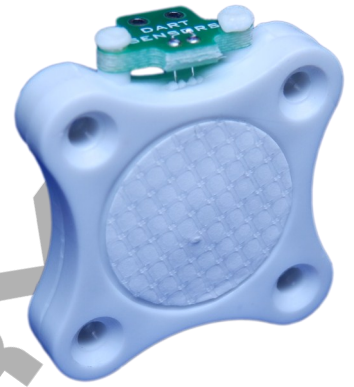


DART SENSORS

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	250		300	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., 35%RH. Sensors are best stored at 20°C in sealed plastic bags for maximum storage life.



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www.dart-sensors.com

Revised: 7th November 2011

INTERFERING SUBSTANCES

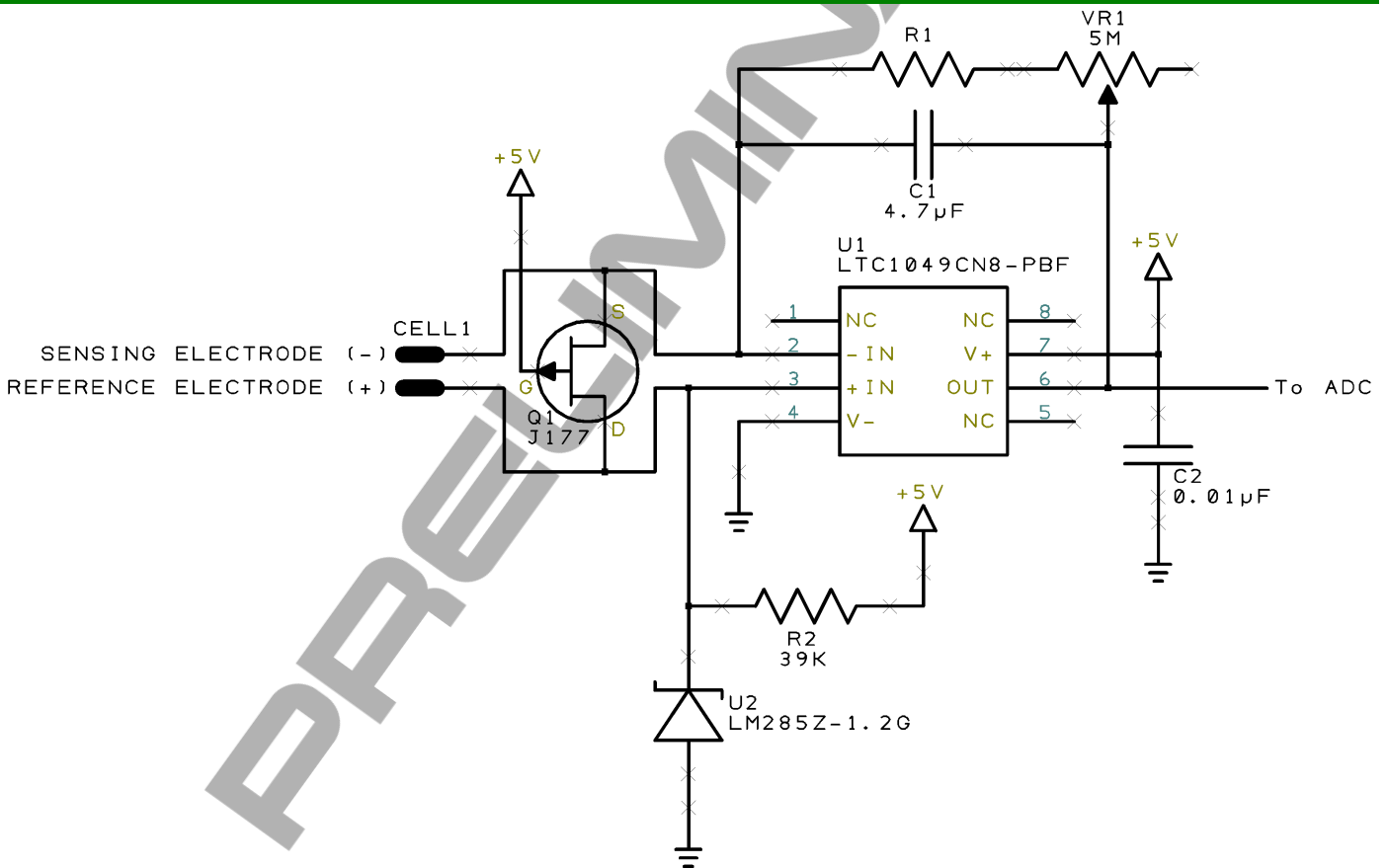
Substance	Cross Sensitivity (%)
CO	1
H ₂ S	No data
H ₂	0.1
SO ₂	12
NO ₂	No data
NO	No data
Cl ₂	-3
C ₂ H ₄	No data
NH ₃	0.0
CO ₂	0.0
Ethanol, methanol	50
Phenol	7
Water vapour	0.0*

*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.

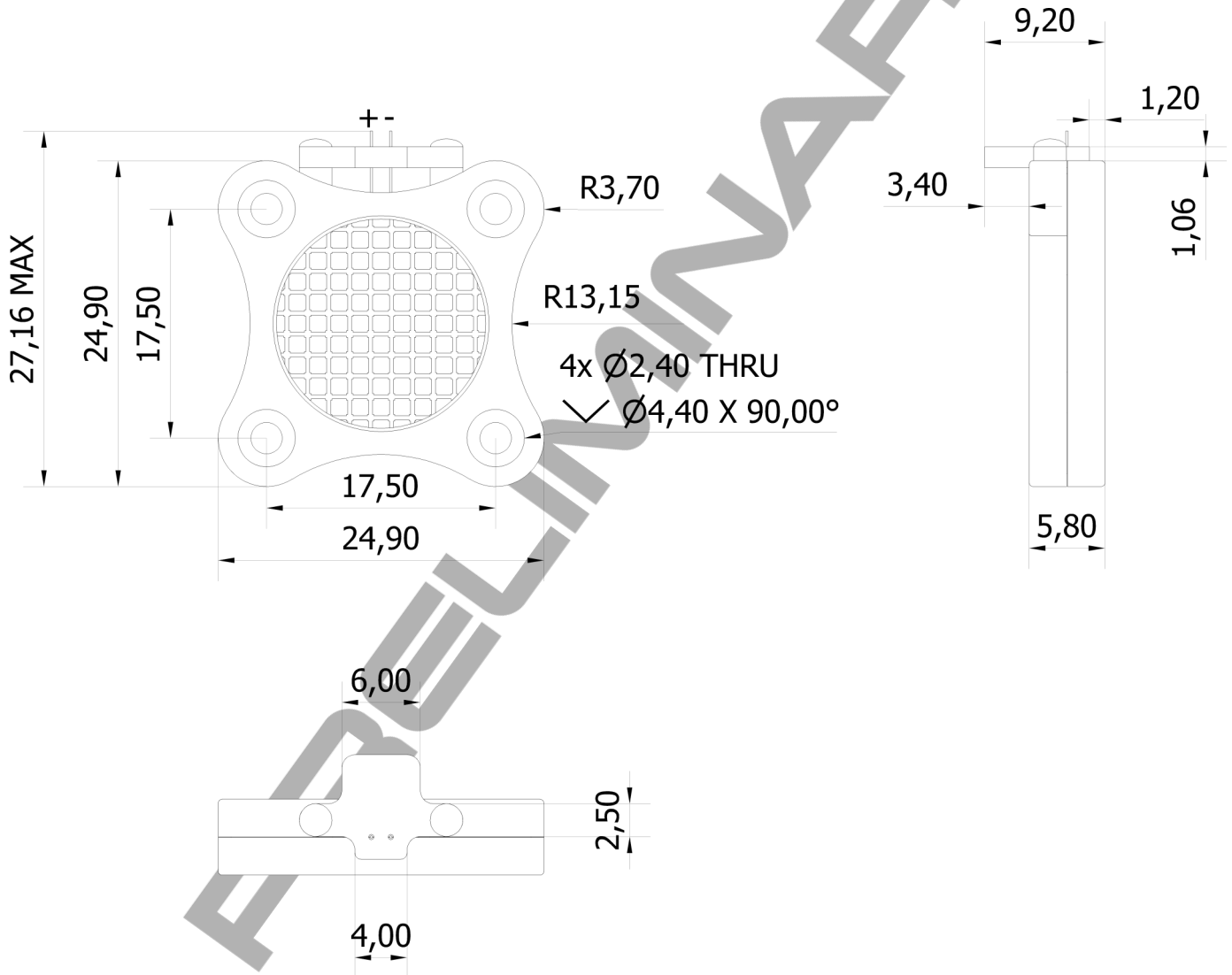


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CALIBRATION

Production of a suitable span gas for performing formaldehyde calibrations is not trivial, and can only be achieved through the use of suitable equipment. In limited cases, by arrangement, a calibration or sensitivity determination can be carried out at the factory for an additional fee. Dart Sensors can supply a test bench system suitable for development work based on a liquid reference fluid. In production situations the only acceptable method is to use a humidified permeation or diffusion tube based apparatus; Dart Sensors can supply such a system on a turn-key basis. 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



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