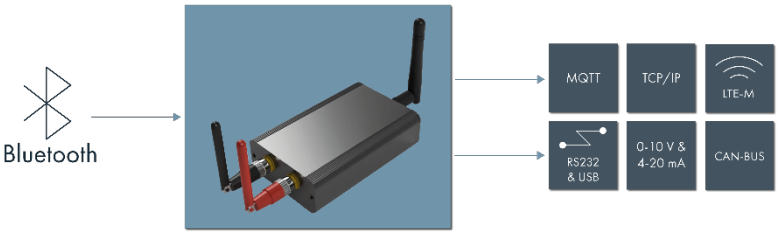
Industrial IoT Gateway

Features

- Connects up to 4 sensor nodes with up to 24 sensors
- Wireless output via Bluetooth Low Energy
- Long-range wireless output option via LTE
- Wired output options USB-C, 0...10 V, RS232, CAN, Ethernet
- Logs data directly to App or into internal memory
- Synchronized Sampling with time stamping
- Customizable to customers needs

Applications

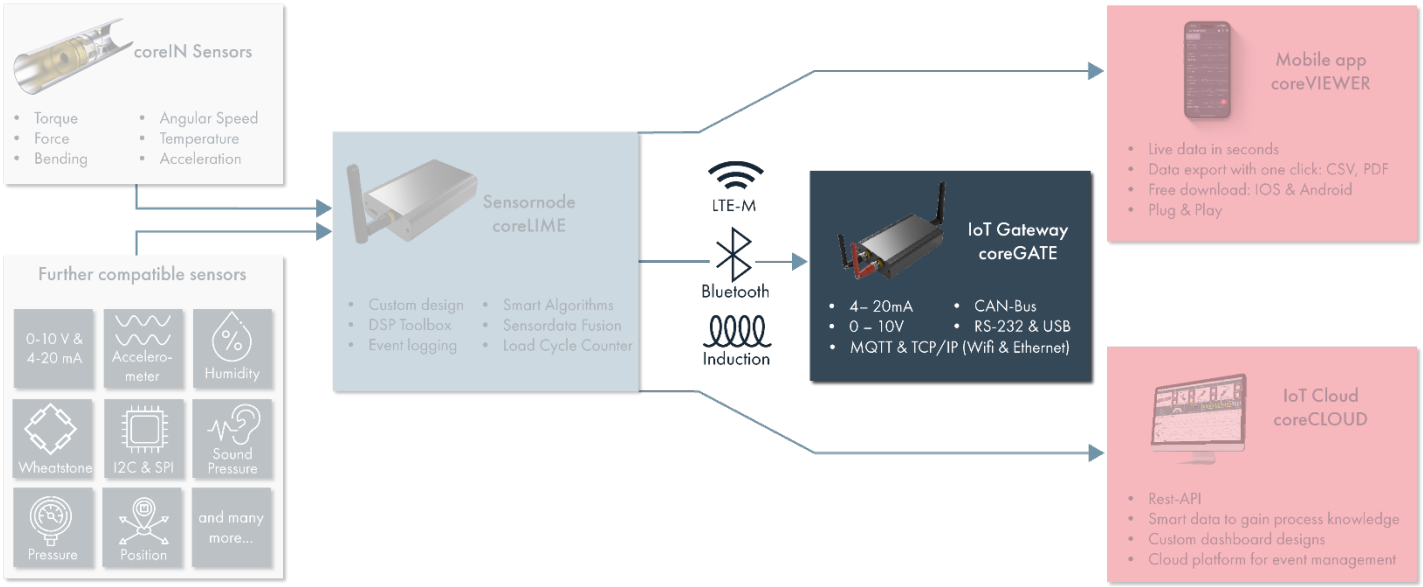
- Test & Measurement
- Predictive Maintenance
- Industrial machine surveillance
- Telemetry for Off-Site asset health monitoring
- Construction surveillance



Description

coreGATE is a wireless Industrial IoT gateway for strain gauge and other sensor applications. It connects up to 4 sensor nodes and collects data from up to 24 sensors. coreGATE offers flexible data transmission with Bluetooth Low Energy for short range and optional long range LTE connectivity. Wired output options include USB-C, 0-10V, RS232, CAN and Ethernet. This IoT gateway enables synchronized sampling with time stamping for precise data acquisition. Customizable to meet specific needs, coreGATE simplifies multi-sensor data collection and management.

core sensing ecosystem



Transmission rate and sensor combination

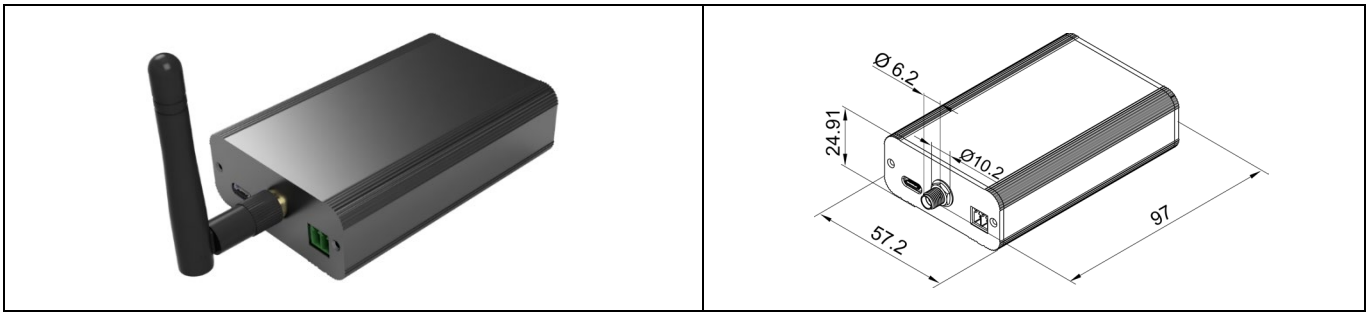
To receive complete results on the coreVIEWER, the transmission rate and the number of sensors per sensor node must be adapted to the total number of connected sensor nodes. For example, if 4 sensor nodes are to be connected to a gateway, a maximum of 6 sensors per sensor node - i.e. a total of 24 sensors - can be sent to the application at a maximum transmission rate of 100Hz. The desired sensors can be selected in the application settings.

Transmission rate	Sensor node	Sensors per sensor node
500Hz	2	2
250Hz	4/2	2/6
100Hz	4	6
10Hz	4	6
1Hz	4	6

Time synchronization

Transmission rate	Sensor node	Synchronicity
500Hz	2	< 1ms
250Hz	4/2	1.5ms

Technical specifications



Left: coreGATE with BLE antenna, Right: Dimensions in mm

Data Transmission		
Frequency	2.45	GHz
Bluetooth Version	Bluetooth Low Energy 4.2	
Transmission rate	4	
Transmit power (max.)	4	dBm
Received Signal Strength	-95 ...4	dBm
Range (max.)	20	m
Antenna connector	SMA Female	

Power Supply		
Operating Voltage[1]	7 ...36	V
Current consumption (max.)	50	mA
Power consumption (max.)	2.4	W

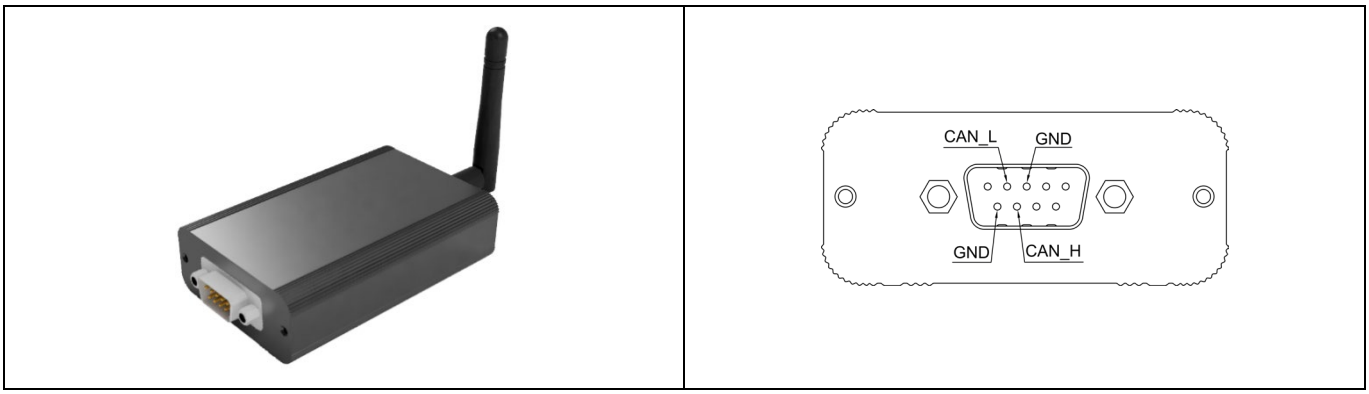
[1] *Can alternatively be operated via USB-C*

Opertion		
Temperature range	-20 ... 60	°C
Protection class	IP20	

Calibration values		
Acceleration	0.9155 · 10-3	g/bit
Rotation speed	20.3448 · 10-3	rpm/bit
Temperature	0.01	°C/bit

Version: coreGATE CAN

The coreGATE CAN enables serial data transmission via an interference-free CAN bus, which connects the gateway to a process controller, e.g. via a Sub-D connector. The output consists of the uncalibrated raw values in bits and must therefore be subsequently converted using the calibration values. The calibration values for acceleration, speed and temperature can be found in the "Calibration values" table above.



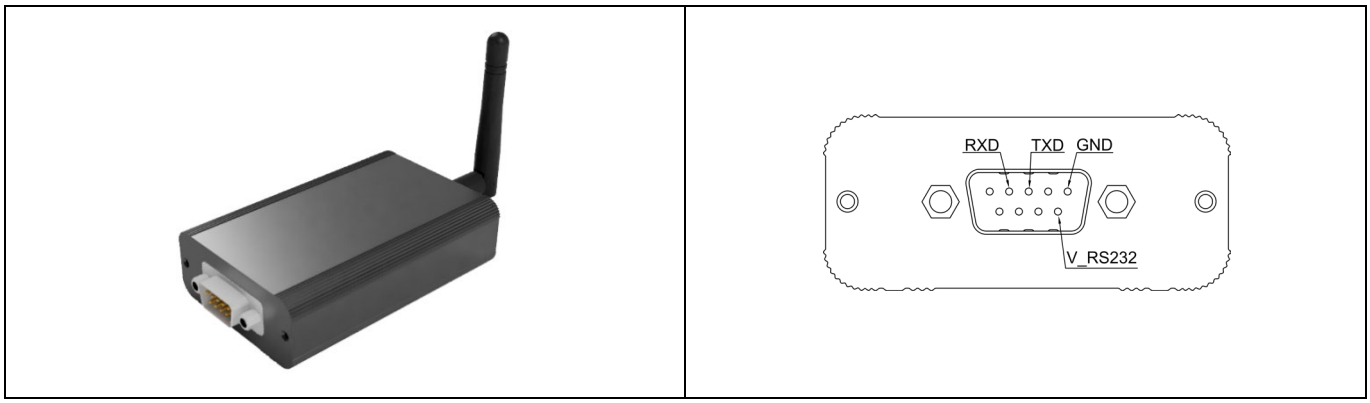
Left: Product view, Right: Pin assignment

Properties		
Number of transferable sensors (max.)	2	
Transmission rate	1	MBit/s
Identifier format	CAN 2.0A	
Terminating resistor[1]	120	Ω
Communication	Unidirectional	
CAN-ID	Freely configurable	
Connector	Sub-D, 9-polig	
Cabel length (max.)	18	m

[1] *Available without terminating resistor on request*

Version: coreGATE RS232

The coreGATE RS232 transmits serial data via a D-sub connector according to the RS232 standard. The measurement data are available as serial signals via freely configurable channels. They can be forwarded to a process controller, for example. The output consists of the uncalibrated raw values in bits and must therefore be subsequently converted using the calibration values. The calibration values for acceleration, velocity and temperature can be found in the "Calibration Values" table above.

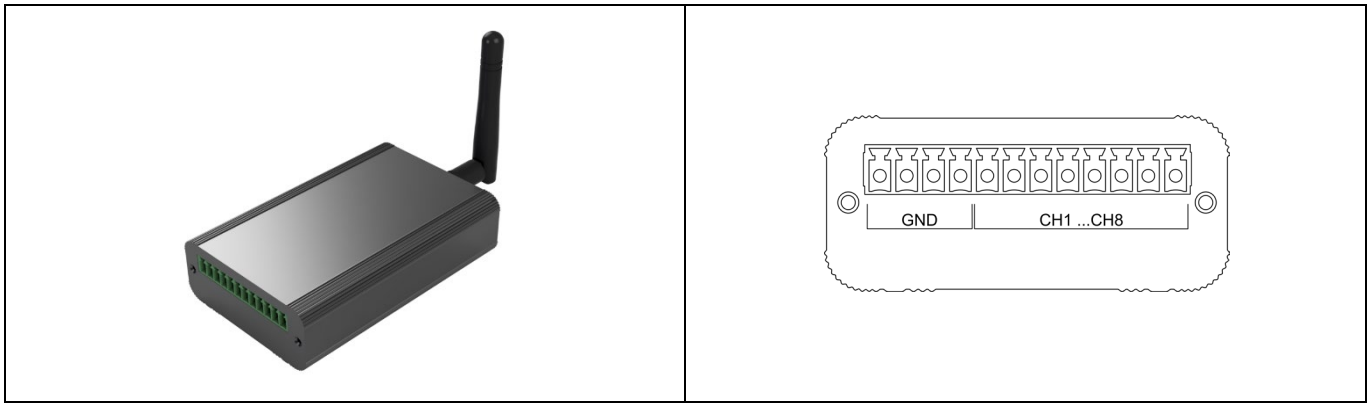


Left: Product view, Right: Pin assignment

Properties		
Number of transferable sensors	8	
Baud rate	9600 ...1000k	Baud
Cabel length (max.)	18	m
Input voltage (min./max.)	±25	V
Output Voltage (min./max.)	±13.2	V
Data bits	8	Bit
Stop bits	1	Bit
Parity bit	--	
External power supply (V_RS232)	5	V
Connector	Sub-D, 9-polig	

Version: coreGATE 0 ...10V

With the coreGATE 0 ...10V, sensor signals can be output as analog signals. The individual outputs are individually assigned and configured with the corresponding voltage ranges via the coreVIEWER application.

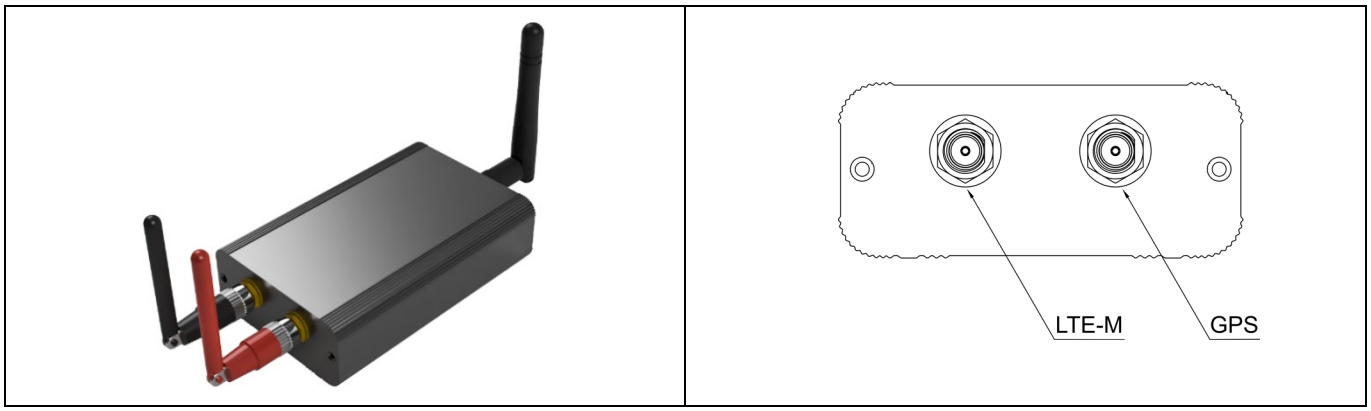


Left: Product view, Right: Pin assignment

Properties		
Number of analog outputs	8	
Voltage range	0 ...10	V
Input resistance (min.)	10	kΩ
Connector	Molex, Terminal Block 12 CKT	

Version: coreGATE LTE-M

The coreGATE LTE-M offers the possibility to send sensor data wirelessly via the cellular network to our web-based IoT platform coreCLOUD.



Left: Product view, Right: Pin assignment

Properties		
Wireless technology	LTE-M	
Transmission rate to cloud (max.)	1	Hz
Signal strength	-100 ...-44	dBm
Antenna connectors	SMA Female	

Included accessories coreGATE

Quantity	Article	Type
1	USB-Cabel	USB-C to USB-C cabel, 1m
1	BLE antenna	Laird, 001-0001
1	LTE-M antenna[1]	ANT-LTE-MON-SMA-E
1	Connectors[2]	Molex, Terminal Block 2 CKT

[1] *Only for the coreGATE LTE-M*
[2] *Only for the coreGATE 0 ...10V*

Change log

Versions	Change	Release
Version 0.0	Initial release	26.06.2024