

Impulse C04

Communication gateway. The fastest way to the cloud.
Small in size, big in power.

It has never been as easy to communicate with your assets. Calculus' unique Impulse C04 allows you to safely monitor even the furthest or hard to reach devices. This compact but powerful device connects all your assets or sensors to our convenient cloud platform.



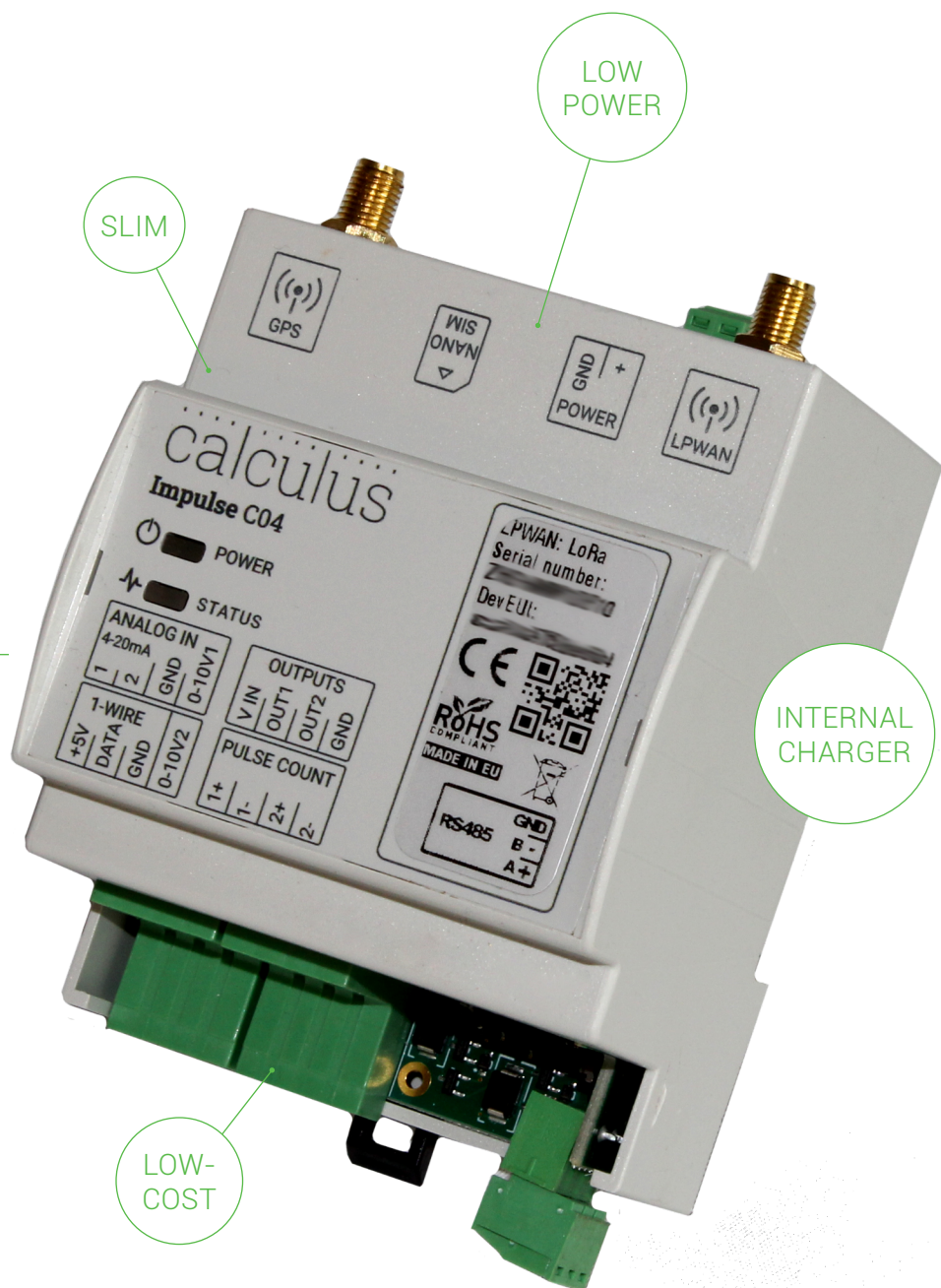
Connect
Through Sigfox, NB-IoT, LoRa or LTE Cat M1.



Measure
Through one of our many interfaces.



Manage
From a distance and control your assets.



Also available without enclosure.

For implementations where size is key, we also deliver the C04 without enclosure.



Reliable results,
minimum usage

Because we are regularly involved in implementations of our products, our business experts constantly test our design and engineering against professional practice. That's why we now bring you a lightweight version of our Impulse gateway. Designed to perform measurements that do not require

an extensive all-rounder, this low-power device can be used in a wide range of applications thanks to its optional internal lithium-ion battery and integrated battery charger (compatible with existing voltage rails and even connectable to a solar cell).

Optimal synergy

With a wide range of communication protocols and read-out options, the Impulse C04 is compatible with virtually any sensor and device. This gives you a wide range of possibilities to combine and deploy your measurement solutions. Apply it as a LoRa slave with our Impulse C07W gateway or with third party devices. Or send data directly to the cloud via Sigfox or LoRaWAN. You can also choose for NB-IoT/ LTE-M to send

data to the Calculus cloud or your own platform.

This compact gateway has been developed for an ideal interaction with the Calculus cloud platform but is also suitable for a wide range of external software solutions.

Technical aspects

Impulse C04

PROPERTIES		DEFAULT	OPTIONAL
Dimensions C04	71,3 x 94 x 62mm		
Mounting	35mm DIN-rail	•	
GPS	GPS, GLONASS, Galileo and QZSS (internal antenna and SMA female connector)		•
On/off switch	Magnetic sensor for activation and configuration	•	

POWER SUPPLY		DEFAULT	OPTIONAL
Battery powered	3,2 – 5 VDC (any lithium/alkaline source. E.g. 3x AA)		•
Wide range power supply	7 – 36 VDC (for industry and automotive)		•
Wide range power supply with rechargeable battery	7 – 36 VDC with 3,7 V lithium-ion battery		•
Power supply monitoring	Monitoring of wide range power supply and battery voltage		•

Power usage / battery lifetime is dependent on choice in power supply, communication, sensors, measuring intervals,... Please see 'Electrical Characteristics' for estimates in your device configuration.

COMMUNICATION		DEFAULT	OPTIONAL
Wi-Fi	802.11b/g/n 2.4 GHz	•	
Bluetooth	v4.2 (BLE)	•	
LPWAN	Sigfox / LoRa / LoRaWAN	•	
Cellular	NB-IoT NB1 & LTE Cat M1	•	
1-Wire	Up to 200 m	•	
Modbus RTU	Optional add-on		•
Z-Wave	Optional add-on		•

I/O		DEFAULT	OPTIONAL
Analog inputs	1x 4-20 mA (fused)		
	1x 0-10 V		•
Outputs	2x MOSFET switch (5 V to 40 V / 250mA)	•	
Power supply outputs	1x switchable 5 V for sensor power		
	1x switchable fused power supply voltage (for 4-20 mA sensor)		•
Pulse counters	2 (with adjustable filters)	•	

SOFTWARE		DEFAULT	OPTIONAL
Calculus portal compliant	Yes	•	
Third party platforms	Via Sigfox / LoRa / MQTT	•	
Configuration	Wireless via iPhone or Android	•	

Electrical Characteristics

ABSOLUTE MAXIMUM RATINGS

Operating temperature	-40 °C - +75 °C
Storage temperature	-55 °C - +85 °C
Wide range power supply Vin	60 V
5 V out for sensor power	250 mA (100 ms peak)
Outputs supply voltage	45 V
Output channel peak current	600 mA (internally limited)

DC CHARACTERISTICS @3,7 V

	MIN.	MAX.
Deep sleep cellular version	60 µA	80 µA
Deep sleep LoRaWAN version	30 µA	40 µA
Idle	37 mA	42 mA
LTE transmit	180 mA	200 mA
LPWAN transmit	141 mA	150 mA

Indicational values on a 3,7 V Li-ion battery. Power usage is dependent on choice in power supply, communication, sensors, measuring intervals,...

Order Information

C04	P	B ¹	N ²	L ³	G	S	-	NE ⁴
Device with default functionality and add-on possibilities	Wide range power supply	Internal 3,7 V Li-ion battery	Cellular communication	LPWAN	GPS	Sensor package		No enclosure
Contactless on/off switch			NB-IoT	Sigfox		Power supply monitoring		
Battery powered			LTE Cat M1	LoRa		Analog inputs		
Wi-Fi				LoRaWAN		Power supply outputs		
Bluetooth								
Outputs								
Pulse counters								
1-Wire								

1. Only possible in combination with P functionality

2. Not possible in combination with L functionality

3. Not possible in combination with N functionality

4. For bare metal implementations

Add-ons for C04	Specification	Order ID
Modbus RTU	Industrial communications protocol	M
Z-Wave	Residential wireless domotics and security protocol	Z
Custom	Call us	C

Limited to one add-on per Impulse C04 unit.

Want to know more?

For more information about pricing, licensing and support, please contact us at hello@calculus.group

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