Garden Trains
From A to Z

P is for Power Supply

Better Information - Better Railroad

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Garden Trains - A to Z

What you will find in this document.

Discussion groups are a great way to share information. One thing that is unique to LSOL.com is our Tuesday Topic. Each week, for almost six years, we have discussed a specific group topic. It could be about bridges, or maybe you like steam vs. diesel engines. Many times it is about how people solved a problem, or what they think about a current issue or product. My favorite was several years ago. "If your railroad was a candy bar, what would it be." (Good and Plenty, Milk Dud, etc.) We have fun at LSOL.com as well as help each other with serious issues on our railroads.

Now with almost 300 different weekly discussions online we wanted to make it easier for you to use this vast knowledge base of topics. We are taking the time to edit the best answers on a specific Tuesday topic into PDF documents. We have also added photos as available so you can see just what was being talked about from each of the users.

This paper is different than one written by just one author on a topic. You are getting dozens and dozens of years of combined experience from some of the smartest people running Large Scale Trains today. Save this document and start building your own personal reference library on your computer today.

What is LSOL.com? (Large Scale Online)

Large Scale Online has been providing information for Large Scale Garden Train enthusiasts for almost 15 years. We are the oldest, largest, and most professional web site on the Internet that is exclusive to Large Scale Garden Trains.

LSOL.com provides information in many different ways. We have online articles, videos for you to watch and photos for you to see how it is done. We also have organized and secure online discussion groups. We are the only site that requires people to use their real name. No hiding behind your keyboard making anonymous posts. Join Us.

Power Supply

Most garden railroad hobbyists start out powering their engines with track power. Supplying power to a track powered railroad couldn't be simpler. Clips are attached to the track and wires run back to a variable output DC power supply that plugs into a standard wall outlet. Turning the control in one direction moves the train forward and turning it the other way moves it backwards. Most starter sets come with everything you need to run one engine with track power. Then we wake up one morning and we have more engines than our one little starter set power supply can handle.

I remember our first funny call from a customer that had purchased a new FA1 that Aristo-Craft had come out with. They said there was something really wrong with it as it would run for a few minutes and then it would stop. If he waited a little while it would run again. He wanted to return it as it was "a piece of junk" and it did not run well. My first question was what kind of power supply he had. He answered that he had a high quality LGB power supply. I pushed, and asked for a model number. Well, even though the power supply might have been "high quality", it was not high power. It was from his LGB starter set. It could not power the FA1 for more than a few minutes. Once it overloaded it had to sit for a while to reset. Once the customer got a new power supply his "piece of junk" ran just great.

What are the top 5 things I should look for when purchasing a power supply to run my trains? If I am just starting out what should I look for in a power supply? If I am growing my railroad, how do I expand what I have without losing my investment? Should I get the controller separate from the power supply or combined? Should I build my own, or would it be better to get something with a warranty?

There have been some interesting ideas about power supplies in the Large Scale Online Library

Growing Railroads need Growing Power

Converting a Computer Power Supply To Power your Railroad Empire

So what has your experience been with Large Scale power supplies? Did you learn the hard way, or did you get a jump on the power curve? What did you start out with and what are you currently using? What features are the most important to have when look at buying a power supply? What factors on your railroad will impact the type of power supply you should buy?

Kenneth Allen -10 amp Bridgewerks

I first started with a power pack that came with the Bachmann set I had. I then bought an Aristo FA & B engines, both power and tried to run the engines with the power pack from the Bachmann set and they would just barely move. Knowing I had to get another power supply I bought a 10 amp Bridgewerks, the engines ran good then. After building the outside layout and buying more and bigger engines the one power supply did not meet the demand of power I needed, so I purchase an Aristo 10 amp power supply also. Now I can run 8 or 10 Loco at once if I want.

Mike Evans - Aristo TE

We were already using an Aristo TE for our HO layout (actually 2 of them). So it seemed natural to adapt that experience to our first outdoor G scale layout. Did find however, that the early trackside TE did not put out much more than 2 amps, regardless of the power input. We also discovered the frailty of Aristo switch wiring when we tried running 4 Aristo diesels at once - burned right up and new wiring was needed. Our other club has had some people with difficulty of over powering a locomotive and stripping out the mechanisms or burning up the motors.

Harry Halbert - both Aristo, and Bridgewerks

I have both Aristo, and Bridgeworks, and use both at the same time. We run two mainlines, and a yard, and all are independent with a connector track with DPDT switches.

Dave Clarke - Aristocraft dual voltage power supply

When I first started out I had just 50' of track and for 12 months I used a 12volt power supply that I used on my HO/OO layout.

With the addition of another 200' of track, I knew the power supply would not be suitable and I purchased an Aristocraft dual voltage power supply. This made running the trains more fun as the power supply was adequate to run two trains on the one track. I now have another 200'of track and the power supply handles this really well.

A further addition of 120'of track which puts my trains to bed at the end of each session, still needs to be tested, but I don't think there will be any major issues with the power supply coping.

Jon D. Miller - Plenty of power with the ZW

I've been using a Lionel ZW transformer feeding power to a DC converter/reverser since 1993. Once the Aristo TE was introduced in 1994 it has been powered by this system.

Track power is seldom used. It is maintained for testing new locomotives and for use by visiting track power operators. As stated in previous topics, the CD&StL if first and foremost a RC/battery power operation. Our club, on a number of occasions, has made an oscilloscope available for members to have their power supplies checked. The converter/reversers, when placed on the oscilloscope, produced some of the "cleanest" DC power of any power supply tested.

Plenty of power with the ZW and converter/reversers to run any locomotive that's operated on the CD&StL. The pacing item is the capacity of the Aristo first generation TE. If I wanted/needed more track power then an Aristo 10amp trackside transmitter could be used. I'll stick with the home-brewed power supply. It has served its purpose well since 1993. Why change now?

Donald Urquhart - Aristo-Craft "Elite" 13 amp

I started with the Aristo-Craft "Ultima" 10 amp (transformer type) power supply feeding the Aristo analog "Train Engineer" running both LGB and Aristo locomotives.

Later I switched to the Aristo-Craft "Elite" 13 amp "Switching" type power supply (solid state / no transformer) and never looked back. Most of my locomotives, both MTH and Aristo-Craft are running on MTH DCS control. Two are running with the Aristo-Craft 75MHz "On Board TE". Both systems can run on the same powered track at the same time. (MTH/DCS sends its signal through the track; Aristo sends its signal by radio.

Paul Roberts - Aristo/Crest 10 amp

On the stage one of our garden railway I used the MRC "Sound and power" transformer from the HO layout with the Aristo TE. Worked well for a time but soon discovered it had its limitations. When stage two was completed bought the Aristo/Crest 10 amp transformer and have not looked back. I have four more "cheapy" transformers that I use on the four auto reversing sections of track. For the small porters and two trollies they work fine. I've really been happy with the crest trans. combined with the TE.

John Dale - LGB 10 amp... added a Bridgewerks

I started with LGB 10 amp power supply and then added a Bridgewerks for non-LGB trains and extra boost; it has powered over 300' of track with multiple feeders just fine for 4 years now.

Willard Kohler - laboratory-type power supply for testing

Since I use 100% battery R/C, I started to answer that I used no power supplies. But, the 'home-made' option turned out to be applicable, since I have, on rare occasions, connected a laboratory-type power supply to the rails for initial testing of locomotives (before conversion).

If I someday add rail power feeders on one loop of track for visitors, I will probably just provide a pair of screw terminals so that I could connect the lab supply or the visitor could bring their own equipment

Ron Brantner - 20 AM / 22 Volts AC OUTPUT power supply

Amps are important, but so are volts. I started with a Crest 10 AMP / 18 Volt DC OUTPUT power supply on a Digitrax DDC system. This configuration ran very well until I started running more than 4 Locos on the same block. At the time my RR was only one block. The more locos I added the slower they all ran. I discovered that each loco would draw and hold about 2 volts. With 4 to 5 locos running, the volts dropped to under 12 volts causing the locos creep along. The solution was to go with a 20 AM / 22 Volts AC OUTPUT power supply. The DDC system allowed AC input. AC maintains the voltage and with the same number of locos, voltage only dropped from 21 to 19 volts. Plenty of power to run as many locos as I want.

I since segmented the RR with 2 blocks with (1) 10AMP/18 volts power booster per block. The power supply supports both power boosters. No need for additional power demands ever again.

John Pletcher - Unipower switch power supply

I did build a power supply from extra parts I had laying around the house, but in the end it did not have enough power for my needs.

I wound up buying a Unipower switch power supply from a mail-order supplier for $48. It has three outputs, the main one is 28 volts @ 15 amps and the other two ate 14 volts @ 3 amps each. I put several diodes in line with the 28 volt output dropping its voltage to 24 volts then I use a trackside TE for control. This setup has served me well now for three years.

John Caughey - Crest Ultima 10 amp as an instant cure

The basic TE that came with, was my initial power, I didn't think my smaller HO/On3 power packs would have enough juice. I planted the Rx in a non weather proof building and would haul out the transformer and Tx for each operating session. Lasted through 3 seasons of monsoon rains, but now can barely send any power to the rails. Looked into battery power, but realized that wasn't a today fix, so I bought the Crest Ultima 10 amp as an instant cure. BUT the fixed rheostat controller sucks, I was spoiled by the walk around Tx...

Batteries are in one loco, but problems with lights and sound have side tracked the conversion. I wish my electronic knowledge was better..... Re-doing seems like work to this old coot and I'm apt to wander off to another interest....

Anyway... the Plan is to have R/C battery control with powered track for recharging and visitors. My pike is small, 2 locos, 1 passenger and the other a working freight. A G-Scale Graphic's Railboss will send the passenger train around the loop with timed stops as the freighter darts to spurs and finally leaves the loop for the big city and an SP interchange.

I want to get my grand nephews their own locos and let them run them as fast as they want. The Crest Ultima will give them all the demolishing speed they like! They can't hurt the layout, what; dirt, rocks and stones? Maybe they will learn that fastest speed doesn't mean the only speed! I might even pull an old switcheroo on them and they'll need to watch out for me putting rocks on the track! Oh what fun!!!

John B Pedersen - 300 Watt 28 volt supply with diode

I started with an MRC power supply which very quickly became overwhelmed. I bought a TE and used a KW Lionel transformer with converter, but it did not do what I needed. I then got my hands on an 18 volt 58 amp FM radio power supply which was great till it got fried and no repair parts were available. I then turned to looking into switching power supplies, as I was using a TE I did not need a variable supply. Like John Pletcher I am also using a 300 Watt 28 volt supply with diodes to drop to 22 volts for the TE. I liked the idea of virtually flat DC voltage with no AC ripple which makes for longer motor life with little overheating. I have had mine for 4 years with no problems and the initial cost was only $30.00. If it goes bad I have another to take its place. I use a separate 250 watt switching supply for all my lighting around the Railroad, both the Malibu lights and building lights, which are 98% LED lights.

Walter C. Bringsauf - always made my own

I have always made my own power supplies and controllers. I am using 4 homemade 3amp power supplies with 3 amp voltage regulator controllers. Each section of my layout has its own controller and power supply: Mainline, yard, sidings and storage tracks. Most 4 wheel truck engines will run fine on 3 amps, even hauling a long consist. You may need a bit more power for 6 wheel truck engines with more the 2 motors. I don't have any of those.

I have a 10 amp store bought power supply for my pending conversion to DCC. That should be enough for all my needs.

David Maynard - 5 amp MRC handles

When I was running my trains around the Christmas tree I was using the little power supply that comes in the Bachmann Big Hauler sets. I knew that when I built my real railroad I would need something bigger. I bought a MRC supply; I think it was rated at like 5 amps. Anyway when I saw the current draw (on an ammeter) of some of my locomotives I went and bought an MRC Trainmaster, it is rated at 10 amps. Being that I only run 2 trains at a time, that MRC, now running through a TE, can handle all I need. The little Bachmann supply was running the relay controller for my layout, but it eventually burned up. So now the 5 amp MRC handles the relay controller, its overkill, but I don't have to worry about it being overloaded.

Greg Elmassian - regulated switching power supply

I used an inexpensive supply rated in VA, it was junk. It was 60 VA and could not run my LGB track cleaning loco. I just had it to "get by" until I got my "real" supply. I now use regulated switching power supplies from Meanwell, $80 for 11 amps, 27 volts. I run DCC and need the extra volts.

Glenn Habrial - Crest 13 amp power supply

I started out with the Aristo TE and found I just HAD to have the remote control capabilities it provided. I now am up to 3 blocks powered by these TE's all off of one Crest 13 amp power supply, and one transmitter. Although I do keep the 10 amp unit in reserve.

Richard Friedman - Bridgewerks 10 ampere

I started with an Aristocraft starter power supply, and used it while I ran Critters on 120 feet of aluminum rail. I later got a Bridgewerks 10 ampere for the main line, but I still use the Aristo for my mountain loop RR and for my trolley line. At least I did 'til I left it out in an unexpected rain storm. I think it needs a new pot. The AC part works fine!

Edward Dice - Bridgewerks and Aristo products

I use both Bridgewerks and Aristo products. Both have glitches but work fine 99% of the time. I will build a power supply system. Am also looking at battery for an on-board system either as a back-up to on-board receiver/decoder or as independent. One use would be for track cleaner and yard switching.

I am always explaining power vs. volts vs. amps to people. Everyone wants more amps without knowing what they are asking for. Reliable power and controls is absolutely critical for enjoyable operations.

Jerome McColgan - prefer my LGB power supplies

Having to choose a single brand of power supply is too limiting (does one choose by number of units or total cost). I prefer my LGB power supplies but I also have and am happy with power supplies from Bridgewerks, Aristo-Craft and others.

David Maynard - MRC Trainmaster 10 amp

I run my Aristo Train engineer with an MRC Trainmaster 10 amp supply. Neither has complained yet

Ron Hill - TE and Crest power supply

When I started out, I did not know what was out there to use being an N-scaler from way back. Several people in the chatroom suggested I purchase a TE and Crest power supply. It has served me well and I have been pleased with it ever since.

KC Marshall - Still have the Crest power supply

I started with track power and a Crest 10 amp supply, and then changed all locos over to R/C and battery power, now trains can travel any direction at any time with many on the same track. Still have the Crest power supply. Just sits in the power control box still wired up to run an occasional track power loco if any ever make it to the pike

Rick Henderson - Capacity, flexibility, capacity

Capacity, flexibility, capacity, adaptability, capacity; did I mention capacity? I think a power supply must have enough capacity to handle your layout as you expand and handle multiple trains. It also would be great to have one adaptable to the various technologies developing, a near impossible feat I know. One that could control multiple reversing loops would also be very attractive.

So as far as track power goes, it is not easy to find one with all of the variables a large layout would require to run multiple trains smooth. However track power supplies are great for running multiple independent loops for displays.

Building your own would not be a good idea for about 99.8% of us.

Joe Fotschky - Crest 10 AMP

Power, mobility, range, easy to use, more power argh argh argh. I have a Crest 10 AMP DC Power Supply also known as an ULTIMA from Aristo-Craft part number CRE-55460. I use the Train Engineer Walk Around Control System. Receiver part number ART-5471. Hand held controller part number ART-5473.

I have enough power for my two track garden railway. It has mobility since I have a wireless handheld unit I use to run the trains. As for ease of use, the unit is easy to use once you input your settings.

Kenneth Allen - the addition of a 10 amp Bridgewerks

I have the same as Joe, with the addition of a 10 amp Bridgewerks. I don't think one can have too much power for their engines. I also like to run double, triple and even more engines at one time. Now to find the power in batteries to do the same.

David Maynard - Go for a decent sized power supply

Capacity or enough power would be the first thing I would say to consider. Yeah that little brick that came with your Bachmann starter set will run that set, but what happens when you get a 4 motor Aristo diesel with smoke lights and sound?

Go for a decent sized power supply (at least 10 amps) And getting a system with separate controllers is best, that way you can independently control 2 loops (with 2 controllers off of one supply), or a yard and a loop without having to buy a whole new set up. Also if something fails (gasp) you don't have to shell out for a whole new set up, just the part that failed. As an aside one of the radio control controllers (like the Aristo Train Engineer I have) is a wonderful idea, that way you don't have to sit in one place and "baby sit" the controller.

In this day and age I would say buy something off the shelf. 20, 30, 40 years ago you would be able to build bigger and for less money then what you could buy, but anymore I don't believe that is so. The new power supplies on the market (most anyway) have some kind of overload protection, and provide cleaner power then what most of us could build. By cleaner I mean DC with less "noise" (ripples, spikes and other fluctuations). Also to be considered with a home brew system is safety, 120 Volts AC can really hurt (I know!) or kill if you make a mistake. Also it's easy to overload a homemade device if you aren't careful about the rating of the parts, and this can present a fire hazard.

Mike Evans - at least 10 amps

The actual power supply needs to have at least 10 amps. Then there is the controller. The early Train Engineer units peaked at about 2 amps throughput to the track. The later units could deliver up to the full 10 amps. I use three separate Aristo/Crest power supplies, with their own controller. This gives each operator total walk-around control of his track & train. The only problem is when we share trackage, yard space, passing sidings, etc.

An ideal setup would be constant track power ala DCC with several power supply 'boosters' along the various track segments. Then a radio receiver unit on board (built-in to some NMRA standard by the manufacturer or after-market easy to install) for speed and direction control as well as accessory and sound operations. It looks like we have the technology; the only thing left is to establish some standards (ala DCC) for radio controlling the receiving locomotive and bringing the system cost down as an incentive for the manufacturer to preinstall the radio receiver.

While we are at it, sound system costs are dropping rapidly. Perhaps a basic sound system could be preinstalled in every locomotive by the manufacturer. I recently purchased a couple of new locomotives. Upgrading them to sound on board is painful and still expensive. Note that HO manufacturers are now offering most new models with sound included. If it was pretty much offered across all scales, costs could be reduced significantly.

It seems to me that a basic sound unit would have a chip aboard that could be reprogrammed for specific sounds and features. The other issues such as triggering, function keys, etc could then be a uniform standard for the basic unit.

Donald Urquhart - Aristo-Craft Elite 13 amp

Track, Power, and then Trains!

I use the Aristo-Craft Elite 13 amp switching power supply (new production of the Elite is 15 amps). This feeds ether an MTH Track Interface Unit (TIU) for DCS digital control or an Aristo Train Engineer for analog control.

A Ten Amp or more Switching Power Supplies will let me run up to three locomotives, car lights, and any layout lights. Most radio control systems are rated at only 10 amps or less so it should be protected with a "fast blow" fuse or a "crowbar" circuit. The transformer based (analog) power supply output drops under load (IR drop), you will need a large one to maintain voltage on a large layout. A Switching (digital) power supply raises its amp output to maintain voltage as the load increases. When it reaches its maximum output it shuts down with the speed needed to protect your circuit boards (crowbars).

Paul Roberts - 10 Amp Crest

I started out with an MRC "Sound n' Power" unit (borrowed from the indoor HO layout. Good enough at first but when a friend brought over his two LGB diesels with sound it kept kicking out. LSOL must have picked up my vibes because shortly after they put the 10 Amp Crest trans. on sale and, the rest as they say is history. Combined with the hand held controller (which I use to control three lines) I have never wanted any more. The range is excellent, more power than I need and the ability to walk around and control three lines from one controller is great!

Richard Friedman - Bridgewerks 10Amp

I have a Bridgewerks 10Amp and an Aristocraft Train Engineer, and they work fine for my small garden RR. I put two connections to the rails about 180 degrees apart around the loops for connectivity, so I've got power pretty consistently. Watch the joints, though. They can make non operation easy! I can run double headed big diesels as well as steamers. I've replaced plastic train wheels with metal, and replaced lights with LEDs and have plenty of power for the lookies.

Short answer: buy more power than you'll need. You'll grow into it.

John B Pedersen - over 16 amps @ 24 volts

I have expanded my Railroad and power supplies several times. I wrote 2 articles on the subject which should cover my 5 reasons for using what I have; I personally like the TE with a relatively inexpensive high output switching power supply. My present supply is rated at over 16 amps @ 24 volts for a cost of $40.00. Here are links to the articles and my reasons.

http://www.largescaleonline.com/members/emag/article_320.html

http://www.largescaleonline.com/members/emag/article_312.html

Dusty Suit - Aristocraft Crest System

If I were starting out, I would buy a Bridgeworks power supply of at least 10 Amps. They have excellent quality and are extremely well designed. For future expansion, just purchase a supply with more current output capability.

I would avoid the Aristocraft switching supplies. We tried one on my layout and it caused the ground fault breaker to blow. Returned it to Aristo and they could find no problem; thus they apparently do not have the ability to check for leakage during production or repair. I measured 115 volts AC between the negative output of the switching supply and the ground-based track connections. I use the Aristocraft Crest System, the 10 amp capable version but I use my own power supply.

I made it into a regulated power supply that tends to provide the same voltage with increasing load. I configured it to be control system on its own (non remote) even if my Aristocraft control system fails. It provides about 12 amps of power that is plenty able to run 2 trains, and lights.

Bob Freeman - Go for AMPS.

Go for AMPS. Get the most you can afford. My first power supply was 10A for a 240 ft. main line, and it was fine until I started running multiple trains with multiple engines. Figure about 1 amp per motor or 2 amps per engine with 2 motors (duh?). If you run smoke units, add an additional amp per engine. If you run cars with lights, add another amp. Therefore, running 2 trains with 3 locos per train, smoke units on, lights in the passenger train = 12-15 amps draw. You can see that I quickly outgrew my original Bridgewerks 10A power supply. I now run 2 separate powered loops, one with the original 10A supply, and the other with the Bridgewerks 25A supply. Overkill? A little, but sometimes I have one train with 5 engines pulling long passenger train that pulls more than 10A by itself, so I have all the power I need. Bottom line: It only costs a little more to get a lot more power.

p.s. If you're as right-brained as me, BUY and don't even think about building.

KC Marshall - progressed into onboard RC/battery power

If you just want to run a LS train around the tree at Christmas time, then the power supply supplied with the starter set (low amp) is fine. It should run the limited train with limited amount of rolling stock around a limited track layout.

If you wish to run a larger layout in the basement, garage or room, then the power supply should meet the requirements of your railroad. Do you wish to run one locomotive on one track, do you wish to run several locomotives on a single track, or do you wish to run separate locos on separate tracks? This is where the power supply comes in. if you wish to run two separate tracks and locomotives, then a power supply for each track should be used and the power output should supply the max power needed for that particular track needs.

Now if you wish to go into the outdoor arena, run multiple locos with lights, smoke and with long trains over a lot larger track setup, then the higher amp output power supply should be used. It should meet or exceed the power requirements for what you plan to do. In this case it is better to get to much power rather than too little and be limited by your power output. Just a simple rule of thumb is use for power need is each loco should have at least 2.5 amps supplied to it, so if you power one loco, you need 2.5 amps output, but if you run 5 locos, you would require minimum 12.5 amps.

But then we get into the power controlling parameters of the power supply, and what you use to either track power control or to individually control each locomotive. So it can be easy, or it can be complicated, but it all can be worked out depending on your specific needs and uses.

I believe the main idea is to get something running first, and once you have a little experience and understanding of your needs and requirements, you will have the experience and understanding of your layout needs, and thus spend your funds to the best return for your needs. I know, it is very broad, but you don't need to purchase something you don't need if it is beyond your requirements.

Such as my outdoor layout, I first designed it for track power with a large power supply, then progressed into onboard RC/battery power (another topic) and now have the high power high amp track power supply just sitting; I am now planning to use this power supply to light up the structure and accessory lights.

Todd Brody - few talk of voltage

Everyone specifies amps and few talk of voltage. Ten amps is more than enough for most stuff, but I wouldn't settle for anything that doesn't put out at least 21-22 volts under a load. I find that the voltage loss through the Train Engineer and RCS remote track-powered system (I use both) is such that if you go below about 21 volts, you can never bring some engines up to a reasonable speed.

BTW, I had a "pre-Crest" Ultima that I sold because I couldn't get more than about 20-21 volts out of and was never satisfied with the speed of some engines. I also have a "Crest" version and it appears to put out another ~1.5 volts that I can live with.

My others are home-made using 16.7 volt ac, 16.7 amp surplus transformers. These produce 22 volts dc and I fuse them at 10 amps. I could use 15 amp fuses, but the TE and RCS fuses would pop at 10 amps anyway, so this is redundant, extra protection.

David Bodnar - There are two types of power supplies

There are two types of power supplies that are normally used in model railroading and other applications.

The first is the traditional transformer based unit that takes 120 volts and runs it through a transformer to drop the voltage to 12-24 volts. That voltage is then run through a bridge rectifier and a filter circuit to turn it to DC. These transformers are heavy and expensive to produce due to the transformer.

A switch mode power supply drops the input voltage to the desired output voltage by rapidly turning the power on and off and sampling the output. The ratio between the on time and off time can be set to give the desired output voltage. These power supplies are much lighter in weight and, although more complex electronically, less expensive to produce. It takes a lot of filtering to give pure DC output but the technology is very mature as switch mode power supplies are found in virtually every desktop computer.

Roy Towne - MTH Z-4000 AC power

It depends on what you intend to run. I am using an MTH Z-4000 AC power through a TIU to run my trains. I usually put four or five engines on my switch yard and "Fire up" what I want to run. I have run four at one time but, it takes more attention to avoid accidents. So, I usually run two or three at a time. I also have a 15 amp Bridgeworks that I use to power my switches (14). Both transformers are well regulated and have circuit breakers just in case of any mishaps. If I want to run a DC only engine I can use the Bridgeworks. The AC seems to carry the command signals to the engines better than the DC. I only need one Controller to operate everything.