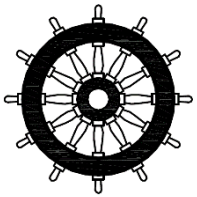
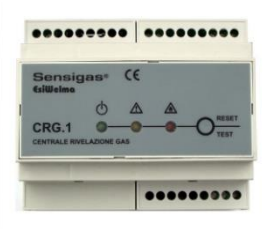
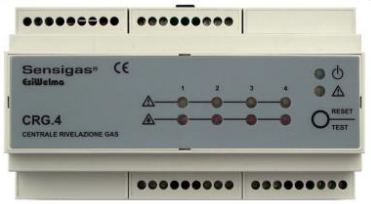
EW20 Product Line

Stand-alone Gas Detectors for Industrial & Marine Applications







Sensigas®

EW20: Stand Alone Gas Detectors (4÷20mA) for industrial & marine applications

Detection of:

- ✓ Methane gas
- ✓ Carbon Monoxide
- ✓ LPG
- ✓ Gasoline Vapour
- ✓ Propane
- ✓ Acetylene
- ✓ Ammonia
- ✓ Hydrogen
- ✓ Ethylene
- ✓ Octane
- ✓ Ethyl Alcohol
- ✓ Oxygen
- ✓ Carbon Dioxide
- ✓ Other gases on request

Applications:

- ✓ Heating Rooms
- ✓ Production dpts.
- ✓ Laboratory
- ✓ Storage
- ✓ Industrial kitchens
- ✓ Laundries
- ✓ Parking
- ✓ Explosion risk areas
- ✓ Marine

Optional cards with relay or resistance variation outputs for interfacing with third-party central units

EW20: Stand Alone Gas Detectors (4÷20mA) - ATEX classified areas (Zone 1 & Zone 2)

ATEX + MED Certified: **UR(x)21(z)E**

(x): gas type
(z): sensor type

ATEX marking: II 2G Ex d IIC T6 Gb
In conformity (ATEX): EN90079-0 /-1 /-29-1
(MED): IEC 60092-504

ATEX + MED Certified: **UR(x)21(z)S**

(x): gas type
(z): sensor type

ATEX marking: II 3G Ex nA IIC T6 Gb
In conformity (ATEX): EN90079-0 /-1 /-15 /-29-1
(MED): IEC 60092-504

Sensigas®

EW20: Stand Alone Gas Detectors (4÷20mA) - ATEX not classified areas

Industrial applications: **UR(x)21(z)I**

(x): gas type
(z): sensor type

Compliant with Standards (ATEX): EN90079-0 /-1 /-29-1
(MED): IEC 60092-504
Protection Degree: IP65

Industrial applications: **UR(x)21(z)L**

(x): gas type
(z): sensor type

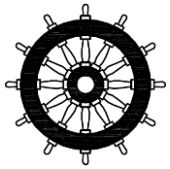
Compliant with Standards (ATEX): EN90079-0 /-15 /-29-1
(MED): IEC 60092-504
Protection Degree: IP55

Car Parks applications: **UR(x)21(z)P**

(x): gas type
(z): sensor type

Compliant with Standards (ATEX): EN90079-0 /-15
(Car Parks / Tunnels): EN50545-1
Protection Degree: IP55

EW20 products : Certifications



ATEX in conformity:	**MED** in conformity:
EN60079-0 (General requirements)	IEC 60092-504 (Automation in Ship)
EN60079-1 (Ex d Explosion Proof)	IEC 60533 (EMC capabilities in Ship)
EN60079-15 (Ex nA Not Sparking)	EN60079-0 (ATEX General requirements)
EN60079-29-1 (Performance)	EN60079-29-1 (ATEX Performance)
EN50270 (EMC capabilities)	SOLAS Reg. II-2/4 (Fire Protection)
EN50271 (Software capabilities)	SOLAS Reg. VI/3 (Detection Equipments)
EN50402 (Functional Safety)	IMO Res. MSC.98 (73- Fire Safety Systems)
EN61508-1,-2,-3,-4,-5,-6,-7 (Functional Safety)	IMO MSC.1/Circ.1370 (Guideline for G.D.S.)

EW20: Stand Alone Gas Detectors (4÷20mA) - Technical characteristics

- ✓ Power Supply: 10÷28 Vdc
- ✓ Sensor Type:
  - Standard Catalytic
  - Professional Catalytic
  - Standard Electrochemical Cell (CO, O_2 etc)
  - Non Dispersive InfraRed (CO_2, Hydrocarbons, etc.)
- ✓ Full Scale Range (some examples):
  - Flammable Gases: 0÷100% LEL (resolution 1%)
  - Carbon Monoxide: 0÷500 ppm (resolution 2 ppm)
  - Oxygen: 0÷30% vol. (resolution 0,1%)
  - Carbon Dioxide: 0÷20.000 ppm (resolution 100 ppm)
- ✓ Led status indications: Alarms or fail conditions
- ✓ Analog Output Mode:

  Proportional: 4 mA → 0% LEL or 0 ppm
  20 mA → 100% LEL o 500 ppm

  Thresholds: 0 mA No alarms
  10 mA 1st alarm Th.
  20 mA 2nd alarm Th.

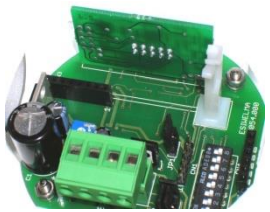
EW20: Stand Alone Gas Detectors (4÷20mA) - Optional Relay Card - Sensor Lifetime

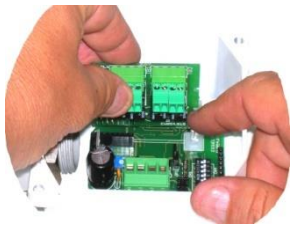
✓ Digital Output:
(Optional card UZR20.4)

N. 4 SPDT VF Contacts

Alarm thresholds sets by dip-switch

Out A: Prealarm (default 10%LEL; 50ppm)
Out B: 1st alarm Th. (default 20%LEL; 100ppm)
Out C: 2nd alarm Th. (default 40%LEL; 200ppm)
Out D: Sensor Fail

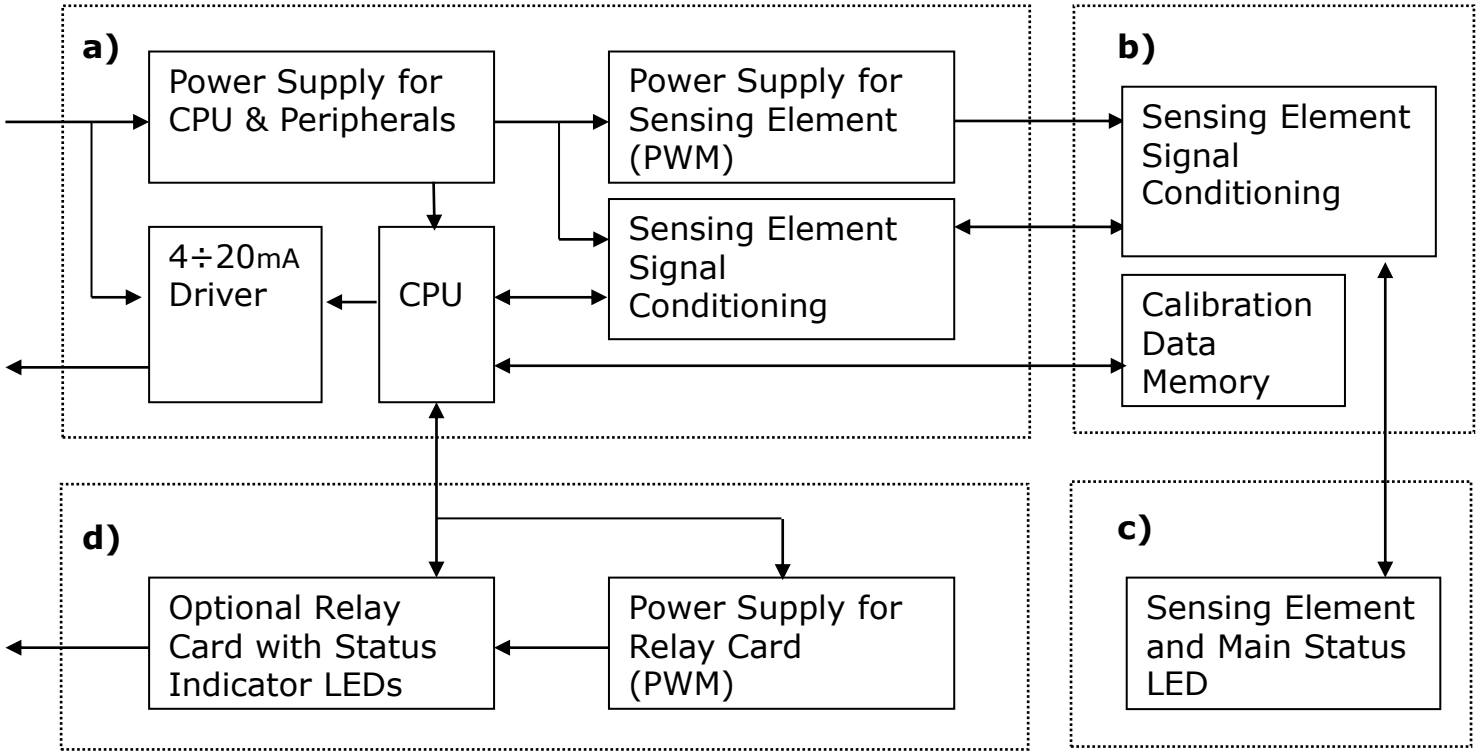




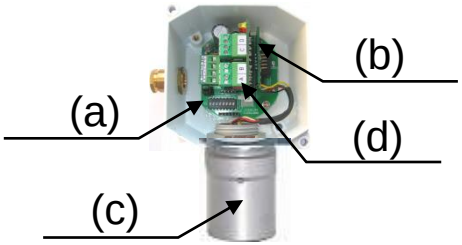
✓ State indicator LEDs: alarms or fail

✓ Sensor lifetime: 255 weeks for Hydrocarbons, CO and CO_2
120 weeks for O_2

EW20: Stand Alone Gas Detectors (4÷20mA) - Block Diagram



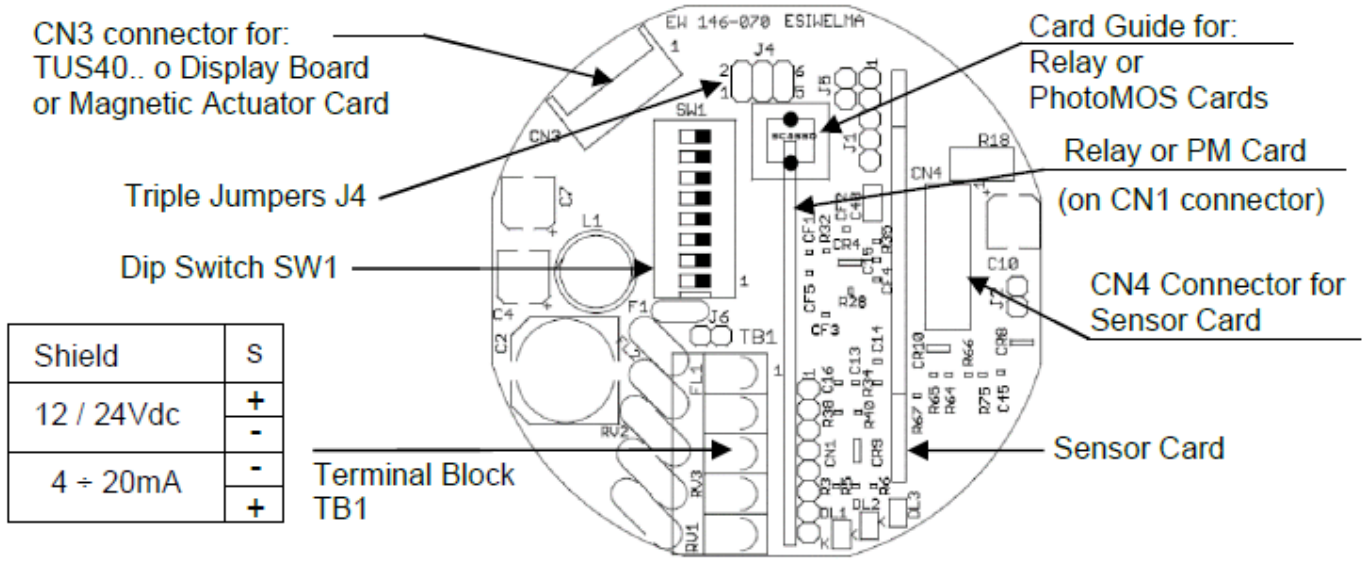
a) Main Card
b) S. E. Signal Conditioning Card
c) S. E. & Main Status LED Card
d) Optional Relay or PhotoMos Cards



EW20: Stand Alone Gas Detectors (4÷20mA) - Wiring Diagram

CAUTION: **Make sure that the area is safe and that the device has been disconnected from the power supply before starting any wiring and configuration operation.**

Sensor installation must be carried out in accordance with EN60079-14.
For cable entry, use 1 "NPT cable gland union ATEX Certificate and compliant with EN60079-0 and EN60079-1 (Ex d protection mode).
The sensor must be earthed using the appropriate system provided.

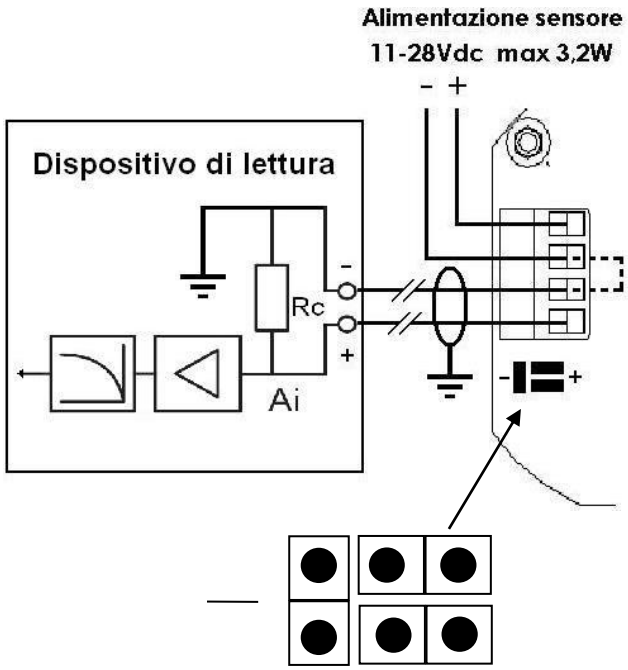


Shield	S
12 / 24Vdc	+
	-
4 ÷ 20mA	-
	+

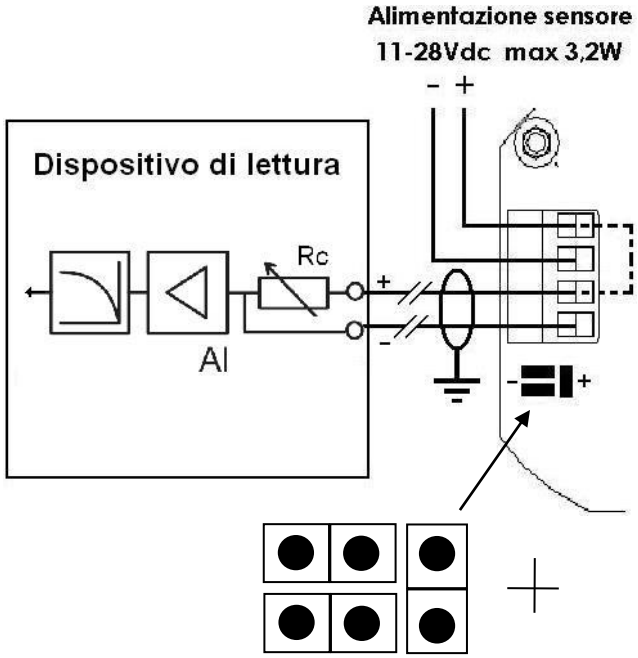
Depending on the connection distance, use a cable with at least 3 conductors with a minimum section of 0.75mm^2 up to 100m, 1mm^2 up to 200m, 1.5mm^2 up to 500m.
In the presence of electromagnetic disturbances use shielded cable.
If the relay board is present, use a multipolar cable suitable for the number of connections.
The cable sheath must not exceed the diameter required by the cable gland.

EW20: Stand Alone Gas Detectors (4÷20mA) - 4÷20mA Output reference selection

J4 configuration for 4÷20mA output with negative reference



J4 configuration for 4÷20mA output with positive reference



<u>Warning:</u> Changing default settings (negative reference) the + and – indication on **TB1** referred to 4÷20mA output will be inverted

EW20: Stand Alone Gas Detectors (4÷20mA) - Alarm Threshold settings by dip-switch

Alarm Threshold

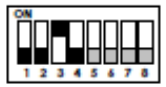
To set the alarm thresholds of the optional relay card, the operator has to use the first four selectors of **SW1** dip-switch.
Particularly, the thresholds, shown in full scale range percentage, will be:

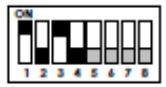

CUSTOM (*)

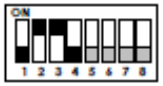

3, 5, 10%


5, 10, 15%


5, 10, 20%

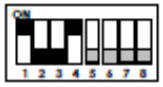

10, 15, 25%

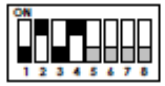

10, 15, 30%


10, 20, 40%
(DEFAULT)

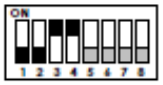

10, 25, 35%

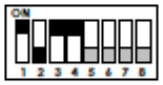

15, 25, 40%

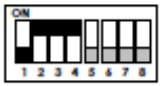

15, 30, 45%

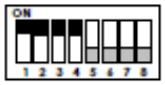

25, 35, 50%


20, 40, 60%







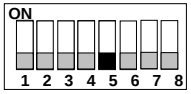


----------Future Implementation----------

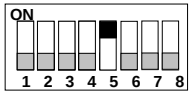
EW20: Stand Alone Gas Detectors (4÷20mA) - Analog Output Mode Selection

Analog Output Mode

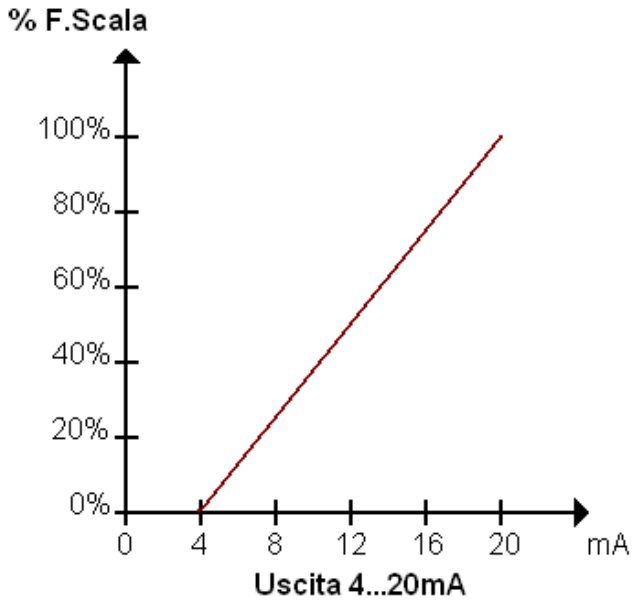
To set the 4÷20mA output signal type, operator has to use the **5th** selector of the dip-switch in **SW1** position, in particular:

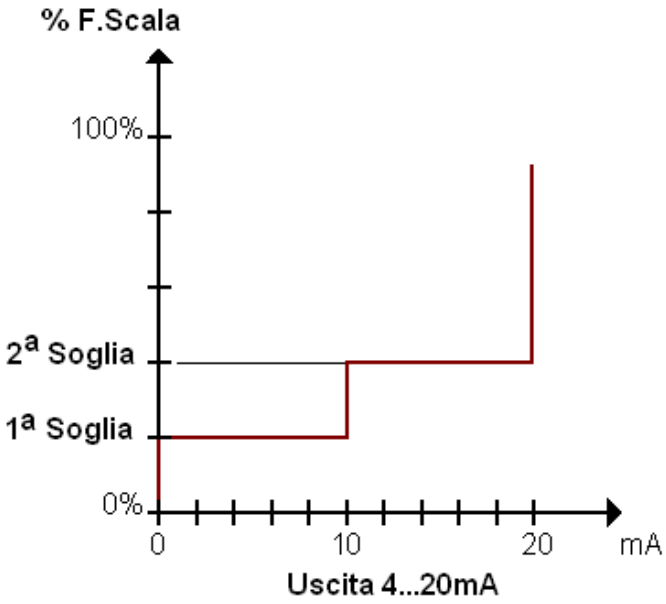


Proportional



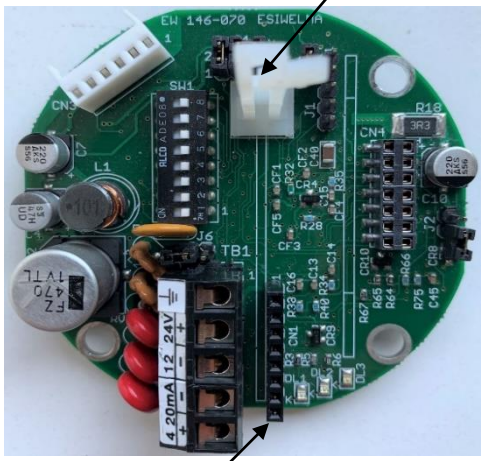
Step Output



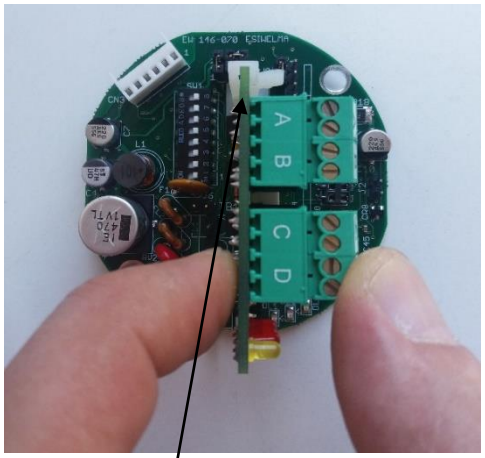


EW20: Stand Alone Gas Detectors (4÷20mA) - Relay Card Installation

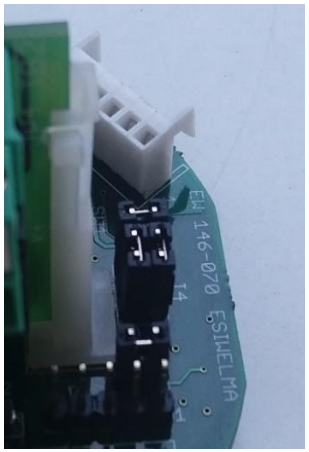
By a connector called **CN1**, placed on the main card, it is possible to add a card with 4 SPDT relays and relatives leds, associated to the following functional conditions: pre-alarm, 1st threshold alarm, 2nd threshold alarm and sensor failure.



Phase 1:
Insert the Relay Card Guide on the main card.
Pay attention that the elastic flag faced the main terminal board

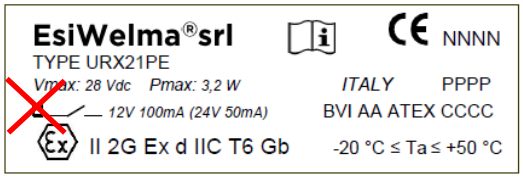


Phase 2:
Insert the Relay Card and pay attention to pull the elastic flag towards main terminal board



Phase 3:
Check the position of the Relay Card.Pay attention that all pins are in CN1 connector and that card is placed and fastened properly by the elastic flag

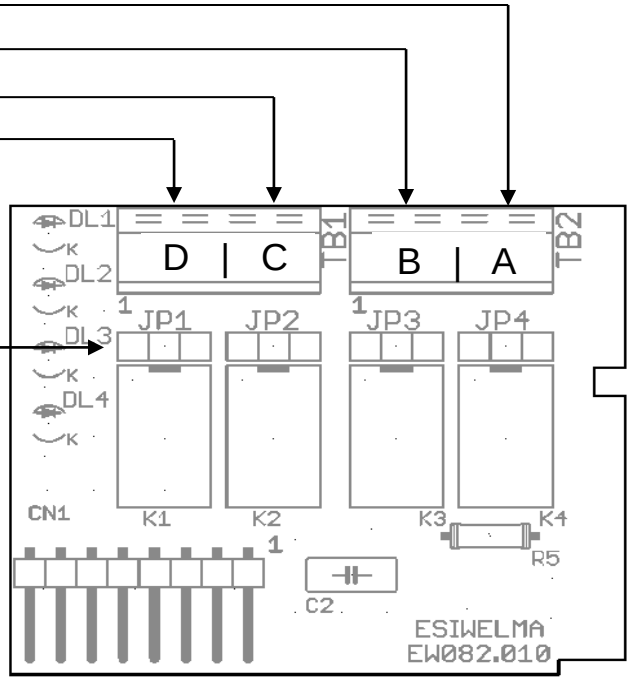
Phase 4:
Tick the appropriate check box using a permanent marker.



EW20: Stand Alone Gas Detectors (4÷20mA) - Relay Card Electrical Installation

For each relay a couple of terminals are available.
Use jumper **JP1…JP4** in order to select type of contact.

NC or NO contact of Pre-alarm relay
NC or NO contact of 1st threshold relay
NC or NO contact of 2nd threshold relay
NC or NO contact of sensor failure relay



Type of contact selection (JP1÷JP4):

DL1 (Yellow), Sensor FAILURE
DL2 (Red), 2nd alarm threshold
DL3 (Red), 1st alarm threshold
DL4 (Red), Pre-alarm

In order to select the operation mode of the relays, operator has to use the **6th** selector of the dip-switch in **SW1** position, in particular:

- **Direct operation mode:**
  (relay energized by event)
- **Reverse operation mode:**
  (relay energized without event)

Direct Mode

Reverse Mode

EW20: Stand Alone Gas Detectors (4÷20mA) - Resistive Variation Card Installation

This type of cards are normally used when the gas detectors are integrated in the Anti Fire plant.

There are different type of this cards, in order to comply with the different type of Anti Fire plants; in particular:

UZS20.E	UZS20.A	UZS20.S
22KOhm = normal state	27KOhm = normal state	2,2KOhm = normal state
10KOhm = pre-alarm state	10KOhm = 1st alarm state	Closed = 1st alarm state
2,2KOhm = 1st alarm state	Open = failure	Open = failure
Open = failure		

EW20: Stand Alone Gas Detectors (4÷20mA) - General Operating Mode & Status Led

The sensors are factory calibrated then they normally don't need any other calibration once installed.
In any case, after the installation a functional check of the sensors is recommended.

Turning On the detector a 2 minutes preheating phase will occur.
After this time the sensor will switch in normal operation mode, but the best performances will be reach after at least 2 hours.

The status LED on the sensor body, and the 4...20mA output, have the following functional meaning:

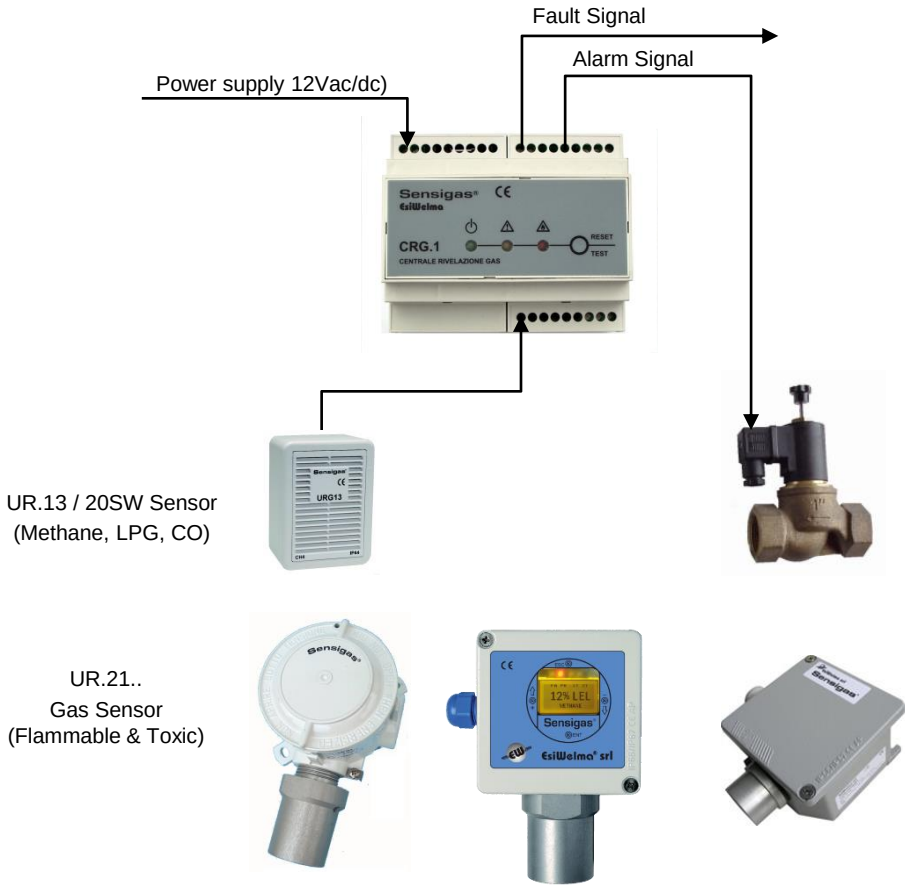
Sensor State	***4÷20mA Output***	***State Led on Sensor Body***
PREHEATING	2mA	Flashing with 2 Hz frequency
WORKING	4÷20mA *0,10,20mA for threshold applications*	1 pulse "ON" every about 10s
PRE-ALARM		2 pulses "ON" every about 5s
1st ALARM THRESHOLD		3 pulses "ON" every about 5s
2nd ALARM THRESHOLD		4 pulses "ON" every about 5s
FAILED SENSOR	22mA	ON steady
OVER-RANGE FAILURE	22mA	1 pulse "OFF" every about 5s

EW20: Stand Alone Gas Detectors (4÷20mA) - Maintenance

System maintenance:

- ✓ TUS40.. Tool kit conceived for:
  - ❖ Local dignostic
  - ❖ Test with sample gases
  - ❖ Calibration with sample gases
  - ❖ Commissioning:
    - ➢ On/Off relais forced
    - ➢ 4…20mA forced

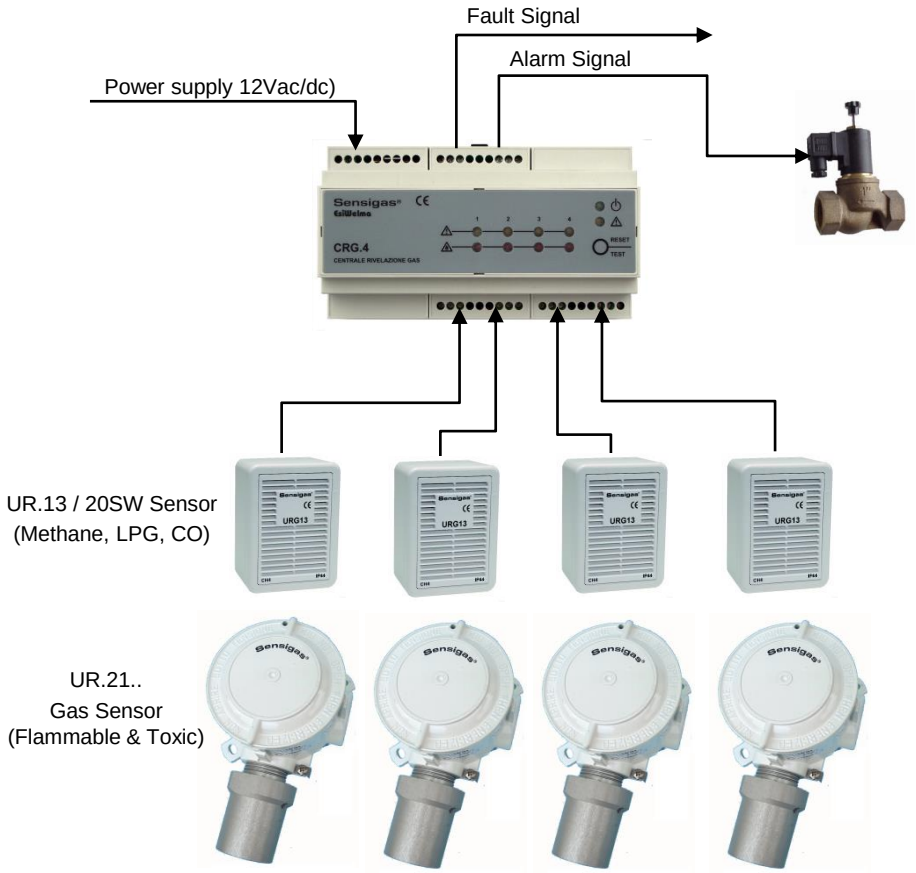
EW20: Stand Alone Gas Detectors (4÷20mA) - UCE1: 1 Sensor Central Unit



Main Specifications:

- ATEX + MED performances certification in conformity:
  - EN60079-29-1 (ATEX)
  - IEC 60092-504 (MED)
- 12Vac/dc power supply
- Din rail installation
- N. 1 gas detector
- Gas detector type:
  - URx13 (low end IP44)
  - URx21yz (till ATEX Ex d)
- Alarm out: SPDT 250V/8(5)A
- Fault out: OC 12Vdc/300mA
- Internal Buzzer
- Reset alarm push button
- Indication LED for:
  - Power Supply
  - Alarm
  - Fault

EW20: Stand Alone Gas Detectors (4÷20mA) - UCE4 Central Unit: up to 4 sensors



Main Specifications:

- ATEX + MED performances certification in conformity:
  - EN60079-29-1 (ATEX)
  - IEC 60092-504 (MED)
- 12Vac/dc power supply
- Din rail installation
- N. 4 gas detector
- Gas detector type:
  - URx13 (low end IP44)
  - URx21yz (till ATEX Ex d)
- Alarm O/P: SPDT 250V/8(5)A
- Fault O/P: SPDT 250V/8(5)A
- Internal Buzzer
- Reset alarm push button
- Indication LED for:
  - Power Supply
  - Alarm (each sensor)
  - Fault (each sensor)

EW20: Stand Alone Gas Detectors (4÷20mA) for industrial & marine applications

THANKS FOR YOUR ATTENTION