

## UPGRADING MPS / FPS FLASH MEMORY

### (MPS-CTU / FPS-CTU FIRMWARE REVISION >1.10)

#### 1. GENERAL

The I/O module communications interface is used to upgrade the firmware in the flash memory of the MPS-CTU / FPS-CTU.

An RS-485 converter capable of operating at 57,600 bits per second is required. The converter should operate using "send-data control". Hardware handshaking using RTS is not supported. If the PC does not have a serial port, a serial-to-USB converter is required.

The SE-Flash (version 2.0 or higher) software is required for uploading the new CTU program to the MPS / FPS flash memory. The file containing the MPS-CTU / FPS-CTU firmware is in Motorola S-Record format and has the ".s19" file extension.

#### 2. PROCEDURE

Install SE-Flash.

Disconnect OPI, RTD, and DIF modules from the CTU.

Connect the RS-485 converter's communication lines to terminals 57 (-) and 59 (+) on the CTU. For the 485SD9TB, connect TD(B) to 59(+) and TD(A) to 57(-).

##### 2.1 INITIATING MPS-CTU / FPS-CTU FLASH UPGRADE

The upgrade is initiated by pressing RESET on the MPS-CTU / FPS-CTU when control voltage is applied. The ALARM and ERROR LED's will be ON and the TRIP LED will be OFF when the MPS-CTU / FPS-CTU is ready to accept commands from SE-Flash.

##### 2.2 UPLOADING THE NEW FIRMWARE

1. Start the SE-Flash program.
2. Select unit type as "MPS Motor Protection System" or "FPS Feeder Protection System". <Press Next>
3. Select the \*.s19 file containing the new MPS-CTU / FPS-CTU software. <Press Open>
4. Select the COM port for the converter. <Press Next>
5. Press Begin. Select "Yes" to request erase. The flash memory will not be erased until communication is established between the PC and the MPS-CTU / FPS-CTU. Once communication is established, the S-records will be uploaded. The S-record counter indicates the number of S-records sent.

#### 2.3 RESTARTING THE MPS-CTU / FPS-CTU

When finished, press Yes to restart the MPS / FPS.

When the MPS / FPS restarts, a non-volatile trip may occur and the following messages may be displayed:

NV Error (All)	All defaults have been loaded.
NV Error (Enum)	One or more enumerated set points (list items) has been added and initialized to the default value.
NV Error (Num)	One or more numeric set points has been added and initialized to the default.
NV Error (String)	One or more string variables has been added and initialized to the default.
NV Error (Event)	One or more event records are damaged (caused by a format change in the new revision).

As a result of a firmware update, the MPS / FPS may be locked in LOCAL. If the LOCAL LED is ON and the CONTROL SELECT key does not allow changing the control mode, the MPS / FPS is locked in local mode. Go to *Setup* | *Systems Config* | *Maintenance* | *Unlock Local* to unlock local control.

#### 3. SE-FLASH ERRORS

The following is a list of possible errors and a summary of how to correct them:

1. **The selected COM port is not available. Please try another COM port.**  
Click 'Back' and select another COM port. You must have a free COM port to use SE-Flash.
2. **The selected file could not be found. Please select another file.**  
The \*.s19 filename you previously selected has moved or changed. Click 'Back' and select a new \*.s19 filename.
3. **Could not establish communication with the unit. Please check all connections and try again, or consult the help file.**  
This indicates that SE-Flash has tried to send information to the unit, but there was no response. Verify that all connections between the computer, converter, and the MPS-CTU / FPS-CTU are correct.

**4. Error 'F': Buffer full error. Please try again, or consult the help file.**

This can occur if the \*.s19 file is damaged or incorrect, or if the connection to the unit is incomplete. Locate an undamaged \*.s19 file, and verify that all connections between the computer, converter, and unit are correct.

**5. Error 'C': Checksum error. Please try again, or consult the help file.**

The checksum in the S-record file did not match with its expected value after the unit has received it. See d).

**6. Error 'E': Flash erase error. Please try again, or consult the help file.**

The unit has attempted to erase the flash memory, but an error occurred. Try the process again; if the error continues to occur, the flash memory may be damaged.

**7. Error 'R': Byte programming error. Do you want to restart the unit?**

There was an error during programming of the flash memory. Try the programming process again. If the error reoccurs, there may be a problem with the flash memory.

**8. The S-Record file (.S19) is damaged or is in the wrong format. Please locate the correct file from [www.littelfuse.com](http://www.littelfuse.com). No changes were made to the unit.**

The upgrade file (S19) is verified for the correct format before SE-Flash attempts the upgrade. If SE-Flash detects an error or an incorrect format, it will not proceed with the upgrade. Obtain the correct upgrade S19 file from [www.littelfuse.com](http://www.littelfuse.com) and retry.

**9. The Quit (Q) command was sent because of 3 failed retries. Do you want to restart the unit?**

If SE-Flash has received a buffer or checksum error during programming, it will automatically resend the S-record. After three failed retries, you will see this message. Try the process again, and verify that all connections between the computer, converter, and unit are correct. See d) and e).

**10. Received an illegal character. Do you want to retry?**

An unexpected character was received from the unit. Click on 'Yes' to resend the current S-record. If the problem reoccurs, restart the programming procedure. Verify that all connections between the computer, converter, and unit are correct.

**11. An end-of-file has been reached without a correct delimiter from the unit. Please try again, or consult the help file.**

The end of the \*.s19 file has been reached unexpectedly. See d).

**12. You have encountered Error # (number) (description).**

This will describe any further errors that may have occurred. The error number and description will define the problem.

**13. SE-Flash has detected a previous update that was not complete. It has restarted the update sequence.**

This may occur if the connection between the computer and unit has been lost during a previous update. Verify that all connections between the computer, converter, and the unit are correct.

## 4. RS-485 CONVERTERS

The converter must be capable of switching from transmit to receive within 400 ms. The following converters from B&B Electronics ([bb-elec.com](http://bb-elec.com)) have been tested:

- 485SD9TB, port or +12 Vdc powered, DB9
- 485LPCOR, port or +12 Vdc powered, DB25
- 485CSP2, +12 Vdc only, DB25

The following Blackbox converter has been tested:

- IC109-A-R2