

TIP866-SW-65

Windows 2000/XP Device Driver

8 Channel Serial Interface IP

Version 1.1.x

User Manual

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1 Introduction

1.1 Device Driver

The TIP866-SW-65 Windows WDM (Windows Driver Model) device driver is a kernel mode driver which allows the operation of the TIP866 on an Intel or Intel-compatible x86 Windows 2000, Windows XP operating systems.

The standard file input and output (I/O) functions (CreateFile, CloseHandle, ReadFile, ReadFileEx, WriteFile, and WriteFileEx) provide the basic interface for opening and closing a communications resource handle and for performing read and write operations.

The TIP866 device driver is fully compatible to the standard Windows WDM serial device driver (*serial.sys*).

Because the TIP866 device driver is stacked on the TEWS TECHNOLOGIES IPAC carrier driver, it's necessary to install also the appropriate IPAC carrier driver. Please refer to the IPAC carrier driver user manual for further information.

The TIP866-SW-65 device driver supports the modules listed below:

TIP866-10	8 channel RS232 serial I/O	(IndustryPack)
TIP866-11	8 channel TTL serial I/O	(IndustryPack)
TIP840-20	8 channel RS422 serial I/O	(IndustryPack)

To get more information about the features and use of TIP866 devices it is recommended to read the manuals listed below.

- TIP866 User manual
- TIP866 Engineering Manual
- CARRIER-SW-65 IPAC Carrier User Manual

1.2 IPAC Carrier Driver

IndustryPack (IPAC) carrier boards have different implementations of the system to IndustryPack bus bridge logic, different implementations of interrupt and error handling and so on. Also the different byte ordering (big-endian versus little-endian) of CPU boards will cause problems on accessing the IndustryPack I/O and memory spaces.

To simplify the implementation of IPAC device drivers which work with any supported carrier board, TEWS TECHNOLOGIES has designed a so called Carrier Driver that hides all differences of different carrier boards under a well defined interface.

The TEWS TECHNOLOGIES IPAC Carrier Driver CARRIER-SW-65 is part of this TIP866-SW-65 distribution. It is located in directory CARRIER-SW-65 on the corresponding distribution media.

This IPAC Device Driver requires a properly installed IPAC Carrier Driver. Due to the design of the Carrier Driver, it is sufficient to install the IPAC Carrier Driver once, even if multiple IPAC Device Drivers are used.

Please refer to the CARRIER-SW-65 User Manual for a detailed description how to install and setup the CARRIER-SW-65 device driver, and for a description of the TEWS TECHNOLOGIES IPAC Carrier Driver concept.

2 Installation

Following files are located in directory TIP866-SW-65 on the distribution media:

tip866Port.sys	Device driver binary of TIP866 Port Driver
tip866Port.inf	Installation script for TIP866 Port Driver
tip866Bus.sys	Device driver binary of TIP866 Bus Driver
tip866Bus.inf	Installation script for TIP866 Bus Driver
TIP866-SW-65-1.1.4.pdf	This document
ChangeLog.txt	Release history
Release.txt	Release information

2.1 Software Installation

The TIP866 Device Driver software assumes a correctly installed and active TEWS TECHNOLOGIES IPAC Carrier Driver.

2.1.1 Windows 2000

This section describes how to install the TIP866 Device Driver on a Windows 2000 operating system.

After installing the TIP866 card(s) and boot-up your system, Windows 2000 setup will show a "**New hardware found**" dialog box.

The "**Upgrade Device Driver Wizard**" dialog box will appear on your screen. Click "**Next**" button to continue.

In the following dialog box, choose "**Search for a suitable driver for my device**". Click "**Next**" button to continue.

Insert the TIP866 driver media; and select "**Disk Drive**" and/or "**CD-ROM**" in the dialog box. Click "**Next**" button to continue.

Now the driver wizard should find a suitable device driver on the media. Click "**Next**" button to continue.

A box will appear announcing, that the digital signature could not be found. Click "**OK**" to continue the driver installation.

Complete the device driver installation and click "**Finish**" to take all the changes effect.

Now the driver for the 8 TIP866 Ports will be requested.

A "**New hardware found**" dialog box will appear again.

The "**Upgrade Device Driver Wizard**" dialog box will appear on your screen.
Click "**Next**" button to continue.

In the following dialog box, choose "**Search for a suitable driver for my device**".
Click "**Next**" button to continue.

Insert the TIP866 driver media; and select "**Disk Drive**" and/or "**CD-ROM**" in the dialog box.
Click "**Next**" button to continue.

Now the driver wizard should find a suitable device driver on the media.
Click "**Next**" button to continue.

Complete the device driver installation and click "**Finish**" to take all the changes effect.

Now the system will install the driver for the other TIP866 devices automatically. (If not, please follow the instructions above again.)

Now copy all needed files (TIP866-SW-65.pdf) to the desired target directories.

After successful installation the TIP866 device driver will start immediately and the devices (TIP866_1, TIP866_2, ...) for all recognized TIP866 Ports will be created.

2.1.2 Windows XP

This section describes how to install the TIP866 Device Driver on a Windows XP operating system.

After installing the TIP866 card(s) and boot-up your system, Windows XP setup will show the search for new hardware window. (TIP866)

Insert the TIP866 driver disk.

Choose "**Automatic Software Install**" and click "**Next**" button to continue.

A window will announce that the Windows-Logo test has failed.
Click "**continue install**" button to continue.

A window will announce that the driver has been installed.
Click "**Finish**" to take all the changes effect.

Now Windows XP setup will show the search for new hardware window. (TIP866 Port n)

Insert the TIP866 driver media.

Choose "**Automatic Software Install**" and click "**Next**" button to continue.

A window will announce that the Windows-Logo test has failed.
Click "**continue install**" button to continue.

A window will announce that the driver has been installed.
Click "**Finish**" to take all the changes effect.

Continue with the last 3 steps until the all TIP866 Ports are installed.

Now copy all needed files (tip866Port.h, TIP866-SW-65.pdf) to the desired target directories.

After successful installation the TIP866 device driver will start immediately and the devices (TIP866_1, TIP866_2, ...) for all recognized TIP866 Ports will be created.

2.1.3 Confirming Installation

To confirm that the driver has been properly loaded in Windows 2000/XP, perform the following steps:

From Windows 2000/XP, open the "**Control Panel**" from "**My Computer**".

Click the "**System**" icon and choose the "**Hardware**" tab, and then click the "**Device Manager**" button.

Click the "+" in front of "**MultiportsSerial**".

The driver "**TIP866 Bus**" should appear.

Click the "+" in front of "**Ports**".

The driver "**TIP866 Port**" (for each of the 8 Ports) should appear.

3 FIFO Configuration

After Installation of the TIP866 Device Driver the trigger level for transmit and receive FIFO are set to their default values.

Default values are:

Receive FIFO	Transmit FIFO
56	8

If the default values are not suitable the configuration can be changed by modifying the registry, for instance with regedt32.

To change the transmit trigger level the following value must be modified.

HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\tip866Port\TxFIFO

Valid trigger levels are 8, 16, 32 and 56.

To change the receiver trigger level the following value must be modified.

HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\tip866Port\RxFIFO

Valid trigger levels are 8, 16, 56 and 60

The configuration of the FIFO trigger level is used for all TIP866 devices in common. To make the changes current the system must be restarted.

4 TIP866 Device Driver Programming

The TIP866 device driver is full compatible to the standard Windows serial device driver (*serial.sys*) and therefore programming of the TIP866 driver is the same as the standard Windows serial driver.

The standard file input and output (I/O) functions (CreateFile, CloseHandle, ReadFile, ReadFileEx, WriteFile, and WriteFileEx) can be used for opening and closing a communications resource handle and for performing read and write operations.

The Microsoft® Win32® application programming interface (API) also includes a set of functions that provide special communication services like reading and setting communication parameter, transmitting immediate characters, setting timeouts and so on.

All of these standard Win32 communication functions are described in detail in the Windows Platform SDK Documentation (Windows base services / Communication).

For details refer to the Win32 Programmers Reference of your used programming tools (C++, Visual Basic etc.)

The windows name of the first port is *Device\TIP866Port0* of the second port *Device\TIP866Port1* and so on.

The DOS device name for TIP866 devices is COM1, COM2, COM3 and so on. If there other serial devices in the system the prefix starts with a higher number (see windows name).

The mapping between windows device names and DOS device names for TIP866 devices can be retrieved from the Registry.

HKEY_LOCAL_MACHINE\Hardware\DEVICEMAP\SERIALCOMM