

DISPOSITIVOS DE MONITOREO Y SOLUCIONES PARA LoRaWAN_{MT}



DECENTLAB

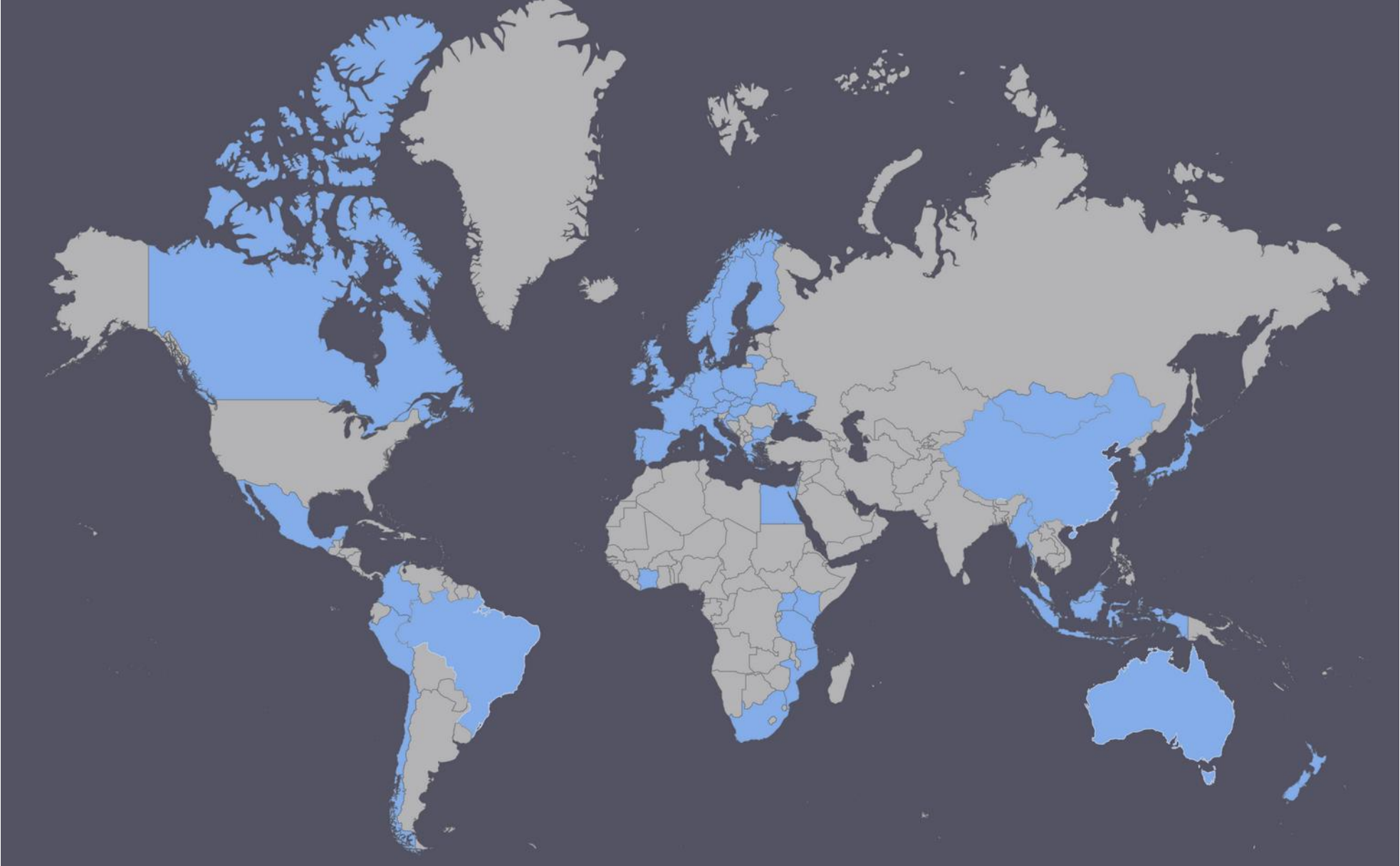
DECENTLAB GMBH

Los sensores inalámbricos y los expertos en LoRaWAN®

Fundada en 2008 y más de diez años de experiencia



DISPOSITIVOS EN MÁS DE 60 PAÍSES



PRODUCTOS LoRaWAN®



MONITOR DEL AMBIENTE INTERIOR



CO2

Temperatura

Humedad

Presión barométrica

Intensidad de luz

Nivel de presencia y actividad

Compuestos orgánicos volátiles

Funciona con pilas (2x AA)

LoRaWAN Clase A

MONITOR DEL AMBIENTE INTERIOR



Otorgado por Airparif París



Airparif premió Indoor Ambiance Monitor durante el Airlab Challenge 2018 y lo comparó con muchos competidores. Airparif está acreditada por el Ministerio de Medio Ambiente para controlar la calidad del aire en París.

*AIRLAB

CHALLENGE MICROCAPTEURS 2018

DECENTLAB Multisensor

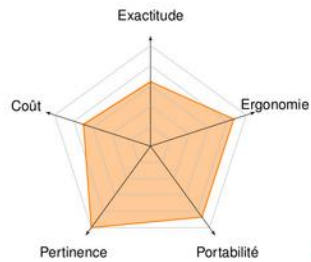
Usage pour lequel l'évaluation était la meilleure : sensibiliser à la qualité de l'air à l'intérieur

Avis du jury 2018

C'est appareil est destiné à la mesure de la qualité de l'air à l'intérieur des bâtiments. Pour un prix plutôt attractif, il mesure le CO₂ et les COV. Il se présente sous la forme d'un boîtier mural qui s'intègre facilement dans différents environnements intérieurs. Fonctionnant sur batteries, il dispose d'une excellente autonomie (3 ans) et son API est fonctionnelle. Si la qualité des mesures est très bonne pour le CO₂, elle est moyenne pour les COV. Toutefois, seul un prototype a pu être testé dans le cadre de ce challenge, sa commercialisation est prévue pour la fin de l'année 2018.



Évaluation



Usages évalués :
 ● en air extérieur
 ● en air intérieur
 ● en mobilité

Polluants mesurés

- NO₂ (NO_x)
- TSP
- Particules PM_{2,5}
- O₃
- COV
- CO
- CO₂
- Particules PM₁₀
- Particules PM₁
- Formaldéhyde
- SO₂
- Particules en nombre

Autres mesures

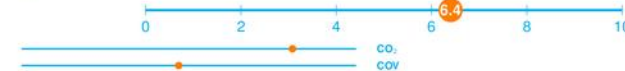
- Température
- Humidité
- Bruit
- Pression
- Luminosité
- Odeurs



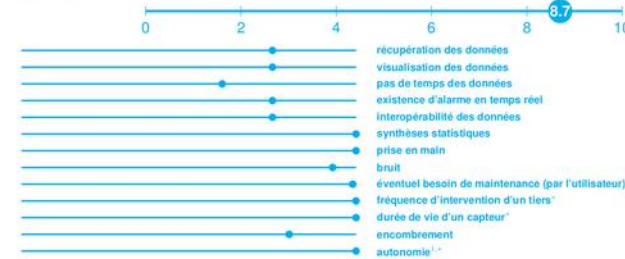
Détails des résultats

Usages évalués :
 ● en air extérieur
 ● en air intérieur
 ● en mobilité
 ● tous les usages

EXACTITUDE sur trois capteurs, à partir de la méthode SET (Fishbain & al. 2017)



ERGONOMIE



PERTINENCE des polluants : nombre et intérêt des polluants mesurés par le capteur au regard des catégories concourues



PORTABILITE^{1,2}



COÛT* investissement et fonctionnement sur 3 ans



¹ Pour les capteurs fonctionnant sur secteur, l'absence d'autonomie est uniquement prise en compte pour la portabilité
² Paramètre non évalué, mais noté sur la base des déclarations du fabricant

Entreprise

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Partenaires du challenge



USAR

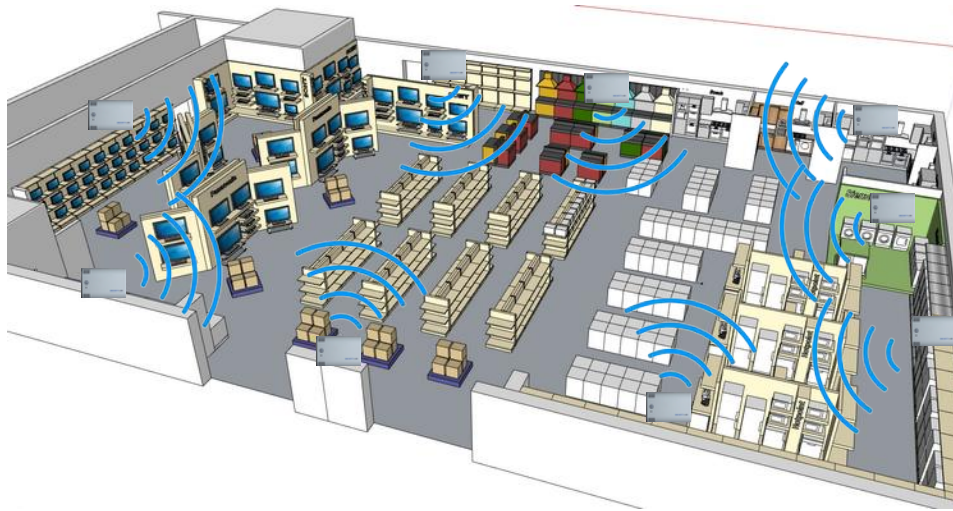
SOSTENIBILIDAD

Certificación LEED 4.0 del US Green

Building Council:

Se requieren informes continuos sobre la concentración de TVOC de CO2

Ahorro energético optimizando la automatización de edificios



CONFORT Y OPTIMIZACIÓN DE LAS HABITACIONES

Optimización de exposiciones y centros comerciales.

- Identificar puntos de acceso

- Ampliar el tiempo de visita gracias a una mayor comodidad.

- Información por correlación de datos del sensor.

Monitoreo de la comodidad en escuelas y lugares de trabajo.

HECHOS

Los niveles elevados de CO2 afectan directamente la cognición y el bienestar humanos

Los niveles elevados de COV pueden tener un impacto negativo en el bienestar, la comodidad y las capacidades cognitivas.

Los edificios nuevos con aislamiento mejorado pueden sufrir un control de ventilación deficiente o no óptimo

SEGUIMIENTO DE ACTIVIDAD Y AMBIENTE EN TIENDA Y LUGAR DE TRABAJO

Informes automáticos

Informes automáticos mensuales o semanales sobre dispositivos y sensores individuales

Clasificación de niveles de confort durante los días laborables/fines de semana

Informes de actividad por sector en tienda

Indicadores de ambiente/confort y planificación de actividades para su optimización.

panorama

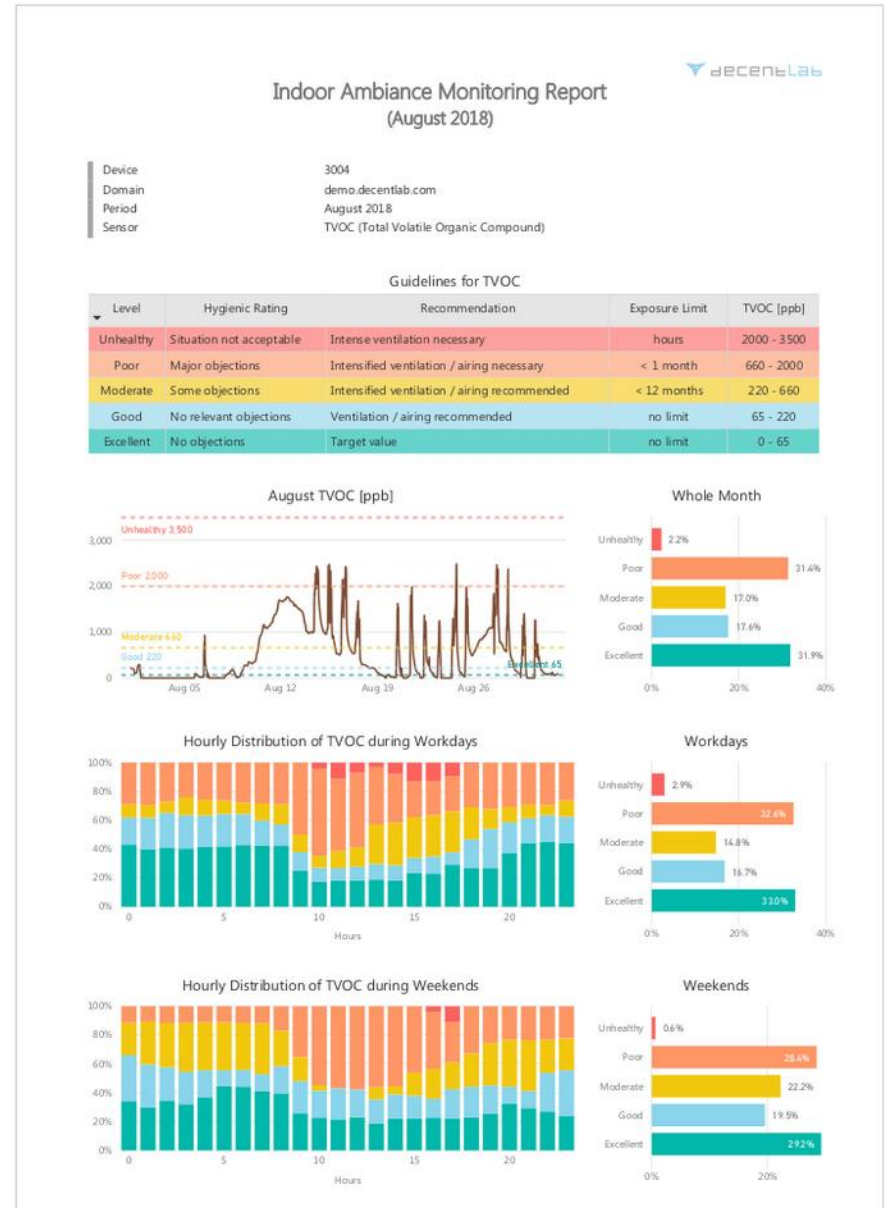
Combinación de sensores para gráficos de correlación.

Informe con recomendaciones

Personalización

Umbrales y alarmantes

Comprar mapas de calor



SEGUIMIENTO DE ACTIVIDAD Y AMBIENTE EN TIENDA Y LUGAR DE TRABAJO

¿Por qué COV?

El uso generalizado de nuevos productos y materiales de construcción, así como un mejor aislamiento para lograr una mayor eficiencia energética, ha dado lugar a mayores concentraciones de compuestos orgánicos volátiles (COV). Estos COV se originan principalmente en pinturas y disolventes, alfombras y muebles, y productos de limpieza, y también son emitidos por los seres humanos. Los niveles elevados de COV pueden tener un impacto negativo en el bienestar, la comodidad y las capacidades cognitivas. La exposición a altos niveles de COV se puede evitar o reducir significativamente mediante ventilación regular, purificación del aire y eliminación de fuentes fuertes de COV. El concepto de VOC total (TVOC) se ha establecido como un método práctico y rentable para inspeccionar los ambientes interiores en busca de contaminación.

¿Por qué CO2?

- 1: El CO2 puede aumentar muy rápidamente en habitaciones mal ventiladas
- 2: Los niveles elevados de CO2 afectan directamente la cognición y el bienestar humanos
- 3: El dióxido de carbono es un indicador de incendio
- 4: El dióxido de carbono puede disminuir la productividad
- 5: Monitoreo del dióxido de carbono para la eficiencia energética

SEGUIMIENTO DE ACTIVIDAD Y AMBIENTE EN TIENDA Y LUGAR DE TRABAJO

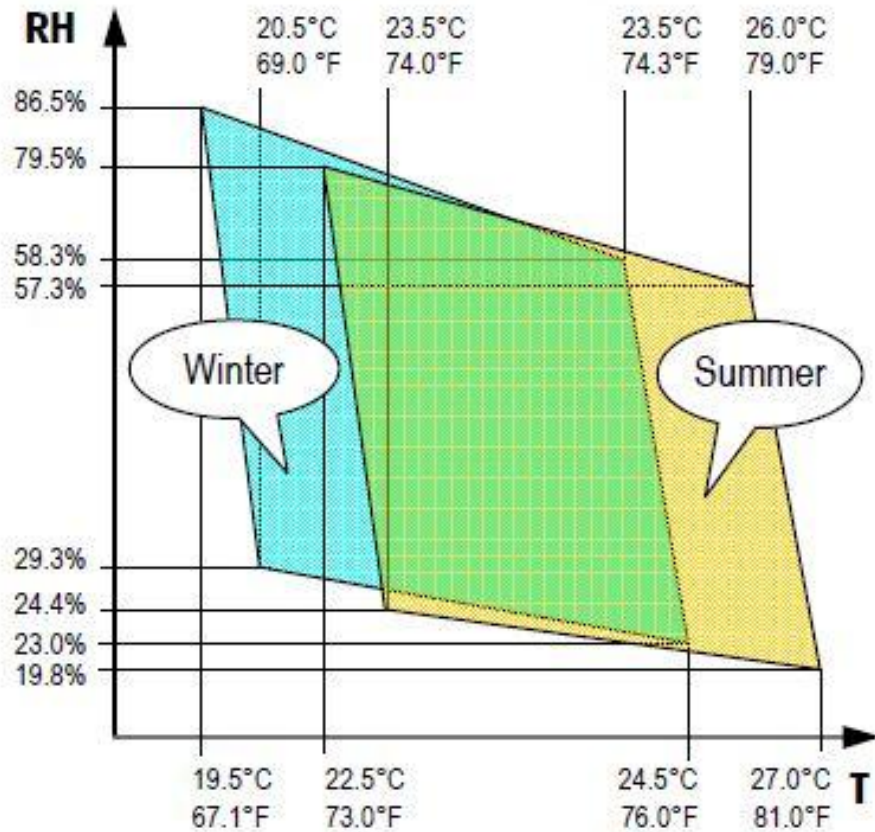


Diagrama de humedad relativa (HR)/temperatura (T) basado en zona de confort según ASHRAE 55- 1992

Por qué nivel de actividad

Identificar puntos críticos y lugares concurridos

Compare lugares menos concurridos con los datos de los sensores ambientales (CO₂, VOC, luz, temperatura, humedad)

CASO DE USO I: AUTOMATIZACIÓN DE EDIFICIOS, SOSTENIBILIDAD

Vasakronan, SE

El mayor propietario inmobiliario de Suecia, entre los 15 primeros del mundo, según el Global Real Estate Sustainability Benchmark (GRESB).

200 propiedades comerciales

Parámetros relevantes: CO2, TVOC

Usar:

Sostenibilidad

Certificación

Optimización energética

Integración en la automatización de edificios

Ventilación

Vasakronan



CASO DE USO II: ESPACIO DE COWORKING, CONTEO DE PERSONAS

SENTIDOS DEL EDÉN

Los sistemas de retroalimentación de AIRICA

Todos deberían poder trabajar, reunirse y aprender en entornos seguros y saludables.

Parámetros relevantes: CO2, humedad, temperatura.

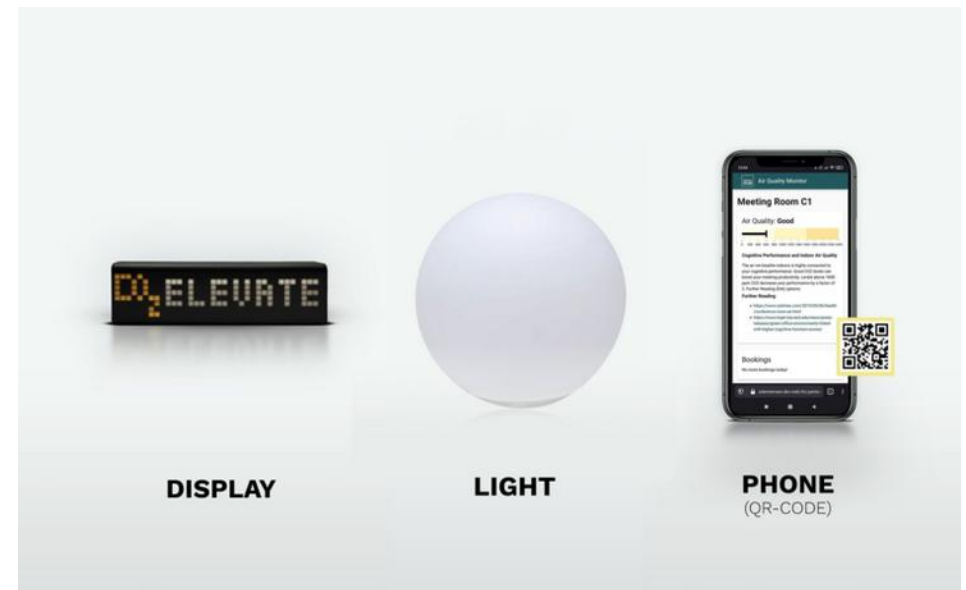


SENSOR

SOFTWARE

Building summary

Room	Number of people	Temperature	Humidity	CO2	VOC
C1	1	21.6 °C	41 %	1157 ppm	377 ppb
C2	3	21.8 °C	38 %	1134 ppm	1195 ppb
C3	0	23.4 °C	44 %	1803 ppm	303 ppb
C4	0	23.4 °C	35 %	590 ppm	43 ppb
C5	2	24.0 °C	38 %	1242 ppm	163 ppb
C6	2	23.7 °C	39 %	1304 ppm	154 ppb
Loft Corner	0	20.3 °C	38 %	503 ppm	154 ppb



DISPLAY

LIGHT

PHONE
(QR-CODE)

CASO DE USO III: SEGURIDAD, USO MÓVIL

Autoridades de la ciudad, oficinas

Parámetros relevantes: CO2, humedad.

Usar:

COVID-19

Comodidad

Ventilación



¿POR QUÉ DL-IAM?

Sensores

- exactitud
- calidad
- validado
- la mayoría de los sensores → fusión de datos, un despliegue
- características / opciones expertas

Baterías

- alcalino simple
- fácil de reemplazar

Hardware y firmware

- robustez y sin preocupaciones en el campo

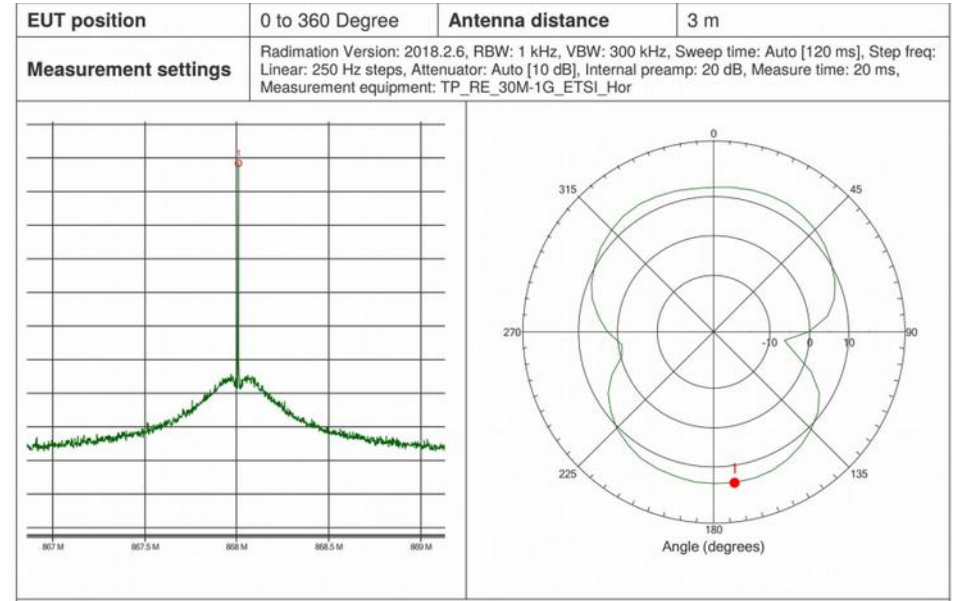


¿POR QUÉ DL-IAM?

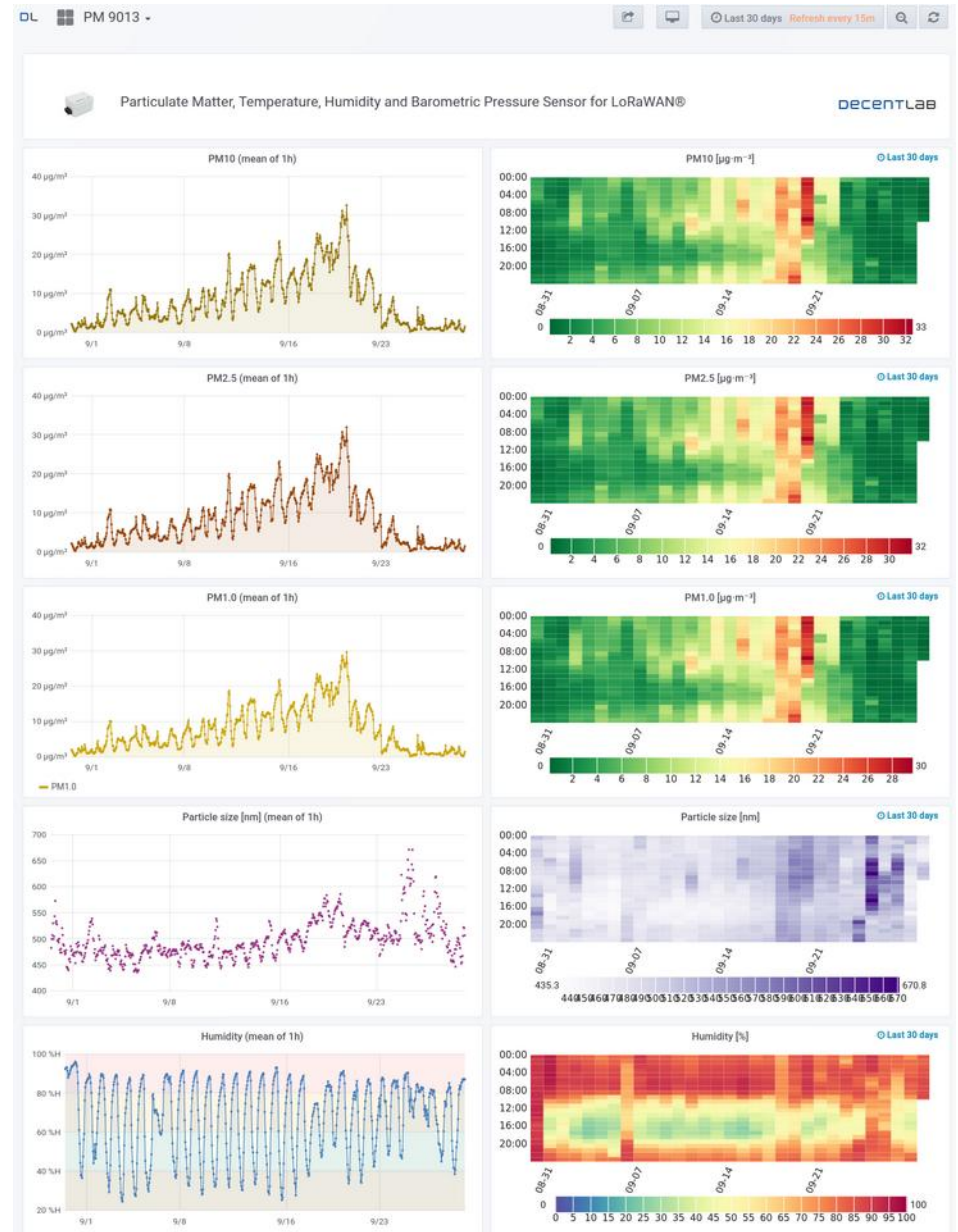
Comunicación

- mejor cobertura

Fácil de implementar



CALIDAD DEL AIRE – PARTÍCULAS



DECENTLAB



FEATURES



- CO₂, humidity and temperature sensors.
- Dual wavelength NDIR CO₂ sensor (Non-Dispersive Infrared) for superior stability.
- User operated CO₂ calibration.
- Data Hold & Max/Min/STEL/TWA function.
- Adjustable auto power off timer.
- Internal CO₂ alarm buzzer.
- Datalogging up to 32,000 sets.
- USB interface, PC software included.
- Backlight display function.

SPECIFICATIONS

Measurement Range:
CO ₂ : 0 ~ 30000 ppm (5000~30000 ppm over range)
Temperature: -20 to 60°C (-4°F to 140°F)
Humidity: 0 ~ 100%RH
Accuracy:
CO ₂ : ± (75 ppm + 3% of reading) (0 ~ 5000 ppm)
Temperature: ± 0.8°C
Humidity: ± 3%RH
Resolution: 1 ppm, 0.1°C/0.1°F, 0.1%RH
Response Time: 20 seconds
Power Source: 9V alkaline battery or Micro USB
Battery life:
Approximately 10 hours normal use (alkaline battery)
Operating Condition: 0°C to 50°C (< 90%RH)
Storage Condition: -20°C to 60°C (< 75%RH)
Dimensions: 284.5 x 65 x 38.5 mm
Weight: 304 g
Accessories:
9V Battery · Instruction Manual · micro USB cable · Windows software · Carrying case.

★ **NEW!**



LED Back Light



Certificate No. 49Q13377

* The specifications and other information in this catalogue are subject to change without prior notice.

Distributed by:

INEKO
Instrumentación



Model GX-3R Pro

Portable gas monitor

 **Bluetooth®
mounted!**



Bluetooth®

Allows fast and accurate information sharing in emergencies.

Three-year sensor warranty

The sensors are covered by a three-year warranty.

*Annual inspection is required once a year.

Up to 5 gases can be detected

Detects carbon dioxide and sulfur dioxide in addition to combustible gases, O₂, H₂S, and CO.

Intrinsically safe explosion-proof construction

Water and dust resistant, IP66/68

Robust design (Withstands 7m drop)



Play the Promotional video from here.

Now on the website!

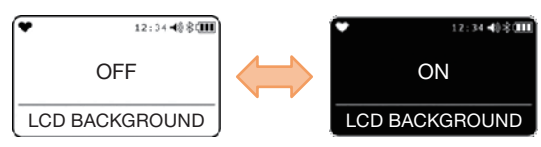
RIKEN KEIKI Co., Ltd.



Model
GX-3R Pro

Multi-function! GX-3R Pro features

- 1 Connected with Bluetooth**
Allows communication with smartphones or tablets using the dedicated app iOS and Android. Allows rapid notification of emergency situations.
- 2 Up to 5 gases can be detected!**
Detects carbon dioxide and sulfur dioxide in addition to combustible gases, O₂, H₂S, and CO. Allows selection to suit requirements.
- 3 Selectable battery type**
Runs on either dry cell or rechargeable batteries. Unit system for easy replacement.
- 4 Supports 11 languages**
Japanese/English/French/Spanish/Portuguese/German/Italian/Russian/Korean/Chinese (Simplified & Traditional)
- 5 Full-dot display easy to see**
Fine dot display for clearer and more various indications.



Combustible conversion gas list

Conversion gas	Gas name displayed	Calibration gas conversion	
		CH ₄	i-C ₄ H ₁₀
Methane	CH ₄	—	×
Isobutane	i-C ₄ H ₁₀	○	—
Hydrogen	H ₂	○	○
Methanol	CH ₃ OH	○	○
Acetylene	C ₂ H ₂	○	○
Ethylene	C ₂ H ₄	○	○
Ethane	C ₂ H ₆	○	×
Ethanol	C ₂ H ₅ OH	○	○
Propylene	C ₃ H ₆	○	○
Acetone	C ₃ H ₆ O	○	○
Propane	C ₃ H ₈	○	×
Butadiene	C ₄ H ₆	○	○
Cyclopentane	C ₅ H ₁₀	○	○

Conversion gas	Gas name displayed	Calibration gas conversion	
		CH ₄	i-C ₄ H ₁₀
Benzene	C ₆ H ₆	○	○
N-hexane	n-C ₆ H ₁₄	○	○
Toluene	C ₇ H ₈	○	○
N-heptane	n-C ₇ H ₁₆	○	○
Xylene	C ₈ H ₁₀	○	○
N-nonane	n-C ₉ H ₂₀	○	○
Ethyl acetate	EtAc	○	○
Isopropyl alcohol	IPA	○	○
Methyl ethyl ketone	MEK	○	○
Methyl methacrylate	MMA	○	○
Dimethyl ether	DME	○	○
Methyl isobutyl ketone	MIBK	○	○
Tetrahydrofuran	THF	○	○

Motion sensor equipped

Man down alarm

Monitors wearer movement and issues alarm if no movement is detected within preset time.



Panic alarm

Lets user issue alarm manually to notify others in emergency. (Tap the unit twice.)



Screen display inversion

Automatically inverts the display by 180 degrees depending on the orientation of the product. This helps reduce mistakes in reading numerical values.



Wide range of safety functions

Combustible gas conversion function

Eliminates the need for complex calculations. Allows direct readout of 26 different combustible gas types.

Alarm setpoints can be freely adjusted

You can now adjust alarm setpoints on the main unit. Allows monitoring based on the customer's own standards.

Confirmation beep

This function provides audible notification that the device is functioning correctly. Buzzer sounds at preset intervals while measurement is underway.


Lunch break

Enabling this function retains the TWA and peak values and allows integrating measurement whether power is on or off.

Cal. Limit

Indicates the number of days until recommended regular maintenance when the power is turned on. Reminds the user to perform maintenance on the product to ensure safe use.

Optional accessories

<p>1 Heat-resistant case</p>  <p>*not explosion-proof</p>	<p>2 Leather case</p> 	<p>3 Belt clip</p> 
<p>4 Arm/Ankle belt</p> 	<p>5 Protective film</p> 	<p>6 Manual suction unit</p>  <p>Sampling probe *Sampling probe not included.</p>
<p>7 Charging cradle</p> 	<p>8 Five-unit AC adaptor</p> 	<p>9 Calibration adaptor</p> 
<p>10 Data management program</p> 		

Model GX-3R Pro



1 Heat-resistant case	Unit case for hot environment. uses a safety pin.	Part No. 4777 4260 80
2 Leather case	Unit case for protection against dirt. uses the clip on the unit.	Part No. 4777 4258 70
3 Belt clip	Allows the product to be attached to a belt or pocket.	Part No. 4777 9202 40
4 Arm/Ankle belt	Belt for securing the unit to your arm or ankle.	Part No. 4777 9293 30
5 Protective film	Protects the display.	Part No. 4777 9296 50
6 Manual suction unit	External manual pump. Draws in at greater flow rates than electric pump.	Part No. 4777 9298 00
7 Charging cradle	Cradle for recharging the unit. Cradles can be interconnected.	Part No. 4777 21
8 Five-unit AC adaptor	One AC adaptor recharges up to five units. *Recharging times remain unchanged.	Part No. 4777 9319 80
9 Calibration adaptor	Adaptor for connecting the gas sampling bag to the main unit for calibration.	Part No. 4777 9312 70
10 Data management program	Software for viewing and managing measurement data.	Part No. 9811 0870 60

Pump unit RP-3R (Pro)

An external electric pump. Allows use for suction sampling.



Specifications

Model	RP-3R(Pro)
Suction flow rate	High mode: Approx. 0.5 L/min Low mode: Approx. 0.35 L/min
Battery	AA alkaline battery x 1
Continuous operating time	High mode: Approx. 10 hours Low mode: Approx. 16 hours
Temperature range	-20°C~+50°C (at a constant condition)
Humidity range	0~95%RH (non-condensing)
Explosion-proof class	Inherently safe explosion-proof construction TlIS Ex ia IIC T4 Ga ATEX II1G Ex ia IIC T4 Ga IECEx Ex ia IIC T4 Ga
Structure	Drip-proof and dust-proof performances compliant to IP67 level
Dimensions / Weight	Approx. 82 mm (W) x 96 mm (H) x 29 mm (D) / Approx. 120 g
Optional accessories	Float-type gas sampling tube Filters (set of 10) Meshes (set of 10)

* Cannot be connected to other models GX-2009, GX-3R Pro and others.

Docking station SDM-3R

Allows the user to perform a simplified pre-work check (bump test) and gas calibration automatically.



Specifications

Model	SDM-3R
Power supply	100 to 240 V AC ±10%, 50/60 Hz
Suction flow rate	Approx. 0.25 L/min
Temperature range	0~40°C (at a constant condition)
Humidity range	0~95%RH (non-condensing)
Dimensions / Weight	Approx. 130mm (W) x 110mm (H) x 250mm (D) / Approx. 810g
Optional accessories	Connecting fixture, wall-mounting fixture, exhaust tube, LAN cap, USB cap

Bluetooth communication*

*Uses low-energy-consumption Bluetooth (Bluetooth Low Energy).

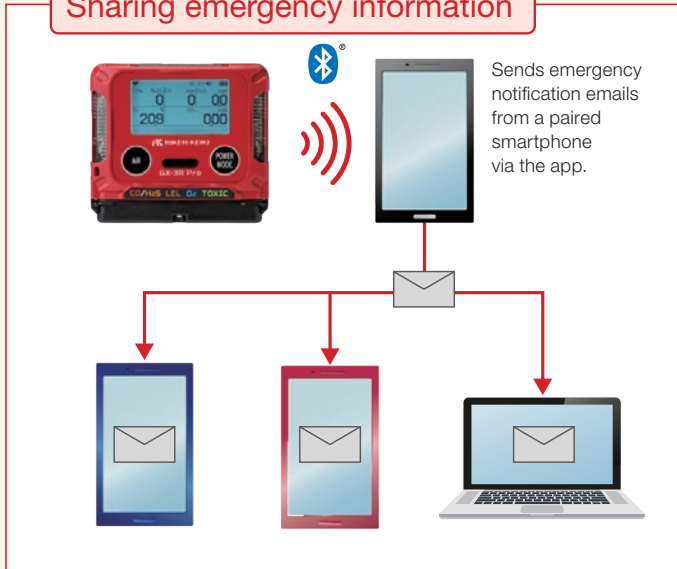


The GX-3R Pro can communicate with smartphones and tablets via Bluetooth. Allows alarms to be issued to remote locations in real time to notify emergency situations using the dedicated RK Link app. Also allows the main unit's settings to be altered. Download the free RK Link app from Google Play or Apple Store.

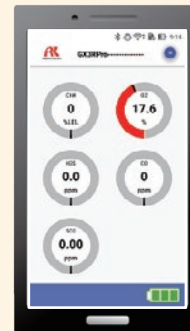


Features available by connecting GX-3R Pro with RK Link

Sharing emergency information



1 Email alarm information



Emergency notification emails are sent promptly to pre-registered addresses in the event of an alarm.

- Gas alarm
- Man down alarm
- Reminder alert
- Fault alarm
- Panic alarm

Change Setting



2 Setting



【Alarm setpoint】



【Calibration】



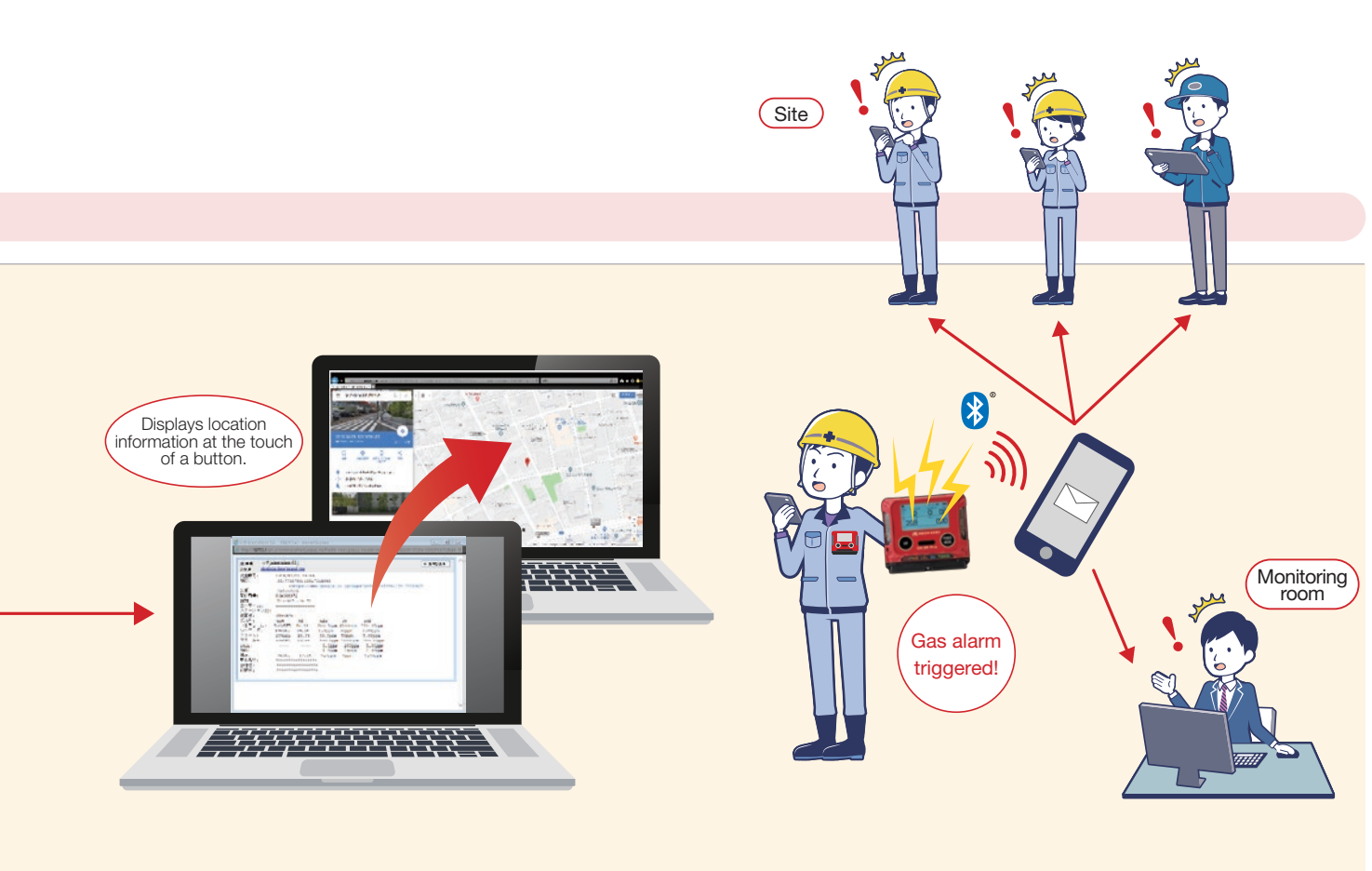
【Language】

- Allows modification of settings like alarm setpoints, calibration gas concentrations, and display language.
- Also allows detailed settings for types of alarms that trigger email notification.

For example: No email notification for first alarm; email notification from second alarm onward



Model
GX-3R Pro



3 Gas concentration and battery level checking



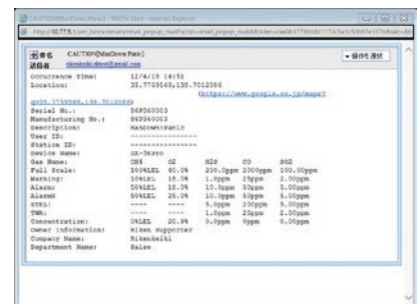
- Displays gas concentrations in real time during measurement.
- Displays current battery levels in three steps.

← Battery level icon

4 Owner information registration



- Allows registration of details such as company and individual name.
- Displayed in emergency notification emails.



Email text (sample)

*Can only be used in country which achieved radio certification.
*May not be available due to radio wave conditions.

Other features available by Bluetooth

GX-3R Pro detection information can be combined with a wide range of wireless devices to enable management on the customer's server and to allow sharing of on-site status in real time with supervisors at remote locations.*

* Your company is responsible for system configurations.



Awareness of individual status, environment, and location improves safety management.



FAQ

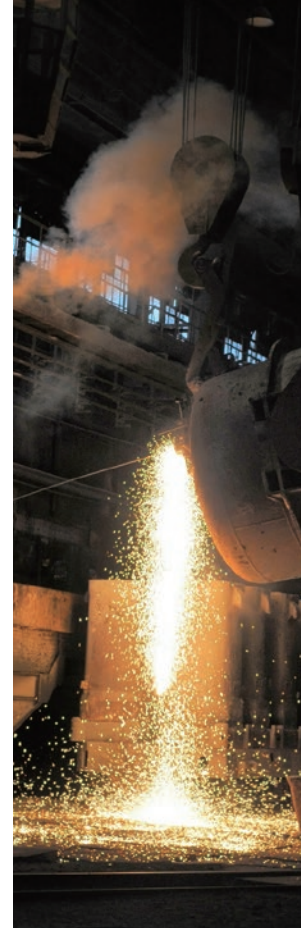
Pairing	
How long is the pairing standby time?	5 minutes. After 5 minutes, Bluetooth needs to be turned on again to resume standby.
What happens when a device is paired?	Bluetooth icon changes from blinking to steady illumination.
What happens when device pairing is lost?	Bluetooth icon blinks and the product goes to standby. No audible alarm is issued.
Are unpaired connections possible?	No.
Communication	
What's the communication system (data access method)?	Read and Write.
What's the GATT profile?	Original.
What's the communication interval?	At least 1 second.
Main unit	
What's the continuous operating time when using BLE?	Normal mode: 25 hours Long-life battery mode: 40 hours * Continuous operating time does not change when using BLE.
Is the product GPS-equipped?	No. Acquire location information from a smartphone or beacons.
Others	
Can details of the communication specifications be disclosed?	Yes, with the conclusion of a nondisclosure agreement.
Do the product communication specifications need to be altered for connecting with a system?	No. Perform steps to ensure compatibility on the system side.
What are the costs of connecting with a system?	No costs are incurred. However, additional fees may apply if such connection requires changes in product specifications.

Specifications

Model	GX-3R Pro						
Detection method	Diffusion type (Changeable to sampling type by attaching RP-3R)						
Gas alarm indication	Lamp flashing, continuous modulating buzzer sounding, gas concentration display blinking, vibration Reset operation: Self-latching						
Fault alarm	System abnormality, sensor abnormality, battery voltage drop, calibration failure						
Fault alarm indication	Lamp flashing, intermittent buzzer sounding, detail display Reset operation: Self-latching						
Panic alarm	Two levels: Prealarm and main alarm (after 5-second prealarm) Reset operation: Self-latching						
Man down alarm	Three levels: Prealarm 1 (60 seconds), prealarm 2 (75 seconds), main alarm (90 seconds) Reset operation: Self-latching						
Display	LCD digital (full-dot), backlight						
Displays	Operation status, clock, battery level, temperature, peak reading, calibration notification						
Buzzer volume	Approx. 95 dB (30 cm)						
Languages	Japanese/English/French/Spanish/Portuguese/German/Italian/Russian/Korean/Chinese (simplified/traditional)						
Bluetooth	Bluetooth 4.2 (Bluetooth Low Energy)						
Data logger function	Maximum number of items: 3,600 Interval: 5 minutes (adjustable) Communication system: IrDA						
Power source	Lithium ion rechargeable battery unit (charging time approx. 3 hours) or dry battery unit (AAA alkaline battery × 2)						
Continuous operating time*1	Long-life battery mode on: Approx. 40 hours (25 °C, fully charged, no alarm, no lighting) Long-life battery mode off: Approx. 25 hours (25 °C, fully charged, no alarm, no lighting)						
Temperature range/ humidity range*2	-40°C~+60°C(no sudden changes), 0~95%RH (non-condensation)						
Explosion-proof class	<table border="0"> <tr> <td>TIIS</td> <td>Ex ia IIC T4 Ga</td> </tr> <tr> <td>ATEX</td> <td>II1G Ex da ia IIC T4 Ga / IM1 Ex da ia I Ma (With combustible gas sensor) II1G Ex ia IIC T4 Ga / IM1 Ex ia I Ma (No combustible gas sensor)</td> </tr> <tr> <td>IECEx</td> <td>Ex da ia IIC T4 Ga / Ex da ia I Ma (With combustible gas sensor) Ex ia IIC T4 Ga / Ex ia I Ma (No combustible gas sensor)</td> </tr> </table>	TIIS	Ex ia IIC T4 Ga	ATEX	II1G Ex da ia IIC T4 Ga / IM1 Ex da ia I Ma (With combustible gas sensor) II1G Ex ia IIC T4 Ga / IM1 Ex ia I Ma (No combustible gas sensor)	IECEx	Ex da ia IIC T4 Ga / Ex da ia I Ma (With combustible gas sensor) Ex ia IIC T4 Ga / Ex ia I Ma (No combustible gas sensor)
TIIS	Ex ia IIC T4 Ga						
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IECEx	Ex da ia IIC T4 Ga / Ex da ia I Ma (With combustible gas sensor) Ex ia IIC T4 Ga / Ex ia I Ma (No combustible gas sensor)						
Protection level	Equivalent to IP66/68 (2 m, 1 h)						
External dimensions/ weight	With rechargeable battery unit: Approx. 73mm(W)×65mm(H)×26mm(D) (excluding protrusions) / Approx. 120 g With dry battery unit: Approx. 73mm(W)×65mm(H)×34mm(D) (excluding protrusions) / Approx. 140 g						

*1 Varies depending on sensor type installed. Please contact Riken Keiki for more information.

*2 In temporary ambient conditions for approximately 15 minutes. The operating temperature and humidity ranges for continuous ambient conditions are as follows: Temperature: -20 °C to +50 °C (no sudden changes) / Humidity: 10 to 90 %RH (no condensation)



Detection gas

Detection target gas	Combustible gas (HC or CH ₄)	Oxygen	Carbon monoxide	Hydrogen sulfide	Sulfur dioxide (SO ₂)	Carbon dioxide (CO ₂)	
Detection principle	New ceramic type	Electrochemical type				Infrared type	
Detection range (service range)	0~100%LEL	0~25.0vol% (~40.0vol%)	0~500ppm (~2000ppm)	0~100.0ppm (~200.0ppm)	0~20.00ppm (~100.00ppm)	0~5.00vol% (~10.00vol%)	0~10,000ppm
1 digit	1 %LEL	0.1 vol%	1 ppm	0.1 ppm	0.05ppm	0.01 vol%	20 ppm
Gas alarm setpoint (can be set by user)	1st alarm : 10%LEL 2nd alarm : 25%LEL 3rd alarm : 50%LEL OVER alarm : 100%LEL	L alarm : 19.5vol% LL alarm : 18.0vol% H alarm : 23.5vol% OVER alarm : 40.0vol%	1st alarm : 25ppm 2nd alarm : 50ppm 3rd alarm : 1200ppm TWA alarm : 25ppm STEL alarm : 200ppm OVER alarm : 2000ppm	1st alarm : 5.0ppm 2nd alarm : 30.0ppm 3rd alarm : 100.0ppm TWA alarm : 1.0ppm STEL alarm : 5.0ppm OVER alarm : 200.0ppm	1st alarm : 2.00ppm 2nd alarm : 5.00ppm 3rd alarm : 100.00ppm TWA alarm : 2.00ppm STEL alarm : 5.00ppm OVER alarm : 100.00ppm	1st alarm : 0.50vol% 2nd alarm : 3.00vol% 3rd alarm : 3.00vol% OVER alarm : 0.50vol% STEL alarm : 3.00vol% OVER alarm : 10.00vol%	1st alarm : 5000ppm 2nd alarm : 5000ppm 3rd alarm : 5000ppm TWA alarm : 5000ppm OVER alarm : 10000ppm

Standard accessories

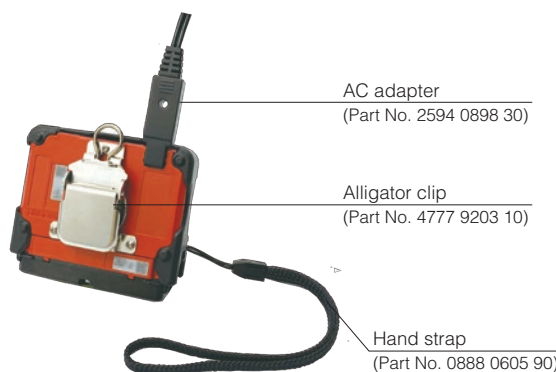
● Protective cover



Appearance when attached



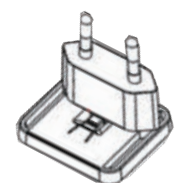
Protective cover (part No. 4777 4161 10)



AC adapter (Part No. 2594 0898 30)

Alligator clip (Part No. 4777 9203 10)

Hand strap (Part No. 0888 0605 90)



EU plug (Part No. 2594 0933 60)

Ordering guide

Select one combustible gas sensor.

Code ①	Code	Selection	Sensor model	Detection range
	H	Combustible gas (HC) sensor	NCR-6309	0~100%LEL
	M	Combustible gas (CH ₄) sensor	NCR-6309	0~100%LEL
	0	No sensor	—	—

Select whether oxygen sensor is required.

Code ②	Code	Selection	Sensor model	Detection range
	1	Oxygen (O ₂) sensor	ESR-X13P	0~25.0vol%(~40.0vol%)
	0	No sensor	—	—

Select one sensor (detection gas type) to be installed.

Code ③④	Code	Selection	Sensor model	Detection range
	E1	Carbon monoxide/ hydrogen sulfide (CO/H ₂ S) sensor	ESR-A1DP	0~500ppm(~2000ppm) 0~100.0ppm(~200.0ppm)
	E2	Carbon monoxide (CO) sensor *H ₂ interference reduction	ESR-A1CP	0~500ppm(~2000ppm)
	E4	Hydrogen sulfide (H ₂ S) sensor	ESR-A13i	0~100.0ppm(~200.0ppm)
	E5	Carbon monoxide (CO) sensor	ESR-A13P	0~500ppm(~2000ppm)
	00	No sensor	—	—

Select one sensor (detection gas type) to be installed.

Code ⑤⑥	Code	Selection	Sensor model	Detection range
	E3	Sulfur dioxide (SO ₂) sensor	ESR-A13D	0~20.00ppm(~100.00ppm)
	E4	Hydrogen sulfide (H ₂ S) sensor	ESR-A13i	0~100.0ppm(~200.0ppm)
	E5	Carbon monoxide (CO) sensor	ESR-A13P	0~500ppm(~2000ppm)
	D1	Carbon dioxide (CO ₂) <vol%> sensor	IRR-0409	0~5.00vol%(~10.00vol%)
	D2	Carbon dioxide (CO ₂) <ppm> sensor	IRR-0433	0~10000ppm
	00	No sensor	—	—

Note Two identical sensors cannot be selected.

Select the battery type.

Code ⑦	Code	Selection	Model
	L	Rechargeable lithium ion battery	BUL-3R
	D	Alkaline battery	BUD-3R

Select Bluetooth compatibility.

Code ⑧	Code	Selection	Model
	1	Bluetooth support	—
	0	Bluetooth unsupported	—

*Can only be used in country which achieved radio certification.
*May not be available due to radio wave conditions.

Write the selected codes in the corresponding boxes on the right.

B

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
①	②	③	④	⑤	⑥	⑦	⑧

Optional accessories list

Heat-resistant case

Leather case

Belt clip

Arm/ankle belt

Protective film

Manual suction unit

Charging cradle

Five-unit AC adaptor

Calibration adapter

Data management program

Pump unit RP-3R(Pro)

Docking station SDM-3R

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