

COSMAN

The Leader in RF Medicine Since 1952

Four Electrode
RF Generator

The Next Generation in
RF Pain Management



G4 Version 2



Patents Applied For

From the inventors of radiofrequency medicine...

Cosman's Historic Firsts in RF Medicine

Landmark inventions by Bernard J Cosman, MS (MIT) and MIT Professor Eric R Cosman, Sr, PhD

1938-2000 Founded and owned Radionics, the world leader in RF medicine until its sale.

1950's

- First commercial radiofrequency generator (1952)
- First temperature-monitoring RF electrode
- First impedance monitor

1960's

- First facet denervation electrode with Dr. Shealy
- First trigeminal neuralgia electrode with Dr. Sweet
- First cordotomy electrode with Dr. Rosomoff

1970's

- First medial branch TC electrode with Dr. Sluijter
- First curved trigeminal electrode with Dr. Tew
- First TC cordotomy electrode with Dr. Levin
- First DREZ electrode with Dr. Nashold

1980's

- First intradiscal RF heating with Dr. Sluijter
- First cardiac RF ablation generator
- First CT cordotomy electrode with Dr. Kanpolat

1990's

- Invented pulsed RF (PRF) with Dr. Sluijter et al.
- First pulsed RF generator, the RFG-3C+
- First curved RF cannulae with Drs. Racz & Finch
- First RF generator for tumor ablation
- First cooled RF electrode with Dr. Goldberg

The Next Generation of RF Innovation

The latest advances from Prof Eric R Cosman, Sr, PhD and Eric R Cosman, Jr, PhD (MIT)

2004-present Founded Cosman Medical.

- G4 four-electrode, touch-screen RF generator
- RFG-1A & 1B generators with simplified controls
- Fundamental discoveries in RF & PRF biophysics¹
- First RF palisade for sacroiliac joint (SIJ) pain²



1950's RFG-2



1960's RFG-3AV



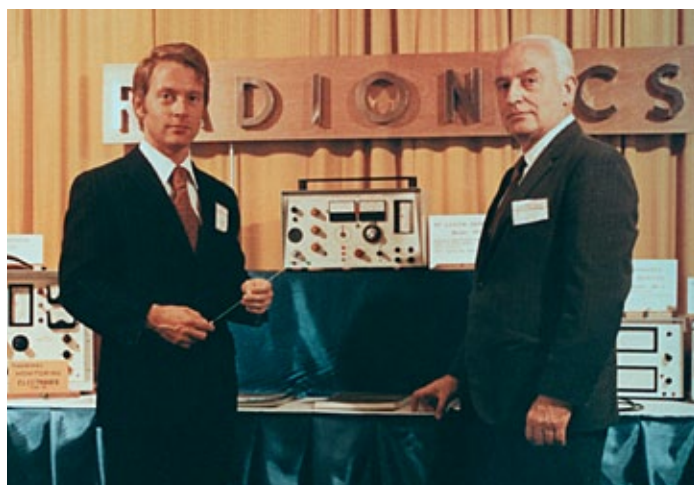
1970's RFG-5



1980's RFG-3B



1990's RFG-3C+



1971: MIT Professor Eric R Cosman, Sr, PhD and his father, Bernard J Cosman, MS (MIT) in the Radionics booth at the American Association of Neurological Surgeons (AANS) congress.



2007: Eric R Cosman, Jr, PhD (MIT) and his father, Professor Eric R Cosman, Sr, PhD in the Cosman Medical exhibition booth at the International Spine Intervention Society (ISIS) congress.

¹ Cosman ER Jr, Cosman ER Sr. Electric and Thermal Field Effects in Tissue Around Radiofrequency Electrodes. Pain Medicine 2005; 6(6): 405-424.

The Cosman G4 system satisfies all your RF needs with superior power, efficiency, and ease of use.

The Most Advanced RF Generator Ever Built

Version 2 of the popular G4 generator builds on Cosman's tradition of performance, safety, and quality in pain management and neurosurgery with the widest available range of features:

- Independent control of 4 lesions at once
- Monopolar and Bipolar RF
- Full 12" touch screen operation
- Full wireless remote operation
- Optional manual knob control
- Two interface choices:
 - *One Touch*: Simple, digital
 - *Graphing*: Advanced, graphical
- Doctor & Patient Presets
- Electronic procedure records
- Large color-coded screens & readings



Full operability with 12" touch screen or wireless remote. The upright screen is visible from a distance. Optional knob control.

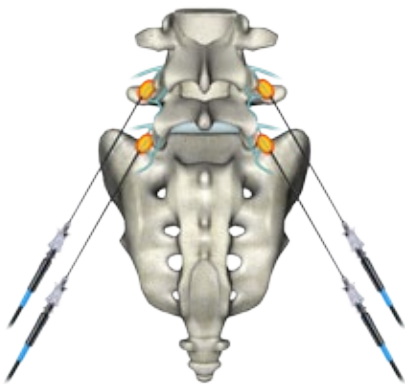


Wireless Remote Control



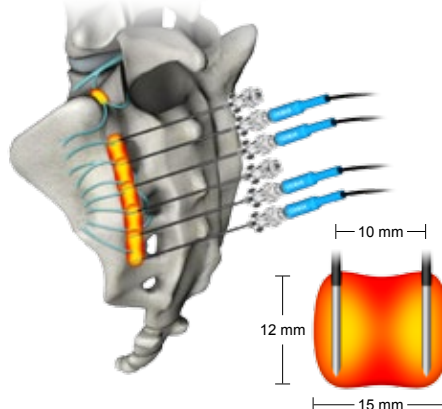
Nitinol, stainless, or disposable electrodes. Smooth steerable cannulae of all sizes.

Unparalleled Capability. Unmatched Simplicity.



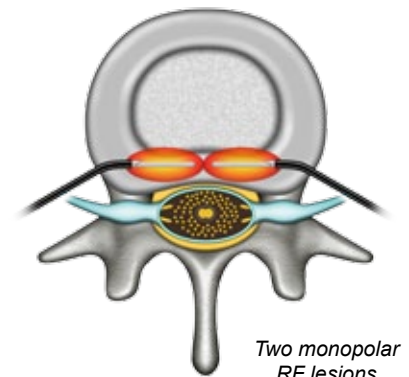
Treat Four Sites At Once

Automatic and Independent Control. Simultaneous or Auto Stagger Start. Faster Thermal & Pulsed Procedures.



SI Joint Palisade™ Kit

Bipolar RF produces a more complete SIJ lesion zone with fewer lesions.² Create two bipolar lesions at once.



Two monopolar RF lesions

Flextrode™ Disc Kits

Targeted intradiscal RF using an extendable electrode. Automatic stepped-temperature programs.

² Cosman ER Jr, Gonzalez CD. Bipolar Radiofrequency Lesion Geometry: Implications for Palisade Treatment of Sacroiliac Joint Pain. Pain Practice 2011. In Press.

Cosman G4: Simple Customizable Workflow

Two Interfaces to Satisfy Diverse Needs

Select a different interface for each doctor preset.

Choose either the simplicity of full touch screen automation or the precision of manual knob control



One Touch Interface

- Very large displays
- Simplified touch screen controls
- Useful in a busy practice

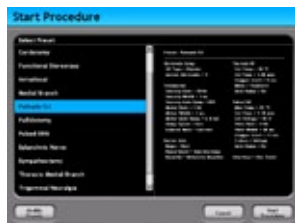


Graphing Interface

- Graph temperature and voltage
- Knob or touch screen control
- Useful for advanced treatments



1 Load stored procedure settings, doctor and patient information.



Doctor Presets

Store hundreds of procedure settings for multiple doctors.



Patient Database

Store patient names, IDs, DOBs, and notes. Recall on repeat appointments.

2 Perform procedure. Adjust electrode setup, settings, notes, and site labels as desired.



Intuitive color-coded screens and large displays

3 Print or export procedure record. Or save on G4 for later export.



Print procedure summary directly to a USB printer



Export electronic records to USB thumb drive



JPEG screen shots for records & presentations



Plot & analyze data for clinical research

Cosman G4: Unique Features

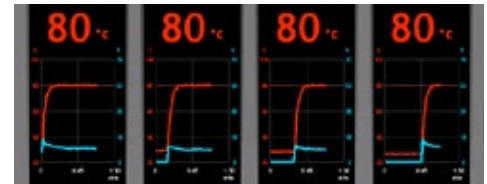
Through personal involvement in academic research and education, Cosman provides clinicians with the very latest in RF technology.

Radiofrequency

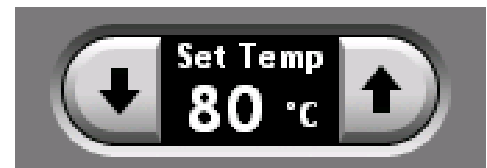
- Simultaneous or automatic stagger start of up to four electrodes
- Smooth automatic temperature control for large and small electrodes
- Displays of all crucial RF readings: Volts, Milliamps, Watts, and Ohms
- Voltage, current, or power control for multiple non-TC electrodes (CR)
- Patent-pending technology for energizing multiple electrodes

- Thermal RF**
- Proprietary algorithms accelerate heating
 - A broad range of temperature settings (37-95 °C)
 - Intradiscal stepped temperature programs

- Pulsed RF**
- The widest range of pulse settings: Rate 1-10 Hz, Width 2-30 msec, Voltage 0-100 V
 - E-dose: Automatic control of pulse settings to optimize nerve exposure to the electric field¹
 - 480 kHz waveform for optimal PRF effect¹
 - Low and high-temperature PRF (37-95 °C)



Automatic staggering of electrode activations quickly identifies problem electrodes



Push-button adjustment of the automatic set temperature during RF lesioning



Select any PRF Pulse Width 2, 3, ... , 30 msec
Select any PRF Pulse Rate 1, 2, ... , 10 Hz

Sensory & Motor Stimulation

- Automatic Stimulation: Choose slow or instant-on ramp rate
- Manual Stimulation: Use knob or on-screen buttons
- Mark the final stimulation level for true electronic record keeping
- Audible impedance tone for cordotomy and intradiscal placement
- Support for both spinal and neurosurgical procedures:
Rate 2-200 Hz, Width 0.1-3 msec, voltage or current control

User Friendly in Multiple Languages

Clear labeling and helpful troubleshooting messages simplify usage in a variety of selectable languages.



Select & preset manual or automatic control for sensory and motor modes separately

Calibration and Safety Checks

Ongoing checks of temperature and other readings confirm accuracy and control. Self-diagnostic tests of hardware and software verify proper function.

Pain Management and Neurosurgical Electrodes

Reliable RF Thermocouple (TC) Electrodes

- High-accuracy temperature measurement
- Colored to match RF cannulae shaft lengths: 5, 10, 15, 20 cm
- Compatible with both straight and curved cannulae of any gauge

Nitinol (TCN)

- Made from Nickel-Titanium “memory” metal
- Improved durability to daily use and autoclaving

Disposable (TCD)

- Sold sterile-packed to eliminate sterilization planning
- Eliminate the possibility of disease transmission

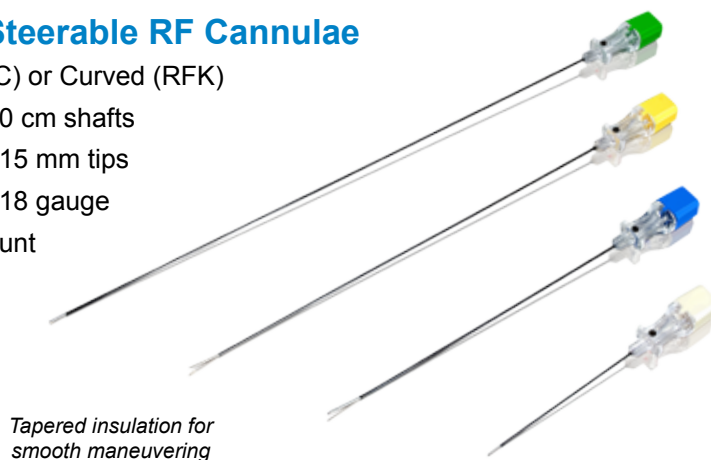
Stainless (CSK)

- Autoclavable for reuse in multiple procedures
- Available with integral 3-meter cable (CSK-TCx-3M)



Smooth Steerable RF Cannulae

- Straight (CC) or Curved (RFK)
- 5, 10, 15, 20 cm shafts
- 2, 4, 5, 10, 15 mm tips
- 22, 21, 20, 18 gauge
- Sharp or Blunt



Tapered insulation for smooth maneuvering

Disposable RF Injection Electrodes & Needles

- Keep your target while injecting through long fluid line
- Tissue piercing, steerable, smooth shafts: 5, 10, 15 cm
- Small hub with marker for injection direction

RF Injection Temperature-Control Electrode (CU)

- Many sizes, straight & curved tips. US Patent 7,862,563.

RF Injection Electrode (CR)

- 5 mm tip for voltage-control RF, shrouded connector

Stimulation Injection Electrode (CP)

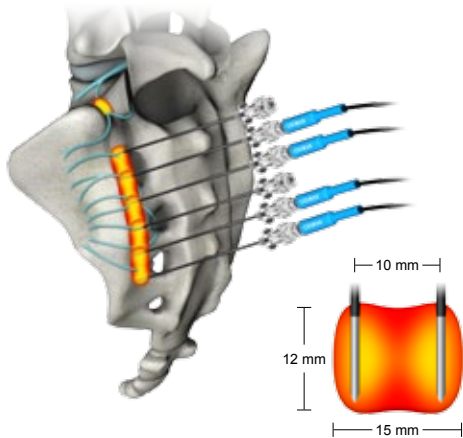
- 1 mm tip for precise stimulation-guided blocks

Block Injection Needle (CN)

- High quality, reliable, low cost



Cosman offers the widest range of RF electrodes, cannulae, and accessories. Our products are designed and built at our own facility to ensure superior quality control, rapid customer service, and manufacturing cost savings that we pass on to our customers.

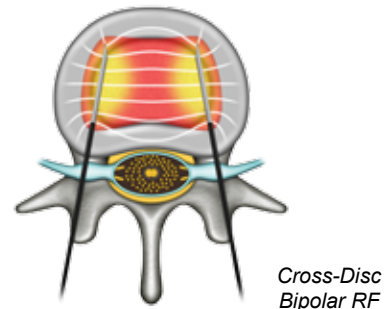
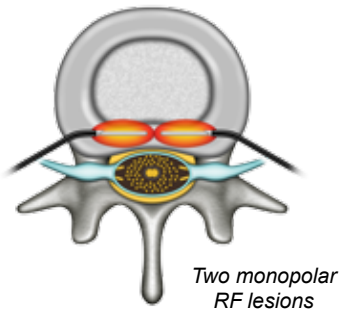
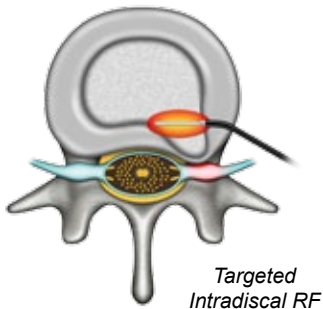


Sacroiliac Joint (SIJ) Palisade™ Kit

- Bipolar RF creates larger heat lesions than cooled RF as used in pain management²
- Bipolar RF produces a more complete SIJ lesion zone in less time, with fewer lesions, using smaller cannulae²
- Even faster with the G4: Create two bipolar lesions at once
- Includes 6 straight cannulae and 4 disposable electrodes

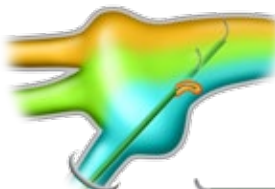
Flextrode™ Disc Kit

- An extendable electrode with curved introducer simplifies targeted intradiscal placements in a variety of orientations
- Automatic stepped-temperature programs.



Bipolar Disc Kit

- Two electrodes with straight 20 gauge introducers
- The G4 directs Thermal or Pulsed RF energy between the electrode tips without a ground pad



Trigeminal Neuralgia Kits

- TEW Curved Electrode
- TIC Straight Electrodes



Trigeminal Neuralgia (TEW, TIC)



Cordotomy Kits

- Autoclavable or Disposable
- Includes spinal needles
- Use X-ray or CT guidance



Cordotomy: Reusable (LCE), Disposable (LCED)



Stereotactic Brain Electrodes

- Adapt to most stereotactic frames
- Thalamotomy, Pallidotomy, Cingulotomy for treatment of movement disorders and intractable pain.



Stereotaxy (TC): Numerous sizes available.

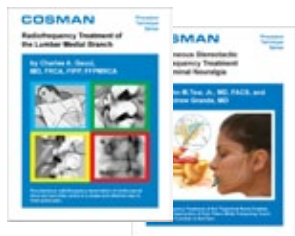


DREZ Kits

- Spinal DREZ Kit (NTCD)
- Nucleus Caudalis Kit (ENA)



DREZ (ENA, NTCD)



Step-by-step
Procedure Guides



G4 Cable Organizer (G4-CO)



CR Injection Electrode
Organizer (CR-CO)



Test plugs verify calibration
and control (RFG-TP)



Wireless Remote
Control (G4-M)



Footswitch
(FS-1)



USB Disk for
Records Export



Ground Pad
(DGP-PM)



Sterile Test Pad
(RFG-STP)



G4 Four-Electrode
RF Generator



RFG-1A & 1B One-Electrode
RF Generators

Thermal RF (480 kHz carrier frequency)
Auto Temp: Off, 37–95°C
Auto Timer: 5 sec – 30 min
Auto Stepped: Start, Step, Final Temps and Times
Power: 0–50 Watts

Pulsed RF (480 kHz carrier frequency)
Auto Temperature: Off, 37–95°C
Auto Timer: 5 sec – 30 min
Voltage: 0–100 Volts Peak
Rates: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 Hz
Widths/Durations: 2, 3, ..., 30 msec
E-dose: Control Voltage or Pulse Width

Stimulation (Biphasic Square Pulses)
Rates: 2, 5, 50, 75, 100, 150, 180, 200 Hz
Widths/Durations: 0.1, 0.5, 1, 2, 3 msec
Voltage Control: 0–3 Volts
Current Control: 0–10 mA

Impedance Monitor: 30–3000 Ω
Temperature Monitor: 0–110 °C

USB Export: PCL3 Printer, Flash Drive (TXT, JPEG)

Size: 14.2 × 9.5 × 12.2 in³ (36.2 × 24.1 × 30.0 cm³)
Touch Screen: 12.1 in (30.7 cm)
Weight: 22 lbs (10 kg)
Electric Supply: 100, 120, 220, 240 Vac; 50/60 Hz

Designed and Built by Cosman Medical

Like all Cosman products, the Cosman G4 radiofrequency generator is designed, manufactured, and serviced by our own engineers and technicians to ensure superior quality control, faster service, and cost savings that we pass on to our customers. Cosman Medical, Inc. is an ISO 13485 certified company. The G4 is indicated for use in procedures to create radiofrequency lesions for the treatment of pain, and for lesioning nerve tissue for functional neurosurgical procedures.

Part #	Description
G4	Four-Electrode RF Generator
G4-M	Wireless Remote Control
FS-1	Foot Switch
RFG-STP	Sterilizable Test Pad with Cable
RFG-TP	Output Test Plug
SC-2	Storage and Carrying Case
CB112-TC	2.4 m Cable, TC Electrode to G4
CB114-TC	2.4 m Cable, Disposable TC Electrode to G4
CB116, CB116-4	2.4 m Cable, CR/CP Electrode(s) to G4
DGP-PM-5,10,25	Disposable Ground Pad, 5, 10, or 25/pk