ASENSE-R (Standard)

ASENSE ROOM

CO2 Room Sensor with Relay Option

The ASENSE Room series monitors the carbon dioxide (CO2) levels in commercial, school, and office type environments. The concentration of CO2 is a strong indication of the overall indoor air quality. The ASENSE Series is based on a single beam non-dispersive infrared technology and is a cost-optimized solution for the climate control of buildings and other processes. In addition, ABC software eliminates the need for manual calibration. The ASENSE Series measures the CO2 concentration in the ambient air up to 2,000 ppm and converts the data into an analog output. This data can be used in conjunction with a Building Automation or Demand Control Ventilation System to create a healthier indoor climate. This series features an analog temperature output (32 to 122°F) and come with combined output options of 0-10 VDC and 0 to 20 mA (4 to 20 mA and 2-10 VDC are field selectable via an onboard jumper). A relay option is available for this series as well. The UIP5 software and programming cable offer a configuration/test utility and provide access to the main features of the ASENSE series.

Applications: Commercial Office Buildings, Gymnasiums, Shopping Malls, Auditoriums, Theaters, Hospitals & Schools

The ASENSE Room Series is covered by ACI's Five (5) Year Limited Warranty. The warranty can be found in the front of ACI's Sensors & Transmitters catalog, as well as on ACI's website, www.workaci.com.

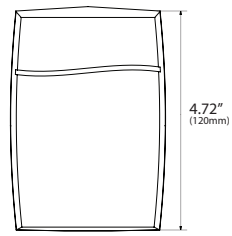
PRODUCT SPECIFICATIONS

Supply Voltage:	24 VAC/VDC ±20%; 50/60 Hz, 10.5 to 40 VDC maximum (Half-wave rectified)
Power Consumption:	<1W
Wiring Connections:	0.00232 in^2 (1.5 mm^2) screw terminals
Operating Environment:	Residential, commercial and industrial spaces
Operating Temperature:	32ºF to 122ºF (0ºC to 50ºC)
Operating RH:	0 to 85% RH Non-condensing
Warm-Up Time:	<5 minutes (@ full specs 15 minutes)
Accuracy:	**CO2[1]:** ±30 ppm and ±3% of reading | **Temperature:** ±1.8ºF (1ºC)
Repeatability:	±20 ppm ±1% of measured value
Annual Zero Drift:	<± 0.3% of measurement range
Operating Pressure:	+1.6% per 0.145 psi (1 kPa) deviation from normal pressure (1 Atmosphere = 14.7 psi (1.013 KPa))
Sensing Method:	Single beam Non-dispersive Infrared (NDIR)
Sensor Life [2]:	>15 years
Response Time (T1/e):	<10 seconds @ 30 cc/minutes flow rate, <3 minutes diffusion time
Sensing Range:	**CO2:** 0 to 2000 ppm | **Temperature:** -4 to 140ºF (-20 to 60ºC)
Extended CO2 Ranges:	Up to 10,000 ppm (factory set or programming cable required)
Extended Range Accuracy > 2,000 PPM:	+/- 30 ppm and +/- 5% of reading
Coverage Area:	7500 sq. ft. maximum
Mounting Height:	4-6' off the floor
Self-Diagnostics:	Complete function check, yellow LED; LCD error indication (display model only)
Display (Optional):	4 digits, 7 segments LCD with ppm indicator
Calibration [3]:	Senseair ABC algorithm (Automatic Baseline Correction)
Outputs:	**Output 1 (CO2):** 0/2 to 10V, 0/4 to 20 mA, 0 to 2000 ppm **Output 2 (Temperature):** 0/2 to 10V, 0/4 to 20 mA, 32 to 122ºF (0 to 50ºC)
Relay (Optional):	**Output 3:** N.O. or N.C. rated 0.5A @ 125 VAC; 1A @ 24 VDC
Relay Trip Point:	1000 ppm (factory set)
Relay Deadband/Hysteresis:	100 ppm (factory set)
Relay Durability:	**Mechanical:** 5,000,000 operations minimum (at 36,000 operations/hr) **Electrical:** 100,000 operations minimum (under rated load, at 1,800 operations/hr)
Storage:	**Standard Versions:** -40 to 158ºF (-40 to 70ºC) | **LCD Versions:** -4 to 122ºF (-20 to 50ºC) 0 to 85% RH Non-condensing
Enclosure:	ABS, Flammability Rating UL94-HB
Product Dimensions:	**ASENSE-R & ASENSE-R-LCD:** (H) 5.12" (130 mm) x (W) 3.35" (85.1 mm) x (D) 1.18" (30 mm)
Product Weight:	**ASENSE-R:** 0.300 lbs (0.136 kg) | **ASENSE-R-LCD:** 0.314 lbs (0.142 kg)
Agency Approvals:	EMC Directive 2014/30/EC, RoHS Directive 2011/65/EU & RoHS 3 Directive 2015/863/EU

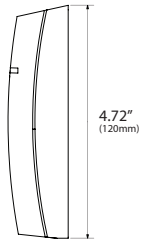
Note [1]: Accuracy is defined after minimum three (3) ABC periods (1 period = 8 days) of continuous operations | **Note [2]:** In normal Indoor Air Quality (IAQ) applications | Corrosive environments are excluded | **Note [3]:** Building CO2 levels must drop to 400 ppm some time during the week for ABC to work properly | If the building is occupied 24 hrs/day, ABC must be turned off | Changes can be made using TTL-232R-3V3 cable and UIP5 software

DIMENSIONAL DRAWING

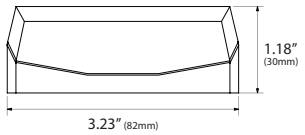
ASENSE Room (Standard)



Front View



Right View



Top View

STANDARD ORDERING

Model # Example: ASENSE-R-REL -OR- 130529

Model #	Item #	Description
ASENSE-R	131189	CO2 Room, 0-10 VDC or 0-20 mA Output, 4-20mA or 2-10 VDC Field Selectable
ASENSE-R-REL	130529	CO2 Room, 0-10 VDC or 0-20 mA Output, Relay, 4-20mA or 2-10 VDC Field Selectable
ASENSE-R-LCD	131191	CO2 Room, with Display, 0-10 VDC or 0-20 mA Output, 4-20mA or 2-10 VDC Field Selectable
ASENSE-R-LCD-REL	130530	CO2 Room, with Display, 0-10 VDC or 0-20 mA Output, Relay, 4-20mA or 2-10 VDC Field Selectable

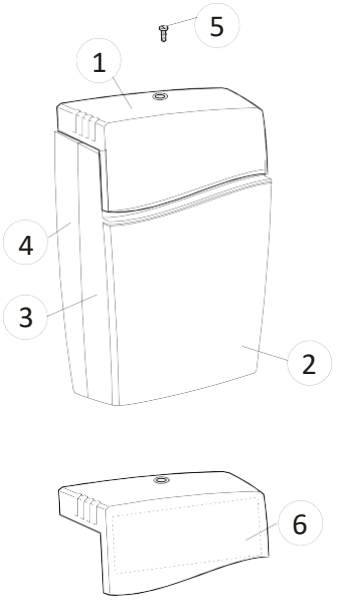
ACCESSORIES ORDERING

Model #	Item #	Description
A/CUSTOM CAL GAS*	140970	Custom Calibration
TTL-232R-3V3	134207	Programming Cable
UIP5	----	Free Software Download (Contact ACI)

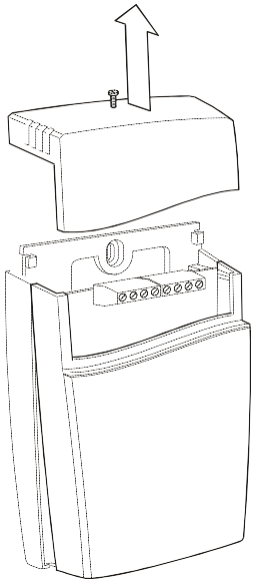
Model # Example: A/CUSTOM CAL GAS -OR- 140970

Note*: Contact ACI's Technical Support for custom calibration ranges

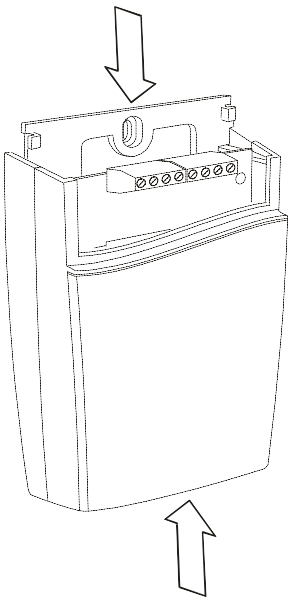
Dismounting of the sensor



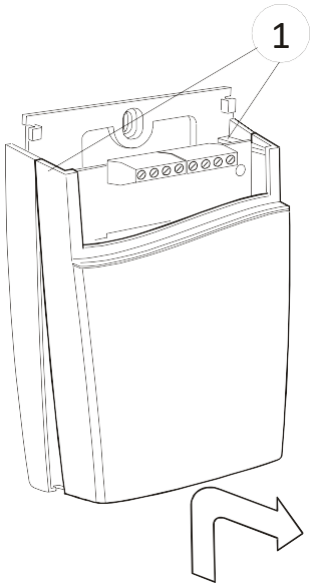
1 top part
2 lid
3 front part
4 wall plate
5 screw
6 label with settings inside the top part



Pull the top part upwards

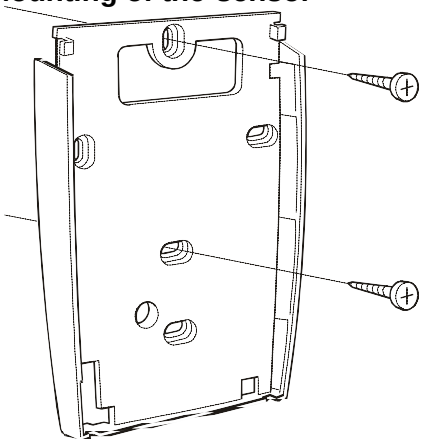


Push the front part with the lid upwards while keeping the wall plate steady

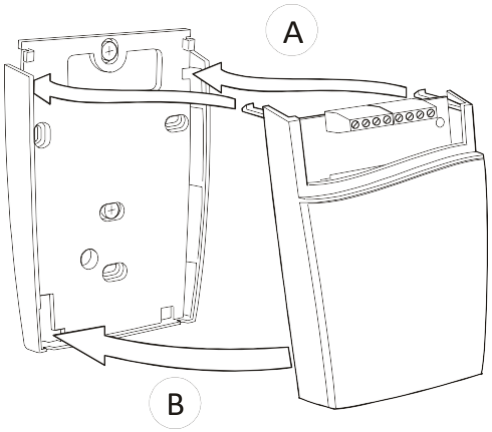


Fold the front part with the lid forwards and loose it from the hooks (#1)

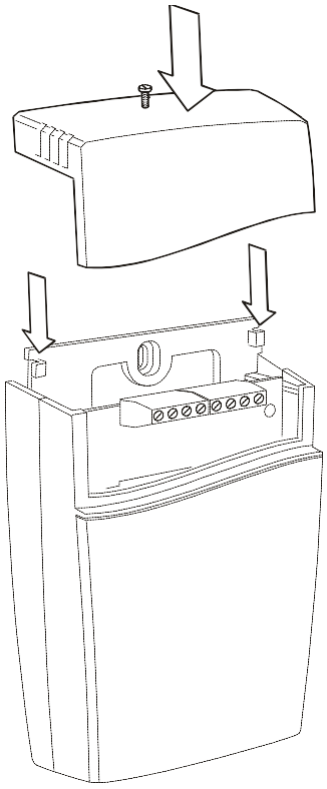
Mounting of the sensor



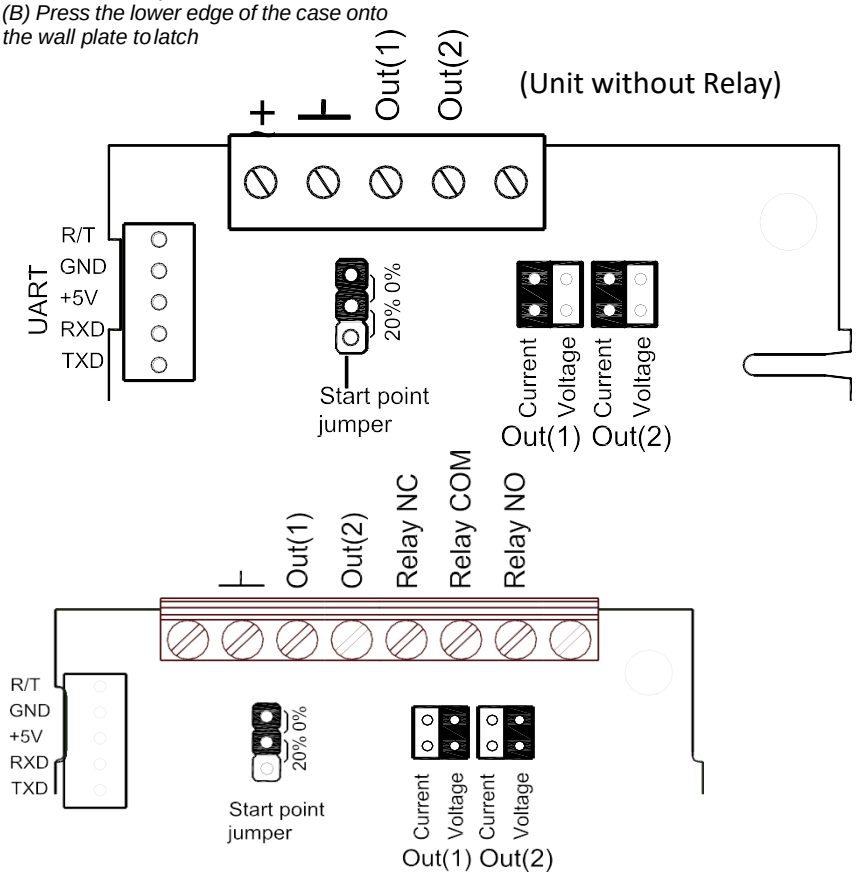
The wall plate is screwed onto the wall
*The screw head diameter should be **max 7,5 mm***
*The screw head height should be **max 2,5 mm***



(A) Put the top tabs of the front part into the top holes of the wall plate.
(B) Press the lower edge of the case onto the wall plate to latch



The top part is pushed under the locking hooks of the wall plate and is secured with a screw



Terminals and jumpers on aSENSE RL.
The darker positions are default settings.
Terminals and jumpers are located under the top part.

If for some reason the PCB must be removed it must be handed carefully and protected from electrostatic discharge! Normally, removing the PCB is not required.

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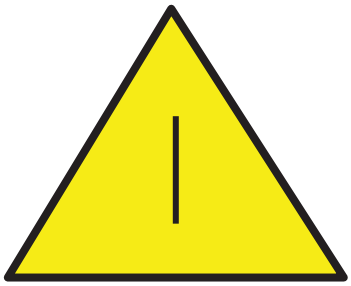
Electrical connections

The power supply has to be connected to ~ and +. ⊥ is considered as system ground. If the analogue output is connected to a controller *the same ground reference must be used for the aSENSE RL unit and for the control system!* Unless different transformers are used, special precautions need to be taken.



PLEASE NOTE! The same ground reference must be used for the *aSENSE RL* unit and for the control system!

If possible, keep the sensor powered up after mounting. Connect the analogue output before measuring.

Connection Terminal	Function	Electrical Data	Remarks
~ + ⊥	Power (+) Power ground (-)	24 VAC/DC+ (+-20%), 3W 24 VAC/DC-	2W without output load *See note 1!*
Out(1) Out(2)	Analogue Output 1 (+) Analogue Output 2 (+)	0-10 VDC or 0-20 mA, 2-10 VDC or 4-20 mA, Same as Output 1	According to positions of OUT1 and start point jumpers. *See note 2!* According to positions of OUT2 and start point jumpers. *See note 2 and 3!*
5 6 7	Normally closed relay Relay COM Normally open relay	Contact free relay minimum load 1mA/5V rated load 0.5A/125VAC; 1A/24VDC	Triggered by register Out(3)
8	Not used		

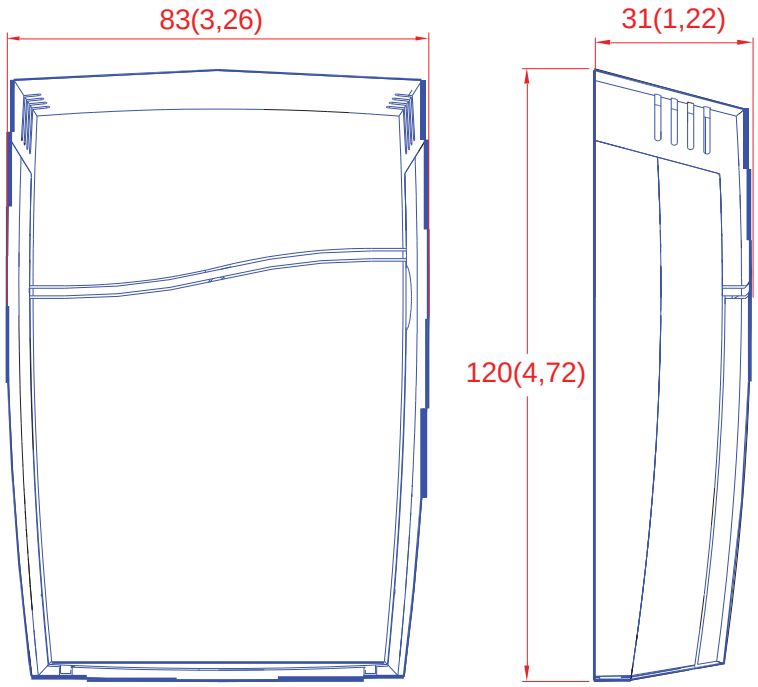
Table I. Electrical terminal connections for aSENSE RL

Note 1: *The ground terminal is used as negative power supply DC input or AC phase ground (halfwave rectifier). A single transformer may be used for the entire system.* ⊥

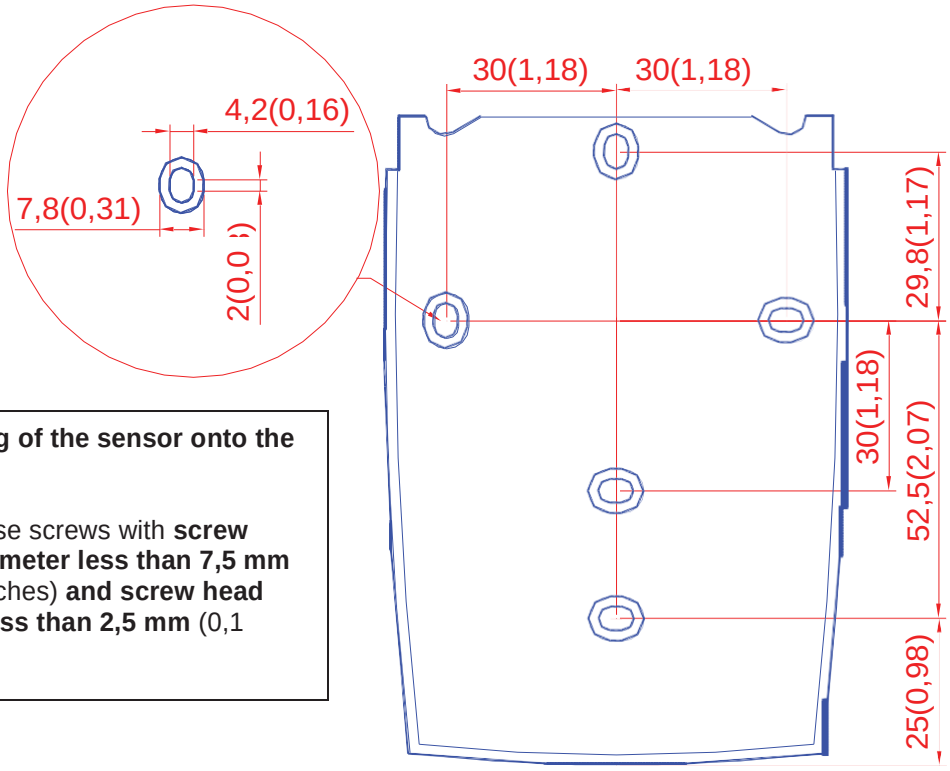
Note 2*: aSENSE RL can deliver a voltage or a current loop for Out(1) / Out(2). To change between voltage and current output mode the hardware jumpers are used. There is one jumper for Out(1) and one for Out(2), so that one output can be a voltage output and the other a current output. Both, voltage output and current output can have start points 0 % (0-10 VDC or 0-20mA) or 20% (2-10 VDC or 4-20mA). The same start point is used for both outputs. See the function manual.*

Note 3: *Please use voltage outputs for temperature measurements. The accuracy of temperature measurements is valid only for units configured in voltage outputs mode.*

Dimensions and holes



Dimensions of sensor in mm and (inches)



Mounting of the sensor onto the wall

Please use screws with **screw head diameter less than 7,5 mm** (0,295 inches) **and screw head height less than 2,5 mm** (0,1 inches)

Dimensions of mounting plate in mm and (inches)