Managed MCP2210 DLL Documentation

Contents

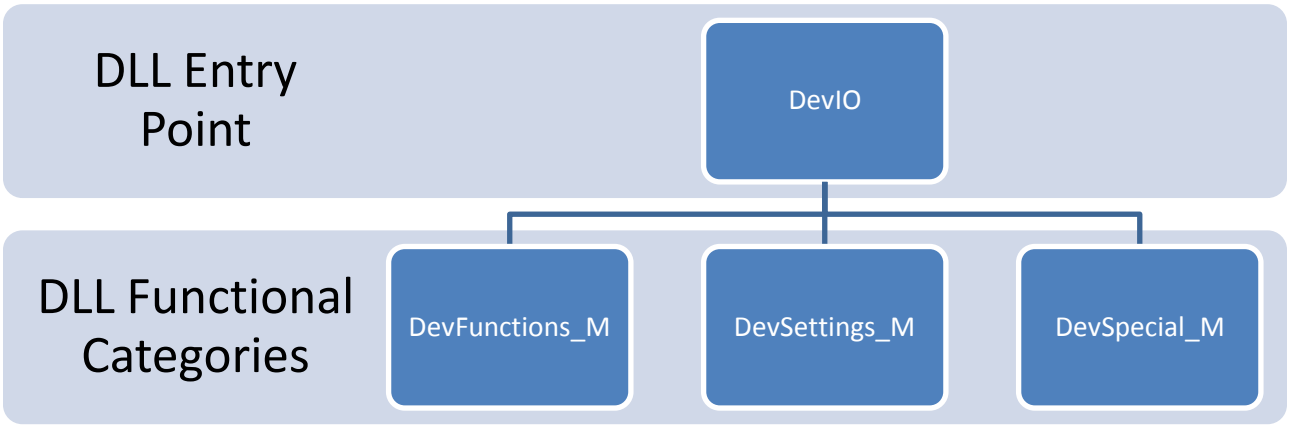
DLL Requirements

This is the key difference is between the managed and unmanaged DLL versions. The managed DLL runs within the managed Microsoft .NET environment and hence requires the **.NET framework (v2.0 or higher)** to be installed while the unmanaged DLL does not have this requirement. See below for a summary of the DLL requirements for each version.

DLL Version:	Requirements:
Managed	1. .NET framework (v2.0 or higher) 2. Microsoft Visual C++ 2008 Redistributable Package
Unmanaged *(Coming at a later date)*	1. Microsoft Visual C++ 2010 Redistributable Package

Managed DLL API Overview

The DLL entry point is through the class named DevIO and is broken up into two sub-classes under this main class: Settings and Functions. There is also a stand-alone class named DllConstants that is not shown in this diagram that provides convenient access to commonly used constant values in the DLL. The diagram below shows the DLL structure:



This structure makes the DLL very simple to use and is a very familiar interface for those who have programmed using .NET previously. All of the functionality within the DLL (with the exception of initializing the DLL which DOES take place at the DevIO class) is in these second-level classes (functional categories).

DevIO_M - API:

```
DevIO::DevIO(UINT32 VendorID, UINT32 ProductID)
```

Functions_M - API:

```
        ////   EEPROM Operations
int     DevFunctions_M::WriteEEProm(BYTE address, BYTE content)
int     DevFunctions_M::ReadEEProm(BYTE address)

        ////   GPIO
int     DevFunctions_M::GetGpioPinDir()
int     DevFunctions_M::SetGpioPinDir(WORD gpioDir)
int     DevFunctions_M::GetGpioPinVal()
int     DevFunctions_M::SetGpioPinVal(WORD gpioVal)

        ////   Password Operations
int     DevFunctions_M::EnterAccessPasswd(String^ passwd)
int     DevFunctions_M::GetPasswdAttmptCnt()
int     DevFunctions_M::GetPasswdAccessStatus()

        ////   SPI Bus Operations
int     DevFunctions_M::RequestSpiBusRel()
int     DevFunctions_M::TxferSpiData(array<Byte>^ txData, int numBytes, array<Byte^ rxData)
int     DevFunctions_M::CancelSpiTxfer()

        ////   Other Chip Status Information
int     DevFunctions_M::GetEvntCntFromIntPin()
int     DevFunctions_M::GetSpiBusRelExtReqStatus()
int     DevFunctions_M::GetSpiBusCurOwner()
```

Settings_M - API:

```
        ////   USB Related
int     DevSettings_M::GetVid()
int     DevSettings_M::GetPid()
int     DevSettings_M::SetVidPid(UINT32 vid, UINT32 pid)
int     DevSettings_M::GetSerialNumber()
bool    DevSettings_M::GetConnectionStatus()
int     DevSettings_M::GetPwrConfigSrc()
int     DevSettings_M::GetPwrConfigRmtWkupCpbl()
int     DevSettings_M::SetPwrConfig(int pwrSrc, bool isRmtWkupCpble)
int     DevSettings_M::GetReqdCurrentLd()
int     DevSettings_M::SetReqdCurrentLd(int current)
int     DevSettings_M::GetStringManufacturer()
int     DevSettings_M::SetStringManufacturer(String^ newString)
int     DevSettings_M::GetStringDescriptor()
int     DevSettings_M::SetStringDescriptor(String^ newString)

        ////   Chip Access Settings
```

```
int    DevSettings_M::GetPermanentDevLockStatus()
int    DevSettings_M::SetPermanentDevLock()
int    DevSettings_M::GetPasswdEnStatus()
int    DevSettings_M::SetPasswdEnStatus(bool onOff, String^ newPasswd)
int    DevSettings_M::SetNewPasswd(String^ curPasswd, String^ newPasswd)

       ////   Chip Settings
int    DevSettings_M::SetAllChipSettings(int whichToSet, array<Byte>^ gpioPinDes,
                                         int gpioDfltOutput, int gpioDfltDir,
                                         bool rmtWkupEn, BYTE intPinMd,
                                         bool spiBusRelEn)
int    DevSettings_M::GetGpioDfltOutput(int whichToGet)
int    DevSettings_M::GetGpioDfltDirection(int whichToGet)
int    DevSettings_M::GetGpioPinDesignations(int whichToGet,
                                         array<Byte>^ gpioPinDes)
int    DevSettings_M::SetGpioConfig(int whichToSet, array<Byte>^ gpioPinDes,
                                         int gpioOutputDflt, int gpioDir)
int    DevSettings_M::GetRmtWkupEnStatus(int whichToGet)
int    DevSettings_M::SetRmtWkupEnStatus(int whichToSet, bool enStatus)
int    DevSettings_M::GetInterruptPinMode(int whichToGet)
int    DevSettings_M::SetInterruptPinMode(int whichToSet, int intPinMode)
int    DevSettings_M::GetSpiBusReleaseEnStatus(int whichToGet)
int    DevSettings_M::SetSpiBusReleaseEnStatus(int whichToSet, bool spiBusRelEn)

       ////   SPI Settings
int    DevSettings_M::SetAllSpiSettings(int whichToSet, UINT32 bitRate,
                                         WORD idleCsVal, WORD activeCsVal,
                                         WORD csToDataDly, WORD dataToDataDly,
                                         WORD dataToCsDly, WORD txferSize,
                                         BYTE spiMd)
int    DevSettings_M::GetSpiBitRate(int whichToGet)
int    DevSettings_M::SetSpiBitRate(int whichToSet, UINT32 bitRate)
int    DevSettings_M::GetSpiIdleCsValue(int whichToGet)
int    DevSettings_M::GetSpiActiveCsValue(int whichToGet)
int    DevSettings_M::SetSpiCsValues(int whichToSet, WORD csIdleCsVal, WORD csActiveVal)
int    DevSettings_M::GetSpiDelayCsToData(int whichToGet)
int    DevSettings_M::GetSpiDelayDataToData(int whichToGet)
int    DevSettings_M::GetSpiDelayDataToCs(int whichToGet)
int    DevSettings_M::SetSpiDelays(int whichToSet, WORD csToDataDly, WORD dataToDataDly,
                                         WORD dataToCsDly)
int    DevSettings_M::GetSpiTxferSize(int whichToGet)
int    DevSettings_M::SetSpiTxferSize(int whichToSet, WORD txferSize)
int    DevSettings_M::GetSpiMode(int whichToGet)
int    DevSettings_M::SetSpiMode(int whichToSet, BYTE spiMode)
```

Special_M - API:

```
      ////   Multiple Device Support
int          DevFunctions_M::GetDeviceCount()
int          DevFunctions_M::GetSelectedDevNum()
String^      DevFunctions_M::GetSelectedDevInfo()
int          DevFunctions_M::SelectDev(int devNum)
```

DllConstants – API:

```
//The two constants below are the same - user chooses which is more intuitive
static const int OFF                              = 0;
static const int DISABLED                         = 0;
//The two constants below are the same - user chooses which is more intuitive
static const int ON                               = 1;
static const int ENABLED                          = 1;
//Constants to be used for all whichTo(Get/Set) variables in DLL functions
static const int CURRENT_SETTINGS_ONLY            = 0;
static const int PWRUP_DEFAULTS_ONLY              = 1;
static const int BOTH                             = 2;
```

DLL Error Codes

Nearly every function within the DLL will return an error code should something go wrong in the operation. Use this table to decipher what went wrong and what action to take in order to resolve the error.

Error Code Range and Category:

0 – 99 - Device Error codes;

100 - 999 - Error originated from DLL or was further interpreted by DLL

Error Code Table

Error Code	Error Description	Recommended Resolution
0	No error (Success)	N/A
-2	Device is busy	N/A
-3	Wrong password entered	N/A
-4	NVRAM locked	N/A
-8	SPI transfer in progress	N/A
-9	SPI Bus not available	N/A
-101	Board not connected	Check connection and device enumeration
-106	Writing to the device failed	Ensure DLL was initialized properly
-107	Reading the device failed	Ensure DLL was initialized properly

-201	Invalid parameter given (1st parameter)	1st parameter was invalid, verify parameters
-202	Invalid parameter given (2nd parameter)	2nd parameter was invalid, verify parameters
-203	Invalid parameter given (3rd parameter)	3rd parameter was invalid, verify parameters
-204	Invalid parameter given (4th parameter)	4th parameter was invalid, verify parameters
-205	Invalid parameter given (5th parameter)	5th parameter was invalid, verify parameters
-206	Invalid parameter given (6th parameter)	6th parameter was invalid, verify parameters
-207	Invalid parameter given (7th parameter)	7th parameter was invalid, verify parameters
-208	Invalid parameter given (8th parameter)	8th parameter was invalid, verify parameters
-209	Invalid parameter given (9th parameter)	9th parameter was invalid, verify parameters
-300	USB transfer in progress	N/A
-301	Invalid USB power configuration found	Re-configure device with a valid USB power config
-501	Chip access is password protected	You must enter access password to access settings
-502	Chip NVRAM is permanently locked	No modifications can be made to NVRAM
-503	Password attempt failed, <5 tries remain	Password failed, password mechanism still open for additional attempts.
-504	Password attempt failed, ≥5 tries	Password mechanism is now temporarily blocked. Must power cycle the device in order to unlock for further attempts at accessing the device.
-601	EEPROM write failed	N/A
-602	EEPROM read failed	N/A

Sample Code (C#) for a Managed Application

[Only a short sample is shown below. For a larger example, please see example code packaged with DLL]

```
using System;
//STEP 1:
//   Add the DLL as a reference to your project through "Project" -> "Add Reference"
//   menu item within Visual Studio
using MCP2210;     //<---- Need to include this namespace


namespace ConsoleApplication1
{
    class Program
    {
        static void Main(string[] args)
        {
            //Variables
            const uint  mcp2210_VID = 0x04D8;   // VID for Microchip Technology Inc.
            const uint  mcp2210_PID = 0x00DE;   // PID for MCP2210
            bool isConnected = false;           // Connection status variable for MCP2210
            //STEP 2:
            //   Make an instance of the MCP2210.DevIO class by calling
            //   the class constructor with the device VID and PID.
            MCP2210.DevIO UsbSpi = new DevIO(mcp2210_VID, mcp2210_PID);

            //STEP 3:
            //   Navigate the DLL classes to find your desired function. In this case,
            //   we choose to check the connection status.
            isConnected = UsbSpi.Settings.GetConnectionStatus();
            if (isConnected == true)
            {
                Console.WriteLine("The device is connected.\n");
            }
            else
            {
                Console.WriteLine("The device is NOT connected.\n");
            }

        }
    }
}
```

Sample Code (VB) for a Managed Application

[Only a short sample is shown below. For a larger example, please see example code packaged with DLL]

```
Imports System
'//STEP 1:
'//   Add the DLL as a reference to your project through "Project" -> "Add Reference"
'//   menu item within Visual Studio
Imports MCP2210          '//<---- Need to include this namespace


Module Module1
   Sub Main()
      '//Variables
      Dim mcp2210_VID As UInt32 = &H4D8   '// VID for Microchip Technology Inc.
      Dim mcp2210_PID As UInt32 = &HDE    '// PID for MCP2210
      Dim isConnected As Boolean = False  '// Connection status variable for MCP2210

      '//STEP 2:
      '//   Make an instance of the MCP2210.DevIO class by calling
      '//   the class constructor with the device VID and PID.
      Dim UsbSpi As MCP2210.DevIO = New DevIO(mcp2210_VID, mcp2210_PID)

      '//STEP 3:
      '//   Navigate the DLL classes to find your desired function. In this case,
      '//   we choose to check the connection status.
      isConnected = UsbSpi.Settings.GetConnectionStatus()

      '//Print the result to the console window
      If (isConnected = True) Then
        Console.WriteLine("The device is connected.\n")
      Else
        Console.WriteLine("The device is NOT connected.\n")
      End If

   End Sub
End Module
```

Detailed API Function List – DevIO

DevIO

```
Function:
      DevIO::DevIO(UINT32 vendorID, UINT32 productID)
Purpose:
      Sets the Vendor and Product ID used for the project. THIS MUST BE DONE IN ORDER TO
      BEGIN USING THE DLL!
Parameters:
     Inputs:
        vendorID - Assigned by USB IF (www.usb.org)
        productID - Assigned by the Vendor ID Holder
     Outputs:
         none
Returns:
       int - Contains error code.  0 = successful.  Other = failed
Example:
      MCP2210.DevIO UsbSpi = new DevIO(0x4D8, 0x00DE);
Notes:
      Call this constructor before any other function calls! This is the only way the DLL
      should be initialized.
```

Detailed API Function List – Functions_M

WriteEEProm

```
Name:
     WriteEEProm
Purpose:
     Write to the EEPROM
Parameters:
     Inputs:
         address (BYTE) - Location in EEPROM where to write the data
         content (BYTE) - Content to put in the EEPROM at specified address.
     Outputs:
          none
Returns:
     int - Contains error code.  0 = successful.  Other = failed
Notes:
     None
```

ReadEEProm

```
Name:
     ReadEEProm
Purpose:
     Read the EEPROM at the specified address
Parameters:
     Inputs:
         address (BYTE) - Location in EEPROM where to write the data
     Outputs:
         none
Returns:
     int - Contains error code or EEPROM data value.  Negative value if error,
               otherwise the function was successful and value returned is from EEPROM.
Notes:
    none
```

GetGpioPinDir

```
Name:
     GetGpioPinDir
Purpose:
     Get GPIO Pin Direction
Parameters:
     Inputs:
         none
     Outputs:
         none
Returns:
```

```
     int - If successful, return GPIO pin values in lower 9 bits.  Other = failed
Notes:
    none
```

SetGpioPinDir

```
Name:
     SetGpioPinDir
Purpose:
     Set GPIO Pin Direction
Parameters:
     Inputs:
         gpioDir (WORD) – What to set the GPIO pin directions as
                          Mapping(MSB to LSB - only lower 9 bits used):
                          GP8DIR GP7DIR GP6DIR GP5DIR GP4DIR GP3DIR GP2DIR GP1DIR GP0DIR
     Outputs:
         none
Returns:
     int - If successful, 0 is returned.  Anything else means operation failed
Notes:
    none
```

GetGpioPinVal

```
Name:
     GetGpioPinVal
Purpose:
     Get GPIO Pin Values
Parameters:
     Inputs:
         none
     Outputs:
         none
Returns:
     int - If successful, return GPIO pin values in lower 9 bits.  Negative = failed
Notes:
    This command will have an effect only on those GPs that are previously configured
    as GPIOs.
```

SetGpioPinVal

```
Name:
     SetGpioPinVal
Purpose:
     Set GPIO Pin Values
Parameters:
     Inputs:
         gpioVal (WORD) – values to set the GPIOs to
```

```
                        Mapping(MSB to LSB - only lower 9 bits used):
                        GP8VAL GP7VAL GP6VAL GP5VAL GP4VAL GP3VAL GP2VAL GP1VAL GP0VAL
     Outputs:
         none
Returns:
     int - If successful, 0 is returned.  Anything else means operation failed
Notes:
    The GPIO pin value will have an effect only on those GPs that are previously configured
    as GPIOs.
```

EnterAccessPasswd

```
Name:
     EnterAccessPasswd
Purpose:
     Send the chip access password to the device in attempt to unlock the device for
     modifying boot-up settings.
Parameters:
     Inputs:
         strPasswd (String^) – Password to submit to the device (must be 8 characters long)
     Outputs:
         none
Returns:
     int - If successful, 0 will be returned to indicate chip access granted.  If a
               negative value is returned, there was an error.
Notes:
     The device will only allow for five attempts prior to self-locking itself.  For more
     information on the chip access protection settings, see the device datasheet on
     microchip.com
```

GetPasswdAttmptCnt

```
Name:
     GetPasswdAttmptCnt
Purpose:
     Get the number of password attempts up to this point
Parameters:
     Inputs:
         none
     Outputs:
         none
Returns:
     int - Number of password access attempts so far. If negative, there was an error.
Notes:
     none
```

GetPasswdAccessStatus

```
Name:
     GetPasswdAccessStatus
Purpose:
     Get the password access status (password access granted or not granted)
Parameters:
     Inputs:
         none
     Outputs:
         none
Returns:
     int - If 0, password has not been guessed correctly and access is not granted.
           If 1, password has been guessed correctly and access is granted.
           If less than zero, an error occurred.
Notes:
     none
```

RequestSpiBusRel

```
Name:
     RequestSpiBusRel
Purpose:
     Request chip to release the SPI bus
Parameters:
     Inputs:
         none
     Outputs:
         none
Returns:
     int - If successful, return GPIO pin values in lower 16 bits.  If error, value is
               negative.
Notes:
     none
```

TxferSpiData

```
Name:
     TxferSpiData
Purpose:
     Transfer the specified SPI data
Parameters:
     Inputs:
        dataTx (array<Byte>^) - Array of SPI data to send to device. This array should be
                                at least the same size as numBytes or larger.
     Outputs:
        dataRx (array<Byte>^) – Array that contains SPI data received. This array should be
                                at least the same size as numBytes or larger.
Returns:
     int - Return value:        negative = error
                                positive = success (in one of 3 SPI states – see below)
```

```
Notes:
     The three possible success states are as follows:
                - SPI Transfer Done:              0x10
                - SPI Transfer Started:           0x20
                - SPI Transfer Pending:           0x30
```

CancelSpiTxfer

```
Name:
     CancelSpiTxfer
Purpose:
     Cancel the current SPI transfer
Parameters:
     Inputs:
         none
     Outputs:
         none
Returns:
     int - Contains error code.  0 = successful.  Other = failed
Notes:
        none
```

GetEvntCntFromIntPin

```
Name:
     GetEvntCntFromIntPin
Purpose:
     Get the current number of events from the interrupt pin.
Parameters:
     Inputs:
         none
     Outputs:
         none
Returns:
     int – Current event count.  If the value is negative, an error occurred.
Notes:
        none
```

GetSpiBusRelExtReqStatus

```
Name:
     GetSpiBusRelExtReqStatus
Purpose:
     Get status regarding whether or not there is an external request for SPI bus release
Parameters:
     Inputs:
         none
     Outputs:
```

```
         none
Returns:
     int – If 0, no external request for SPI bus release
           If 1, pending external request for SPI bus release
           If less than zero, an error occurred.
Notes:
        none
```

GetSpiBusCurOwner

```
Name:
     GetSpiBusCurOwner
Purpose:
     Get information regarding who is the current SPI bus owner
Parameters:
     Inputs:
         none
     Outputs:
         none
Returns:
     int – If 0, no owner
           If 1, USB Bridge is the owner
           If 2, an external master is the owner
           If less than zero, an error occurred.
Notes:
        none
```

Detailed API Function List – Settings_M

GetVid

```
Name:
     GetVid
Purpose:
     Get the vendor ID (VID) of the part.
Parameters:
     Inputs:
        none
     Outputs:
        none
Returns:
     int - VID value is returned.  If error, a negative value is returned.
Notes:
     none
```

GetPid

```
Name:
     GetPid
Purpose:
     Get the product ID (PID) of the part.
Parameters:
     Inputs:
        none
     Outputs:
        none
Returns:
     int - PID value is returned.  If error, a negative value is returned.
Notes:
     none
```

SetVidPid

```
Name:
     SetVidPid
Purpose:
     Set the VID and PID of the part.
Parameters:
     Inputs:
        vid (UINT32) – Vendor ID value to set
        pid (UINT32) – Product ID value to set
     Outputs:
        none
Returns:
     int - Contains error code.  0 = successful.  Other = failed
Notes:
```

```
     none
```

GetSerialNumber

```
 Name:
     GetSerialNumber
Purpose:
     Get the device serial number.
Parameters:
     Inputs:
        none
     Outputs:
        none
Returns:
     String^ - Serial number string is given as output.  If error, null is returned.
Notes:
     none
```

GetConnectionStatus

```
  Name:
     GetConnectionStatus
Purpose:
     Retrieve the connection status of the device
Parameters:
     Inputs:
        none
     Outputs:
        none
Returns:
     bool – True if connected, false if device is unconnected
Notes:
     none
```

GetPwrConfigSrc

```
 Name:
     GetPwrConfigSrc
Purpose:
     Get the USB power configuration setting: Power source (host or self).
Parameters:
     Inputs:
        none
     Outputs:
        none
Returns:
     int - Return code that indicates USB device power configuration value.  If less
              than zero, there was an error.
                 (0 = bus-powered, 1 = Self-powered)
```

```
Notes:
     none
```

GetPwrConfigRmtWkupCpbl

```
 Name:
     GetPwrConfigRmtWkupCpbl
Purpose:
     Get the USB power configuration setting: remote wakeup capable.
Parameters:
     Inputs:
        none
     Outputs:
        none
Returns:
     int - Will be either TRUE(1) or FALSE (0).  If less than zero, there was an error
Notes:
     none
```

SetPwrConfig

```
 Name:
     SetPwrConfig
Purpose:
     Set the USB power configuration settings for the part.
Parameters:
     Inputs:
        pwrOptn (int) – USB power mode (0 = Host-Powered, 1 = Self-Powered)
        rmtWkup (bool)- Specify if the device is remote wakeup capable (false = no, true =
                        yes)
     Outputs:
        none
Returns:
     int - Contains error code.  0 = successful.  Other = failed
Notes:
     none
```

GetReqdCurrentLd

```
 Name:
     GetReqdCurrentLd
Purpose:
     Gets the amount of current (mA) that the device will request from the USB host
Parameters:
     Inputs:
        none
     Outputs:
        none
Returns:
```

```
     int – If positive, USB device current requested value
Notes:
     The value returned is equal to the actual value for this setting (i.e. a return value
     of 100 means the setting is set to 100mA).
```

SetReqdCurrentLd

```
 Name:
     SetReqdCurrentLd
Purpose:
     Sets the amount of current (mA) that the device will request from the USB host
Parameters:
     Inputs:
        newVal (int) - The value to be set.
     Outputs:
        none
Returns:
     int - Contains error code.  0 = successful.  Other = failed
Notes:
     This function will adjust the value to meet the USB spec (1 = 2mA). So if you want
     this setting to be set to 100mA, simply use 100 as input to this function (rather than
     50 as the USB spec would require).
```

GetStringManufacturer

```
 Name:
     GetStringManufacturer
Purpose:
     Retrieve the manufacturer string from the device.
Parameters:
     Inputs:
        none
     Outputs:
        none
Returns:
     manString (String^) – If successful, the current device USB manufacturer string is
                           returned.  If an error occurred, null is returned.
Notes:
     The string returned can be up to 29 Unicode characters in length.
```

SetStringManufacturer

```
  Name:
     SetStringManufacturer
Purpose:
     Set the USB manufacturer string for the device.
Parameters:
     Inputs:
```

```
        manString (String^) - Holds Unicode or ANSI string of desired manufacturer string
    Outputs:
        none
Returns:
    int - Contains error code.  0 = successful.  Other = failed
Notes:
    The USB manufacturer string can be up to 29 Unicode characters long.
```

GetStringDescriptor

```
  Name:
    GetStringDescriptor
Purpose:
    Retrieve the string descriptor from the device.
Parameters:
    Inputs:
        none
    Outputs:
        none
Returns:
    descString (String^) – If successful, the current device USB string descriptor is
                           returned.  If an error occurred, null is returned.
Notes:
    The string returned can be up to 29 Unicode characters in length.
```

SetStringDescriptor

```
 Name:
    SetStringDescriptor
Purpose:
    Set the USB string descriptor for the device.
Parameters:
    Inputs:
        descString (String^) – Holds Unicode or ANSI string of desired string descriptor
    Outputs:
        none
Returns:
    int - Contains error code.  0 = successful.  Other = failed
Notes:
    The USB string descriptor can be up to 29 Unicode characters long.
```

GetPermanentDevLockStatus

```
  Name:
    GetPermanentDevLockStatus
Purpose:
    Get the enable/disable status of the permanent device lock protection
Parameters:
    Inputs:
```

```
        none
     Outputs:
        none
Returns:
     int - Value will be 1 if enabled, 0 if disabled, and less than 0 if there was an
              error.
Notes:
     none
```

SetPermanentDevLock

```
  Name:
     LockDevice
Purpose:
     Permanently lock the part (THIS CANNOT BE UNDONE – USE WITH EXTREME CAUTION!)
Parameters:
     Inputs:
        none
     Outputs:
        none
Returns:
     int - Contains error code.  0 = successful.  Other = failed
Notes:
     !! WARNING WARNING !!! -- USE THIS FUNCTION WITH GREAT CAUTION.  THE CHIP NON-VOLATILE
        MEMORY CANNOT BE CONFIGURED AFTER THIS FUNCTION HAS BEEN INVOKED!!
```

GetPasswdEnStatus

```
 Name:
     GetPasswdEnStatus
Purpose:
     Get the enable/disable status of the chip password protection mechanism
Parameters:
     Inputs:
        none
     Outputs:
        none
Returns:
     int - Value will be 1 if enabled, 0 if disabled, and less than 0 if there was an
              error.
Notes:
     none
```

SetPasswdEnStatus

```
 Name:
     SetPasswdEnStatus
Purpose:
     Enable/disable the password protection
```

```
Parameters:
     Inputs:
        enStatus (bool)- True if you want to enable password protection, and false if not
        passwd (String^) - Must be the desired password when enabling password protection.
                           The length of this password MUST be 8 characters long. When
                           disabling password protection, this parameter must be NULL.
     Outputs:
        none
Returns:
     int - Contains error code.  0 = successful.  Other = failed
Notes:
     If you are disabling the password protection, ensure that the access password has
     already been entered and the device has no protection enabled.  If this is not done
     prior to an attempt to disable the password mechanism, the attempt will fail.
```

SetNewPasswd

```
  Name:
     SetNewPasswd
Purpose:
     Change the current password for the device.
Parameters:
     Inputs:
        oldPasswd (String^) – Should contain current password if previously set. Otherwise
                              use null in this parameter's place.
        newPasswd (String^) - The new password to set for the device.
     Outputs:
        none
Returns:
      int - Contains error code.  0 = successful.  Other = failed
Notes:
       This function is nearly the same as using SetPasswdEnStatus(). Use NULL in the
       oldPasswd parameter if there is currently no password protection enabled and you want
       to enable password protection using the password specified in the newPasswd
       parameter.  Use NULL in the newPasswd parameter and supply the current password in
       the oldPasswd parameter if you want to disable password protection. Remember that any
       password chosen must have a length of 8 characters.
```

SetAllChipSettings

```
Name:
     SetAllChipSettings
Purpose:
     Set all the chip settings with one function.
Parameters:
     Inputs:
        whichToSet (int) - Use  static constants defined in DllConstants class.
                           Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0,
                           PWRUP_DEFAULTS_ONLY = 1,
```

```
                        BOTH = 2
        gpPinDes (array<Byte>^) - Array of 9 elements specifying each GPIO pin designation
                        (0 = GPIO, 1 = Chip-selects, 2 = Dedicated pin function)
        dfltGpioOutput (int) - Default GPIO output.
                        Mapping (MSB to LSB - only lower 9 bits used):
                        GP8VAL GP7VAL GP6VAL GP5VAL GP4VAL GP3VAL GP2VAL GP1VAL GP0VAL
        dfltGpioDir (int) - Default GPIO direction, where 0 = output and 1 = input
                        Mapping (MSB to LSB - only lower 9 bits used):
                        GP8VAL GP7VAL GP6VAL GP5VAL GP4VAL GP3VAL GP2VAL GP1VAL GP0VAL
        rmtWkupEn (bool) - Enable/disable remote wake-up
        intPintMd (BYTE) - Dedicated Pin function (interrupt pin mode).
                        See below for different modes:
                                -> b100 – count high pulses
                                -> b011 – count low pulses
                                -> b010 – count rising edges
                                -> b001 – count falling edges
                                -> b000 – no interrupt counting
        spiBusRelEn (bool) - SPI Bus release enable.
                        0 = SPI bus is released between transfer,
                        1 = SPI bus is not released by MCP2210 between transfers
     Outputs:
        none
Returns:
     int - The status of the remote wakeup enable(1)/disabled(0).  If not these values,
               it is an error code.
Notes:
     None
```

GetGpioDfltOutput

```
 Name:
     GetGpioDfltOutput
Purpose:
     Get GPIO configuration default output
Parameters:
     Inputs:
        whichToGet (int) - Use  static constants defined in DllConstants class.
                        Cannot use BOTH in any Get… functions. Use one of the following:
                        CURRENT_SETTINGS_ONLY = 0, PWRUP_DEFAULTS_ONLY = 1
     Outputs:
        none
Returns:
     int - If less than zero, there was an error.  Otherwise this value is the default
              GPIO output value.  More info:
              Mapping(MSB to LSB - only lower 9 bits used):
               GP8VAL GP7VAL GP6VAL GP5VAL GP4VAL GP3VAL GP2VAL GP1VAL GP0VAL
Notes:
     none
```

GetGpioDfltDirection

```
 Name:
     GetGpioDfltDirection
Purpose:
     Get GPIO configuration default direction
Parameters:
     Inputs:
        whichToGet (int) - Use  static constants defined in DllConstants class.
                           Cannot use BOTH in any Get… functions. Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0, PWRUP_DEFAULTS_ONLY = 1
     Outputs:
        none
Returns:
     int - If less than zero, there was an error.  Otherwise this value is the
               dfltGpioDir value.  More info:
               Default GPIO direction, where 0 = output and 1 = input
               Mapping(MSB to LSB - only lower 9 bits used):
                GP8VAL GP7VAL GP6VAL GP5VAL GP4VAL GP3VAL GP2VAL GP1VAL GP0VAL
Notes:
     none
```

GetGpioDesignations

```
 Name:
     GetGpioPinDesignations
Purpose:
     Get GPIO Pin designations
Parameters:
     Inputs:
        whichToGet (int) - Use  static constants defined in DllConstants class.
                           Cannot use BOTH in any Get… functions. Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0, PWRUP_DEFAULTS_ONLY = 1
     Outputs:
        gpPinDes (array<Byte>^) - Array of 9 elements specifying each GPIO pin
                                  designation
Returns:
     int – If the output Byte array is NULL, then an error occurred. Otherwise it was
           successful.
Notes:
     Since the output of this function is through the Byte array given as a parameter, the
     contents of this array does not need to be assigned to anything.
```

SetGpioConfig

```
Name:
     SetGpioConfig
Purpose:
     Allow the user to adjust GPIO configuration settings
Parameters:
     Inputs:
```

```
        whichToSet (int) - Use  static constants defined in DllConstants class.
                           Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0,
                           PWRUP_DEFAULTS_ONLY = 1,
                           BOTH = 2
        gpPinDes (array<Byte>^) - Array of 9 elements specifying each GPIO pin designation
                            (0 = GPIO, 1 = Chip-selects, 2 = Dedicated pin function)
        dfltGpioOutput (int)- Default GPIO output.
                           Mapping(MSB to LSB - only lower 9 bits used):
                            GP8VAL GP7VAL GP6VAL GP5VAL GP4VAL GP3VAL GP2VAL GP1VAL GP0VAL
        dfltGpioDir (int) - Default GPIO direction, where 0 = output and 1 = input
                           Mapping(MSB to LSB - only lower 9 bits used):
                            GP8VAL GP7VAL GP6VAL GP5VAL GP4VAL GP3VAL GP2VAL GP1VAL GP0VAL
     Outputs:
        none
Returns:
     int - Contains error code.  0 = successful.  Other = failed
Notes:
     none
```

GetRmtWkupEnStatus

```
Name:
     GetRmtWkupEnStatus
Purpose:
     Get the enable state of the remote wakeup setting
Parameters:
     Inputs:
        whichToGet (int) - Use  static constants defined in DllConstants class.
                           Cannot use BOTH in any Get… functions. Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0, PWRUP_DEFAULTS_ONLY = 1
     Outputs:
        none
Returns:
     int - The status of the remote wakeup enable(1)/disabled(0).  If negative, this
           is an error code.
Notes:
     none
```

SetRmtWkupEnStatus

```
Name:
     SetRmtWkupEnStatus
Purpose:
     Set the enable state of the remote wakeup setting
Parameters:
     Inputs:
        whichToSet (int) - Use  static constants defined in DllConstants class.
                           Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0,
```

```
                          PWRUP_DEFAULTS_ONLY = 1,
                          BOTH = 2
        rmtWkupEn (bool) - Enable(true)/disable(false) remote wake-up
     Outputs:
        none
Returns:
     int - Contains error code.  0 = successful.  Other = failed
Notes:
     none
```

GetInterruptPinMode

```
Name:
     GetInterruptPinMode
Purpose:
     Get interrupt pin mode settings
Parameters:
     Inputs:
        whichToGet (int) - Use  static constants defined in DllConstants class.
                           Cannot use BOTH in any Get… functions. Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0, PWRUP_DEFAULTS_ONLY = 1

     Outputs:
        none
Returns:
     int - Dedicated Pin function (interrupt pin mode).  If the return value is
               negative, the operation failed. See below for different modes:
                         -> 4 – count high pulses
                         -> 3 – count low pulses
                         -> 2 – count rising edges
                         -> 1 – count falling edges
                         -> 0 – no interrupt counting
Notes:
     none
```

SetInterruptPinMode

```
Name:
     SetInterruptPinMode
Purpose:
     Allow the user to adjust GPIO configuration settings
Parameters:
     Inputs:
        whichToSet (int) - Use  static constants defined in DllConstants class.
                           Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0,
                           PWRUP_DEFAULTS_ONLY = 1,
                           BOTH = 2
        intPintMd (int) - Dedicated Pin function (interrupt pin mode).  See below for
                          different modes:
```

```
                                -> 4 – count high pulses
                                -> 3 – count low pulses
                                -> 2 – count rising edges
                                -> 1 – count falling edges
                                -> 0 – no interrupt counting
     Outputs:
        none
Returns:
     int - Contains error code.  0 = successful.  Other = failed
Notes:
     none
```

GetSpiBusReleaseEnStatus

```
Name:
     GetSpiBusReleaseEnStatus
Purpose:
     Get the enable state of the SPI bus release setting
Parameters:
     Inputs:
        whichToGet (int) - Use  static constants defined in DllConstants class.
                           Cannot use BOTH in any Get… functions. Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0, PWRUP_DEFAULTS_ONLY = 1
     Outputs:
        none
Returns:
     int - The status of the remote wakeup enable(1)/disabled(0).  If not these values,
           it is an error code.
Notes:
     none
```

SetSpiBusReleaseEnStatus

```
Name:
     SetSpiBusReleaseEnStatus
Purpose:
     Set the enable state of the SPI bus release setting
Parameters:
     Inputs:
        whichToSet (int) - Use  static constants defined in DllConstants class.
                           Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0,
                           PWRUP_DEFAULTS_ONLY = 1,
                           BOTH = 2
        spiBusRelEn (bool)- SPI Bus release enable.
                         false = SPI bus is released between transfer,
                         true = SPI bus is not released by MCP2210 between transfers
     Outputs:
        none
Returns:
```

```
     int - Contains error code.  0 = successful.  Other = failed
Notes:
     none
```

SetAllSpiSettings

```
Name:
     SetAllSpiSettings
Purpose:
     Set all the SPI settings with one function.
Parameters:
     Inputs:
        whichToSet (int) - Use  static constants defined in DllConstants class.
                           Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0,
                           PWRUP_DEFAULTS_ONLY = 1,
                           BOTH = 2
        baudRate (UINT32) - SPI bit rate speed
        idleCsVal (WORD) - IDLE CS (chip select) value
        activeCsVal (WORD) - ACTIVE CS value
        csToDataDly (WORD) - CS to data delay
        dataToDataDly(WORD)- Delay between subsequent data bytes
        dataToCsDly (WORD) - Last data byte to CS
        txferSize (WORD) - Bytes per SPI transaction
        spiMd (BYTE) - SPI mode (Possible values: 0, 1, 2, or 3)
     Outputs:
        none
Returns:
     int - Contains error code.  0 = successful.  Other = failed
Notes:
     none
```

GetSpiBitRate

```
Name:
     GetSpiBitRate
Purpose:
     Get SPI bit rate value.
Parameters:
     Inputs:
        whichToGet (int) - Use  static constants defined in DllConstants class.
                           Cannot use BOTH in any Get… functions. Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0, PWRUP_DEFAULTS_ONLY = 1
     Outputs:
        none
Returns:
     int - The value of the SPI bit rate
Notes:
     none
```

SetSpiBitRate

```
Name:
     SetSpiBitRate
Purpose:
     Set SPI bit rate value.
Parameters:
     Inputs:
        whichToSet (int) - Use  static constants defined in DllConstants class.
                           Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0,
                           PWRUP_DEFAULTS_ONLY = 1,
                           BOTH = 2
        bitRate (UINT32) – Value of desired bit rate
     Outputs:
        none
Returns:
     int - Contains error code.  0 = successful.  Other = failed
Notes:
     none
```

GetSpiCsIdleValue

```
Name:
     GetSpiCsIdleValue
Purpose:
     Get the SPI chip select idle value
Parameters:
     Inputs:
        whichToGet (int) - Use  static constants defined in DllConstants class.
                           Cannot use BOTH in any Get… functions. Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0, PWRUP_DEFAULTS_ONLY = 1
     Outputs:
        none
Returns:
     int - The value of the SPI chip select idle value. If the return value is negative,
              the operation failed.
Notes:
     none
```

GetSpiCsActiveValue

```
Name:
     GetSpiCsActiveValue
Purpose:
     Get the SPI chip select active value
Parameters:
     Inputs:
```

```
        whichToGet (int) - Use  static constants defined in DllConstants class.
                           Cannot use BOTH in any Get… functions. Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0, PWRUP_DEFAULTS_ONLY = 1
     Outputs:
        none
Returns:
     int - The value of the SPI chip select active value. If the return value is negative,
              the operation failed.
Notes:
     none
```

SetSpiCsValues

```
Name:
     SetSpiCsValues
Purpose:
     Set the SPI chip select values
Parameters:
     Inputs:
        whichToSet (int) - Use  static constants defined in DllConstants class.
                           Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0,
                           PWRUP_DEFAULTS_ONLY = 1,
                           BOTH = 2

        idleCsVal (WORD) - IDLE CS (chip select) value
        activeCsVal (WORD)- ACTIVE CS value
     Outputs:
        none
Returns:
     int - Contains error code.  0 = successful.  Other = failed
Notes:
     none
```

GetSpiDelayCsToData

```
Name:
     GetSpiDelayCsToData
Purpose:
     Get CS to data SPI delay
Parameters:
     Inputs:
        whichToGet (int) - Use  static constants defined in DllConstants class.
                           Cannot use BOTH in any Get… functions. Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0, PWRUP_DEFAULTS_ONLY = 1
     Outputs:
        none
Returns:
     int - Returns CS to data SPI delay value.  If return code is less than zero, an
              error occurred.
```

```
Notes:
     none
```

GetSpiDelayDataToData

```
Name:
     GetSpiDelayDataToData
Purpose:
     Get data to data SPI delay
Parameters:
     Inputs:
        whichToGet (int) - Use  static constants defined in DllConstants class.
                           Cannot use BOTH in any Get… functions. Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0, PWRUP_DEFAULTS_ONLY = 1
     Outputs:
        none
Returns:
     int - Returns data to data SPI delay value.  If return code is less than zero, an
              error occurred.
Notes:
     none
```

GetSpiDelayDataToCs

```
Name:
     GetSpiDelayDataToCs
Purpose:
     Get data to CS SPI delay
Parameters:
     Inputs:
        whichToGet (int) - Use  static constants defined in DllConstants class.
                           Cannot use BOTH in any Get… functions. Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0, PWRUP_DEFAULTS_ONLY = 1
     Outputs:
        none
Returns:
     int - Returns data to CS SPI delay value.  If return code is less than zero, an
              error occurred.
Notes:
     none
```

SetSpiDelays

```
Name:
     SetSpiDelays
Purpose:
     Set the SPI delays
Parameters:
     Inputs:
```

```
        whichToSet (int) - Use  static constants defined in DllConstants class.
                           Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0,
                           PWRUP_DEFAULTS_ONLY = 1,
                           BOTH = 2
        csToDataDly (WORD)- CS to data delay
        dataToDataDly (WORD) - Delay between subsequent data bytes
        dataToCsDly (WORD- Last data byte to CS
     Outputs:
        none
Returns:
     int - Contains error code.  0 = successful.  Other = failed
Notes:
     none
```

GetSpiTxferSize

```
Name:
     GetSpiTxferSize
Purpose:
     Get the SPI transfer size.
Parameters:
     Inputs:
        whichToGet (int) - Use  static constants defined in DllConstants class.
                           Cannot use BOTH in any Get… functions. Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0, PWRUP_DEFAULTS_ONLY = 1
     Outputs:
        none
Returns:
     int – The SPI transfer size is returned.  If return code is less than zero, an
              error occurred.
Notes:
     none
```

SetSpiTxferSize

```
 Name:
     SetSpiTxferSize
Purpose:
     Set the SPI transfer size.
Parameters:
     Inputs:
        whichToSet (int) - Use  static constants defined in DllConstants class.
                           Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0,
                           PWRUP_DEFAULTS_ONLY = 1,
                           BOTH = 2
        txferSize (WORD) - Bytes per SPI transfer (can range from 0 to 60 inclusive)
     Outputs:
        none
```

```
Returns:
     int - Contains error code.  0 = successful.  Other = failed
Notes:
     none
```

GetSpiMode

```
Name:
     GetSpiMode
Purpose:
     Get the SPI mode
Parameters:
     Inputs:
        whichToGet (int) - Use  static constants defined in DllConstants class.
                           Cannot use BOTH in any Get… functions. Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0, PWRUP_DEFAULTS_ONLY = 1
     Outputs:
        none
Returns:
     int - The value of the SPI Mode (0, 1, 2, or 3). If return code is less than zero,
              an error occurred.
Notes:
     none
```

SetSpiMode

```
Name:
     SetSpiMode
Purpose:
     Set the SPI mode
Parameters:
     Inputs:
        whichToSet (int) - Use  static constants defined in DllConstants class.
                           Use one of the following:
                           CURRENT_SETTINGS_ONLY = 0,
                           PWRUP_DEFAULTS_ONLY = 1,
                           BOTH = 2
        spiMd (BYTE)- Specify SPI mode 0, 1, 2, or 3.
     Outputs:
        none
Returns:
     int - Contains error code.  0 = successful.  Other = failed
Notes:
     none
```

Detailed API Function List – Special_M

GetDevCount

```
Name:
     GetDevCount
Purpose:
     Gets the total number of attached devices
Parameters:
     Inputs:
         none
     Outputs:
         none
Returns:
       int - The total number of attached MCP2210 devices.
Notes:
       ***IMPORTANT: You MUST use the GetConnectionStatus() function prior to calling this
       function since the device count is refreshed by doing so.***
```

GetSelectedDevNum

```
Name:
     GetSelectedDevNum
Purpose:
     Gets the unique index number that indicates with MCP2210 device is selected.
Parameters:
     Inputs:
         none
     Outputs:
         none
Returns:
       int - The unique index number identifying the selected MCP2210 device.
Notes:
       Numbering of devices starts with 0.  Hence, the first device will be indicated by the
       number 0 and the 2nd device by 1 and so on.
```

GetSelectedDevInfo

```
Name:
     GetSelectedDevInfo
Purpose:
     Get the information for the currently selected device
Parameters:
     Inputs:
         none
     Outputs:
         none
Returns:
       String^ - String that gives information regarding the currently selected device
Notes:
```

In order to uniquely identify each device from another, you can use this string and/or the device serial number.

SelectDevice

Name:
SelectDev
Purpose:
Select the device to which the DLL will communicate
Parameters:
Inputs:
devNum (int) - The device number to be selected
Outputs:
none
Returns:
int - Contains error code. 0 = successful. Other = failed
Notes:
Numbering of devices starts with 0. Hence, the first device will be indicated by the number 0 and the 2nd device by 1 and so on. Be sure to get the total count of devices available before using this function in order to be sure that you are selecting a valid device number (max valid number is devCount-1). ***IMPORTANT: You MUST use the GetConnectionStatus() function after switching your selected device to allow proper operation and manipulation of that device.***
