
 TI8220en	Product Information	
GDI9- Series (CO2)	Duct Air Quality (CO2) Sensor with BACnet MSTP / Modbus RTU communication and analog output	

The GDI9- Series (CO2) is designed to measure air quality in air ducts of heating, ventilation and air conditioning systems

The air quality is measured based on CO2 levels (CO2 = Carbon dioxide).

The sensor operates with low power supply

The sensor output is via BACnet MSTP or Modbus RTU communication / 0...10V or 4...20mA



Use	<p>Compatible with all common HVAC DDC and Analog Controls systems, with/without Building Automation System</p> <p>Air quality (CO2) and temperature measurement in air ducts</p> <p>Used in all common HVAC applications</p> <p>Used in Commercial and Industrial Buildings</p> <p>Professional and practical product design, withstands rough environmental conditions</p>
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Features	<p>Sensor with BACnet MSTP or Modbus RTU communication</p> <p>Sensor output 0...10V or 4...20mA, field selectable</p> <p>Dual channel system with automatic calibration</p> <p>Can be used 24h / 365d applications such as call center, hospital, etc.</p> <p>Professional and practical product design, withstands rough environmental conditions</p> <p>Easy to use, install and maintain</p>
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Product Range	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th data-bbox="164 1579 311 1736">Order Codes</th> <th data-bbox="311 1579 422 1736">BUS-system</th> <th data-bbox="422 1579 526 1736">Power Supply</th> <th data-bbox="526 1579 638 1736">Measured</th> <th data-bbox="638 1579 746 1736">Accuracy</th> <th data-bbox="746 1579 858 1736">Analog Output</th> <th data-bbox="858 1579 965 1736">Measuring Range</th> <th data-bbox="965 1579 1077 1736">Immersion Pocket</th> <th data-bbox="1077 1579 1173 1736">Protection</th> </tr> </thead> <tbody> <tr> <td data-bbox="164 1736 311 1892" style="text-align: center;">GDI9.AA</td> <td data-bbox="311 1736 422 1892" style="text-align: center;">BACnet MSTP</td> <td data-bbox="422 1736 526 2049" rowspan="2" style="text-align: center;">AC/DC 24V (±10%)</td> <td data-bbox="526 1736 638 2049" rowspan="2" style="text-align: center;">Air Quality (PPM)</td> <td data-bbox="638 1736 746 2049" rowspan="2" style="text-align: center;">±30ppm + 3% (of reading) at 21°C</td> <td data-bbox="746 1736 858 1892" style="text-align: center;">0...10V or 4...20mA</td> <td data-bbox="858 1736 965 2049" rowspan="2" style="text-align: center;">0...2000PPM</td> <td data-bbox="965 1736 1077 2049" rowspan="2" style="text-align: center;">Ø19.5mm x 150mm</td> <td data-bbox="1077 1736 1173 2049" rowspan="2" style="text-align: center;">IP54 according to EN 60529, IP65 with bolted cover</td> </tr> <tr> <td data-bbox="164 1892 311 2049" style="text-align: center;">GDI9.AG</td> <td data-bbox="311 1892 422 2049" style="text-align: center;">Modbus RTU</td> </tr> </tbody> </table>	Order Codes	BUS-system	Power Supply	Measured	Accuracy	Analog Output	Measuring Range	Immersion Pocket	Protection	GDI9.AA	BACnet MSTP	AC/DC 24V (±10%)	Air Quality (PPM)	±30ppm + 3% (of reading) at 21°C	0...10V or 4...20mA	0...2000PPM	Ø19.5mm x 150mm	IP54 according to EN 60529, IP65 with bolted cover	GDI9.AG	Modbus RTU
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GDI9.AG	Modbus RTU																				

Sensor Specifications	Sensor Specification	Measured	CO2
		Sensor Characteristics	Active
		Sensor Output	BACnet MSTP or Modbus RTU communication, RS485
		Sensor Output	0..10V or 4...20mA
		Accuracy	Max. ±30ppm +3%
		Pressure Dependency	1% of reading / kPa
		Warm up time	<6 min. (Operational); ~15 min. (max. accuracy)
		Calibration	Self calibration dual channel
		Sensor Element	NDIR (Non Dispersive InfraRed)
		Measuring Interval	2 sec.
		Measuring Range (Full Scale)	0...2000ppm
Technical Information	Electrical Information	Power Supply	AC/DC 24V (±10%)
		Frequency	50 / 60 Hz @ AC 24V
		Output Load	Min. load 10kΩ @ AC/DC 24V
		Measuring Current	<1mA
		Power Consumption	Max. 3.0W
	Mechanical Information	Sensor Pipe Diameter	Ø19.5mm
		Sensor Pipe Length	150mm
		Sensing Element Position	Inside the housing
	User Interface		None
	Color and Material	Housing Cover	PA6, pure white
		Housing Bottom	PA6, pure white
		Cable Gland	PA6, pure white
		Gland Rubber Seal	ENSOFT50, RAL9016 (Traffic White)
		Sensor Pipe	PA6, RAL 9017 (Traffic Black)
	Environmental Condition	Operation Temperature	0°C...+50°C
		Operation Humidity	<85% r.h., no condensation
		Transport Temperature	-35°C...+70°C
		Transport Humidity	< 90% r.h.
		Storage Temperature	-20°C...+70°C
		Storage Humidity	< 85% r.h., no condensation
	Norms and Directives	Sensor Outputs	IP54 according to EN 60529, IP65 with bolted cover
		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
		Emitted Interference	2000/EN60730-1 Emitted Interference
		CE Conformities	2004/108/EG Electromagnetic Compatibility EMV
		Emitted Interference	2000/EN60730-1 Emitted Interference
		Interference Resistance	2000/EN60730-1 Interference Resistance
		RoHS Compatibility	Rohs 3 EU2015/863
		Operation Climatic Condition	IEC 60721-3-3
Operation Mechanical Condition		IEC 60721-3-2 to class 2M2	
Transport to Climatic Condition		IEC 60721-3-2	
Transport Mechanical Condition		IEC 60721-3-2 to class 2M2	
Storage Climatic Condition		IEC 60721-3-1	
Storage Mechanical Condition		IEC 60721-3-1 to class 2M2	
Miscellaneous		Accessories	Mounting Kit, Included in delivery
	Shipping & Handling	Minimum Order	1 box with 2 pieces
		Packaging Material	Rigits Cardboard
	Order Notes	Order Code	GDI9.AA

All Information and technical data are subject to alteration

Modbus Parameters	Address Number	Register Description	
	0...3	Serial Number	actual version
	4	Software Version	actual version
	6	Modbus Address	Default 254, selectable 1...254
	8	Hardware Version	actual version
	11	Baud Rate autodetection	0= OFF ; 1= On
	15	Baud Rate, (if autodetection is OFF)	0= 9600 ; 1= 19.200 ; 2= 38.400 ; 3= 57.600 ; 4= 115.200
34	Air Quality, CO2	actual value (0...2000PPM)	

BACnet Parameters	Supported BACnet Objects Types	
	analog-value	
	device	
	Supported BACnet Services	
who-is		
i-am		
object-identifier, object-name, object-type, present-value, units, object-list, vendor-id, vendor-name, system-status, confirmed-service, unconfirmed-services		

BACnet Parameters	MSTP Objects		
	analog-value		
	BACnet Address	Default 127, selectable 0...127	
	AV0	Baud rate autodetection	default 0, 0= OFF ; 1= ON
	AV1	Baud Rate, (if autodetection is OFF)	0= 9600 ; 1= 19.200 ; 2= 38.400 ; 3= 57.600 ; 4= 115.200
	AV2	Humidity Mode	0= Dew Point ; 1= Enthalpy ; 2= Absolute Humidity ; 3= relative humidity
	AV3	Protocol	0= Modbus ; 1= BACnet
	AV4	Air Quality, CO2	actual value (0...2000PPM)
	Device		
	device-identifier		
device-name			

The function "Baud Rate autodetection" can only be used during the product is been setup. When the product is working with the BAS, the "Baud Rate autodetection" has to be set to 0= OFF and the actual Baud Rate has to be set.

Installation Notes



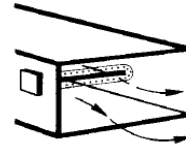
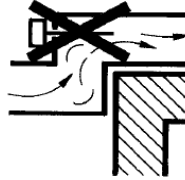
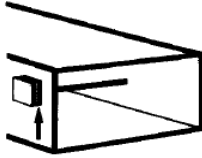
Observe the following general regulation for engineering and implementation:

- 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

Advices



Mounting Advices



Disposal Notes



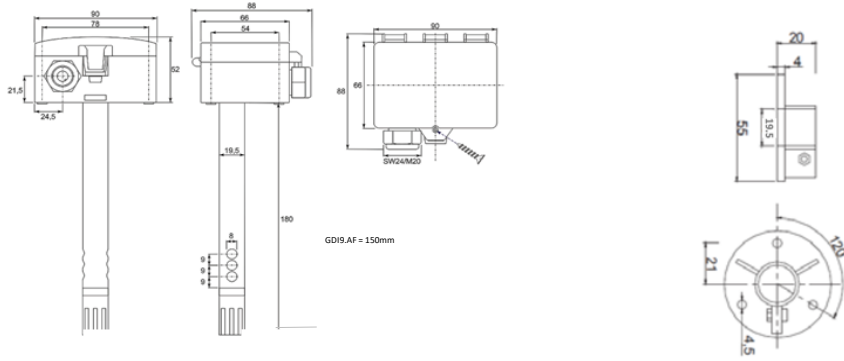
The device is considered an electronic device for disposal in terms of the EUROPEAN DIRECTIVE 2012/19/EU.

The device may not be disposed as domestic garbage.

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

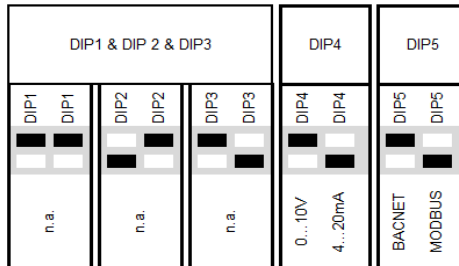
It is mandatory to complying with local currently applying laws and regulations.

Dimensional Drawing



Connections

Connection Terminals				
T1	T2	T3	T3	T4
UB+ (24V AC/DC)	GND	Analoge Out	RS485 - C-	RS485 - C+



Accuracy

