



## Features

- Digital measurement value processing incl. temperature compensation
- Internal functional control with integrated Hardware Watchdog
- Data / measured values in  $\mu C$  Sensor, therefore simple exchange of sensor uncalibrated <> calibrated
- Software according to SIL2 compliant development process
- Modular technology (plug-in and replaceable)
- Easy maintenance and calibration by exchange of the sensor cartridge or by comfortable on-site calibration
- Serial RS 485 interface with protocol for CGD06. Modbus and BacNet.

Technical Data	Sensor Board
<b>Electrical</b>	
<b>Power supply</b>	16 – 29Vdc, reverse-polarity protected
<b>Power consumption</b>	100mA (2.4 VA), 24Vdc
<b>Analog input signal</b>	4 -20mA, overload and short-circuit proof, input resistance 200 $\Omega$
<b>Voltage for external analog sensors</b>	24 Vdc, max. 100 mA
<b>Digital input signal</b>	Potential-free contact
<b>Function</b>	Acknowledge or test function
<b>Analog output signal</b>	Proportional, overload and short-circuit proof, load $\leq$ 500 Ohm <b>4-20 mA or 2-10V</b> = meas. range <b>3.2 &lt;4 mA</b> = underrange <b>&gt;20- 21.6 mA</b> = overrange <b>2.5 mA</b> = fault <b>&gt;21.8 mA</b> = fault high
<b>Output for local sensor</b>	5 Vdc, 250 mA max. Overload, short-circuit and reverse-polarity protected"
<b>Temperature range</b>	-20 °C to +50 °C (-31 °F to 122 °F)
<b>Humidity range</b>	15 - 95 % r.H non-condensing
<b>Storage temperature</b>	5 °C to 30 °C (41 °F to 86 °F)
<b>Storage time</b>	6 months
<b>Serial interface</b>	
<b>Local bus</b>	1-wire / 19200 Baud
<b>Field bus</b>	RS 485 / 19200 Baud
<b>Tool bus</b>	2-wire / 19200 Baud
<b>Mounting Height</b>	<b>0.2m above floor</b>
<b>Protection class</b>	IP 65
<b>Wire connection:</b>	
Field bus	Screw-type terminal min. 0.25 mm <sup>2</sup> , max. 2.5 mm <sup>2</sup>
Local bus	3-pin connector
Digital input, analog output	Screw-type terminal min. 0.25 mm <sup>2</sup> , max. 1.5 mm <sup>2</sup>
Power supply, relays	Screw-type terminal min. 0.25 mm <sup>2</sup> , max. 2.5 mm <sup>2</sup>

## Application

The Combi Detector is used as a stand-alone unit with its relay outputs or alternatively with its analog output signal.

It is also used as a two-wire connection and contact anywhere in the building network.

## Design Features

Sensor board with RS 485 interface, 4 – 20 mA output and further options for integration of the sensor and/or for connection of analog sensors.

The Combi Detector provides the power supply of the sensor and makes the measured data available for digital communication and for the 4 to 20 mA output.

Communication with the CGD06 controller takes place via the RS 485 field bus interface with CGD06 protocol.

The optional alarm relays can be controlled both via the CGD 06 controller and locally via the measurement signals.

The digital input for acknowledgment or test function and other options such as various communication protocols for direct connection to superordinate BMS ensure the adaptation to the wide range of applications in gas detection technology.

The sensor is connected to the local bus via a plug connection enabling simple SC exchange instead of an on-site calibration.

The internal X-Change routine recognizes the exchanged sensor after the exchanging process and starts the measurement mode automatically.

An LED indicates the correct procedure of the exchange operation. As an alternative, the on-site calibration via the CGD06 Service Tool can be used with the integrated, comfortable calibration routine.

## Ordering Codes on next page



# Propyl Alcohol, Combustible gas Combi Detector - Analog, Fieldbus, Relays

CPAL

Mar. 16

**Directives** "EMC directives 2004/108/EC CE  
Conformity to: EN 50271  
EN 61010-1:2010  
ANSI/UL 61010-1  
CAN/CSA-C22.2 No. 61010-1"

**Options**

**Power relays (3)** 250 V AC, 5 A, potential-free, change-over contact (SPDT)

**Modbus protocol RTU RS-485** Transmission of current measured values & alarm stages

Technical Data	Sensor
<b>Electrical</b>	
<b>Power supply</b>	5 Vdc from sensor board, reverse polarity protected
<b>Power consumption:</b>	200 mA, max. (1.0 VA)
<b>Serial interface local bus</b>	1-wire / 19200 Baud
<b>Sensor element</b>	
<b>Sensor element</b>	Pellistor (catalytic bead sensor)
<b>Measuring range</b>	0 – 100 % LEL
<b>Accuracy</b>	± 1 % LEL
<b>Resolution</b>	0.2%
<b>Repeatability</b>	< 1 % sig.
<b>Response time <math>t_{90}</math></b>	10 sec.
<b>Zero point variation</b>	0.5 %
<b>Long-term zero-point drift</b>	< 0.3 % LEL / month
<b>Long-term sensitivity drift</b>	< 1 % LEL / month
<b>Temperature range</b>	-20 to +50 °C (-4 to 122 °F)
<b>Humidity range</b>	5 - 95 % r.H non-condensing
<b>Pressure range</b>	Atmospheric ± 20 %
<b>Sensor life time</b>	> 36 months / normal ambient conditions
<b>Calibration interval<sup>1</sup></b>	6 months
<b>Storage temperature range</b>	+ 5 to + 30 °C (41 to 86 °F)
<b>Storage time</b>	6 months
<b>Poisoning</b>	The sensitivity of Pellistor sensors can be influenced by substances containing silicon compounds and even poisoned and destroyed by them.
<b>Warranty</b>	1 year on material (without sensor element)

<sup>1</sup> Manufacturer-recommended calibration interval for normal environmental conditions.

**Ordering Codes**

<b>CPAL 100</b>		0-100%LEL 4-20mA 16-29Vdc
<b>CPAL 100M</b>	ModBus	0-100%LEL 4-20mA 16-29Vdc
<b>PAL 100</b>	Sensor Head	0-100%LEL för utbyte ( 3-year life span)
<b>CPS 230</b>	Power Supply 90-240Vac/15VA	
<b>CRELPAL</b>	3 st relay outputs for different alarm levels, standard 20% / 30% / 100% LEL	
<b>CSTOP</b>	Reset button with external input, incorporated in detector	
<b>CBUZ LED</b>	Buzzer with LED indication in 3 colours, incorporated in detector	
<b>CDUCT</b>	Kit for duct mount	
<b>DR 24/30</b>	Power Supply 24Vdc	
<b>CSTAIN</b>	Option for stainless housing	
<b>REG</b>	Pressure regulator, flow adjustment to 0.5 l/min	
<b>GAS</b>	Calibration Gas 17 liter	
<b>GKIT</b>	Calibration Kit	
<b>Alarm Units</b>		
<b>AAW 24</b>	Warning Horn 24Vdc 98dB	
<b>AAW 230</b>	Warning Horn 230Vac 98dB	
<b>OA 24</b>	Flashlight 24Vdc, red	
<b>OAW 24</b>	Combined Warning Horn/Flashlight, 24Vdc 98dB	
<b>OAW 230</b>	Combined Warning Horn/Flashlight, 230Vac 98dB	
<b>OAW 24T</b>	Combined Warning Horn/Flashlight with reset button, 24Vdc 98dB	
<b>Warning Plate</b>		
<b>Gas Alarm</b>	Flashing gas alarm plate "GASALARM" 24Vac/dc	

## Set-up and Standard Alarm Levels

0 - 100% LEL

- Early alarm level set at **5% LEL**
- Emergency alarm level set at **20% LEL**

Special protection for people and buildings. The units are manufactured in accordance with the rules and directives such as EN50545.

Products delivered by the AP meets and exceeds the requirements of the new European standard EN50545.

Safety functions control devices for connection warnings regarding functionality and open circuit - day and night.  
Level SIL2 according to EN 50271.

### Set-up:

At 4mA the detector indicates that the sensor's service life has ended and links the fault indication to a relay output for alarm or similar.

3.2 mA and 21,6mA indicate sensor error.

This is nonetheless an error and these values can be used for diagnostics as an internal check on functionality.

## Electrical Connection

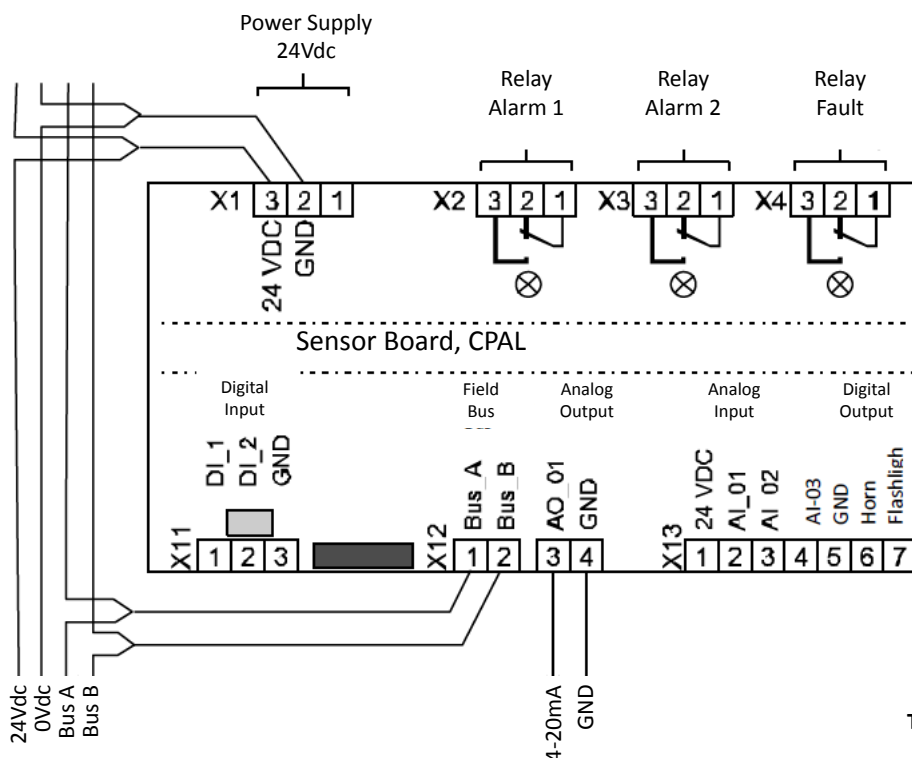


Table: Connection options for sensors

Connection to CPAL	Sensors via local bus	Analog sensors with 4-20 mA signal
Number	0	1 - 3
Number	1	0 - 2
Number	2	0 - 1

### Field Bus

We cannot be held responsible for errors in the manual/datasheet and reserve the right to correct any errors and to make product improvements, which may affect the accuracy of the manual/datasheet, without prior notice.