

## EKG / ECG Buyers Guide:

### Preface:

As an owner of CardiacDirect, I have witnessed a substantial shift in the EKG market, specifically over the last 10 years. Machine prices have fallen dramatically following the same trend as ECG insurance reimbursements. 10 Years ago machine costs were averaging roughly \$4,500-6,000 and many of the features considered standard in today's world were optional. This is quite a change from today's market where your average full page EKG should be well under \$2,000.

Considering the fact that most EKG machines will last 7-10 years under normal operating scenarios it should come as no surprise that physicians and office staff are not up to speed with the current EKG market and how to navigate it. This document is available to help specifically address the current market, options and pricing.

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### Warranty / Support:

First and foremost I would like to issue you a warning. The internet has opened up the medical market. There are hundreds of online resellers selling hundreds of brands. It is very easy to get caught up on a low price and wind up with a machine you can't use or breaks easily. Sure, you saved \$250 dollars but what happens when you need help? Any machine you purchase should have a solid service / support platform in place should you realize a failure.

All machines, regardless of brand, break from time to time. When evaluating an ECG vendor and the brand they are selling there are questions to ask if a warranty issue should arise:

Do you have to ship your machine back to China?

Do you have to call overseas in the middle of the night just to get a human on the phone that barely speaks English?

Do you have to ship your machine back to them at your expense to have it repaired? Does your reseller provide a loaner in writing?

Focusing too much on cost up front can lead to down time and weeks without your machine and will cost you in the long run.

A simple set of steps can protect you from falling victim to purchasing a machine from a vendor that has no product support infrastructure in place:

- Be sure that the vendor is an Authorized Reseller for the brand they are recommending. Verify with the Manufacturer of the product if you can. If not, your warranty may not be valid!
- Don't stop there! It is even better if your potential vendor is an authorized service and repair center for the brand that they are selling or if they have a service and repair department. But

beware, everyone will say they do! Be smart, ask for certifications from a manufacturer or get details on their support staff. How many people? Do they offer phone support or email only? Do they have a technical support CRM software to assign ticket and resolution numbers? These details will help distinguish those that say they have an in-office support department and those that actually do.

- If you have questions that your dealer cant answer...run away.
- Inquire whether or not the manufacturer of the brand your potential vendor is selling has a service and repair center in the continental United States and operates on US business hours.
- Inquire whether vendor has a loaner and/or extended warranty policy. Don't accept "yes" and answer, they should have a Terms & Conditions sheet ready for you.

At CardiacDirect, we have our own service and support personnel and are certified to support and repair most of the brands we sell. We partner with our manufacturers to ensure quick support and repair turn around from our two Southern California locations. Most of our machines have 2, 3 and 4 year warranties. But...don't let the warranty get the best of you. Many companies are extending warranties on their products to create a false sense of security.

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## FDA:

Make sure the machine you select has FDA approval. Ask the seller for the 510K number if you have any doubt. Many of the ultra-low cost machines do not have FDA approval and if they ever cause an issue or miss a diagnosis, you could be liable.

At CardiacDirect, we only sell FDA approved devices to the human market.



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## Form Factor:

What type of machine are you looking for? While most EKG machines are still standalone "box EKG" systems, PC Based units have grown in popularity and tend to have lower cost. Your average Stand-Alone EKG systems have onboard thermal printers (called a recorder), LCD screens, keyboards, etc. We will discuss many of these options below.

Unlike stand-alone models, which will operate completely independently of any other hardware, PC Based Units require a Personal Computer (PC) and printer if you would like hard copies.



PC Based EKG machines generally plug in to a PC via a USB connection or wireless via Bluetooth. You can easily print to plain paper or simply save the test results on the PC as a PDF. These machines tend to carry less cost but must use a PC to operate. Make sure you ask if the EKG you select is compatible with the latest version of windows.

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## Interpretation:

A couple years ago, most manufacturers charged for interpretation as an option. While some of the big guys still have the option, interpretation should really be a standard feature on your new machine. If they are charging extra, you probably are paying too much. With rare exception, every EKG machine we sell at CardiacDirect comes with interpretation.

There are many competing interpretive algorithms that claim to be the most accurate. The two most noted are “Minnesota Code” and “Glasgow”. These interpretation systems should be accurate roughly 90% of the time. Minnesota Code is the most widely used ECG classification system and can be used as the benchmark. Many of the brands we sell such as Burdick, Edan and Schiller have their own spins on Minnesota code, but underlying algorithm and accuracy is similar. Many of the lower priced options in the market that start from scratch don’t deliver. Make sure you inquire as to which algorithm the machine uses for interpretation and beware of “we have our own software” as it can leave you or your staff confused over a missed diagnosis.

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## Preview Screen:

When performing an EKG, having the ability to “preview” the leads before you print is a must. There is nothing more wasteful than printing a report on expensive thermal paper only to find a poor connection on one of the leads. A preview screen allows you to see the lead quality before you print, saving you paper and \$. The preview screen can also help you identify and capture pathology since you can see what is happening in real-time! We recommend a color LCD screen when possible so you can clearly see what is going on.

Preview screen models used to be 2x the cost when compared to the same model without the screen. Over the past 10 years the cost for LCD screens has drastically decreased. The additional cost for a preview screen is so nominal it does not makes sense to consider a model without one.



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## Paper Size and Type:

One of the questions I receive most is what is the difference between 12 Lead and 12 Channel. The answer is simple! Most EKG machines are 12 Lead and use a 10 lead patient cable. When people talk about 1, 3, 6, or 12 Channel machines they are generally talking about the size of the printout. A 12-channel printout is 8.5x11 or “full page”. This configuration represents roughly 80% of EKG sales. All 12

leads can be seen on one page including the measurements and interpretation. In a scenario where portability might be of more concern than print size, some customers elect to go with 6, 3 or 1 channel printouts. These machines tend to be physically smaller due to the smaller onboard printer. A 6-channel printout basically takes the 8.5x11 and cuts it in half and doubles the length. So to see all 12 leads would occupy 4.25" and be roughly 22" long. Cut it in half again for a 3 channel. If that has you confused, here is a link to a video explaining:

<https://www.youtube.com/watch?v=eUw4KmgRWeo>

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## Keyboard / Data Entry:

Probably the single largest time waster in the EKG process is data entry. I find it very hard to believe that anyone would but up with a "numeric keypad" on their EKG for data entry...you know what I am talking about...pressing the number five 3 times to get a letter "L" like an old cell phone. Even worse, a trackball/knob that forces you to select each letter one at a time. Having to enter a patients name this way over and over again is a waste on time and costs money. I would not accept anything short of full QWERTY keyboard, whether it be touch or hard key (recommended). This isn't a cost driver and it makes data entry a breeze. We call it a no brainer at CardiacDirect.



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## Memory:

This is a standard feature on most machines today. Make sure you have some internal memory available for saving tests. Some machines will allow you to connect a USB thumb drive to expand that memory. Memory can be particularly useful if you move a day or weeks worth of data to a computer or external storage all at once. This brings us to our next topic...

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## PC Connectivity / EMR:

Most offices are using some form of Electronic Medical Records (EMR) to manage their patient information and files. While some companies advertise "direct" or "bidirectional" communication between their EMR and diagnostic devices like an EKG, in reality, it is more headache then it is worth. Many customers are stuck purchasing and configuring "middleware" and paying heavily to get things configured. The major EMR companies' limit which devices are "compatible" to promote customers spending too much on major



label hardware. If you are specifically interested in this communication style, let us know and we can point you in the right direction.

At the end of the day, you want a simple and reliable way to move patient data from your device to a PC / EMR. There are a couple ways to do this and it varies machine to machine.

- **USB Thumb Drive:** Probably the simplest method. Some machines will create a PDF on the EKG itself without any additional hardware or software. This is ideal since you can easily take that data to your PC and upload it to your EMR patient record.
- **Wired / Wireless Ethernet Networking:** This connection method generally requires purchase and use of EKG software to run on your computer. This software will talk to the EKG machine and allow you to view the files on your PC and save them as a PDF for upload to your patient records. The data travels over your network. Wireless is the most convenient so make sure the product you are looking at has that functionality if EMR connectivity is a priority for you. Some of this requires some TCP/IP and networking experience but we are here to help.
- **Bluetooth:** Bluetooth is another option for wireless communication and operates in a similar manner to networking. Out of the 3 communication methods in this document, we spend, by far, the most time providing computer IT support with products using Bluetooth as their communication protocol. With that said, if you are familiar adding and pairing Bluetooth devices to your computer you should be good to go. We are always ready to help with setup utilizing the latest in Remote Desktop Support assistance.

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## Country of Origin:

This has become a hot topic recently. It turns out that most machines are made in one of two places: China or India. Of course, there are machines from Korea, Italy, USA and more but the vast majority of those are composed of parts from China. Even the big name brands that claim “made in the USA” are playing games with final assembly. Do you really think, for example, that GE has their plastic molding, circuit boards, LCD screens, buttons, and knobs made in the USA? That would be analogous to thinking your Dell computer is actually made in Austin, Texas.

So to me the question really is: “Who” makes a machine and not “Where” is a machine made. This really goes back to the warranty and support paragraph above. We can all agree that 95% of EKGs come from overseas.

So the real question is, what can I expect once I make the purchase? I would hold all other vendors you are considering purchasing from by the same standards that CardiacDirect has invested in and abides by. When you buy from CardiacDirect you can expect a company to stand behind its products and our customers with a certified support and repair center. As a result, you can expect excellent customer service and fast repair turnover times. Naturally, you can also expect excellent pricing on extended warranty and loaner programs.

You can expect that we work in conjunction with the manufacturer, regardless of their location, to give our customers a seamless experience. Most importantly, you can expect to do business with a company that knows EKG/ECG better than anyone.

## Most Popular:

So what is our most popular machine? It is easily the CardioTech™ GT-300. In fact, the GT-300 represents roughly 60% of our EKG sales. Why? Simple...it has all the features of the big guys (GE, Philips, Welch Allyn, Burdick, etc) at roughly half the price. Who is CardioTech™? CardioTech™ is our personal private label collection of the best diagnostic products. Our machines feature the best in:

- Reliability (Warranty, domestic service, loaner program, solid warranty)
- Features (Preview screen, full keyboard, memory, EMR connectivity)
- Price points (Under \$2000)



Only the best products on the market qualify to be CardioTech™ trademarked products. It is our name and our reputation on the line so we have to be sure of its quality. We have sold to more than 25,000 physician offices, hospitals, specialty practices, surgery centers, and urgent and long-term care facilities around the globe. We have a reputation of excellence and are proud of the value we bring to your shopping experience.

Thanks for taking the time to read about and get educated on EKG systems. Be sure to mention that you read this for a special discount on the purchase of your EKG system!

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