

Programming the **ADM1260** Using a Hexadecimal (HEX) File and Restarting the Sequence

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INTRODUCTION

The **ADM1260** has two 512-byte cells of nonvolatile electronically erasable program read only memory (EEPROM) from Address 0xF800 to Address 0xFBFF. The EEPROM is used for permanent storage of data that is not lost when the **ADM1260** is powered down. Each EEPROM is split in 16, 32-byte pages.

In the **ADM1260**, the EEPROM can be divided into six sections, as shown in Table 1.

This application note explains the steps required to perform a configuration update on the **ADM1260** in a system application. Use the same procedure to program the **ADM1166**, the **ADM1168**, and the **ADM1169** family.

ERASING THE EEPROM

If the EEPROM contains configuration and sequence data, erase the EEPROM pages before programming the new configuration and sequence data.

To erase the EEPROM space, perform the following steps:

1. Write 0x05 to Register Address 0x90 to enable an EEPROM block erase.
2. When erasing or accessing the EEPROM in the 0xFA00 to 0xFBFF address range, first halt the sequence engine. Write 0x01 to the SECTRL register at Register Address 0x93 to halt the sequencing engine. The sequence engine must be halted every time there is a read or write transaction to the sequencing engine EEPROM space.
3. When erasing or accessing the EEPROM in the 0xF800 to 0xF89F address range or the 0xF900 to 0xF9FF address range, write 0x01 to the BBCTRL register at Register Address 0x9C. To halt black box operation and enable access to the 0xF800 to 0xF89F address range and the 0xF900 to 0xF9FF address range of the EEPROM.

4. Write 0xF800 to the **ADM1260**, which is the starting address of EEPROM A, Page 1.
5. Write 0xFE to the device, which erases Page 0.
6. Repeat Step 4 and Step 5 and offset the lower address by 32 for every iteration. The address in Step 4 is 0xF820, 0xF840, 0xF860, and so on. Add a 25 ms delay between subsequent erase operations.

READING THE HEX FILE

The HEX file that generates with the configuration of the **ADM1260** follows the Intel hexadecimal format, which converts binary information into ASCII text form.

Each line of the HEX file contains hexadecimal numbers that encodes multiple binary numbers for representing data and memory addresses.

Figure 1 shows a typical record from the **ADM1260**.

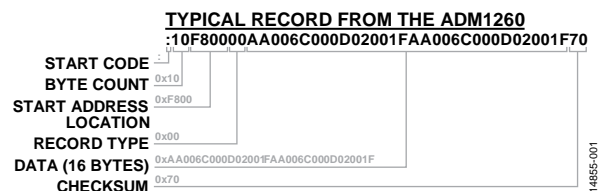


Figure 1. Typical Record from the **ADM1260**

Calculate the checksum of each line of data by the sum of the decoded byte values as follows:

$$10 + F8 + 00 + 00 + AA + 00 + 6C + 00 + 0D + 02 + 00 + 1F + AA + 00 + 6C + 00 + 0D + 02 + 00 + 1F = 0x390$$

The sum of the decoded bytes, 0x390, is AND'ed with 0xFF, resulting in 0x90. The twos complement of 0x90 is 0x70, which is the checksum.

The end of the hexadecimal file is represented by 00000001FF.

Table 1. EEPROM Address Mapping

Type	Start Address (Hexadecimal)	End Address (Hexadecimal)	EEPROM	Pages
Configuration Data	0xF800	0xF89F	A	0 to 4
Reserved	0xF8A0	0xF8FF	A	5 to 7
GUI Information (Only for ADM1260)	0xF900	0xF93F	A	8 to 9
User Space	0xF940	0xF97F	A	10 to 11
Fault Record	0xF980	0xF9FF	A	12 to 15
Sequence Data	0xFA00	0xFBFF	B	0 to 15

WRITE THE CONFIGURATION AND SEQUENCE DATA TO THE EEPROM

To write the configuration and sequence data to the EEPROM, perform the following steps:

1. Write 0x01 to Register Address 0x90 to enable the configuration register to update continuously.
2. Write 0xF800 to the device, which is the starting address of EEPROM A, Page 1.
3. Use Command 0xFC to write the number of bytes of data that is to be sent, which is 0x20 (32 bytes) followed by the 32 bytes of data.
4. Repeat Step 2 and Step 3 and offset the lower address by 32 for every iteration. The address in Step 2 is 0xF820, 0xF840, 0xF860, and so on.

RELOADING THE NEW CONFIGURATION AND RESTARTING THE SEQUENCE

After writing the data to the EEPROM, the new configuration can be loaded by writing 0x01 to Register Address 0xD8 (UDOWNLD). This write downloads the configuration data from the EEPROM.

To restart the sequence engine from a reserved state, unlock the SEDOWNLD register at Register Address 0xDB by consecutively writing 0x27 and 0x10 to Register Address UNLOCKSE at Address 0xDA, followed by writing 0x01 to the SEDOWNLD register.

In a multidevice system, it is only necessary to restart one of the [ADM1260](#) devices, which causes the remaining [ADM1260](#) devices, connected via IDB, to reset.