DART SENSORS

FORMALDEHYDE SENSOR

This sensor is of the two-electrode electrochemical type, operating by the diffusion principle and as such requires no external sampling hardware. In the presence of formaldehyde gas a small direct current is produced; the sensor requires no power supply of its own but this current requires amplification to make it readable using external data collection equipment. There are several configuration options to suit a range of OEM applications.

ABSOLUTE MAXIMUM RATINGS

Parameter	Value	Units
HCHO Concentration	TBD	ppm
Temperature Range	-10 to 40	°C
Ambient Pressure Range	TBD	kPa
Humidity Range	15 to 90	%RH
Service Life	3	years

SENSOR CHARACTERISTICS

Parameter	Min.	Typ.	Max.	Units
Output Signal	150		350	nA/ppm
Resolution		0.01		ppm
Response Time (T90)		<30		s
Baseline Offset		<0.03		ppm
Repeatability		TBD		% of signal
Linearity		Linear		
Temperature Drift		0.35		%/°C
Baseline Drift (20°C-40°C)		0.00		ppm
Calibration Stability		TBD		%/yr
TBD (Economy)				
TBD (Economy)				
TBD (Economy)				

NB: Sensor performance tested under standard conditions of 293K, 1atm., 50%RH. Sensors are best stored at 20°C in sealed plastic bags for maximum storage life.

ELM HOUSE, 54 MARY ARCHES STREET, EXETER, EX4 3BA
TEL: +44 (0)1392 277733
E-MAIL: customer.service@dart-sensors.com
www.dart-sensors.com

Revised: 9th December 2013

INTERFERING SUBSTANCES

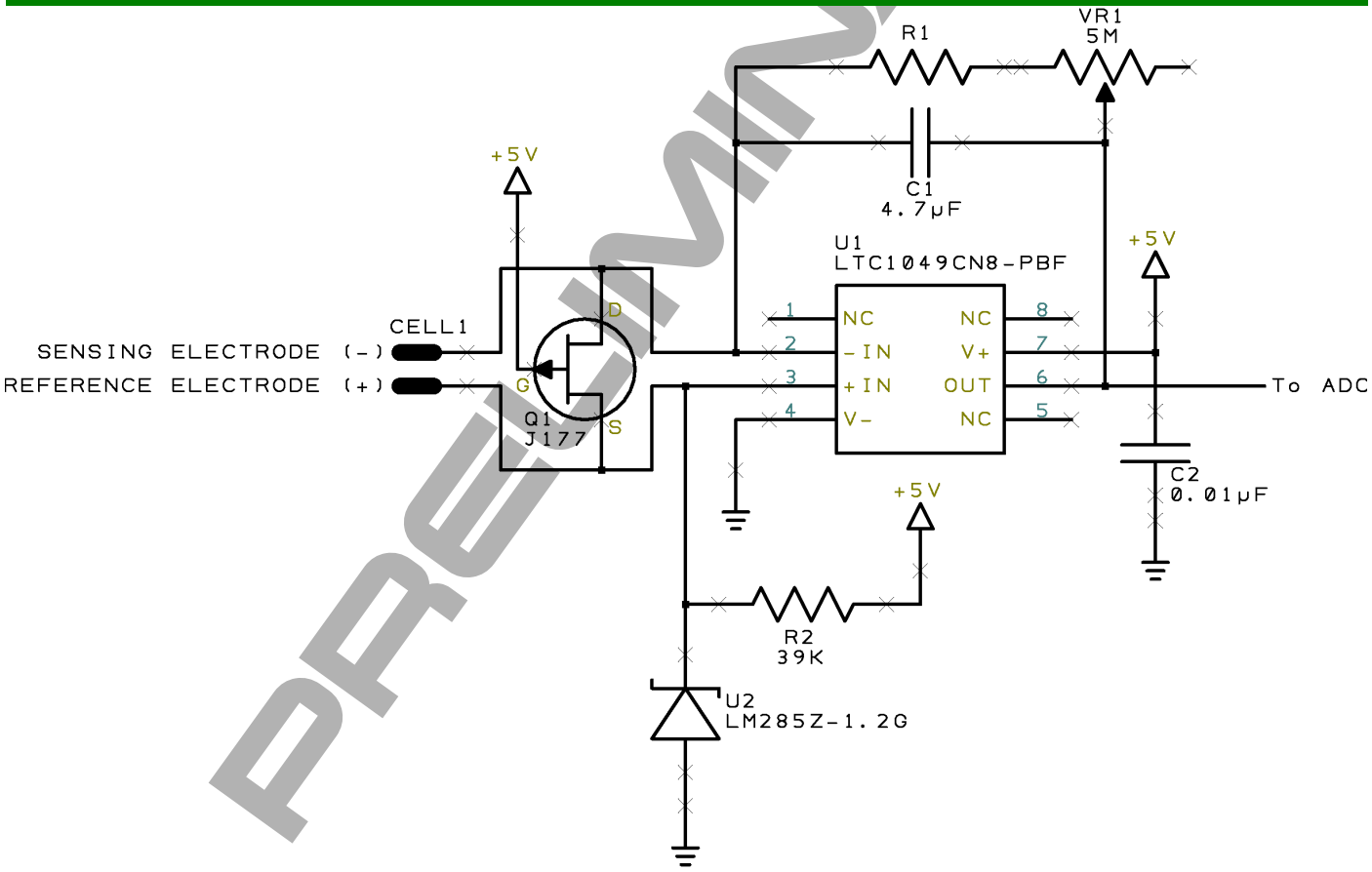
Substance	Cross Sensitivity (%)
CO	1
H_2S	No data
H_2	0.1
SO_2	12
NO_2	No data
NO	No data
Cl_2	-3
C_2H_4	No data
NH_3	0
CO_2	0
Ethanol	45
Phenol	7
Water vapour	0*

*NB: Within specified range. Step changes in %RH produce short term transient response

SENSOR CHOICE

The sensor is available in two versions to suit the requirements of different markets. The premium version represents the optimum specification for use where the best performance is required, for example in scientific instrumentation or safety critical applications. The economy is a pared-down variant, offering adequate performance where low cost is of greater importance than absolute precision. If in doubt, Dart Sensors recommends starting your development process with the premium version.

APPLICATION CIRCUIT



Due to the sensor's small signal, the amplifier circuit is high-gain; circuit design and component choice is therefore critical. Calibration can be achieved either by physically adjusting the gain of the circuit (manually with a variable resistor or electronically with a digital potentiometer), or using a fixed circuit gain, known sensor sensitivity and a calibration calculation in software.

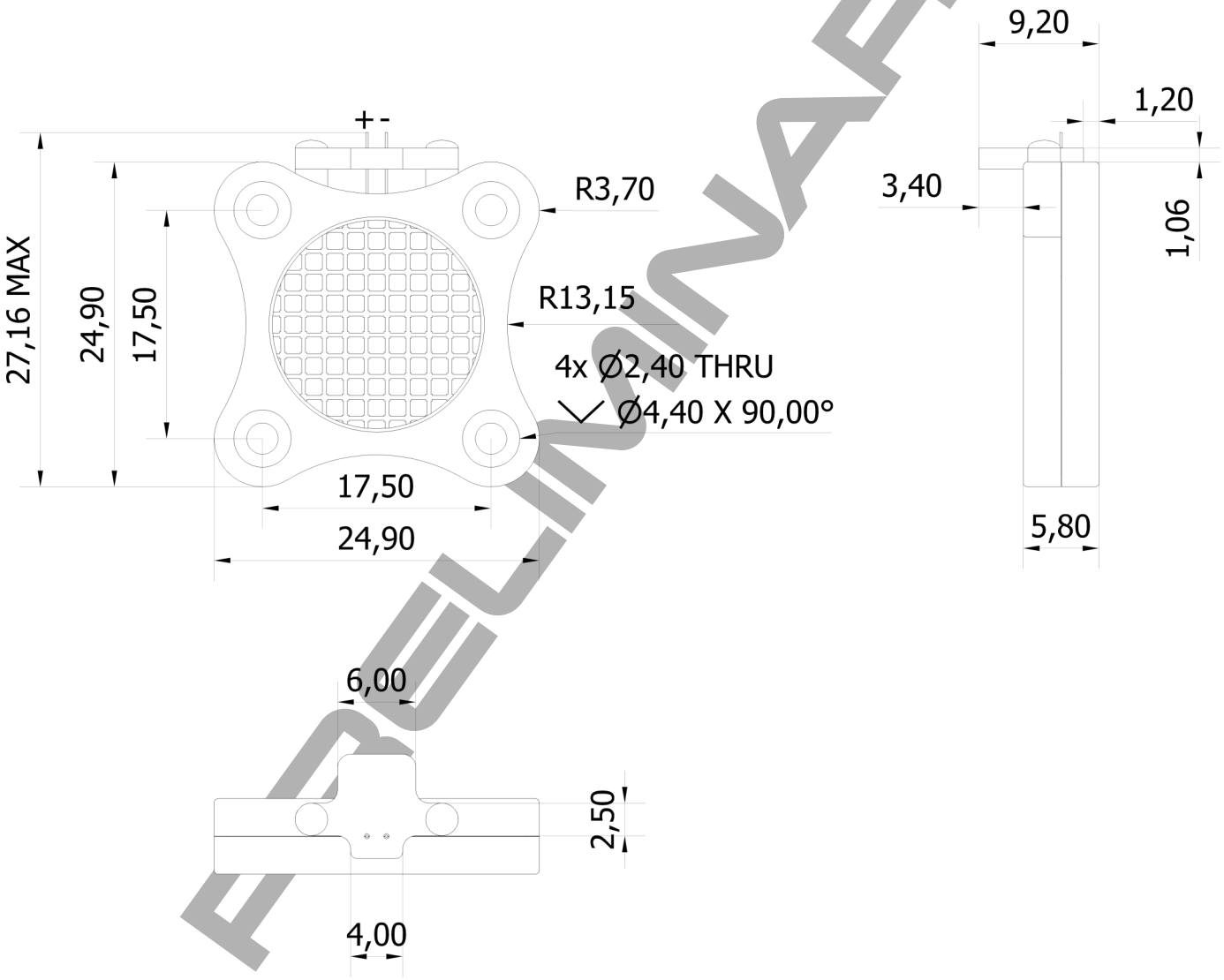
The reference circuit above is available pre-built from Dart Sensors for development purposes. It incorporates a JFET to short the sensor, preventing offsets from building up when not in use. It also generates a virtual ground, a requirement when operating in single-supply environments.

ELM HOUSE, 54 MARY ARCHES STREET, EXETER, EX4 3BA
TEL: +44 (0)1392 277733
E-MAIL: customer.service@dart-sensors.com
www.dart-sensors.com

CALIBRATION

Production of a suitable span gas for performing formaldehyde calibrations is not trivial, and can only be achieved through the use of specialist equipment. In limited cases, by arrangement, a calibration or sensitivity determination can be carried out at the factory for an additional fee.
In production situations the only method approved by Dart Sensors is the use of permeation or diffusion tube based apparatus with a post-humidification unit. Contact us for advice on the choice of suitable equipment with which to assemble such an apparatus. Dart Sensors will not offer technical support where inferior/unsuitable equipment has been used to generate calibration or test gases.

DIMENSIONS



ORDERING INFORMATION

Part Number	Description
2-FP5	Premium sensor with connector PCB
2-FP5W	Premium sensor without connector PCB
2-FE5	Economy sensor with connector PCB
2-FE5W	Economy sensor without connector PCB

ELM HOUSE, 54 MARY ARCHES STREET, EXETER, EX4 3BA
TEL: +44 (0)1392 277733
E-MAIL: customer.service@dart-sensors.com
www.dart-sensors.com