

Tech Specs

quellrelief.com/how-quell-works/tech-specs/

100% drug free wearable pain relief technology

Looking for all the details you can handle? You'll find them right here in our tech specs.



Output

Waveform	Biphasic with alternating leading phase, symmetrical, rectangular
Regulated Current or Voltage	Current
Net Charge per Pulse	$0 \pm 1 \mu\text{C}$ into 500Ω Load
Maximum Output Voltage ($\pm 10\%$)	100V
Maximum Output Current ($<1\text{K}\Omega$ load) ($\pm 10\%$)	100 mA
Pulse Duration ($\pm 4\%$)	200 - 400 μsec
Pulse Frequency ($\pm 4\%$)	60-100 Hz, randomly varying
Pulse Pattern	Continuous
Maximum Phase Charge	20 μC
Maximum Current Density	0.71 mA/cm ² into 500Ω load
Maximum Average Current	4 mA into 500Ω load
Maximum Average Power Density	7 mW/cm ² into 500Ω load

Output Trips

No Load	Device not connected to patient
Insufficient Charge	Delivered charge below target
Over Load	Delivered charge above target
Electrode Peeling	Electrode dislodging from skin

Therapy Session

Timer	60 minutes
Start Therapy	Click button once

Therapy Session

Stop Therapy	Click button 4 times
Manual Intensity Increase/Decrease	Increase +1.25% per second, decrease -5%
Habituation Compensation	Adaptive stepwise increase in intensity during session



Electrode

Type	Self-adhering, single-patient use, multiple applications
Materials	Maylar substrate, silver electrode pads
Number of Electrodes	2, outer electrode area 28 cm ² , inner electrode area 33 cm ²
Connector	Medical snap (male)
Dimensions	0.2 cm x 5.3 cm x 28.3 cm (exterior)



Power

Source	Permanent rechargeable battery
Battery Type	Rechargeable 3.7V Lithium-Ion battery
Battery Life	400 Charge Cycles
Charging Source	AC line adapter
Line Current Isolation	Patient disconnected when charging
Patient Leakage Current, DC	<10 μ A

Power

Patient Leakage Current, Enclosure	<10 μ A
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Physical

Dimensions	98 mm x 74 mm x 11 mm
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Weight (without straps)	62g
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Environmental

IP Classification	IP20
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Operating Temperature Range	-5° C to 40° C
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Atmospheric Pressure Range	70 kPa to 106 kPa
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Relative Humidity Range	15% to 93%
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Transport and Storage Temperature Range	-25° C to 70° C
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Atmospheric Pressure Range	70 kPa to 106 kPa
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Relative Humidity Range	10% to 93%
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Guidance Documents & Standards

FDA	Draft Guidance for Industry and Staff: Class II Special Control Guidance Document: Transcutaneous Electrical Nerve Stimulator for Pain Relief (April 5, 2010)
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IEC	IEC 60601-1, IEC 60601-1-2, IEC 60601-1-6, IEC 60601-1-11, IEC 62304
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Bluetooth®

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Communication between the Quell device and the Smartphone is via Bluetooth.

Disabling Bluetooth

While all sensitive data transmission is encrypted, Bluetooth functionality can be turned off for increased privacy. If Bluetooth is disabled, then the Quell Relief App will not function, but all other functions of the Quell device will operate normally.

To turn off Bluetooth:

1. Plug the Quell device into the charger/wall outlet,
2. Click and hold the button on the Quell device for approximately 10 seconds until the one orange and one white LED light up, then release the button.
3. The Bluetooth module is now disabled.

To reactivate Bluetooth functionality, repeat the above steps. All six LED's should be lit.

Bluetooth Specifications

Bluetooth Module	Bluegiga BLE 113 Bluetooth® Module with Bluetooth® 4.0 low energy radio
Transmit Power	+0 dBm
Receiver Sensitivity	-93 dBm
FCC Rules	Part 15C
Frequency Range	2402.0 - 2480.0
Output Watts	0.0011
Security	Encryption

Quell App requires iOS version 8.0 or later or Android version 4.4 or later
Smartphone must support Bluetooth LE