SIPROTEC 4 Device Hardware, Device Firmware & Device Parameter-set (P-set)

An operational SIPROTEC numerical protection relay consists of a hardware component, a firmware component, and the applied settings:

- The hardware component is the physical electronics that form the foundation of the device. The MLFB (ordering code) defines the mix of the different hardware options. The MLFB may also indicate setup options (such as if CT input jumpers are set to 1A or 5A, or if specific licensed features are enabled, e.g. Auto-reclose)
- The firmware is the microprocessor code (i.e. the operating system) that provides the protection and control functionalities utilising the hardware
- The Parameter-set (P-set) is the set of all parameters (settings) that can be set for a SIPROTEC 4 device. The parameter-set may be specific to a given firmware version, or a range of firmwares. As the DIGSI 4 software for creation of setting files supports all SIPROTEC 4 devices, and all firmware versions, the Parameter-set can be seen as the bridge between the specific device firmware and DIGSI 4 software, ensuring the correct parameters are loaded.

All SIPROTEC Relay units are clearly labelled, and this information is also accessible via the HMI and setting files. The label shows specific order/versions information. For example: “7SJ8042-4EB96-3FB0+L0S /CC; Firmware V04.63.05 ; P-set: V4.62.04; BFXXXXXXXXXX”, is:

- The MLFB code defining the mix of the hardware options (i.e. 7SJ8042-4EB96-3FB0+L0S)
- Hardware version for the main body (i.e. /CC) [Communication cards and other slot in devices will have their own hardware and possibly firmware versions]
- Firmware version V04.63.05
- Parameter-set (device driver) V4.62.04;
- Serial number BFXXXXXXXXXX.

What is a Device Driver?

When browsing the SIPROTEC web site, the download file for updating DIGSI with new Parameter-sets are referred to as “Device Drivers”. These files are zipped .exe files, which will run an installer to load the Parameter-sets into DIGSI.(From this site, select the relay type in the Product/Version selection box, then select "Software and Firmware" in the "Downloads" selection box before clicking "Search")

The firmware for the protection relay, also available via the Siemens website, is clearly indicated as firmware. This is also a zipped exe file, which will install a universal SIPROTEC 4 firmware load programme (separate from DIGSI). With any firmware “zipped .exe” files, the firmware load programme is only installed if it does not exist. Where the firmware load programme does exist, then the new firmware is added and appears in the load programme selection list.

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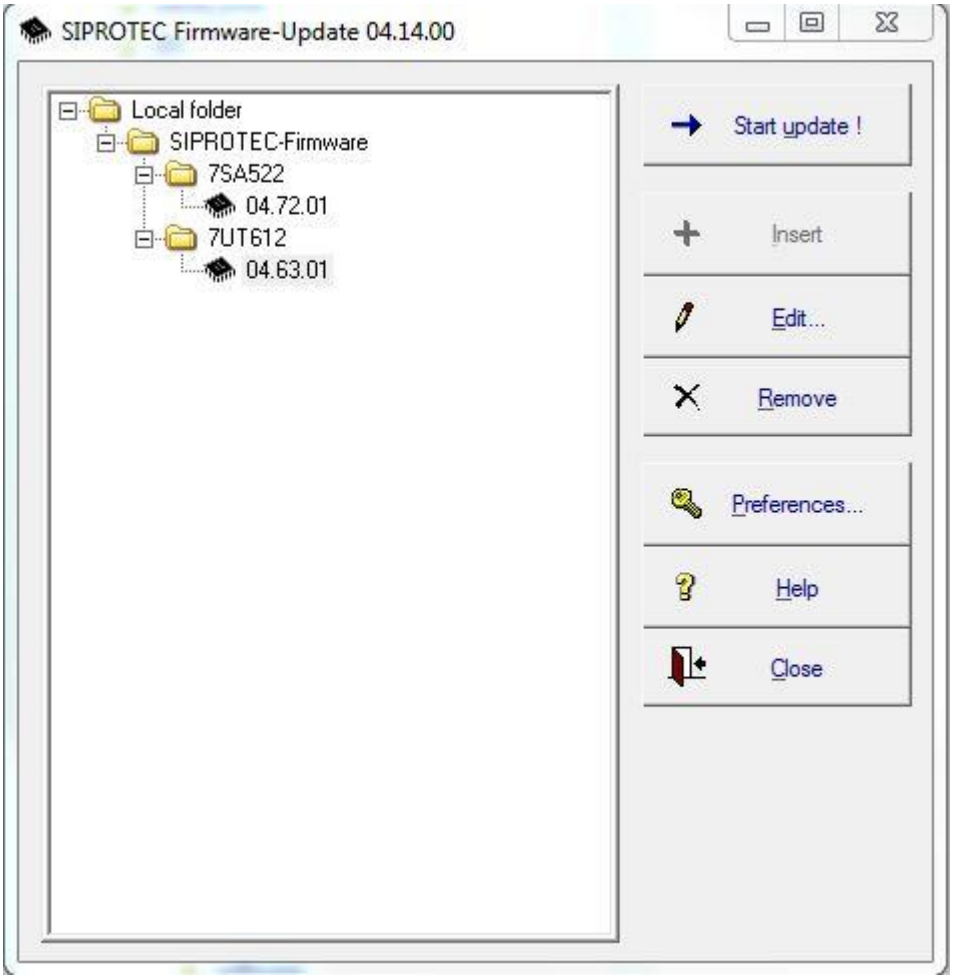

Figure 1. SIPROTEC Firmware Update tool supports multiple relay/firmware versions.

What version firmware/parameter-set do I use?

When creating a setting file from scratch within DIGSI, you are given the choice of what parameter-set to use. Note that within DIGSI you are selecting/using a parameter-set (not firmware). In selecting which parameter-set to use, you should confirm:

1. Whether the customer/utility specifies a particular version to be used.
2. That your copy of DIGSI actually has the latest parameter-sets loaded (if electing to use the latest version). Check the website.
3. That the parameter-set is supported by target relay firmware (one, the other, or both may need to change).

Normally the latest release is recommended. However, where you are adding to an existing project, it may be appropriate to use an earlier firmware version to enable compatibility with your existing installed systems. In the case where devices are communicating across Protection Data Interfaces (especially Differential Relays), firmware compatibility between line ends is a strict requirement. In some very limited cases, hardware versions may need to be considered to enable matching firmware to be used.

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The Siemens document “Service Information Firmware update SIPROTEC 4” is available from the web (or via HV Power). This provides instructions covering the process of updating relay firmware, updating DIGSI parameter-sets and the compatibility rules for different hardware/firmware and parameter-sets. Use this information to select the appropriate firmware and parameter-set (device driver) versions and then locate the files on the SIPROTEC website to download.

The most current version of “Service Information Firmware update SIPROTEC 4” can be accessed via this link. However, we recommend navigating via the website links to ensure you get the latest version.

Note that when installing an update from the web, not all minor versions of the parameter-set may be available/included (most likely it is the latest version). If you need a specific minor version, contact us for advice.

Is the parameter-set supported by target relay firmware?

The document “Service Information Firmware update SIPROTEC 4” provides the full details of compatibility. However, generally the firmware version and the parameter-set version have to match by the first number behind the decimal point. This means for a device with firmware version V4.1x any parameter-set version V4.1y is acceptable.

If the first digit after the decimal point differs, then the parameter-set should be updated. For example, a relay with Firmware V4.12 which is updated to V4.23, will need the “old” V4.1y parameter-set to be updated to V4.2y. DIGSI 4 has an “Update Parameter-set” function, described in the “Service Information Firmware update SIPROTEC 4” document. This document also lists some exceptions. A further document “Important Information regarding the Update of Parameter-sets” is also available giving further details of this process.

Supply of new relays

All customer orders for SIPROTEC devices will be supplied with the latest firmware and hardware, unless otherwise arranged. Where you are adding to an existing project, it may be recommended to specify an earlier firmware version to enable compatibility with your existing system. In limited cases matching hardware versions may be required. In the cases where multiple devices are communicating, such as across Protection Data Interfaces (Differential Relays) firmware compatibility is a strict requirement.

At HV Power, we keep records of all this information for any relay we supply, so call on us if you need help. As part of our delivery service, we can also install your desired firmware version.

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