

HONEYWELL

Transmission Risk Air Monitor

A cost-effective monitor for use in schools, restaurants, and other small-to-medium-sized buildings that alerts users when conditions are present that may increase the risk of exposure to airborne viral transmission.*

Classrooms, restaurants, and buildings with outdated HVAC and ventilation systems can foster environments where the risk of airborne virus transmission could increase.* Honeywell proprietary technology that monitors CO₂ levels, coupled with user-controlled settings to account for human activity levels in an indoor area, provides users with a portable, cost-effective, and user-friendly solution that alerts when conditions are present that may increase the risk of exposure to airborne viral transmission.

Research conducted by scientists at the University of Colorado¹ has shown that real-time monitoring of indoor ambient air can be an indicator of increased risk of airborne viral transmission, utilizing different levels of risk-based factors such as CO₂ concentration levels and the type of human activity in the area.*

Using this guidance and Honeywell algorithms, we identified air quality conditions that are driven by common activities and variables such as average room size, number of people present, breathing rate, and duration. The device comes with three pre-programmed indoor activity settings: low activity (movie theaters, libraries, and classrooms), medium activity (restaurants, offices, small clinics), and high activity (gyms, indoor arenas, recreation centers) and is recommended for coverage of 800-1000 square feet. For each setting, the monitor provides indications using a traffic light pattern (green, yellow, or red) and a sound alarm so users can be aware of conditions that may increase the risk of airborne transmission based on detectable CO₂ levels.



The Honeywell Transmission Risk Air Monitor helps you monitor indoor environments in real time for conditions that may increase exposure to airborne viruses.



Monitor air for students in classrooms to determine potentially higher risk conditions.



Monitor air in restaurants to alert to possible higher risk situations.

FEATURES AND BENEFITS



The monitor comes with a user manual and USB charging cable. AC adapter sold separately.



Made of alloy and plastic, the monitor's sleek, lightweight design makes it easy to carry for real-time monitoring anywhere.



Red (high), yellow (medium), and green (low) for at-a-glance estimation of risk levels.

Honeywell

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Honeywell Transmission Risk Air Monitor Technical Specifications

SPECIFICATIONS	
CHARACTERISTIC	PARAMETER
Dimensions (H × W × D)	80 mm × 80 mm × 22 mm [3.1 in × 3.1 in × 0.87 in]
Weight	140 g
Housing materials	Aluminum alloy
Display	TFT
Input voltage	5 V
Input current	1 A
Battery	Lithium-ion rechargeable battery 10-hour battery time
Battery capacity	2,600 mAh
Operating temperature & humidity	0°C to 40°C, 0% RH to 90% RH
USB port	Micro USB

In California's 2020 School Reopening Ventilation and Energy Efficiency Verification and Repair Program legislation, the importance of CO₂ monitoring in classroom settings is highlighted,

“To ensure proper ventilation is maintained throughout the school year, all classrooms shall be equipped with a carbon dioxide monitor.”²

Monitors should be placed in the center of activity areas and should be close to breathing height (approximately 1.5 m, depending on the height or age of the room occupants), out of direct sunlight, and not directly located near induction units, floor fans, or heaters.

SENSOR RANGE	
DESCRIPTION	DETECTION RANGE
CO ₂ (NDIR)	400 ppm to 2000 ppm, up to 10,000 ppm extended range
Temperature	-20°C to 60°C or -4°F to 140°F
Humidity	0% RH to 100% RH

DEVICE INDICATION⁴



	GREEN	YELLOW	RED
Low Activity Setting⁵⁶	<800 ppm 0.043% infection risk	800 ppm 0.043% infection risk	1100 ppm 0.051% infection risk
Medium Activity Setting⁵⁷	<700 ppm 3.40% infection risk	700 ppm 3.40% infection risk	1000 ppm 5.41% infection risk
High Activity Setting⁵⁸	<500 ppm 7.32% infection risk	500 ppm 7.32% infection risk	800 ppm 25.25% infection risk
Custom Setting	The end user can also choose custom settings on the device to set the alarm threshold levels based on the user's parameters and local, regional and state requirements. Note: If custom settings are used, the user is solely responsible for validating that those alarm settings meet their specific requirements.		
Recommended Action	–	<ul style="list-style-type: none"> Open windows Turn on HVAC fan Move out of room Additional actions as needed 	<ul style="list-style-type: none"> Ventilate room immediately Reduce activities Move out of room Additional actions as needed
Alarm	–	One beep	Two beeps

SCENARIO SELECTION

The device has three pre-programmed scenario settings based on activity levels.

- Low activity:** Reading, quietly talking, Breathing rate (susceptibles): 0.252 m³/h, CO₂ emission rate/person: 0.0052 (@ 273 K and 1 atm), Quanta exhalation rate (infected): 9.4 quanta/h, activity duration for 30 minutes
- Medium activity:** Eating, talking loudly, Breathing rate (susceptibles): 1.2 m³/h, CO₂ emission rate/person: 0.012 (@ 273 K and 1 atm), Quanta exhalation rate (infected): 170 quanta/h, activity duration for 45 minutes
- High activity:** Running, jumping, exercising, Breathing rate (susceptibles): 3 m³/h, CO₂ emission rate/person: 0.016 (@ 273 K and 1 atm), Quanta exhalation rate (infected): 408 quanta/h, activity duration for 60 minutes
- Other general assumptions** from risk estimator can be found in the below table:

Parameters	Value	Unit	Source
Length of room	30	ft	
Width of room	30	ft	
Volume	900	sq ft	
Height	16	ft	
Pressure	0.95	atm	
Temperature	20	C	
Relative Humidity	50	%	
Background CO2 Outdoors	415	ppm	
Decay rate of the virus	0.62	h ⁻¹	default per https://tinyurl.com/covid-estimator
Deposition to surfaces	0.3	h ⁻¹	default per https://tinyurl.com/covid-estimator
Additional control measures	0	h ⁻¹	default per https://tinyurl.com/covid-estimator
Total N people present	20	ft	
Infected People	1	person	
Fraction of population immune	0%		default per https://tinyurl.com/covid-estimator
Exhalation mask efficiency	0%	no mask	
Fraction of people w/ masks	0%	no mask	
Inhalation mask efficiency	0%	no mask	
Quanta Concentration initial value	0.00	no virus at the beginning	

- The default setting is the low activity setting with the alarm threshold of 800 ppm for medium and 1100 ppm for high.

*** The Honeywell Transmission Risk Air Monitor (HTRAM) analyzes specific air quality conditions and alerts the user when conditions are present that may increase risk of potential exposure to airborne viral transmission. It does not prevent or reduce virus transmission nor mitigate viruses that may be present, nor does it detect or warn against the presence of any virus, including but not limited to COVID-19. Even at lower risk levels caution is required to prevent viral transmission. The HTRAM does not repel or destroy any microorganism, viruses, bacteria, or germs.**

- It is buyer's sole responsibility (1) to determine the suitability of the HTRAM for use in its application; (2) to operate the HTRAM in accordance with the User Manual and any other instructions provided by Honeywell and in compliance with all applicable laws, rules and regulations; and (3) to determine, based on buyer's experience, expertise, and other available tools, the suitability of any product or service it may offer or recommend to the end user.
- Buyer is responsible for determining whether the product is appropriate for use under certain international, federal, state or local guidelines, and is likewise responsible for determining whether the HTRAM qualifies for any government programs, including without limitation, reimbursement plans.
- Any recommendations or assistance provided by Honeywell regarding the use or operation of the HTRAM – through our literature, the Honeywell web site, or otherwise – shall not be construed as representations or warranties of any kind, express or implied, and such information is accepted at buyer's own risk and without any obligation or liability to Honeywell. The information we supply in this data sheet is believed to be accurate and reliable as of this writing. However, specifications may change without notice, and Honeywell assumes no responsibility for its use.
- The HTRAM does not detect for levels of CO₂ that would make for an unsafe or unsuitable breathing environment.

1 <https://tinyurl.com/FAQ-aerosols>

2 https://leginfo.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=1.&title=&part=1.&chapter=8.7.&article=3

3 <https://pubs.acs.org/doi/10.1021/acs.estlett.1c00183>

- The HTRAM's preset PPM measurements for each activity level are subjective standards based on Honeywell's assessment of U.S. state statutory limits and scientific studies, including the "2020 COVID-19 Aerosol Transmission Estimator" and the "Exhaled CO₂ as a COVID-19 Infection Risk Proxy for Different Indoor Environments and Activities" article from the University of Colorado-Boulder (see <https://docs.google.com/spreadsheets/d/16K100KLD4BjgBd08ePi6ytf-RpPMJl6aXfg3PrIQB-bQ/edit#gid=519189277> and <https://pubs.acs.org/doi/10.1021/acs.estlett.1c00183>, respectively). The user must verify applicable standards or regulations and adapt the product's thresholds to such standards and regulations as required for its use intended by the user.
- Please note: A green designation does not mean no risk for transmission. An increase from green to yellow, yellow to red or green to red does not indicate a linear increase in potential transmission risk within one activity setting. Any increase in potential transmission risk across multiple activity settings is also not linear. Numerous factors, including without limitation, interaction among individuals in a room, the number of infected individuals present, and the wearing of Personal Protective Equipment (PPE) such as masks and gloves, will affect the potential transmission risk. Users should not rely solely on this device to make a determination of safety.
- Percent of infection risk calculation is based on the following assumptions and is only intended as guidance: Total number of people: 20, Infected: 1; Time duration: 30 mins and room size: 900 sq ft.
- Percent of infection risk calculation is based on the following assumptions and is only intended as guidance: Total number of people: 20, Infected: 1; Time duration: 45 mins and room size: 900 sq ft.
- Percent of infection risk calculation is based on the following assumptions and is only intended as guidance: Total number of people: 20, Infected: 1; Time duration: 60 mins and room size: 900 sq ft.

WARRANTY

- Under normal use and maintenance that is consistent with Honeywell manuals and instructions, Honeywell warrants that, for a period of one (1) year from the date of purchase, all components of this product, except software and software components, shall be free from faulty workmanship and defective materials. The software and software components, including any documentation designated by Honeywell for use with such software or software components, are provided "AS IS."
- These warranties do not apply if the claimed defect or nonconformity is due to accident, misuse, neglect, or improper shipping or handling, installation, or testing; or any failure of electrical power, air conditioning, or humidity control. This warranty is valid only if the product has not been tampered with or serviced by any party not authorized by Honeywell.
- If during the one-year warranty, the customer notifies Honeywell in writing of any alleged defect within 30 days of discovery, and it is determined by Honeywell that any component of the product, except software components, is defective due to faulty workmanship or defective materials, then Honeywell shall repair or replace such Product at Honeywell's sole discretion. Repair or replacement of a product (or any part thereof) does not extend the warranty period for such product. Products which have been repaired or replaced during the warranty period are warranted for the remainder of the unexpired portion of the original warranty period.
- In case of non-conforming products, users may return such product to the distributor where they made the original purchase.
- Honeywell shall not be responsible for any loss or damage of any form, including any accidental or necessary direct or indirect loss as a result of breach of any warranty or any other acts that damage the product.
- These explicit warranties are the only warranties provided by Honeywell with respect to the product and are in lieu of all other warranties, express or implied. Any implied warranty or guarantee, including merchantability, fitness for a particular purpose, and non-infringement of third party rights, shall not apply.
- This warranty only applies to the main unit of the product, and does not cover the package, manuals, consumables, or other components susceptible to damage or consumption or which have a normal life inherently shorter than the foregoing warranty period.
- Customers wanting additional warranty beyond the standard one-year warranty offered by Honeywell have the option to purchase a 2-year extended warranty when purchasing the product. Any such extended warranty shall only extend the timeframe of the warranty terms above from three years from the date of purchase, and shall not provide any additional warranty or guarantee, express or implied.

DISPOSAL

This product contains a lithium-ion battery and aluminum alloy materials. Upon receipt of the product, the customer is responsible for proper use, transport, storage and disposal of the product based on the battery and material type, including but not limited to applicable governmental requirements for proper disposal

CAUTION

Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

MANUFACTURER CERTIFICATE

Honeywell Safety and Productivity Solutions certifies that the CO₂ sensor in Honeywell Transmission Risk Air Monitor (HTRAM) device is maintenance-free in normal indoor environments. No calibration at end user is needed. The accuracy of the sensor is ±50 ppm at 1000 ppm CO₂.



SIMPLIFIED EU DECLARATION OF CONFORMITY

Hereby, Honeywell Safety and Productivity Solutions declare that the radio equipment type HTRAM-V2-W is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address:

Operating Frequency: 2400-2483.5 MHz (Bluetooth): <20 dBm EIRP; 2400-2483.5 MHz (WLAN IEEE 802.11b/g/n): <20 dBm EIRP.



This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.



SIMPLIFIED UK DECLARATION OF CONFORMITY

Hereby, Honeywell Safety and Productivity Solutions declare that the radio equipment type HTRAM-V2-W is in compliance with UK radio equipment regulation. The full text of the UK declaration of conformity is available at the following internet address:

RECHARGEABLE LI-ION BATTERY

Nominal Voltage: 3.6 V
Rated Capacity: 2480 mAh/8.93 Wh
Typical Capacity: 2600 mAh/9.36 Wh
Limited Charging Voltage: 4.2 V
Manufacturer: SCUJ (Fujian) Electronics Co., Ltd.
Red Wire: (+) Black wire: (-)
Made in China

WARNING: TO PREVENT INJURY, DO NOT DISASSEMBLE, PUNCTURE, CRUSH, HEAT, OR BURN

Use the authorized charger only. Never disassemble by yourself. Never short-circuit the battery. Dispose of the battery properly. Exposing the battery to an open flame could cause an explosion.

802.11 CAUTION

Users are responsible for configuring the channels of operation that comply with their country regulatory standards. A Wireless Network Administrator should review the operating restrictions for the access point.

Strangulation HAZARD: Children have STRANGLED in cords. Keep this cord out of reach of children (more than 3 ft (1m) away). Do not use with an extension cord.

THE
FUTURE
IS
WHAT
WE
MAKE
IT