How to read wiring diagram

A wiring diagram is a type of schematic that uses abstract pictorial symbols to show all the interconnections of components in a system. Wiring diagrams are made up of two things: symbols that represent the components in the circuit, and lines that represent the connections between them. Therefore, from wiring diagrams, you know the relative location of the components and how they are connected. It's a language engineers need to learn when they work on electronics projects. Wiring diagrams are often used in engineering and educational fields to illustrate how electronic devices are built. Wiring diagrams are easy to draw and understand. Professionals can study wiring diagrams to determine if electronic devices have been set up properly and safely. In addition, they allow anyone to understand how devices are made up, and can facilitate repairs as well. A schematic , or schematic diagram, represents the elements of a system with abstract and graphic symbols instead of realistic pictures. A schematic diagram focuses more on comprehending and spreading information rather than doing physical operations. For this reason, a schematic usually omits details that are not relevant to the information that it intends to convey and may add simplified elements to help readers understand the features and relationships. A wiring diagram also named electrical diagram, elementary diagram, and electronic schematic is a graphical representation of an electrical circuit. Wiring diagrams are widely used for circuit design, construction, and maintenance of electrical and electronic equipment. Wiring diagrams can be divided into two categories - pictorial wiring diagram and schematic wiring diagram. Start a wiring diagram design using industry-standard symbols that everybody understands. Here are the symbols that are often used when creating wiring diagrams. The symbols below all come from Edraw. It shows partially from the built-in electrical symbol library. Wiring diagrams use simplified symbols to represent switches, lights, outlets, etc. Here is the wiring symbol legend, which is a detailed documentation of common symbols that are used in wiring diagrams, home wiring plans, and electrical wiring blueprints. To read a wiring diagram, you should know different symbols used, such as the main symbols, lines, and the various connections. To read a wiring diagram, first, you have to know what fundamental elements are included in a wiring diagram, and which pictorial symbols are used to represent them. The common elements in a wiring diagram are ground, power supply, wire and connection, output devices, switches, resistors, logic gate, lights, etc. A list of electrical symbols and descriptions can be found on the "electrical symbol" page. A line represents a wire. Wires are used to connect the components. All points along the wire are identical and connected. Wires on some places need to cross each other, but that does not necessarily mean that they connect. A black dot is used to indicate the injunction of two lines. The main lines are represented by L1, L2, and so on. Usually, different colors are used to distinguish the wires. There should be a legend on the wiring diagram to tell you what each color means. Usually, circuits with more than two components have two basic types of connections: series and parallel. A series circuit is a circuit in which components are connected along a single path, so the current flows through one component to get to the next one. In a series circuit, voltages add up for all components connected in the circuit, and currents are the same through all components. In a parallel circuit, each device is directly connected to the power source, so each device receives the same voltage. The current in a parallel circuit flows along each parallel branch and re-combines when the branches meet again. How to make an electrical wiring diagram easily? Using EdrawMax to create your own electrical wiring diagram. Also, you can use massive wiring design diagram symbols and elements from libraries in left menu to customize your wiring design diagram. Step 5: Besides, you can share your diagram with others via social media and web page. Or publish your diagram in EdrawMax template gallery to show your work with others. If you are still confused the steps of how to create a wiring diagram in EdrawMax, here is a video guide to help you understand how to create a professional wiring diagram in detail. EdrawMax is a powerful but easy-to-use wiring diagram software that makes it easy to create professional-looking wiring diagrams based on pre-formatted wiring diargams templates and examples - with no drawing required. The smart wiring diagrams symbols are designed with auto generation arrows, allowing users to add and connect shapes easily. The tool has several categories for almost all types of industries, and each category further has numerous templates to choose from, thus saving you a lot of time that you would otherwise waste in structuring a diagram, wiring diagram for this example, from scratch. Here are some examples showing brilliant works done by Edraw wiring diagram software. This harness wiring diagram shows how to match up the wires for each connection to the wiring harnesses. Create an electrical wiring diagram to display wire connections and the physical layout of an electrical system or circuit. Semiconductors are used extensively in eletrical circuits and most of them are crystals that are made of silicon. According to this article, there are mainly four parts to illustrate what is the wiring diagram, to tell you the symbols of wiring diagram design diagram, and to show you how

easy and helpful EdrawMax wiring diagram tool is, then shows some wiring diagram templates and examples. Creating a perfect wiring diagram with EdrawMax is an effective way to design. EdrawMax is an easiest all-in-one diagramming tool, you can create wiring diagrams and any other type diagrams with ease! With substantial wiring diagram symbols and cliparts, making wiring diagrams could be as simple as possible. Also, it supports to export your work in multiple formats and share your work with others. Get started to create your wiring diagrams now! EdrawMax is an advanced all-in-one diagramming tool for creating professional flowcharts, org charts, mind maps, network diagrams, UML diagrams, floor plans, electrical diagrams, science illustrations, and more. Just try it, you will love it! Electrical Wiring Diagram - EdrawMax. Electrical Diagram How To. Diagram Symbols. This article helps you learn about the basics of wiring diagram - what symbols to use, how to read, and how to make wiring diagrams. What's Wiring Diagram. Part 1: What is The Wiring Diagram. Part 2: The Wirign Diagram Symbols. Part 5: Wiring Diagram Examples. Part 6: Conclusion. Get Started! You Will Love This Easy-To-Use Diagram Software EdrawMax is an advanced all-in-one diagramming tool for creating professional flowcharts, org charts, mind maps, network diagrams, UML diagrams, floor plans, electrical diagrams, science illustrations, and more. Ongoing donations help keep the site running. Contribute to this website by clicking the Donate button. Many thanks to all who have donated. Home Beginners Read Circuit Diagram. This articles shows how to read circuit diagrams for beginners in electronics. Learn to read electrical and electronic circuit diagrams or schematics. A drawing of an electrical or electronic circuit is known as a circuit diagram, but can also be called a schematic diagram, or just schematic. Circuit or schematic diagrams consist of symbols representing physical components and lines representing wires or electrical conductors. In order to learn how to read a circuit diagram, it is necessary to learn what the schematic symbol of a component looks like. It is also necessary to understand how the components are connected together in the circuit. Probably the simplest circuit that can be drawn is one that you may have seen in a school science class: a battery connected to a light bulb as shown below. Each electronic or electrical component is represented by a symbol as can be seen in this simple circuit diagram. Lines used to connect the symbols represent conductors or wires. Each symbol represents a physical component that may look as follows. The physical circuit for the above circuit diagram may look something like the image below, although a more practical physical circuit would have a light bulb holder and clamps that connect to the battery terminals. A light bulb holder would have screw terminals to connect the wires to, and a socket to screw the light bulb into. Battery clamps would allow the wires to easily be connected between the battery and light bulb holder. Typically the actual battery type and bulb type would be specified in a component list that accompanies the circuit diagram. More information on the bulb and battery type could also be included in the circuit as text. For example, the battery may be specified as a The light bulb may be specified as a 12V 5W incandescent bulb, or 9V 0. Components in a circuit should always have references, also called reference designators , used to identify the components in the circuit. This allows the components to easily be referenced in text or a component list. A battery may have the reference designator "BAT" and a light bulb may have a reference "L". Because there could be more than one battery or light bulb in a circuit, reference designators will usually always end with a number, e. BAT1 and L1 as shown in the circuit below. A second light bulb in the circuit would then have the reference designator L2. Circuit diagrams or schematic diagrams show electrical connections of wires or conductors by using a node as shown in the image below. A node is simply a filled circle or dot. When three or more lines touch each other or cross each other and a node is placed at the intersection, this represents the lines or wires being electrically connected at that point. If wires or lines cross each other and there is no node, as shown at the bottom of the above image, the wires are not electrically connected. In this case the wires are crossing each other without connecting, like two insulated wires placed one on top of the other. In the circuit below, two light bulbs are connected in parallel to a battery power source. It can be seen that the top terminals of the two light bulbs are connected together and to the positive terminal of the battery. We know this because the three terminals or connection points have a node where they intersect. The bottom terminals of the bulbs are connected to each other and to the negative terminal of the battery, because the second node shows these connections. In the series circuit below, two light bulbs are connected in series. No nodes are necessary in this circuit to show the bulbs connecting to each other and to the battery because single wires are connecting straight to each other. Nodes are only placed if three or more wires are connected. When starting to learn to read electronic circuit diagrams, it is necessary to learn what the schematic symbol looks like for various electronic components. The Start Electronics Now electronics course for beginners consists of a series of tutorials for beginners in electronics. Following the course explains how to read basic electronic circuit diagrams while

building the circuits on electronic breadboard. The course includes a list of basic electronic components with their schematic symbols where beginners can learn what the physical components and their symbols look like. After a four part introduction, the first tutorial in the electronics course shows the circuit diagram of a simple LED and resistor circuit and how to build it on breadboard. Basic components for this tutorial include an LED, resistor and battery which can all be found in the beginner's component reference. The best way for beginners to continue learning how to read circuit diagrams is to follow the course and build the circuits from each tutorial. Recent Donors: Donations Received. Blog YouTube Donate. Beginner's Articles About Electronics. How to Read Circuit Diagrams. Using a Multimeter - First Steps. Making a Battery Clip Pluggable. Making a Stripboard Circuit. Soldering Wire to a Loudspeaker. Too Tight Breadboard Problem. An electrical wiring diagram could be a single page schematic of how a ceiling fan should be connected to the power source and its remote switches. A wiring diagram may include the wirings of a vehicle. For example, how the horns are powered and connected to the controller on your steering wheel. Or an electrical wiring diagram can be a page document including all the electrical wirings of an electrical control panel in a huge factory or plant. Wiring diagrams may follow different standards depending on the country they are going to be used. So, when you see a wiring diagram for the first time, you may need some time to analyze it and become familiar with its layout and symbols. Normally the very first step to learn reading a wiring diagram is becoming familiar with the symbols of the equipment and each wiring diagram is supposed to have a page or two for this purpose. Remember that these symbols may have some minor differences in different wiring diagrams depending on the ECAD software they have been designed with. First of all, there is a rule of thumb in standard wiring diagrams that you should read the diagram from left to right and from top-down. So as an exception, we should start from the downside and this is where the three-phase power enters the panel. The terminal strip is a mark that refers to a group of terminal blocks with the same voltage level or the same purpose. From these terminal blocks, we move on to a three-pole circuit breaker with thermal and short circuit protection capability. This means that all of the contacts, contactors, circuit breakers, etc. Therefore, when you see a closed contact in an electrical wiring diagram, that is a normally closed contact and the rest of the contacts should be open. We have a great article about NO and NC contacts and their actual application examples that you can read it here. After closing this circuit breaker manually, the power flows toward some power distributer bars, from which some branches can be taken. Wire Tags are the combination of some letters and numbers installed on the wire or cable and are used to show you to which device or terminal block a wire or a cable should be connected. Wire tags are very helpful in case of troubleshooting so that when a wire gets out of its connection point, you can easily look at the wiring diagram and figure out where it should be connected again. It is used to feed the power receptacle or socket, the heater, and the fan. Before we continue to the next page, you may ask what these numbers on top of the page are. This is a very good question! Actually, these are the column numbers and they have divided each page of this drawing to 10 columns. As you see, there are some devices in each column and we can use these column numbers in combination with the page number to address different devices, contacts, terminal blocks, and so on, in other pages. For instance, the main three-phase power is shown with some arrows and numbers on the top right-hand side of the page. And there you go! And how do I know that?! Below the coil, you see the contact NO Contact of page two and also the other NO and NC contacts of this relay with the addresses they have been used in this drawing. On page two, the mains power source is feeding a volt power supply and it provides us with a voltage of 24 with 10 amps of capacity. From there, we have extended this voltage using some terminal blocks so that we can deliver the power to different instruments, PLC cards, PLC CPU, or whatever device which needs 24 volts to power on. But wait! There are a variety of terminal blocks in the market. In this case, to save some space in the panel, we have used some double-Level terminal blocks. They occupy the same space as the ordinary terminal blocks but we can connect two wires to each side of them. In the following, we have a branch that delivers the 24 volts power to page 12 column zero, but with two interlocks! For example, here, without having those interlocks enabled, our 24 v cannot reach page 12, column 0. In fact, reading the datasheet of the equipment is a very important and inevitable stage of designing a wiring diagram. In this way, our volt power will be transferred to page 12, column zero. You can read Part 2 of this article here. Thanks for reading another article. Please spread the word by sharing this article:. Join Us Free! Hey Mateo! Happy you liked this blog post. Thanks for the good stuff. Indeed I have been looking for something like this. Am glad to meet you. God bless you all. Hey Emmanuel! Thank you very much for your visit. Please stay tuned for future videos. Your email address will not be published. Save my name, email, and website in this browser for the next time I comment. Submit Comment. Before you continue, let's join to our newsletter to receive

more free content. How to Read Electrical Diagrams? Spend Some Time on Understanding the Standards! They may have different layouts depending on the company and the designer who is designing that. First Things First! Wiring Diagram Symbols. Every wiring diagram includes: â€" Hardware components, â€" Power sources, â€" Ground chassis, â€" Terminals, â€" Some wires of course! This page is known as Legend and abbreviation page. In the Legend and Abbreviation page you can see: â€" A three-phase AC electric motor symbol â€" A solenoid valve symbol â€" An MCCB with thermal and short circuit protection â€" A contactor the coil and its contacts and all the other electrical symbols you need to read the wiring diagram. But in AutoCAD electrical, it looks like this:. Wiring Diagram Rules of Thumb! Exactly like reading a book! But sometimes, designers make some exceptions to have a better layout such as this page. For example: â€" In England or Austria, the voltage level is volts with 50 hertz of frequency â€" In the United States, a three-phase power source will produce volts with 60 hertz of frequency. Every standard wiring diagram should be drawn in the neutral condition. How to Read Wiring Diagrams. One of the branches goes into a two-pole circuit breaker. What is a Wire Tag? And Device Tag. There are the tags for the devices within the panel as well. This transformer converts the volts to a single-phase volts. How to Address a Component in Wiring Diagrams. Let me explain it by some examples! All of them have a 2. As another example, the number below this contact says page and column 6. And there it is! The same tag, KA as we had expected. It looks like a coil. But not the coil of a contactor; the coil of a relay. What are Double-Level Terminal Blocks? What is Electrical Interlocking? An interlock means a condition. This is the only way we have to take to fully understand these drawin

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gs. Remember that the designer of this wiring diagram had to refer to the datasheet of this equipment to complete his job. We should always do the same thing for all of the equipment used in the process. Name Email Join Us Free! Our YouTube Channel. Subscribe Now! Bitebo Numbere on December 24, at PM. Amirhossein on December 25, at PM. Hi there! The upcoming video is the next part of this video series. Stay tuned! Mateo Mwale on December 29, at AM. Amirhossein on December 29, at AM. Ahmed on January 17, at AM. Please the video and pics on page are very small to see and its not zoomable in both tab and pc Reply. Amirhossein on January 18, at AM. Hi Ahmed, we are trying to add them to this blog post shortly. Emmanuel N on February 8, at PM. Amirhossein on February 9, at AM. Submit a Comment Cancel reply Your email address will not be published. Contact Us Have a question or suggestion? Follow Us. Youtube channel. Subscribe Me! Close this module. Hey, wait! Email Enter your email address.