Understanding Remote IO

[0m:0s]

[0m:4s] Hi, I'm Josh Bloom. Welcome to another video in the RSP Supply Education Series. If you find that these videos are helpful to you, it certainly helps us out if you'd give us a big thumbs up

[0m:15s] and subscribe to our channel. In today's video, we are going to be talking about a concept that is commonly used in industrial control and automation environments that allows for the critical instruments and devices that we used to be utilized in a more flexible way. I am talking about remote IO, or remote inputs and outputs. For the purpose of this video, we want you to go over the basics of what a remote IO system is, and why they are used, and also how they differ from a traditional PLC IO setup.

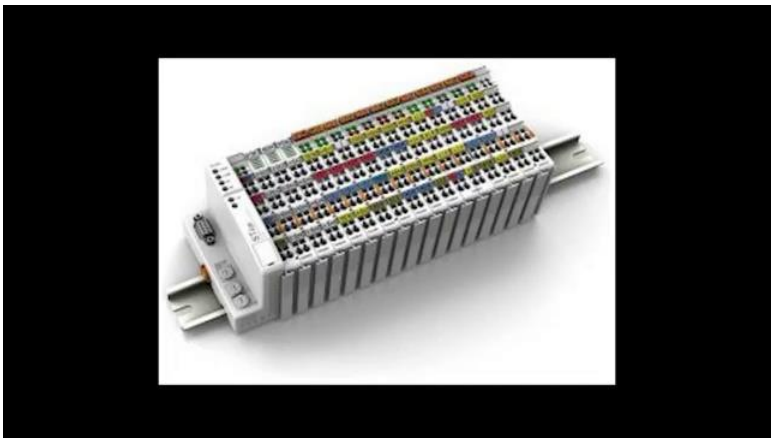
[0m:50s] We will also discuss some of the benefits of using this type of system, and we will also mention a few of the disadvantages of remote IO systems as well.

[1m:0s] If you have not already seen some of our other videos which we talk about PLCs, on how they work,

[1m:5s] we will link those videos in the description below. As always, the information provided in this video is intended to provide only a basic overview of this specific topic and should never take the place of proper electrical instruction. With that being said, let's take a closer look at what makes this type of system different and why we might use it. Before we talk about remote IO setups, let's briefly go over what a more traditional system will look like so that you can better distinguish the differences between the two. If you remember from some of our other videos, a PLC, or programmable logic controller,

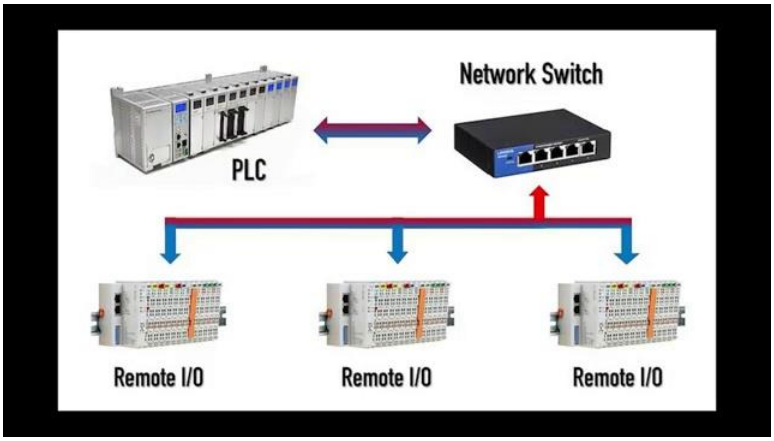
[1m:43s] is a device that can process multiple points of data, ranging from analog signals, digital signals, both inputs and outputs. PLCs read and send data to and from the IO sections of the PLC device or rack.

[1m:58s] Sometimes the IO sections can be totally separate IO cards. or example.



[2m:3s] a digital input card is a very common type of IO card.

[2m:7s] There are also situations where the IO sections are integrated into the same hardware as the PLC, which we see when using a device like a SCADA pack. Either way, it is important to understand that the PLC is what actually reads and interprets the data and also sends commands out. The actual IO is simply a pathway that leads to the PLC. In situations where you have instruments and devices that need to be monitored and control, you might have the IO interface in order for the PLC to receive and interpret the data. So, what is a remote IO setup? It is not uncommon to see the PLC located in one location, while all of the IO cards, or IO hardware will be in a totally different locations.

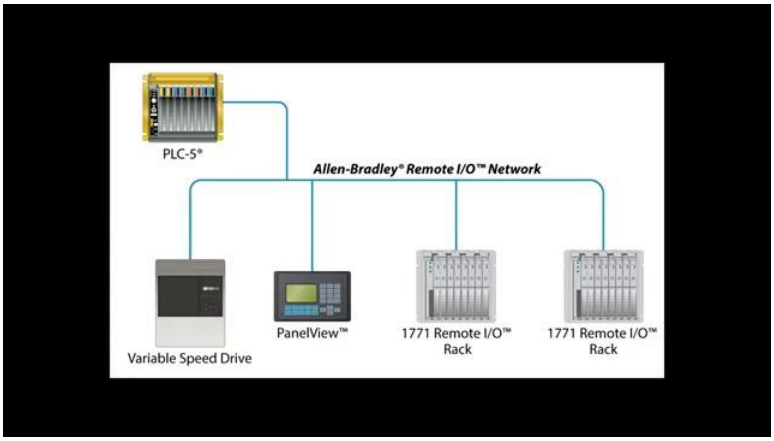


[2m:56s] Sometimes the IO hardware will be physically closer to the actual instrumentation that is being monitored and controlled, while the PLC is located closer to a control room and is in a much safer location.

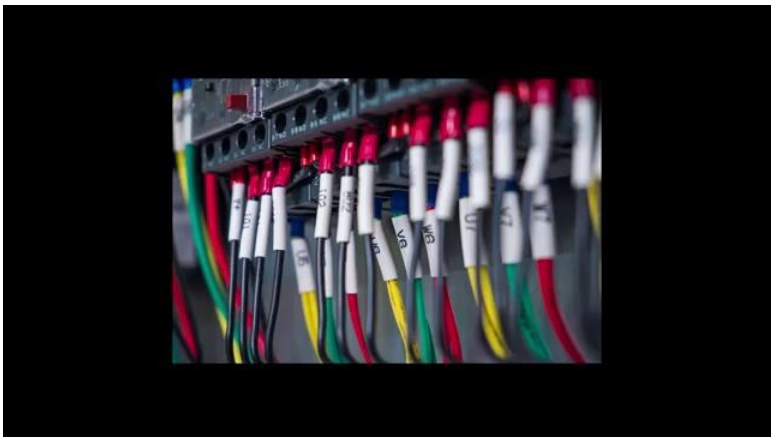
[3m:11s] However, in this scenario, it is still necessary for the PLC to receive the data that is being collected by the IO Hardware.

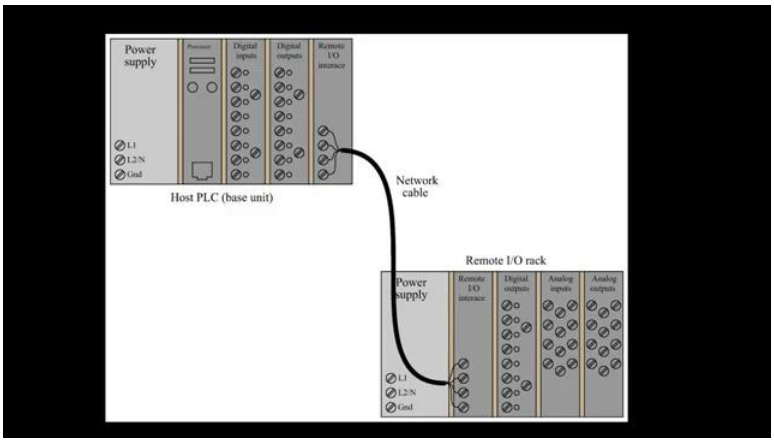
[3m:18s] This is typically done via some ethernet protocol, although other protocols can be used.

[3m:25s] By using a protocol such as Ethernet IP or Modbus TCP, the IO portion of the hardware and PLC can send and receive high amounts of information back and forth,



[3m:36s] allowing the PLC to receive all of this necessary information being collected by the remote IO portion of the hardware. As you can imagine, one major advantage to having this type of remote IO configuration is that you can significantly limit the amount of traditional wiring that needs to be run. If the remote IO section is located close to the locations of the devices and instruments that are being controlled and monitored, the amount of wiring becomes much less. If you were to locate your IO in the same location as the PLC, which may be a further distance from the physical devices, wiring becomes much more challenging. This flexibility allows for many different types of hardware configurations to occur when using a remote IO setup. One disadvantage to using remote IO is that all of the signals being communicated rely on one point of communication between the PL and the remote IO portion of the hardware. If this communication is lost or interrupted, you will likely lose all of the data that is being received and the ability to control that hardware. There are ways to put in redundant communication channels that can help with this potential downfall,





[4m:54s] but it is something that should be considered when designing your PLC and IO systems. With some basic understanding of how remote IO systems work and why we use them, you will better be equipped to deal with them when you encounter this type of hardware.

[5m:11s] You will also be able to know if using this type of system might make sense for your specific situation. For a full line of PLC and IO hardware, as well as thousands of other products, please go to our website. For more information or other educational videos, go to RSPSupply.com, the Internet's top source for industrial hardware. Also, don't forget, like and subscribe.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