

UR FREQUENTLY ASKED QUESTIONS

1 What is the purpose of the backup battery? What happens if the battery is drained?

The battery backs up the oscillography and data logger information, and keeps the real-time clock running. If the relay is powered, then the battery is not used at all and should not be drained.

2 What does the "Battery Fail: Pull Tab/Replace" message mean?

There is a pull-tab that is located on the power supply module. This pull-tab keeps the backup battery out of the relay circuitry so that if the relay is left unpowered for long periods before installation, the battery will not drain. If the relay is placed in service and this message appears, it means that either the tab has not been pulled or the tab has been pulled and the battery has failed.

3 How can I program certain messages to scroll on the Front Panel display?

At this time, we do not yet have this feature. It will be in an upcoming firmware release scheduled for summer 2000.

4 Do I have to energize the relay or my spare modules once a year to prevent deterioration of electrolytic capacitors?

No, the manufacturing process for electrolytic capacitors has improved over the years to the point that it is now no longer required to power them up to prevent deterioration.

5 How can I link data from the UR into Microsoft® Excel applications?

You could use a Modbus client program or an MMS Client, such as AXS-4MMS. These software tools allow you to read or write data to the UR, and provide DDE (Dynamic Data Exchange) capability. Excel could be set up to read or write relay information using DDE through the Modbus client or MMS client program. Using this methodology, you could do things such as trending and data analysis, in addition to the capabilities provided by the relay.

6 What does the term "UR Family" mean?

This includes all GEPM relays designed using the common UR Platform of hardware and software.

7 What kind of distance is the L90 capable of with each of the fiber card types?

Maximum fiber optic cable length depends on factors such as terminating equipment's optical budget and data rate, fiber type, fiber bandwidth, and fiber losses in the link such as connector and splice losses. A proper system design for the application is required to answer such a question. You can use the L90 fiber calculator (<http://www.ge.com/indsys/pm/notes/l90fcalc.xls>) to calculate the approximate distance you can expect to achieve with each fiber type, depending on your system.

8 How do I upgrade my firmware or Boot code?

Once you have set up URPC to successfully communicate with your relay, within the URPC program go to Maintenance and Update Firmware. Double-click on Update Firmware. Click on OK, and then No when prompted to Save Firmware. Saying yes to Save Firmware will store the firmware file that is currently running in the relay to a file in a location on your computer that you specify at the same time it is loading the new firmware into the relay.

9 What happens if something goes wrong when upgrading my firmware or boot code? What does the "Bad Application CRC" message mean?

For Firmware:

The Bad Application CRC message indicates that the firmware in the relay is corrupt. This could happen if you lost control power or communications to the relay while loading firmware into it. To recover from this situation, put your relay in boot mode by doing the following:

1. Turn the power off to the relay.
2. Hold down the "0", "+/-" and "8" keys and then while holding them all down reapply control power to the relay. Continue to hold down the keys until the relay finishes booting.
3. Verify that the display shows something to the effect of "In flash programming mode at 115200".
4. Use URPC to upload the Firmware through the relay's front port. Ensure that the baud rate in URPC "Edit Site List" matches the displayed baud rate on the relay.

Note that when the relay is put in boot mode, you cannot use the RS485 or Ethernet ports for loading firmware.

For Boot Code:

The CPU module must be sent back to the factory in order to add the boot code and firmware to the FLASH memory.

10 Does it matter in what sequence the Flexlogic is programmed?

Flexlogic equations are evaluated in order from top to bottom.

11 Does GOOSE continuously broadcast states or only when the states change?

It does broadcast the states continuously, but you can set the delay between 1 and 60 seconds. The broadcast will be timed according to this delay. GOOSE messages are also sent on relay power up and on change of state and are re-transmitted according to the delay.

- 12 I have set up many UR relays to send and receive GOOSE messages. What happens if one of the relays that I have set up powers down or the communications are lost?**

The GOOSE data structure (as defined by IEC 61850) contains something called a "hold time". This tells remote devices how long to wait before if a device has gone off-line. The shortest re-transmit time is 1 second. The corresponding hold time is over 2 seconds (i.e. two consecutive messages must be "missed"). If a device goes "offline" the remote input will revert to a default state, which is programmable. The default state should be programmed to be "fail-safe" for the specific application.

- 13 How do you ensure a GOOSE message will be acted upon? Is there an algorithm that produces a number of retries if a message does not get through?**

GOOSE messages (actually they are MMS Information Reports containing GOOSE data structures) are triggered when one of the outgoing data bits changes state. They are repeated in a sequence in case a device misses one. All received messages are acted upon when they are received. If a device were to miss an incoming message (very unlikely to happen) it would have to wait until the message is repeated.

- 14 What are some of the benefits of using GOOSE over hard-wired digital inputs?**

1. Cost reduction by not requiring all the wiring between the Digital I/O in the relays
2. Cost reduction by not requiring labour involved in hardwiring Digital I/O in the relays
3. Cost reduction and time savings in verifying the system is connected correctly and the time to troubleshoot if it isn't
4. Reduction in system maintenance costs, less connections mean less congestion in the wiring of the substation.

- 15 How fast does the contact input read a change of state?**

The sample time for the contact inputs is 8 times a cycle (2.08ms @ 60 Hz) with two consecutive reads for security (recognition time is 2 to 4ms).

- 16 I have two substations, each with their own LAN. I want to connect these LANs together and send GOOSE messages between substations. What are some of the issues that I will encounter?**

You should connect your LANs by means other than routers, such as bridges. Routers require additional addressing information to forward data whereas bridges do not. As GOOSE messages are multicast messages and do not use TCP/IP, they cannot be routed. This is why GOOSE messaging will not work between two relays connected to the Internet.

If you interconnect your LANs by some type of bridging, the GOOSE messages should pass through to the other LAN.

Some reading material about bridging can be found on the Internet at:

<<http://www.freesoft.org/CIE/Topics/30.htm>> or <<http://www.whatis.com/bridge.htm>>

- 17 Would it be possible for a UR to act as a Master and write data to modbus slave device addresses, say a PQM?**

No, the UR does not have this ability.

18 If you were reading oscillography using URPC over Modbus/TCP, and you were also communicating with MMS and DNP 3.0 over the same Ethernet connection, how would they interact with each other? Which one has priority?

MMS can be polled for information, or will automatically transmit if UCA Reporting is enabled (feature present on upcoming 2.4x Firmware release). Whether you are using different protocols doesn't necessarily matter with regards to taking time and resources from the CPU. MMS or DNP may take more time than Modbus RTU for example, but the major factor with regards to time usage would be the number of connections that you have to the relay that you are using to communicate over. The more connections, the slower the communications would get.

All messages are dealt with as a buffer type of configuration - one at a time as the requests come in, not prioritized internally in the relay. GOOSE messages have a higher priority than anything else, but other than GOOSE messages, one protocol doesn't have priority over another.

19 How do I add a new module to my relay? How do I update my relay order code to show the new configuration?

When you order a UR module separately from the relay, it is shipped with a terminal block and an instruction sheet showing how to install it. Ensure that the control power to the relay is turned OFF while installing the module. After installing the hardware, re-apply control power to the relay, then go to Commands - Relay Maintenance - Update Order Code through the Front Panel Keypad (not URPC), select YES, then press enter. Cycle power to the relay and when after it goes through the boot process your new order code is now enabled and your new card is now seen by the relay. (Note: You still must configure the relay to use this new module.)

20 Can I remove modules from the relay when it is live?

No, module withdrawal and insertion may only be performed when control power has been removed from the relay.

21 What are Remote I/Os and Virtual I/Os, and what is the difference between them?

Remote I/Os are a part of the UCA/MMS protocol and are used to signal point information between two or more relays over Ethernet communications. Virtual I/Os are a feature which allow the user to program logic in the relay without having to hard-wire the logic external to the relay.

22 With the C and D type of CPU module there is an RJ-45 terminal available and called TEST ONLY. Why is this a TEST ONLY port? Why can't it be used for normal operation in service?

We are recommending the use of the RJ-45 connector for test purposes only due to the fact that fibre has a higher noise immunity than twisted pair. If fibre is not an alternative, the RJ-45 connector will still achieve the same communications as the fibre option, but will not be nearly as noise immune.

23 What does the "UNIT NOT PROGRAMMED: Self Test Error" message mean?

This message indicates that the relay setpoints have not been programmed and the relay is not in service. The UR will not operate any output relays when this condition is present. To eliminate this condition do the following:

1. Program all setpoints into the relay necessary for the application.
2. Go to Settings - Product Setup - Installation and use the value buttons to change Relay Settings to Programmed. Press Enter to store the value.

24 Why is there no F60 or L90, etc. type test report?

Since the hardware for all UR relays is common, there is only a UR Platform type test report.

25 The URPC program only seems to allow an interface connection of RS232, Ethernet, or Modem. Can we connect up a standard RS485 link to the URPC program and communicate at 115400 baud?

Think of the connection type in URPC as what is found on the computer you are using. The connections from your computer could be RS232, Ethernet, or Modem. In order to communicate to the UR using RS485, you would use an RS485 converter box. The computer you are using still sees that as an RS232 connection.

26 Why does the typical wiring diagram not match my relay configuration?

The typical wiring diagram is meant to demonstrate a "typical" example of how to wire the UR relay. The relay I/O are designed to be customer configurable in order to accommodate the wide variety of system configurations. Consequently, it would be impractical to represent this on a single wiring diagram. The pages following the typical wiring diagram in the manual show the wiring for all possible module types.

27 Why does the typical wiring diagram not match my relay configuration?

The typical wiring diagram is meant to demonstrate a "typical" example of how to wire the UR relay. The relay I/O are designed to be customer configurable in order to accommodate the wide variety of system configurations. Consequently, it would be impractical to represent this on a single wiring diagram. The pages following the typical wiring diagram in the manual show the wiring for all possible module types.