Promira Serial Platform

The Promira Serial Platform with Applications such as I²C/SPI Active and eSPI Analysis Application allows developers to interface a host PC to a downstream embedded system environment, transfer serial messages using the I²C and SPI protocols, non-intrusively monitor eSPI data, and perform other functions determined by the purchased application.

Promira Serial Platform

- I²C – Two-wire interface
  - Standard mode (100 kHz), Fast mode (400 kHz), Fast mode plus (1 MHz), High Speed mode (3.4 MHz)
  - Master and slave functionality
  - Master/Slave Bit Rate 1 kHz to 3.4 MHz
  - Target Power 5V or 3.3V; IO Power 0.9V - 3.45V
- SPI – Four- to Six-wire Interface
  - Single, Dual, and Quad SPI functionality
  - Master and Slave functionality
  - Master Bit Rate 31 kHz to 80 MHz
  - Slave Bit Rate 31 kHz to 20 MHz
  - Up to eight SS signals, Configurable polarity
  - Target Power 5V or 3.3V; IO Power 0.9V - 3.45V
- GPIO – General Purpose Input/Output
  - Up to sixteen general purpose signals on shared and dedicated pins; Selectable polarity
- eSPI – Eight-wire Interface
  - Non-intrusive eSPI monitoring up to 66 MHz
  - Single, Dual, and Quad eSPI functionality
  - Two CS Signals, Two Alert Signals, Two Reset Signals
  - Eleven Digital IO Signals
  - Target Power 5V or 3.3V $ndash; IO Power 1.8V
- Advanced Cable Tester – USB Cable Tester
  - USB Type C, Type A, and Type micro B cable testing
- Software
  - Windows, Linux, and Mac OS X compatible
  - Easy to integrate application interface
  - Upgradeable Firmware over USB

TOTAL PHASE

Supported products:

PROMIRA

Promira Serial Platform
System
User Manual v1.35.001

June 12, 2017

1 Revision History

1.1 Changes in version 1.35

Added auto start feature.

Updated text for upgrades(001)

1.2 Changes in version 1.34

Improved the connection to Windows.

1.3 Changes in version 1.33

Added features for Promira platform with eSPI Analysis Application.

Updated Applications section.

1.4 Changes in version 1.32

Fixed the connectivity issue of the first attempt to connect the Promira platform to the Promira API pm_load function after the device reset.

1.5 Changes in version 1.31

Added features for Promira platform I^2C Active Level 2 Application and SPI Active Level 3 Application.

1.6 Changes in version 1.30

Added features for Promira platform SPI Active Level 2 Application.

2 General Overview

The Promira Serial Platform with the I^2C/SPI Active applications and eSPI Analysis application supports I^2C master/slave active modes; Single, Dual, and Quad SPI master/slave active modes; and Single, Dual and Quad eSPI analysis modes. The Promira platform supports up to 8 SPI SS/CS signals, up to 16 GPIO signals, and up to 11 eSPI Digital IO signals depending on purchased application. The Promira platform connects to an analysis computer via Ethernet or Ethernet over USB. The applications installed on the Promira Serial Platform are field-upgradeable and future-proof.

3 Applications

Table 1 (1) : Applications Description

Application	Max Bitrate (Master/ Slave MHz)	Max GPIO Signals	Digital IO Signals	Max SS/CS Signals	Slave Response Level (1)	Slave Response Capability (1)	Slave Response Size (1)
I^2C Active Level 1	1/1	6	NA	NA	Advanced Slave	1 slave address, 1 response	256 Bytes
I^2C Active Level 2	3.4/3.4	12	NA	NA	Advanced Slave	1 slave address, 1 response	256 Bytes
SPI Active Level 1	12.5/8	6	NA	1	Advanced Slave	1 response	256 Bytes
SPI Active Level 2	40/20	12	NA	3	Advanced Slave, Ultra Slave	Advanced Slave: 1 response. Ultra Slave: Multiple responses	256 Bytes
SPI Active Level 3	80/20	16	NA	8	Advanced Slave, Ultra Slave	Advanced Slave: 1 response. Ultra Slave: multiple responses	Advanced Slave: 256 Bytes. Ultra Slave: Up to 64 MBytes
eSPI Analysis	66	NA	11	2	NA	NA	NA

Notes:

(1) Ultra Slave will be released at a future date.

4 Hardware Specifications

4.1 Pinouts

4.1.1 Pin Description

Table 2 (1) : Pin Description - Target Connector

Pin	Symbol	Description
4	V_{TGT}	Software configurable Vcc target power supply. NC/3.3V/5V.
6	V_{TGT}	Software configurable Vcc target power supply. NC/3.3V/5V.
22	V_{IO}	Software configurable Vcc IO level power supply. NC/0.9V to 3.45V.
24	V_{IO}	Software configurable Vcc IO level power supply. NC/0.9V to 3.45V.
2, 10, 12, 16, 18, 28, 30, 34	GND	Ground Connection.

Note:

(1) The pin description in this table is for Promira FW v1.30/v1.30 and above.

4.2 USB 2.0 Compliance

The Promira Serial Platform is USB 2.0 compliant and will operate as a high speed (480 Mbps) device on a USB 2.0 hub or host controller. For additional information see table 15.

4.3 Physical Specifications

- Dimensions: W x D x L: 77.5 mm x 29.2 mm x 115.6 mm (3.05" x 1.15" x 4.55")
- Weight: 153 g (0.34 lbs)

4.4 Promira Boot Process

4.4.1 Promira General Boot Process

1. Promira platform is off, and 3 leds are off
2. Power on Promira platform by connecting it to computer USB connector.
3. In about 1 s right led turns red.
4. In about 5 s right led turns blue.
5. Issue Promira API function pm_load, or connect Promira platform to Control Center Serial or Flash Center.
6. In about 1 us right led turns green, and Promira platform is ready to transfer data.

4.4.2 Promira FW Update Boot Process

1. Right led is green, and Promira platform is ready to transfer data.
2. Issue FW update in Control Center Serial or Promira Update Utility.
3. 3 leds turn off.
4. In about 1 s right led turns red.
5. In about 5 s all 3 leds turn blue.
6. Promira platforms appears as a hard drive on the computer.
7. Copy pmu file to Promira hard drive on the computer
8. Eject safely the Promira hard drive from the computer.
9. Reboot Promira platform by disconnecting and connecting the USB cable.
10. In about 1 s right led turns red.
11. In about 5 s all 3 leds turn blue.
12. In about 5 s all 3 leds flash blue (one at a time).
13. Promira platform automatically reboots: Bullets 1-6 in General Boot Process section are occurred.

4.4.3 Promira License Update Boot Process

The steps are similar to the Promira FW Update Boot Process steps. However, it is faster, and without step 12.

5 Software

5.1 Compatibility

5.1.1 Overview

The Promira Serial Platform software is offered as a 32-bit or 64-bit Dynamic Linked Library (or shared object). The specific compatibility for each operating system is discussed below.

5.1.2 Windows Compatibility

The Promira Serial Platform software is compatible with 32-bit and 64-bit versions of Windows 7, and Windows 8/8.1. The software is provided as a 32-bit or 64-bit application.

5.1.3 Linux Compatibility

The Promira Serial Platform software is compatible with 32-bit and 64-bit standard distributions of Linux with kernel 2.6 and integrated USB support including: Red Hat, Ubuntu, Fedora, and SuSE. The software is provided as a 32-bit or 64-bit application. When using the 32-bit library on a 64-bit distribution, the appropriate 32-bit system libraries are also required. When using either the 64-bit library or 32 bit library, the appropriate system libraries are also required.

5.1.4 Mac OS X Compatibility

The Promira Serial Platform software is compatible 32-bit and 64-bit Intel versions of Mac OS X 10.7 Lion, 10.8 Mountain Lion, 10.9 Mavericks, 10.10 Yosemite, and 10.11 El Capitan. The software is provided as a 32-bit or 64-bit application. Installation of the latest available update is recommended.

5.2 Connectivity

There are two ways to connect to the Promira Serial Platform: via USB or via Ethernet. No additional device drivers are required for using either method.

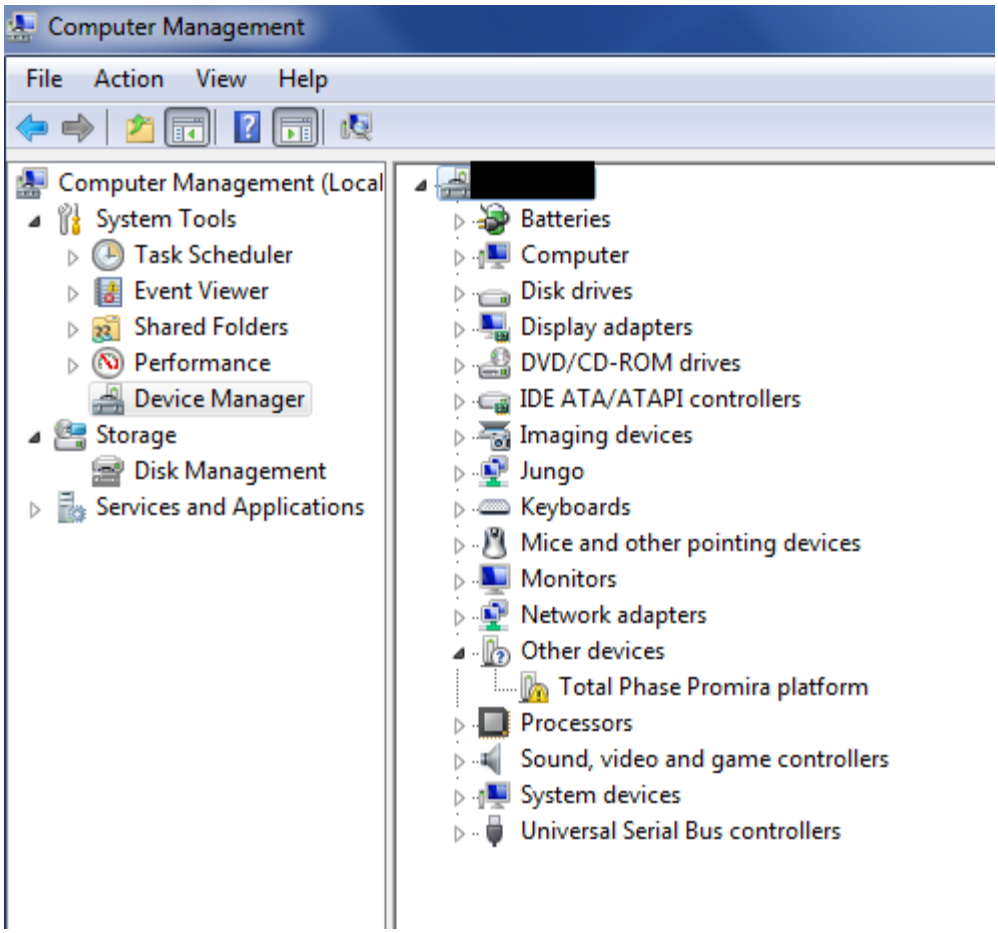
5.2.1 USB

The Promira Serial Platform uses Ethernet over USB, which allows the host software to connect to the adapter via an IP address. To use this interface, connect the device to your PC with a USB cable and follow the instructions below to set up the connection on the PC.

For Ethernet over USB, the Promira Serial Platform is a DHCP server that dynamically distributes network configuration parameters, such as IP addresses for interfaces and services.

Windows

1. Connect Promira to PC with USB cable.
2. After the device is connected to the development PC, Windows will automatically search for the appropriate RNDIS driver. To verify the drive is installed correctly, right-click on **Computer** and select **Manage**. From **System Tools**, select **Device Manager**. If the Total Phase Promira platform shows up with an exclamation mark, continue to the next step and install the driver.



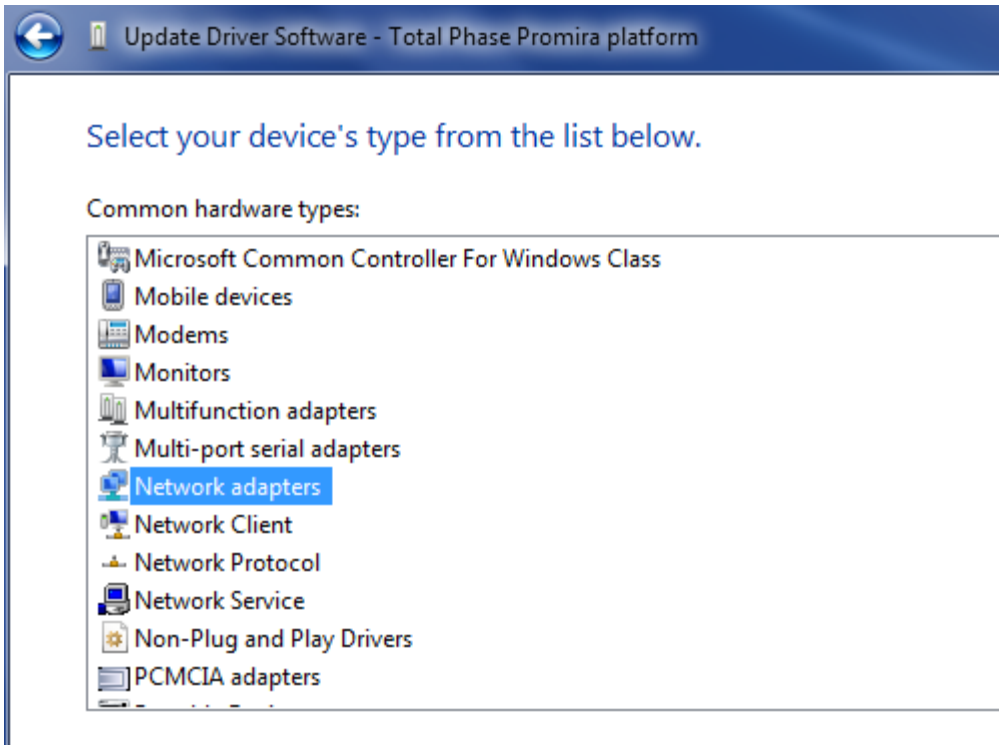
Otherwise, close this window, skip RNDIS driver installation in the next step and continue to the following step.

3. Install RNDIS driver:

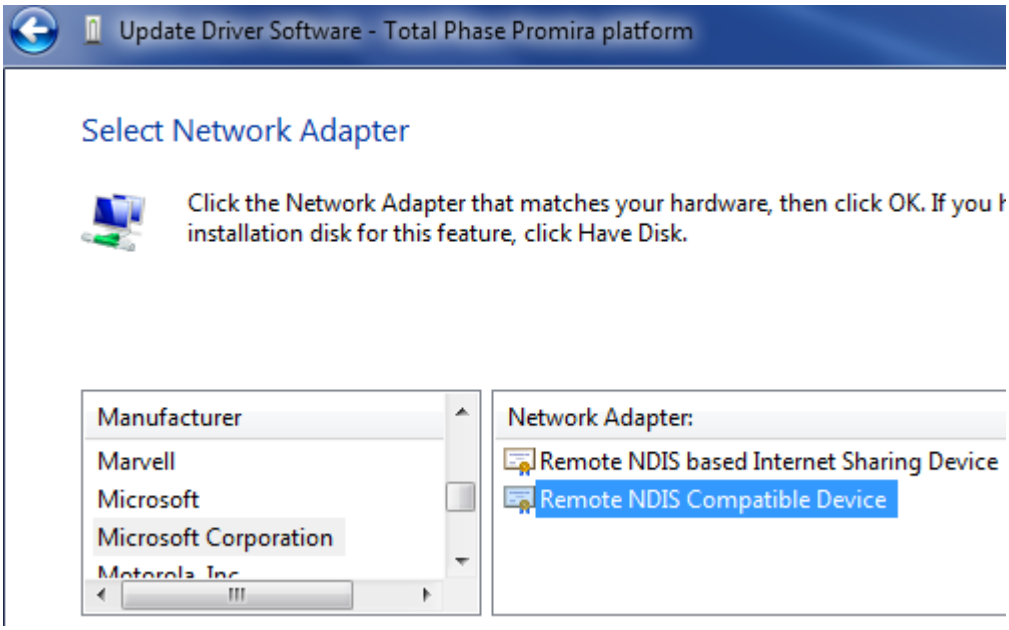
   a. Right-click on **Total Phase Promira platform** device and select **Update Driver Software...** When prompted to choose how to search for device driver software, choose **Browse my computer for driver software**.

   b. **Browse for driver software on your computer** will come up. Select **Let me pick from a list of device drivers on my computer**.

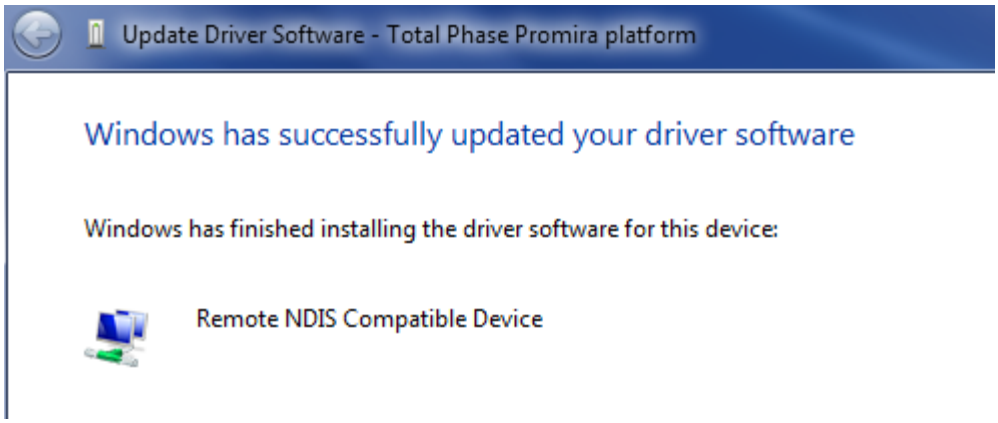
   c. A window will come up asking to select the device type. Select **Network adapters**, as RNDIS emulates a network connection.



d. In the **Select Network Adapter** window, select **Microsoft Corporation** from the **Manufacturer** list. Under the list of **Network Adapter:**, select **Remote NDIS compatible device**.



e. The Total Phase Promira platform device is now installed and ready for use.



4. From the Start menu, select **Control Panel | Network and Internet | Network and Sharing Center.**
5. Select **Change adapter settings** on the left panel.
6. Right-click on the **USB Ethernet/RNDIS Gadget** adapter, select **Properties**.

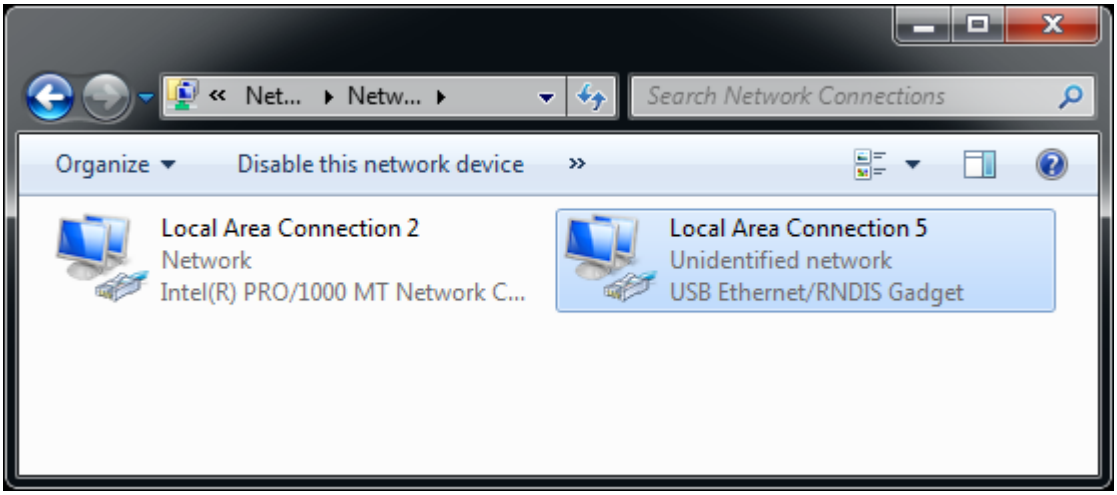


***Figure 1** : Windows Change adapter settings window.*

7. Double click on **Internet Protocol Version 4 (IPv4).**

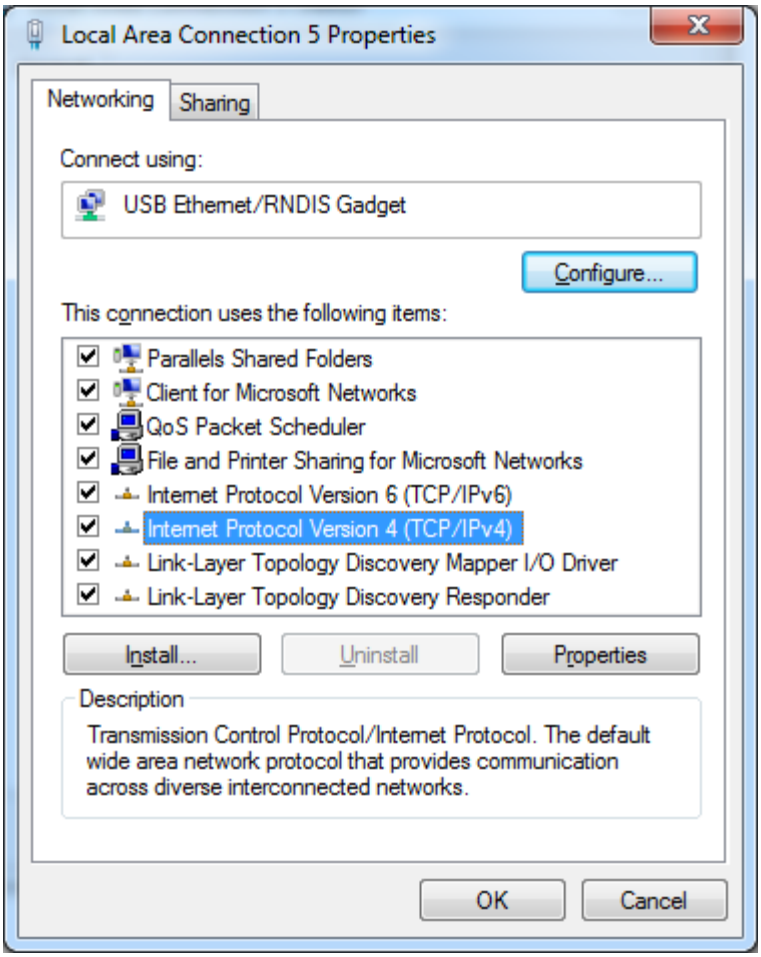


***Figure 2** : Windows Network Interface Properties dialog.*

8. Select **Obtain IP address automatically** and also select **Obtain DNS server address automatically**.

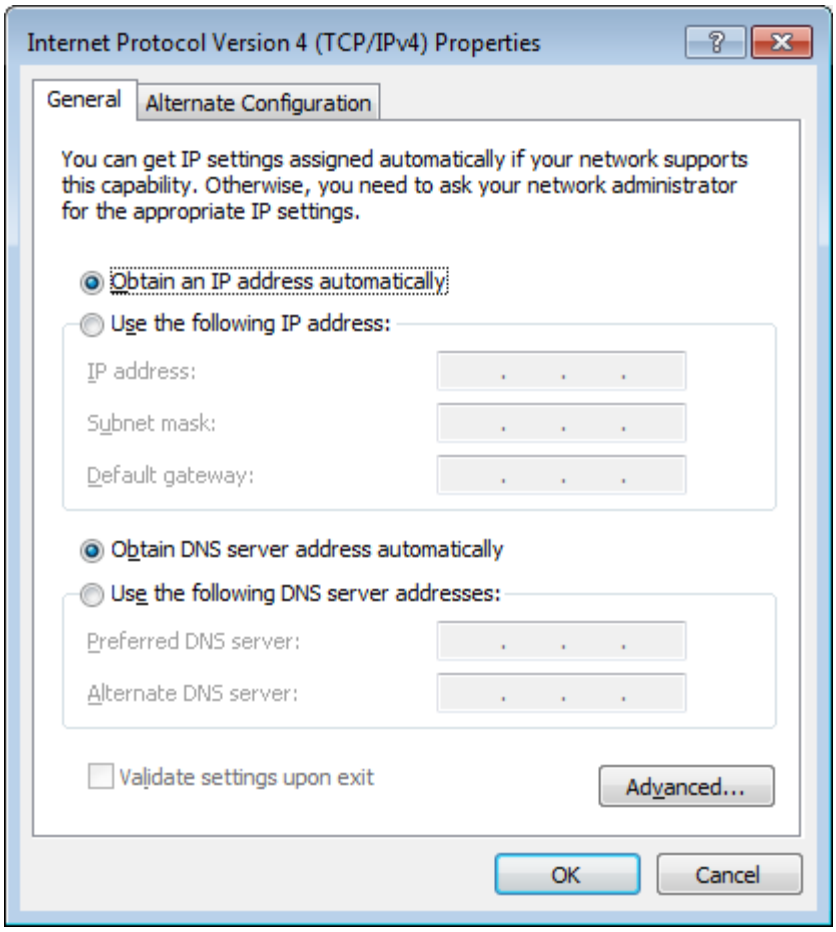


***Figure 3** : Windows IPv4 Properties dialog.*

9. Select **OK** and **Close** to dismiss the dialogs.

10. In order to make sure it is ready or to know the IP address of the Promira Serial Platform, right-click on the **USB Ethernet/RNDIS Gadget** adapter, select **Status** and then select **Details...**. The IP address assigned to the network interface on the host PC is will be in the format of 10.x.x.x and is listed as the IPv4 Address. The IP address of the device will be at the preceding address. For example, the image below shows 10.1.0.2 for the host IP address. The device address will then be 10.1.0.1. This device address will also be displayed in the Control Center software and will be needed when connecting to the device using the API.

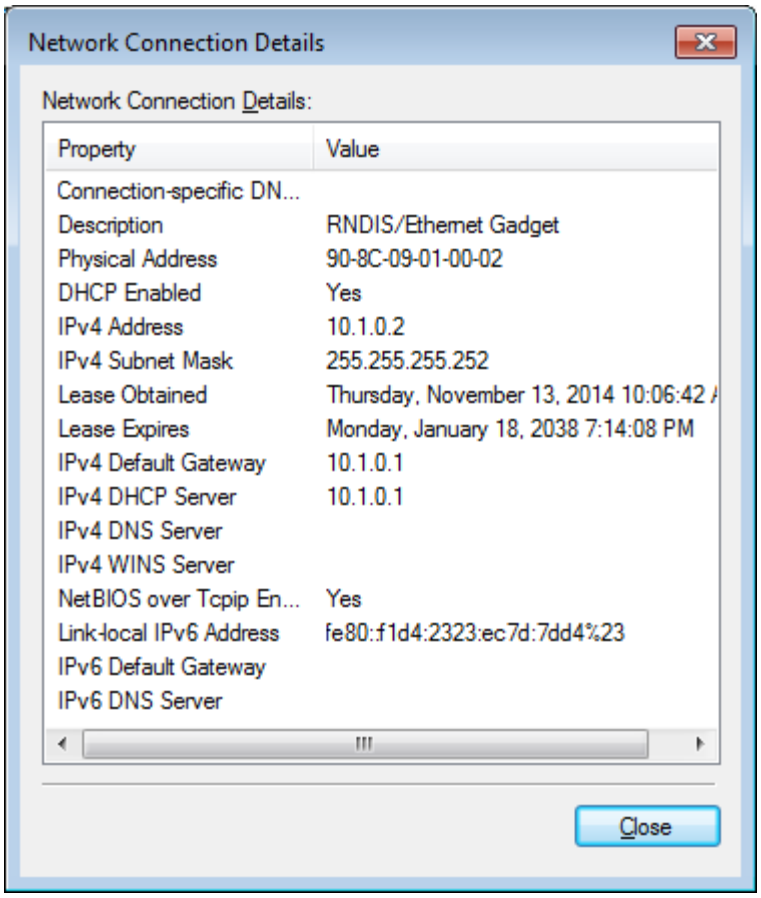


***Figure 4** : Windows Connection Details.*

11. Select **OK** and **Close** to dismiss the dialogs.

Linux

1. Download the Promira Serial Platform Linux support files from the website and follow the instructions in the README.txt file.
2. Connect Promira to PC with USB cable.
3. Use `ifconfig -a` to determine the network interface of Promira. If you do not recognize which one is the new interface, compare the lists from `ifconfig -a` before and after plugging in the device.

4. The Promira Serial Platform will be shown as tpp*x*.

Mac OS X

1. Connect Promira to PC with USB cable.
2. Select **Network** under **System Preferences.**
3. Select **Total Phase Promira Platform.**

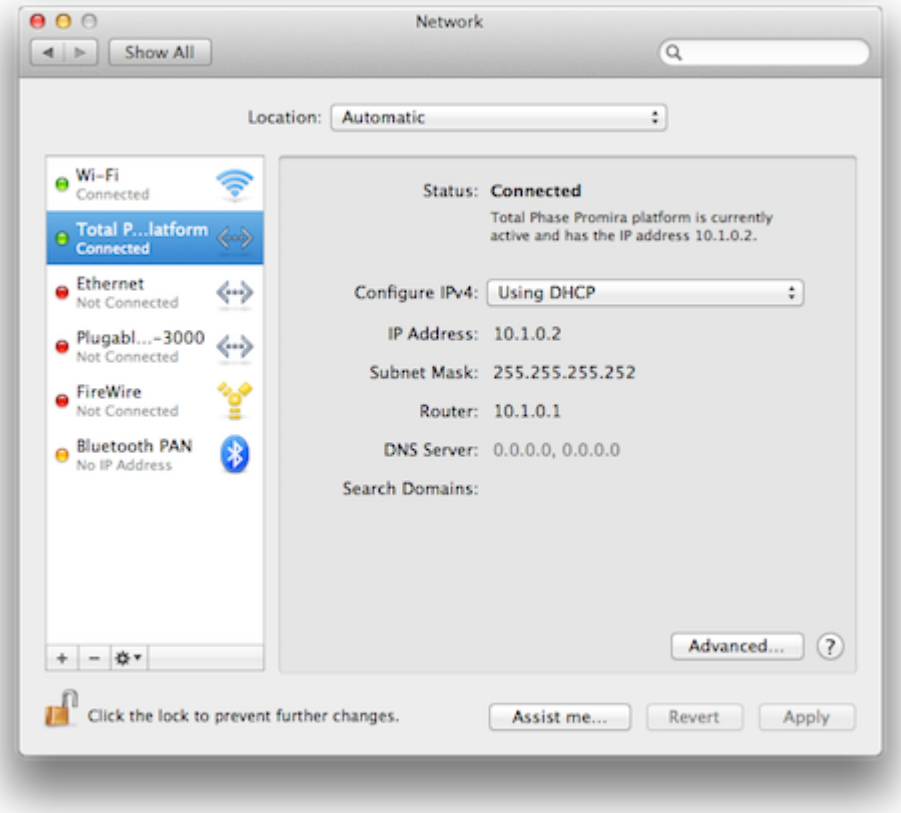


***Figure 5** : Mac OS X Network Preferences window.*

4. Select **Using DHCP** from the **Configure IPv4:** dropdown list box.

5. Select **Apply** to apply the changes.

5.2.2 Ethernet

The Promira platform can be connected to the computer through the Ethernet port. The Promira network preference for Ethernet is configurable by the Control Center Serial. The Promira platform can be configured to static IP addressing or dynamic IP addressing (DHCP). The default network preferences of the Promira platform for Ethernet is a static and its IP address is 192.168.11.1. This IP address can be changed using the **promira** command-line application provided in the **util** folder in the Promira API package. For more details see the Control Center Serial manual section 2.8 Configuring Network Preference and the README.txt file in the API package.

5.3 Detecting IP addresses

To detect the IP addresses to which the Promira Serial Platforms are attached, use the `pm_find_devices` routine as described in following API documentation. Alternatively, the Control Center software can be used to list the available devices.

5.4 Dynamically Linked Library

The Promira requires the Promira DLL to operate and is only compatible with the Promira Serial Platform.

In addition to the Promira DLL, the Aardvark Compatibility DLL is provided to make the Aardvark API available for legacy and compatibility purposes.

5.4.2 DLL Location

Total Phase provides language bindings that can be integrated into any custom application. The default behavior of locating the Promira DLL and the Aardvark Compatibility DLL is dependent on the operating system platform and specific programming language environment. For example, for a C or C++ application, the following rules apply:

On a Windows system, this is as follows:

1. The directory from which the application binary was loaded.
2. The applications current directory.

3. 32-bit system directory (for a 32-bit application). Examples:
    1. `c:\Windows\System32` [Windows 7/8 32-bit]
    2. `c:\Windows\SysWow64` [Windows 7/8 64-bit]
4. 64-bit system directory (for a 64-bit application). Examples:
    1. `C:\Windows\System32` [Windows 7/8 64-bit]
5. The Windows directory. (Ex: `c:\Windows`)
6. The directories listed in the PATH environment variable.

On a Linux system, this is as follows:

1. First, search for the shared object in the application binary path. If the `/proc` filesystem is not present, this step is skipped.
2. Next, search in the applications current working directory.
3. Search the paths explicitly specified in `LD_LIBRARY_PATH`.
4. Finally, check any system library paths as specified in `/etc/ld.so.conf` and cached in `/etc/ld.so.cache`.

On a Mac OS X system, this is as follows:

1. First, search for the shared object in the application binary path.
2. Next, search in the applications current working directory.
3. Search the paths explicitly specified in `DYLD_LIBRARY_PATH`.
4. Finally, check the /usr/lib and /usr/local/lib system library paths.

If the DLL is still not found, an error will be returned by the binding function. The error code is `PM_UNABLE_TO_LOAD_LIBRARY` for the management API and `PS_APP_UNABLE_TO_LOAD_LIBRARY` for the application API.

5.4.3 DLL Versioning

The Promira Compatibility DLL checks to ensure that the firmware of a given device is compatible. Each DLL revision is tagged as being compatible with firmware revisions greater than or equal to a certain version number. Likewise, each firmware version is

tagged as being compatible with DLL revisions greater than or equal to a specific version number.

Here is an example.

```
DLL v1.20: compatible with Firmware >= v1.15
Firmware v1.30: compatible with DLL >= v1.20
```

Hence, the DLL is not compatible with any firmware less than version 1.15 and the firmware is not compatible with any DLL less than version 1.20. In this example, the version number constraints are satisfied and the DLL can safely connect to the target firmware without error. If there is a version mismatch, the API calls to open the device will fail. See the API documentation for further details.

6 Firmware

6.1 Field Upgrades

6.1.1 Upgrade Philosophy

The Promira Serial Platform is designed so that its internal firmware (FW) and License can be upgraded by the user, thereby allowing the inclusion of any additional applications purchased, software support renewals, performance enhancements, or critical fixes available after the receipt of the device.

The Promira Serial Platform shows multiple FW version numbers in the Control Center Serial GUI Configure Adapter window, Flash Center GUI - Add Adapters window, Data Center GUI connect window, and the Promira Utility window. The first one is the version number of the system FW and the others are the version numbers of the various Promira applications. For example, the FW numbers 1.10/1.00/x.xx represent FW system v1.10 and FW application v1.00 and so on.

Promira API has four main FW functions: pm_version, pm_app_version, ps_app_version, and pa_app_version. Promira API function pm_version returns FW system version and Promira API functions pm_app_version, ps_app_version, and pa_app_version return FW application versions.

6.1.2 Upgrade Procedure

Basic steps for License or Firmware Update with Promira Utility

- Step 1 - Connect the USB port of the Promira platform to the PC.
- Step 2 - Run the Promira Update Utility.
- Step 3 - Select the desired Promira Serial Platform by clicking on Promira button.
- Step 4 - Click the Update License/Firmware button to put the device into update mode and have it show up as a storage device on the PC.
- Step 5 - Copy the downloaded <name>.pmu file to the storage device.
- Step 6 - Power cycle the Promira platform.

Please refer to the Promira Utility product for more information on how to upgrade the firmware and license on the Promira Serial Platform.

7 API Documentation

7.1 Introduction

The Promira API documentation that follows is oriented toward the Promira Rosetta C bindings. The set of Promira API functions and their functionality is identical regardless of which Rosetta language binding is utilized. The only differences will be found in the calling convention of the functions. For further information on such differences please refer to the documentation that accompanies each language bindings in the Promira API Software distribution.

7.2 General Data Types

The following definitions are provided for convenience. All Promira data types are unsigned.

```
typedef unsigned char       u08;
typedef unsigned short      u16;
typedef unsigned int        u32;
typedef unsigned long long  u64;
typedef signed   char       s08;
typedef signed   short      s16;
typedef signed   int        s32;
typedef signed   long long  s64;
typedef float               f32;
```

7.3 Notes on Status Codes

Most of the Promira API functions can return a status or error code back to the caller. The complete list of status codes is provided at the end of this chapter and in the Promira

applications' user manuals. All of the error codes are assigned values less than 0, separating these responses from any numerical values returned by certain API functions.

7.4 Application Management Interface

7.4.1 Application Management

Find Devices (pm_find_devices)

```
int pm_find_devices (int   num_devices,
                     u32 * devices);
```

Get a list of IP addresses to which Promira adapters are attached.

Arguments

`num_devices`	maximum size of the array
`devices`	array into which the IP addresses are returned

Return Value

This function returns the number of devices found, regardless of the array size.

Specific Error Codes

`None.`

Details

Each element of the array is 4 byte integer value represented IP address. For instance, "192.168.1.2" is 0x0201A8C0.

Two IP addresses to same device might be returned when both Ethernet and Ethernet over USB are enabled.

If the input array is NULL, it is not filled with any values.

If there are more devices than the array size (as specified by `num_devices`), only the first `num_devices` IP addresses will be written into the array.

Find Devices (pm_find_devices_ext)

```
int pm_find_devices_ext (int   num_devices,
                         u32 * devices,
                         int   num_ids,
                         u32 * unique_ids
                         int   num_statuses
                         u32 * statuses);
```

Get a list of IP addresses and unique IDs to which Promira Serial Platforms are attached.

Arguments

`num_devices`	maximum number of IP addresses to return
`devices`	array into which the IP addresses are returned
`num_ids`	maximum number of unique IDs to return
`unique_ids`	array into which the unique IDs are returned
`num_statuses`	maximum number of statuses to return
`statuses`	array into which the statuses are returned

Return Value

This function returns the number of devices found, regardless of the array sizes.

Specific Error Codes

`None.`

Details

This function is the same as `pm_find_devices()` except that is also returns the unique IDs of each Promira adapter. The IDs are guaranteed to be non-zero if valid.

The IDs are the unsigned integer representation of the 10-digit serial numbers.

The number of devices and IDs returned in each of their respective arrays is determined by the minimum of `num_devices`, `num_ids`, and `statuses`.

If status is PM_DEVICE_NOT_FREE, the device is in-use by another host and is not ready for connection.

Open a Promira Serial Platform (pm_open)

```
Promira pm_open (const char * net_addr);
```

Open a connection to a Promira Serial Platform.

Arguments

`net_addr`	net address of the Promira Serial Platform. It could be an IPv4 address or a host name.

Return Value

This function returns a Promira handle, which is guaranteed to be greater than zero if valid.

Specific Error Codes

`PM_UNABLE_TO_OPEN`	The specified net address is not connected to a Promira Serial Platform.
`PM_INCOMPATIBLE_DEVICE`	There is a version mismatch between the DLL and the firmware. The DLL is not of a sufficient version for interoperability with the firmware version or vice versa.

Details

None.

Close the Promira Device (pm_close)

```
int pm_close (Promira promira);
```

Close the connection to the Promira adapter.

Arguments

`promira`	handle of the connection to the Promira Serial Platform to be closed

Return Value

The number of devices closed is returned on success. This will usually be 1.

Specific Error Codes

None.

Details

If the `promira` argument is zero, the function will attempt to close all possible handles, thereby closing all connections to Promira Serial Platforms.

Version (pm_version)

```
int pm_version (Promira          promira
                PromiraVersion * version);
```

Return the version matrix for the system connected to the given handle.

Arguments

`promira`	handle of the connection to the Promira Serial Platform
`version`	pointer to pre-allocated structure

Return Value

A status code is returned with `PM_OK` on success.

Specific Error Codes

None.

Details

The `PromiraVersion` structure describes the various version dependencies of application components. It can be used to determine which component caused an incompatibility error.

```
struct PromiraVersion {
  /* Software, firmware, and hardware versions. */
  u16 software;
  u16 firmware;
  u16 hardware;
```

```
    /* FW requires that SW must be >= this version. */
    u16 sw_req_by_fw;

    /* SW requires that FW must be >= this version. */
    u16 fw_req_by_sw;

    /* API requires that SW must be >= this version. */
    u16 api_req_by_sw;

    /* (year


If the handle is 0 or invalid, only software,
          fw_req_by_sw, and api_req_by_sw version
          are set.
```

Sleep (pm_sleep_ms)

```
int pm_sleep_ms (u32 milliseconds);
```

Sleep for given amount of time.

Arguments

`milliseconds`	number of milliseconds to sleep

Return Value

This function returns the number of milliseconds slept.

Specific Error Codes

`None.`

Details

This function provides a convenient cross-platform function to sleep the current thread using standard operating system functions.

The accuracy of this function depends on the operating system scheduler. This function will return the number of milliseconds that were actually slept.

Status String (pm_status_string)

```
const char *pm_status_string (int status);
```

Return the status string for the given status code.

Arguments

`status`	status code returned by a Promira application function.

Return Value

This function returns a human readable string that corresponds to status. If the code is not valid, it returns a NULL string.

Specific Error Codes

`None.`

Details

None.

Applications (pm_apps)

```
int pm_apps (Promira  promira,
             u16      apps_size,
             u08 *    apps);
```

Return the installed applications.

Arguments

`promira`	handle of the connection to the Promira Serial Platform
`apps_size`	number of bytes in `apps`
`apps`	buffer to place the applications string

Return Value

The length of the apps string in bytes.

Specific Error Codes

PM_INVALID_LICENSE	The installed license is corrupt or invalid.

Details

The apps argument will be filled with a colon separated string containing the names of applications that are installed for this device.

Pass a value of 0 for apps and apps_size to request the total length of the applications string. Note this length does not include the null terminating character.

Licensed Applications (pm_licensed_apps)

```
int pm_licensed_apps (Promira  promira,
                      u16      apps_size,
                      u08 *    apps);
```

Return the licensed applications.

Arguments

promira	handle of the connection to the Promira Serial Platform
apps_size	number of bytes in apps
apps	buffer to place the licensed applications string

Return Value

The length of the apps string in bytes.

Specific Error Codes

None.

Details

The apps argument will be filled with a colon separated string containing the names of applications that are licensed for this device.

Pass a value of 0 for apps and apps_size to request the total length of the applications string. Note this length does not include the null terminating character.

Application Version (pm_app_version)

```
int pm_app_version (Promira          promira,
```

```
                                const char *     app_name,
                                PromiraVersion * version);
```

Return the version matrix for the given application in the system connected to the given handle.

Arguments

`promira`	handle of the connection to the Promira Serial Platform
`app_name`	application name
`version`	pointer to pre-allocated structure

Return Value

A status code is returned with `PM_OK` on success.

Specific Error Codes

`None.`

Details

This function is to check the version number of the application without loading it.

Only `firmware`, `hardware`, and `sw_req_by_fw` version are set.

Launch an Application (pm_load)

```
int pm_load (Promira      promira,
             const char * app_name);
```

Launch an application.

Arguments

`promira`	handle of the connection to the Promira Serial Platform
`app_name`	application name to be launched

Return Value

A Promira status code is returned with `PM_OK` on success.

Specific Error Codes

PM_APP_NOT_FOUND	There is no application with the specified name.
PM_UNABLE_TO_LOAD_APP	Unable to load the application.
PM_APP_ALREADY_LOADED	There is the auto started application. Use pm_load_ext to forcibly load a new application.

Details

This function works same as pm_load_ext with PM_LOAD_NO_FLAGS.

Launch an Application (pm_load_ext)

```
int pm_load_ext (Promira          promira,
                 const char *     app_name,
                 PromiraLoadFlags flags);
```

Launch an application.

Arguments

promira	handle of the connection to the Promira Serial Platform
app_name	application name to be launched
flags	enumerated values specifying the load flag See Table 3

Table 3 : flags enumerated types

PM_LOAD_NO_FLAGS	No flags.
PM_LOAD_UNLOAD	Unload any auto started application first.

Return Value

A Promira status code is returned with PM_OK on success.

Specific Error Codes

PM_APP_NOT_FOUND	There is no application with the specified name.
PM_UNABLE_TO_LOAD_APP	Unable to load the application.

PM_APP_ALREADY_LOADED	There is the auto started application. Use PM_LOAD_UNLOAD to forcibly load a new application.

Details

The Promira Serial Platform can have more than one application. Prior to the use of any subsystems in the application, it needs to be launched.

The Promira Serial Platform with firmware version 1.35 has three applications. "com.totalphase.promact_is", "com.totalphase.promana_espi", and "com.totalphase.promact_cab".

Query Network Configurations (pm_query_net)

```
int pm_query_net (Promira           promira,
                  PromiraNetCommand cmd,
                  int               buf_size
                  u08 *             buf);
```

Get the Ethernet network interface properties for this Promira handle.

Arguments

promira	handle of the connection to the Promira Serial Platform
cmd	enumerated values specifying the network configuration to get. See Table 4.
buf_size	size of the array for network configuration
buf	array into which the network configuration is returned

Table 4 : cmd enumerated types

PM_NET_ETH_ENABLE	Query whether Ethernet is enabled or not.
PM_NET_ETH_IP	Query the IP address of Ethernet.
PM_NET_ETH_NETMASK	Query the netmask of Ethernet.
PM_NET_ETH_MAC	Query the MAC address of Ethernet.
PM_NET_ETH_DHCP_ENABLE	Query whether DHCP for Ethernet is enabled or not.
PM_NET_USB_IP	Query the IP address of Ethernet over USB.
PM_NET_USB_NETMASK	Query the netmask of Ethernet over USB.
PM_NET_USB_MAC	Query the MAC address of Ethernet over USB.

Return Value

Length of the network configuration string is returned on success.

Specific Error Codes

None.

Details

For PM_NET_ETH_ENABLE and PM_NET_ETH_DHCP_ENABLE, '1' will be returned when enabled, otherwise '0' will be returned.

Configure Network Configuration (pm_config_net)

```
int pm_config_net (Promira           promira,
                   PromiraNetCommand cmd,
                   const char *      data);
```

Configure the Ethernet network interface.

Arguments

promira	handle of the connection to the Promira Serial Platform
cmd	enumerated values specifying the network configuration to get. See Table 5
data	network configuration data

Table 5 : cmd enumerated types

PM_NET_ETH_ENABLE	Enable/Disable Ethernet.
PM_NET_ETH_IP	Configure the IP address of Ethernet
PM_NET_ETH_NETMASK	Configure the netmask of Ethernet
PM_NET_ETH_DHCP_ENABLE	Enable/Disable DHCP for Ethernet.
PM_NET_ETH_DHCP_RENEW	Renew the DHCP for Ethernet.

Return Value

A Promira status code is returned with PM_OK on success.

Specific Error Codes

PM_NETCONFIG_ERROR	Unable to configure network interface.
PM_INVALID_IPADDR	Invalid IP address.
PM_INVALID_NETMASK	Invalid network mask.
PM_INVALID_SUBNET	The 192.168.12.x subnet is reserved. It is an error to configure the Ethernet interface to any address in this subnet.
PM_NETCONFIG_LOST_CONNECTION	Applying the last settings has changed the IP address of the connection. Any further access doesn't work since the connection to the device has lost and pm_close needs to be called to clean up the resources.

Details

In order to enable Ethernet or DHCP for Ethernet, call this function with '1' as data. In order to disable, call this with '0' as data.

Network interface can be configured by the promira utility (promira.exe or promira). See the section Ethernet for more detail.

Query Preferences (pm_query_pref)

```
int pm_query_pref (Promira      promira,
                   const char * key,
                   int          buf_size
                   u08 *        buf);
```

Get preferences.

Arguments

promira	handle of the connection to the Promira Serial Platform
key	key of preference
buf_size	size of the array for the value of preference
buf	array into which the value of preference is returned

Return Value

Length of the value of preference is returned on success.

Specific Error Codes

None.

Details

System firmware uses the value of **"app.autostart"** to determine which application will be loaded on boot up.

Configure Preferences (pm_config_pref)

```
int pm_config_pref (Promira      promira,
                    const char * key,
                    const char * data);
```

Configure the preferences.

Arguments

promira	handle of the connection to the Promira Serial Platform
key	key of preference
data	preference data

Return Value

A Promira status code is returned with PM_OK on success.

Specific Error Codes

None.

Details

Preferences can be set by the promira utility (promira.exe or promira).
> promira (ip) key value

Read License (pm_read_license)

```
int pm_read_license (Promira promira,
                     int     buf_size,
                     u08 *   buf);
```

Read the entire license.

Arguments

`promira`	handle of the connection to the Promira Serial Platform
`buf_size`	number of bytes in `buf`
`buf`	buffer to place the license string

Return Value

The length of the license in bytes.

Specific Error Codes

`PM_INVALID_LICENSE`	The installed license is corrupt or invalid.

Details

Pass a value of `0` for `buf` and `buf_size` to request the total length of the license.

Features (pm_features)

```
int pm_features (Promira      promira,
                 const char * app,
                 u16          features_size,
                 u08 *        features);
```

Return the features licensed for the application.

Arguments

`promira`	handle of the connection to the Promira Serial Platform
`app`	name of the application
`features_size`	number of bytes in `features`
`features`	buffer to place the features string

Return Value

The length of the features string in bytes.

Specific Error Codes

`PM_INVALID_LICENSE`	The installed license is corrupt or invalid.
`PM_INVALID_APP`	The application name is invalid.

Details

The `features` argument will be filled with a colon separated string containing the names of features that are licensed for `app`.

Pass a value of `0` for `features` and `features_size` to request the total length of the features string. Note this length does not include the null terminating character.

Feature Value (pm_feature_value)

```
int pm_feature_value (Promira      promira,
                      const char * app,
                      const char * feature,
                      u16          value_size,
                      u08 *        value);
```

Return the value of a feature for the application.

Arguments

`promira`	handle of the connection to the Promira Serial Platform
`app`	name of the application
`feature`	name of the feature
`value_size`	number of bytes in `value`
`value`	buffer to place the value string

Return Value

The length of the value string in bytes.

Specific Error Codes

`PM_INVALID_LICENSE`	The installed license is corrupt or invalid.
`PM_INVALID_APP`	The application name is invalid.
`PM_INVALID_FEATURE`	The feature name is invalid.

Details

The `value` argument will be filled with a string containing the value of the `feature`. The `feature` must be one of those provided by `pm_features` for this `app`.

Pass a value of `0` for `value` and `value_size` to request the total length of the value string. Note this length does not include the null terminating character.

Feature Description (pm_feature_description)

```
int pm_feature_description (Promira      promira,
                            const char * app,
                            const char * feature,
                            u16          desc_size,
                            u08 *        desc);
```

Return the description of a feature for the application.

Arguments

`promira`	handle of the connection to the Promira Serial Platform
`app`	name of the application
`feature`	name of the feature
`desc_size`	number of bytes in `desc`
`desc`	buffer to place the description string

Return Value

The length of the description string in bytes.

Specific Error Codes

`PM_INVALID_LICENSE`	The installed license is corrupt or invalid.
`PM_INVALID_APP`	The application name is invalid.
`PM_INVALID_FEATURE`	The feature name is invalid.

Details

The `desc` argument will be filled with a string containing the description of the `feature`. The `feature` must be one of those provided by `pm_features` for this `app`.

Pass a value of `0` for `desc` and `desc_size` to request the total length of the description string. Note this length does not include the null terminating character.

7.5 Error Codes

Table 6 : Management Error Codes

Literal Name	Value	pm_status_string() return value
PM_OK	0	ok
PM_UNABLE_TO_LOAD_LIBRARY	-1	unable to load library
PM_UNABLE_TO_LOAD_DRIVER	-2	unable to load USB driver
PM_UNABLE_TO_LOAD_FUNCTION	-3	unable to load binding function
PM_INCOMPATIBLE_LIBRARY	-4	incompatible library version
PM_INCOMPATIBLE_DEVICE	-5	incompatible device version
PM_COMMUNICATION_ERROR	-6	communication error
PM_UNABLE_TO_OPEN	-7	unable to open device
PM_UNABLE_TO_CLOSE	-8	unable to close device
PM_INVALID_HANDLE	-9	invalid device handle
PM_CONFIG_ERROR	-10	configuration error
PM_SHORT_BUFFER	-11	output buffer not large enough
PM_FUNCTION_NOT_AVAILABLE	-12	function not available
PM_APP_NOT_FOUND	-101	app not found
PM_INVALID_LICENSE	-102	invalid license
PM_UNABLE_TO_LOAD_APP	-103	unable to load app
PM_INVALID_DEVICE	-104	invalid device for license
PM_INVALID_DATE	-105	invalid date
PM_NOT_LICENSED	-106	not licensed
PM_INVALID_APP	-107	invalid app
PM_INVALID_FEATURE	-108	invalid feature
PM_UNLICENSED_APP	-109	unlicensed app
PM_APP_ALREADY_LOADED	-110	app already loaded
PM_NETCONFIG_ERROR	-201	network configuration error
PM_INVALID_IPADDR	-202	invalid IP address

PM_INVALID_NETMASK	-203	invalid netmask
PM_INVALID_SUBNET	-204	invalid subnet
PM_NETCONFIG_UNSUPPORTED	-205	unable to set network configuration
PM_NETCONFIG_LOST_CONNECTION	-206	changed, but connection has lost

8 Legal / Contact

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