
 <b>TI2105en</b>	<b>Technical Information</b>	
<b>GRF1- Series (CO2)</b>	<b>Room Air Quality Sensor with Active Outputs</b>	

The GRF1- Series is designed to measure air quality in rooms or areas

Sensor available with Touch- LED displaying the actual air quality values, day and time

Adjustable Air Quality Indication

Sensor can be field calibrated

The sensor operates with low power supply

The sensor outputs are active



GRF1.Ax



GRF1.Cx

<b>USE</b>	<p>Compatible to all common HVAC DDC and Analog Controls systems, with/without Building Automation System</p> <p>Air Quality (CO2) measurement in Rooms and Areas</p> <p>Flush mounted 2.4" Sensor, with or without display, room sensor</p> <p>Used in all common HVAC applications</p> <p>Used in Commercial and Industrial Buildings</p>
------------	---

<b>Features</b>	<p>Sensor Outputs are active</p> <p>Sensor Outputs 0...10V or 4...20mA</p> <p>Air Quality field calibration</p> <p>Adjustable Air Quality indication</p> <p>Modern and practical product design</p> <p>Easy to use, install and maintain</p>
-----------------	--

<b>Product Range</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th data-bbox="188 1541 357 1653">Order Codes</th> <th data-bbox="357 1541 523 1653">Power Supply</th> <th data-bbox="523 1541 689 1653">Display</th> <th data-bbox="689 1541 855 1653">Sensor Outputs</th> <th data-bbox="855 1541 1021 1653">AQ Indication</th> <th data-bbox="1021 1541 1187 1653">Measuring Ranges</th> <th data-bbox="1187 1541 1353 1653">Air Quality Accuracy</th> <th data-bbox="1353 1541 1487 1653">Housing Color</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1653 357 1765">GRF1.AA</td> <td data-bbox="357 1653 523 2105" rowspan="4" style="text-align: center; vertical-align: middle;">AC/DC 24V (±10%)</td> <td data-bbox="523 1653 689 1765">Full screen LCD</td> <td data-bbox="689 1653 855 1765" rowspan="2" style="text-align: center; vertical-align: middle;">0...10V</td> <td data-bbox="855 1653 1021 1765">good/standard/ poor</td> <td data-bbox="1021 1653 1187 2105" rowspan="4" style="text-align: center; vertical-align: middle;">0...2000 PPM (CO2)</td> <td data-bbox="1187 1653 1353 2105" rowspan="4" style="text-align: center; vertical-align: middle;">± 50PPM or 3% of reading</td> <td data-bbox="1353 1653 1487 2105" rowspan="4" style="text-align: center; vertical-align: middle;">Signal White RAL 9003*</td> </tr> <tr> <td data-bbox="188 1765 357 1877">GRF1.CA</td> <td data-bbox="523 1765 689 1877" style="text-align: center;">n/a</td> <td data-bbox="855 1765 1021 1877" style="text-align: center;">n/a</td> </tr> <tr> <td data-bbox="188 1877 357 1989">GRF1.AD</td> <td data-bbox="523 1877 689 1989">Full screen LCD</td> <td data-bbox="689 1877 855 1989" rowspan="2" style="text-align: center; vertical-align: middle;">4...20mA</td> <td data-bbox="855 1877 1021 1989">good/standard/ poor</td> </tr> <tr> <td data-bbox="188 1989 357 2105">GRF1.CD</td> <td data-bbox="523 1989 689 2105" style="text-align: center;">n/a</td> <td data-bbox="855 1989 1021 2105" style="text-align: center;">n/a</td> </tr> </tbody> </table>	Order Codes	Power Supply	Display	Sensor Outputs	AQ Indication	Measuring Ranges	Air Quality Accuracy	Housing Color	GRF1.AA	AC/DC 24V (±10%)	Full screen LCD	0...10V	good/standard/ poor	0...2000 PPM (CO2)	± 50PPM or 3% of reading	Signal White RAL 9003*	GRF1.CA	n/a	n/a	GRF1.AD	Full screen LCD	4...20mA	good/standard/ poor	GRF1.CD	n/a	n/a
Order Codes	Power Supply	Display	Sensor Outputs	AQ Indication	Measuring Ranges	Air Quality Accuracy	Housing Color																				
GRF1.AA	AC/DC 24V (±10%)	Full screen LCD	0...10V	good/standard/ poor	0...2000 PPM (CO2)	± 50PPM or 3% of reading	Signal White RAL 9003*																				
GRF1.CA		n/a		n/a																							
GRF1.AD		Full screen LCD	4...20mA	good/standard/ poor																							
GRF1.CD		n/a		n/a																							

\*different colors are available

All Information and technical data are subject to alteration

GRF1- Series (CO2) V20.1

<b>Sensor Specification</b>	Sensor Specification	Measured	Air Quality (CO2)
		Sensor Characteristics QA	NDIR, self calibrating, dual channel
		Sensor Outputs AQ GRF1.xA	0...10V ; 0...10V ; 0...10V
		Sensor Outputs AQ GRF1.xD	4...20mA ; 4...20mA; 4...20mA
		Output Load	Max. load 3W AC 24V / 6VA DC 24V
		Accuracy	± 50PPM or 3% of reading
		Repeatability	1% of Measuring Range
		Response time (t63)	<2min
		Measuring Range Air Quality	0...2000PPM (CO2)
<b>Technical Information</b>	Electrical Information	Power Supply	AC/DC 24V (±10%)
		Frequency	50 / 60 Hz at AC 24V
		Terminal Clamp	Screw terminal, max. 1.5mm <sup>2</sup>
		Power Consumption	Max. load 3W AC 24V / 6VA DC 24V
	Mechanical Information	Cable Connection	terminals with max. 1.5mm <sup>2</sup> backside of the housing
		Sensing Element Position	Inside the housing
		Display GRF1.AA / GRF1.AD	Touch-LCD with LED-Illumination
	Colour and Materials	User Interface GRF1.AA / GRF1.AD	5 Touch buttons
		Housing Cover GRF1.AA / GRF1.AD	ABS, screech resistant acrylic class, white frame
		Housing Cover GRF1.CA / GRF1.CD	ABS, RAL9003 (Signal White)
	Environmental Conditions	Housing Bottom	ABS, RAL9005 (Traffic Black)
		Operation Temperature	-25°C...+70°C
		Operation Humidity	<85% r.h., no condensation
	Norms and Directives	Transport Temperature	-35°C...+70°C
		Transport Humidity	< 90% r.h.
		Storage Temperature	-10°C...+70°C
		Storage Humidity	< 85% r.h., no condensation
		IP- Rating	IP30 to IEC60529
		Safety Class	III to EN 60 730
		Product Standard 1	Automatic Electric. Controls for household and similar use
		Product Standard 2	2009/EN 60 730-1
		CE Conformities to	2004/108/EG Electromagnetic Compatibility EMV
		CE Electromagnetic Compatibility Emitted Interference	2000/EN60730-1 Emitted Interference
		CE Electromagnetic Compatibility Interference resistance	2000/EN60730-1 Interference Resistance
		RoHS Compatibility	RoHS 2011/65/EC
	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	
	<b>Miscellanies</b>	Accessories	non
Shipping & Handling		Minimum Order	1 box with 1 piece
		Package Material	Rigid Cardboards
Order Notes		Order Code	GRF1.AA

Actual Weekdays  
Actual Time

Actual Room Temperature

Commission Button



Air Quality Indication

Value Button (-)

Date / Time Button      Value Button (+)  
Screen ON/OFF Button

**Entering the Commissioning Screen:**

Press for approximately 5 sec, until the commissioning screen appears.

**Commissioning Screen**



**Change Commissioning Parameters**

- 1) Press until the desired Parameter number appears
- 2) Press or until desired value appears
- 3) Press to confirm the selected value, the program goes to the next Parameter or press the button to leave the Commissioning Screen

**Entering the Date/Time Screen:**

Press for approximately 5 sec, until the Date / Time screen appears.

**Date / Time Screen**



**Change Date / Time**

- 1) Press or until the desired Weekday appears
- 2) Press to confirm the selected day
- 3) Press or until the desired hour appears
- 4) Press to confirm the selected hour
- 5) Press or until the desired minute appears

Date / Time screen will disappear and the standard display will appear

PARA	Name	Parameter	Description	Default
P01	Display standard setting	1	Standard Display	1
		2	Only Temperature & Humidity Values	
P02	Display during Screen saver operation	1	Temperature & Humidity values & ON/OFF button (50%)	1
		2	ON/OFF button only (50%)	
P03	Screen Saver Mode	1	Screen Saver not active	10
		2...60	Screen Saver delay time (2...60min)	
P04	Time Format	1	European Time Format	1
		2	American Time Format	
P05	Room Air Quality Calibration	-99...+99	Adjustment of room temperature sensor value (-99...+99 PPM CO2)	0
P06	CO2 Indication treshold limit value "Good -> Standard"	4...20	in steps of 100PPM (4= 400PPM)	800
P07	CO2 Indication treshold limit value "Standard -> Poor"	8...20	in steps of 100PPM (10= 1000PPM)	1200

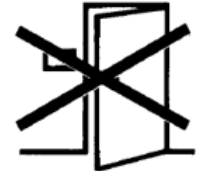
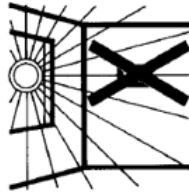
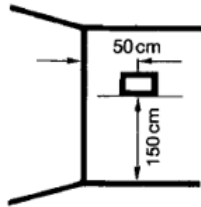
**Installation Notes**



Observe the following general regulation for engineering and implementation:

- All relevant national and heavy power regulation
- Other country specific regulations
- Country-specific regulations
- Local electrical supply authority regulation
- Schematics, cable listings, dispositions, specification and arrangements from the customer or engineering office in charge
- Third party specifications, e.g. general contractors or constructors

**Mounting Advices**



Under normal environmental conditions we recommend a recalibration interval of 2 year to maintain the indicated accuracy. Refrain from touching the sensitive sensor. Any touch of the same will result in an expiration of the warranty.

At high ambient temperatures and high humidity, or when use the sensor in aggressive gases, an early recalibration or a change of the sensor can become necessarily.

Such a recalibration or a probable sensor change may not come under the general warranty

**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.

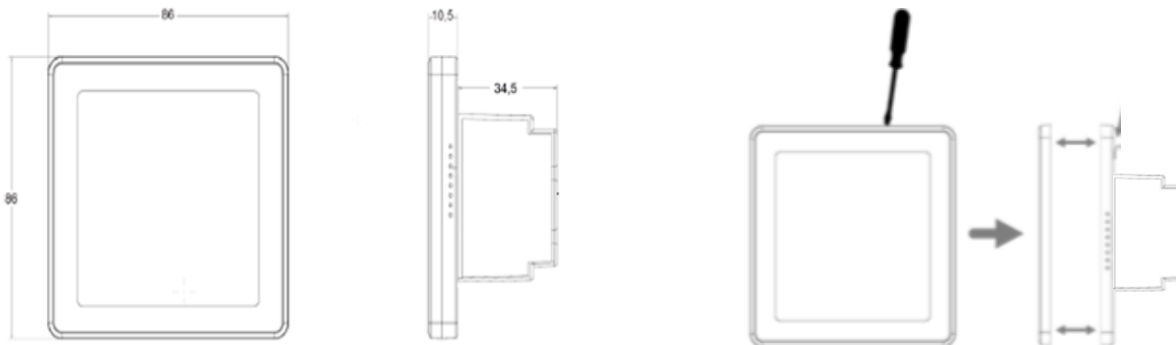
The device must be disposed through channels provided for this purpose.

It is mandatory to complying with local currently applying laws and regulations.

**Connection**

Power Supply		Sensor Outputs		
UB+	G	n/a	n/a	Air Quality
T1	T2	T3	T4	T5

**Dimensional Drawing / Mounting Instruction**



**Accuracy**

