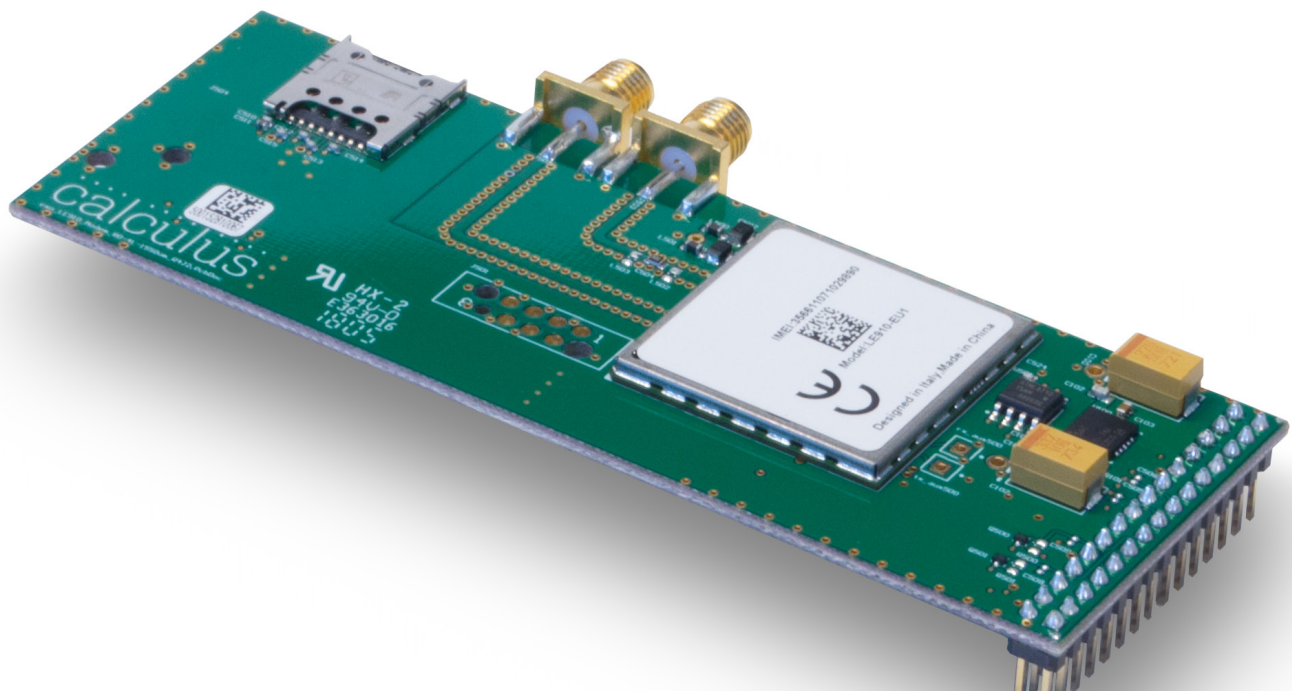# EU 4G/LTE
Cat. 1 connectivity card

When your Calculus Impulse gateway has no internet connection by wire or Wi-Fi and you desperately need some bandwidth we can offer you our cellular connectivity expansion card.

Our 4G/LTE expansion card is a LTE Cat. 1 modem specifically for feature-rich IoT applications, which at the same time helps you to optimize battery life cycles and more importantly has greater in-building penetration. One of these advantages is almost always an absolute requirement for IoT applications.

The high speed of this modem card is enough to let any VPN tunneling application work without the hassle that you may encounter when working on many company networks. Additionally, any simple standard SIM card with a data plan suffices to connect your gateway to the Calculus cloud.

This card is also reliable for remote or mobile applications. If 4G is not available or overused, you can still count on its 2G fallback.

EU 4G/LTE CAT. 1 CONNECTIVITY CARD

Frequencies	2G: B3 (1800), B8 (900)
	4G: B1 (2100), B3 (1800), B7 (2600), B8 (900), B20 (800)
Output power	Class 1 (1W) @ DCS 1800
	Class 3 (0.2W, 23dBm) @ LTE
	Class 4 (2W) @ GSM 900
Speeds	Max. 10 Mb/s down, 5 Mb/s up
SIM interface	Standard 1.8V / 3V SIM (15 x 25mm)
Antenna connectors	SMA female
With diversity antenna connection	Yes

ANTENNA REQUIREMENTS

Frequency range	Depending by frequency band(s) provided by the network operator, the customer shall use the most suitable antenna for that/those band(s)
Bandwidth	250 MHz in LTE/WCDMA Band 1
	170 MHz in LTE/WCDMA Band 3 / DCS1800
	190 MHz in LTE Band 7
	80 MHz in LTE/WCDMA Band 8 / GSM900
	71 MHz in LTE Band 20
Impedance	50 ohm
Input power	> 24dBm average power
VSWR absolute max	≤ 10:1 (limit to avoid permanent damage)
VSWR recommended	≤ 2:1 (limit to fulfill all regulatory requirements)

calculus

Measure it. Improve it.