

Introducing the Micro-Pulse **Model B5**

The most advanced and flexible PEMF device ever, now available for scientific use. **Specifications:**

- mass: 130 g (4.6 ounces)
- size: 11.7 x 7.9 x 2.4 cm (4.7 x 3.1 x .95 inches)
- power: 5V USB (2.0 Amp max)
- battery: external (optional) “power pack”
- outputs: 4 independent I.C.E.S. coils or arrays
- intensity control: 16 levels, digitally controlled
- protocols: 8 pre-set, millions can be programmed
- frequencies: 0.5 to 300 pulses per second
- internal protections: voltage and temperature
- display: OLED, high-contrast, impact isolated



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A closer look at your new B5: User Interface



- High-contrast OLED display
- Green LED indicates each pulse
- Red LED indicates mode change (flash) or system fault (solid)
- Four (4) high-quality physical tactile buttons (250 gm-f activation)
- Automatically stores the last setting on each protocol for fast access
- Auto-run, internal fault protection, automatic button deactivation during operation, and many other features



A closer look at your new B5: Input & Output

- Power INPUT: Use either one of the two micro-USB ports (one is just a spare for convenience)
- PEMF OUTPUTS: Four identical synchronized independently powered and controlled I.C.E.S. output ports to drive 4 sets of original I.C.E.S. coils, or 4 new 2x2 coil arrays, or any combination



About the Model B5

- The B5 is a powerful scientific instrument. It can be used for professional applications including basic and clinical research, and for personal use.
- It is intended for experienced I.C.E.S. users who already know how to use other Micro-Pulse products, such as the A9, P2 and others.
- The B5 is currently in use in basic research involving:
 - Traumatic Brain Injury/Concussion
 - Type 1 Diabetes (mice)
 - Inflammatory signaling
 - Heart disease and cardioprotection
 - Orthopedic injury
 - Chronic Pain
 - Diseases of kidney and liver



A bit more about the B5...

- Each B5 system will be built-to-order, not mass-produced
- Each is hand built, programmed, calibrated, and tested by Bob Dennis
- Absolutely premium electronic components are used
- Each system is fully warranted against flaws in assembly
- Firmware upgrades are free (just mail back for reprogramming)
- B5 systems will be available only in limited quantities
- Shipment will be about 1 week after order (time required to build)
- Personal B5 systems use exactly the same circuit board and PEMF protocols as the professional scientific versions currently in experimental use



Scientific Research Model: MCP48

Ongoing animal studies use the B5 technology, adapted for use with animal cages (mouse and rat).

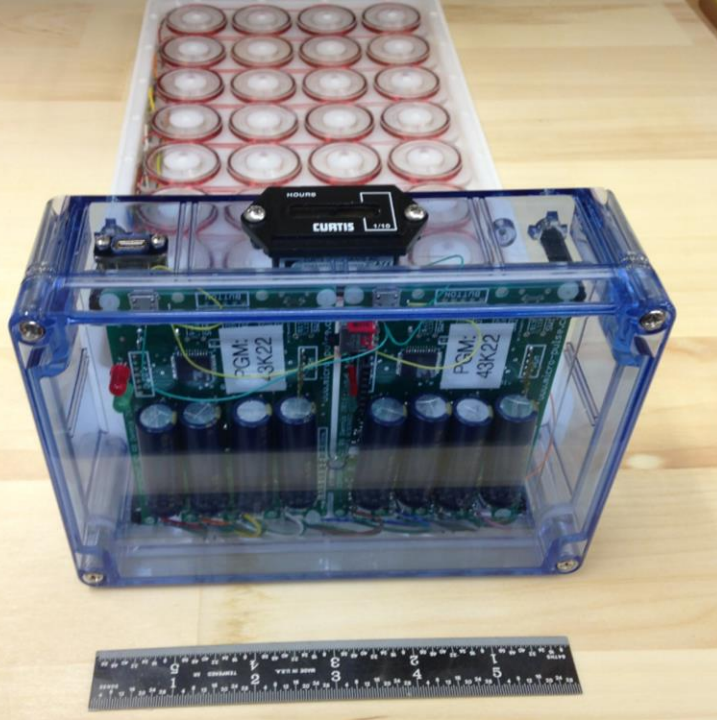
These systems use exactly the same circuit board electronics and ICES protocols as the Model B5.

Special programming is available for scientific studies.

Mice and rats are treated with the ICES protocols with the cage placed on top of the coil platform

Current studies underway include:

Diabetes, heart, kidney, liver, inflammation & autoimmune signaling, scar formation, more...



B5 Features: POWER SUPPLY

- Uses USB charger ports (2 Amp), 2 identical micro-USB
- Does not use or require USB data
- Peak power at start-up is 2.0 A
- Running power is 0.5 Amps generally, depending on the intensity setting (higher = more current)
- An external battery “power pack” can be used. Generally 10,000 mAh units (or larger) work well.
- Ultra-high energy efficiency makes the B5 the most advanced portable and wearable PEMF system available



B5 Features: Intensity Control

Precise intensity control: 16 digitally regulated intensity levels

B5 setting	A9 setting	Magnetic flux slew rate (kG/s) @ 25 mm coil spacing
0	-	100 +/- 50 (variability on all intensity settings)
1	-	250
2	-	400
3	-	550
4	LOW	700 (same as A9 "L" setting)
5	-	800
6	-	900
7	MED	1000 (same as A9 "M" setting)
8	-	1100
9	-	1200 (default setting on first power-up)
10	-	1250
11	HIGH	1300 (same as A9 "H" setting)
12	-	1350
13	-	1400
14	-	1450
15	X-HIGH	1500 (same as A9 "X" setting)



B5 Features: Coil Configurations

The B5 allows extreme flexibility in the use of coils and arrays

- Individual ICES coils of any size can be used, in any combination
- Use original ICES coils or the new 2x2 coil array shown here:
- Treat multiple areas simultaneously
- Stack coils or arrays for more penetration
- Any combination of coils or arrays can be used: only 1, or 2, or 3, or all 4
- Larger mats and long arrays of coils can be built using up to four 2x2 arrays
- Full power is delivered to all 4 ports.
Power is not divided between coils.



B5 Features: Built-in PROTOCOLS

The B5 allows you to select from any legacy Micro-Pulse protocol, adjust the time in each mode, or select a frequency of your own

B5 – 6 modes (frequencies) adjustable 0 – 255 minutes for each mode

A9 – 3 modes (frequencies) adjustable 0 – 255 minutes for each mode

P2 – 4 modes (frequencies) adjustable 0 – 255 minutes for each mode

Omni-1 – 8 modes (frequencies) adjustable 0 – 255 minutes for each mode

Schumann – Primary and first 4 harmonics, each adjustable 0 – 255 minutes

Hold – Select and HOLD one frequency, from 0.5 to 300 pulses per second

Wave – ramp between 2 frequencies, adjustable frequencies & ramp time

Matrix – This is a specially designed user protocol (see [Dr. Roth](#))

****RESET to DEFAULT**** – resets all modes to their original settings



B5 Protocol – a new ICES protocol

- When your Model B5 is delivered, it is set to the B5 protocol. You can change to any of the other protocols each time at power ON.
- Each mode is a pattern of pulses. You can adjust the time each pattern runs before moving to the next pattern (mode).
- At the end of the final mode, the device cycles back to the first mode.
- The B5 protocol cycles through 6 modes (all times are adjustable):
 - Mode 1: 5 pps (pulses per second), bipolar, for 10 minutes
 - Mode 2: 100 pps for 5 pulses, each second, repeat for 2 minutes
 - Mode 3: same as Mode 2 with opposite pulse polarity, repeat for 2 minutes
 - Mode 4: 10 pps, bipolar, repeat for 5 minutes
 - Mode 5: 100 pps for 5 pulses, then 5 pps, for 1 second, repeat for 1 minute
 - Mode 6: same as Mode 5 with opposite pulse polarity, repeat for 1 minute



A9 Protocol

- You can change to the A9 Protocol. The system will remember your choice and will start with the A9 protocol the next time you turn it ON.
- This is identical to the original Model A9 protocol except for the random pulses in the original A9 protocol, for a few seconds at the end of each mode. This randomization has been removed to allow for precise, repeatable protocol definition for scientific purposes.
- At the end of the final mode, the device cycles back to the first mode.
- The A9 protocol cycles through 3 modes (all times are adjustable):
 - Mode 1: 5 pps (pulses per second), bipolar, for 10 minutes
 - Mode 2: 100 pps for 5 pulses, positive polarity, repeat for 10 minutes
 - Mode 3: 100 pps for 5 pulses, negative polarity, repeat for 10 minutes



P2 Protocol (all Micro-Pulse models prior to the A9)

- This is the classic Micro-Pulse ICES protocol that was programmed into earlier Micro-Pulse devices such as AllevaWave, SomaPulse, MagnaFix, and others.
- As always, the B5 system will remember your choice and will start with the most recent protocol you selected the next time you turn it ON.
- This is identical to the original Model P2 protocol except that the time for the REST mode varies in some of the legacy devices. You can set any REST time you want.
- At the end of the final mode, the device cycles back to the first mode.
- The P2 protocol cycles through 4 modes (all times are adjustable):
 - Mode 1: 5 pps (pulses per second), bipolar, for 10 minutes
 - Mode 2: 100 pps for 5 pulses, positive polarity, repeat for 10 minutes
 - Mode 3: 100 pps for 5 pulses, negative polarity, repeat for 10 minutes
 - Mode 4: Rest mode, 10 minutes (originally set to 20 minutes or 10 minutes on legacy devices)

NOTE: you can set the REST mode to 0 minutes if you want to skip that mode
You can skip any mode in any protocol by setting the time for that mode to zero.



Omni-1 Protocol

- This is a new protocol that was developed with extensive Beta-testing among our model A9 customers, including scientists, clinicians and athletes.
- It starts with the classic Micro-Pulse ICES A9 protocol, then continues with a series of specially selected pulse patterns initially based on lower frequency sub-harmonics. We don't know why these work, but our Beta testers report that they think it is about 15% to 20% more effective than the original A9 protocol. Some A9 systems shipped since the latter half of 2016 have been programmed with this protocol rather than the original A9 protocol, which instead has random pulse sequences at the end of each mode, and only has modes 1 – 3 below.
- The Omni-1 protocol cycles through 8 modes (all times are adjustable):
 - Mode 1: 5 pps (pulses per second), bipolar, for 10 minutes
 - Mode 2: 100 pps for 5 pulses, positive polarity, followed by 5 pps pulses each second, 2 minutes
 - Mode 3: 100 pps for 5 pulses, negative polarity, followed by 5 pps pulses each second, 2 minutes
 - Mode 4: 3.92 pps, bipolar, for 1 minute
 - Mode 5: 7.14 pps, bipolar, for 1 minute
 - Mode 6: 10.42 pps, bipolar, for 1 minute
 - Mode 7: 13.70 pps, bipolar, for 1 minute
 - Mode 8: 16.95 pps, bipolar, for 1 minute



Schumann Protocol

- This protocol generates the first five Schumann Resonances:
https://en.wikipedia.org/wiki/Schumann_resonances
- You can read more about my thoughts on Schumann frequencies [here](#).
- These frequencies seem to work well. I hypothesize this is because they are in a range that is physiologically meaningful for the electro-magnetic modulation of paramembranous ion flux, which I believe operates over a fairly broad range of pulse frequencies in the range of about 2 to 40 pps.
- The Schumann protocol cycles through 5 modes (all times are adjustable):
 - Mode 1: 7.82 pps (Schumann fundamental frequency) for 5 minutes
 - Mode 2: 14.3 pps for 2 minutes
 - Mode 3: 20.8 pps for 1 minute
 - Mode 4: 27.3 pps for 1 minute
 - Mode 5: 33.8 pps for 1 minute



HOLD One Frequency Protocol

- This new mode allows you to select a frequency.
- Frequencies are selected from the range of 0.5 to 300 pps.
- As always, the B5 system will remember your choice and will start with the most recent protocol and frequency you previously selected the next time you turn it ON.
- The B5 will generate a continuous series of pulses at this one frequency.
- The selectable frequencies are listed [here](#).



WAVE – Ramp Between Two Frequencies

- The WAVE protocol allows you to ramp between two frequencies that you select.
- You also set a time period (in minutes) for each ramp.
- As always, the B5 system will remember your choice and will start with the most recent protocol you selected the next time you turn it ON. It will remember your last pair of frequencies and the ramp time you selected.
- This allows you to use a range of frequencies that ramp up and down automatically.
- The frequencies will ramp in 10 even steps, starting from the first frequency toward the second frequency you select, then back again.
- This cycle will continue indefinitely, ramping up – down – up – down - ...
- The WAVE protocol allows you to simulate important brain and other neural patterns that tend to fluctuate over known ranges of frequencies in a known time period.
- The selectable frequencies are listed [here](#).



MATRIX Protocol

- This is the Micro-Pulse ICES protocol that was developed for [Dr. George Roth](#).
- The use of this pattern is intended only for use with the Matrix Repatterning System, as instructed by Dr. George Roth.
- This protocol has fewer adjustments because it is intended to allow consistent clinical application within the Matrix Repatterning System.
- At the end of the final mode, the device cycles back to the first mode.
- The Matrix protocol cycles through 8 modes (times are not adjustable):
 - Mode 1: 5 pps (pulses per second), bipolar, for 7 minutes
 - Modes 2 – 8 are fixed in their pattern and duration



RESET to DEFAULT Protocol

- The RESET option is always the final protocol on the list for you to select.
- If you get confused, or if you just want to start over, you can always use this function to reset the B5 system to its original settings for all protocols.
- This will wipe the memory clean, so the next time you turn the power ON, the system will start at the B5 protocol with all the standard time settings.
- All of your protocol adjustments will be forgotten and will be reset to the original settings.
- If you select ****RESET to DEFAULT****, the B5 will:
 - Internally wipe its memory clean
 - Reset all settings to their initial values for each protocol
 - Instruct you to turn the power OFF
 - The B5 will wait for you to power the device OFF. It will not allow any other action.
 - When you power the B5 back ON, it will be reset to all of its original settings.



Micro-Pulse

Model B5

Narrated by Bob Dennis



Standard Frequencies are built-into the Model B5:

- 100 pps positive and negative polarity bursts (5-pulse burst, once each second)
- Omni-1 Frequencies: 5, 100 + 5 (combined), 3.92, 7.14, 10.42, 13.20, 16.95
- Schuman Resonances (first 5): 7.83, 14.3, 20.8, 27.3, 33.8 pps

And the following selectable frequencies for the HOLD and WAVE protocols:

- 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.0, 2.2, 2.4, 2.6, 2.8, 3.0, 3.2, 3.4, 3.6, 3.8, 4.0, 4.2, 4.4, 4.6, 4.8, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0, 9.5, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300 (all are pulses per second)

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Bob's thoughts on Schumann Frequencies

- For technical reasons, I remain skeptical that any PEMF products can resonate with the Schuman frequencies of the earth-ionosphere system.
- That is not to say that these frequencies do not work well, in fact they work just fine, but not for the reasons many people think.



My skepticism is based upon one opinion and two facts:

- **OPINION:** The references on the Internet to Schumann Resonances in PEMF therapy were first put forward by marketers to lend credibility to their products. It sounds cool and “earthy”. But these claims are based upon made-up “NASA” experiments that never happened.
- **FACTS:**
 - (1) the phase of the earth-ionosphere Schumann wave is not detected by any PEMF system, because detection of Schumann resonances requires large and highly specialized equipment, so even at a precise Schumann frequency, commercial PEMF systems are just as likely to be in anti-resonance as in resonance.
 - (2) Schumann frequencies vary slightly with changes in the earth-ionosphere cavity geometry, so even a precise non-phase-locked open-loop pulse generator will result in beat frequencies, where: $f_{\text{beat}} = (f_{\text{system}} - f_{\text{earth}}) / 2$ thus generating a much lower frequency amplitude modulation.

[https://en.wikipedia.org/wiki/Beat_\(acoustics\)](https://en.wikipedia.org/wiki/Beat_(acoustics))

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