Watlow CSV Creator Application for use with the Watlow RMA PLUS

Document Revision 1.002

Introduction

The Watlow CSV Creator application is used to configure Modbus, data logging, and configuration settings on the Watlow RMA PLUS. The application initially requires the RMA PLUS hardware in order to discover the unit-specific parameters to ensure that the created data log, and Modbus configurations are using parameters that exist in your specific RMA PLUS, and connected devices. This process also makes the configuration process much simpler than trying to manually configure the Modbus, and data logging files without device-specific information. The application uses a discovery process to extract the parameter information from the RMA PLUS module, and connected modules. The discovery process may be accomplished via an Ethernet or USB connection. In order to save the configuration to the RMA PLUS, you will need to be connected via USB to allow the PC to mount the actual drives in the RMA PLUS to save the configuration to the device. You may still create and save configuration files to your PC if you only have an Ethernet connection to the RMA PLUS.

Initial Setup

To use the application, you will need to copy the application directory from the SD card on your RMA PLUS to your PC. Once the application directory has been copied to your PC, double-click the CsvCreator.exe application executable. Once the application starts, the *On-LIne Params* tab is presented (See Image 1, below). When the application is started for the first time, click on the Settings tab, and configure your Ethernet and USB connections, as needed, as shown in Image 2, below. If you are configuring a serial connection, set *Use Serial* to true, and select the serial port you wish to use. If you need to change the serial port, disable it, save settings, and restart the application to select a new serial port. After your settings are configured, you will need to click the "Save Settings" button, and shut down, and restart the application for the settings to take effect. If you are not using the serial port, make sure it is disabled on the Settings tab. Disable the serial port, and save settings, and restart the application if the serial port is enabled, and not being used. Otherwise, your initial device discovery will be very slow.
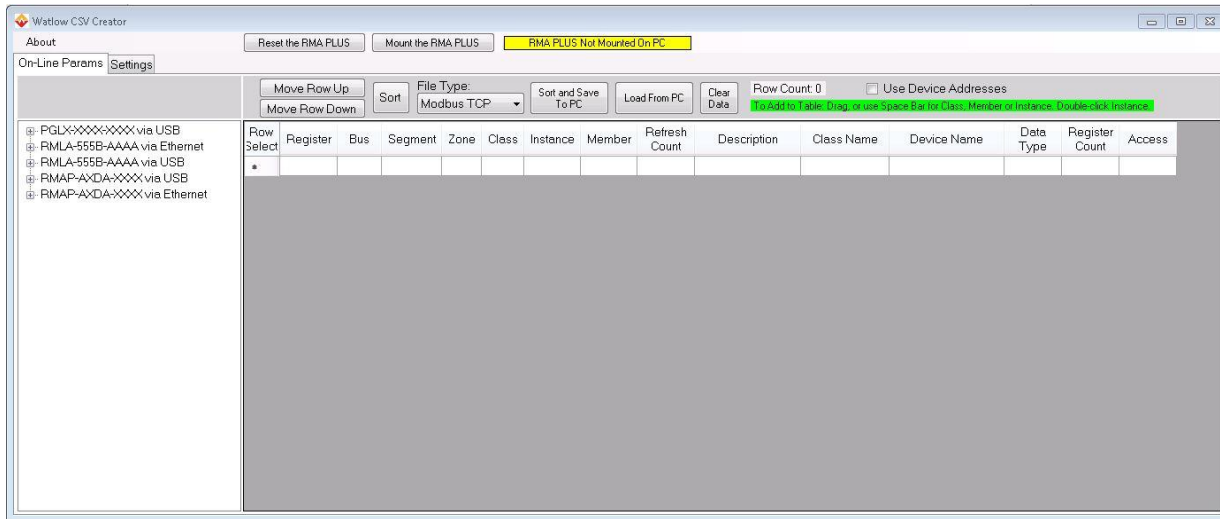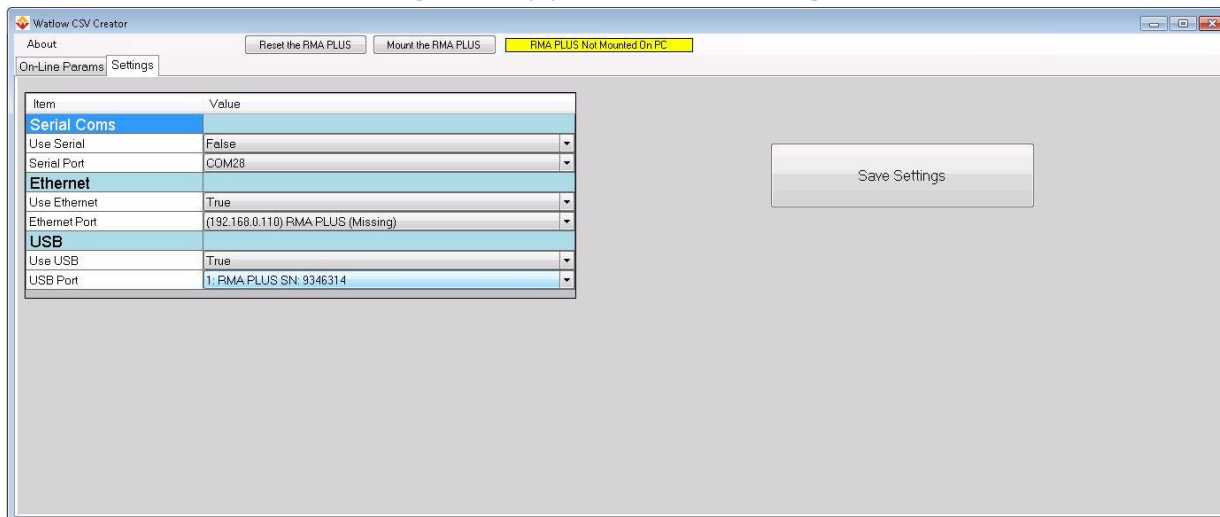
Image 1: On-Line Parameters Tab

Image 2: Application Settings Tab

When the application is initially invoked or during an RMA PLUS reset procedure, the application will discover all the devices connected via Ethernet or USB that are associated with the RMA plus device. Stand-alone devices not associated with the RMA PLUS won't be discovered. In order to rediscover any new devices, you will need to restart the application, or click the *Reset the RMA PLUS* button on the application, which resets the RMA PLUS, and restarts the application. All data in the table view is removed when the reset operation is started, so be sure to save any in-progress files.

General Usage

The device tree on the left shows a list of discovered devices associated with the RMA PLUS. It also indicates which interface the device was discovered on, by showing a "via USB" or "via Ethernet" label after the device part number. If you hover over the device shown in the tree, you will also get information related to the device zone number, and the IP address of the device if it is an Ethernet interface. Hovering over an instance field will display the initial or current value read from the control

Watlow CSV Creator Application

for that parameter. Each time you hover over a parameter, and then move off of the parameter, the parameter value is refreshed. If the parameter is an enumeration, the enumeration text is also shown in addition to the numeric value. Showing the value helps identify if it is the correct parameter. Devices connected via both USB, and Ethernet will be shown twice in the list. It does not matter which copy of the device you use to configure your files, as both interfaces will show the same information. Just remember, you will need a USB connection to save the configuration files back to the RMA PLUS. When a USB connection is not available, the configuration files may be stored on the local PC. **You must always save the table data to a file or clear the data from the table prior to switching file types via the pulldown menu.** The application will not allow you to change file types until you do one of the two above actions. This is to make sure the data is not lost.

Configuring Modbus Registers via the Application

The application allows the user to build a Modbus configuration file by selecting File Type "Modbus TCP", "Modbus RTU 6", or "Modbus RTU 7". These settings are stored in a file called "ModbusTcp.csv", "ModbusRTU6.csv", or "ModbusRTU7.csv" on the "NOR FLASH" drive of the RMA PLUS. In order to configure Modbus TCP, parameters for the RMA PLUS, and any slave devices, using user-assigned Modbus register addresses, the default File Type is used (See *File Type* pulldown menu). The menu also contains options to configure either of the Modbus RTU interfaces via different files on the RMA PLUS. The application is initially setup to configure Modbus TCP via the *File Type* pulldown menu, as shown in Image 3.

Selecting Parameters for Modbus and Data Logging

In order to select parameters to include in the Modbus, or data logging configurations from the RMA PLUS or attached devices, navigate the tree on the left side of the screen to view the classes, members, and corresponding instances available. These parameters are read from the devices to guarantee that the configuration files will only contain valid parameters. The user may then select an entire class (including all members, and instances) by dragging the class name into the on the right side of the screen. The class may also be added to the table by selecting the class name in the tree and clicking the space bar. The user may select all instances of a parameter by selecting a parameter name, and then dragging the member name into the table on the right. The user may also use the space bar to accomplish adding the parameters to the table. If the user wishes to only add a single member to the table, they may double click the instance label, or use the space bar, or drag the instance label to the table on the right. Some of the parameters have performance advantages when being read from the devices. These parameters will have a green background when displayed in the tree. They will also have a tooltip that says "Producer".

Image 3
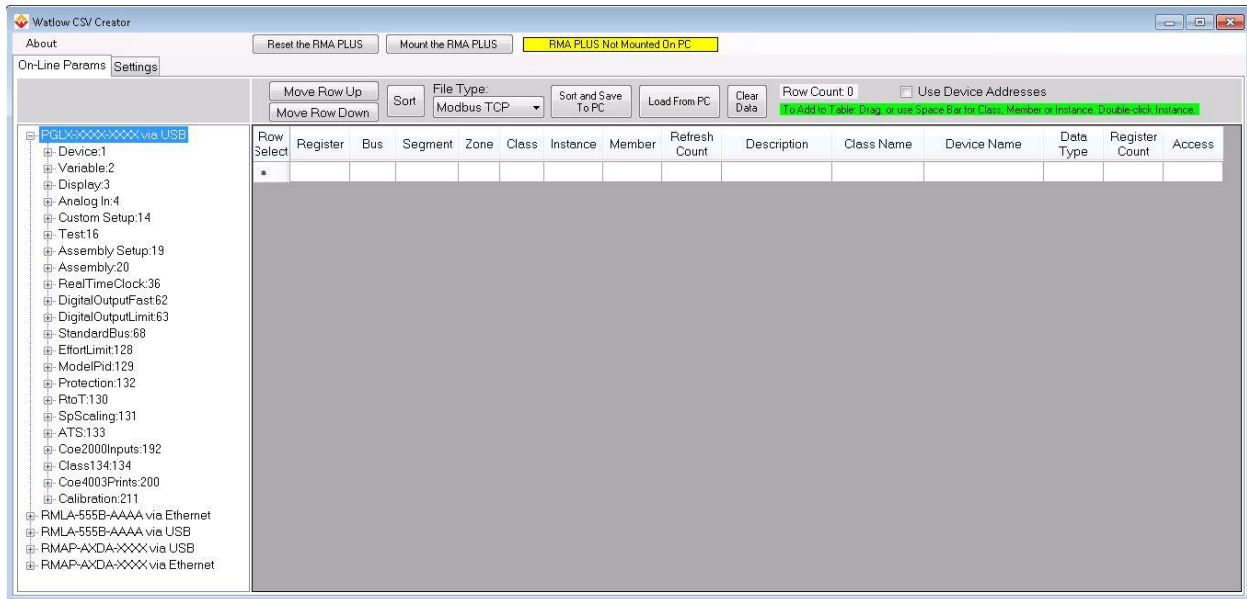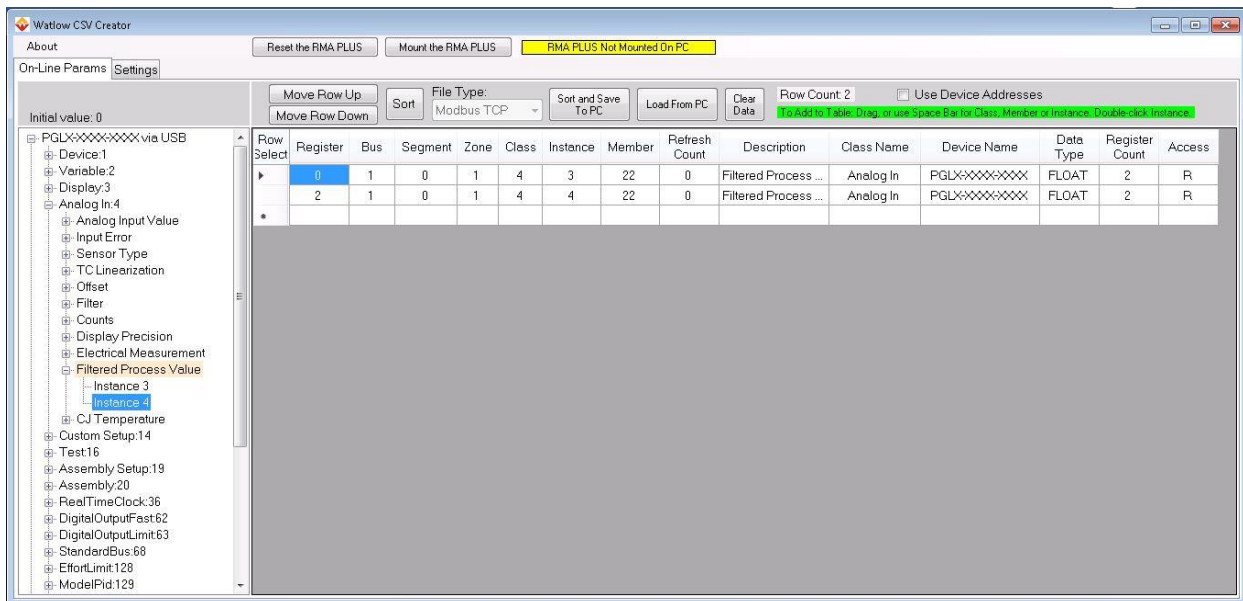
Modbus Default Register Addressing Mode

Image 4 shows the results of adding the Filtered Process Values, Instances 3, and 4, to the Modbus TCP configuration file. By default, the register addresses are automatically incremented as items are added to the table. You may override the register addressing by changing the register for a certain row, or group of rows. There are built-in tools that will help with this operation. The tools are accessible by right-clicking on the table. The tool options are "Delete Selected Rows", "Renumber Selected Rows", and "Add Separator Below Current Row". To select a row, or group of rows, click the leftmost column (Row Select) to select a single row. To select multiple rows, use the Row Select column, and the shift key. The renumber function assumes you select a group of contiguous rows. The function will renumber the group of selected rows, starting with the register address of the first selected row. The "Add Separator Below Current Row" option allows the user to add a separator to the table view for readability. In the event of any duplicate registers (Register column), in the Modbus files, the RMA PLUS will use the first occurrence in the file.

The table shows the parameter information, including some extra information that will not be saved to the configuration file, in order to minimize file size, to improve performance. All the column information to the right of the Description column will only be available upon initial load of the parameters. When the file is saved, or reopened, these columns will be blank, as the data is not saved to the files.

When the application is started, the status bar at the top of the window will show the current status of the RMA PLUS mount point on the PC. If the bar is yellow and shows "RMA PLUS Not Mounted ON PC", then the application is in a mode where any saved files will be stored on the PC, in a folder called UserFIles under the folder where the application was launched. Since the RMA PLUS requires the Modbus files to be sorted by register address (Register column), the application will sort the rows when the user clicks the "Sort" button. The application will also sort the register addresses on file save, to ensure that the Modbus configuration files always contain incrementing Modbus configuration data. If the user is editing, or saving any of the other configuration file types, sorted data is not required, so the Sort button, and sort-on-file-save functionality will be disabled.

Watlow CSV Creator Application

If the status bar on the top of the application is green and displays "RMA PLUS Mounted on PC X:", where "X" will indicate the drive letter where the NOR FLASH drive on the RMA PLUS on the PC. In the RMA PLUS mounted state, all of the file save, and file load functionality will be directed to the drive internal to the RMA PLUS. If the user wishes to override this functionality when an RMA PLUS is mounted, they may simply change the path, and filename in the file load, or save dialog windows, that are present during the file load, or save operations. The RMA PLUS must be mounted prior to selecting the file load or save button, or the drive will not be available for file operations. Based on the file type, and destination (PC or RMA PLUS), the file load, and save operations will default to the correct path, and filename used by the RMA PLUS for configuration. You may wish to save a backup copy of the configuration files to your PC. You can accomplish this by changing the path with the file load, and save functions, or using Windows File Explorer to copy the file to, or from the RMA PLUS.

Image 4

Legacy Modbus Register Addressing from RMA PLUS Connected Devices

In order to reuse existing Modbus applications, there is a mode in the application that will extract the legacy register map from each control, and add the legacy register to the file, instead of just incrementing the Modbus register as items are added to the table. If the product (RMC, RME) has more than one set of Modbus maps, be sure to configure the product with the correct map prior to starting the CSV Creator application. This will allow the CSV Creator application to pull the intended legacy Modbus map from the control. The legacy register addressing mode will persist between application executions, so you only need to change the setting once. To use the legacy mode, check the *Use Device Addresses* check box, and then close, and restart the application. Once this is done, the tree view on the left side of the screen will show the legacy registers of the connected devices to the right of the instance number. For non-legacy devices, or where the legacy decoder information is not found, the application will insert the new parameters as the next available location in the current list of parameters in the

table. In the event of any duplicate registers (Register column), in the Modbus files, the RMA PLUS will use the first occurrence in the file.

Image 5
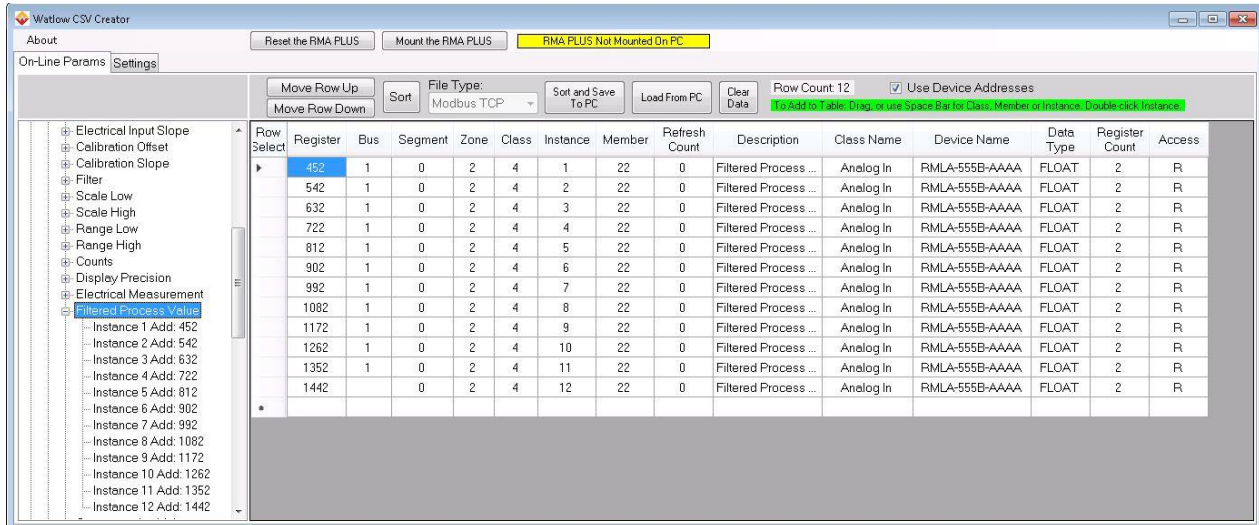
Applying the changes to the RMA PLUS

For the RMA PLUS to accept and start using the changes to the files, after they are written to the RMA PLUS' internal drives, the RMA PLUS either needs to be power cycled, or reset via the "Reset the RMA PLUS" button at the top of the application. **Be sure to save all files prior to pressing this button, as this button resets the RMA PLUS, and restarts the application, losing any information not previously saved to a file on the RMA PLUS, or PC**. You also need to save the table data, or clear the table prior to switching file types, as mentioned previously.

System Configuration Settings

The application allows the user to configure system settings by selecting File Type "Setup". These settings are stored in a file called "Setup.csv" on the "NOR FLASH" drive of the RMA PLUS. In order to edit the settings, clear or save any data shown in the table on the right side of the screen, and select "Setup" from the File Type pulldown menu at the top of the application. Then mount the RMA PLUS internal NOR FLASH drive by clicking the *Mount the RMA PLUS* button at the top of the application if the drive is not already mounted. You will see a green status at the top of the page indicating that the RMA PLUS drive is mounted, and which drive letter on the PC corresponds to the RMA PLUS NOR FLASH drive. Be sure to not corrupt this file, or your RMA PLUS will not operate correctly. If you need a reference regarding what data this file should contains, see Image 6.

Image 6: RMA PLUS Setup File Edit Mode
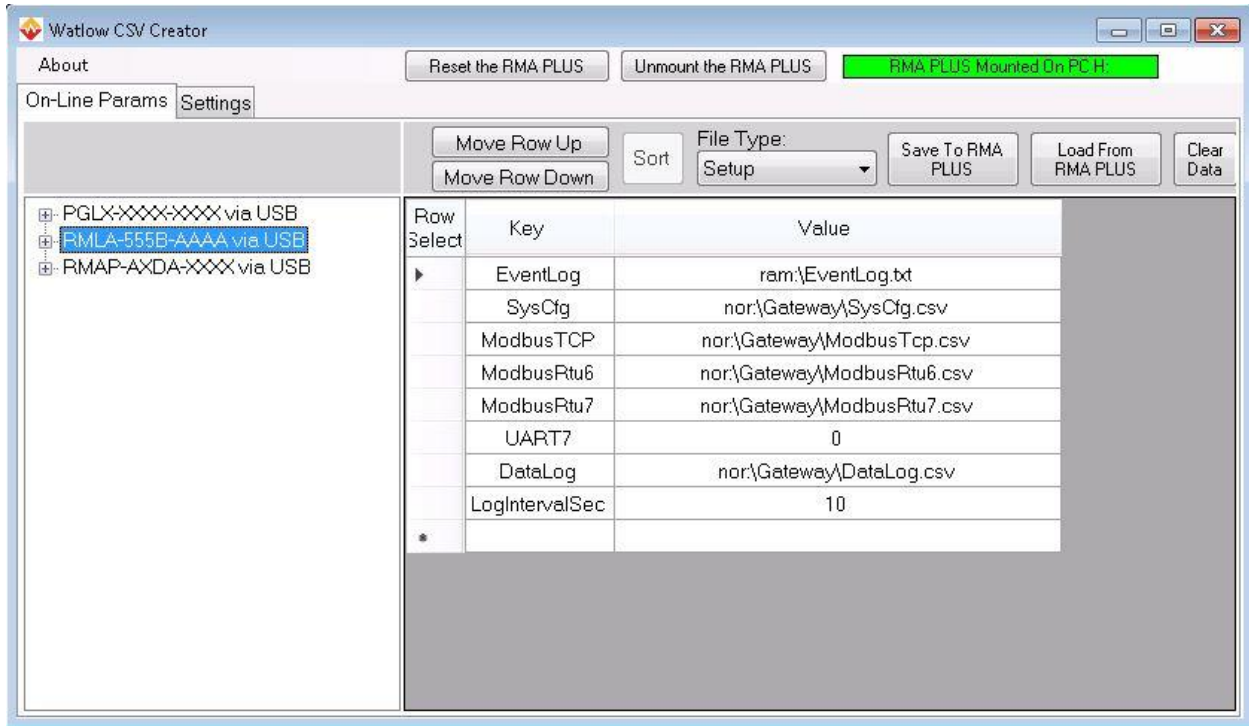
Data Log Configuration

The CSV Creator application may also be used to configure the data logging for the RMA PLUS. The parameter selection available will be the same as shown for the Modbus configurations above. The RMA PLUS, and all connected devices' parameters will be available for data logging. Like the Modbus Table, all parameters to the right of the description column will only be shown on the initial load of the parameters from the device, as they are not saved in the file. Image 7 shows a sample data log file being generated.

Image 7: RMA PLUS Data Logging Configuration

Watlow CSV Creator Application

Watlow CSV Creator Application