

## INSTRUCTION MANUAL

### ED910 GAS DETECTOR

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## WARNING

Dangerous voltages are present within the mains input models particularly at the input voltage terminals and the neon indicator above these terminals. Dangerous voltages may also be present on the alarm contacts of all models.

## GENERAL

The ED910 is a fixed installation gas detector control unit which is available in four models:-

1. ED910 Semiconductor
2. ED910 Head electronics (4-20mA)
3. ED910 Head electronics (0.2-1.0V)
4. ED910 Oxygen Monitor

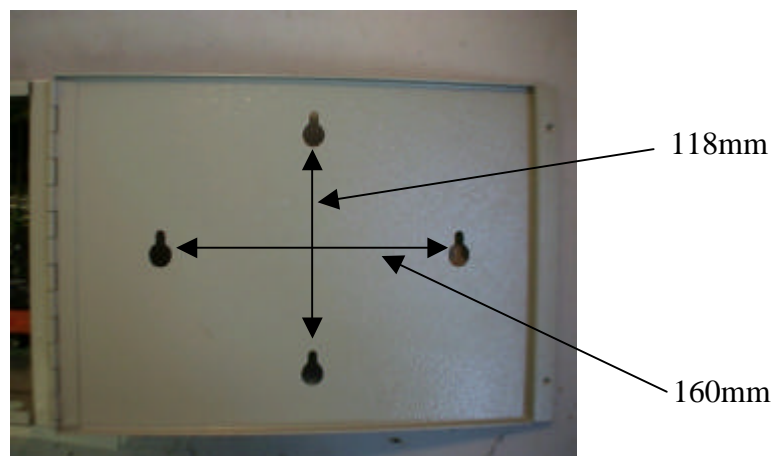
Each model is available for either 24Vdc or 110/120Vac 50/60Hz or 220/240Vac 50/60Hz operation. The Model type and voltage must be specified prior to dispatch as they cannot be changed once manufactured.

## INSTALLATION

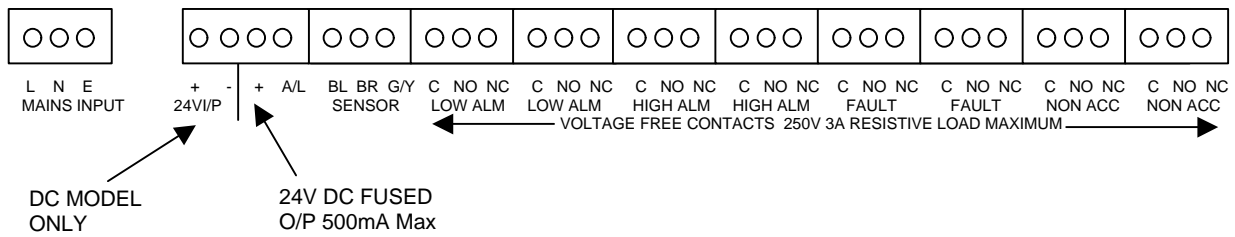
Control Unit: The unit should be mounted in a convenient position for the operator away from possible mechanical damage or ingress of moisture and allowing the enclosure to swing open for ease of calibration etc.

N.B. If the only suitable position is exposed to dust or moisture then consideration should be given to having the enclosure to I.P.54 standards or above. Contact **Electronic Devices Ltd.**

The enclosure is opened by releasing the two screws on the right hand side of the enclosure and is secured to a wall or bulkhead by four screws or bolts at the rear of the enclosure. Sufficient cable should be allowed so as the enclosure can swing open on its hinges.



## Connections:



It should be ensured that any peripheral devices connected do not take more than 500mA current consumption at any time as this could damage the ED910.

**Alarm Output Functions:** The ED910 has two sets of voltage free contacts each for low alarm, high alarm and fault. In addition two sets of “Non Alarm Accept” contacts are available for low or high alarm (factory set for high alarm).

**Engineers Override:** The override can be activated by pressing and holding down the override button. The override time increments by 10 minute, the longer the button is pressed, to a maximum of 40 minutes. During this time the internal sounder operates but all other outputs are disabled.

To end the override period early press and hold down the reset override button.

It is important to note that all alarm outputs should be checked periodically.

## **ED910 Semiconductor**

Suitable for the connection of semiconductor gas sensors manufactured by Electronic Devices Ltd. e.g.

- EDP1B uncertified, EDF1B flameproof or EDS1B Intrinsically Safe via Barrier.  
Suitable for the detection of flammable gases such as Ammonia, Butane, Propane and some toxic gases, for more gases see list available.
- EDP2B uncertified, EDF2B flameproof or EDS2B Intrinsically Safe via Barrier.  
Suitable for the detection of flammable gases such as Methane and some toxic gases, for more gases see list available.
- EDP3B uncertified, EDF3B flameproof or EDS3B Intrinsically Safe via Barrier.  
Suitable for the detection of most Freons such as R22.
- EDP3B fig uncertified, EDF3B fig flameproof or EDS3B fig Intrinsically Safe via Barrier.  
Suitable for the detection of most Freons such as R11, R12, R143A, R134A etc.

Calibration procedure: Ensure that the sensor has been energised at the correct input voltage for at least 24 hours, with the gas sensor in clean air, before attempting this procedure. This procedure must be carried out by competent personnel only.

1. Immerse sensor in a known concentration of the target gas in the range of 20-60% of full scale, preferably at one of the alarm points.
2. Rotate the potentiometer VR4 (closest to TP3) until the correct reading is displayed on the front panel display (clockwise increases sensitivity).
3. The low and high alarm points are factory set but can be adjusted using VR7 and VR8 respectively. It is important that these levels are only adjusted whilst the display is reading the correct concentration for the alarm being adjusted.
4. If after 24 hours in clean air the display is not reading zero contact Electronic Devices Ltd.

### **ED910 Head electronics (4-20mA)**

Designed to accept 4-20mA input from sensor head electronics type EFM/C, EFM/P, EFM/S or EDN manufactured by Electronic Devices Ltd. Some gas sensors require head electronics for correct operation such as Electrochemical Cell Sensors or Catalytic (Pellistor) Sensors. See list of gases for sensor types available.

Calibration procedure: adjustment of calibration is carried out at the head electronics not at the ED910. See data sheet supplied with head electronics.

Low and high alarm points can be achieved after successful calibration as follows: The low and high alarm points are factory set but can be adjusted using VR7 and VR8 respectively. It is important that these levels are only adjusted whilst the display is reading the correct concentration for the alarm being adjusted.

If after 24 hours in clean air the display is not reading zero contact Electronic Devices Ltd.

### **ED910 Head electronics (0.2-1.0V)**

Designed to accept 0.2-1.0Vdc input from sensor head electronics type EDS/C or EDS/P manufactured by Electronic Devices Ltd. Some gas sensors require head electronics for correct operation such as Electrochemical Cell Sensors or Catalytic (Pellistor) Sensors. See list of gases for sensor types available.

Calibration procedure: Ensure that the sensor has been energised at the correct input voltage for at least 24 hours, with the gas sensor in clean air, before attempting this procedure. This procedure must be carried out by competent personnel only.

Once this procedure has been successfully achieved, any adjustment thereafter should be carried out at the head electronics module, i.e. single man calibration using data sheet provided with head electronics

- 1) Ensure the zero light is illuminated on the head electronics module, and the sensor is in "clean air".

- 2) Adjust the Variable Resistor VR3 on the ED910 fully clockwise and then anti-clockwise, until the front panel display just reads “Zero”.
- 3) Set the output of the head electronics module to a predetermined point e.g. 50% FSD or 100% FSD by the use of calibration gas or a dummy sensor.
- 4) Adjust the Variable Resistor VR4 (closest to TP3) on the ED910, until the front panel display reads the correct concentration e.g. either 50% FSD or 100% FSD. .
- 5) Recalibrate the head electronics and sensor at the head electronics using the separate calibration instructions.

### **ED910 Oxygen monitor**

Designed to accept the two core Oxygen sensor type EDP 6/02 sensor head manufactured by Electronic Devices Ltd. This sensor and hence the ED910 has a range of 0-30% oxygen.

Calibration procedure: Ensure that the sensor has been energised for at least 24 hours, with the gas sensor in clean air, before attempting this procedure. This procedure must be carried out by competent personnel only.

1. Ensure ED910 is operating within the designed operating voltage range.
2. Immerse sensor in 18.5% Oxygen concentration and allow to settle.
3. Adjust VR4 (closest to TP3) until 18.5% is displayed on the front panel meter.
4. Ensure the A1 alarm and connected sounders/beacons operate.
5. Immerse sensor in 23% Oxygen concentration and allow to settle.
6. Ensure the A2 alarm and connected sounders/beacons operate.
7. In normal Air concentration ensure the panel meter displays 21% Oxygen.
8. The Fault output can be tested by disconnecting the sensor.
9. Test all alarm outputs function correctly.

# A LIST OF THE MOST COMMONLY DETECTED GASES AND SENSOR TYPES AVAILABLE FROM ELECTRONIC DEVICES LIMITED (MAY 2002).

THIS LIST IS A SUMMARY, IF A PARTICULAR GAS OR CONCENTRATION IS NOT LISTED CONTACT ELECTRONIC DEVICES  
 ELECTRONIC DEVICES CANNOT GUARANTEE THE AVAILABILITY OF CALIBRATION GAS  
 ELECTRONIC DEVICES ADVISE THE STUDY OF COSHH REGULATIONS AND THE EH40 OCCUPATIONAL EXPOSURE LIMITS LIST AVAILABLE FROM THE HSE

<u>GAS</u>	<u>RANGE</u>	<u>SENSOR TYPE</u>	<u>Exd PART No.</u>	<u>I.S. PART No.</u>	<u>UNCERTIFIED PART No.</u>	<u>REPLACEMENT CELL (IS ONLY)</u>	<u>NOTES</u>
ACETYLENE	0-100% LEL	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
ACETONE	50-1000PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
ACRYLONITRILE	10-1000PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
AMMONIA	0-100PPM	ELECTROCHEMICAL	EDF 5C 100	EDSC 5C 0-100	EDSC 5C 0-100 NON IS	5C 0-100	Require Head Electronics
AMMONIA	0-1000PPM	ELECTROCHEMICAL	EDF 5C 1000	EDSC 5C 0-1000	EDSC 5C 0-1000 NON IS	5C 0-1000	Require Head Electronics
AMMONIA	5000-10000PPM (1.0%VOL)	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
AMMONIA	5000-10000PPM (1.0%VOL)	CATALYTIC	EDF 9C	EDF 9C			Require Head Electronics
BENZENE	10-1000PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
BUTANE	0-100% LEL	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
CARBON MONOXIDE	0-500PPM	ELECTROCHEMICAL	EDF 7C 500	EDSC 7C 0-500	EDSC 7C 0-500 NON IS	7C 0-500	Require Head Electronics
CARBON MONOXIDE	0-1000PPM	ELECTROCHEMICAL	EDF 7C 1000	EDSC 7C 0-1000	EDSC 7C 0-1000 NON IS	7C 0-1000	Require Head Electronics
CHLORINE	0-50PPM	ELECTROCHEMICAL	EDF CL2 50	EDSC CL2 50	EDSC CL2 50 NON IS	CL2 50	Require Head Electronics
CHLORINE	0-100PPM	ELECTROCHEMICAL	EDF CL2 100	EDSC CL2 100	EDSC CL2 100 NON IS	CL2 100	Require Head Electronics
DIMETHYL AMINE	50-500PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
ETHANE	50-10,000PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
ETHYLENE	500-3000PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
ETHANOL	500-10,000PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
ETHYLENE OXIDE	500-1000PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
FREON 22	500-10000PPM	SEMICONDUCTOR	EDF 3B	EDP3BIS or EDS3B	EDP3B		
FREON 11,12,21,113	500-10000PPM	SEMICONDUCTOR	EDF 3B FIG	EDP3BIS FIG or EDS3B FIG	EDP3B FIG		
FREON 404A, 407C	1000-10000PPM	SEMICONDUCTOR	EDF 3B FIG	EDP3BIS FIG or EDS3B FIG	EDP3B FIG		
FREON 134A, 143A	1000-10000PPM	SEMICONDUCTOR	EDF 3B FIG	EDP3BIS FIG or EDS3B FIG	EDP3B FIG		
HEXANE	50-5000PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
HYDROGEN	50-1000PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
HYDROGEN	0-10000PPM	ELECTROCHEMICAL	EDF H2 1%	EDSC H2 1%	EDSC H2 1% NON IS	H2 1%	Require Head Electronics
HYDROGEN	0-40000PPM	ELECTROCHEMICAL	EDF H2 4%	EDSC H2 4%	EDSC H2 4% NON IS	H2 4%	Require Head Electronics
HYDROGEN SULPHIDE	0-100PPM	ELECTROCHEMICAL	EDF 4C 100	EDSC 4C 100	EDSC 4C 100 NON IS	4C 100	Require Head Electronics
HYDROGEN SULPHIDE	0-200PPM	ELECTROCHEMICAL	EDF 4C 200	EDSC 4C 200	EDSC 4C 200 NON IS	4C 200	Require Head Electronics
HYDROGEN SULPHIDE	0-500PPM	ELECTROCHEMICAL	EDF 4C 500	EDSC 4C 500	EDSC 4C 500 NON IS	4C 500	Require Head Electronics
HYDROGEN CHLORIDE	0-30PPM	ELECTROCHEMICAL	EDF HCL 30	EDSC HCL 30	EDSC HCL 30 NON IS	HCL 30	Require Head Electronics
HYDROGEN CYANIDE	0-30PPM	ELECTROCHEMICAL	EDF HCN 30	EDSC HCN 30	EDSC HCN 30 NON IS	HCN 30	Require Head Electronics
HYDROGEN FLUORIDE	0-10PPM	ELECTROCHEMICAL	EDF 10C 10	EDSC 10C 10	EDSC 10C 10 NON IS	10C 10	Require Head Electronics
METHANE	0-100%LEL	SEMICONDUCTOR	EDF 2B	EDP2BIS or EDS2B	EDP2B		
METHANE	0-100%LEL	CATALYTIC	EDF 8C	EDF 8C			Require Head Electronics
METHANOL	50-500PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
METHYL ACETATE	50-500PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
METHYL CHLORIDE	10-1000PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
METHYLENE CHLORIDE	50-1000PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
METHYL ETHER	500-3000PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
METHYL ETHYL KETONE	50-200PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
METHYL MERCAPTAN	50-3000PPM	SEMICONDUCTOR	EDF 2B	EDP2BIS or EDS2B	EDP2B		
NITROGEN DIOXIDE	0-50PPM	ELECTROCHEMICAL	EDF NO2 50	EDSC NO2 50	EDSC NO2 50 NON IS	NO2 50	Require Head Electronics
NITROGEN OXIDE	0-100PPM	ELECTROCHEMICAL	EDF NO 100	EDSC NO 100	EDSC NO 100 NON IS	NO 100	Require Head Electronics
PENTANE	50-5000PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
PROPANE	500-10000PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
VINYL CHLORIDE	50-1000PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
SULPHUR DIOXIDE	10-500PPM	SEMICONDUCTOR	EDF 2B	EDP2BIS or EDS2B	EDP2B		
TRICHLOROETHANE	20-400PPM	SEMICONDUCTOR	EDF 1B	EDP1BIS or EDS1B	EDP1B		
TRICHLOROETHYLENE	50-3000PPM	SEMICONDUCTOR	EDF 3B FIG	EDP3BIS FIG or EDS3B FIG	EDP3B FIG		



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