

THE

GE 90-30 SERIES

FIELD GUIDE

Avoid costly
downtime &
extend the life of
your GE 90-30 PLC



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Section 1: Extending the Life of Your PLC

Our team at Qualitrol International is dedicated to helping your team stay on top of maintenance and to keep your systems going.

We've compiled this guide of best practices to help you better maintain your GE 90-30 PLC and prepare for unexpected failures.

With more than five decades of experience with GE's most popular controllers, our expertise is in your hands to stop problems from happening—and to efficiently handle them once they've already happened.

From common maintenance procedures to more specific questions, we've pulled this information about GE 90-30 PLCs to help you get back on track in the event that your systems stop working.

Let us help you make your system more reliable and less likely to fail. We prepare you for any future disasters you might currently be unable to tackle.

Welcome to the GE 90-30 Field Guide from Qualitrol.

Section 2: The 90-30 Hardware

Sometimes the most effective steps are also the simplest. By properly maintaining your hardware, you can sidestep disaster and have a healthy system.

Keep Necessary Backup Components Ready

Components fail. It happens.

If you want a repair, we can certainly get that done—but how much easier would your life be if you had the exact replacement you needed on hand?

Replace the component, then get yours repaired. Now you have an additional spare on hand.

GE suggests keeping at least one of each component, especially those with high failure rates, at your factory for a speedy recovery of your systems.

For parts that have a high failure rate, schedule a replacement before they stop working to maximize your maintenance routine and factory productivity. These include any component that generates heat or drives a current. They also include output modules.

Qualitrol International has the professional methodology to determine what you should carry with our [Risk Assessment](#). Our program does all the legwork for you, leaving you with concrete knowledge about what should be in stock.

Keep spares on hand to prevent a disaster that could have been a quick fix.

Replace Batteries Before They Fail

The battery for your PLC processor will need to be replaced, at maximum, every three years. Depending on how old your system is and how hot it gets, it could be sooner.

Schedule a time to switch out your battery before it fails. 90-30 PLCs have a backup battery in place to protect your program should the main battery fail. Your system can keep working with a battery that's about to go bad, but why risk it?

Don't be scrambling for a backup of your program or a new battery when your old one finally fails.

When your battery has failed, the BATT light on your CPU will be red. If your battery is in good standing, the light will not be lit up at all.

Here's how to replace your battery:

Step 1: Locate the Battery

The battery is located on the bottom of your CPU on the backside of a small door that opens up into a compartment. The battery is connected to the power supply, which is located in the rear of this compartment.

Step 2: Disconnect the Battery

Disconnect the battery from the power supply at the rear of the battery cavity. After you do this, your BATT LED should be red. At this point, your backup battery is keeping the system running.

Step 3: Replace the Battery

- Using a small screwdriver, insert the tip into the battery cover removal slot. This will be located beneath the battery cover.
- Loosen the cover gently with the screwdriver.
- Remove the battery cover with your fingers.
- Disconnect the battery connector by reaching into the battery compartment with your fingers (not a metal object).

- Remove the old battery from its place on the battery cover.
- Plug in the new battery connector.
- Fasten the new battery into the clip on the battery cover.
- Snap battery cover back onto power supply.

Change Power Supplies

We mentioned output modules are among the parts that bear the brunt of the system and will need to be replaced sooner than other components. The same is true for power supplies.

Just like your battery, the power supplies will need to be replaced sooner than other components. You should plan on doing a swap every five years or potentially sooner if your system runs hot.

These supplies work hard, so keeping units on hand is recommended. You may even consider keeping more than just one of each in stock!

Fortunately, your GE 90-30 PLC has a backup battery so you don't lose your program when you remove the power supply.

Don't Skip Scheduled Maintenance

Keeping up with maintenance is easier said than done. Skipping your maintenance tasks seems like such a small thing but can be detrimental to your systems.

In other words, small problems that go ignored can turn into huge disasters.

We're here to make your maintenance routine a little easier with our outline of the most important tasks.

1. Check Analog Input Devices

You always want your analog components to be in good calibration. We recommend you follow the manufacturer's schedule for maintenance to prevent issues.

These practices may include:

- Checking the voltage; do this by changing the voltage and ensuring that the input module shows the change.
- Configure I/O channels properly; do this by checking the channel settings and confirming they match the sensor wired to that channel. They'll need to match your PLC configuration.
- Ensure values are within range; all I/O modules have defined ranges. If the value is outside of the defined range, there's likely a problem with the wiring or sensor.
- Measure the actual voltage going to or from the device; this will help you tell if the issue is with your device or the PLC.

2. Keep Airborne Contaminants Out

Keeping your PLC maintained is crucial to enabling its function in a harsh environment. Airborne contaminants such as chlorine can affect your PLC's functions as they are extremely corrosive.

Don't let airborne contaminants continue to impact your PLC until it just stops working. Whether you experience a total shutdown or just an irregular error, these problems could be the result of contaminants.

The good news is that you can regularly check for conductive and airborne contaminants by doing visual inspections. Check for dust remnants in your cabinets. If you see black dust, this is indicative of a larger issue.

You can use canned air during your inspections to remove dust. Ensure the cabinet seal is functioning properly, as this could allow unnecessary dust to accumulate inside the cabinet.

3. Keep Cables and Connections Secure

Loose connections are the result of many problems we see here at Qualitrol. Simply by checking connections and cables, you can eliminate simple problems and ensure things are secure in the face of heavy vibrations.

4. Audit Your Wiring System for Electromagnetic Interference (EMI)

When working with high voltages and currents, EMI is a constant concern.

We often see situations where the PLC install just didn't take EMI interference into account. The truth is that high current wires produce major EMI. Depending on the location of these wires, problems can arise for components that operate at a lower current.

To solve this problem, you can do an audit of your current wiring setup to help identify sources of EMI and stop interference before it happens. An excellent opportunity to do this is when making or updating your wiring diagrams.

Disarrayed analog signals or disrupted communications are a sign of EMI and should be evaluated. If you've ruled out wires that carry high currents as a source, check the contactors on your output modules. These can be a source of EMI, particularly if they're aged.

Section 3: The 90-30 Software

When problems happen to your 90-30 software, be sure to follow our guide to ensure your system stays up and running until you can safely fix the problem.

Back-Up Your Program

This is the first step to take before trying to assess any problem with your 90-30 PLC. With these legacy systems, all it takes is the wrong hit of a key to wipe out your program.

Having a backup of your current program ensures that your PLC operation is safe until you either upgrade to the latest software or resolve the issue.

In fact, backing up your program any time changes are made is a good idea!

Upgrade to the Latest Software

Often, when software issues arise with your 90-30 PLC, the software is so old that changes can't be made to it. The programming software just isn't available.

The good news is that upgrading to the newest software means more features and ease of use. The most current software is the GE-supported Proficy software.

Upgrading to Proficy for your 90-30 PLC ensures that your system's software is up-to-date and capable.

Fortunately, you can upgrade to Proficy without immediately affecting your plant. After you transition the software, you can remain with your 90-30 for a little while longer before upgrading the hardware for a smooth transition.

Updating your firmware will ensure the updated Proficy software can communicate with the firmware, further alleviating any potential problems.

When you allow your firmware to become outdated, your software won't be able to communicate and you'll get a connection error. Make sure the two are able to communicate through having the most recent version installed.

Section 4: Basic Troubleshooting Suggestions

By checking some basic yet crucial hardware and software on your PLC, you can determine the source of most major problems.

CPU and Power Failures

Regularly checking your diagnostic fault tables can help you catch issues before they become larger problems. Although fatal fault errors are obvious when they happen, other problems may be less noticeable until they get worse.

The first place to start is checking your LEDs when it comes to locating the source of the problem with your 90-30 PLC. These will be on the front of your power supply.

There are four LEDs to check—PWR, OK, RUN, and BATT. Here's how to tell the health of each of these indicators with the help of your diagnostic fault tables.

PWR. The Power LED is indicative of your power supply. When the light is green, your supply is in good standing. If there's no light at all, you'll need a battery to keep the program running while you change the power supply.

Since the 90-30 has eight distinct modules for power supply, you'll need to consult the diagnostic fault tables to determine which one is causing the problem.

OK. This LED is all about your CPU health. If the LED is green, it's working. If the LED is out, you'll need to replace the CPU. This is a problem that's likely the result of a hardware failure in your CPU module.

Your 90-30 has 17 different CPU modules, so you'll need to check the fault tables identify which one is responsible for the outage.

RUN. This light is indicative of the status of your CPU—when it's running properly, the LED is on. If the LED is not on, this means there's been an error that's stopping your CPU from running. You'll need to consult the fault tables to learn why.

It's worth noting that if you have failed I/O devices, this will not affect the run status of your CPU and you'll need to look elsewhere to fix this problem.

BATT. This is one LED that should not be lit up if your battery is working properly. If the light is red, however, your battery needs to be replaced. You can do this while the PLC is on.

Install the new battery before you remove the failed battery; there will be two connectors for this purpose. Don't worry about losing your program; the 90-30 has a backup battery so your PLC will still operate without the failing one.

Utilizing the Diagnostic Fault Tables

The two fault tables you need to be concerned with are those for I/O and for the CPU. The diagnostic fault tables contain detailed information about what went wrong. Utilize them to your best advantage!

This includes the rack and slot position of the module that's failed. There will also be a time and date on the problem, indicating how long the issue has been happening. You can resolve the problem and then clear the fault tables.

The diagnostic fault tables are a great tool in order to conduct preventative maintenance as well as to get to the root of major problems.

Remember, although an LED indicator may not tell you when something's wrong, the fault tables always reveal the true status of your hardware.

Section 5: 90-30 Best Practices

Your 90-30 PLC was made to run no matter what. The great thing about this is that it'll last for a long time with only the most routine maintenance. The unfortunate part about this is that when something goes wrong, the right person usually isn't around to fix it.

At Qualitrol, we constitute your total support system for PLC health for your 90-30. Knowing who to turn to—and what to do—when your system fails is crucial to coming through the crisis unscathed.

Let's learn how you can quickly fix the issue and know what to do when problems happen. After all, nothing lasts forever.

Stay Current with Training

Although your system may not change for some time, your software eventually will. Knowing the latest developments in GE-supported software can help you more easily recover when a glitch happens.

Qualitrol International fully supports the training of technicians in the field so problems can more quickly be resolved. Our training is featured on [our blog](#), our [YouTube Channel](#), and our [Tech Support Portal](#).

We even come on-site to conduct trainings for your factory floor team for 90-30 PLCs. You can find out more about our training programs [here](#).

We invite you to check out all we have to offer to keep current and know how to best solve problems when the time comes.

Have Resources When You Need Them

Keeping things like important documents, manuals, and troubleshooting guides handy when you need them can make a huge difference.

No, we don't mean keeping them right on your PLC. Put them in a safe place that's well-known and easily accessible. You can even keep a copy of the manufacturer's control manual digitally, so you don't have to take up limited space.

Although it may seem trivial for a system that hasn't failed in years, it'll save you crucial moments when downtime happens.

Since your 90-30 is often older than your technicians, having the right resources in place can get knowledge in the hands of the people who need it most.

Don't skimp on the important stuff—keep guides, documents, and control manuals available. You won't regret it! (Unless, of course, you're keeping it on your PLC and it's generating dust and heat).

Update System Wiring Diagrams

If your wiring diagrams haven't been updated in a while, you're setting yourself up for trouble when errors occur.

The perfect opportunity to update your system wiring diagrams is when you conduct your EMI audit. Bringing an expert in to evaluate the problem usually requires that you have current diagrams available and ready for use.

Your wiring diagrams will show which devices are connected to input and output ports on your 90-30 PLC. Drawings of your system as well as all its connections should be included.

Once you have this information, you can utilize the module LEDs to find out which device is faulty and where.

Keeping your system wiring diagrams in your cabinet ready to be used is an invaluable step in your troubleshooting process.

Advanced Tips from Professionals

It's not easy to avoid that feeling of panic when your systems stop and you can't figure out what's going on. Fortunately, the experts at Qualitrol are here to help.

If you're at a loss for resources, aren't sure whether your maintenance has been kept up on, and aren't getting any major errors from your LED indicators, our engineers can help walk you through the problem.

Our services extend far beyond just helping you avoid that in-the-moment disaster from a component failure. We conduct repairs, sell remanufactured parts, and conduct on-site services.

From trainings to EMI audits to risk assessments, our professionals have decades of experience in the industry and are ready to help.

Migrating Your 90-30 PLC

When it's time for you to upgrade your 90-30, remember that migration to GE's RX3i is the most cost-effective and simplest upgrade path on the market.

You can keep your same program, use the same footprint in your panel, and even use some of the same 90-30 I/O.

GE makes the migration path smooth and the advantages of moving to the RX3i are huge. Our engineers can put together a migration path designed just for you whether you'd like a phased or full approach.

We begin with a risk assessment to determine how prepared you are to continue with your 90-30. When migration time approaches, we can discuss how the transition to the RX3i would benefit you and how we can help you make the switch.

Give us a call at 1-800-794-9385 or visit [our website](#) to contact us and discover more. We look forward to helping your 90-30 PLC operate at its best and migrate when the time is right!

ABOUT QUALITROL

Qualitrol International is the repair and remanufacturer division of Cimtec Automation. We have installed, serviced or repaired hundreds of thousands of PLC systems over the past 20 years and hire the most knowledgeable automation engineers in the world.

Qualitrol is the only factory-authorized GE 90-30 Repair Center in the world and is also the only place you can still get new GE 90-30 PLC parts.

Workmanship, Functional Testing, and Product Presentation are the cornerstones of Qualitrol International's Remanufacturing and Repair processes

When you need quality parts fast....

When you need quality repairs.....

When you need the best support...

You need Qualitrol International

