CM-1 Firmware Update Instructions

57-6041 Rev A

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1.0 Introduction

Dyacon provides free updates to the CM-1 weather station controller. Firmware may be done in the field. This document describes the remote, over-the-air (OTA) method and USB method.

Firmware release v122 was accompanied by a new Control Module Utility version, v0.8.0, which added an Update Firmware button. The USB firmware update will only work on units installed with v121 or later. If an earlier version is on your weather station, over-the-air update is the best method.

v122 (relative to v114) was a significant improvement in cell phone data performance. The cell phone interface was improved for better OTA updates, faster data transfer, shorter connection times, and better reliability. The bootloader was improved to provide a third level of validation for OTA updates. v122 also added the capability to update firmware through the USB port using Dyacon Control Module Utility (CM Utility) in addition to the over-the-air method.

2.0 Over-the-air (Remote) Update Method

Firmware updates can be initiated remotely. Hundreds of OTA updates have been run on Dyacon CM-1 controllers and never lost a unit. Multiple checks are done on the file before the bootloader is initiated. If a file is corrupted or interrupted, the controller will not update.

Due to recent improvements to the bootloader and transfer method, the binary file is dependent on the version currently on the unit.

2.1 Determining Current Firmware by SMS Text

If your weather station has an active cell phone, users can use their own cell phone to send the following text message to the controller:

    debug

The controller will respond to the calling number with two text messages similar to the following:

    20:04 Jun 13 16
    6.7 m/s 148.9 deg S:0
    6.2 m/s 142.5 deg
    3.9 m/s 137.4 deg
    6.3 m/s 156.8 deg
    14.3 C, 9.1 C
    71.0% S:0
    854.5 mb 0 14.4 C
    29.92 inHg

    Rain: 0.00 in, 0.00 in/hr
    Solar: 40 w/m^2
    13.02V 19C 13.2V Fast
    Sig: 27 SMS: 1
    FW:122 A:3 W:6

The currently installed firmware version is shown in the last line of the second text message (shown in bold face font).

Select the appropriate update procedure below based on the firmware version installed.

2.2   Update From Version 114 or Lower

To update to v122 send an SMS text message to your weather station's phone number:

> update 93eb updt160607.bin

Please note that other firmware version announcements will use a different text string to trigger the update.

The weather station controller will respond with the following text messages:

> Getting Update

> Updating

Following the "Updating" message, the controller will turn off the internal cell phone and write the new firmware to to memory. This will take several minutes.

The user can verify that the update was successful by sending the "Debug" request again.

If the firmware update fails, the following message will be returned:

> Update – Bad Download

Simply send the above update command again.

2.3   Update From Version 115 or Higher

To update to v122 send an SMS text message to your weather station's phone number:

> update 93eb 140079 updt160607.bin

Please note that other firmware version announcements will use a different text string to trigger the update.

The weather station controller will respond with the following text messages:

> Getting Update

> Updating

Following the "Updating" message, the controller will turn off the internal cell phone and write the new firmware to to memory. This will take several minutes.

The user can verify that the update was successful by sending the "Debug" request again.

If the firmware update fails, the following message will be returned:

> Update – Bad Download

Simply send the above update command again.

A YouTube video is available on this procedure.

http://youtube.com/dyacon

MS-100 Series Weather Station Firmware Update
https://www.youtube.com/watch?v=HjfVztG_fX4

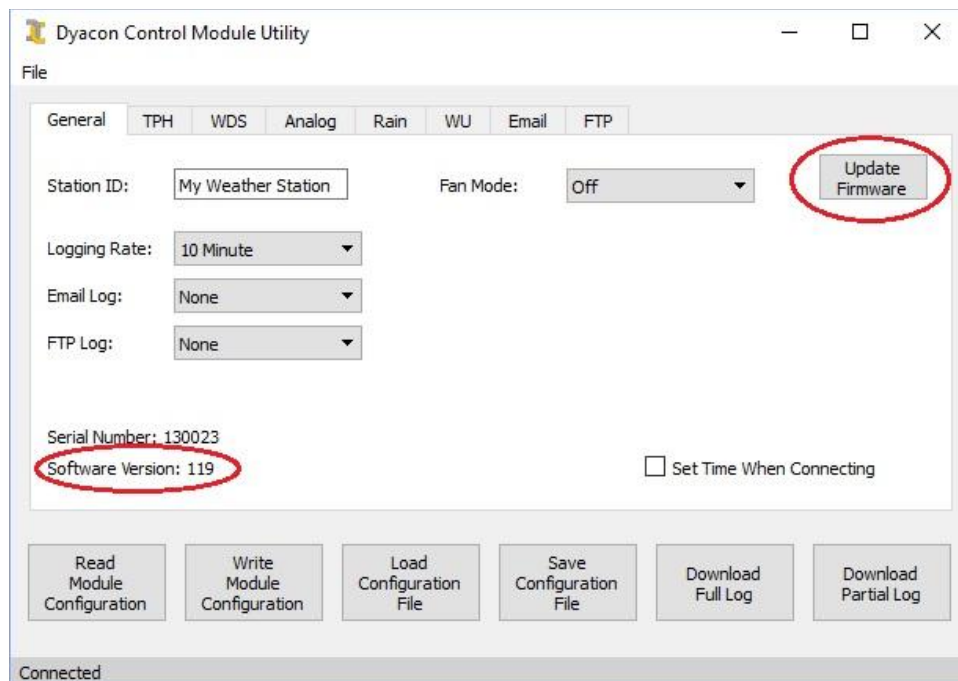# 3.0 USB Update Method (For FW 121 And Higher)

Firmware versions below 121 require using over-the-air update or a low-level programming device. If you do not have a cell phone installed, contact Dyacon for assistance.

Beginning with version 121, users may update the firmware through Dyacon CM Utility, v 0.8.0 or later.

CM Utility is a free program and can be downloaded from Dyacon.com and is found on all of the weather station pages and CM-1 page.

Run the utility on a PC and connect a USB A to USB B cable between the PC and the CM-1.

The controller should immediately connect when the cable is attached.
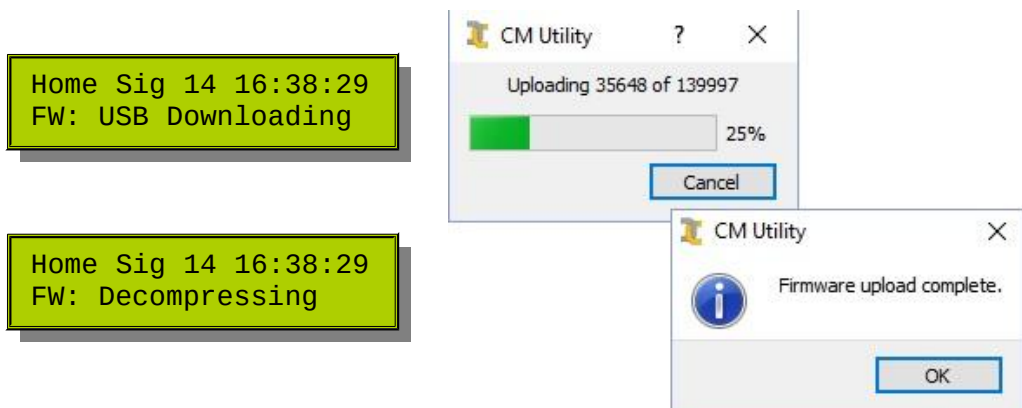

Click on Read Module Configuration.

Click on the Update Firmware button and navigate to the binary (.bin) file supplied by Dyacon.

With the file highlighted, select Open.

The utility will automatically start loading the new firmware. You will see the following messages on the PC and CM-1 display as the update progresses and the new image is loaded.

```
Home Sig 14 16:38:29
FW: Saving
```

```
Home Sig 14 16:38:29
Checking Image
```

```
Home Sig 14 16:38:29
Cell is Shutting Dow
```

```
Bootloader Started
Erasing
```

```
Bootloader Started
Writing
```

```
Bootloader Started
Verifying
```

```
Booting
```

The unit is now updated.

You can validate the firmware by paging to the serial number and firmware page.
Press ▼ (Down) six times.

```
SN: 130023
FW: 122 A:3 W:6
```

FW: CM-1 firmware version.
A: TPH firmware version.
W: WSD firmware version.

4.0 HELP!

If you would like Dyacon staff to run the update process or are having difficulty, just send an email to support@dyacon.com or call 435-753-1002.

5.0 Firmware Version History

Version	Description of Changes	Date
v87	Add "test wu" SMS command to test WeatherUnderground connection.	29 May 2015
v90	Add manual cell phone APN. Add Modbus Slave port settings.	08 Jun 2015
v91	Adds Modbus Slave functionality, including time setting register. Add manual setting of time to calculate daily rain values w/o cell phone connection.	16 Jun 2015
v92	Add web-bulb temperature to Modbus slave and SMS "X" message.	23 Jun 2015
v93	Implemented HTTP 1.1 for improved Weather Underground connectivity through GSM networks.	10 Jun 2015
v94 and v95	Change Modbus wind direction register to use corrected value.	30 Jul 2015
v96	Corrected rain gauge rounding error	28 Aug 2015
v97	Add system time update sync option when using CM Utility	
v101	Add estimated cloud base and density altitude to the METAR report.	Sep 2105
v102	Fixed email log transmission rounding error.	Nov 2015
v103	Fixed a rounding error that was causing temperature values between 0 and -1 to show as positive.	Nov 2015
v105	Corrects a glitch in the analog that would show large negative values when nothing was connected.	Dec 2015
v107	Add support for real-time clock on CM-1 Rev B, which began shipping Mar 2016.	Mar 2016
v114	Add support for HSPA cell phone modules. Fixed wind gust direction Modbus register. Added support or external real-time clock. Added battery voltage and solar charge controller Modbus registers. Added 1 hour interval for email and FTP log uploads.	Apr 2016
v118	Increased cell phone interface speed. Added firmware write validation to bootloader. Allow for padded OTA update files to workaround phone error. Allow for data-only cell phone accounts that do not have a phone number. New OTA update command format for FW< v114 and >= v115 units.	19 May 2016
v121	Add firmware update capability through USB port. (This is in addition to the previous over-the-air capability.)	02 Jun 2016
v122	Improve status messages during USB firmware update.	07 Jun 2016

REVISION HISTORY

Rev	Description	Author	Date
A	First release.	E. Bodrero	17 Jun 2016