

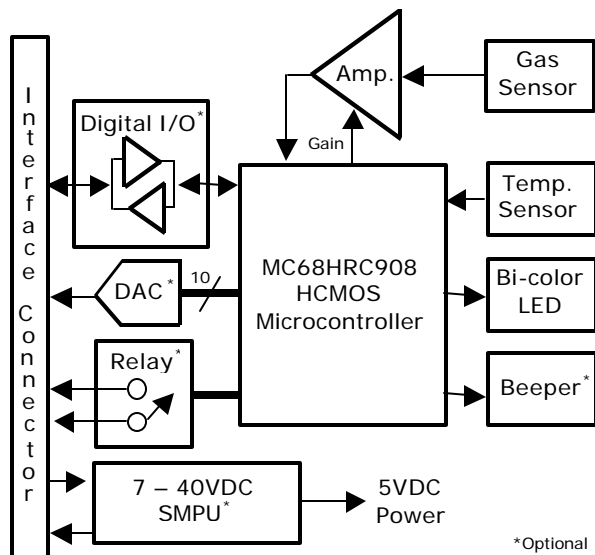
## Intelligent Electrochemical Sensor Gas Detectors

### DESCRIPTION

Panterra-ECHEM is a series of trace gas detectors based on electrochemical sensor technology for applications requiring accuracy, sensitivity and selectivity. These sensors are intended for ambient safety applications.

### TARGET GASES

- |                  |                   |
|------------------|-------------------|
| Ammonia          | Hydrogen sulphide |
| Carbon monoxide  | Nitric oxide      |
| Chlorine         | Nitrogen dioxide  |
| Ethylene oxide   | Oxygen            |
| Hydrogen (trace) | Phosphine         |
| Hydrogen cyanide | Sulfur dioxide    |



### SPECIFICATIONS (Preliminary and Tentative)

Target Gas	Chem	Range	Res.	Accur.	T90	Temp.	RH%	Life
Oxygen	O <sub>2</sub>	0-30%	0.1%	2%	15s	-20-50	0-99	2 yrs
Carbon monoxide	CO	1,000 ppm	1 ppm	2%	25s	-20-50	15-90	2 yrs
Hydrogen sulphide	H <sub>2</sub> S	100 ppm	0.1 ppm	2%	30s	-40-50	15-90	2 yrs
Sulfur dioxide	SO <sub>2</sub>	100 ppm	0.1 ppm	2%	75s	-20-50	15-90	2 yrs
Nitric oxide	NO	500 ppm	0.5 ppm	2%	30s	-20-50	15-90	2 yrs
Nitrogen dioxide	NO <sub>2</sub>	100 ppm	0.1 ppm	2%	25s	-20-50	15-90	2 yrs
Hydrogen cyanide	HCN	100 ppm	0.5 ppm	2%	200s	-20-50	15-90	2 yrs
Hydrogen (trace)	H <sub>2</sub>	2,000 ppm	2 ppm	2%	90s	-20-50	15-90	2 yrs
Chlorine	Cl <sub>2</sub>	100 ppm	0.1 ppm	2%	60s	-20-50	15-90	2 yrs
Ammonia	NH <sub>3</sub>	200 ppm	0.5 ppm	10%	150s	-25-30	15-90	1 yr
Ethylene oxide	C <sub>2</sub> H <sub>4</sub> O	100 ppm	0.1 ppm	2%	120s	-20-50	15-90	2 yrs
Phosphine	PH <sub>3</sub>	20 ppm	.05 ppm	2%	160s	-20-50	15-90	2 yrs

Note: All sensors rated for atmospheric pressure +/- 10%.  
 Operating temperatures specified in degrees Celsius.  
 Accuracies specified as percent signal repeatability and linearity error.  
 Relative humidity specifications refer to non-condensing environments  
 Lifetime specification based on nominal operation in air

# Panterra-ECHEM Gas Detector

## STANDARD FEATURES

Supported states:	Normal, Warning, Alarm, Error
Visual indication:	Bi-color (red/green) LED
Audio indication:	80dB at 30cm beeper (optional)
Relay:	<ul style="list-style-type: none"> <li>- 100 VA sealed SPST</li> <li>- NO or NC</li> <li>- Auto reset or manual reset (latching)</li> </ul>
Sensor sampling system:	10-bit A/D with auto-ranging analog front end
Temperature compensation:	Active compensation over entire operating range
Output signaling (one of):	
0-5VDC:	8 or 10-bit DAC (optional)
TTL:	Normally high/low – Auto/Latching (optional)
Step function:	Voltage encoded Normal, Warning, Alarm, Error (optional)
Digital communications:	PK-Port™ compliant signaling for calibration and monitoring
Input power:	
I1:	5VDC regulated
I2:	7-40VDC unregulated
I3:	7-60VDC unregulated
Mechanical:	<ul style="list-style-type: none"> <li>- 2.5" x 2.0" x 1.0" form factor</li> <li>- Anodized aluminum enclosure optional</li> <li>- Extendable sensor: 25' cable, 1" x 1" x 1" sensor head</li> </ul>
General:	<ul style="list-style-type: none"> <li>- User-settable alarm/warning via <i>PK-Port™</i></li> <li>- Digital FLASH-based calibration</li> <li>- Each device factory pre-calibrated</li> <li>- Field re-programmable firmware</li> </ul>

## SPECIAL FEATURES

Error detection:	Temperature error (signal as Alarm or Error state)
Power consumption:	100mW

## ORDERING OPTIONS

Target gas:	O <sub>2</sub> , CO, H <sub>2</sub> S, SO <sub>2</sub> , NO, NO <sub>2</sub> , HCN, H <sub>2</sub> , Cl <sub>2</sub> , NH <sub>3</sub> , C <sub>2</sub> H <sub>4</sub> O, PH <sub>3</sub>
Action levels:	Warning and alarm concentration as percentage of range
Output signal type:	None, 0-5VDC, TTL – norm. hi/lo – auto/latch, step function
Relay type:	None, norm. open/closed – auto/latch
Beeper:	None, included
Operating voltage:	5VDC, 7-40VDC, 7-60VDC
Enclosure:	None (open frame), anodized aluminum