| DS2102en | **Data Sheet** | GRUNER |
|---|---|---|
| GRW1-Series ($CO_2$) | **Room Air Quality ($CO_2$) Sensor with Active Output** | |

The GRW1-Series ($CO_2$) is designed to measure air quality ($CO_2$) in rooms or areas

The sensor operates with low voltage power supply

In accordance with RESET® and WELL Building Standard™

With Operation LED, optional with ePaper display available

The $CO_2$ sensor output are active, optional with passive temperature output


## Use

Compatible to all common HVAC DDC and Analog Controls systems, with/without Building Automation System

Used in all common HVAC applications

Used in Commercial and Industrial Buildings

## Features

Sensor with active output, optional with passive temperature output

Sensor output 0–10 V or 4–20 mA, optional with passive temperature output

With Operation LED, optional with ePaper display available

Reading/parameter settings via NFC technology

Firmware updates via external USB-C

Easy to use, install and maintain.

## Product Range

| Order Codes | General Parameters | | | | | Air Quality ($CO_2$) | Temperature Parameters, passive * | |
|---|---|---|---|---|---|---|---|---|
| | Active Output | Display | LED | Power Supply | IP Rating | Parameters | Passive Outputs | Accuracy Passive |
| **GRW1G.FA** | 0–10 V | ePaper display 31 mm × 60 mm | Air Quality LED | AC/DC 24 V (±10 %) | IP20 | Accuracy ±(50 ppm +3 % of reading)<br>Measuring Range 0 ppm to 2000 ppm<br>Repeatability ±10 pp<br>Response time $t_{63}$ = 60 s | N/A | |
| **GRW1G.DA** | | N/A | | | | | N/A | |
| **GRW1G.DO** | | | | | | | PT1000 | ±0.15 K @ 0ºC DIN EN 60751, class A |
| **GRW1G.DP** | | | | | | | NTC10k | ±0.25 K @ 25ºC |
| **GRW1G.FD** | 4–20 mA | ePaper display 31 mm × 60 mm | | | | | N/A | |
| **GRW1G.DD** | | N/A | | | | | N/A | |
| **GRW1G.DJ** | | | | | | | PT1000 | ±0.15 K @ 0ºC DIN EN 60751, class A |
| **GRW1G.DM** | | | | | | | NTC10k | ±0.25 K @ 25ºC |

*Other passive elements are available. Contact your Sales Manager for more information

| | | | |
|---|---|---|---|
| **Sensor Specification** | **Sensor Specification** | Measured | Air Quality ($CO_2$), opt. passive Temperature |
| | | Sensor Characteristics | Active |
| | | Sensor Output (s) | 0–10 V or 4–20 mA |
| | | Output Load | |
| | | 0–10 V output | Min. load 5 kΩ @ AC/DC 24 V |
| | | 4–20 mA output | Max. load 700 Ω @ DC 24 V |
| | **Temperature (passive)** | Accuracy, PT sensors | ±0.15 K @ 0 °C DIN EN 60751, class A |
| | | Accuracy, NTC sensors | ±0.25 K @ 25 °C |
| | **Air Quality ($CO_2$)** | Accuracy | ±(50 ppm +3 % of reading) |
| | | Repeatability | ±10 ppm |
| | | Response Time | $t_{63}$ = 60 s |
| | | Measuring Rang | 0 ppm to 2000 ppm |
| **Technical Information** | **Electrical Information** | Power Supply | AC/DC 24 V (±10 %) |
| | | Frequency | 50/60 Hz at AC 24 V |
| | | Terminal Clamp | Screw terminal, max. 1.5 mm² |
| | | Power Consumption | |
| | | 0–10 V output | ≤1 W |
| | | 4–20 mA output | ≤1 W |
| | **Mechanical Information** | Cable Entry | ~50 mm × 10 mm on the backside |
| | | USB-C | Bootloader for software updates |
| | | Display | ePaper 31 mm × 60 mm |
| | **Materials and Colours** | Housing Cover | ABS, white / transparent (display) |
| | | Housing Bottom | ABS, white |
| | | Flammability Standard | UL 94 class HB; IEC 60707; ISO 9770 |
| | **Environmental Conditions** | Operation Temperature | 0 °C to +50 °C |
| | | Operation Humidity | <85 % RH, no condensation |
| | | Transport Temperature | −35 °C to +70 °C |
| | | Transport Humidity | <90 % RH |
| | | Storage Humidity | <85 % RH, no condensation |
| | **Norms and Directives** | IP-Rating | IP20 to IEC60529 |
| | | REACH Regulation | Regulation (EC) No. 1907/2006 |
| | | Product Safety | Safety class III, in accordance with EN IEC 60730-1 |
| | | Product Standard | Automatic electrical controls for household and similar use in accordance with EN IEC 60730-1:2022 |
| | | CE marking in accordance with Directive | 2014/30/EU Electromagnetic Compatibility (EMC) |
| | | EMC Emissions, in accordance with | EN IEC 60730-1:2022 |
| | | EMC Immunity, in accordance with | EN IEC 60730-1:2022 |
| | | RoHS Compliance, in accordance with | Directive 2011/65/EU, as amended by (EU) 2015/863 |
| | | Operation Climatic Condition | IEC 60 721-3-3 |
| | | Operation Mechanical Condition | IEC 60 721-3-2 to class2M2 |
| | | Transport to Climatic Condition | IEC 60 721-3-2 |
| | | Transport Mechanical Condition | IEC 60 721-3-2 to class2M2 |
| | | Storage Climatic Condition | IEC 60 721-3-1 |
| | | Storage Mechanical Condition | IEC 60 721-3-1 to class2M2 |
| **Miscellaneous** | **Accessories** | N/A | |
| | **Shipping & Handling** | Minimum Order | 1 box with 1 piece |
| | | Packaging | Rigid cardboard packaging |
| | **Order Notes** | Order Code | See product range, e.g. GRW1G.DA |

## Advices

### Installation Notes

Observe the following general regulation for engineering and installation:

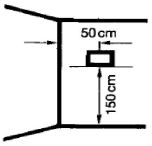
All relevant national and local electrical installation codes

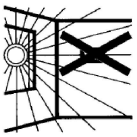
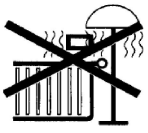
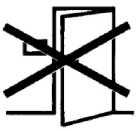
Other country-specific regulations

Comply with all local safety regulations, schematics, cable listings, dispositions, specifications, and arrangements from the engineering office in charge

Third-party specifications, e.g., general contractors' or constructors' notes

### Mounting Advices



### Disposal Notes

The device is considered an electronic device for disposal in terms of the European Directive 2012/19/EU

The device may not be disposed as domestic garbage

The device must be disposed through channels provided for this purpose

It is mandatory to comply with local currently applying laws and regulations

### NFC Setting

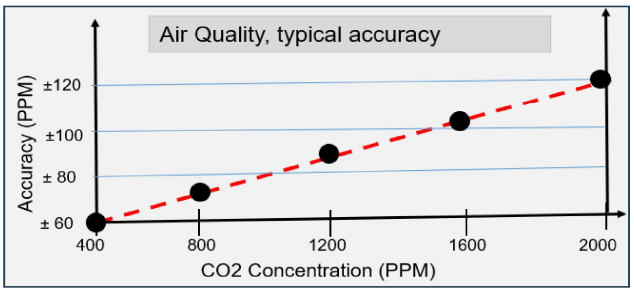
All devices marked with the NFC Logo can be parameterized via the Gruner AP NFC APP

The NFC APP is available on the Gruner AP Website, https://www.grunerasiapacific.com/

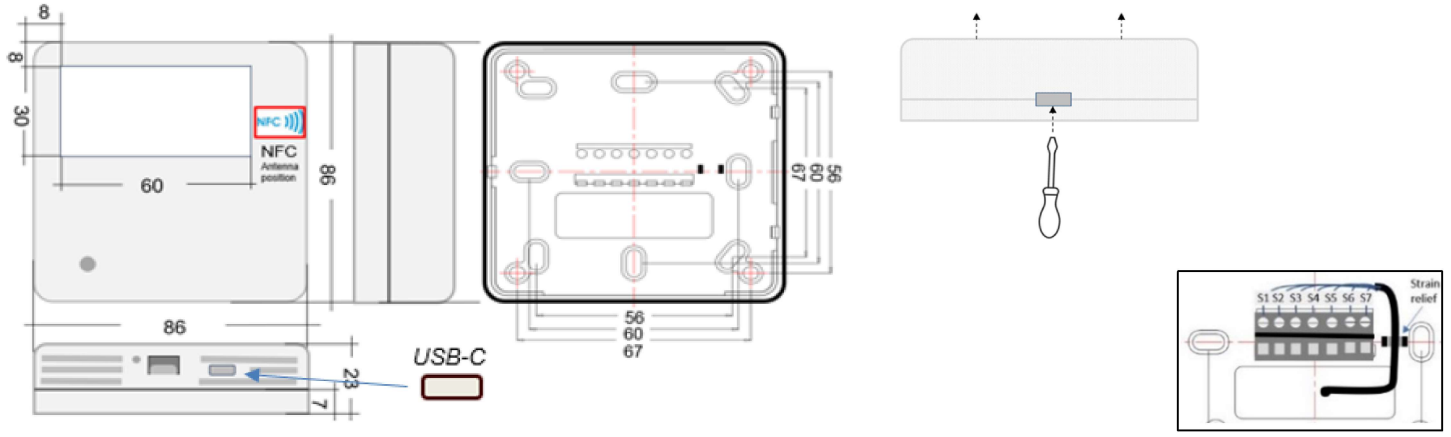
Hold your NFC-capable Android phone to the NFC Logo, the installed APP will start automatically

***Commissioning Note:*** The sensor will reach its specifie **~50 mm × 10 mm on the backside**

## Accuracy Curves



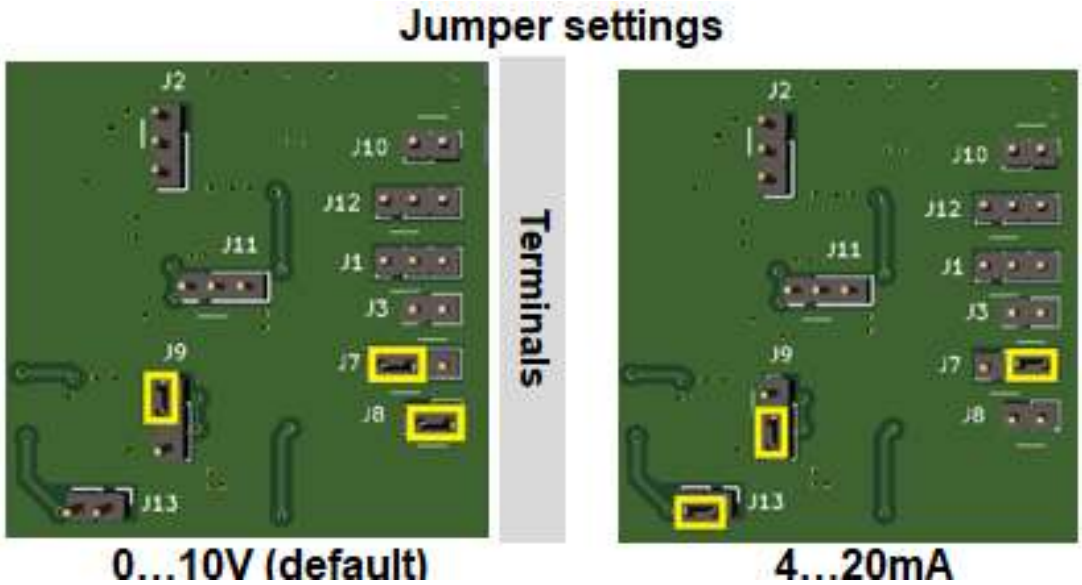

## Dimensional Drawing / Mounting




## Connections & Settings

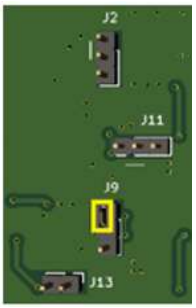
| Terminal Connections | | | | | | | |
|---|---|---|---|---|---|---|---|
| S1 | | S2 | S3 | S4 | S5 | S6 | S7 |
| UB+ | 24 V AC/DC | GND | Air Quality ($CO_2$) | N/A | N/A | Temperature Passive (-) | Temperature Passive (+) |

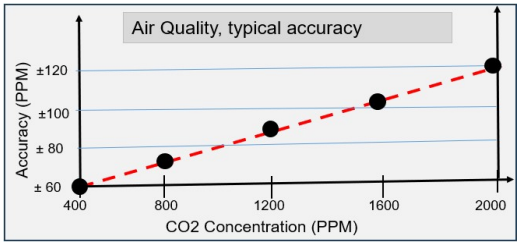
pictures


Jumper settings
J2
J10
J12
J11
J1
J3
J9
J7
J8
J13
Terminals
0...10V (default)
4...20mA


NFC
779 CO2 ppm

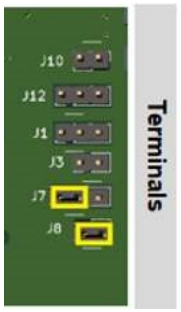
## Terminals

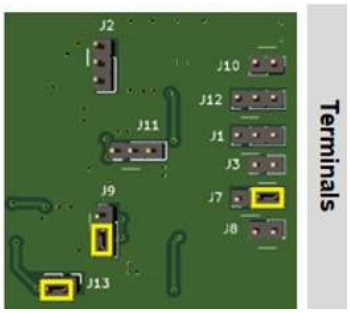


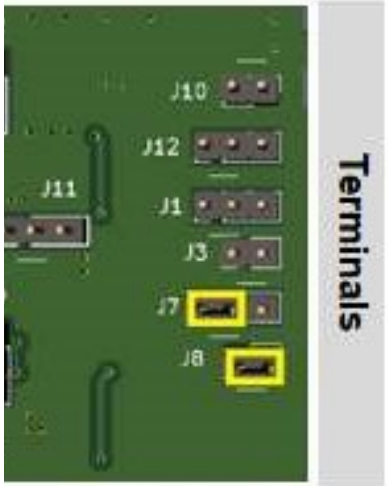


0...1

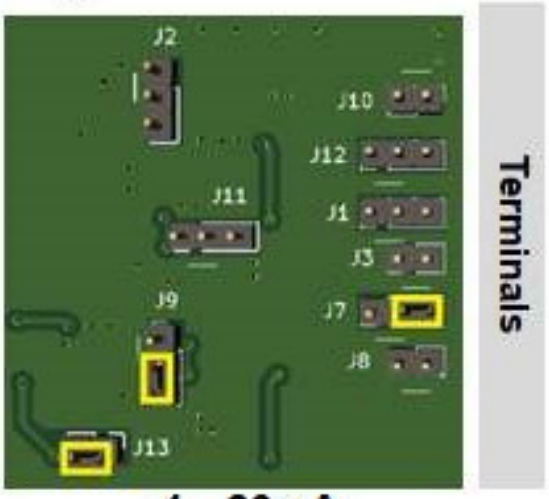



## Jumper settings




10V (default)




4…20mA