



## Features

- Self diagnostic procedure
- Continuous monitoring
- Zero point tracking
- Watch dog switch
- Easy calibration (zero, span and 4-20mA adjustment)
- Reverse polarity protected
- Overload-proof
- 4-20mA proportional or three-step (0, 10 and 20mA)
- 1 or 3 relays output switching thresholds
- Open collector output switching thresholds
- Modbus RTU serial bus
- EEx-d protection for Zone 1 or Zone 2
- EEx-n protection for Zone 2

## Technical Data

|                            |  |
|----------------------------|--|
| <b>Gas</b>                 | Oxygen O2                              |
| <b>Detection principle</b> | Electrochemical, diffusion             |
| <b>Measuring range</b>     | 0 - 25 vol. % or 0-30vol.% oxygen      |
| <b>Accuracy</b>            | +/- 5% of range or 10% of reading      |
| <b>Response time</b>       | t90 <15 sec.                           |
| <b>Repeatability</b>       | +/- 5% of range                        |
| <b>Warm-up time</b>        | 300 sec.                               |
| <b>Control Unit</b>        | Micropr.10bit resolution1024points     |
| <b>Digital Filter</b>      | Variable average on the sampled values |
| <b>Visual indications</b>  | Flashing LED                           |
| <b>LCD-display</b>         | 4 digits; 5 status LED                 |
| <b>Stabilisation time</b>  | 120 sec.                               |
| <b>Zero-point drift</b>    | Auto zero drift compensation           |
| <b>Mounting height</b>     | 1,5 to 1,8 metres above floor          |
| <b>Output signal</b>       | 4-20mA, load 200ohm<br>or 0-10-20mA    |
| <b>Serial Interface</b>    | Baud/9600 at Modbus                    |
| <b>Power supply</b>        | 18-28Vdc, -20%...+15%                  |
| <b>Power consumption</b>   | 90mA (at 12Vdc), 130mA                 |
| <b>Expected lifetime</b>   | 2 years, normal operating envirom.     |
| <b>Humidity range</b>      | 20-90% rH non-condensing               |
| <b>Operating range</b>     | -10 up to +50C                         |
| <b>Protection Class</b>    | IP55 EEX-n<br>IP65 EEX-d               |
| <b>Pressure range</b>      | 800 to 1100mBar (80 to 110kPa)         |
| <b>Air Velocity</b>        | < 6m/sec.                              |

## Application

For detection of oxygen in rooms where changes of the oxygen concentration are possible, such as laboratories and food production etc.

The calibration for types without LCD display is possible via the handheld calibration keypad CKD.

The types with LCD display have a non intrusive magnetic calibration feature for easy calibration without opening the instrument and declassifying the area.

The gas detector is available with EEx-d for Ex zone 1 and 2, or with EEx-n protection for Ex zone 2.

## Ordering Codes

### Zone 1 or Zone 2, EEx-d enclosure IP65

|                      |            |  |
|----------------------|------------|--|
| <b>ATEX 113 O2</b>   | 0-25% vol. | 4-20mA, 12-24Vdc, Modbus                 |
| <b>ATEX 113 O2/D</b> | 0-25% vol. | 4-20mA, 12-24Vdc, Modbus,<br>c/w display |

### Zone 2, EEx-n enclosure IP55

|                      |            |  |
|----------------------|------------|--|
| <b>ATEX 341 O2</b>   | 0-25% vol. | 4-20mA, 12-24Vdc, Modbus                 |
| <b>ATEX 341 O2/D</b> | 0-25% vol. | 4-20mA, 12-24Vdc, Modbus,<br>c/w display |

|                           |   |
|---------------------------|---|
| <b>MOD</b>                | Protocol for Modbus RTU                                       |
| <b>O2 Head ATEX Gland</b> | Replacement Head ( 2 years lifetime)<br>ATEX gland för Zone 1 |

|                   |                                   |
|-------------------|-----------------------------------|
| <b>REL1 O2</b>    | Relay card for 1 alarm level      |
| <b>REL3 O2</b>    | Relay card for 3 alarm levels     |
| <b>REL3 O2/50</b> | Relay card for 3 alarm levels     |
| <b>OC O2</b>      | Open Collector for 2 alarm levels |

|            |                        |
|------------|------------------------|
| <b>CSW</b> | Calibration software   |
| <b>IDI</b> | RS-interface           |
| <b>CKD</b> | Service tool pluggable |
| <b>CAP</b> | Calibration adapter    |

## Physical characteristics

|                               |  |
|-------------------------------|--|
| <b>Enclosure</b>              | Metal  |
| <b>Enclosure colour</b>       | Blue   |
| <b>Dimensions WxHxD</b>       | 200 x 105 x 90mm EEx-d<br>169 x 106 x 62mm EEx-n                                   |
| <b>Weight</b>                 | EEx-d 1,4kg, EEx-n 0,8kg   |
| <b>Cable entry</b>            | 1 x NPT 3/4"   |
| <b>Mounting</b>               | Wall mounting<br>(sensor head downwards)   |
| <b>Wire connection</b>        | Screw terminal,<br>min 0,25mm <sup>2</sup> and max 2,5mm <sup>2</sup>              |
| <b>Wire length</b>            | Max.working resistance 200ohm<br>(= wire resistance + controller input resistance) |
| <b>Guidelines</b>             | EN50014, EN50018, EN50021<br>EN61779-1/4 (Performances)                            |
| <b>ATEX Marking</b>           | <b>CE 722 II 2G EEXd IIC T6</b><br><b>CE 722 II 3G EEx nA IIC T6</b>               |
| <b>EC Type Certification</b>  | <b>CESI01ATEX053 EEX-d</b><br><b>CESI03ATEX339 EEx-n</b>                           |
| <b>Sensor Head</b>            | <b>CESI01ATEX013U</b><br><b>CESI01ATEX066U</b>                                     |
| <b>One-relay output</b>       | Max 24Vac/dc, 100mA@12Vdc<br>50mA@24Vdc  |
| <b>Three-relay output</b>     | Max 24Vac/dc, 1A   |
| <b>Two open collector O/P</b> | Max 24Vdc, 20mA  |

## Relay Package

The **1 relay** card for the ATEX gas detectors allows the detector to be provided with 1 voltage free changeover contact.

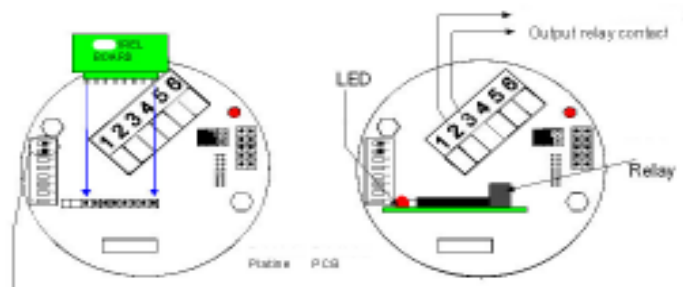
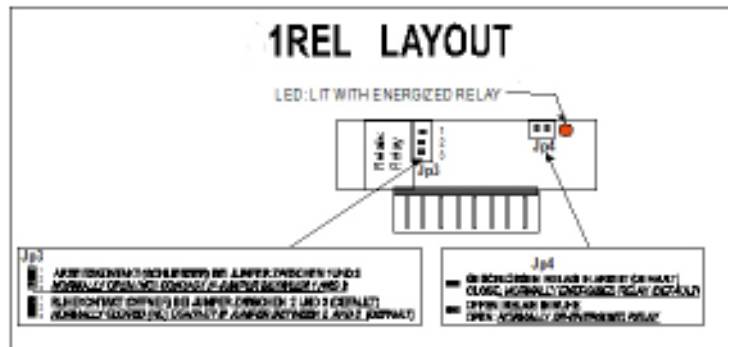
## Mounting

Before inserting the **REL1 O2** card be sure the detector has been powered off.

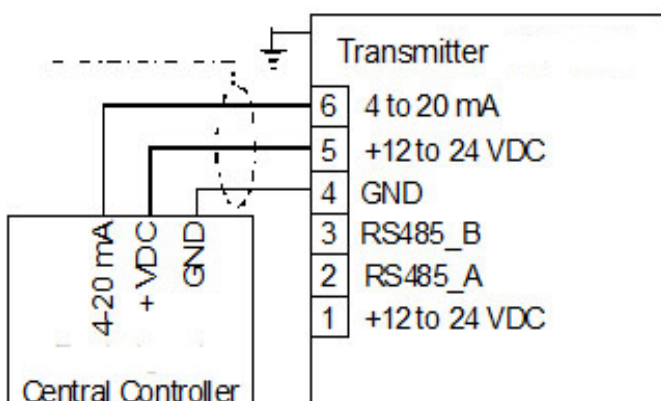
Insert the vertical plug-in card into the 10-pole connector, paying attention to leave the two left side poles free.

Make sure the card has been fully plugged in.

Turn the side comprising the red LED towards the main terminal board, as shown in the drawing here below..



## Connecting Diagram



### Relay Package 3 relays

The three-relay card for ATEX gas detectors allows the detector to be provided with tension free changeover contacts.

- The first output is to be associated to the *Fault* and *Watch-dog alarm*
- The second output can be associated to the first or second alarm threshold
- The third output can be associated to the second or third alarm threshold.

The card comes complete with a flat cable and connector to be easily plugged on the detector's mother board.

**Contacts Rating: 24 VDC-1 A**

#### Operation Voltage:

from 10.2 to 16 VDC and from 19 to 28 VDC

**Only one model of REL3 O2 is available:  
before connecting the relay card, please make sure  
the detector's operation voltage is within the values  
here above.**

### Mounting

Verify the detector has been disconnected before mounting the **REL3 O2**.

Insert the supports into the holes on the PCB, as per the drawing on page 2.

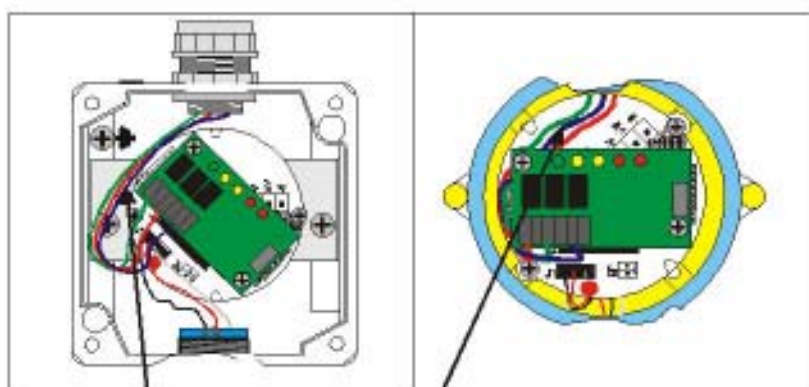
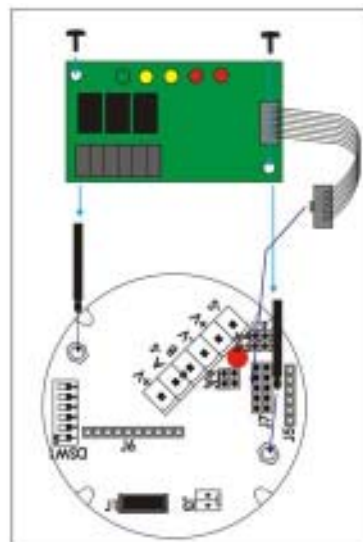
Insert the female connector at the edge of the flat cable into the male connector J7 on the PCB.

Beware that the black triangle on the female connector (corresponding to pin one) is facing towards the internal part of the PCB.

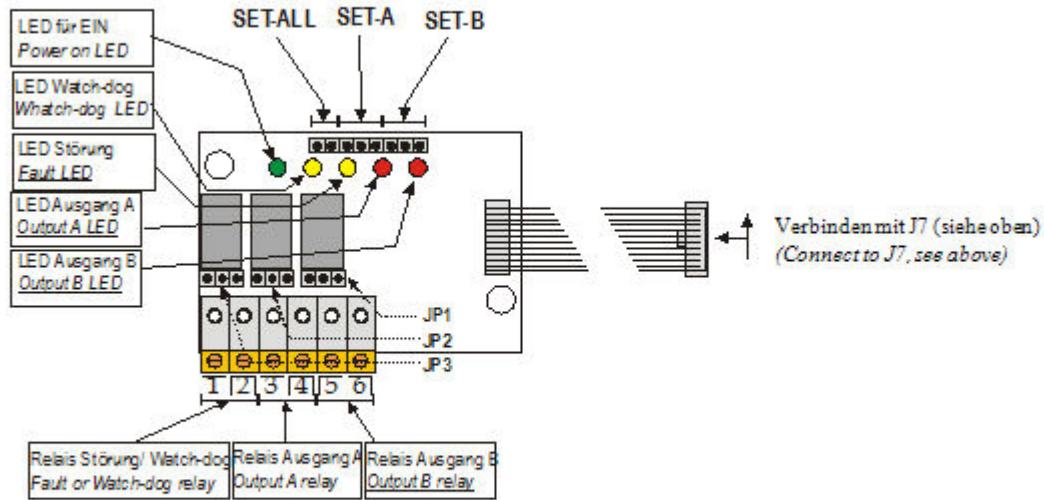
Tighten the card to the supports with the screws the relay-card kit is equipped with.

Once the card has been properly mounted the terminal block shall be faced towards the lower part of the detector, i.e. towards the sensor head.

The detector can now be wired, connected and powered on.



### 3REL LAYOUT



**SET-ALL**

- OFFEN: RELAIS ARBEITSSTROMPRINZIP (DEFAULT)  
OPEN: NORMALLY ENERGISED RELAY (DEFAULT)
- GESCHLOSSEN: RELAIS RUHESTROMPRINZIP  
CLOSE: NORMALLY DE-ENERGISED RELAY

**SET-A**

- RELAIS 'A' VERBUNDEN MIT ALARMSCHW. 1 (DEFAULT)  
RELAY 'A' COUPLED TO THRESHOLD 1 (DEFAULT)
- RELAIS 'A' VERBUNDEN MIT ALARMSCHWELLE 2  
RELAY 'A' COUPLED TO THRESHOLD 2

**SET-B**

- RELAIS 'B' VERBUNDEN MIT ALARMSCHWELLE 2 (DEFAULT)  
RELAY 'B' COUPLED TO THRESHOLD 2 (DEFAULT)
- RELAIS 'B' VERBUNDEN MIT ALARMSCHWELLE 3  
RELAY 'B' COUPLED TO THRESHOLD 3

**JP3**

- SCHLIESSEN/ARBEITSKONTAKT ZWISCHEN KLEMME 1 UND 2 STÖRUNG/WATCH-DOG (DEFAULT)  
NORMALLY OPEN (NO) CONTACT BETWEEN TERMINAL 1 AND 2 FAULT/WATCH-DOG (DEFAULT)
- ÖFFNER/RUHEKONTAKT ZWISCHEN KLEMME 1 UND 2 STÖRUNG/WATCH-DOG  
NORMALLY CLOSED (NC) CONTACT BETWEEN TERMINAL 1 AND 2 FAULT/WATCH-DOG

**JP2**

- SCHLIESSEN/ARBEITSKONTAKT ZWISCHEN KLEMME 3 UND 4 VON RELAIS A (DEFAULT)  
NORMALLY OPEN (NO) CONTACT BETWEEN TERMINAL 3 AND 4 RELAY A (DEFAULT)
- ÖFFNER/RUHEKONTAKT ZWISCHEN KLEMME 3 UND 4 VON RELAIS A  
NORMALLY CLOSED (NC) CONTACT BETWEEN TERMINAL 3 AND 4 RELAY A

**JP1**

- SCHLIESSEN/ARBEITSKONTAKT ZWISCHEN KLEMME 5 UND 6 VON RELAIS B (DEFAULT)  
NORMALLY OPEN (NO) CONTACT BETWEEN TERMINAL 5 AND 6 RELAY B (DEFAULT)
- ÖFFNER/RUHEKONTAKT ZWISCHEN KLEMME 5 UND 6 VON RELAIS B  
NORMALLY CLOSED (NC) CONTACT BETWEEN TERMINAL 5 AND 6 RELAY B

**\* HINWEIS : ALLE ANGABEN ÜBER DIE RELAISKONTAKTE BEZIEHEN SICH AUF DIE NICHT ANGESCHLOSSENE KARTE!  
NOTE : ALL INDICATIONS GIVEN ON RELAY CONTACTS ARE MEANT FOR NON-CONNECTED CARD!**

## Introduction

The 2-open collector card for gas detectors provides the detector with 2 independent outputs with negative reference.

According to the JP jumper position on the O.C. board, one of the following statuses may be chosen:

- JP open O.C. normally closed
- JP closed the O.C. normally open

## Technical Specification

O.C. Rating Max 20 mA

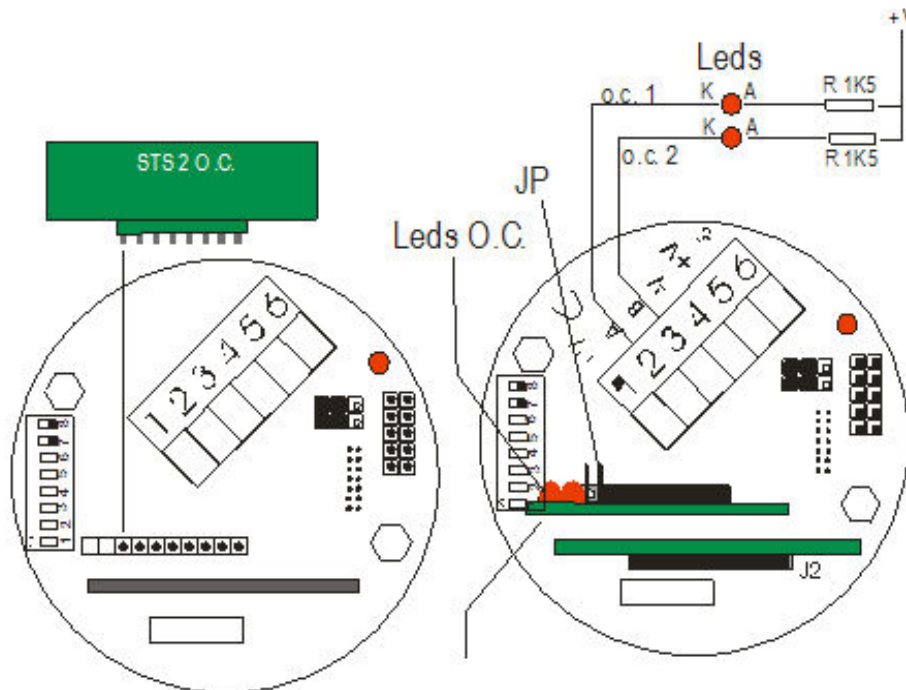
## Installation

Before inserting the O.C. card, make sure the detector has been disconnected.

Insert the vertical plug-in card into the 10-pole connector, paying attention to leave the two left side poles free.

Make sure the card has been fully plugged in.

The red LEDs on board should face the general terminal block, as shown in the drawing here below.



| dip 7 | dip 8 | (A) o.c.1 | (B) o.c.2 |
|-------|-------|-----------|-----------|
| OFF   | OFF   | FLT       | WD AL1    |
| OFF   | ON    | FLT AL3   | WD AL2    |
| ON    | OFF   | FLT AL2   | WD AL1    |
| ON    | ON    | FLT AL3   | WD AL1    |

### Default configuration

Dip 7 ON - Dip 8 ON- JP Closed