Petrol	0-20	%LIE
Output for petrol vapours			
TS255CN2	CO	0-300	ppm
Output for CO	NO ₂	0-30	ppm
Output for NO ₂			

(1) All TS293P series, are calibrated with 100%LEL range, it will change only the calibration gas.

(TS.....) Models shown in brackets, operational characteristics is identical to the first highlighted in bold, the only difference is the case rating.

Connection the CE380UR to old central units CE700 produced up to December 2009

The connection should be made, between the **CE700 serial port RS485**, and the terminals of the first CE390UR remote unit, then between the first remote unit and terminal of the second remote unit, and so on until the last CE380UR remote unit.



The cable should be used is a three-wire shielded section of not less than 0.35 mm^2 . The maximum distance to connect the last remote unit CE380UR is 1 Km.

The connection in the CE700, should be made, using the DB9 female connector, soldered to pin 1 signal **H** (HIGH) to pin 6 signal **L** (LOW) and to pin 5 to the **Ground**.

Connection with old two wire 4-20mA gas detectors

CE380UR also be connected to the detectors produced up to December 2008.

Transmitters 4-20mA linear 3-wire type *TS292K* flammable gas (IP65) or *TS293K* (Ex "d") with a scale of 0 to 20% LEL, or type *TS293P* (Ex "d") with a scale of 0 to 100% LEL. Transmitters 4-20mA 2-wire linear, with electrochemical cell sensors for toxic gases and oxygen, *TS220E* type (IP65) as shown below in Fig.

The connection with 2-wires 4-20 mA detectors has to be made between (Fig.10) terminals "+" and "-" of the detector and the correspondent "+" e **S** terminals of the CE380UR inputs card (from IN-1 to IN-8).

The section of the connection cables between detectors and CE380UR has to be calculated in function of the distance as indicated in the table. Gas detectors series *TS210E* and *TS220E* need a shielded cable. The braiding has to be connected to the "-" of the input detector terminal.

Detectors series <i>TS210E</i> e <i>TS220E</i>	
Distance	Cable type
From 0 to 100 meters	2x0,5 mm^2 Shielded
From 100 to 200 meters	2x1 mm^2 Shielded
From 200 to 500 meters	2x1,5 mm^2 Shielded
From 500 to 1000 meters	2x2,5 mm^2 Shielded

Fig 10 - Connection Scheme to two wires 4-20mA trasmitters series *TS210E* and *TS220E*

