User Manual for the Micro-Pulse

Model B5

Rev: 2018-02-21

TABLE of CONTENTS:

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Terminology in ICES-PEMF: *Hz* versus *pps*

Throughout this document you will see the term “pps” (pulses per second) to describe how many ICES pulses are generated per second, instead of the more common unit “Hz” (Hertz).

You might ask, “is *pps* the same as *Hz* (Hertz)?”. Well, yes and no. I use the term *pps* because I believe it is more technically precise than *Hz* when describing trapezoidal pulses as used in low frequency PEMF. For you as a user of PEMF technology it is fine to use the terms *pps* and *Hz* interchangeably. But as a scientist, I believe I have the responsibility of adhering to more precise technical terminology. The B5 is a scientific instrument, so I feel obligated to describe its performance with an appropriate level of scientific precision.

It is OK for you to think of *pps* as equivalent to Hz (i.e., *pulses per second* is equivalent to *Hertz*). When you see *pps*, just think: “ frequency, Hz”

If you are comfortable with this, you can skip the rest of this page and move on to the rest of the B5 manual, remembering that “pps” just means “Hz”.

If you are wondering why I am splitting hairs on this topic, here is my justification.

Return to ToC

Power Input: 5 VDC @ 2 Amps (or higher rating)

- USB to micro-B cable: use good quality
- 3, 6, 10 feet (any length is OK)
- USB data lines are not used
- Use either micro-B port on the B5
- Do not use both ports, use only one at a time (second one is a spare)

Power Input: 5 VDC @ 2 Amps (or higher rating)

- USB to micro-B cable
- 3, 6, 10 feet (longer ~ stiffer, be careful not to damage the USB micro-B ports)
- USB data lines are not used
- Use either micro-B port on the B5
- Do not use both ports, use only one at a time (second one is a spare)

Power Input: 5 VDC @ 2 Amps (or higher rating)

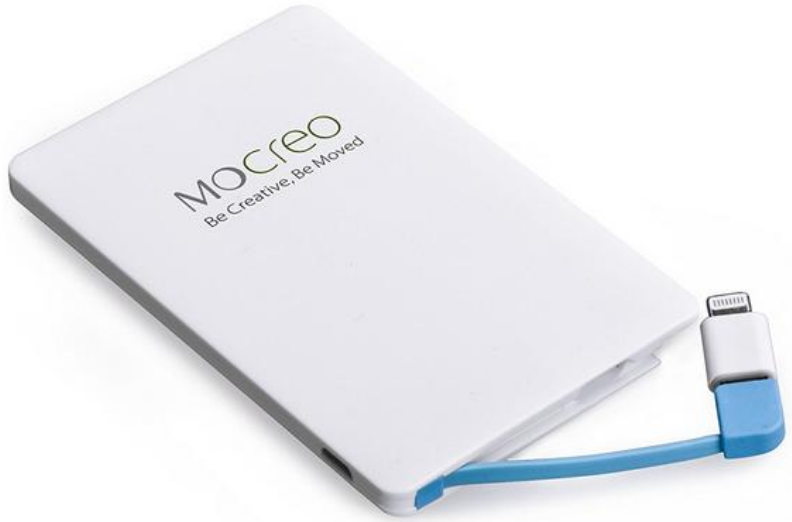
- A laptop USB port may not have adequate power rating (< 2 Amps).
- Most plug-in car or wall outlet USB power/charger ports work very well. Be sure the rating is at least 2 Amps (10 Watts) per port

Power Input: Battery Packs

Inadequate power: < 10,000 mAh

- **AmazonBasics Power Bank (< 10,000 mAh)**

- **HAME 4000mAh**
- **Mocreo 2500mAh**



Power Input: Battery Packs (some work well, others do not)

Use Battery Packs with
-- > 2.0 Amp rating
-- > 10,000 mAh capacity

- ✓ **Anker PowerCore 10000**
- ⊘ **KMASHI 10000mAh with 3.1A Output**
- ✓ **Unifun 10400mAh**
- ✓ **Polanfo M50000-12000mAh**

Power Input: KNOW YOUR BATTERY

- Battery portable power packs are sophisticated devices. If you choose to use one you must take the time to learn how it works.
- Most battery packs are intended to recharge other devices, so they may not behave well when powering a device like the B5 which draws variable amounts of power as it changes modes and frequencies.
- Most battery power packs will shut off automatically if they detect very little or no power drain. This can be a problem, because the B5 is ultra efficient, so the battery power pack may decide that it is not connected to anything that is using power, and may shut itself off.

Power Input: KNOW YOUR BATTERY

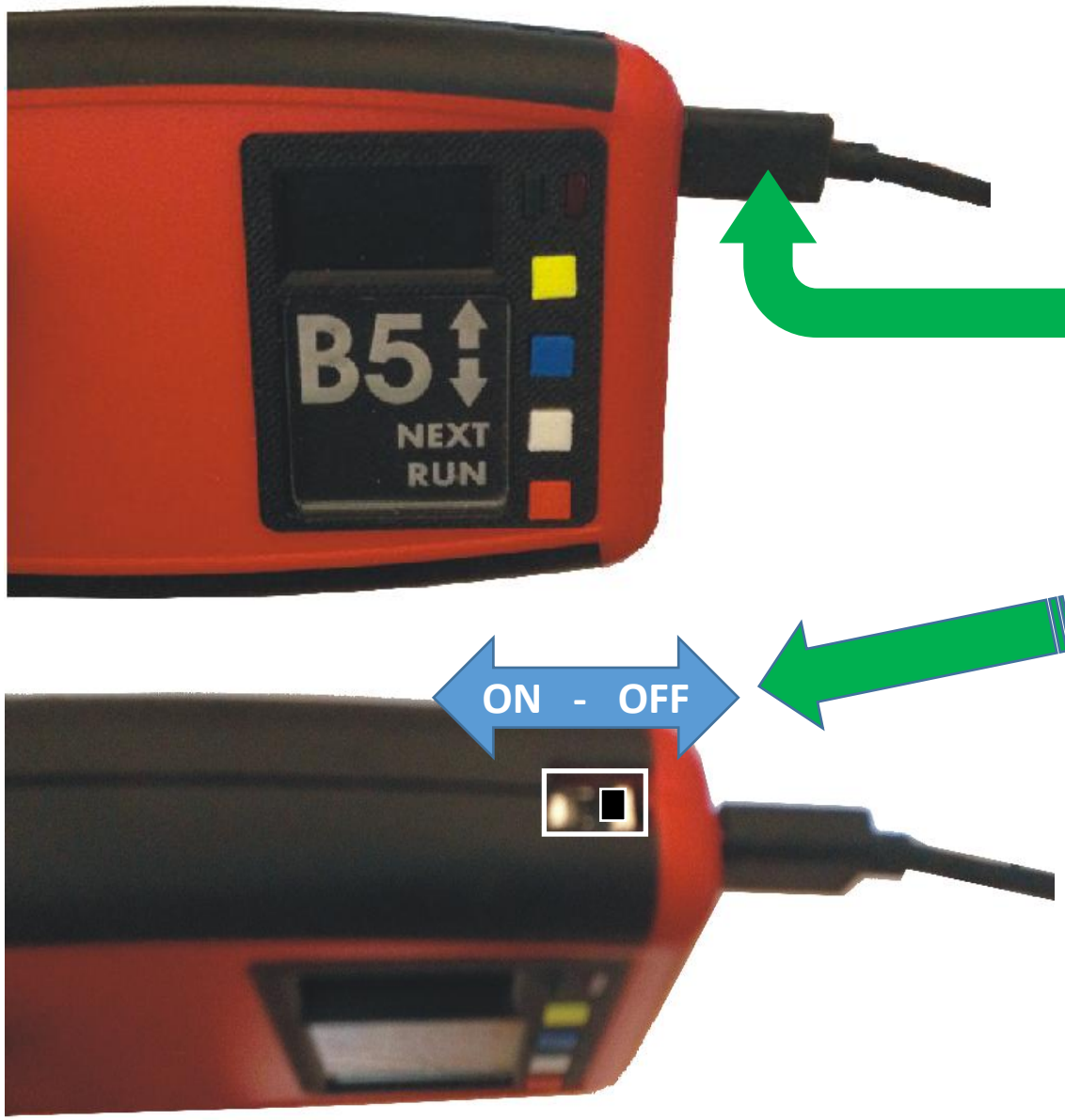
POWER/RESET Button

- Or, if you draw too much power, such as at POWER UP for the B5 when it draws the most power, about 2 Amps, the battery pack may automatically shut down if it detects an over-current error. This protects the battery from self destructing.
- In either case, you may have to reset the device. Every battery pack is different. You need to know how to reset it. This battery pack can be reset by pressing the power button indicated above.
- If you are using a battery pack and your B5 keeps shutting off, this is probably the problem you are experiencing. You may need to try a different battery pack, or change how you are using the battery pack you have.
- Also note: this battery pack has two outputs: 1 Amp and 2.1 Amp. Use the higher one.

Power Input: very short or long USB cable

- Use with battery power packs or USB wall power converters
- Any length USB – micro B power cable can be used
- Some cables are better than others: some have unreliable connections while others seem to provide a good, reliable connection.

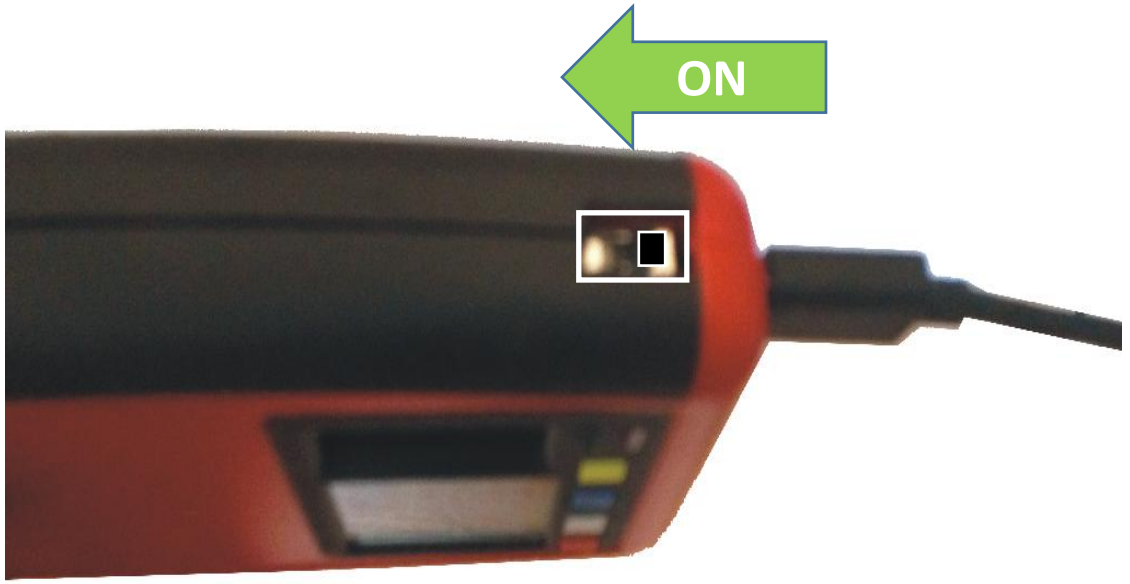
Power ON

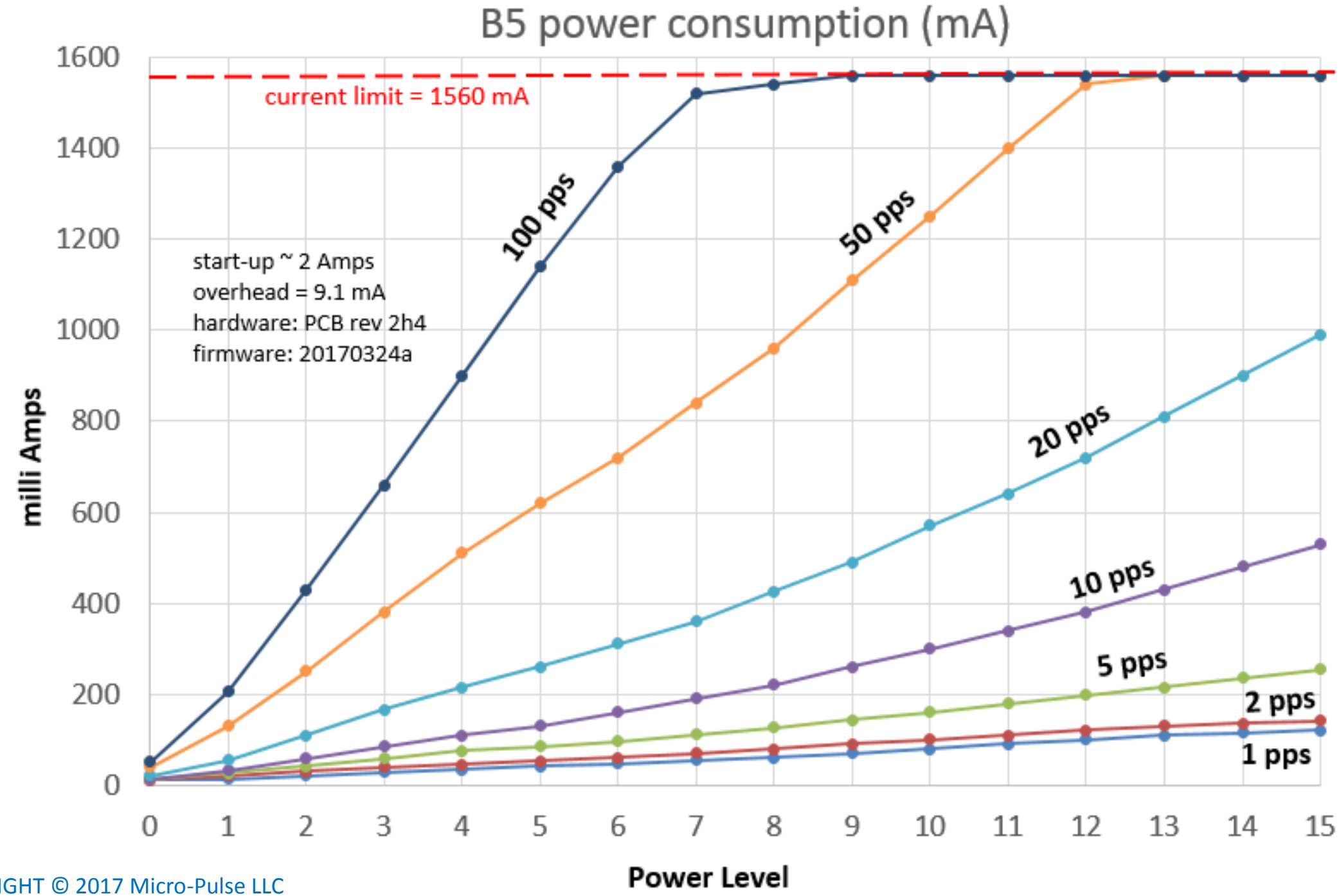


- To power up the B5, first plug in to a USB power port, or in to an external battery pack.
- Then, switch the power ON
- The Power Switch is recessed into the case to prevent accidental switching
- You will use the Power Switch often, to control B5 protocol termination and to reset the device.

Power ON

- The B5 can only be adjusted within the first 15 seconds of power-up. After that, it initiates the AUTO-RUN sequence.
- Once the B5 is running, you can not adjust the settings. This is to prevent accidental changes to settings if you are wearing the device.
- If power is interrupted for any reason, the B5 will restart the most recent protocol using your most recent settings as soon as power is reestablished. You do not need to do anything but provide reliable power.
- To adjust the settings, you simply switch the B5 OFF, wait one second, then switch it back ON.
- This feature seems annoying at first, but it prevents unintended changes to the settings on your B5. Once you get used to it, it will make sense.





NOTE: if the current limit is exceeded, the RED LED will light for ~ 1 second, then the B5 will resume function. It will continue at the high power level you have set, but next time, on POWER-UP, it will reset to a safe level, usually POWER = 9. Use lower power or frequency.

Connecting Coils and Arrays

ICES COIL OUTPUTS:

The B5 has 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

Plug each coil in firmly, all the way

Use any or all four ports

Connecting Coils and Arrays

- Any Micro-Pulse coils or coil arrays can be used
- Coils and arrays can be used in any combination and in any port
- We advise against using audio cable splitters

How to Place Coils on the Body

For the most recent advice on coil placement, please visit YouTube and search the following terms:

“ICES PEMF tutorial” (optionally refine the search with the term “coil”)

Optionally, you can jump straight to the following links:

https://www.youtube.com/watch?v=FGMyCZVQM5E

https://www.youtube.com/watch?v=Ew1H4nglT0A&t=8s

https://www.youtube.com/watch?v=_WtdIF0OmJ0&t=275s

https://www.youtube.com/watch?v=Fy_p2ZtW03M&t=46s

Programming Guide for the Micro Pulse

Model B5

B5 – 5 – 100 – 100 – 10 – 100 – 100

A9 – 5 – 100 – 100

P2 – 5 – 100 – 100 – rest

Omni1 – selected subharmonics

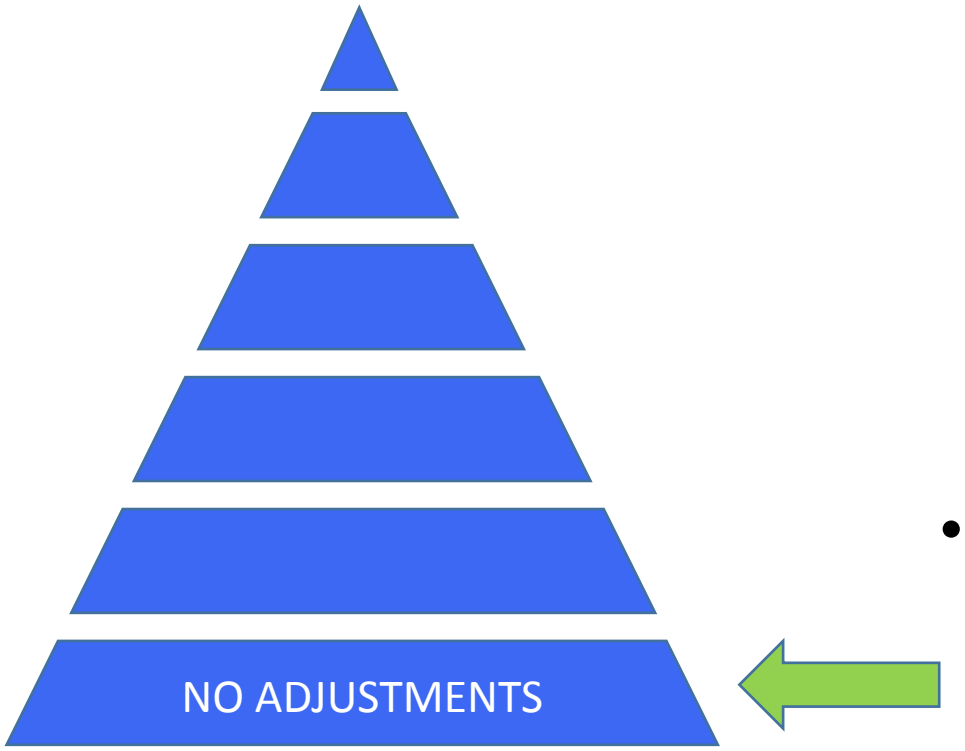
Schumann – first five harmonics

Hold – select one frequency

Wave – setup a frequency wave

Matrix – special wellness network

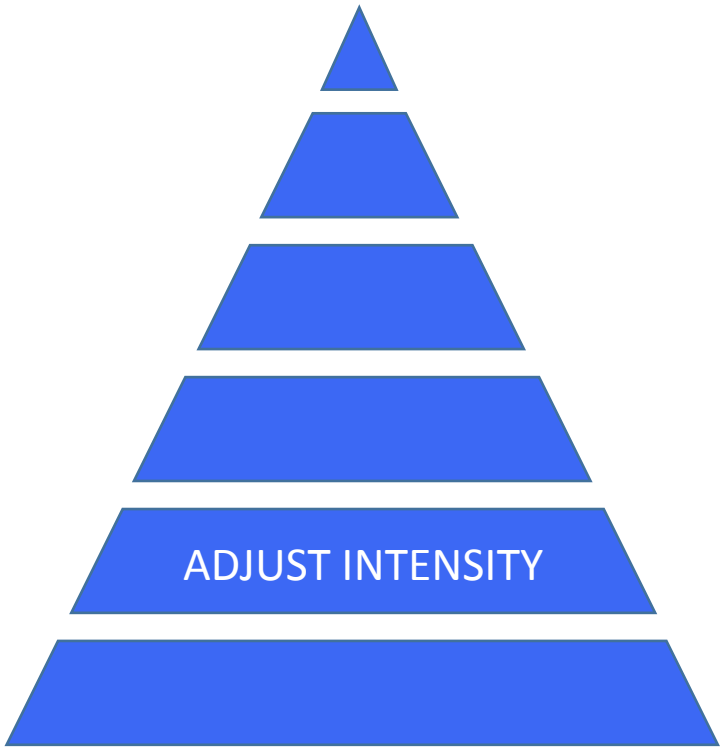
Start simple, grow toward more complexity



- Think of it as a pyramid…

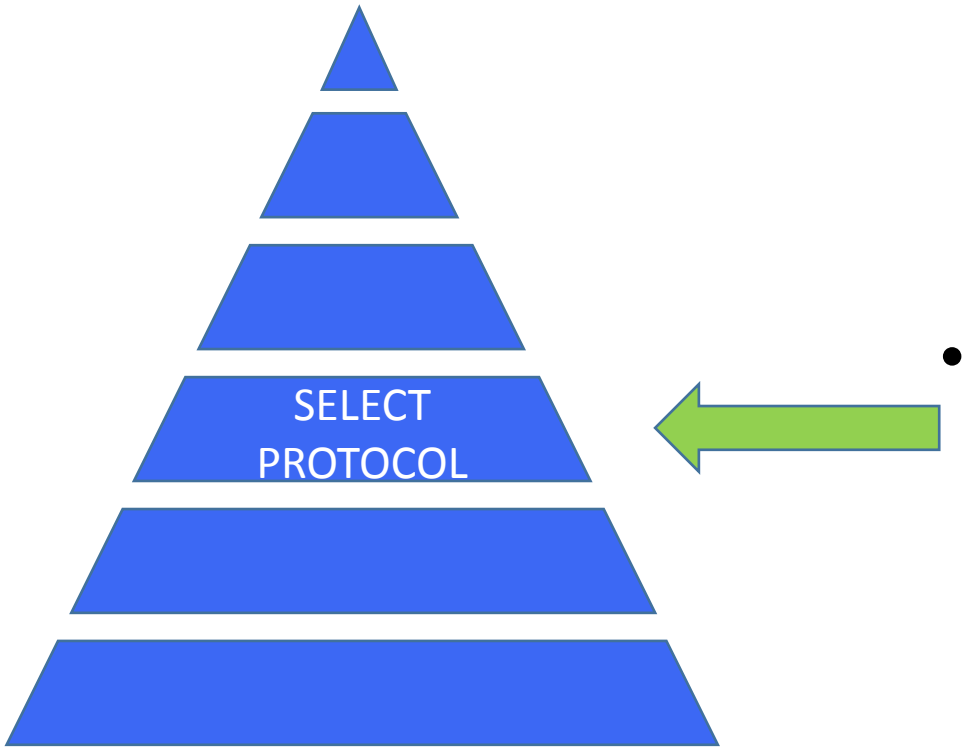
- You start at the bottom. Everyone starts here. It is the least complex. Here, you just plug in coils and USB power, turn the B5 ON, and use it just as it is out-of-the-box, with no adjustments. It will start automatically in ~ 15s

Start simple, grow toward more complexity



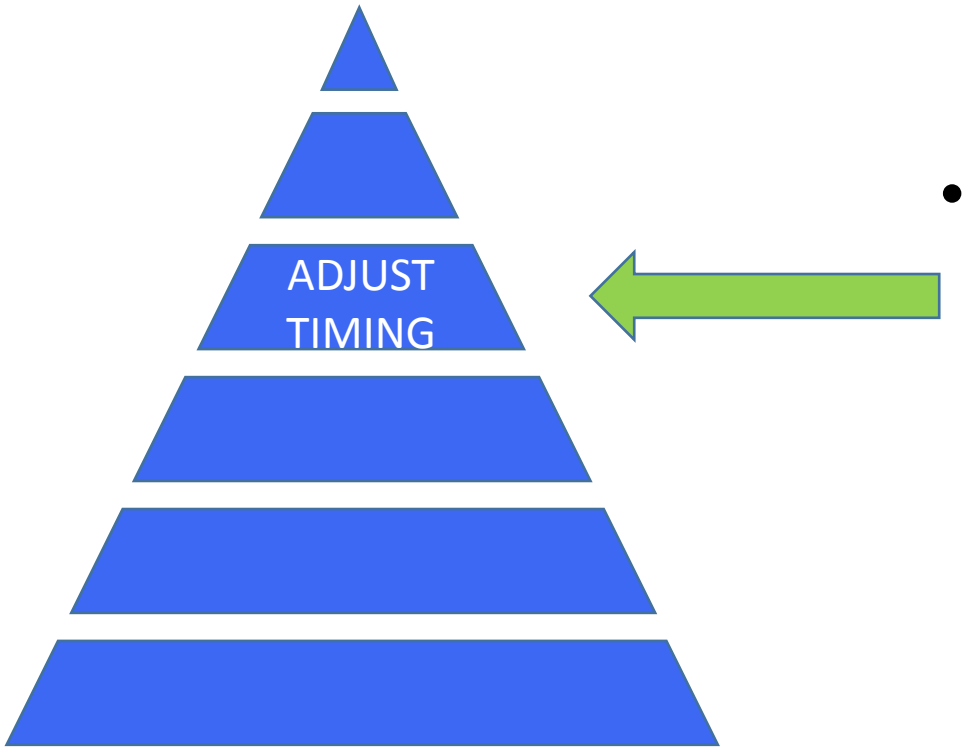
- Think of it as a pyramid…
- Then you learn to adjust the intensity. There are 16 intensity levels: 0 through 15

Start simple, grow toward more complexity



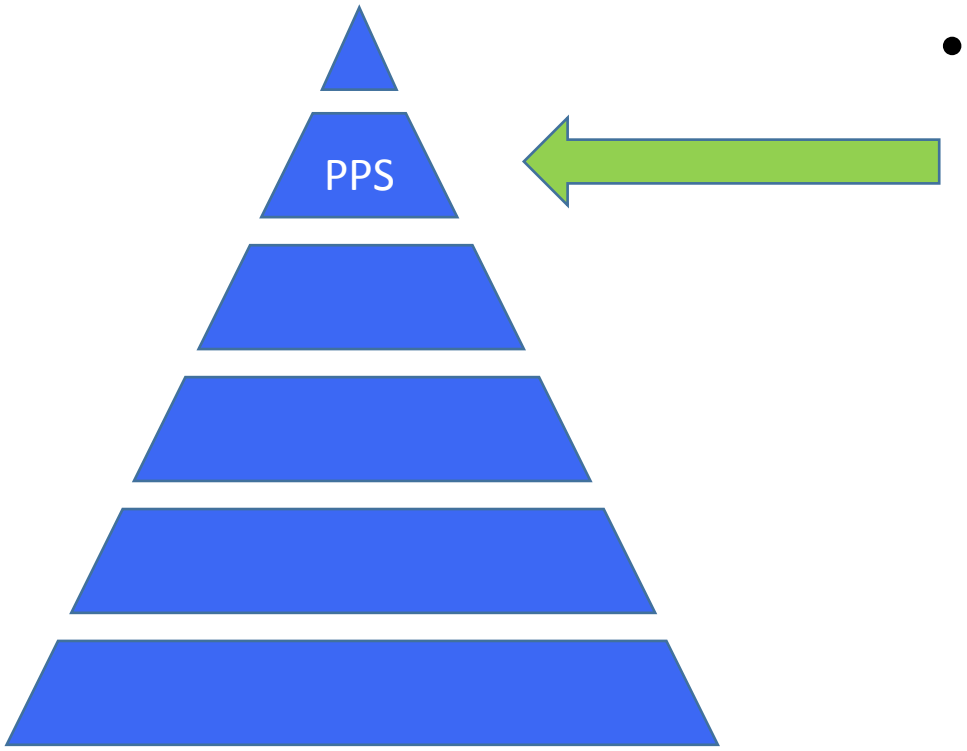
- Think of it as a pyramid…
- When you are comfortable adjusting the intensity, then you can learn how to select from one of the 8 available ICES protocols

Start simple, grow toward more complexity



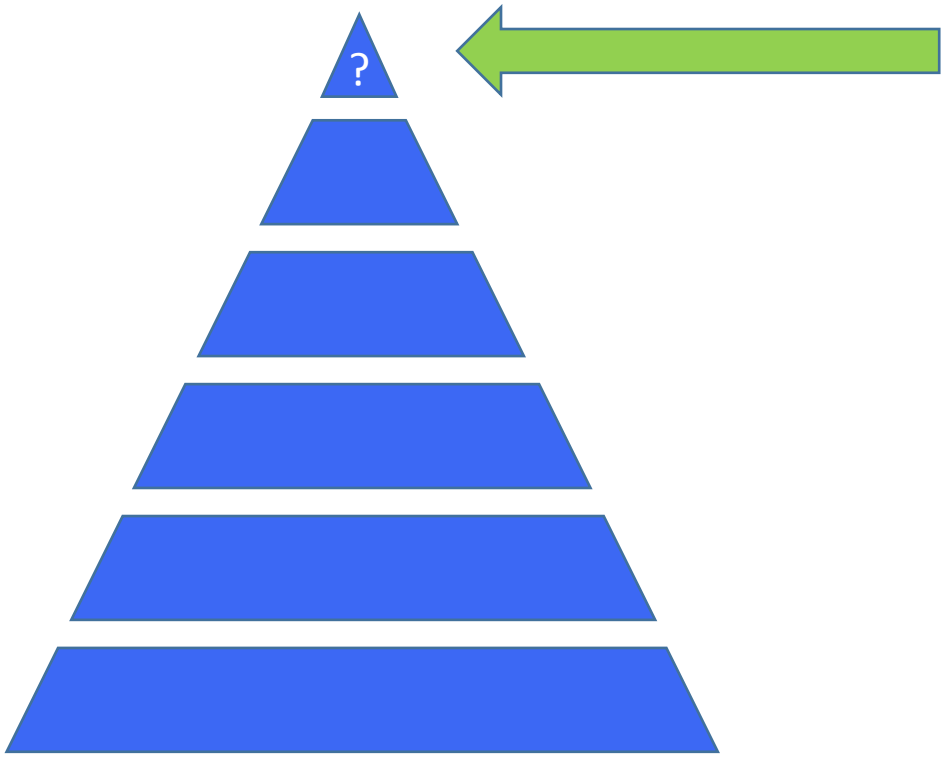
- Think of it as a pyramid…
- By now you're getting into advanced territory. Most people will probably never need to do this, but the B5 will allow you to adjust the timing in each protocol.

Start simple, grow toward more complexity



- Advanced users and researchers will also be able to adjust the pulses per second (pps) and to use timed waves of frequency change to create more complex waveforms. This can only be done in the advanced protocols: HOLD and WAVE.

Start simple, grow toward more complexity

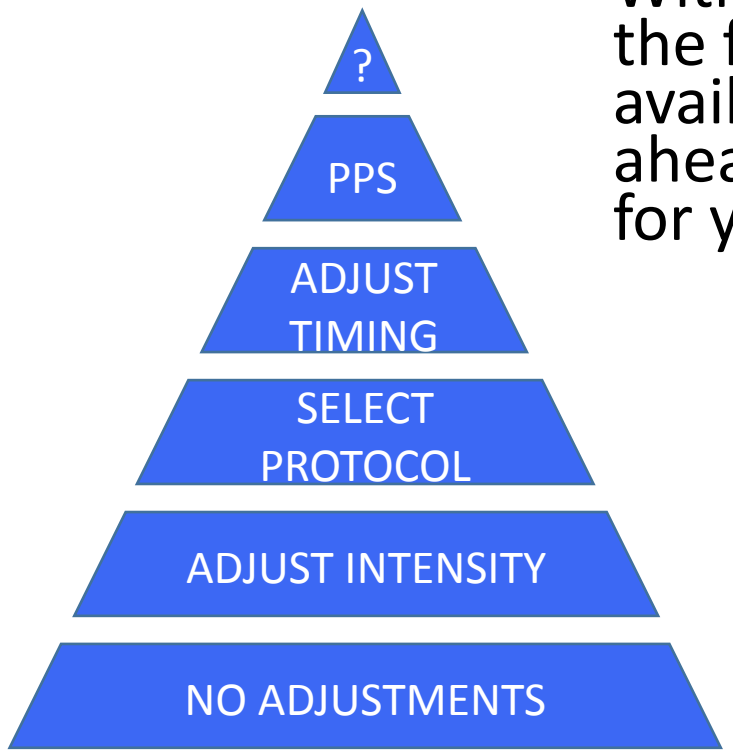


- At the very top, advanced researchers, hard-core self hackers, and anyone who genuinely wishes to keep *ahead* of the science can work with me to develop new ICES protocols. This requires scientific and engineering work to make firmware upgrades.

Start simple, grow toward more complexity

The B5 is designed for everyone, at every level, to grow with each individual who needs the power of PEMF.

With the B5, you get easy access to the best technology with the flip of a switch, or you can tailor it to your needs from available protocols, you can keep up with the science, or race ahead of the science to discover for yourself what works best for you.



General Guidelines: WHAT TO EXPECT

Please do not get discouraged or frustrated by the sophistication of the B5. If it sounds complicated, that is because it is a complex device.

When these technical details are discussed with most other PEMF manufacturers, their eyes glaze over. They would never make a product this complex. They assume no one would be able to figure out how to use it.

However, in my experience most Micro-Pulse customers are intelligent people, so I am confident that you can work through this. Just take it slow.

The details of intelligently adjusting PEMF are indeed very complex.

It may help to remember that NASA had to hire me as a consultant to figure this out for them 20 years ago.

So, this is real rocket science. And it takes a while to figure it out.

Just take it slowly.

General Guidelines

The B5 has 8 built-in ICES protocols. More may be added in the future.

To get more protocols in the future when they are released, you will need to send your B5 back for reprogramming to check your hardware and update the firmware. We do this for free whenever new firmware is available and you want a firmware upgrade.

Just contact us at mzd@micro-pulse.com to arrange for your free firmware upgrade.

General Guidelines: BEFORE YOU BEGIN SELECTING and ADJUSTING PROTOCOLS

The B5 is a scientific instrument, not a toy, not a web browser.

The best way to use the B5 is to think and plan before you begin to make adjustments.

You should have a clear plan in mind before you begin to adjust the B5:

-- What intensity (power level) do you need?

-- Which protocol do you want to use?

-- What adjustments will you make to that protocol, if any?

-- For the HOLD and WAVE protocols, what settings will you use?

If you have these specific things in mind before you begin making adjustments, then adjusting the B5 is easy and very fast. If you don't think about it beforehand, and you want to just decide as you go, you will find the B5 is very frustrating to use. You only have 5 seconds on each screen. This is plenty of time if you know what you want, but not enough time to browse indecisively. Plan ahead.

General Guidelines

The B5 is designed to run without error, no matter what happens. Remember, the B5 is a very powerful scientific instrument that has biological effects. It must operate as intended, at all times. So, you need to follow strict guidelines when adjusting the B5. These adjustments can only happen in the first 15 seconds when the B5 is turned ON.

REMEMBER: You can only adjust the B5 settings during the first 15 seconds after Power-Up. This prevents accidental changes while the device is running, and allows the device to quickly reboot and continue if there is a temporary loss of power.

Therefore you need to think ahead to decide what settings you want to use. You cannot just stare at the screen, and you cannot go backwards. If the timer runs out or if you make a mistake you just need to power the B5 OFF then ON, and you will start again right where you left off. At first this seems annoying, but you will get the hang of it, and this structure makes the B5 a much more reliable device.

General Guidelines:
The Structure of Protocols

Each of the built-in protocols has one or more *modes*.

Each mode is a pattern of pulses that runs for a certain period of time.

Each mode had a default time setting programmed in minutes.

For example, the A9 protocol has three modes:

Mode_1 = 5 pulses per second (pps), alternating polarity

Mode_2 = a burst of 5 pulses at 100 pps, one burst per second, positive polarity

Mode_3 = a burst of 5 pulses at 100 pps, one burst per second, negative polarity

General Guidelines

Each mode runs for a certain period of time, then the next mode starts.

The next mode runs for a different period of time, followed by the next.

The B5 cycles through each mode in each protocol.

At the end of the last mode, the B5 starts again with the first mode.

The B5 will continue to cycle through each mode: 1, 2, 3, 1, 2, 3, 1, 2, …….

Each mode runs for a defined time “t” in minutes.

For the A9 Protocol, the modes and default times can summarized as:

Mode_1 = 5 pps +/- - for 10 minutes

Mode_2 = 100+ pps - for 10 minutes

Mode_3 = 100- pps - for 10 minutes

General Guidelines: Selecting a Protocol

The Micro-Pulse Model B5 is a scientific instrument. It is not a marketing gimmick. We do not provide pre-programmed protocols to:

Enhance sleep

Amplify your brain power

Connect you with the Earth Mother Goddess

Magically cure a specific disease

Magically heal a serious injury

While many commercially available PEMF systems make such claims, we believe most of these claims have limited or no scientific basis. On the other hand, some PEMF devices have been reported to have remarkably beneficial effects. Many of these effects have been reported in peer-reviewed scientific papers, some have been verified by independent certified testing laboratories, and the FDA has approved several PEMF systems as safe and effective, to be used by prescription. Micro-Pulse ICES products are NOT FDA approved for any use. The B5 is a scientific instrument designed to allow you to experiment and explore these effects for yourself. The only miracles you should expect are the miracles of careful science.

General Guidelines – Select vs Adjust

Each protocol is made up of modes, and each mode runs for a certain time in minutes. These times are initially set to default values.

At the end, the cycle begins again.

When you select a protocol, you choose one with default time settings, or one that you have adjusted with different times for the modes.

When you adjust a protocol, you are just adjusting the time that each mode runs. When you make these adjustments, the B5 remembers your new mode times and will display them for you the next time use it.

You can adjust the time of each mode to any number of minutes, ranging from 0 minutes to 255 minutes.

When you set a mode to 0 minutes, the B5 will just skip over that mode.

General Guidelines – Select vs Adjust

EXAMPLE #1: General use of the B5 by adjusting a standard protocol, for example, protocol A9

When you first use the B5, the A9 protocol is programmed by default as:

Mode_1 = 5 pps +/- - for 10 minutes

Mode_2 = 100+ pps - for 10 minutes

Mode_3 = 100- pps - for 10 minutes

Let's say you only like the first two modes, but you want the first one to be twice as long. You can adjust the A9 protocol to look like this:

Mode_1 = 5 pps +/- - for 20 minutes

Mode_2 = 100+ pps - for 10 minutes

Mode_3 = 100- pps - for 0 minutes

The result is as follows:

The first mode (5 pps) will run for 20 minutes instead of just 10

The second mode (100+ pps) will run for 10 minutes (this is the default setting, you did not change it)

The B5 will skip right past the third mode since you set it to 0 minutes

The B5 will remember your changes, so the next time you use the A9 protocol, it will remember and use these new settings.

General Guidelines – Select vs Adjust

EXAMPLE #2: Your doctor prescribes a specific protocol based on, for example, our TBI/concussion study protocol

First you use the yellow (UP) and blue (DOWN) keys to set the Power Level (intensity) to the appropriate level. Usually you will start in the low power range until you get accustomed to higher levels of power.

When you first use the B5, the HOLD protocol has a single mode that looks like this by default:

HOLD at 10.0 pps

The protocol we used in our first TBI/Concussion study was a constant 5 pps (reported as 10 "Hz" for reasons of calculus and poor choice of technical terms in the PEMF community. To be clear, you need to set it for 5.00 pps)

Then you just press the RUN button (red key) and the B5 will begin pulsing at 5.00 pps.

The result is as follows:

The B5 will run continuously at 5.00 pps until you shut it OFF

The B5 will remember your changes and will use 5.00 pps the next time you use the HOLD protocol

General Guidelines – Select vs Adjust

EXAMPLE #3: You are a self-hacker who wants to simulate brain waves in the Delta Wave range

Many self-hackers have asked for this capability, so here it is:

Level 1: (the simplest way to try to match a brainwave pattern – a single constant frequency)

You just want to pick a certain frequency and use that one constant frequency, for example, 4.0 Hz. ICES technology is programmed in pulses per second (pps), not Hz, because the use of the term "Hz" is technically incorrect for anything except a pure sine wave. It does not apply to ICES trapezoidal pulses. Anyway… a good place to start is by researching brain waves, such as at:

https://en.wikipedia.org/wiki/Delta_wave

First, select a frequency from the Table of Standard Available Frequencies at the end of this manual.

You decide to set the single frequency to 4.0 Hz. Just as in the previous example, you SELECT the HOLD protocol. Then you ADJUST the HOLD protocol to 4.0 seconds with the yellow and blue (up and down) keys on the ADJUST PROTOCOL screen until it says "HOLD at 4.00 pps".

Then you just press the RUN button (red key) and the B5 will begin pulsing at 4.00 pps.

The result is as follows:

The B5 will run continuously at 4.00 pps until you shut it OFF

The B5 will remember your changes the next time you use the HOLD protocol

General Guidelines – Select vs Adjust

EXAMPLE #3: Delta Wave range, continued…..

Level 2: (a much more accurate way to try to match a brainwave pattern – a wave of changing frequencies over a specified rise and fall time)

If you study brain waves you will come to realize that the brain does not do anything at one fixed frequency. The B5 has an advanced protocol to more closely simulate real brain wave activity, the WAVE protocol:

For this example, you need to pick a range of frequencies. You select a LOWEST frequency and a HIGHEST frequency to set the range of frequencies. Once again, a good place to start is by researching brain waves at:

https://en.wikipedia.org/wiki/Delta_wave

Based upon your research you decide you want to stimulate over a frequency range from 0.75 to 3.5 Hz. Then you need to check the table of standard available frequencies at the end of this document to see what is available for use on the B5. Keep in mind that the biology of all of these "frequencies" is inexact, so you only need to find frequencies that are approximately correct. From the table you decide to select the frequency range of 0.6 to 3.6 pps, since this most closely covers your range of interest. Finally, you decide these frequencies should ramp up over a 7 minute time period. Now you are ready to adjust the WAVE protocol on your B5.

First, you adjust the intensity (power level). Then you SELECT the WAVE protocol. Then you ADJUST the WAVE protocol to the following settings:

LOWEST = 0.60 pps

HIGHEST = 3.60 pps

Wave time = 7 min

Then you just press the RUN button (red key) and the B5 will begin pulsing at the lowest frequency. The result is as follows:

The B5 will ramp up from 0.6 pps to 3.6 pps in ten equal frequency steps over a period of 7 minutes, then back down over 7 minutes, …

The B5 will continue to ramp up and down until you turn the power OFF.

The B5 will remember your changes the next time you use the WAVE protocol. Your changes will be remembered until you change them.

Model B5
User Interface

UP

DOWN

NEXT

RUN

B5 User Interface: A closer look

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User Interface

The B5 name plate reminds you of the button functions:
UP DOWN NEXT RUN

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Functions of Buttons when Programing

Yellow = UP increases a value or goes up one item on a list

Blue = DOWN decreases a value or goes down one item on a list

White = NEXT goes to the next screen, one level deeper in complexity

RED = RUN skip all screens and RUN THE PROTOCOL IMMEDIATELY

<u>Rules of Thumb:</u>

- When you adjust the intensity (power) level, go to a protocol screen, or adjust a mode time, the B5 already sets the new value. You do not have to press a button to set it. If you see it, it is already set. So, if you go to the screen SELECT PROTOCOL – A9, then that automatically sets the protocol to A9 and the system remembers that setting until you change it again.
- Once you have set the thing you want to set, just press the RED button to save all changes and RUN IMMEDIATELY.
- If you make a mistake, power OFF, then ON, then start over.

Model B5

Adjust the Intensity (power level)

Power Up Screens

Adjusting the Intensity (power level)

User Interface: Starting at Power-Up

- The B5 takes about 4 seconds to power up.
- First the red and green LED will switch ON for 1 second. This simply allows you to verify that the LEDs are working, and power is ON.
- Then the OLED screen will swipe WHITE, then BLACK. This is the OLED display resetting itself.
- Then you will see the first screen.
- The first screen will look like this:

ICES model B5a
Rev: B520170324a
© 2017 Micro-Pulse
<NEXT> <RUN>

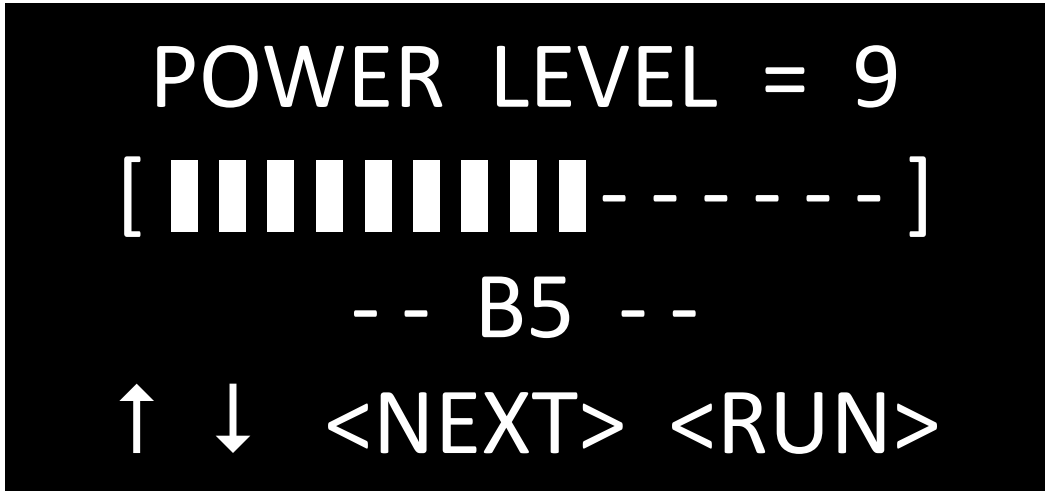
User Interface: Screen # 1 - Start-Up Screen

- Every screen has 4 lines
- On this screen, the top line tells you the device hardware version: B5a
- The second line tells you the firmware revision date: 24 March 2017
- The third line is a copyright statement.
- The bottom line tells you which buttons are active for the current screen.
- On this screen you can use 2 buttons:
- WHITE = <NEXT> which means advance to the next screen
- RED = <RUN> which means RUN NOW
- If you do nothing, the B5 will continue on automatically to the next screen in 5 seconds, then on to AUTO RUN.

ICES model B5a
Rev: B520170324a
© 2017 Micro-Pulse
<NEXT> <RUN>

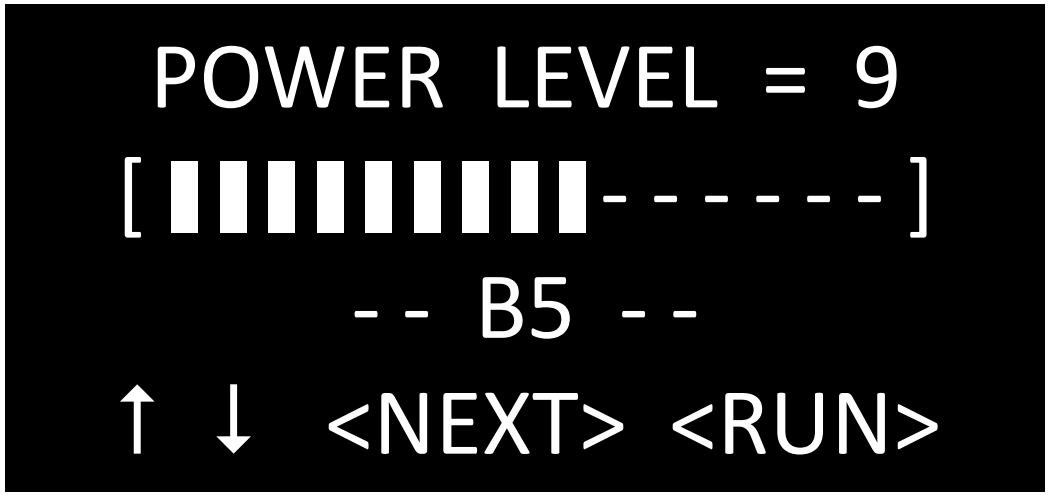
User Interface: Screen # 2 - ADJUST POWER

- Screen # 2 is the screen you will use most often
- On this screen, all four switches are active: UP DOWN NEXT and RUN
- To INCREASE the power level, press the YELLOW button which means <UP>
- To decrease the power, press the BLUE button which means <DOWN>
- WHITE = <NEXT> = go to next screen (Select Protocol)
- RED = <RUN> = RUN NOW
- If you do nothing, the B5 will continue on automatically to the next screen in 5 seconds.



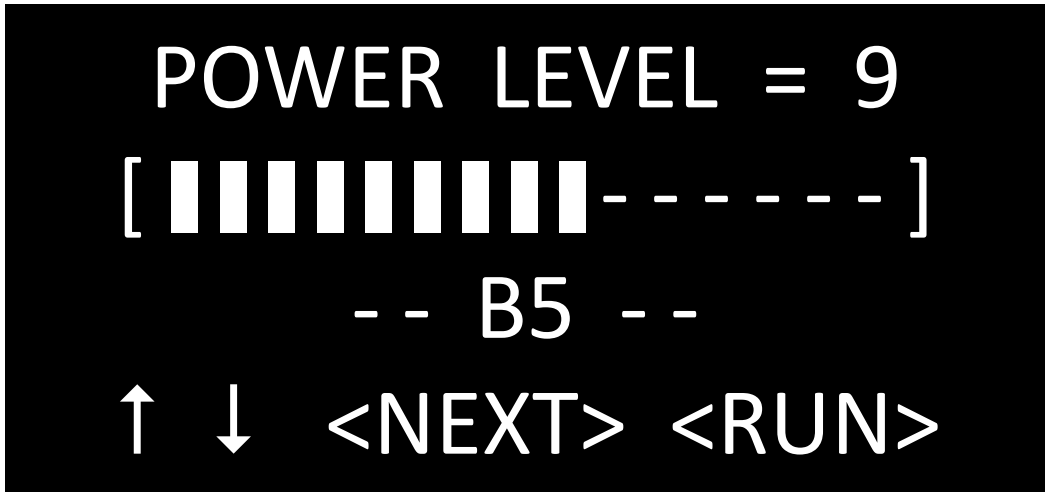
User Interface: Screen # 2 - ADJUST POWER

- Screen # 2 at POWER UP is the only time you can adjust the power level.
- To reset the power level, you must turn the B5 OFF, then ON again and wait for this screen which will display about 8 seconds after POWER UP.
- Or you can press WHITE <NEXT> on screen #1 to get straight to this screen without waiting
- There are 16 available power levels: 0 to 15
- The current power level is displayed both as a number (0 to 15) and a “power bar”
- Press the YELLOW button once for each level of power increase, BLUE once for each level of power decrease.
- The third line on this screen tells you the currently selected protocol.
- In this case, the protocol is the “B5” protocol. You can select a different protocol on the next screen.



User Interface: Screen # 2 - ADJUST POWER

- Once you have adjusted the power level, you have four options:
- Press the WHITE button <NEXT> to go to next screen which allows you to SELECT the protocol that will run.
- Press the RED button <RUN> to jump straight to RUN NOW. The B5 will immediately begin running the selected protocol at the power level you set.
- If you do nothing, the B5 will continue automatically to the next screen in 5 seconds.
- If you continue to do nothing, the B5 will AUTO RUN in about 10 seconds
- Or, you could just turn the B5 off.
- No matter what you do, the B5 will remember the power level you just set and will return to that power level the next time you use the device.



Model B5

Select a Protocol

AVAILABLE PROTOCOLS

B5 – 5 – 100 – 100 – 10 – 100 – 100

A9 – 5 – 100 – 100

P2 – 5 – 100 – 100 – rest

Omni1 – selected special frequencies

Schumann – first five harmonics

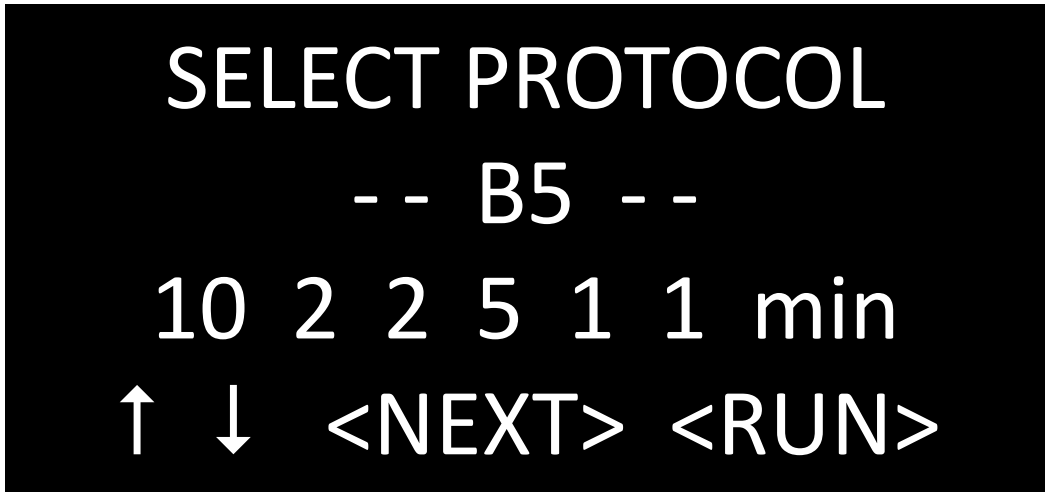
Hold – select one frequency

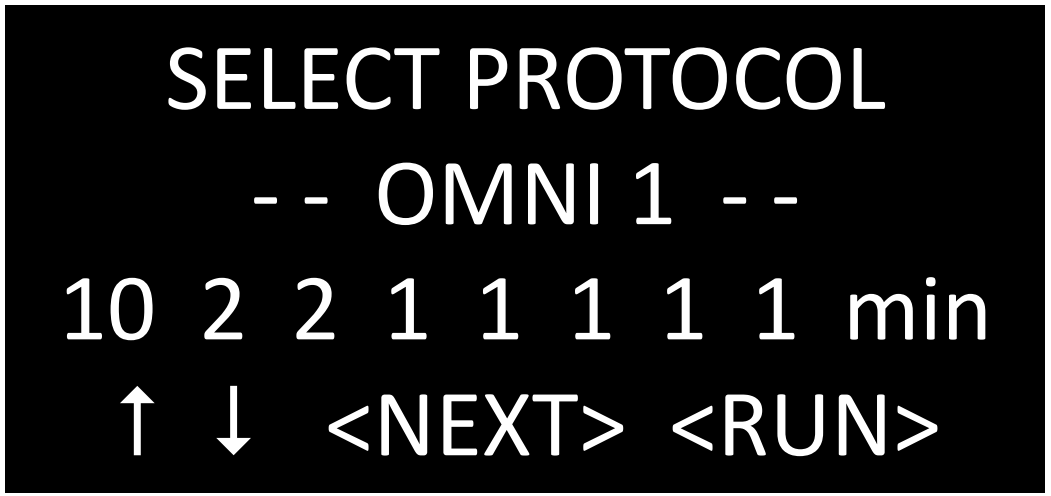
Wave – setup a frequency wave

Matrix – special wellness network

SELECT a PROTOCOL

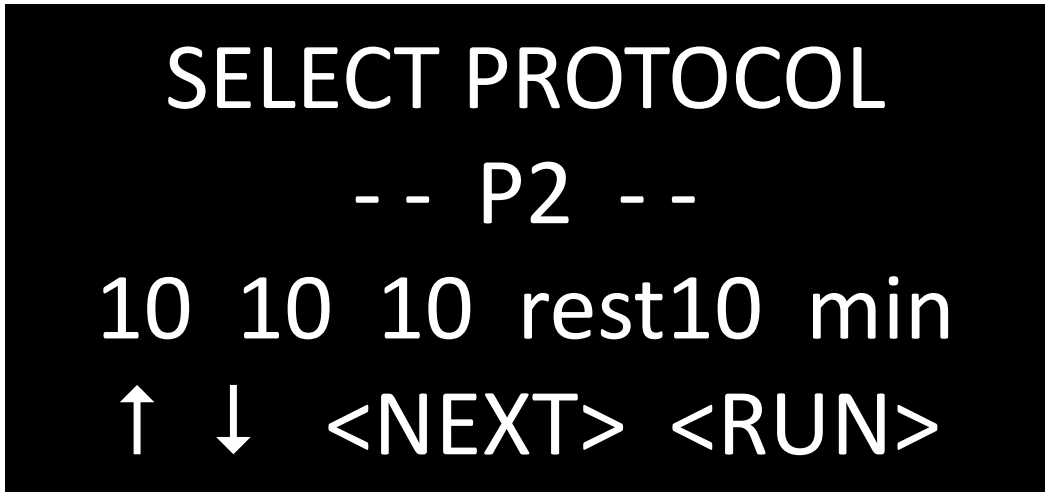
- Get to the SELECT PROTOCOL screen by pressing the WHITE (NEXT) button from the ADJUST POWER screen. It will look like the screen at the right:
- The default protocol is “B5”, which is the new protocol developed for the B5 system, but you can select a different protocol on the following screens.
- Use the BLUE (DOWN) button to scroll down the list of protocols. Each protocol is listed on its own screen.
- For example, from the B5 protocol, press the BLUE (DOWN) button three times to get to the Omni 1 screen, as shown:
- When you see the protocol you want, just press the RED button <RUN> to jump straight to RUN NOW. The B5 will immediately begin running the selected protocol at the power level you set. It will remember this protocol setting.
- If you do nothing, the B5 will continue automatically to the next screen in 5 seconds.
- Then it will automatically RUN in 5 seconds.

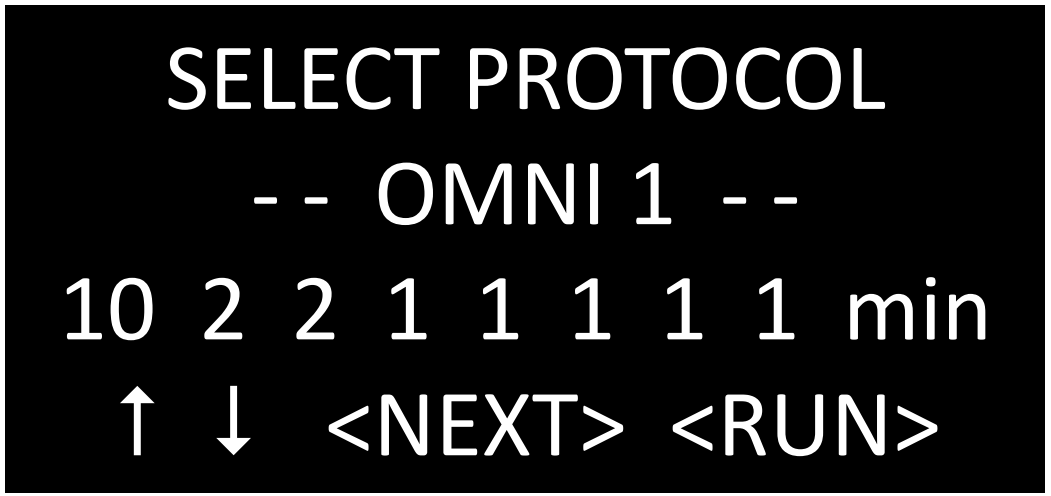




SELECT a PROTOCOL

- In case you are wondering…
- The third line on each screen shows you how much time that protocol spends in each “mode”. A *mode* is a pulse pattern.
- The time is in minutes.
- So, for example, the P2 protocol has 4 *modes*. The first three modes run for 10 minutes each, then the device goes into “REST” mode (no pulses) for 10 minutes.
- Omni 1 has 8 different modes, as shown.
- You can adjust any of the times for any mode in any protocol (except Matrix).



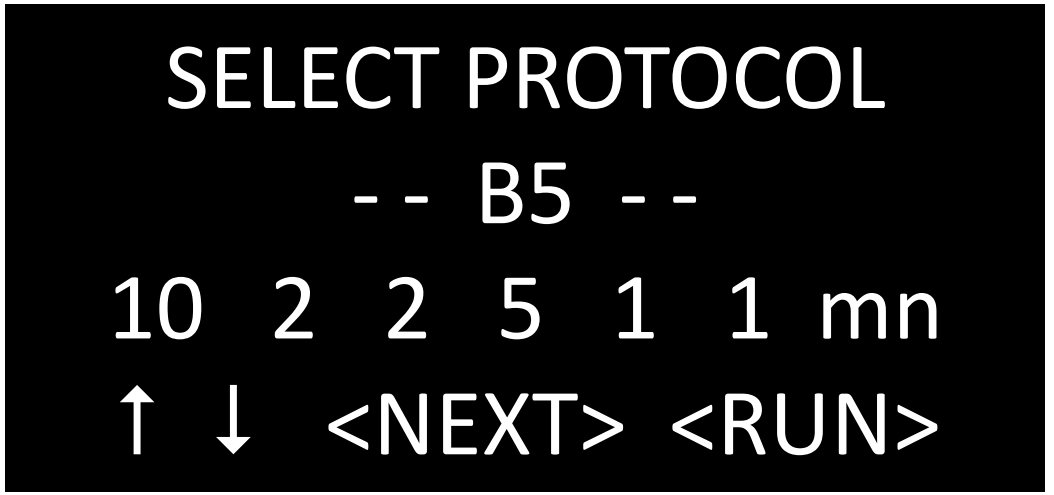


SELECT a PROTOCOL WITHOUT ADJUSTMENT

- Most of the time you will want to just SELECT a protocol without adjusting the individual mode times.
- To SELECT a protocol without adjusting it:
- First, scroll to the protocol you want on the SELECT PROTOCOL screens.
- Then, just press the RED (RUN) button. Or do nothing and the B5 will AUTO RUN in a few seconds.
- When you press the RED button, the B5 will set the protocol to the one you have scrolled to, it will remember it, and it will begin running it automatically.
- BUT, if you accidently press the WHITE (NEXT) button from a SELECT PROTOCOL screen, then you will go one level deeper and begin adjusting the mode times of the protocol you have selected. You can read about ADJUSTING PROTOCOLS in the next section. Or, you can ESCAPE by pressing the RED (RUN) button.
- To avoid doing this, just press the RED (RUN) button and the B5 will not change any mode settings unless you have adjusted them.

SELECT B5 PROTOCOL

- This is the default screen for the B5 protocol:
- When you scroll down to this screen, the system will remember that you want to use this protocol.
- The B5 protocol has 6 modes:
  - 10 minutes: 5 pps alternating bipolar
  - 2 minutes: +100 pps bursts every second
  - 2 minutes: -100 pps bursts every second
  - 5 minutes: 10 pps alternating bipolar
  - 1 min: +100pps burst every second and 5pps
  - 1 min: -100pps burst every second and 5pps
- You can adjust any of these mode times from 0 to 255 minutes

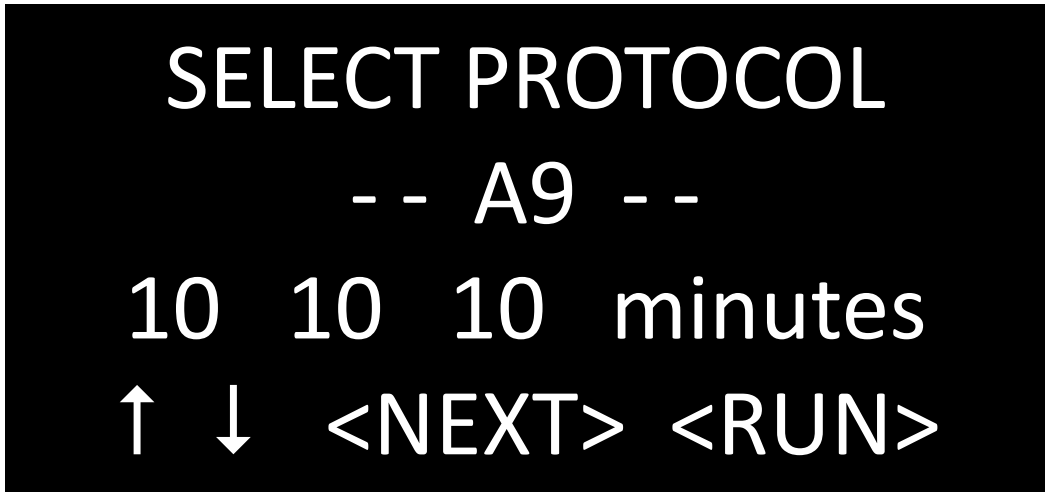


Once you are on this screen, just press the RED button to start the ICES stimulation immediately without adjusting the mode times.

The system will remember this protocol as its current setting, and will start here the next time you power up the system.

SELECT A9 PROTOCOL

- This is the default screen for the A9 protocol:
- When you scroll down to this screen, the system will remember that you want to use this protocol.
- The A9 protocol has 3 modes:
  - 10 minutes: 5 pps alternating bipolar
  - 2 minutes: +100 pps bursts every second
  - 2 minutes: -100 pps bursts every second
- You can adjust any of these mode times from 0 to 255 minutes

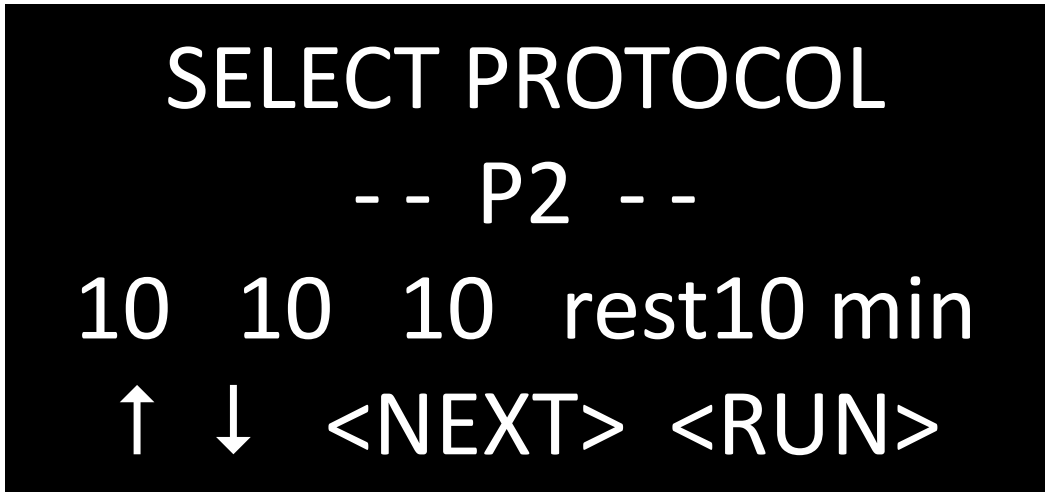


Once you are on this screen, just press the RED button to start the ICES stimulation immediately without adjusting the mode times.

The system will remember this protocol as its current setting, and will start here the next time you power up the system.

SELECT P2 PROTOCOL

- This is the default screen for the P2 protocol:
- P2 is the protocol that was used for older Micro-Pulse devices, such as SomaPulse, MagnaFix, AllevaWave, and others.
- When you scroll down to this screen, the system will remember that you want to use this protocol.
- The P2 protocol has 4 modes:
  - 10 minutes: 5 pps alternating bipolar
  - 10 minutes: +100 pps bursts every second
  - 10 minutes: -100 pps bursts every second
  - 10 minutes: REST (no pulses during the REST period)
- You can adjust any of these mode times from 0 to 255 minutes

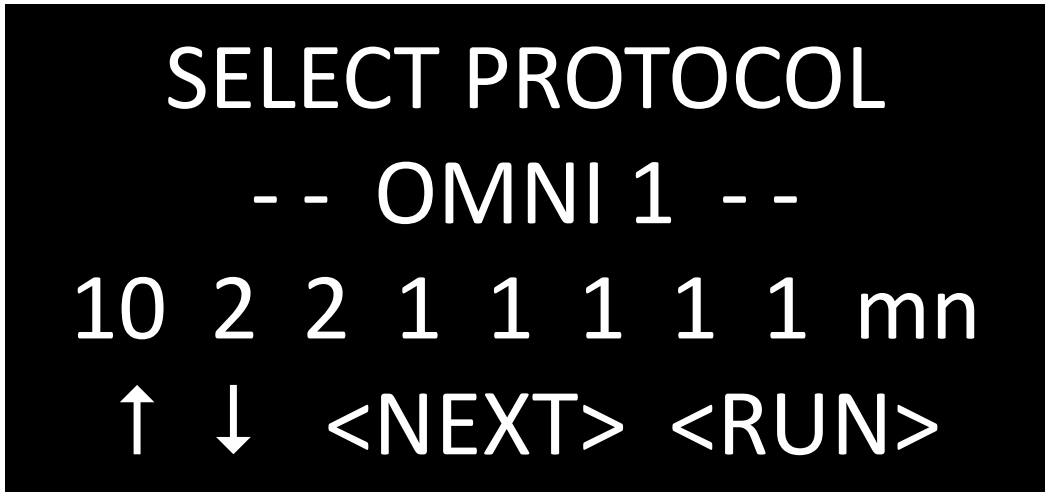


Once you are on this screen, just press the RED button to start the ICES stimulation immediately without adjusting the mode times.

The system will remember this protocol as its current setting, and will start here the next time you power up the system.

SELECT Omni 1 PROTOCOL

- This is the default screen for the Omni 1 protocol:
- When you scroll down to this screen, the system will remember that you want to use this protocol.
- The OMNI 1 protocol has 8 modes:
  - 10 minutes: 5 pps alternating bipolar
  - 2 minutes: +100 pps bursts every second + 5 pps bipolar
  - 2 minutes: -100 pps bursts every second + 5 pps bipolar
  - 1 minute: 3.92 pps alternating bipolar
  - 1 minute: 7.14 pps alternating bipolar
  - 1 minute: 10.42 pps alternating bipolar
  - 1 minute: 13.20 pps alternating bipolar
  - 1 minute: 16.95 pps alternating bipolar
- You can adjust any of these mode times from 0 to 255 minutes.

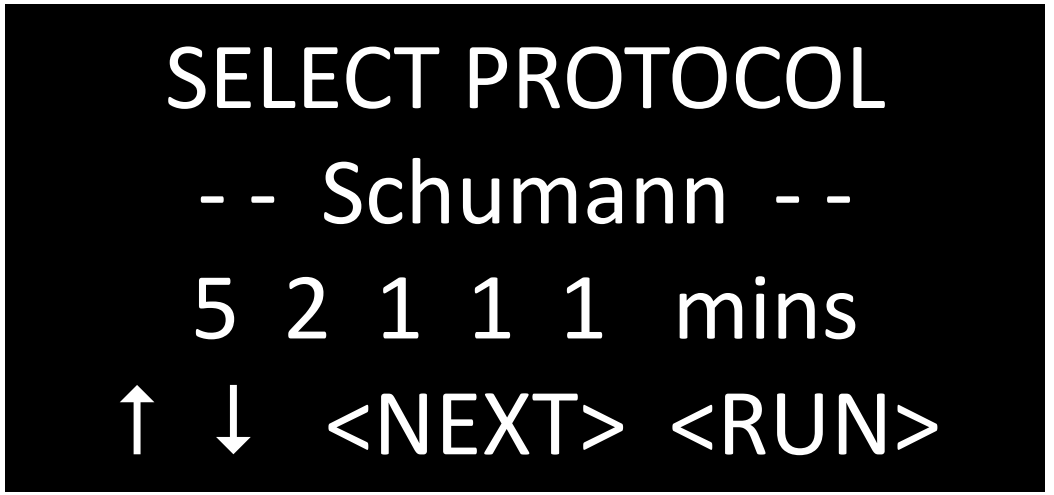


Once you are on this screen, just press the RED button to start the ICES stimulation immediately without adjusting the mode times.

The system will remember this protocol as its current setting, and will start here the next time you power up the system.

SELECT Schumann PROTOCOL

- Here are my thoughts on Schumann resonances.
- The default screen for the Schumann protocol is →
- When you scroll down to this screen, the system will remember that you want to use this protocol.
- The Schumann protocol has 5 modes:
  - 5 minutes: Fundamental: 7.83 pps alternating bipolar
  - 1 minute: First harmonic: 14.3 pps bipolar
  - 1 minute: Second harmonic: 20.8 pps bipolar
  - 1 minute: Third harmonic: 27.3 pps bipolar
  - 1 minute: Fourth harmonic: 33.8 pps bipolar
- You can adjust any of these mode times from 0 to 255 minutes.

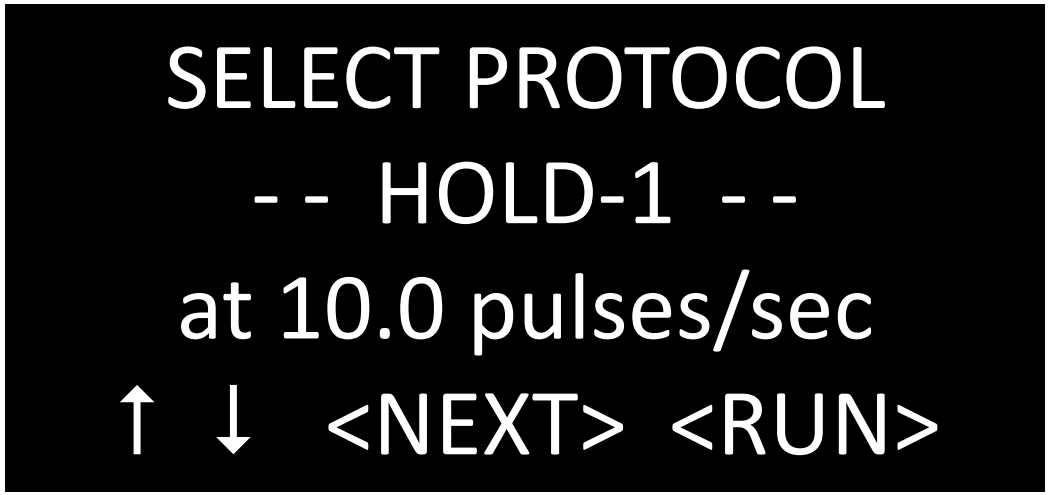


Once you are on this screen, just press the RED button to start the ICES stimulation immediately without adjusting the mode times.

The system will remember this protocol as its current setting, and will start here the next time you power up the system.

SELECT HOLD-1 PROTOCOL

- HOLD-1 lets you set a single frequency. This is the default screen for the HOLD-1 protocol:
- The list of standard available frequencies (pps) to select from is at the end of this document.
- When you scroll down to this screen, the system will remember that you want to use this protocol.
- The HOLD-1 protocol has only 1 mode:
  - You select one frequency from the list
  - The B5 runs that frequency continuously
  - The default is 10.0 pps, but you can set any frequency you want from the list at the end of this document.
- There are no mode times to adjust.

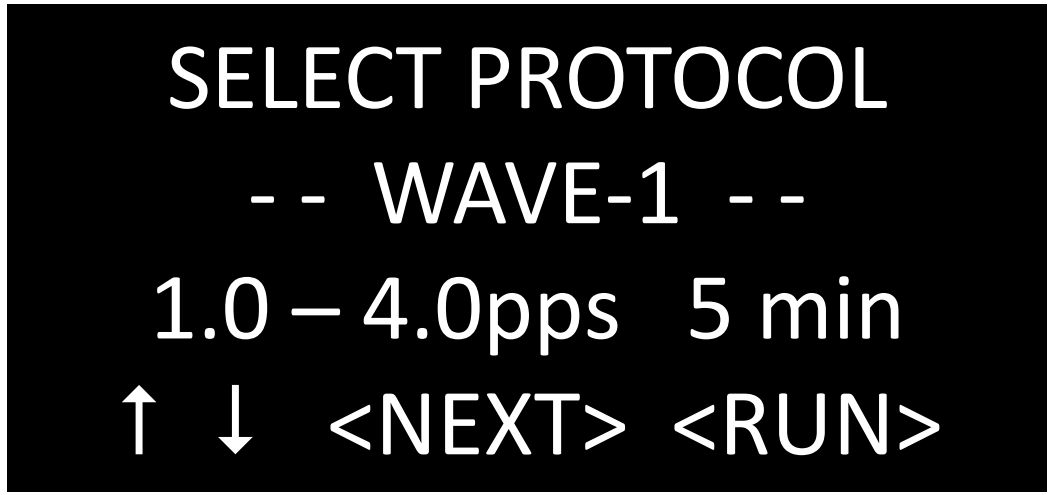


Once you are on this screen, just press the RED button to start the ICES stimulation immediately without adjusting the mode times.

The system will remember this protocol as its current setting, and will start here the next time you power up the system.

SELECT WAVE-1 PROTOCOL

- WAVE-1 lets you chose two frequencies (LOWEST and HIGHEST), and then set a time in minutes to ramp between these two frequencies.
- This is the default screen for the WAVE-1 protocol →
- By default, the low frequency is set for 1.0 pps, the high frequency is set for 4.0 pps, and the ramp time is set to 5 minutes.
- You can select any two frequencies from the Table of Available Frequencies.
- The ramp time can be changed to any value from 1 to 255 minutes.
- The WAVE-1 protocol takes 10 steps between the two frequencies (pps) in the time period you set for the ramp.
- The Wave-1 protocol has only 1 mode:
  - It starts at the first frequency
  - It moves to the second frequency in 10 equal steps: (f2 – f1) ÷ 10
  - It reaches the second frequency and finishes this ramp in the time specified
  - Then it takes ten steps backward to the first frequency in the time specified
- When you adjust the frequencies or the ramp time, it is automatically remembered.

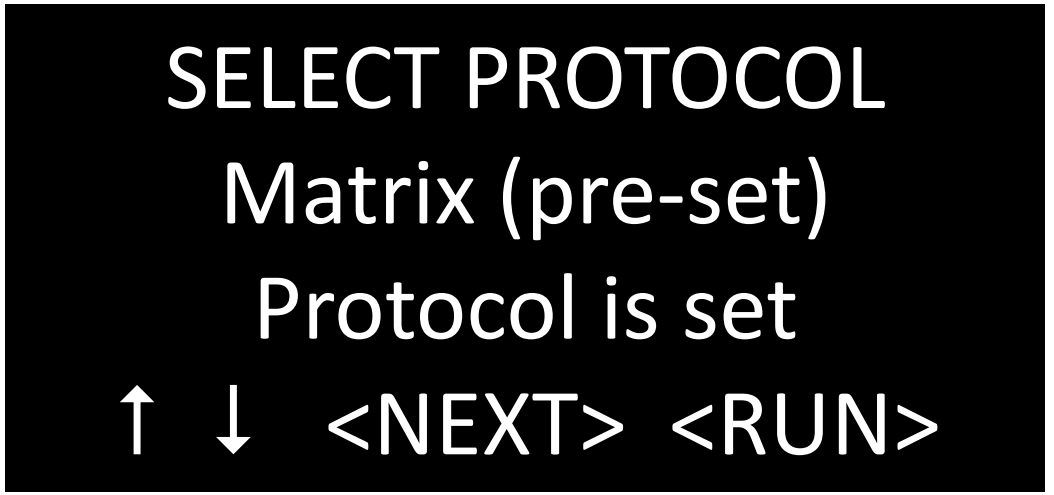


Once you are on this screen, just press the RED button to start the ICES stimulation immediately without adjusting the mode times.

The system will remember this protocol as its current setting, and will start here the next time you power up the system.

SELECT MATRIX PROTOCOL

- This is the default screen for the Matrix protocol:
- When you scroll down to this screen, the system will remember that you want to use this protocol.
- The Matrix protocol is only for use if you are a member of the Matrix Repatterning Network, which involves training.
- This protocol is NOT adjustable to assure that it is identical for all users in the network.
- The Matrix protocol is identical to the default Omni-1 protocol except that it has an extended time for Mode #1, and the mode times are not adjustable:
- You can NOT adjust any of the mode times.
- If you want to adjust the Matrix protocol, use the Omni-1 protocol.



Once you are on this screen, just press the RED button to start the ICES stimulation immediately.

The system will remember this protocol as its current setting, and will start here the next time you power up the system.

Model B5

Adjust a Protocol

AVAILABLE PROTOCOLS

B5 – 5 – 100 – 100 – 10 – 100 – 100

A9 – 5 – 100 – 100

P2 – 5 – 100 – 100 – rest

Omni1 – selected special frequencies

Schumann – first five harmonics

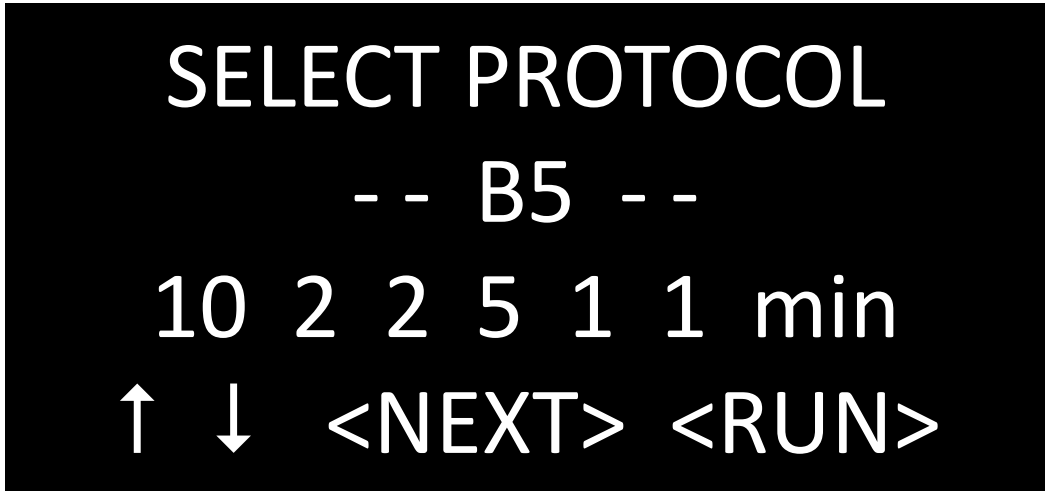
Hold – select one frequency

Wave – setup a frequency wave

Matrix – special wellness network

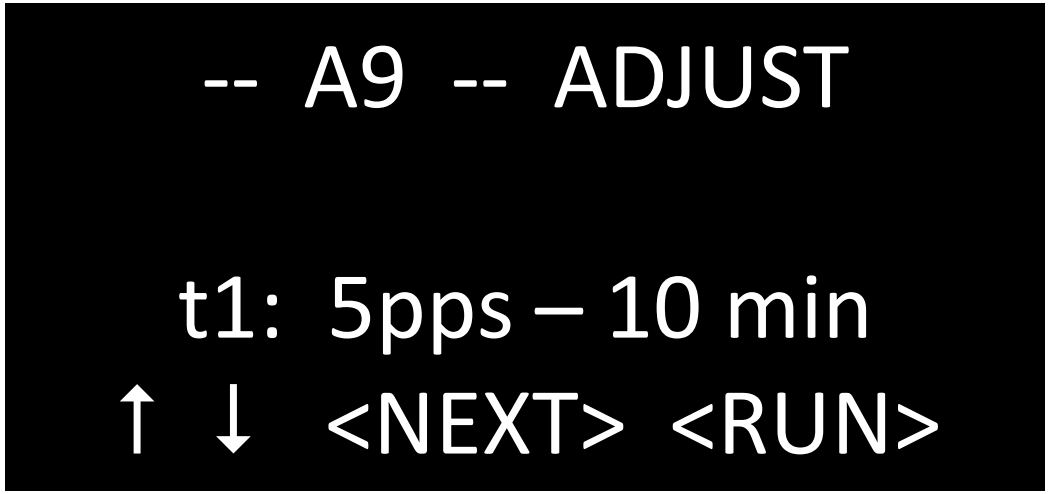
Adjust a Protocol

- The process of ADJUSTING protocols starts by planning head: you should think about what protocol and settings you want before starting to make adjustments.
- SELECT a protocol by scrolling down to the SELECT PROTOCOL screen that has the protocol you want, as shown in this screen:
- Then, from the SELECT PROTOCOL screen, you press the WHITE (NEXT) button.



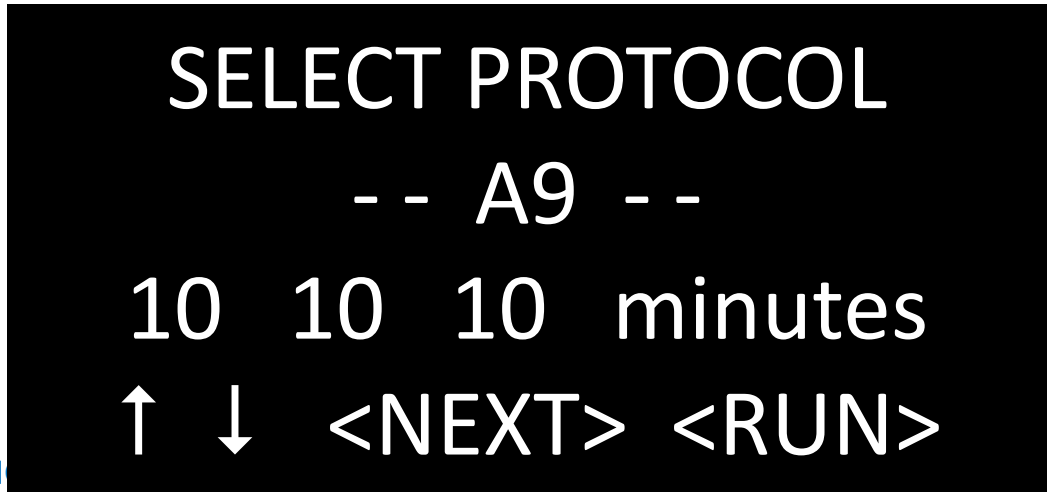
Adjust a Protocol

- Now you are on the ADJUST PROTOCOL screen. The AUTORUN timer is disabled. Starting here you walk through each mode and set each time.
- Use the YELLOW (UP) or BLUE (DOWN) buttons to adjust each mode time UP or DOWN.
- When you have the time that you want (or if you do not want to change the time of that mode) just press the WHITE (NEXT) button to go to the next mode adjustment screen, or press the RED (RUN) button to save your changes and RUN the protocol immediately.
- NOTE: except in HOLD and WAVE, you can not adjust the pulse frequency. You can only adjust the time of each mode, in minutes.
- If you want to set different pulse frequencies you must select the HOLD or WAVE protocol.

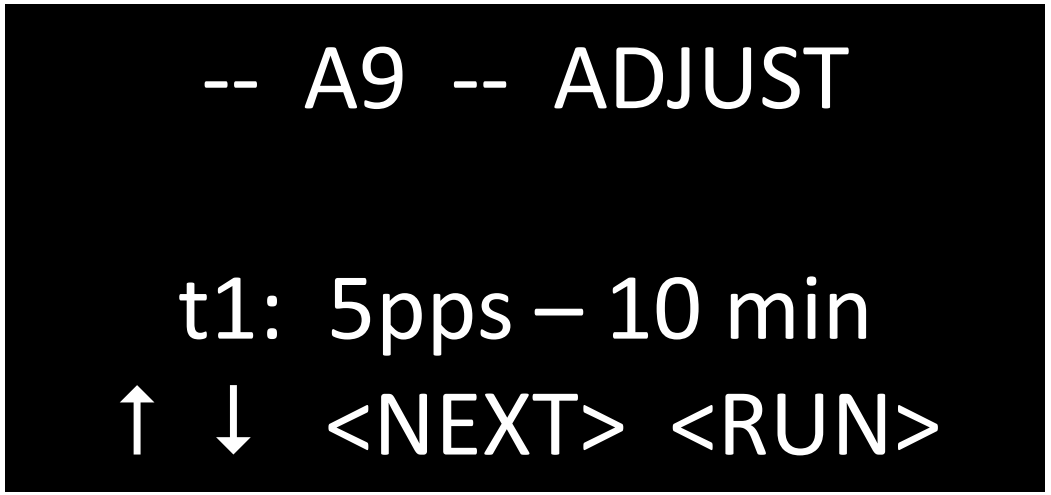


Adjust a Protocol

- As an example, we will adjust the A9 protocol, which has 3 modes.
- First, after Start-Up, press the WHITE (NEXT) button until you get to the SELECT PROTOCOL -- A9 -- screen (see screen to the left, below).
- Then, instead of pressing the RED button (RUN), you press the WHITE (NEXT) button
- When ADJUSTING a Protocol, you will see the screen below, right, or one like it with a different protocol (B5, A9, P2, Omni1, Schumann, HOLD, WAVE, or Matrix)
- All protocols can be adjusted except Matrix, which is fixed to prevent any changes.

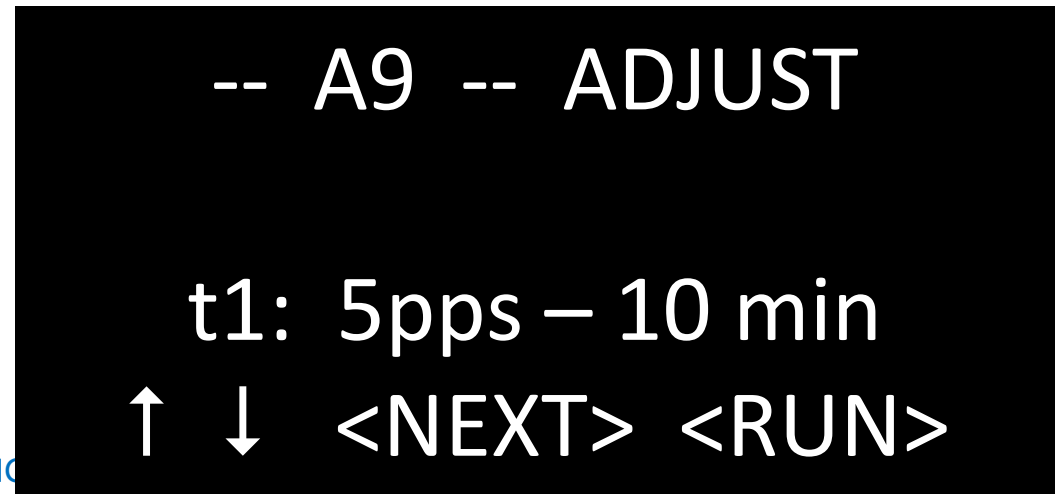


Press the WHITE (NEXT) Button →

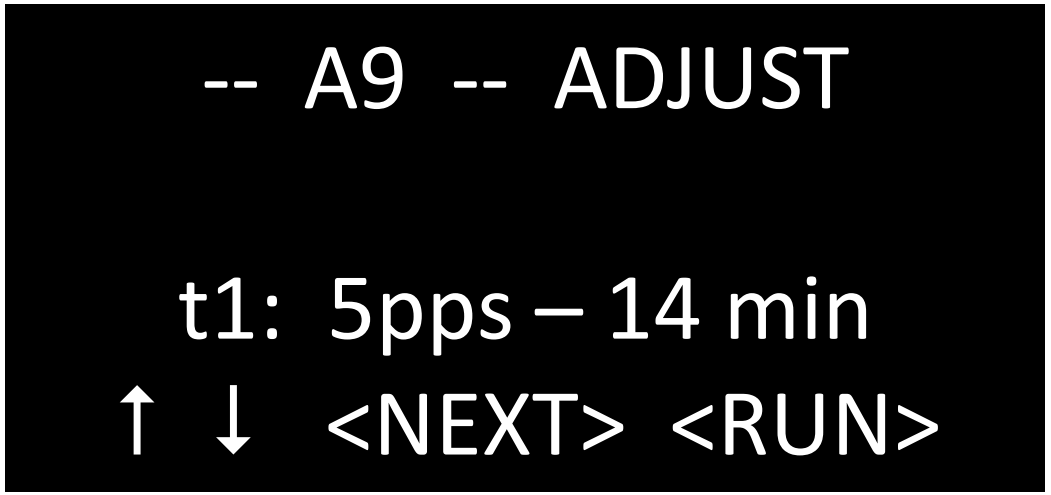


Adjust a Protocol

- Try adjusting mode time 1 (t1) from 10 minutes to 14 minutes.
- To do this, just press the YELLOW (UP) button 4 times.
- If you are done, you can press the RED (RUN) button.
- To adjust the next mode time, press the WHITE (NEXT) button.
- If you screw something up, just power OFF, then ON and start again.
- The B5 will remember all of the changes you made, so it will not take to long.

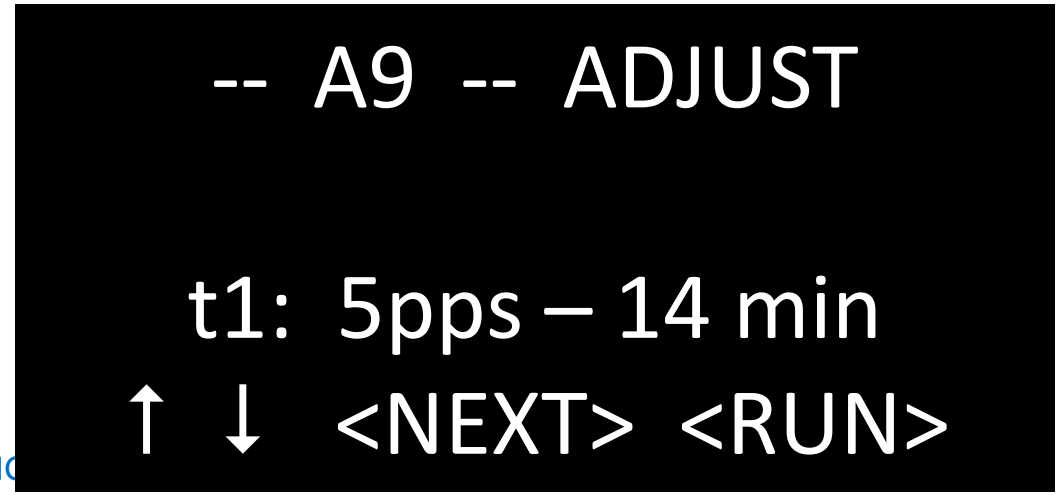


Press the YELLOW (UP) Button 4 times →

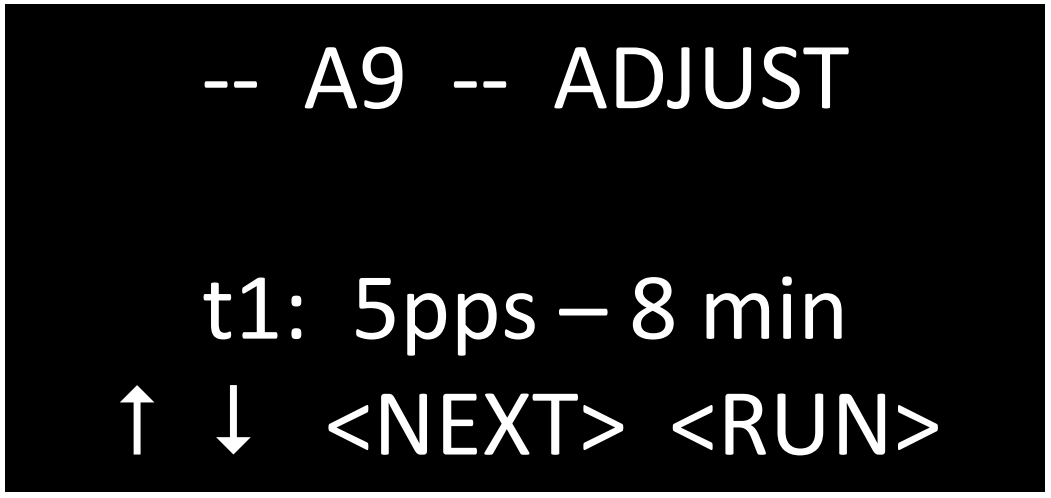


Adjust a Protocol

- Try adjusting mode time 1 (t1) from 14 minutes to 8 minutes.
- To do this, just press the BLUE (DOWN) button 6 times.
- If you are done, you can press the RED (RUN) button.
- To adjust the next mode time, press the WHITE (NEXT) button.
- If you screw something up, just power OFF, then ON and start again.
- The B5 will remember all of the changes you made, so it will not take to long.

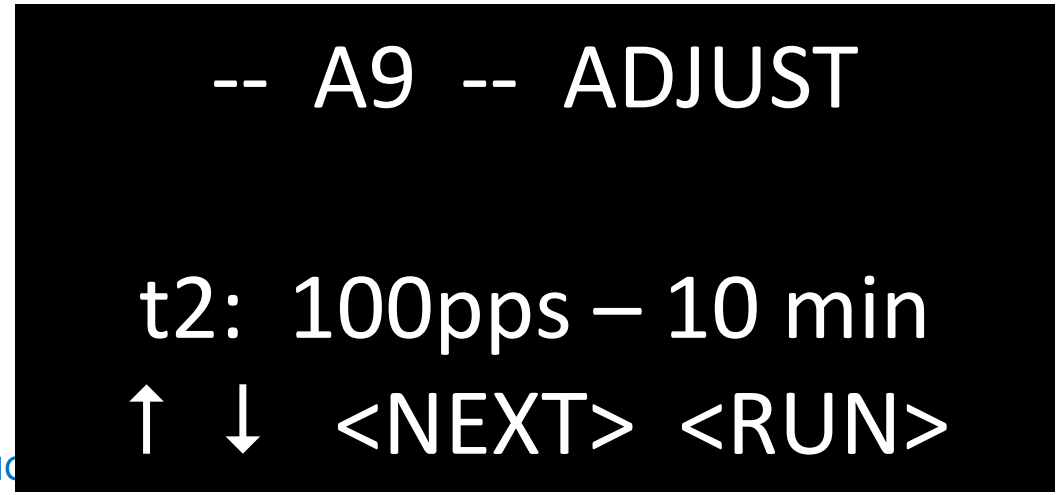


Press the BLUE (DOWN) Button 6 times →

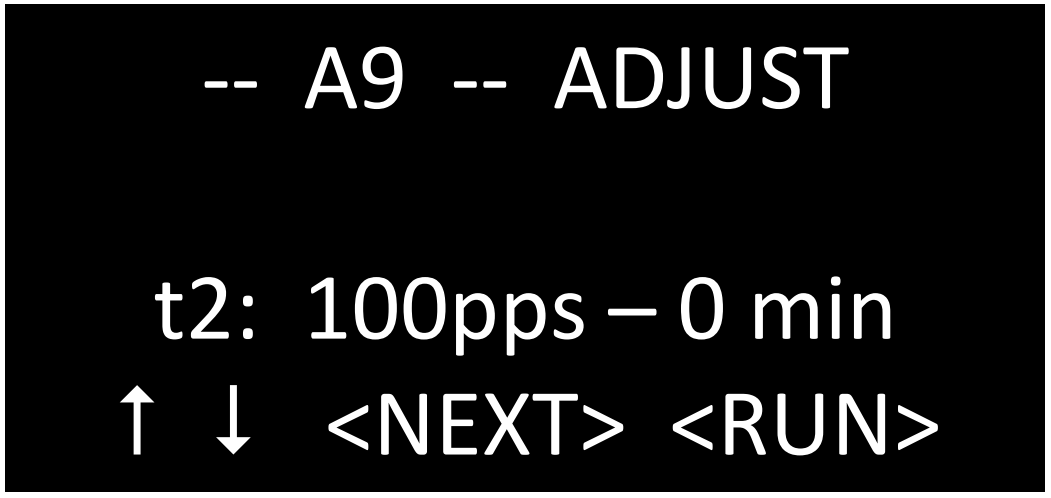


Adjust a Protocol

- If you press the WHITE (NEXT) button, you will go to the next ADJUST screen.
- Try adjusting mode time 2 (t2) from 10 minutes to 0 minutes.
- This allows you to turn any mode OFF (it gets skipped)
- To do this, just press the BLUE (DOWN) button 10 times.
- If you are done, you can press the RED (RUN) button. It will remember all changes.
- To adjust the next mode time, press the WHITE (NEXT) button.
- If you screw something up, just power OFF, then ON and start again.

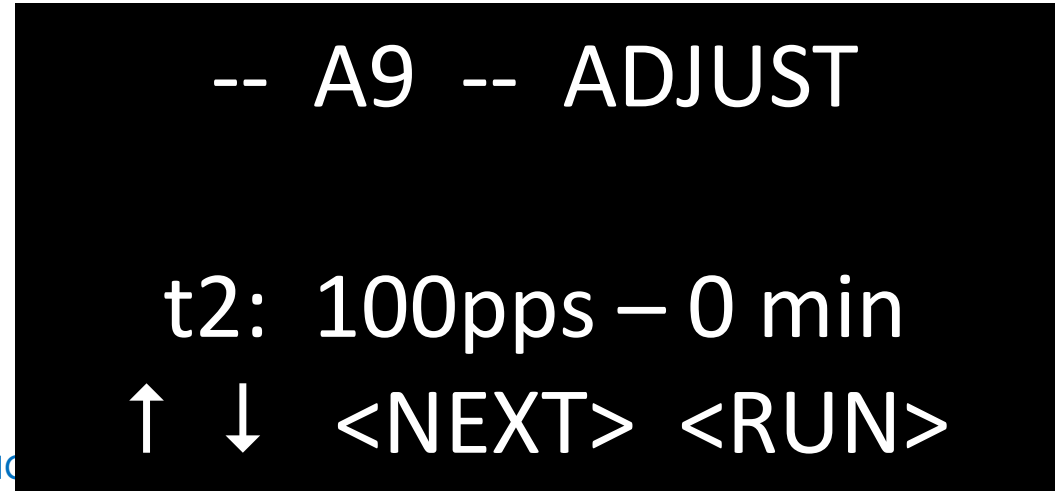


Press the BLUE (DOWN) Button 10 times →

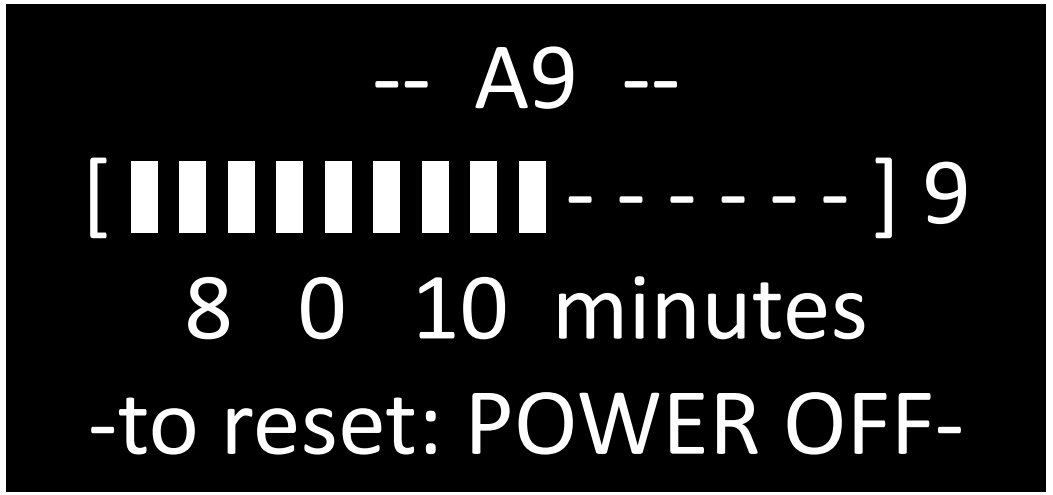


Adjust a Protocol

- If you pressed the RED (RUN) button, all of your adjustments will be remembered, and the B5 will begin to RUN the adjusted A9 protocol immediately.
- The screen will change to the RUNNING SCREEN, as shown below on the right.
- If you screw something up, just power OFF, then ON and start again.

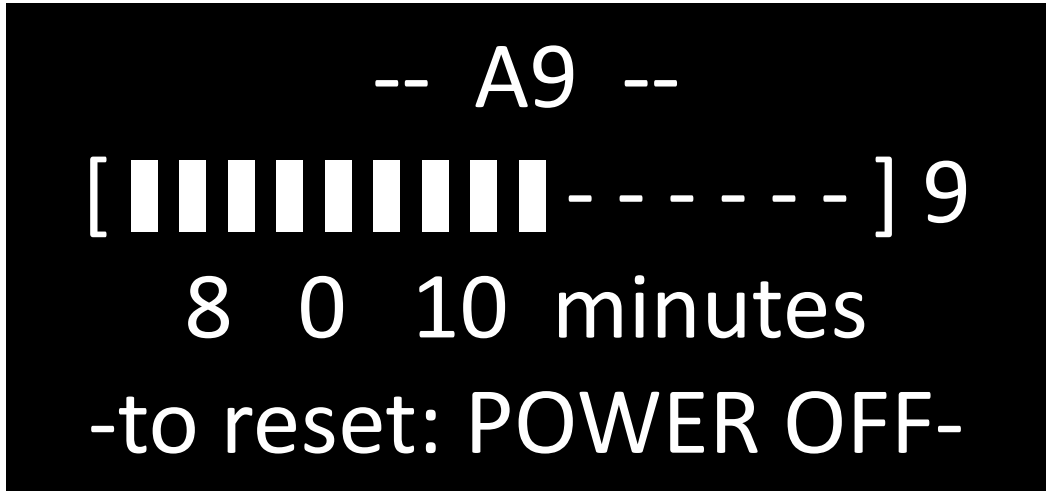


Press the RED (RUN) Button one time →



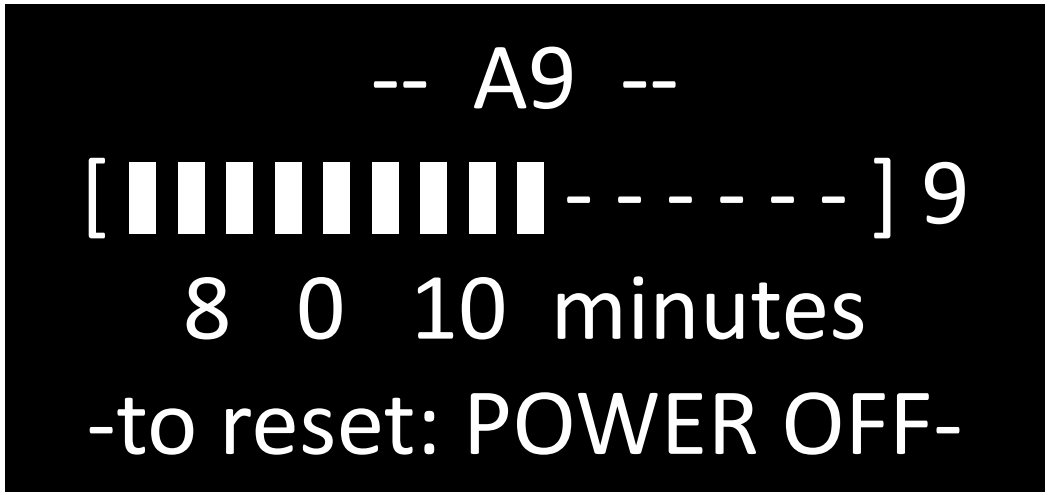
Adjust a Protocol

- On the RUNNING SCREEN, the B5 tells you a lot of information:
- The top line tells you the protocol, in this case A9.
- The second line tells you the intensity (power level) as both a bar and a number
- The third line tells you the adjusted mode times. In this case:
  - Mode 1 = 8 minutes
  - Mode 2 = 0 minutes (this mode will be skipped)
  - Mode 3 = 10 minutes (unchanged from the default setting)
- The bottom line tells you how to reset the system: you must POWER OFF and restart.



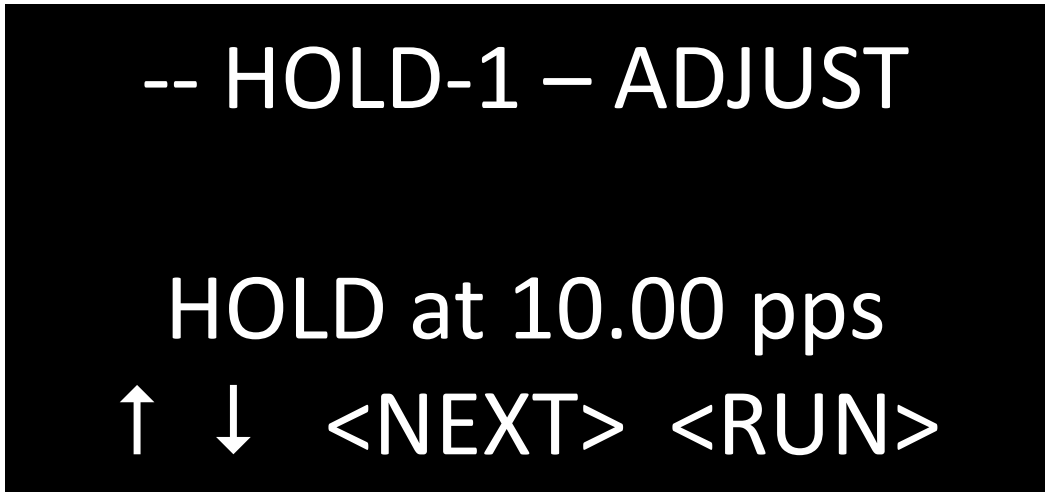
Adjust a Protocol

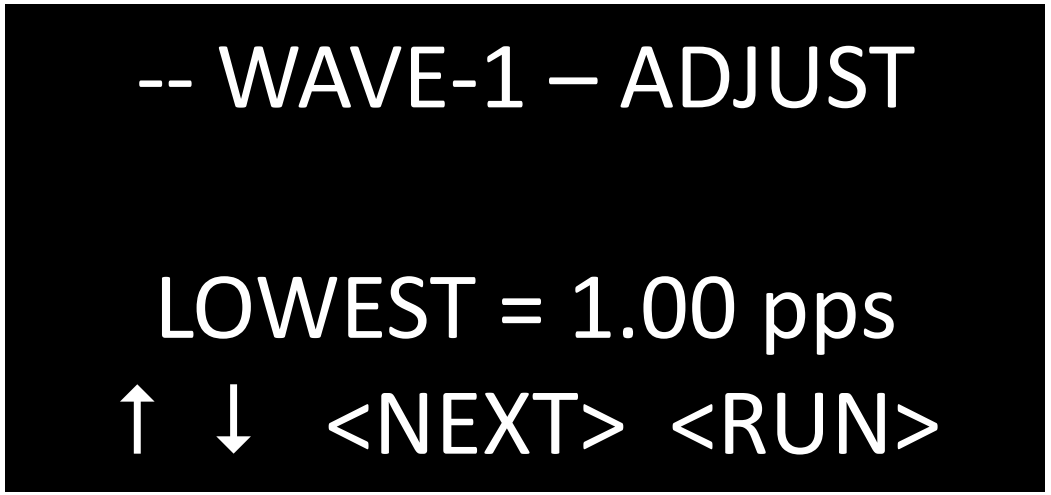
- If you screw something up, just power OFF, then ON and start again.
- Once the B5 has started RUNNING you can not change the settings unless you POWER OFF and RESTART.
- The buttons have different functions when the B5 is RUNNING. Those are discussed in the next section.



ADJUST the HOLD-1 or WAVE-1 PROTOCOL

- HOLD-1 lets you set a single frequency. This is the default screen for the HOLD-1 protocol:
- The list of standard available frequencies (pps) to select from is at the end of this document.
- You adjust UP or DOWN using the YELLOW or BLUE buttons to select one frequency from the list. Then press the RED button to RUN.
- The WAVE-1 protocol lets you ramp up and down over a range of frequencies:
  - You use YELLOW and BLUE to select two frequencies: first LOWEST and then HIGHEST, from the list.
  - You can set any two frequencies you want from the list of frequencies at the end of this document.
  - You set the time to ramp up/down in minutes (1-255)
- Once you set the parameters, press RED to run.





Adjust a Protocol

- To remember what each pulse pattern is in each mode, you can go back to review that mode in the SELECT PROTOCOL section above.
- Or, you can use the hyperlinks in the table on the right.
- Each mode has a time in minutes, *tx*, where "*x*" is the number of the mode in a protocol (mode # 1, 2, 3, 4, …)

LIST of PROTOCOL MODES

B5 – 5 – 100 – 100 – 10 – 100 – 100

A9 – 5 – 100 – 100

P2 – 5 – 100 – 100 – rest

Omni1 – selected special frequencies

Schumann – first five harmonics

Hold-1 – select one frequency

Wave-1 – setup a frequency wave

Matrix – special wellness network

Model B5

Reset to Default

If you have really screwed up the B5, join the club! I have done this hundreds of times.

Here is how you fix it:

*****Reset to Default*****

This resets the B5 to the settings originally programmed into it.

Bad news: it forgets all your changes.

Good news: it forgets all your changes.

Restart or Reset to Default?

- If you only made a minor mistake, or the screen times out before you are done, then I suggest you just start again by powering OFF then ON. The B5 will remember the last change you made, so just work your way back to that screen, then you can adjust it and move on.

- If you do something that is too complex to fix, or you select something that jams the device, or something else really bad or unexpected happens, then, and only then, try **RESET to DEFAULT**

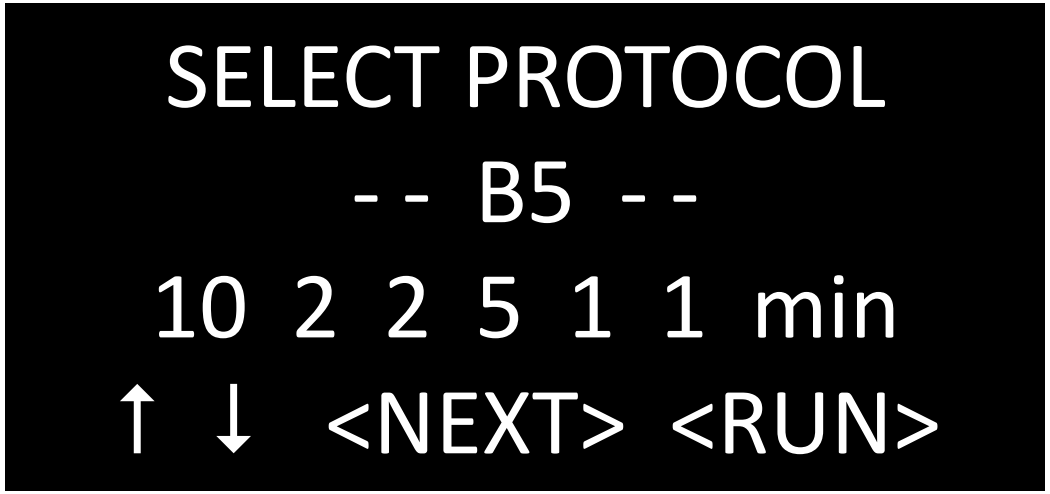
RESET to DEAFULT

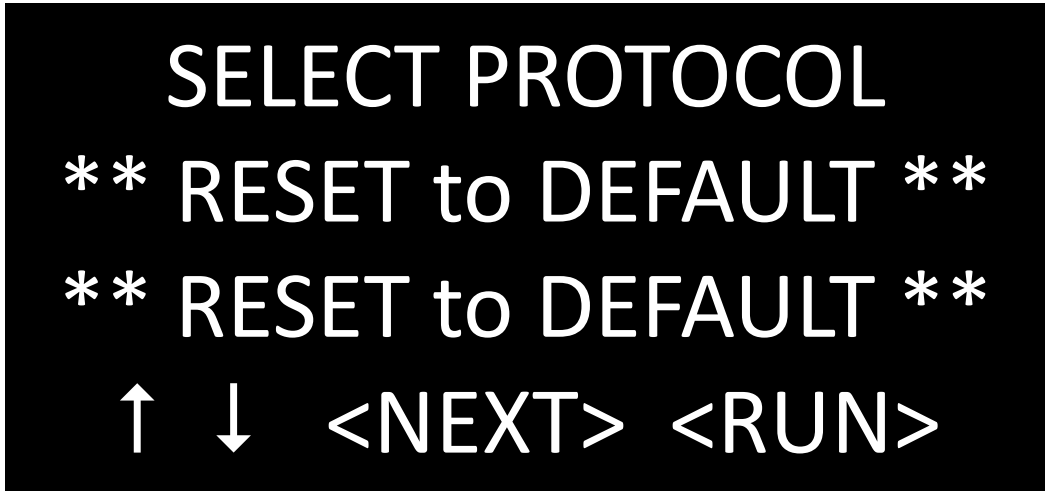
- Power up the B5 and just wait, or press the WHITE (NEXT) button twice to get to any SELECT PROTOCOL screen, as shown above:

- Then use the YELLOW (UP) button until you see the **RESET to DEFAULT** screen as shown below:

- Then press the RED (RUN) button, or just wait for the magic. On second thought, just go ahead and press the RED button right now.

- Let it RESET, which takes about 5 seconds. Then, when instructed, power the B5 OFF. On Power-Up, the device will have been reset and all past mistakes will have been entirely forgotten and erased.





Model B5

Advanced System Diagnostics

The B5 has extensive internal system diagnostic capability.

Some of this is available to the user while the system is RUNNING.

The status of internal voltages, temperatures, and coil status can be checked.

The numbers do not update continuously. They are a single point snapshot of internal system status.

These numbers will update once when you press the appropriate button.

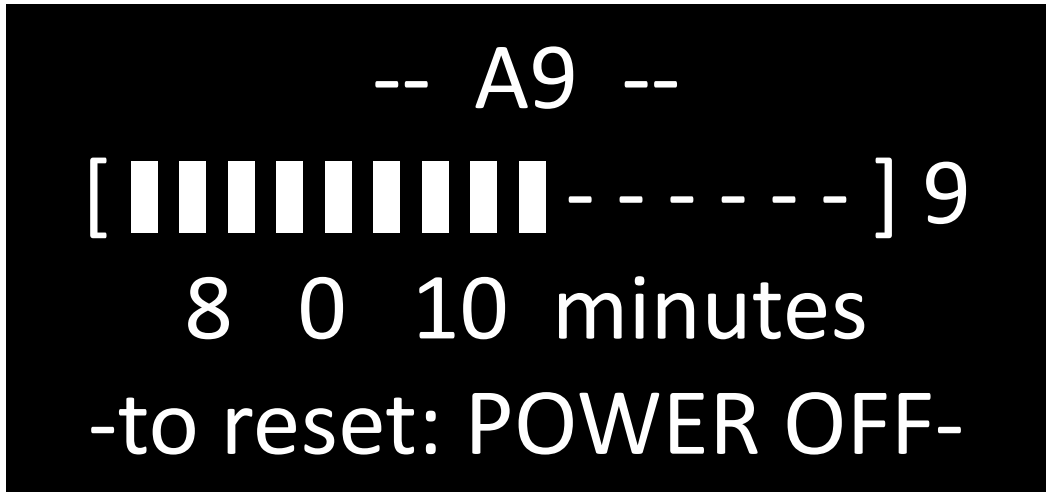
These are generally not something the user can do much about, but they are included here for the advanced user, and for completeness of documentation.

If seeing actual numbers gives you anxiety, just disregard this section. If you think the world is a precise, deterministic clockwork, and that everything should always be absolutely precise and clear, disregard these numbers. They only have meaning in the context of the overall system operation. They contain a lot of electronic noise that is unavoidable.

You might need to look at these numbers if you require over-the-phone diagnostic help with your B5, before sending it in.

ADVANCED SYSTEM DIGNOSTICS

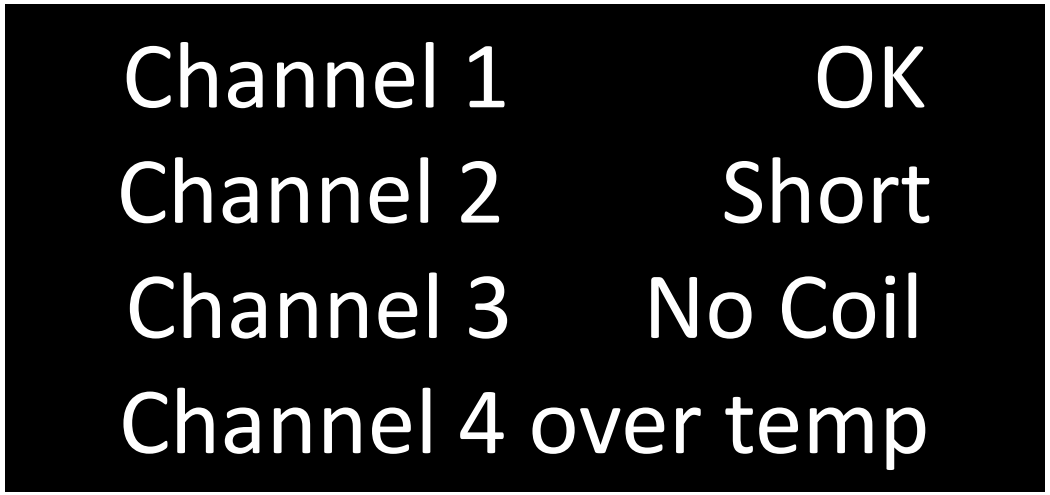
- Once the B5 is in RUN mode, the buttons can no longer be used to change the protocol settings.
- This is to assure that settings do not inadvertently change while the system is operating.
- While operating, the green LED will flash or toggle ON/OFF for every pulse.
- The user interface buttons have different functions when the B5 is RUNNING. Those are discussed in this section.
- The initial RUN screen looks like this:



ADVANCED SYSTEM DIAGNOSTICS

- Once RUNNING, you can press the YELLOW (UP) button to view the internal voltages and temperatures as shown to the left.
- You may have to PRESS and HOLD the YELLOW button for one second or longer for this screen to come up.
- The voltage and temperature for each of the four channels is shown on each line.
- This is only a snapshot. The numbers do not update continuously. You must press the YELLOW button again to see the numbers update.
- NNN/MMM show the voltages immediately before and after each pulse on each channel. There is noise on the signal lines, so the voltages will vary. Do not panic and send emails if these numbers are slightly different from what you think they should be. They are an approximation and contain a lot of electronic noise. Their meaning is primarily in how they average and change over time, but this screen gives you a window into internal system operation.
- The voltages to not include the decimal point, so NNN = NN.N volts, and MMM = MM.M volts
- Temperature is in degrees Fahrenheit, also accurate only to +/- 4 F

ADVANCED SYSTEM DIAGNOSTICS



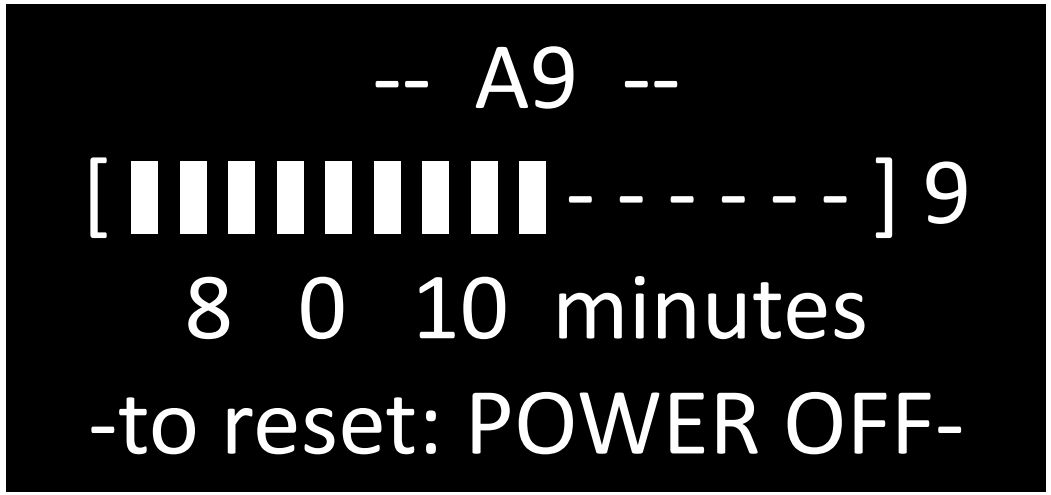
- Once RUNNING, press the BLUE (DOWN) button to view the status of the coils. Four possible status indicators are shown: “OK” “Short” “No Coil” “Over Temp”
- You may have to PRESS and HOLD the BLUE button for one second or longer for this screen to come up.
- This screen displays only what the B5 *thinks* is happening with the coils. This may not be reality. But it can be helpful.
- The only way to tell for sure if the coils are working is to use the hexagonal coil test chip that comes with every Micro-Pulse system.
- But this screen may be helpful to you as a quick check that the B5 system thinks everything is OK.
- Keep in mind, these status indicators are based upon calculations of the coil voltages during operation. But this computation is complex and assumes things about what type of coil is being used, what your protocol is, and many other factors. So these status indications can be incorrect. Use your coil tester.
- Here are the possible indications:
  - **OK** - this is what you should see most of the time. It means everything is OK.
  - **Short** - this usually means your coil is not pushed in far enough. Push it in.
  - **No Coil** - this usually means you do not have a coil plugged in, or a wire is broken.
  - **Over Temp** – This means the system thinks the internal temperature is getting too high
  - If the temperature is persistently too high, the B5 will warn you with a new screen, then it will flash the RED LED. Eventually the system will shut down the output power in an attempt to prevent damage. If you see this, try reducing the frequency or intensity.

ADVANCED SYSTEM DIAGNOSTICS

ICES model B5a
rev: B5-20170324a
(C) 2017 Micro-Pulse
Power ON # = 74

- Once RUNNING, you can press the WHITE (NEXT) button to view SYSTEM START STATUS screen.
- You may have to PRESS and HOLD the button for one second or longer for the screen to come up.
- The first line shows you the hardware model and revision (ICES model B5a).
- The second line shows you the firmware revision and release date (24 March 2017).
- The third line is a copyright statement.
- The fourth line tells you how many times the B5 has been powered ON since updating the firmware. This is similar to the odometer on a car. The B5 tells you how many times you have turned the power ON and OFF. It can be helpful to know this for system maintenance.

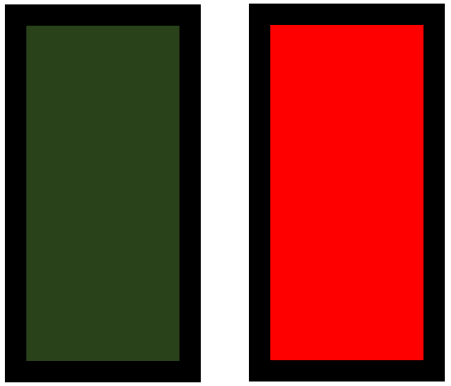
ADVANCED SYSTEM DIAGNOSTICS



- Once RUNNING, you can press the RED (RUN) button to view the RUNNING screen.
- You may have to PRESS and HOLD the button for one second or longer for the screen to come up.
- This is the screen that normally shows as soon as the B5 begins to RUN.
- The top line displays the protocol you are running.
- The second line shows the intensity (power level) as both a power bar and a number.
- The third line shows you the settings for each mode in the protocol you are running. This reflects your most recent adjustments to mode times (and frequencies for the HOLD and WAVE protocols).
- The fourth line reminds you that you need to shut the power OFF in order to reset or adjust the B5 settings.

ADVANCED SYSTEM DIAGNOSTICS

Channel 1 over temp
Channel 2 over temp
Channel 3 over temp
Channel 4 over temp

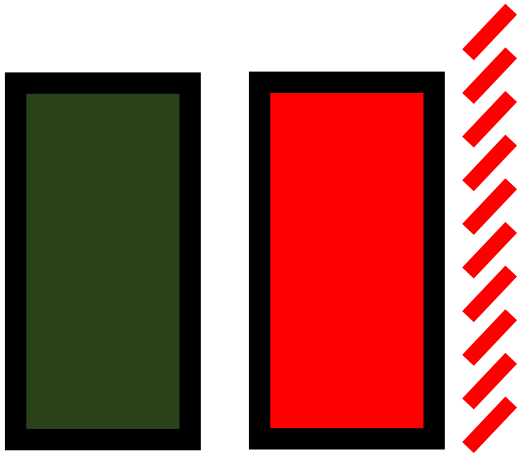


WHAT TO DO IF THE RED LED COMES ON

- If the red LED flashes very briefly, less than one second, that just means the system is changing modes within a protocol. This is nothing to worry about.
- If the red LED comes on for a second or two, that means the system has detected a potential OVER TEMPERATURE condition. It may correct itself, or you may need to reduce the frequency or intensity of your protocol.
- If the red LED comes on and stays on, that means a CRITICAL OVER TEMPERATURE condition has been detected. Your system is definitely running too hot and it has decided to shut down. You may see a warning screen. You should turn the power OFF.
- The system may automatically adjust your intensity (power level) down to a safe level, usually level 9.

ADVANCED SYSTEM DIAGNOSTICS

Channel 1 over temp
Channel 2 over temp
Channel 3 over temp
Channel 4 over temp



“WHY CAN’T I JUST RUN THE B5 AT FULL SPEED AND FULL POWER WITH MAXIMAL LOAD ALL THE TIME?”

- Consider this: what would happen if you took your car out on the open road. Then you just floored the accelerator and ran it at maximum speed and power. And you just kept it there…..
- A typical production vehicle will do this for a minute or two, then it will self-destruct.
- The police will give you a ticket, a judge will throw you in jail and you may lose your license permanently. Your insurance will gain a few extra digits. You may kill some innocent person, you may lose your home, or you may leave your children without a parent. So don’t do it.
- Many very good products require common sense and self control.
- The B5 is a scientific instrument. It has not been “child-proofed”. It tries to keep you safe and prevent you from destroying it, but remember that you purchased the B5 under the condition that you were to act like a responsible adult. Avoid the temptation to think that more power = more effectiveness.
- There is no scientific or rational basis to think that MORE POWER makes PEMF work better. Properly designed, PEMF works at very low power.
- If the B5 tells you it is in the danger zone, then it is too much. Tone it down a bit by reducing the frequency or the power level or both.

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

These are the selectable frequencies (pps) for the HOLD protocols:

NOTE: Wave protocols may limit the maximum pulse rate to 50 pps to prevent overheating

- 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)

Return to ToC Return to HOLD Return to WAVE

Terminology in ICES-PEMF: *Hz* versus *pps*

As a general rule, a field of science can not progress rapidly until everyone involved in the field agrees to a common set of terms and definitions. This is because it is impossible to have an accurate conversation about anything when people are using imprecise terminology. I have carefully reviewed hundreds of scientific papers in the field of PEMF (and related disciplines) and it is my professional opinion that one of the greatest obstacles to scientific progress in our understanding of the biological effects of PEMF is the sloppiness of the terminology. By my assessment, more than 90% of the peer-reviewed articles on PEMF either used technical terms incorrectly, or failed to adequately define the terms they were using. Even more confusion arises from the fact that the scientific terminology of PEMF has been hijacked by marketers, who distort and misuse the terminology to try to gain a market advantage and boost their sales.

This can lead to a lot of confusion when non-scientific usage is mixed with formal scientific usage. The biggest example of this is the use of Hz (Hertz) to describe the waveform and rate of a low-frequency PEMF system, especially since some of these systems generate sine waves, while others generate discrete trapezoidal pulses or other very different waveforms.

The term “frequency” has a very specific technical meaning, as well as a much less strict technical meaning, and also various common usage meanings. In its strictest form, frequency is the first time derivative of the phase of a sine-like wave. But the term “frequency” is also more commonly used to describe anything that happens periodically. In electronics, the term frequency can describe things such as the clock rate of a computer microprocessor. The word “frequency” has a lot of meanings, as you can see at the Wikipedia disambiguation page:

https://en.wikipedia.org/wiki/Frequency_(disambiguation)

This general problem of sloppy terminology in PEMF research spills over into the medical and biological terminology as well. This makes it very difficult to precisely describe both ends of a scientific experiment: what was done (the PEMF protocol) and what happened biologically as a result (the effects on tissues, cells, and chemical signaling). In many scientific papers, the terms are so unclear or missing that it is impossible to draw any conclusions. And the bottom line when money is involved is this: wherever there is scientific confusion, there will be abuse and distortion of the facts.

So, I am trying to remedy this scientific sloppiness and market confusion by applying the following strategies:

- 1- Educate the consumer – if people understand that the terminology can be very precise, they can become as informed as they wish to be, and then they can spot abuses and distortions.
- 2- Hold myself to a higher standard – I understand the need for terminology in common use, and this is fine, but I will use the terminology with adequate precision to advance the science.
- 3- Conduct and support only good-quality science – in scientific meetings and other forums of scientific discussion, I will try to raise the bar by encouraging precision in the discussion.

Return to ToC Return to Terminology

Bob's thoughts on Schumann Resona

- 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 for PEMF, in fact they seem to 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. If you disagree, do not send angry emails claiming "NASA has published 2000 studies…." Just send me one study from NASA showing that Schumann Resonance has a biological effect. Just a *single* one. Send the entire reference, not just a title or a link to a blank page. This is very easy to debunk. If I am mistaken, I will thank you.
- **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. They could cancel, not resonate.

  (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: $f_{beat} = (f_{system} - f_{earth}) / 2$ thus generating an amplitude modulation of much lower frequency.

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

Return to ToC Return to Schumann Protocol

Micro-Pulse

Model B5 Manual

Bob Dennis