HENGSTLER

Thermal Printer C-56
Windows XP Driver

S 6 8 4 0 0 2
Release 2 – Version 1.09 - 2008MAY31

Installation Guidelines
Operation Manual
Driver Synopsis
Programming Manual

Revision 9

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HENGSTLER GmbH

Uhlandstr. 49

78554 Aldingen / Germany

Tel. +49 (0) 7424-89 0

Fax +49 (0) 7424-89 500

eMail: info@hengstler.com

www.hengstler.com

Safety Precautions

- Please read and understand these specifications thoroughly before using the C-56 printer driver in combinations with your application. Please keep the specifications carefully in a place where they may be easily consulted when the printer driver is used.

- Please do not modify this C-56 printer driver as this may cause unpredictable behaviour.

- The C-56 printer driver is not intended to be installed in computer systems or in combination with devices, such as those used in life-support medical equipment, undersea relays, and aerospace applications or for nuclear power control, in which extremely high reliability is required. If you are considering such applications, please consult our customer service department.

- There is a general possibility of component failure. Every effort has been made to improve product quality but such failures cannot be completely excluded. Please assume that such failure may occur before using the C-56 printer driver.

- Take care that the contents of this document matches the version of your C-56 printer driver.

We would urge that these specifications should be thoroughly understood to assure that the C-56 printer driver is used safely in your company or associated organization. Please indicate or describe in your products and in the user manuals those items, which are related to the prevention or avoidance of danger and draw these to the attention of the eventual client (the user).

Any approval or order based upon this manual will not be accepted by HENGSTLER. Any approval must be made upon samples of the product.

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Document History

Revision	Date	Autor	Status	Description
0	2004NOV23	HENGSTLER/HOR	Closed	Initial version.
1	2004DEC02	HENGSTLER/HOR	Closed	Contents corrected. Chapters synopsis and programming manual added .
2	2004DEC16	HENGSTLER/HOR	Closed	Modifications of driver V1.03 documented: - upload of character sets through UI/SDK' - upload of firmware through SDK - added C56SdkDemo04
3	2004JAN12	HENGSTLER/HOR	Closed	Modifications of driver V1.04 documented: - remove trailing blanks checkbox in paper control allows variable paper length
4	2004JAN18	HENGSTLER/HOR	Closed	Document and driver version both matches V1.05. Driver history added (from V1.03).
5	2005 MAR 14	HENGSTLER/HOR	Closed	Extended with driver V1.06/V1.07 functionality.
6	2007 JAN 31	HENGSTLER/HOR	Closed	Extended with driver R1-V1.08 functionality.
7	2008 MAY 31	HENGSTLER/HOR	Closed	Adapted to driver R2-V1.09.

Comments

List of known missing, incomplete or malfunctioning parts:

•

Driver History

Version	Date	Major Modification
1.03	2004DEC16	Upload of firmware and primary/secondary character sets (done through the C-56 driver setup dialog and SDK).
1.04	2004JAN12	Variable paper size printing through GDI (“removal of trailing blanks” flag within the driver setup dialog).
1.05	2004JAN18	Limitation of automatic printer status requests (status requests to C-56 printer are only done, when printer status has been requested through SDK or driver setup dialog).
1.06	2005FEB02	SDK extended with: - firmware upload function - character set upload function - binary file upload function - spooler control functions User interface extended with: - firmware version selection in upload tab New demo applications added: - C56SdkDemo04 demonstrating upload of firmware and character sets - C56SdkDemo05 demonstrating continuous ticket printing - C56SdkDemo06 demonstrating load and storage of printer properties - C56SdkDemo07 demonstrating upload of binary files New tool added: - C56ConfigTool for setup of RS232 communication parameter
1.07	2005MAR15	SDK extended with: - Information on last confirmed job number Print monitor “thread end” bug removed: - Fast display of properties - Improved recognition of driver plug and play New demo applications added: - C56SdkDemo07 demonstrating load and storage of escape command files. New tool added: - C56ExhibitionTool used for demonstrating the C56 at CeBIT 2005
1.08	2007JAN31	First released version: - C-56 configuration parameter for RS232 control flow limited to hardware - Extended with new SDK functions for document handling - Extended with new SDK functions for new C-56 emulation commands - Extended with new SDK functions for wide character sets (e.g. Chinese/Korean) - Extended with new controls for C56-EXTENDED printers, which have a cutter. - Removal of specific applications: C56SdkDemo04, C56SdkDemo07 - Extended with new applications: C56ExhibitionTool2006, C56CutterDemoTool, C56PrintTerminal, C56SpeedTestTool, C56SdkDemo10, C56UploadTool - Extended with new components: C56TB2 (DLL) - Implementation of horizontal/vertical data compression for GDI printing

1.09	2008MAY31	Second release version: - The timeout time in the API is the timeout time for the I/O added 2500 ms - Processing of comments (e.g. “//Comment”) in escape command text corrected. Instead of all subsequent data being ignored, only text until end of line is ignored. - C56 Configuration data extended with paper jam detection flags (available from C56 firmware version 3.01i) and with paper low detection setting (available from C56 firmware version 3.01j). - C56 Configuration data extended with paper jam detection flags (available from - C56 firmware version 3.01i) and with paper low detection setting (available from C56 firmware version 3.01j) - Text “Paper low detected through blackmark” changed to “Paper low detected“. - Tool C56ExhibitionTool changed to C56ExhibitionTool2005. - Model indicator field added (12/24 volt). - API enumeration C56_STATUS_RESPONSE extended with C56SR_PRINTER_PAPERINCHUTE. - Status dialog extended with paper in chute flag. Demo applications removed/added: - C56SdkDemo04 removed - C56SdkDemo08 added for initiating complex printouts using emulation commands. - C56SdkDemo09 added which demonstrates usage of registered images. - C56SdkDemo10 added which can be used for periodical printouts of a sample ticket.

Applicable Documentation

Following documentation is applicable to this document:

[1] Operator Manual - Thermal Printer C-56

Part-Nr: Hengstler 2684019
File: 2-684-019_Operator Manual C56.pdf

[2] Emulation Command Set Manual - Thermal Printer C-56

Part-Nr: Hengstler D 684 017
File: D-684-017_EmulationCommandSet_C56-E.pdf

[3] Thermal Printer C-56 - Windows XP Driver – Release Note

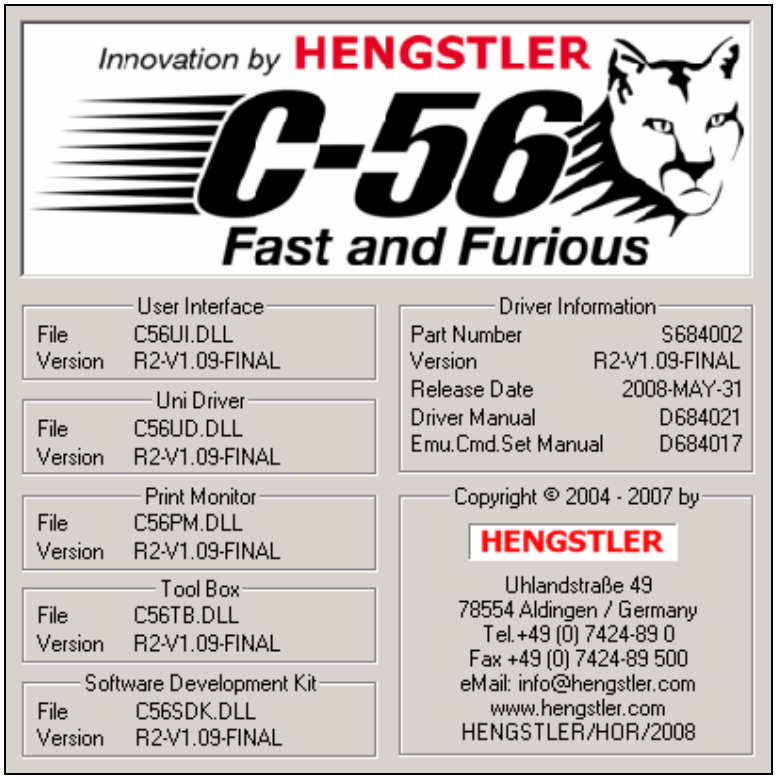
Part-Nr: Hengstler D 684 004
File: D-684-059-C56-WindowsXpDriver_ReleaseNote.pdf

[4] Thermal Printer C-56 – Driver and Documentation - Customer CD

Part-Nr: Hengstler 1 684 010

Note on the actual C-56 Driver Version

The current C-56 driver has version “R2-V1.09” and contains various sub-components with own version history. The versions of these components are shown in the figure below.



The version of the C-56 driver and its components can be viewed in the printer properties dialog, that will show ERROR on version mismatch. Version information is also available for each driver component by examining their file properties with the windows explorer. Note that file C56TB.DLL and C56SDK.DLL may not be updated after having installed the new driver.

In case of version mismatch after installation, you will need to use the C56Uninstaller-Utility, which will uninstall all C56 drivers and files from your system. It also possible to recover from this problem by hand when you:

- stop the spooler with command “NET STOP SPOOLER”
- replace the older (not installed) driver files by those supplied on the installation package
- start the spooler with command “NET START SPOOLER”

Also note that the C-56 driver components normally are positioned in “C:\Windows\System32” and “C:\Windows\system32\spool\drivers\w32x86\3”.

Abbreviations

Abbreviation	Description
<cd>	Absolute path to the installation CD –ROM (e.g. “D:”)
<windows>	Absolute path to the windows directory (e.g. “C:\WINDOWS\”)
<system32>	Relative path to the System32 directory of the Windows operating system from the <windows> directory (e.g. “SYSTEM32”)
<driver>	Relative path to the printer driver directory from the <windows>\<system32> directory (e.g “spool\drivers\w32x86\3”
<program-files>	Absolute path to the program files directory (e.g. “C:\Program Files\”)
<start-program>	Path to the start menu directory (e.g. “C:\Documents and Settings\All Users\Start Menu\Programs”)
GDI	***G**raphical **D**evice **I**nterface*, a Windows standard for representing graphical objects and transmitting them to output devices, such as monitors and printers.
SDK	***S**oftware **D**evelopment **K**it*, a programming package that enables a programmer to develop applications for a specific platform. Typically an SDK includes one or more APIs, programming tools, and documentation.
API	***A**pplication **P**rogram **I**nterface*, a set of routines, protocols, and tools for building software applications. A good API makes it easier to develop a program by providing all the building blocks. A programmer puts the blocks together.
DLL	***D**ynamic **L**ink **L**ibrary*, a library of executable functions or data that can be used by a Windows application. Typically, a DLL provides one or more particular functions and a program accesses the functions by creating either a static or dynamic link to the DLL. A static link remains constant during program execution while a dynamic link is created by the program as needed. DLLs can also contain just data. DLL files usually end with the extension *.dll,.exe., drv,* or *.fon.* A DLL can be used by several applications at the same time. Some DLLs are provided with the Windows operating system and available for any Windows application. Other DLLs are written for a particular application and are loaded with the application.

1 Introduction

This reference manual describes the Hengstler C-56 printer driver “S684002 - Release 2 – Version 1.09 – 2009MAY31”, which is used for printing and interacting with the Hengstler C-56 thermal printer through windows XP and 2000.

In this manual, the usage of the C-56 printer driver is split into following sections:

- C-56 Printer Driver - Installation Guidelines
- C-56 Printer Driver - Operation Manual
- C-56 Printer Driver – Synopsis
- C-56 Printer Driver - Programming Manual

The current C56 printer driver “S684002 - Release 2 – Version 1.09 – 2008MAY31”, is released for usage with C-56 printers which have either an USB or d RS232 type board and firmware version V1.30, V1.31, V1.32, V2.01, V3.00 or V3.01 installed.

The version of the firmware which is installed in your C-56 printer can be inquired by removing and reinserting the paper at the back of the printer.

2 C-56 Printer Driver - Installation Guidelines

2.1 Introduction

This chapter describes the basic installation and Uninstallation of the C-56 printer driver within the MS-Windows XP operating system. This C-56 printer driver is to be used with both UBS and RS232 type boards.

Following subjects are described throughout this chapter:

- C-56 printer driver distribution
- Installing the C-56 printer driver
- The C-56 printer driver files
- Uninstalling the C-56 printer driver

Since installation of the C56 printer driver under MS-Windows 2000, is about similar to that under MS-Windows XP, this installation is not described in this document.

The procedures described in here also apply to MS-Windows 2000, whereas some of the dialogs may differ in shape and appearance.

2.2 The C-56 printer driver distribution

Among other information, the C-56 printer driver is distributed on the Hengstler C-56 customer CD [4].

In **"<cd>\Driver & SDK\"** and **"<cd>\Driver & SDK\SDK\",** following two INF-Files are used for driver installation:

- **.\HengstlerC56.INF**
  This file is used for installing the C-56 printer driver only (end user systems).

- **.\SDK\HengstlerC56-SDK.INF**
  This file is used for installing the C-56 printer driver on development platforms, and includes the C-56 printer driver as well as the SDK (Software Development Kit / Application Programming Interface).

"<cd>\Driver & SDK" contains a zipped version of the C-56 printer driver distribution:

- **.\ C56-S684002-WindowsXpDriver-R2-V1_09-2008MAY31.zip**
  This file is a zipped-copy of "<cd>\Driver & SDK\".

"<cd>\Driver & SDK" contains the release note:

- **.\ D-684-004-C56-WindowsXpDriver_ReleaseNote.pdf**
  This file contains the release note for the C-56 printer driver.

"<cd>\Driver & SDK\" contains following sub-directories:

- **.\Driver**
  This directory contains all C-56 printer driver files for installation under MS-Windows XP:
  .\i386\C56.gpd = Generic Printer Description File
  .\i386\C56PM.dll = Printer Job Language Monitor (DLL)
  .\i386\C56RC.dll = Driver Recources (version information) (DLL)
  .\i386\C56SDK.dll = Software Development Kit (DLL)
  .\i386\C56TB.dll = Tool Box (DLL)
  .\i386\C56UD.dll = Uni-Driver (DLL)
  .\i386\C56UD.ini = Uni-Driver Initialization File
  .\i386\C56UI.dll = User Interface (DLL)
  .\i386\C56VS.dll = Vendor-Setup (DLL)

- **.\SDK**
  This directory contains all files relevant for integrating the application programming interface (API) of the SDK in the application:
  .\C56SDK.h = C-Code header file describing the API
  .\C56SDK.lib = Library for linking the C56SDK.dll

- **.\Samples**
  This directory contains a sample application for demonstrating how the SDK could be integrated in the application:
  .\C56SdkDemo···.exe = Demo programs demonstrating SDK usage
  .\C56SdkDemo···.zip = Source code of demo programs (Visual C++, .NET)
  .\C56GdiDemo···.doc = Demo document 01-10 demonstrating GDI usage (MS-Word)

- **.\Fonts**
  This directory contains a sample characters sets:
  .\ Standard-2004.08X16.C56CS
  = Standard 08X16 character set, which is used as primary character set in C-56 firmware V1.3x, V2.0x and V3.0x
  .\ Standard-2004.12X24.C56CS
  = Standard 12X24 character set , which is used as primary character set in C-56 firmware V1.3x, V2.0x and V3.0x
  .\ Standard-CBL-2004.08X16.C56CS
  = Standard 08X16 character set, slightly modified primary
  .\ Standard-CBL-2004.12X24.C56CS
  = Standard 12X24 character set, slightly modified primary
  .\ Standard-GVRKG-2004.08X16.C56CS
  = Standard 08X16 character set, which is used as secondary character set in C-56 firmware V3.0x
  .\ Standard-GVRKG-2004.12X24.C56CS
  = Standard 12X24 character set, which is used as secondary character set in C-56 firmware V3.0x
  .\ Hexadecimal-08Bit-HOR-2004.08X16.C56CS
  = Hexadecimal 08X16 character set, for test purposes only
  .\ Hexadecimal-08Bit-HOR-2004.12X24.C56CS
  = Hexadecimal 12X24 character set, for test purposes only
  .\ Korean-KS5601.20X20.C56WCS
  = Korean KS5601 20X20 wide character set , that can be uploaded into the flash memory of C-56 printers that have an RS232 type controller board
  .\ Standard-Mall.24X24.C56WCS
  = Sample 24X24 wide character set, that can be uploaded into the flash memory of C-56 printers that have an RS232 type controller board

- **.\Tools**
  This directory contains tools used in combination with the C-56 printer driver, but which are no main component of the printer driver:

.\C56ConfigTool.exe	= Tool for configuring certain printer settings (e.g RS232 settings, dot history settings, part number, flags, etc.)
.\C56CutterDemoTool.exe	= Tool used to demonstrate the C-56 printer with has been extended with a cutter
.\C56ExhibitionTool.exe	= Tool used to demonstrate printing on two C-56 printers simultaneously (used on CeBIT 2005)
.\C56TicketNr···.prn	= Print files of C56ExhibitionTool
.\C56ExhibitionTool2006.exe	= Tool used to demonstrate printing on two C-56 printers simultaneously (used on Electronica 2006)
.\ C56Exhibition2006···.prn	= Print files of C56ExhibitionTool2006
.\C56PrintTerminal.exe	= Tool used evaluate emulation commands
.\C56SpeedTestTool.exe	= Tool used to test various print speeds
.\C56UnInstaller.exe.exe	= Tool used to uninstall C-56 printer drivers and driver files
.\C56UploadTool.exe	= Tool used to upload firmware, character sets and other into the C-56 printer.
.\C56TB2.dll	= Tool box 2, library that is used by tools (DLL)
.\MFC71.dll	= Microsoft Foundation Classes, used by applications/tools
.\msvcr71.dll	= Microsoft Message Servers, used by applications/tools

- **.\Other**
  This directory contains files, related to or required for operating the C-56 printer driver but which are not part of the printer driver itself:

.\MFC71.dll	= Microsoft Foundation Classes, used by applications/tools
.\msvcr71.dll	= Microsoft Message Servers, used by applications/tools
.\NET START SPOOLER	= Command for starting the printer spooler (service only)
.\NET STOP SPOOLER	= Command for stopping the printer spooler (service only)

- **.\Documentation**
  This directory contains documentation which is related to the C-56 printer driver:
  .\S684002-Note-20080520-HowToUseTheC56DriverWithWindowsVista.txt
  = Note which describes how to use the driver under windows Vista.
  .\D-684-021-C56-WindowsXpDriver_Manual.doc
  = A copy of this manual.

2.3 Installing the C-56 printer driver

The procedure for installation of the C-56 depends on the type of board (USB/RS232) and the firmware installed (V1.3X, V2.0X / V3.0X).

In case of the RS232 board with firmware V2.0X or more or the USB board with firmware V1.3X manual installation of the printer driver is required.

In case of the USB board with firmware V3.0X or more, the operating system automatically prompts for driver installation.

In both cases you must use the printer properties dialog to manually select the appropriate C-56 paper tray after having installed the driver.

2.3.1 Manual installation of the C-56 printer driver

Manual installation of the C-56 printer driver under MS-Windows XP is done as standard windows “Printers & Faxes” installation in following steps:

- Selecting the “Printer & Faxes” dialog
- Adding a new printer to “Printer & Faxes” dialog
- Going through the “Add Printer Wizard”

Manual installation of the C-56 printer driver is required for each RS232 type board and for USB type boards that have the firmware version V1.3X.

Note, that the installation under MS-Windows 2000 is similar to that of MS-Windows XP.

2.3.1.1 Selecting the “Printer & Faxes” dialog

The “Printer and Faxes” dialog is started though the start-menu by selecting ...

[Start] ·· [Settings] ·· [Printers and Faxes]

... as is shown in Figure 1below.

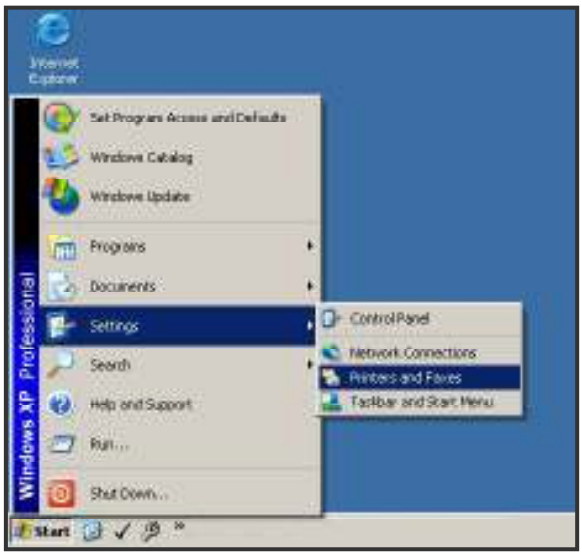


Figure 1: Selecting the "Printers and Faxes" dialog

Within the „Printer and Faxes“ dialog, installed printers are listed as shown in Figure 2 below.

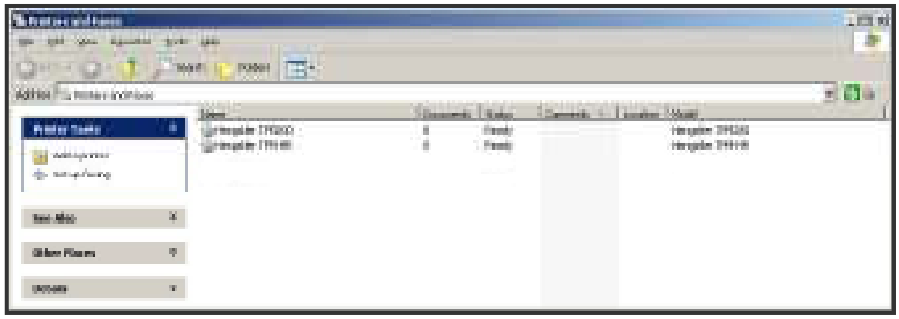


Figure 2: List of installed printers

Before installing, this dialog should be checked for instances of previously installed „HENGSTLER C-56 THERMAL PRINTER“ models as is shown in Figure 3 below. Note that these printers must be uninstalled to avoid a file mismatch with versions (see chapter 2.6 „Uninstalling the C-56 printer driver “).

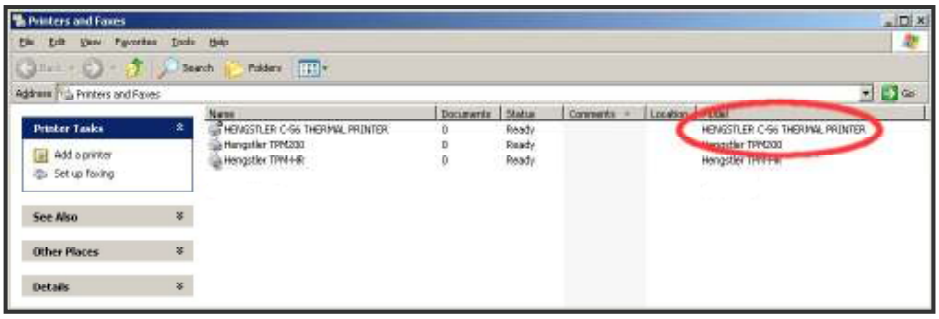


Figure 3: Check for installed „HENGSTLER C-56 THERMAL PRINTER“ models

Note that you may install multiple printers of model „HENGSTLER C-56 THERMAL PRINTER“ (e.g. USB001, USB002, etc.), whereas all of them must use the same C-56 driver version.

2.3.1.2 Adding a new printer to “Printer & Faxes” dialog

The C-56 Printer Driver is installed with use of the „Add Printer Wizard“ which is started from the „Printers and Faxes“ dialog by simply selecting the „Add printer“ item in „Printer Task“ as shown in Figure 4 below.

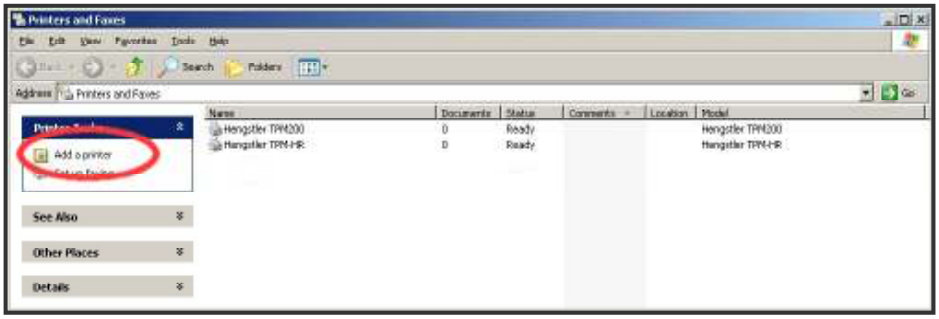


Figure 4: Adding a printer from the „Printers and Faxes“ dialog

The „Add Printer Wizard“ guides you through this installation.

2.3.1.3 Going through the “Add Printer Wizard”

This chapter guides you through the „Add Printer Wizard“.

2.3.1.3.1 The „Welcome....“ page

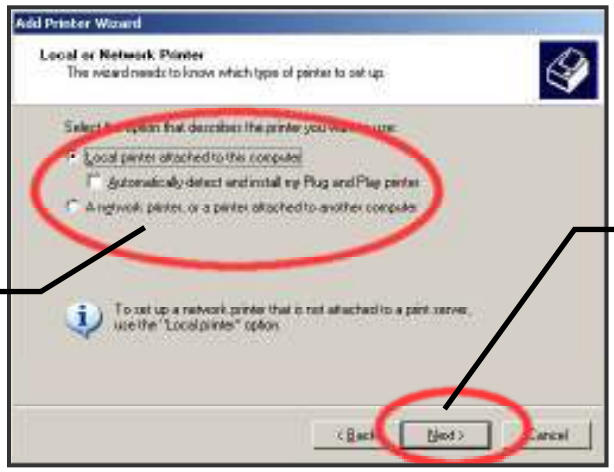
The first page of the „Add Printer Wizard“ (see Figure 5) displays information on the wizard and plug and play printer. This information on „plug and play ....“ can be ignored when installing the C-56 printer driver.

Select [Next] to continue installation on the next page

Figure 5: The „Welcome“ page of the „Add Printer Wizard“

2.3.1.3.2 The „Local or Network Printer“ page

The 2nd page of the „Add Printer Wizard“ is used to select either a local or a network printer. The C-56 can only be attached as local printer and is not a plug and play printer. See Figure 6 for the appropriate C-56 settings.



Select local printer only and do not automatically detect a plug and play printer

Select [Next] to continue installation on the next page

Figure 6: The „Local or Network Printer“ page in the „Add Printer Wizard“

2.3.1.3.3 The „Select a Printer Port“ page

The 3rd page of the „Add Printer Wizard“ is used to attach a printer port to the C-56 Thermal Printer. Since the actual C-56 controller is available for USB-Connection and RS232-Connection, you need to select an USBXXX (note that XXX indicates digits) or COMX port here. If your C-56 thermal printer is connected to the first USB/RS323 port of your system, you should select USB001 (Virtual Printer port for USB) / COM1. A sample selection of the USB port is shown in Figure 7. The communication settings for the RS232 port are setup within the printer properties dialog.

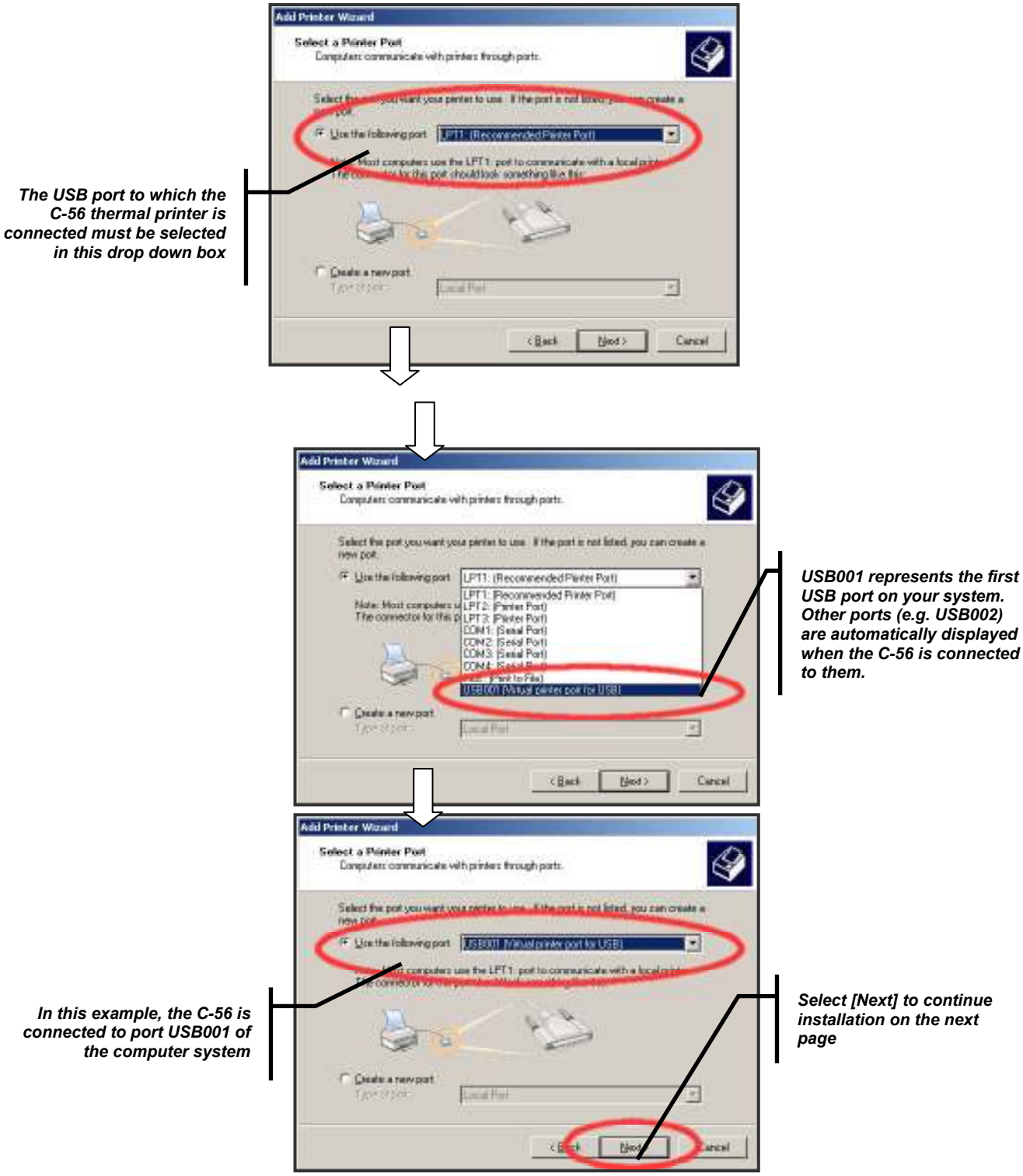


Figure 7: The „Select a Printer Port“ page in the „Add Printer Wizard“

Note that, if you connect your C-56 printer to a different USB port as the one specified here, a selection of the port in the “Printer Properties” is required.

2.3.1.3.4 The „Install Printer Software “ page

The 4th page of the „Add Printer Wizard“ is used to select the C-56 printer driver softwareThe C-56 printer driver software is selected by:

- … specifying the path to the INF file **„HengstlerC56.INF“** or **„HengstlerC56+SDK.INF“**
- … selecting **„HENGSTLER C-56 THERMAL PRINTER“** from the list of available printers.

Note that the distribution CD contains both the **„HengstlerC56.INF“** and **„HengstlerC56+SDK.INF“** files, whereas the last one also installs the software development kit and sample applications for development purposes.

Figure 8 shows all steps required for selecting the appropriate C-56 printer driver software.

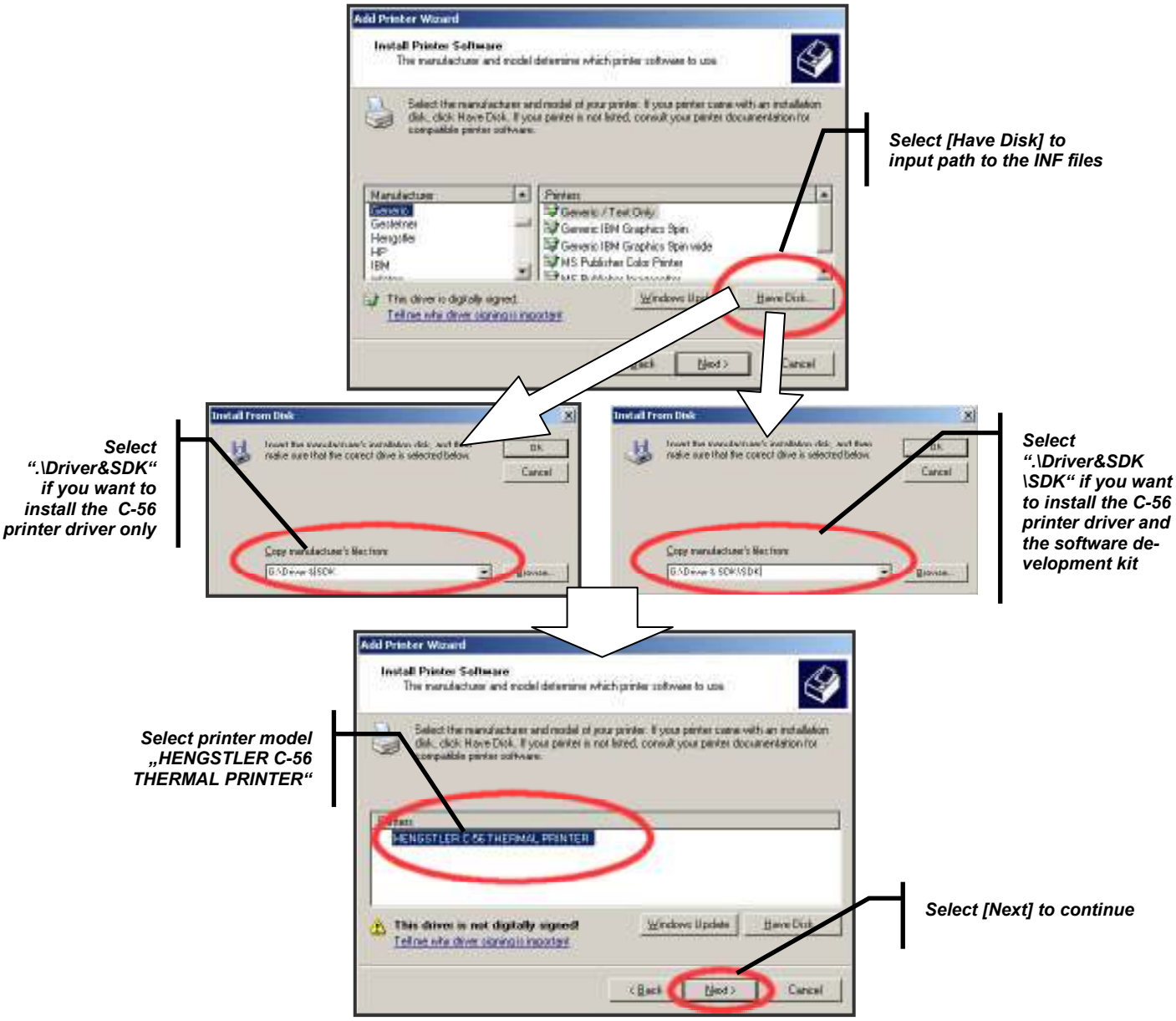
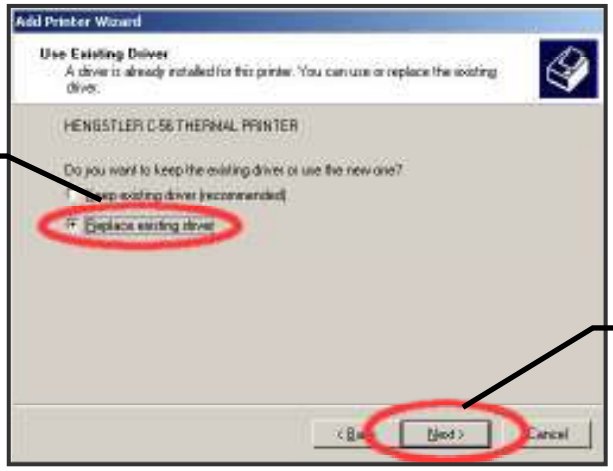


Figure 8: The „Install Printer Software“ page in the „Add Printer Wizard“

2.3.1.3.5 The „Use Existing Driver“ page

The 5th page of the „Add Printer Wizard“ selects, if an already installed driver is to be used or if this driver is to be replaced. To ensure that old driver files are replaced by new ones you must select „Replace existing driver“ in this page.



Be sure to replace the existing C-56 driver

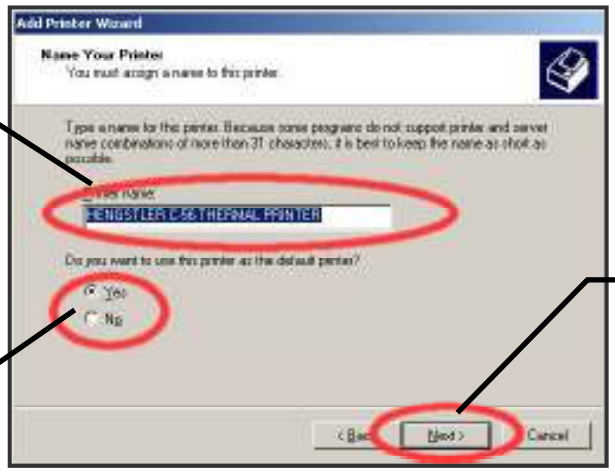
Select [Next] to continue

Figure 9: The „Use Existing Driver“ page in the „Add Printer Wizard“

2.3.1.3.6 The „Name Your Printer“ page

The 6th page is used to give your printer a name. If you use multiple C-56 printers on different ports, you can distinguish these printers by giving them an individual name (e.g. „C-56 USB001“ or „C-56 USB002“).

Also you can make the printer the default printer in your system.



Select an appropriate name for this C-56 printer if required (e.g. „C-56 USB001“)

Select C-56 printer as default if required.

Select [Next] to continue installation on the next page

Figure 10: The „Name Your Printer“ page in the „Add Printer Wizard“

2.3.1.3.7 The „Print Test Page“ page

The 7th page is used to select if you want the „Add Printer Wizard“ to printout a test page after installation.

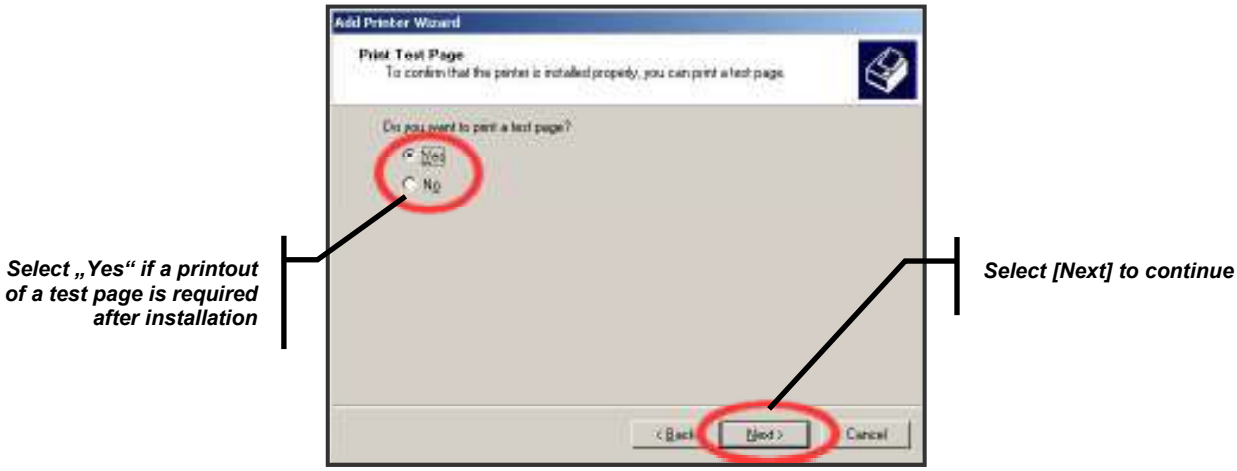


Figure 11: The „Print Test Page“ page in the „Add Printer Wizard“

2.3.1.3.8 The C-56 printer driver installation

The last page of the „Add Printer Wizard“ summarizes all settings. You should verify if everything matches your requirements. The internal installation is initiated by clicking [Finish] .

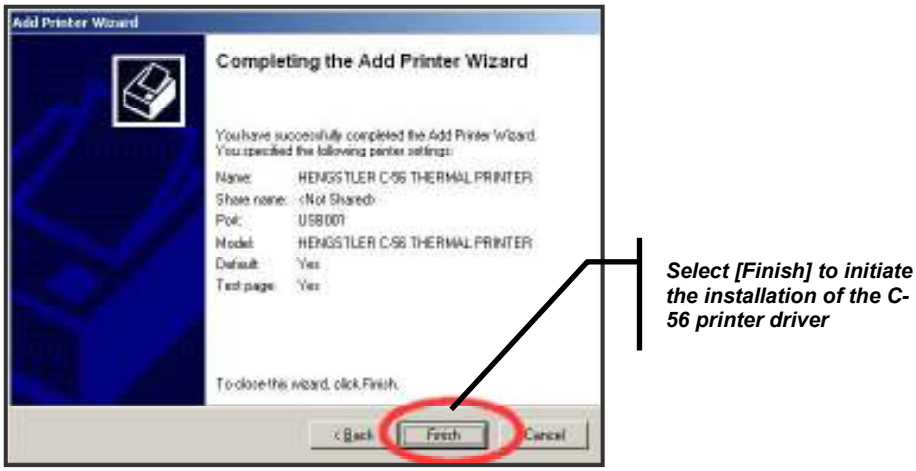


Figure 12: The „Final“ page in the „Add Printer Wizard“

The actual C-56 printer driver installation is represented by progress dialogs in which the „Add Printer Wizards“ shows what files are copied to which directories. You can find information on copied files and their destination directories in chapter 2.4.

During installation the „Add Printer Wizard“ might inform you that this driver is not digitally signed. Such signatures are provided by Microsoft and for the time being, we do not have a digital signature. To continue installation you can simply ignore this message.

If you have previously selected a printout of the test page, then a MS-Windows test page will be send to the printer. Also, a dialog prompts you for the result of the test page printout. You should note, that the width of the C-56 printer is not optimal for printing of this general test page and that there will be a large border at the left and right side of the printout. To make test-printouts it is better to use more appropriate applications such as MS-WORD.

Please don't forget to select the appropriate paper tray in the printer properties dialog, especially when you are using the C-56 printer through GDI.

2.3.1.4 Verifying the success of the C-56 printer driver installation

Successful installation can be verified in the „Printer and Faxes“ dialog. If it contains the printer model „HENGSTLER C-56 THERMAL PRINTER“, then the installation succeeded. Note that the name of the printer may vary from the model name (e.g. „C-56 USB001“).

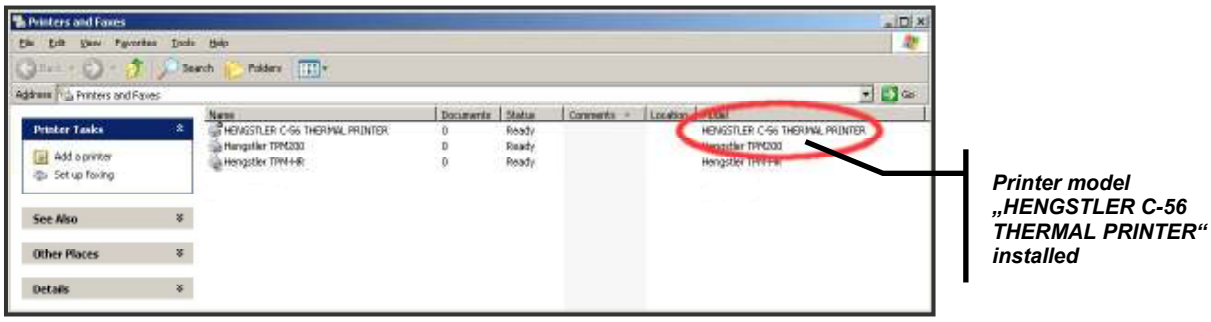


Figure 13: The „Printer and Faxes“ dialog with the C-56 printer driver installed

2.3.2 Automatic installation of the C-56 printer driver

Automatic installation of the C-56 printer driver is supported for USB type boards that have the firmware version V2.00 or up.

After you have plugged the USB cable of the C-56 printer containing firmware V2.00 or up into the host computer, Window launches the “Found New Hardware Wizard”, that will guide you through the installation process.

2.3.2.1 Going through the „Found New Hardware Wizard“

This chapter guides you through the „Found New Hardware Wizard“.

2.3.2.1.1 Informing the wizard on the way of installation

In the first page you can inform the wizard, that you want to:

- “install from a list or specific location”
- “Install the software automatically”

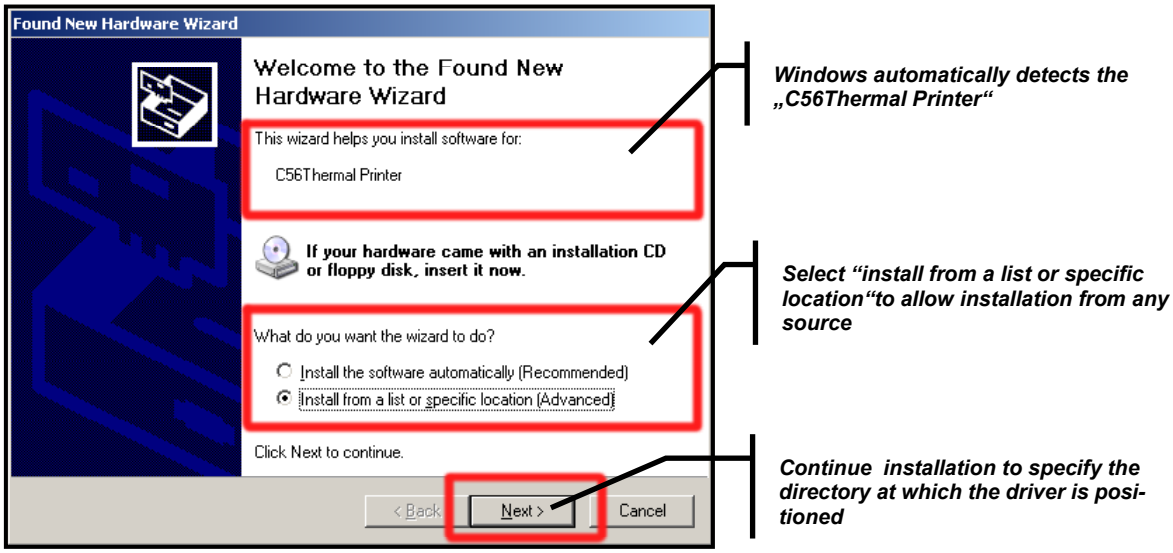


Figure 14: The „Found New Hardware Wizard“ – Specify way of installation

To allow installation from any location (e.g. from the C-56 distribution CD), it is best to select “Install from a list or specific location”, whereas this will allow you to specify the path to the driver directory.

You can however decide to select the “Install the software automatically” option, when:

- You have all C-56 driver files in the root directory of a CD.
- You have already installed the driver and are plugging the C-56 printer into a different USB port.
- You have already installed the driver and are plugging a second C-56 printer into a different USB port.

2.3.2.1.2 Informing the wizard about the driver location

If you have previously selected “Install from a list or specific location”, then you will be prompted to specify the location at which the driver is positioned.

You can either let the wizard search for the best driver or manually specify the driver that is to be installed. In our sample below we choose to let the wizard search for the best driver, whereas we did no search removable media and explicitly included the path to our C-56 driver directory.

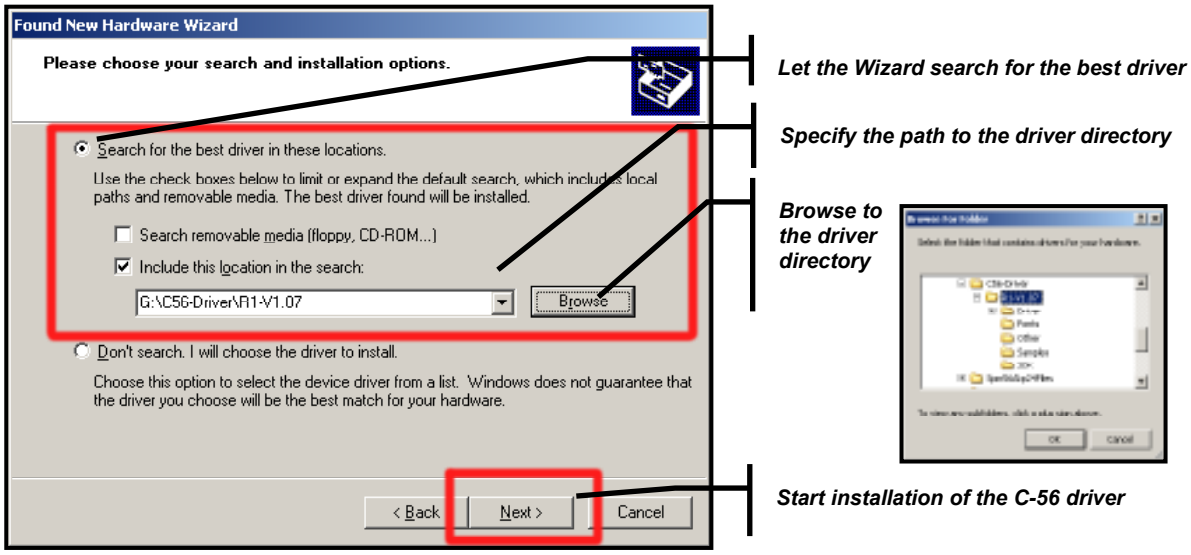


Figure 15: The „Found New Hardware Wizard“ - Specifying the driver location

With the “Browse” option you can browse to the position at which the driver is positioned. In normal, this is the directory shown in the sample above. If, however, you also want to install the SDK files, then you should select the sub-directory “SDK”. In normal these SDK is not installed on end-user systems.

2.3.2.2 Finishing the „Found New Hardware Wizard

After having detected the appropriate driver for the “C56Thermal Printer”, the wizard will start installation of this C-56 driver.

During this installation the wizard might inform you that this driver is not digitally signed. Such signatures are provided by Microsoft and for the time being, we do not have a digital signature. To continue installation you can simply ignore this message.

After successful installation the wizard informs you that installation has completed.

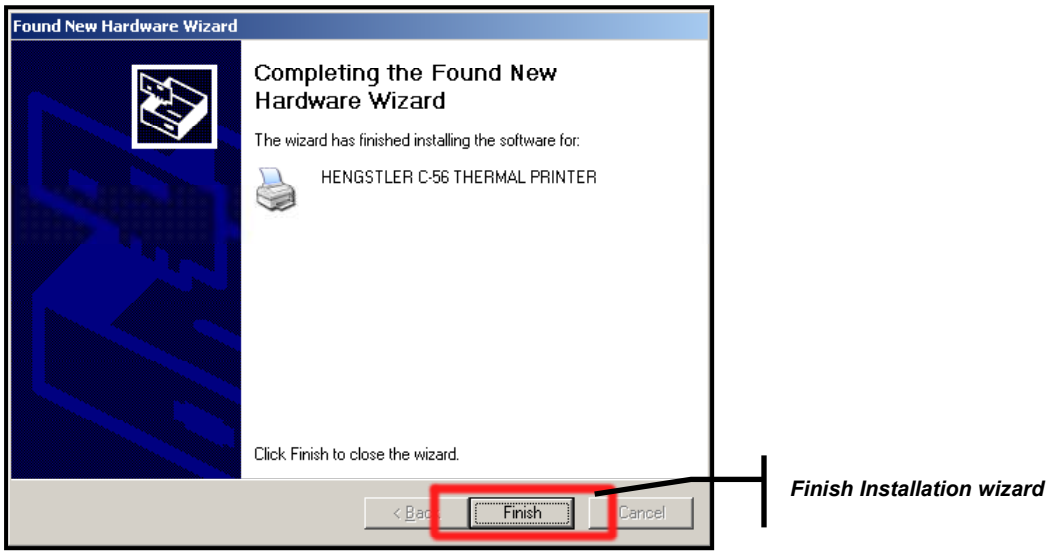


Figure 16: The „Found New Hardware Wizard“ – Completing the installation

Please don’t forget to select the appropriate paper tray in the printer properties dialog, especially when you are using the C-56 printer through GDI.

2.3.3 Selecting the C-56 Paper Tray

After having installed the C-56 printer driver, you need to select the C-56 paper tray as paper source using the „printer properties“ dialog. The paper size will be selected automatically, only if this selection has been done.

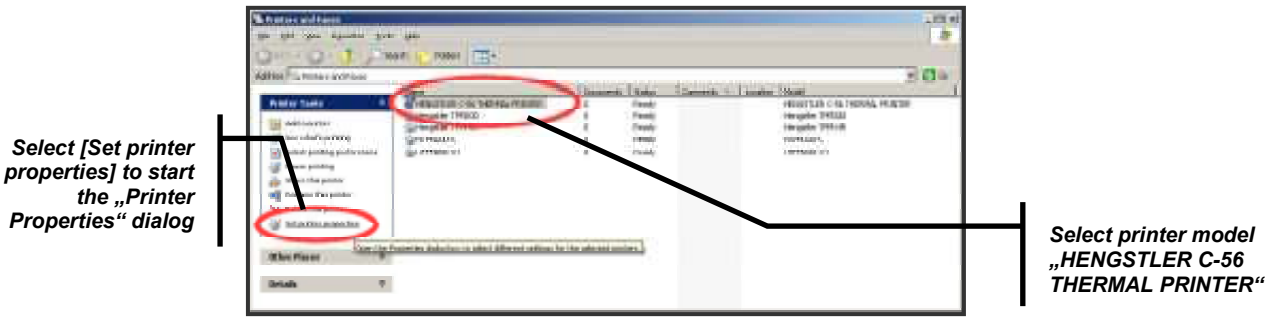


Figure 17: Starting the „Printer Properties“ dialog for the C-56 printer driver.

In the „HENGSTLER C-56 THERMAL PRINTER Properties“ dialog, the tab-page „General“ contains the [Printing Preferences] button that starts the „Printing Preferences“ dialog. This „HENGSTLER C-56 THERMAL PRINTER Preferences“ dialog allows you to set the paper source to „C-56 Paper Tray“. The procedure for selecting the „C-56 Paper Tray is shown in Figure 18.

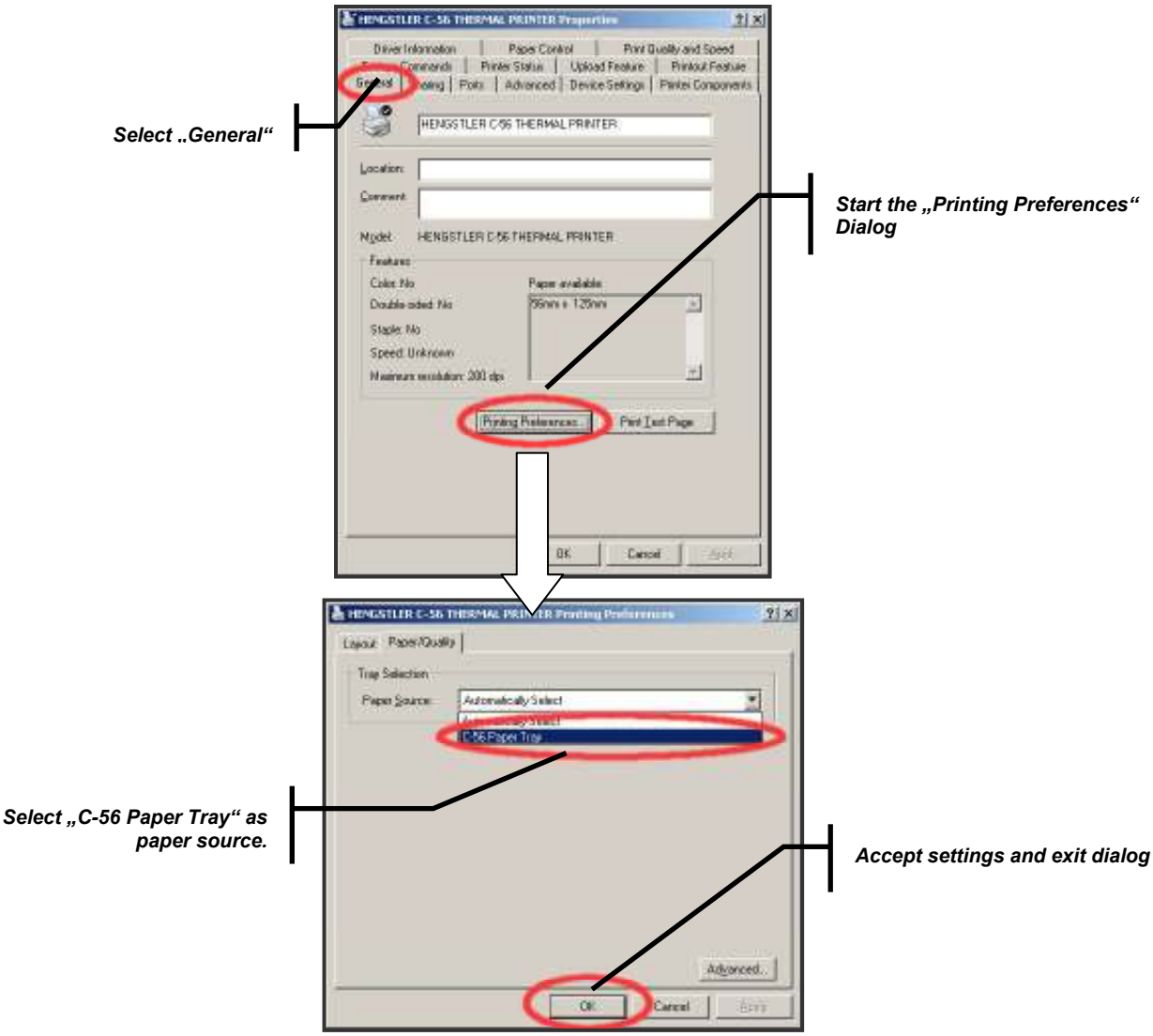


Figure 18: Selecting the „C-56 Paper Tray“ as paper source for the C-56 printer driver.

2.4 Printer driver installation using DOS commands

Sometimes it is required that the installation of the printer driver becomes integrated into a customer specific installation utility. For those cases Windows XP permits you to install a printer from the command line whereas this command might be easily integratable into the customer specific installation utility.

The DOS command for Hengstler printer driver installation under Windows XP is:

```
rundll32.exe printui.dll,PrintUIEntry
   /if /q
   /m ”<printer-driver-name>”
   /f “<inf-file-name>”
   /r “<port-name>”
   /b “<base-printer-name>”
```

Sample printer driver installation commands:

- Installation of the Hengstler C-56 printer driver on LPT1:

```
rundll32 printui.dll,PrintUIEntry
   /if /q
   /m "HENGSTLER C-56 THERMAL PRINTER"
   /f "C:\Tmp\Product\HengstlerC56.inf"
   /r "lpt1:"
   /b "HENGSTLER C-56 THERMAL PRINTER"
```

- Installation of the Hengstler C-56 printer driver on COM1 with printer name “C-56 Serial”:

```
rundll32 printui.dll,PrintUIEntry
   /if /q
   /m "HENGSTLER C-56 THERMAL PRINTER"
   /f "C:\Tmp\Product\HengstlerC56.inf"
   /r "com1:"
   /b “C-56 Serial”
```

Detailed information on the printer user interface can be retrieved by launching command „rundll32 printui.dll,PrintUIEntry /?“, whereas following information will be displayed:

```
sage: rundll32 printui.dll,PrintUIEntry [options] [@commandfile]
   /a[file] binary file name
   /b[name] base printer name
   /c[name] unc machine name if the action is on a remote machine
   /dl delete local printer
   /dn delete network printer connection
   /dd delete printer driver
   /e display printing preferences
   /f[file] either inf file or output file
   /ga add per machine printer connections
   /ge enum per machine printer connections
   /gd delete per machine printer connections
   /h[arch] driver architecture one of the following, Alpha | Intel | IA64
   /ia install printer driver using inf file
   /id install printer driver using add printer driver wizard
   /if install printer using inf file
   /ii install printer using add printer wizard with an inf file
   /il install printer using add printer wizard
   /in add network printer connection
   /j[provider] print provider name
   /k print test page to specified printer, cannot be combined with command when
installing a printer
   /l[path] printer driver source path
   /m[model] printer driver model name
   /n[name] printer name
   /o display printer queue view
   /p display printer properties
   /q quiet mode, do not display error messages
   /r[port] port name
   /s display server properties
   /Ss Store printer settings into a file
```

```
   /Sr Restore printer settings from a file
   Store or restore printer settings option flags that must be placed at the end of
command:
   2                                PRINTER_INFO_2
   7                                PRINTER_INFO_7
   c                                Color Profile
   d                                PrinterData
   s                                Security descriptor
   g                                Global DevMode
   m                                Minimal settings
   u                                User DevMode
   r                                Resolve name conflicts
   f                                Force name
   p                                Resolve port
   /u use the existing printer driver if it's already installed
   /t[#] zero based index page to start on
   /v[version] driver version one of the following, Windows 95, 98 and Me | Windows NT
4.0 | Windows NT 4.0 or 2000 | Windows 2000 or XP | Windows XP
   /w prompt the user for a driver if specified driver is not found in the inf
   /y set printer as the default
   /Xg get printer settings
   /Xs set printer settings
   /z do not auto share this printer
   /Y do not auto generate a printer name
   /K changes the meaning of /v and /h to accept 0,1,2,3, respectively Windows IA64 |
Windows NT x86 | Windows NT Alpha_AXP | Windows 4.0
   /Z share this printer, can only be used with the /if option
   /? help this message
   @[file] command line argument file
   /Mw[message] show a warning message before committing the command
   /Mq[message] show a confirmation message before committing the command
   /W[flags] specifies flags and switches for the wizards (for APW & APDW)
   r                                make the wizards to be restart-able from the last
page
   /G[flags] specifies global flags and switches
   w                                suppress setup driver warnings UI (super quiet mode)

Examples:
   Run server properties:
rundll32 printui.dll,PrintUIEntry /s /t1 /n\\machine
   Run printer properties:
rundll32 printui.dll,PrintUIEntry /p /n\\machine\printer
   Run add printer wizard localy:
rundll32 printui.dll,PrintUIEntry /il
   Run add printer wizard on \\machine:
rundll32 printui.dll,PrintUIEntry /il /c\\machine
   Run queue view:
rundll32 printui.dll,PrintUIEntry /o /n\\machine\printer
   Run inf install:
rundll32 printui.dll,PrintUIEntry /if /b "Test Printer" /f %windir%\inf\ntprint.inf /r
"lpt1:" /m "AGFA-AccuSet v52.3"
   Run add printer wizard using inf:
rundll32 printui.dll,PrintUIEntry /ii /f %windir%\inf\ntprint.inf
   Add per machine printer connection:
rundll32 printui.dll,PrintUIEntry /ga /c\\machine /n\\machine\printer /j"LanMan Print
Services"
   Delete per machine printer connection:
rundll32 printui.dll,PrintUIEntry /gd /c\\machine /n\\machine\printer
   Enumerate per machine printer connections:
rundll32 printui.dll,PrintUIEntry /ge /c\\machine
   Add printer driver using inf:
rundll32 printui.dll,PrintUIEntry /ia /c\\machine /m "AGFA-AccuSet v52.3" /h "Intel" /v
"Windows 2000 or XP" /f %windir%\inf\ntprint.inf
   Add printer driver using inf:
rundll32 printui.dll,PrintUIEntry /ia /K /c\\machine /m "AGFA-AccuSet v52.3" /h "Windows
NT x86" /v 3
   Remove printer driver:
rundll32 printui.dll,PrintUIEntry /dd /c\\machine /m "AGFA-AccuSet v52.3" /h "Intel" /v
"Windows 2000 or XP"
   Remove printer driver:
rundll32 printui.dll,PrintUIEntry /dd /K /c\\machine /m "AGFA-AccuSet v52.3" /h "Windows
NT x86" /v 3
   Set printer as default:
rundll32 printui.dll,PrintUIEntry /y /n "printer"
   Set printer comment:
```

```
rundll32 printui.dll,PrintUIEntry /Xs /n "printer" comment "My Cool Printer"
   Get printer settings:
rundll32 printui.dll,PrintUIEntry /Xg /n "printer"
   Get printer settings saving results in a file:
rundll32 printui.dll,PrintUIEntry /f "results.txt" /Xg /n "printer"
   Set printer settings command usage:
rundll32 printui.dll,PrintUIEntry /Xs /n "printer" ?
   Store all printer settings into a file:
rundll32 printui.dll,PrintUIEntry /Ss /n "printer" /a "file.dat"
   Restore all printer settings from a file:
rundll32 printui.dll,PrintUIEntry /Sr /n "printer" /a "file.dat"
   Store printer information on level 2 into a file :
rundll32 printui.dll,PrintUIEntry /Ss /n "printer" /a "file.dat" 2
   Restore  from a file printer security descriptor:
rundll32 printui.dll,PrintUIEntry /Sr /n "printer" /a "file.dat" s
   Restore  from a file printer global devmode and printer data:
rundll32 printui.dll,PrintUIEntry /Sr /n "printer" /a "file.dat" g d
   Restore  from a file minimum settings and resolve port name:
rundll32 printui.dll,PrintUIEntry /Sr /n "printer" /a "file.dat" m p
```

2.5 The C-56 printer driver files

After installation of the C-56 printer driver file "**HengstlerC56.INF**", various files are copied into specific directories as follows:

- **<windows>\<system32>**
  .\C56PM.dll = Printer Job Language Monitor (DLL)
  .\C56SDK.dll = Software Development Kit (DLL)
  .\C56TB.dll = Tool Box (DLL)
  .\MFC71.dll = Microsoft Foundation Classes, used in C56SdkDemoXX.exe
  .\msvcr71.dll = Microsoft Message Server s, used in C56SdkDemoXX.exe

- **<windows>\<system32>\<driver>**
  .\C56.gpd = Generic Printer Description File
  .\C56RC.dll = Driver Recources (DLL)
  .\C56UD.dll = Uni-Driver (DLL)
  .\C56UD.ini = Uni-Driver Initialization File
  .\C56UI.dll = User Interface (DLL)

After installation of the C-56 printer driver file "**HengstlerC56-SDK.INF**", which includes the C-56 Software Development Kit, additional files are copied into specific directories as follows:

- **<windows>\<system32>**
  .\C56TB2.dll = Tool Box 2 (DLL)
  .\C56VS.dll = Vendor-Setup (DLL)

- **<program-files>\HENGSTLER\C-56\SDK**
  .\C56SdkDemo01.exe = Demo program 01 demonstrating SDK (API) usage
  .\C56SdkDemo02.exe = Demo program 02 demonstrating SDK (API) usage
  .\C56SdkDemo03.exe = Demo program 03 demonstrating SDK (API) usage
  .\C56SdkDemo05.exe = Demo program 05 demonstrating SDK (API) usage
  .\C56SdkDemo07.exe = Demo program 07 demonstrating SDK (API) usage
  .\C56SdkDemo08.exe = Demo program 08 demonstrating SDK (API) usage
  .\C56SdkDemo09.exe = Demo program 08 demonstrating SDK (API) usage
  .\C56SdkDemo10.exe = Demo program 10 demonstrating SDK (API) usage

- **<program-files>\HENGSTLER\C-56\SDK\Library**
  .\C56SDK.h = C-Code header file describing the API
  .\C56SDK.lib = Library for linking the C56SDK.dll

- **<program-files>\HENGSTLER\C-56\SDK\C56SdkDemo01\Vx.xx**
  .\C56SdkDemo01.zip = Sources of demo program 01 demonstrating SDK usage

- **<program-files>\HENGSTLER\C-56\SDK\C56SdkDemo02\Vx.xx**
  .\C56SdkDemo02.zip = Sources of demo program 02 demonstrating SDK usage

- **<program-files>\HENGSTLER\C-56\SDK\C56SdkDemo03\Vx.xx**
  .\C56SdkDemo03.zip = Sources of demo program 03 demonstrating SDK usage

- **<program-files>\HENGSTLER\C-56\SDK\C56SdkDemo05\Vx.xx**
  .\C56SdkDemo05.zip = Sources of demo program 05 demonstrating SDK usage

- **<program-files>\HENGSTLER\C-56\SDK\C56SdkDemo06\Vx.xx**
  .\C56SdkDemo06.zip = Sources of demo program 07 demonstrating SDK usage

- **<program-files>\HENGSTLER\C-56\SDK\C56SdkDemo08\Vx.xx**
  .\C56SdkDemo08.zip = Sources of demo program 08 demonstrating SDK usage

- **<program-files>\HENGSTLER\C-56\SDK\C56SdkDemo09\Vx.xx**
  .\C56SdkDemo09.zip = Sources of demo program 09 demonstrating SDK usage

- **<program-files>\HENGSTLER\C-56\SDK\C56SdkDemo10\Vx.xx**
  .\C56SdkDemo10.zip = Sources of demo program 10 demonstrating SDK usage

- **<start-program>\HENGSTLER\C-56\SDK**
  C-56 SDK Demo 01.lnk = Link to the C-56 demo program 01
  C-56 SDK Demo 02.lnk = Link to the C-56 demo program 02
  C-56 SDK Demo 03.lnk = Link to the C-56 demo program 03
  C-56 SDK Demo 05.lnk = Link to the C-56 demo program 05
  C-56 SDK Demo 06.lnk = Link to the C-56 demo program 06
  C-56 SDK Demo 08.lnk = Link to the C-56 demo program 08
  C-56 SDK Demo 09.lnk = Link to the C-56 demo program 09
  C-56 SDK Demo 10.lnk = Link to the C-56 demo program 10
  C-56 SDK Directory = Link to the C-56 SDK directory
  C-56 SDK Header File = Link to the C-56 SDK C-Source header file

- **<start-program>\HENGSTLER\C-56\Tools**
  C-56 Configuration Tool.lnk = Link to the C-56 configuration tool
  C-56 Cutter Demo Tool.lnk = Link to the C-56 cutter demo tool
  C-56 Driver Uninstaller.lnk = Link to the C-56 Uninstallation tool
  C-56 Exhibition Tool 2006.lnk = Link to the C-56 exhibition tool for Electronica 2006
  C-56 Exhibition Tool.lnk = Link to the C-56 exhibition tool for CeBIT 2005
  C-56 Print Terminal.lnk = Link to the C-56 print terminal
  C-56 Speed Test Tool.lnk = Link to the C-56 speed test tool
  C-56 Upload Tool.lnk = Link to the C-56 upload tool

2.6 Uninstalling the C-56 printer driver

2.6.1 Uninstalling the C-56 printer driver

Uninstallation of the C-56 printer driver is to be done with the C56Uninstaller tool that can be found in the “\Tools” directory of the C56 printer driver package.

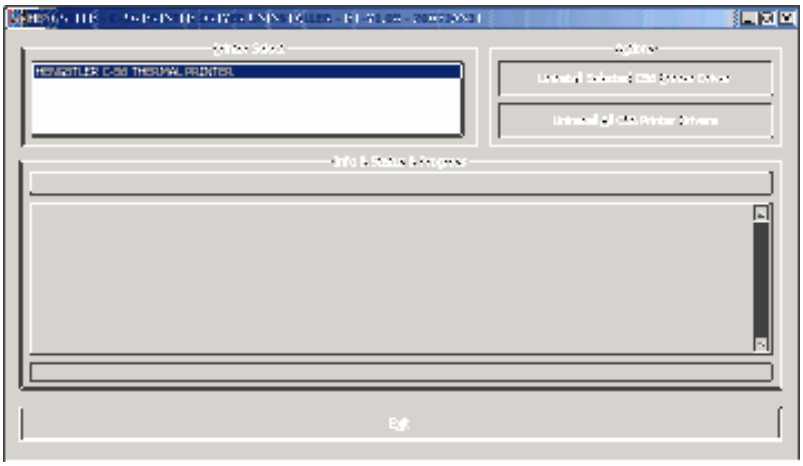


Figure 19: The C-56 printer uninstaller

With this tool it is possible to uninstall a selected C-56 driver or all installed C-56 printer drivers. Note that this tool will also delete all C-56 printer driver files from windows if all C-56 printer drivers are uninstalled.

Uninstallation of the C-56 printer driver can also be done through the “Printer and Faxes” dialog, which is selected through the start menu as shown in Figure 20.

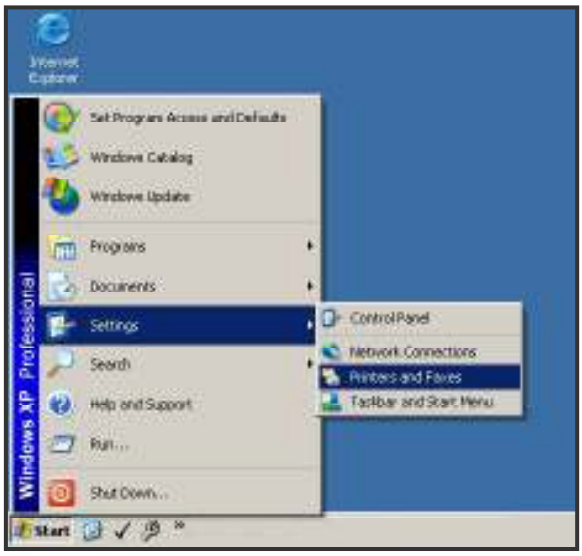


Figure 20: Selecting the "Printers and Faxes" dialog

Select the “HENGSTLER C-56 THERMAL PRINTER” model and select [Delete this Printer] to start the printer Uninstallation. Figure 21 show how to initiate the printer Uninstallation.

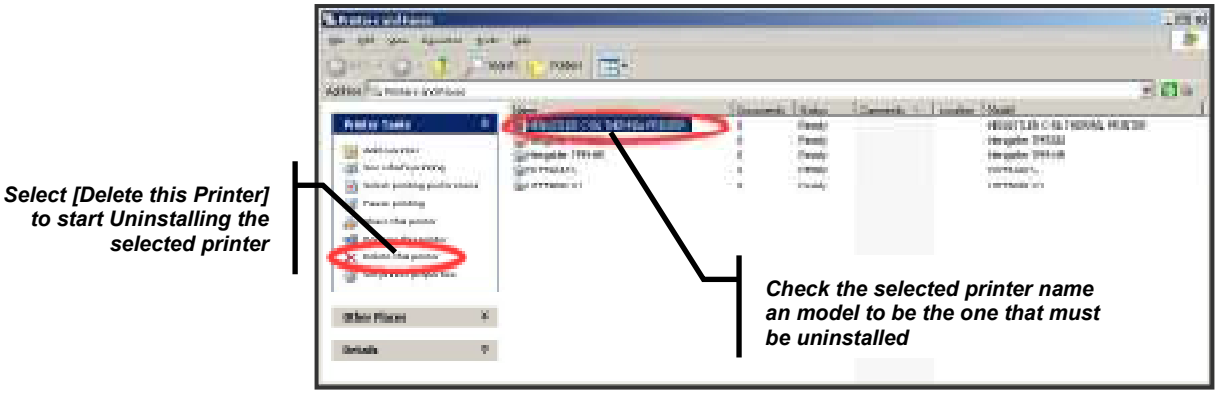


Figure 21: Initiating a C-56 printer driver Uninstallation in the "Printers and Faxes" dialog

After successful deletion, the printer is no longer visible in the “Printer and Faxes” dialog as shown in Figure 22.

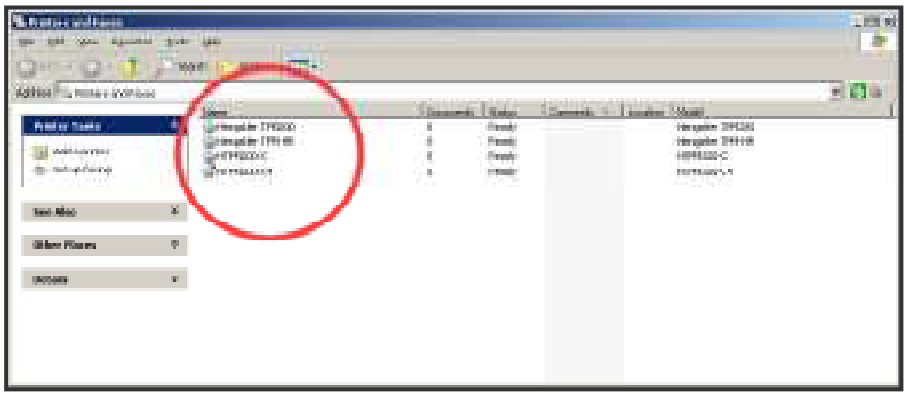


Figure 22: Checking if the C-56 printer driver has been uninstalled.

Note that the driver files remain in windows when a printer is deleted using the “Printers and Faxes” dialog.

2.6.2 Cleaning up the hard disk drive

All C-56 printer driver files and their paths within your windows operating system are listed earlier in chapter 2.5.

After having uninstalled all C-56 printer drivers, you might want to manually delete these files from your hard disk, but be aware, not to remove other files than these. Before deleting these files, you should make a backup or image of your hard disk, so that you are able to recover from unwanted deletions afterwards.

Note that you can use the “NET STOP SPOOLER” command to stop the spooler, in case the spooler is still locking a C-56 driver file. The spooler can be started with the “NET START SPOOLER” command.

2.6.3 Removing C-56 defined paper sizes and driver models

All C-56 defined paper sizes and driver models can be removed from the “Print Server Properties” dialog, which is started from the popup menu in the “Printers and Faxes” dialog as shown in Figure 1.

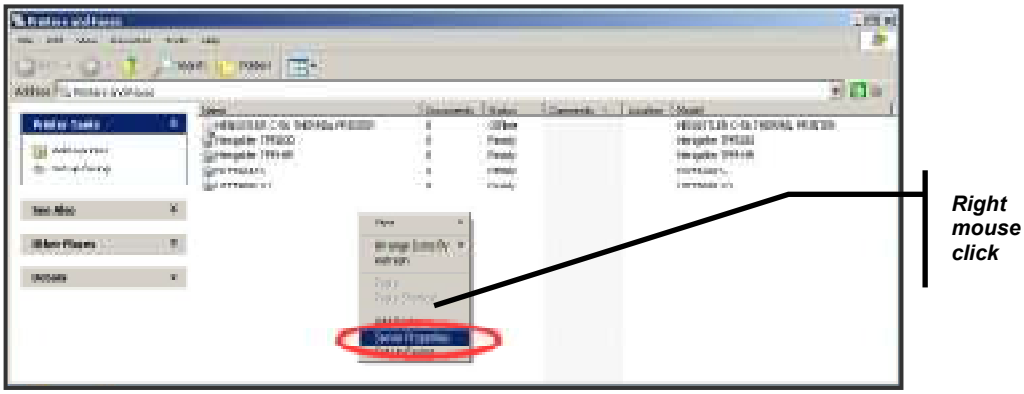


Figure 23: Starting the „Print Server Properties“ dialog from the „Printer and Faxes“ dialog

There are two “Print Server Properties” pages used for removing paper sizes and driver models:

- Page “Forms” is used for form management and can be used to delete the C-56 defined paper sizes.
- Page “Drivers” is used for driver management and can be used to delete the C-56 driver models

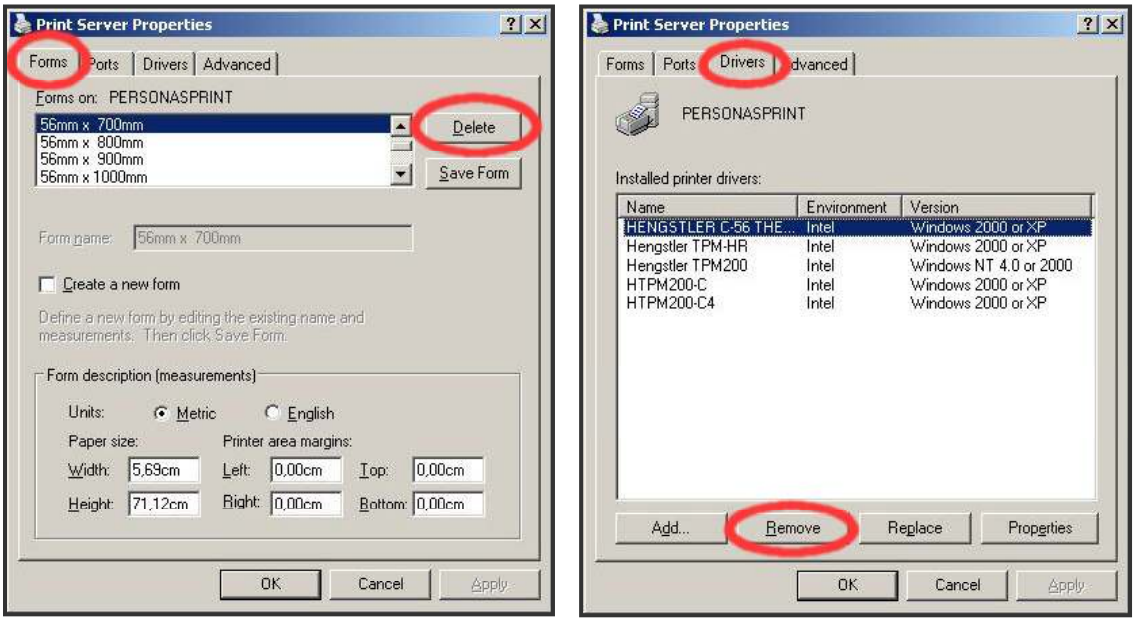


Figure 24: Pages „Forms“ and „Drivers“ in the „Print Server Properties“ dialog

3 C-56 Printer Driver - Operation Manual

After successful installation, the C-56 printer driver can be referenced to by applications that have a printing function (such as MS-WORD) using the GDI, the SDK or both.

3.1 Configuring the C-56 printer driver

The C-56 printer driver is configured from the printer properties dialog. Among other, this dialog allows you to

- Specify the burn time of the print head
- Specify the print speed
- Specify the amount of paper feed (forward/backward) at start and end of a print job
- Specify the dimensions of the black mark
- Specify additional ASCII/HEX data to be sent to the printer before and after printing
- Check the actual driver version as well as it's components
- View the C-56 components
- Examine the C-56 printer status
- Upload firmware and primary / secondary character sets
- Initiate sample printouts

3.1.1 Selecting the "Printer Properties" dialog

The „printer properties" dialog is started from the „Printers and Faxes" dialog as shown in Figure 25,

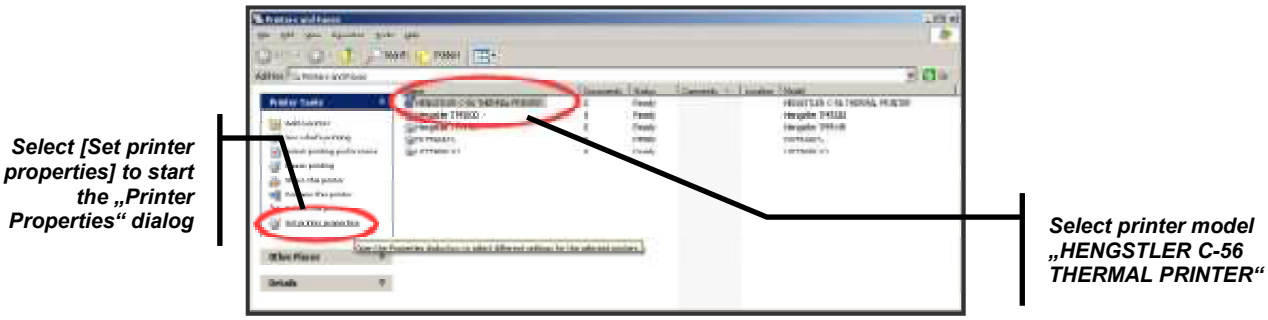


Figure 25: Starting the „Printer Properties" dialog for the C-56 printer driver

3.1.2 Overview of tab-pages in the “Printer Properties” dialog

Within the “Printer Properties” dialog, following tab-pages are available:

Tab-Page	Function
Driver Information	Displays Information on the C-56 driver and it’s components
Paper Control	Settings for the initial and/or final paper feed and minimum and maximum black mark size, as well as enabling/disabling removal of trailing blanks. A cutter control option is added for the C-56 printer that has a cutter (C56 extended).
Print Quality, Speed and Compression	Settings for the burn time (at 21°C) (print quality and impressed energy correction), the print speed and data compression.
Escape Commands	User-defined initial, pre-print, post-print and final C-56 commands
Printer Status	Displays the printer status (e.g. paper low, paper out, etc.), print head temperature, printer job status, paper control state and customer flags (note that printer job status and paper control state are available for debug purposes only)
Printer and Spooler Feature	Generates sample printouts such as: firmware version, primary and secondary character sets, line feeds, form feeds, etc. Controls cutter (C-56 extended), clears and/or resets the printer spooler.
Printer Components	Displays all elementary C-56 components in an explosion graph.
General (MS-Windows)	Settings for the printer name and setup of the C-56 paper tray through “Printing Preferences” as well as initiating a test page printout. See your MS-Windows manual for additional information on this tab-page.
Sharing (MS-Windows)	See your MS-Windows manual for information on this tab-page.
Ports (MS-Windows)	Setup of the communication port the C-56 thermal printer is connected to. See your MS-Windows manual for additional information on this tab-page.
Advanced (MS-Windows)	See your MS-Windows manual for information on this tab-page.
Device Settings (MS-Windows)	Settings for the default paper size. See your MS-Windows manual for information on this tab-page.

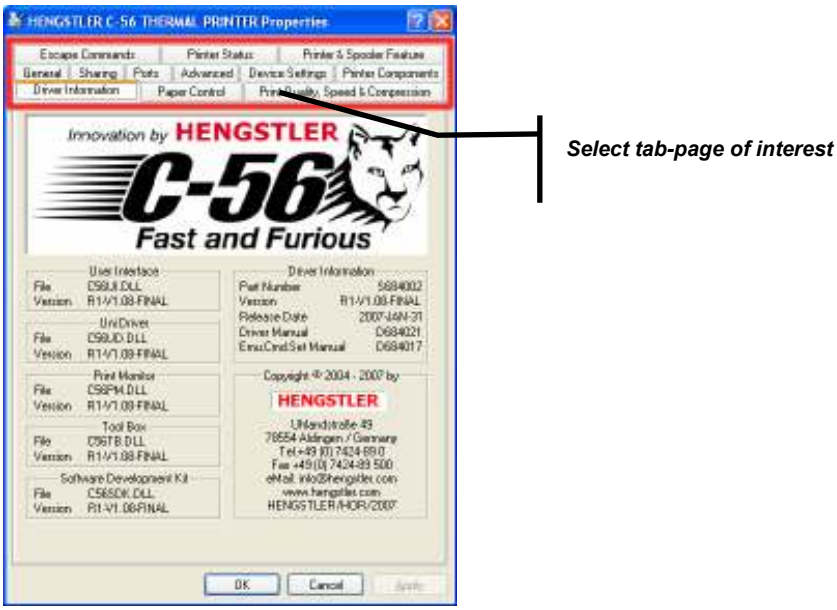


Figure 26: Selecting tab-pages in the „Printer Properties“ dialog

3.1.3 The “Driver Information” page

The „Driver Information“ page displays various information on the C-56 Printer Driver as shown in Figure 27. The most important information is the part number and the release/version (here R1-V1.01) of the C-56 Printer Driver (see “Driver Information”).

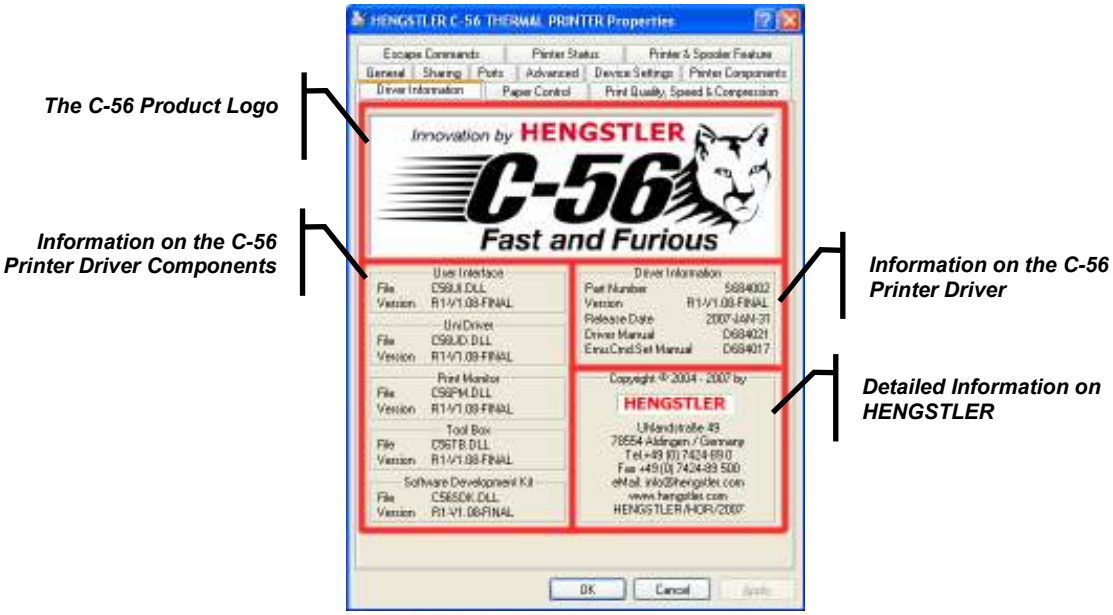


Figure 27: The „Driver Information“ page in the „Printer Properties“ dialog

3.1.4 The “Paper Control” page

The „Paper Control“ page is used to:

- Setup paper control parameters (initial/final paper feed)
- Specify the black mark dimensions (minimum/maximum)
- Enable/disable trailing blanks removal
- Enable/disable cutter control (C-56 Extended)

The initial paper feed is used to position the document top (edge of the paper) at the print head position. The final paper feed is used to position the document bottom at the cut-off position.

Within the “Paper Control” group of this dialog both initial/final paper feed can be enabled/disabled, whereas the amount of paper feed required can be specified in millimeters.

Note that the C-56 printer driver sends the initial paper feed at start of the print job (if enabled), and the final paper feed at the end of a print job (if enabled).

The black mark dimensions need to be specified only when thermal paper with black marks is used. The C-56 uses this information as follows:

- A black area that is smaller than the minimum height is ignored
- A black area that is within minimum and maximum height is regarded as blackmark (paper low).
- A black area that is larger than the maximum height is regarded as end-of-paper (paper out).

Note that the C-56 printer driver sends these black mark dimensions to the C-56 printer at the start of each print job.

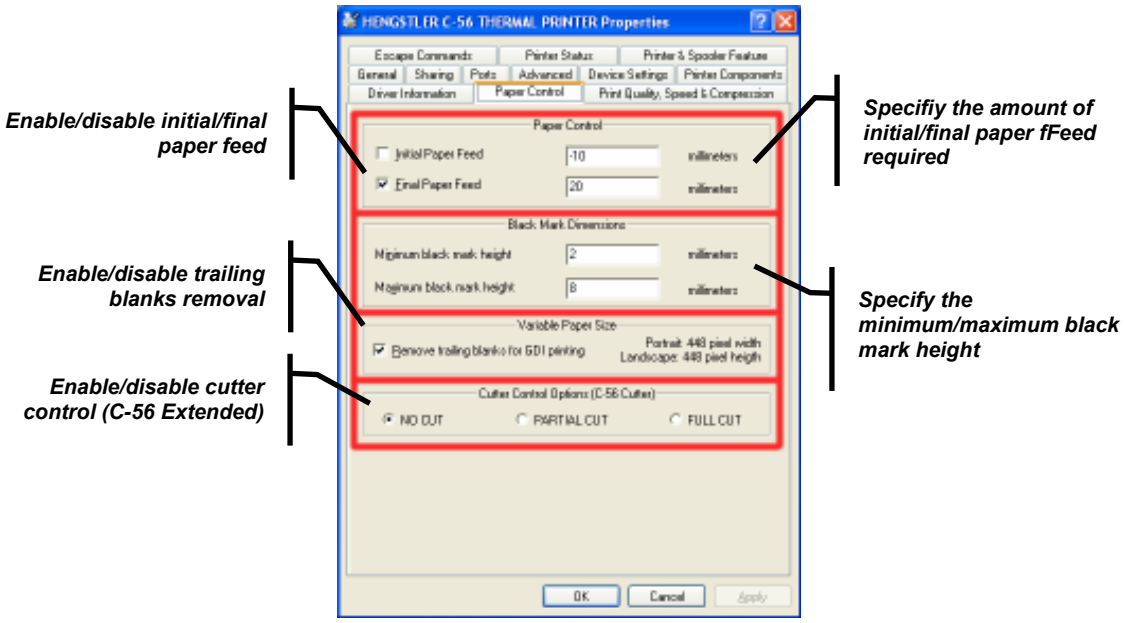
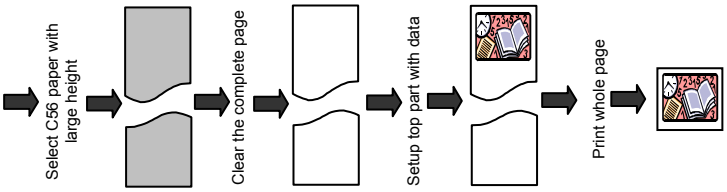


Figure 28: The „Paper Control“ page in the „Printer Properties“ dialog

The “remove trailing blanks” option is helpful when the length of the printout needs to be variable (not fixed). When having enabled this feature, then all trailing blank dot lines in specific printouts through GDI (portrait with 448 pixel width) will not be printed.

A variable size printout is done in following steps:

- In your GDI application, select one of the C-56 specifix paper sizes with 448 pixel width and large height (“C-56: 56 mm x 3000mm” is the largest height currently available in the driver)
- Clear the complete page (e.g. fill the page with white color)
- Setup the top part of the page with data (e.g. ticket contents) that is to be printed
- Print the whole page as portrait, whereas only the top part (e.g. ticket contents) will be printed



The “cutter control” option is only of interest when the C-56 has been extended with a cutter (C-56 extended). By enabling this option a cut command (partial/full) is send to the C-56 at end of each page.

3.1.5 The “Print Quality and Speed” page

The „Print Quality and Speed“ page is used to:

- Specify the estimated burn time (at 21°C) by means of print quality and impressed energy settings
- Specify the effective print speed in mm/sec (standard / extended)
- Enable/disable data compression for GDI printing

The estimated burn time is the time at which the print head is assumed to be powered when printing a single dot line. In fact, it is used to specify the blackness at which the C-56 prints data on the thermal paper. This burn time is calculated according the following algorithm:

<estimated-burn-time>	=	<burn-time-from-print-quality>
	+	(<impressed-energy-value> – 53) * 3 us.
<burn-time-from-print-quality>	=	220 us for print quality LOW and 350 us for HIGH.
<impressed-energy-value>	=	a value between 0 and 255 in 3 us resolution

The estimated burn time is limited to the maximum burn time, which depends on the actual print head temperature and is calculated according following algorithm:

<maximum-burn-time>	=	390 us + 40 us
	+	(25 °C - <print-head-temperature>) * 1.5 us
<print-head-temperature>	=	measured temperature at print head in °C

The effective print speed can be set to:

- Standard which is one of LOW (65 mm/sec), MEDIUM2 (95 mm/sec), MEDIUM1 (130 mm/sec) or FAST (160 mm/sec)
- Extended whereas a speed between 50 and 240 mm/sec can be selected.

Note that printout quality may suffer and that initial paper retracts might cause failures when printing above 200 mm/sec.

The data compression for GDI printing is of interest when the connection with the C-56 printer is regarded to be slow (e.g. RS232 – low baudrate). If enabled, then print lines are horizontally and/or vertically compressed before they are transmitted to the printer. This option may cause a more fluent printout on some printers.

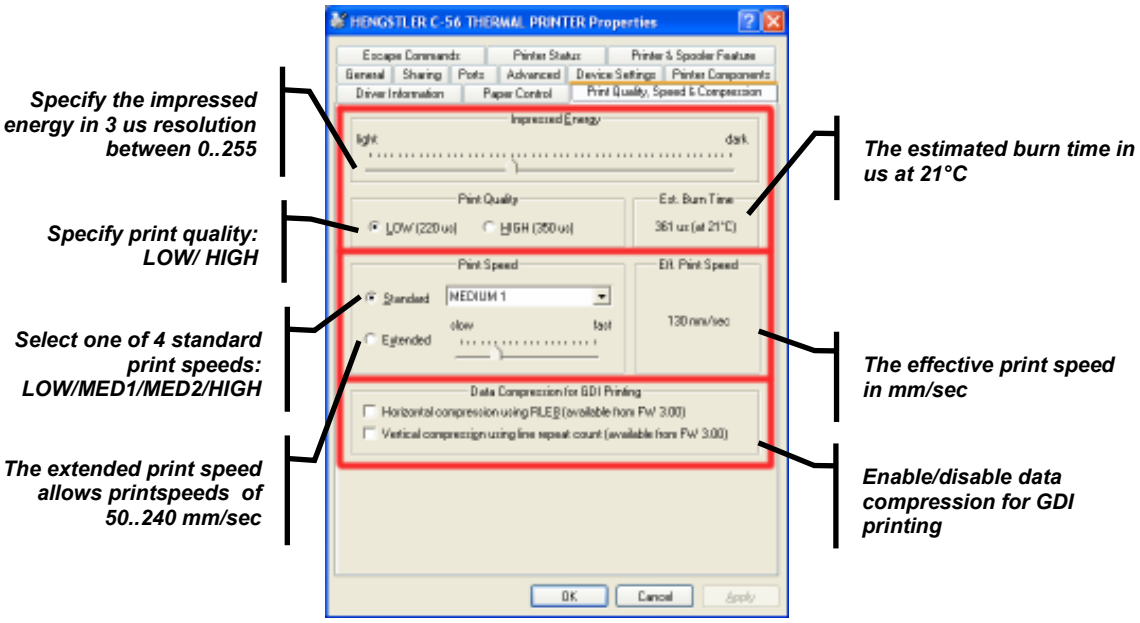


Figure 29: The „Print Quality and Speed“ page in the „Printer Properties“ dialog

3.1.6 The “Escape Commands” page

The „Escape Commands“ page is used to:

- Specify “Initial Commands” that are sent to the C-56 printer at the very start of the document printout.
- Specify the “Pre-Print Commands” that are sent to the C-56 printer at the start of the document data printout.
- Specify the “Post-Print Commands” that are sent to the C-56 printer at the end of the document data printout.
- Specify “Final Commands” that are sent to the C-56 printer at the very end of the document printout.

In fact, these “commands” are represented as a combination of data and escape commands that are to be sent to the printer in predefined phases of document printout.

The phases of document printing are:

1. Transmission of **initial commands**
2. Transmission of print speed, print quality, black mark dimensitions and intial paper feed
3. Transmission of **pre-print commands**
4. Transmission of document data
5. Transmission of **post-print commands**
6. Transmission of final paper feed
7. Transmission of **final commands**

The edit fields in the „Escape Commands“ page allows simultaneous input in TEXT and HEX mode whereas the mode is selected by special character combinations:

- **“\X” or “\x” or “[“ switches to hex mode.**
  All hex digit pairs entered afterwards represent HEX values that are converted to bytes when the data is transmitted to the C-56 printer.
  Sample: ”\X0a0A0a” are three linefeeds whereas ‘LF’ ‘LF’ ‘LF’ is send to the C-56 printer

- **“\A”or “\a” or “]” switches to text mode**
  All data entered afterwards represents ASCII text that is transmitted to the C-56 printer without conversion:
  Sample: “\ATEXT” are 4 characters whereas ‘T’ ‘E’ ‘X’ ‘T’ is send to the C-56 printer

Other special character combinations are:

- “\n” for initiating a line feed
- “\f” for initiating a form feed
- “\\” for setting a single ‘\’
- “ for start/end of text

Note that all edit fields start in TEXT mode and that new lines are ignored (not sent to the printer). Also note that the maximum number of characters in an escape command is limited.

Information on all C-56 escape commands can be found in the “Emulation Command Set Manual Thermal Printer C-56” [2].

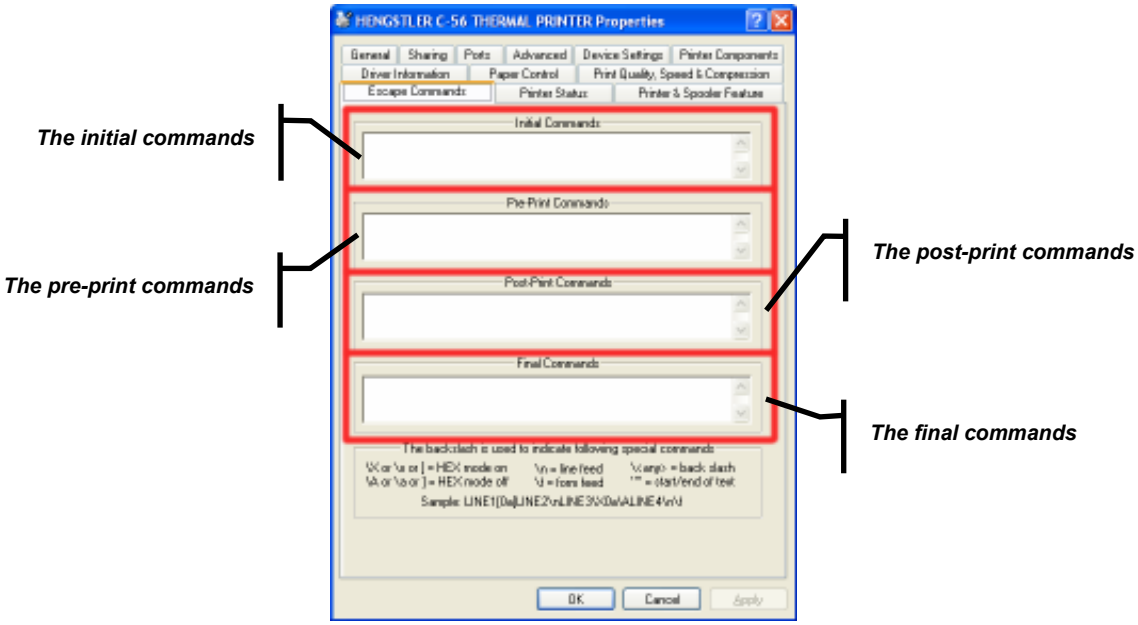


Figure 30: The „Escape Commands“ page in the „Printer Properties“ dialog

3.1.7 The “Printer Status” page

The „Printer Status“ page informs about the actual status of the printer and contains following information:

- Printer status flags:
  - Temperature alert if print head temperature is equal/above 70°C
  - Printout of last ticket (document/print job) lost
  - Paper jam when retracting paper at paper end
  - Paper low detected
  - Out of paper detected
  - Printer power on

  Note that this information is retrieved from the 1st byte of the printer status DWORD.

- Actual printhead temperature in °C and °F
  Note that this information is retrieved from the 2nd byte of the printer status DWORD.

- Actual printer status DWORD in HEX code (see “Emulation Command Set Manual Thermal Printer C-56” [2].)

- State of all 31 print jobs (undocumented/for debug purposes only)

- State of paper control (undocumented/for debug purposes only)
  Note that this information is retrieved from the 3rd byte of the printer status DWORD.

- Customer status flags, which can be used to distinguish multiple printers on a single host system (e.g. left/right printer).

The C-56 printer driver periodically request status information from the C-56 printer every 1000ms. The information in the “Printer Status” page is grayed if older than 5000ms.

Note that, for safety reasons, any printout on the C-56 printer is prohibited when the “Temperature Alert” flag is raised.

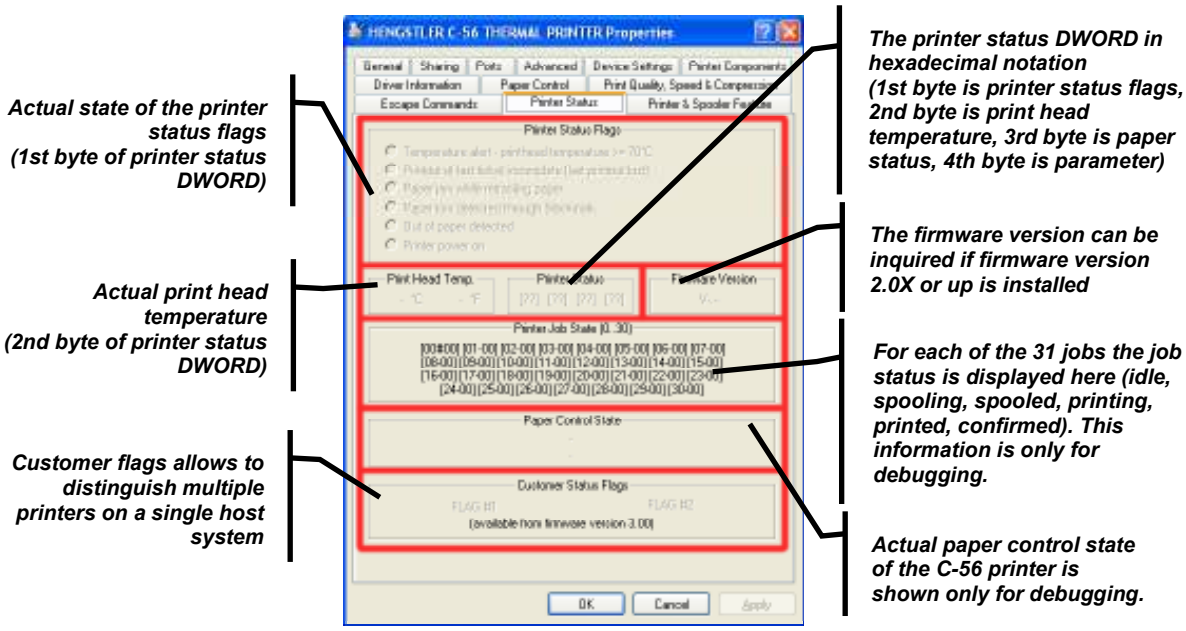


Figure 31: The „Printer Status“ page in the „Printer Properties“ dialog

3.1.8 The “Printer & Spooler Feature” page

The „Printer & Spooler Feature“ page is used to initiate following:

- Printout of various samples on the C-56 (e.g. firmware info, character sets, etc.).
- Transmission of a partial or full cut command to the C-56 (C-56 Extended only).
- Clearance and/or reset of the spooler .

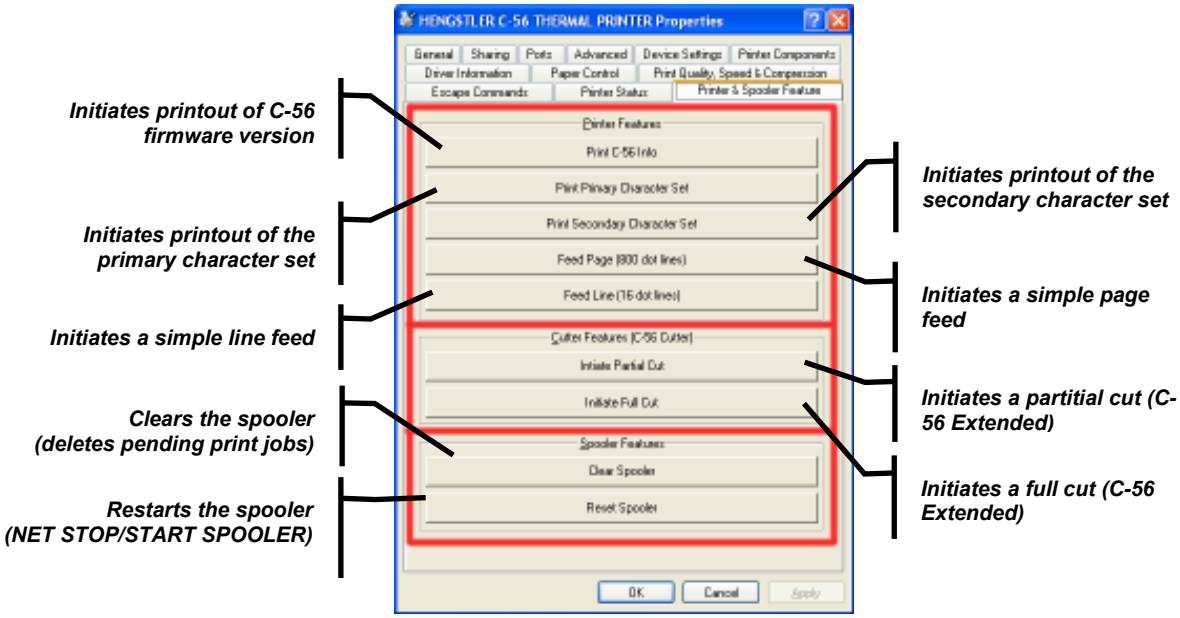


Figure 32: The „Printer & Spooler Feature“ page in the „Printer Properties“ dialog

3.1.9 The “Printer Components” page

The „Printer Components “ page displays all components of the C-56 printer.

Figure 33: The „Printer Components“ page in the „Printer Properties“ dialog

3.1.10 The “General” page

The „General“ page is a MS-Windows standard tab and includes:

- An edit field for modifying the printer name
- An edit field for modifying information on the location at which the printer is positioned
- An edit field for modifying the descriptive comment about the printer
- Information on the printer model and it’s features
- A button to call the printing preferences dialog
- A button to initiate printout of a MS-Windows test page

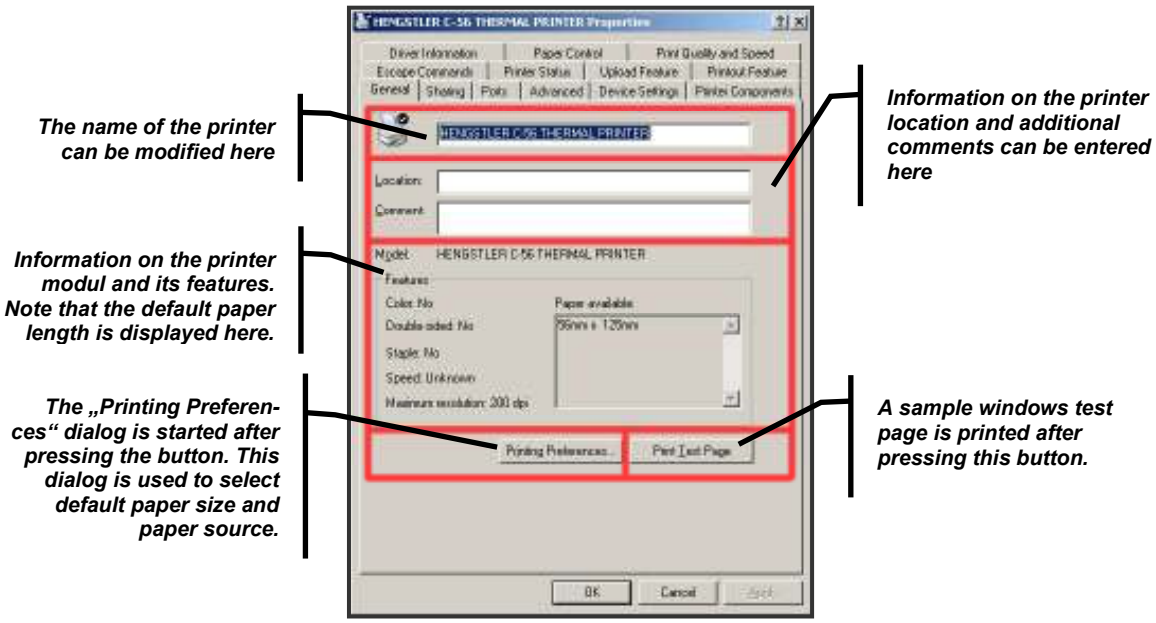


Figure 34: The „General“ page in the „Printer Properties“ dialog

3.1.11 The “Shared” page

The „Shared“ page is a MS-Windows standard tab used to configure a printer as a shared network printer.

Since C-56 printer driver is not designed for usage within a network, the usage as a shared network printer is prohibited.

Figure 35: The „Sharing“ page in the „Printer Properties“ dialog

3.1.12 The “Ports” page

The „Ports“ page is a MS-Windows standard tab that is used to assign the C-56 printer to a specific communication port such as USB001 or COM1:

- A list of available ports in which the port to which the C-56 printer is connected is checked. Note that you must manually re-assign the C-56 printer to a new USB port or an RS232 port.
- Port management function buttons which allow addition, deletion and modification of ports. The baud rate of a serial communication port can be setup through these port management buttons.
- A checkbox for enabling/disabling bidirectional printing. Note that printer status information is no longer available when bidirectional printing is disabled.
- A checkbox to enable/disable printer pooling. Printer pooling is linking two or more identical printers with one printer setup or printer share. Note that this feature is not used in combination with the C-56 printer driver.

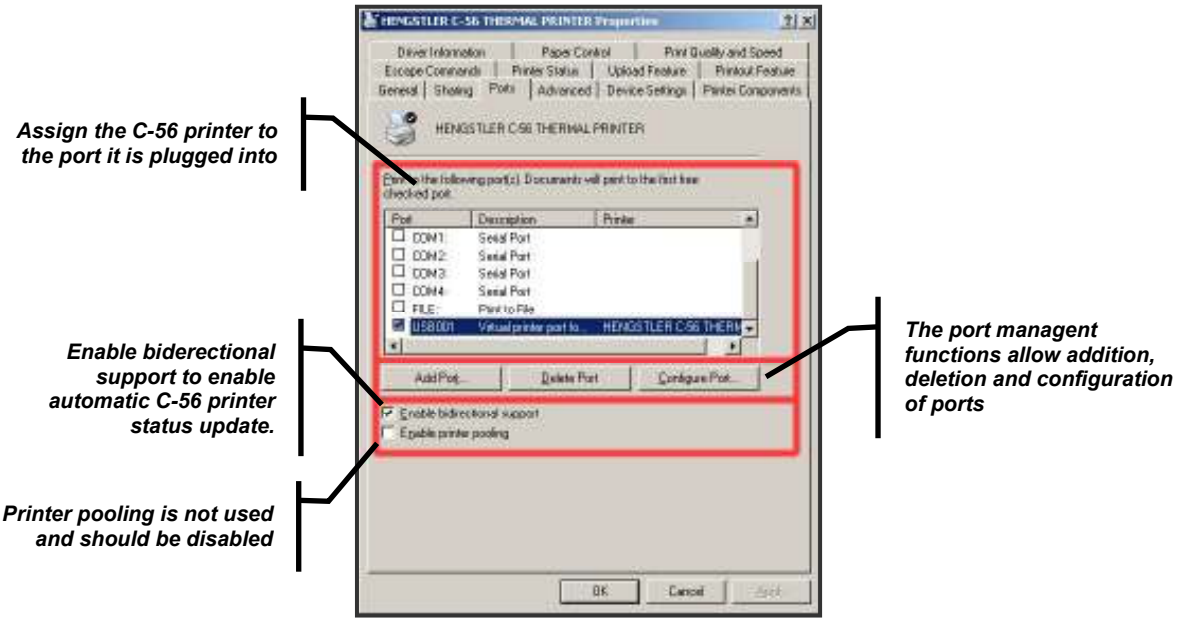


Figure 36: The „Ports“ page in the „Printer Properties“ dialog

3.1.13 The “Advanced” page

The „Avanced “ page is a MS-Windows standard tab that includes:

- Specification of printer availability parameters.
- Setup of the printer priority.
- Enabling/disabling printer spooling, whereas the printed document is sent directly to the printer if disabled. Note that the application waits until the printing has completed when the spooler is disabled.
- Enabling/disabling the “hold mismatched documents” spooler option, if the printer spooler is enabled. Note that this setting must be disabled for the C-56 printer.
- Enabling/disabling the “spooled documents first” spooler option. Note that this setting should be enabled for the C-56 printer.
- Enabling/disabling the “keeping printed documents” spooler option, that causes documents not to be removed from the spooler after printing. Note that this setting must be disabled for the C-56 printer.
- Enabling/disabling the “advanced printing features” spooler option. Note that this setting must be enabled for the C-56 printer.
- A button that is used to start the printing defaults dialog, that is the same as the one in the printing preferences dialog.
- A button to call the separator page selection dialog. Note that the C-56 printer driver is not designed for the usage of a separator page.

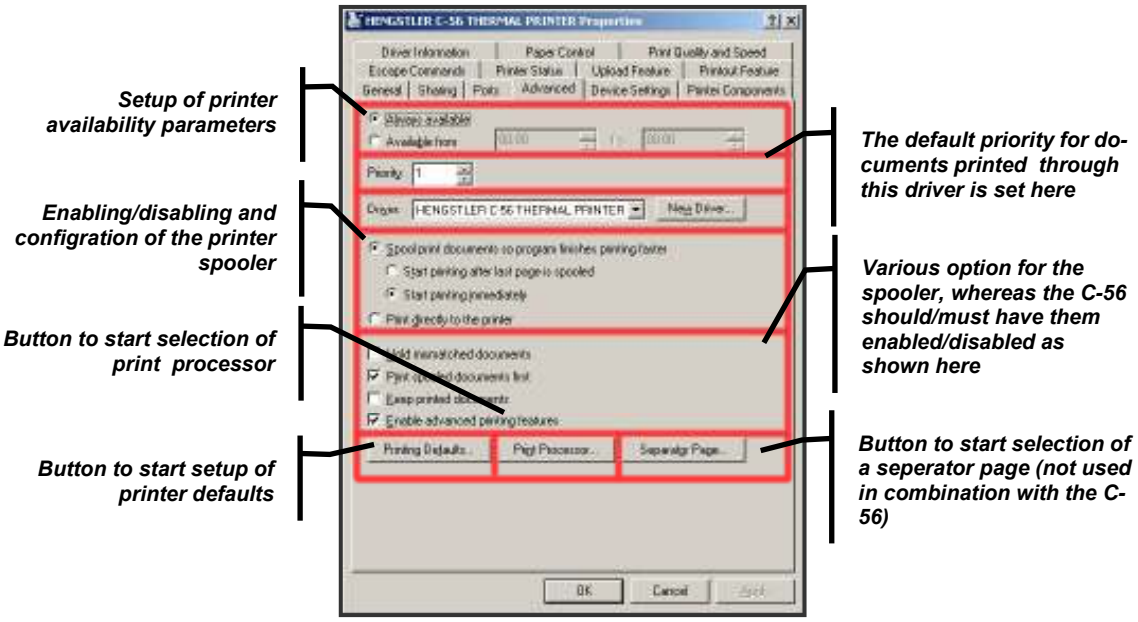


Figure 37: The „Advanced“ page in the „Printer Properties“ dialog

3.1.14 The “Device Settings” page

The „Device Settings“ page is a MS-Windows standard tab that, to assign a default form size to the C-56 paper tray.

Unfortunately these settings are ignored by the C-56 printer driver. The default paper form must be specified through the “Printer Preferences” dialog of the “General” page.

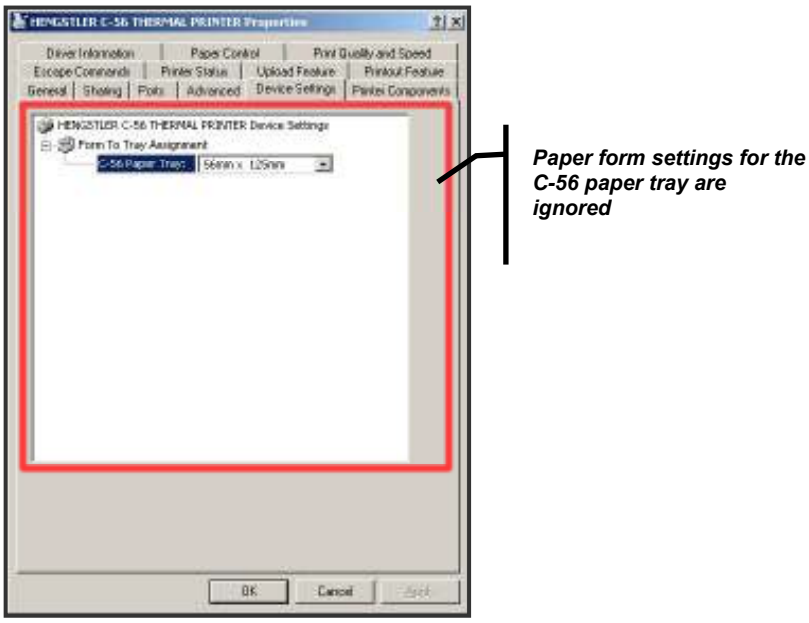


Figure 38: The „Device Settings“ page in the „Printer Properties“ dialog

3.2 Using the C-56 printer driver

The C-56 printer (driver) can be used by standard applications (e.g. MS-Word) through the Graphical Device Interface (GDI), or, by special applications (e.g. Receipt-Systems) through Software Development Kit (SDK) or a combination of both.

3.2.1 Using the C-56 printer driver in common applications

The C-56 printer can be used in common applications that use GDI for printing (such as MS-WORD), however with following restrictions:

- The selected paper size must match one of the C-56 predefined paper sizes (e.g. “C-56: 56mmxA4”).
- If the selected paper size differs from a C-56 pre-defined paper size, then the default paper will be used instead.

Note that you can setup the default paper size in the “Printer Preferences” dialog (see the “General” page in the “Printer Properties” dialog). Also note that the C-56 printer driver installation contains various sample preformatted MS-Word documents (see documents files “C56SGdiDemoXX.exe”, XX is 01,02,etc.).

3.2.2 Using the C-56 printer driver in special applications

The C-56 printer can be used in special applications that use the SDK or SDK + GDI interface of the C-56 printer driver for printing.

The SDK offers an API (Application Programming Interface) that support:

- Retrieval of information on available C-56 printers
- Management of print jobs
- Monitoring of up to 31 print jobs simultaneously
- Direct usage of (nearly) all C-56 emulation commands
- … and more …

If printing through GDI is required, then the SDK can als be used additionally for:

- Retrieval of information on available C-56 printers
- Monitoring of up to 31 print jobs simultaneously
- …. and more ….

Note that the C-56 printer driver installation contains various sample applications using the SDK (see application files “C56SdkDemoXX.exe”, XX is 01,02,etc.).

4 C-56 Printer Driver – Synopsis

This chapter describes the conception of the C-56 printer driver and all it's components.

4.1 Printer Driver Components

In general the C-56 Printer Driver consists out of following components, that are integrated into the Microsoft Universal Printer Driver environment:

- C56UI -> User Interface
- C56UD -> Uni Driver
- C56PM -> Print Job Language Monitor
- C56SDK. -> Software Development Kit
- and additional components ….

4.1.1 C56UI.DLL – User Interface

The C56UI "User Interface" module handles user interaction through the "Printer Properties" dialog.

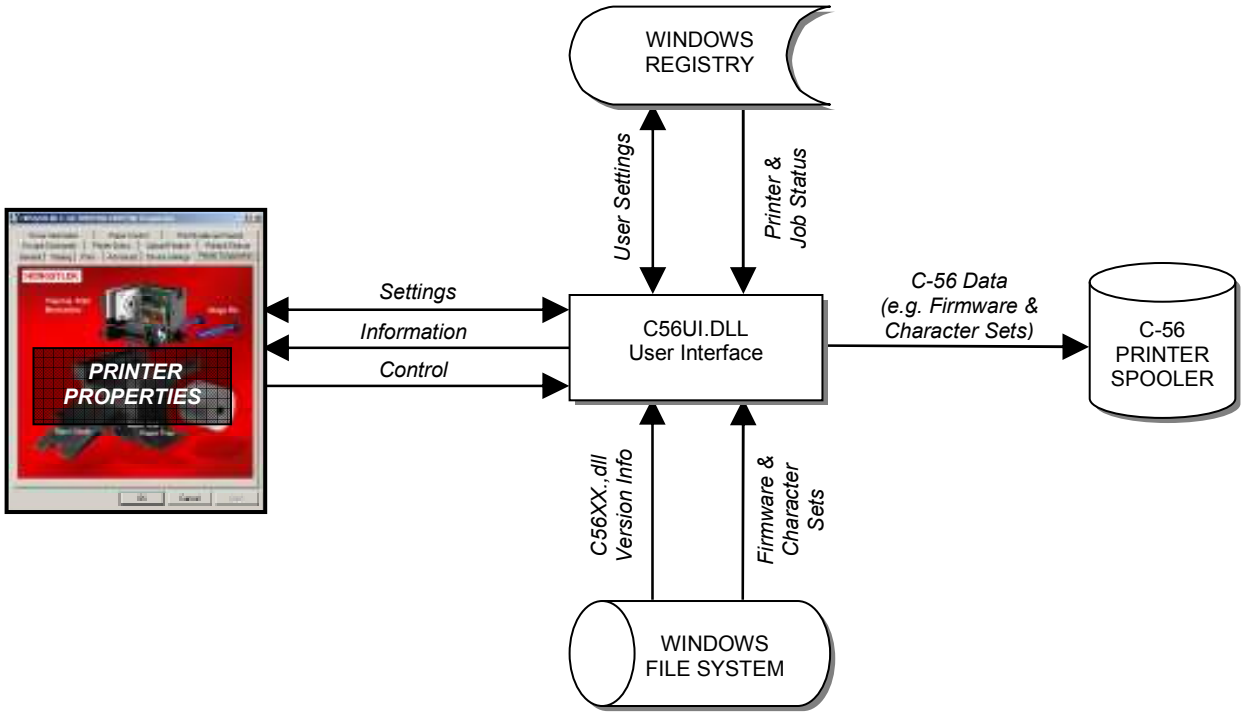


Figure 39: Module C56UI.DLL – User Interface

Note that all settings of the "Printer Properties" dialog are stored in the windows registry.

4.1.2 C56UD.DLL – Uni Driver

The C56UD Uni Driver module represents the graphical device interface (GDI) which the application uses for printing.

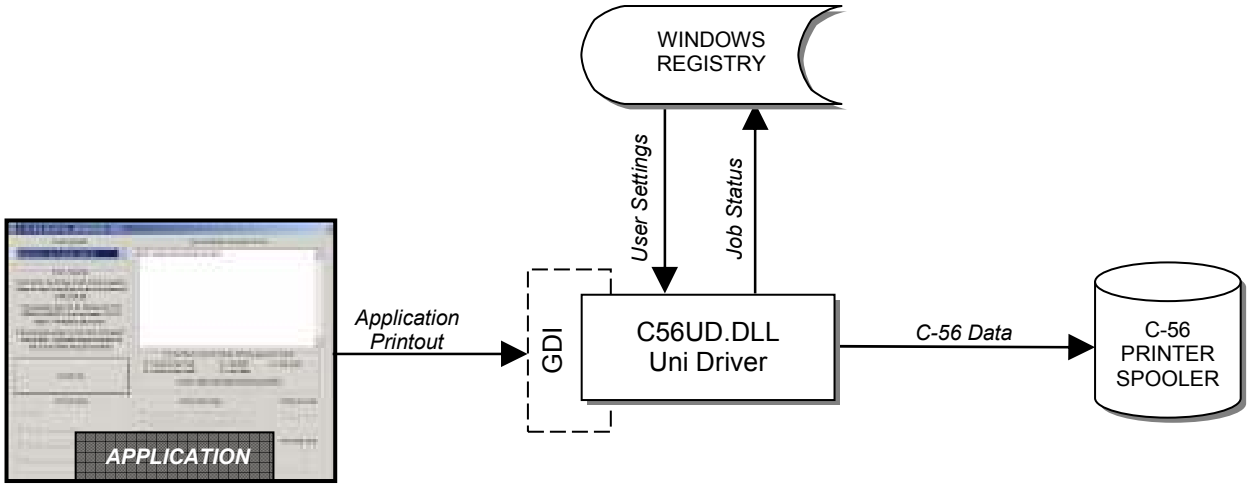


Figure 40: Module C56UD.DLL – Uni Driver

For each application printout, the settings from the window registry are used to generate following initial and final commands, whereas C-56 data is spooled in following sequence:

- Initial escape commands
- Initial paper feed
- Print speed setup
- Print quality setup
- Pre-print escape commands
- Application printout
- Post-print escape commands
- Final paper feed
- Final escape commands

If the document name of the application printout has extension “[XX]” - with XX being the job identifier within domain [00..30] (e.g. “Document [21]” for job identifier 21) - then the job status information (SPOOLING/SPOOLED) of the corresponding job is updated in the windows registry. Note that job identifiers and job status information can be retrieved through the SDK.

4.1.3 C56PM.DLL – Print Monitor

The C56PM Print Monitor module handles the print data stream from the print spooler to the appropriate port driver (e.g. USB port driver).

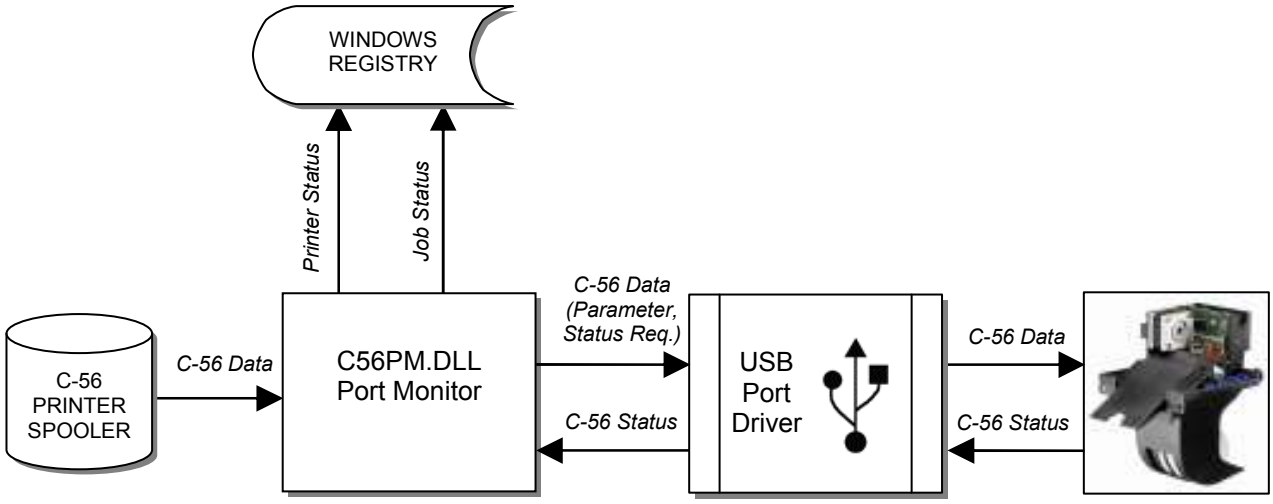


Figure 41: Module C56PM.DLL – Port Monitor

If the document name of the spooled printout has extension “[XX]” - with XX being the job identifier within domain [00..30] (e.g. “Document [21]” for job identifier 21) - then the job status information (PRINTING/PRINTED/CONFIRMED) of the corresponding job is updated in the windows registry. In this case the paramater is also sent to the printer at the end of the printout and echoed by the C-56 printer in it’s C-56 status to confirm completion of the print job. Note that job identifiers and job status information can be retrieved through the SDK.

The port monitor requests the C-56 printer status once per second and stores it in the windows registry. Note that the SDK offers an interface for retrieving printer status information.

4.1.4 C56SKD.DLL – Software Development Kit

The C56SDK Software Development Kit module provides an Application Programming Interface (API) through which the application can monitor printer/job status and control raw job printouts (e.g. emulation/escape commands).

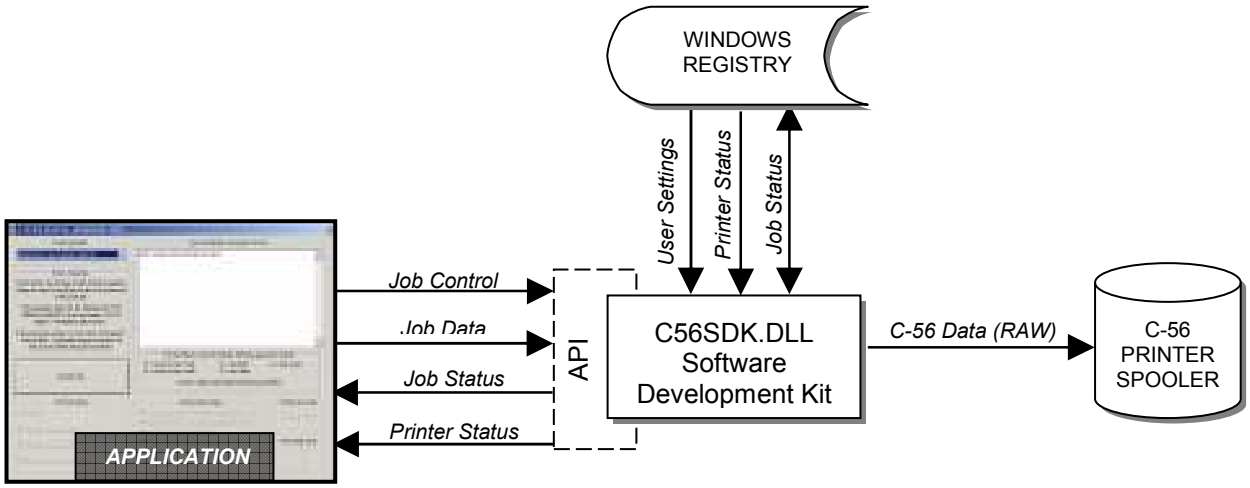


Figure 42: Module C56SDK.DLL – Software Development Kit

The API of the SDK provides following functionality to the application:

- C-56-model printer enumeration feature
- Job status control/inquiry functions (idle/spooling/…./printed/confirmed)
- Document (job) control functions (start/print/end)
- Emulation command set functions (e.g. raw data printouts, barcodes, etc.)
- and more …

Note that an application can combine the API with GDI printing, whereas the API is used for job identifier control and inquiring printer/job status only.

4.1.5 Additional components

Additional components of the C-56 driver are:

- **C56TB.DLL**
  General tool box (TB), used by all main C-56 printer driver modules (C56UI, C56PM, C56UD, C56SDK).

- **C56RC.DLL**
  Resource (RC) library containing general driver version information

- **C56.GPD**
  Generic Printer Description (GPD) file describing the printer capabilites (e.g. paper sizes).

4.2 Printer Driver Overview

Figure 43 shows the printer driver overview with all main components an their interaction throughout the printer spooler and windows registry.

The printer spooler is a central queue in the C-56 printer driver. All print jobs generated through the C-56 software development kit, the C-56 uni driver or the C-56 user interface are queued in the spooler, whereas the C-56 print monitor becomes active as soon as a print job is pending and the port is connected.

The actual printer status is stored within the windows registry and periodically updated by the C-56 port monitor. This information can be retrieved through the C-56 SDK and viewed in the printer properties via the C-56 user interface. Note that the printer status updating starts at the first printout (which may be an empty print job). Also note that the printer status contains at least the following information : paper status, paper low/out/jam flags, temperature alert flag, print head temperature.

The job status represents the status of up to 31 (0..30) different jobs. For each job following states are defined: idle, spooling, spooled, printing, printed and confirmed. These states can be monitored through the C-56 SDK.

The job status monitoring is available if printing is done through:

- C-56 SDK API, whereas a job identifier is automatically assigned

- standard GDI with “[XX]” as the last 4 characters of the document name (XX = job identifier within domain [00..30]). Note that the job identifier can be requested through the SDK.

If you are using a job identifier in your document name, then the C-56 software development kit and C-56 uni driver will set the job status from spooling and spooled. If this print job is processed by the C-56 port monitor, then the monitor will set the job status from printing and printed. Also, it will add the parameter command to the end of the print job and the C-56 will echo this parameter in it’s status dword to confirm printing completed. The C-56 port monitor will set the job status to confirmed after receiving this parameter.

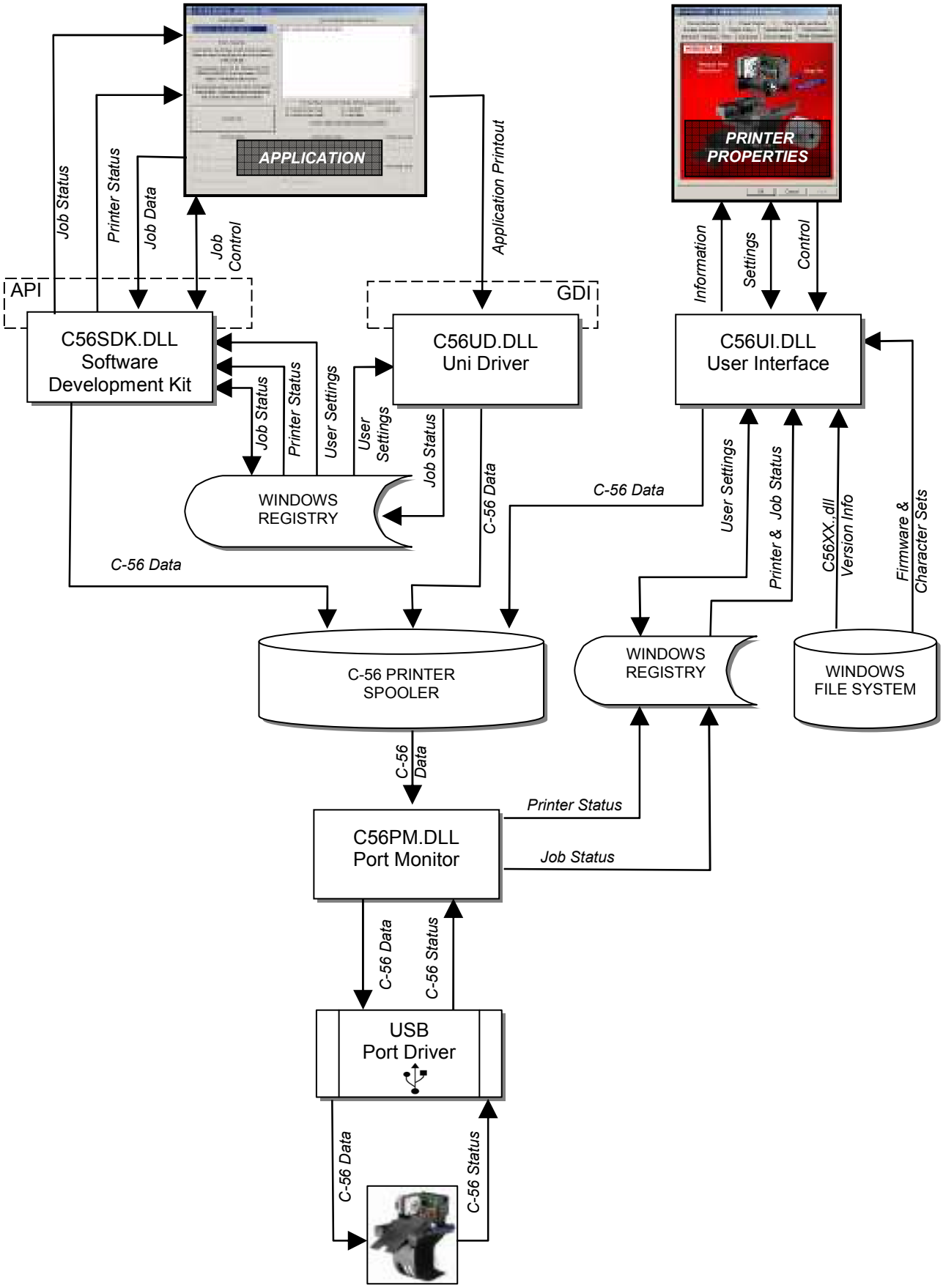


Figure 43: C-56 Printer Driver – Overview

5 C-56 Printer Driver - Programming Manual

This chapter describes the application programming interfaces (API) of the software development kit (SDK) that is part of the C-56 printer driver package.

5.1 Integrating the C-56 SDK in an application

The C-56 SDK is represented by file **C56SKD.dll**, a dynamic link library (DLL) that exports all functions of the C-56 API (application programming interface). File C56SDK.dll is located in <windows>\<system32>.

Two additional files allow integrating of the C56SDK.dll in your application:

- **C56SDK.h**
  This is the header file of the C-56 SDK which describes the API through macro definitions, type definitions, function prototypes, etc. This header file must be included in your application C-source files that call C-56 SDK functions. Note that this file is used during compile time to check if your C-56 function calls are syntactically correct.

- **C56SDK.lib**
  This is the import library of the C-56 SDK which contains code for loading and accessing file C56SDK.dll. File C56SDK.lib must be included in (e.g. linked to) the application. Note that this file is used during link time to check availability of the function calls used in the application.

After proper installation both files are located in <program-files>\HENGSTLER\C-56\SDK\Library.

Note that C56SDK.dll is a vital component of your final application environment and that its availability is a must. Files C56SDK.h and C56SDK.lib however, are only used during the application development phase and obsolete for the final application environment.

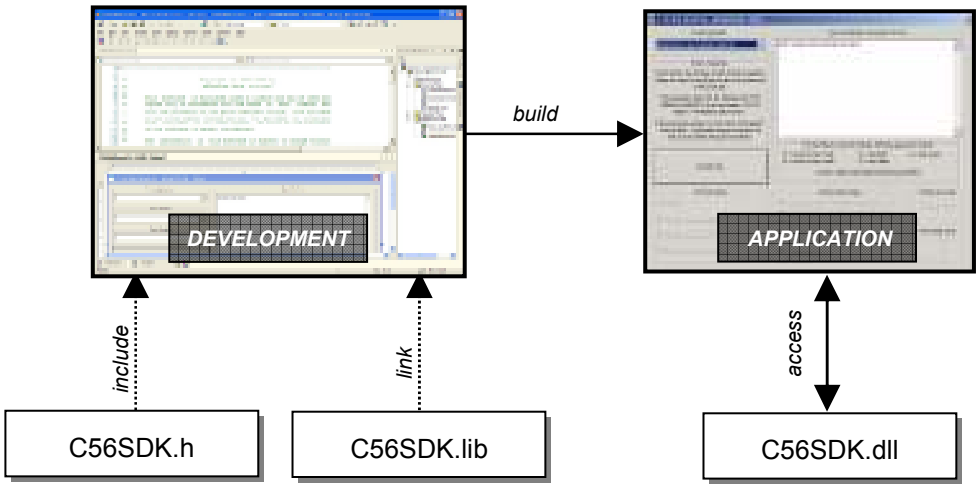


Figure 44: Using the C-56 SDK

5.2 The Application Programming Interface

The C-56 API is defined in header file C56SDK.h which is devided into following parts:

- Includes Part -> list of include files
- Macros Part -> macro definitions
- Types Part -> type definition
- Functions Part -> function prototypes

5.2.1 Printer I/O Functions

Following printer I/O functions are provided by the SDK:

Function	Description			
	Return value		Parameter overview	
C56Sdk_PioPrinterOpen	Opens the connection to the printer.			
	HANDLE	hPrinter	LPSTR	pszPrinterName
			DWORD	dwTimeOutMs
C56Sdk_PioPrinterRead	Reads an amount of bytes from the printer.			
	DWORD	dwBytesRead	HANDLE	hPrinter
			unsigned char *	pubData
			DWORD	nData
			DWORD	dwTimeOutMs
C56Sdk_PioPrinterReadClear	Clears any pending bytes read from the input buffer.			
	BOOL	fDone	HANDLE	hPrinter
C56Sdk_PioPrinterWrite	Writes an amount of bytes to the printer.			
	DWORD	dwBytesWritten	HANDLE	hPrinter
			unsigned char *	pubData
			DWORD	nData
			DWORD	dwTimeOutMs
C56Sdk_PioPrinterClose	Closes the connection to the printer.			
	BOOL	fDone	HANDLE	hPrinter

- Variables Part -> exported variables

5.2.1.1 Includes Part

The “INCLUDES” part in file C56SDK.h includes all header files required for succesfull compilation of this header file.

Header File	Description

stdarg.h	Standard C library for handling variable arguments
stdlib.h	Standard C library with standard definitions

5.2.1.2 Macros Part

The “MACROS” part in file C56SDK.h specifies following macros:

- Graphic Line Macros

5.2.1.2.1 Graphic Line Macros

Following macros are used for graphic line printing in combination with the API function *C56Sdk_DcAddGraphicsLine(..)*:

Macro	Description
N_DOTLINE_DOTS	Specifies number of dots (bits) in a C-56 dot line (448)
N_DOTLINE_BYTES	Specifies the number of bytes required to store a single C-56 dot line (56)
M_DOTLINE_SET_DOT (DOTLINE,DOTNR,STATE)	Sets a dot in a byte dot line array on/off: - DOTLINE = pointer to 56 byte array - DOTNR = number of dot in domain (0..447) - STATE = dot status (off = 0, on = 1)

5.2.1.3 Types Part

The “TYPES” part in file C56SDK.h specifies following basic data type definitions:

- Emulation Command Set Types
- Job Monitoring Types
- Character Set Types

5.2.1.3.1 Emulation Command Set Types

Following data types are based on the C-56 emulation command set and are used in combination with the API functions *C56Sdk_DcAdd.....(...)*:

Data Type	Description
C56_STATUS_REQUEST	Bit mask type used to specify the parameter of the “setting and cancellation of auto status transmission” command “GS a + [n]”: -C56SR_STATE_VERSION (from FW V2.01) -C56SR_STATE_ONOFFLINE -C56SR_STATE_ERROR -C56SR_STATE_PAPERFEED -C56SR_STATE_AUTO
C56_STATUS_RESPONSE	Bit mask type used to identify the bits in the first byte of the C-56 status dword as described for “setting and cancellation of auto status transmission” command “GS a + [n]”: - C56SR_PRINTER_TEMPALERT - C56SR_PRINTER_PRINTOUTLOST - C56SR_PRINTER_PAPERJAM - C56SR_PRINTER_PAPERLOW - C56SR_PRINTER_OUTOFPAPER - C56SR_PRINTER_POWERON
C56_ROTATE_TYPE	Enumeration type used to specify the parameter of the “text, image and barcode rotation” command “ESC V + [n] + [m]”: - C56RT_TEXT - C56RT_BITMAP - C56RT_BARCODE
C56_ROTATE_DIRECTION	Enumeration type used to specify the parameter of the “text, image and barcode rotation” command “ESC V + [n] + [m]”: - C56RD_0_DEG - C56RD_90_DEG - C56RD_180_DEG - C56RD_270_DEG
C56_PRINT_SPEED	Enumeration type used to specify the parameter of the “print speed” command ”ESC s + [n]”: - C56PS_HIGH - C56PS_MEDIUM_1 - C56PS_MEDIUM_2 - C56PS_LOW
C56_PRINT_MODE	Enumeration/bit mask type used to specify the parameter of the “printing mode specification” command ”ESC ! + [n]”: - C56PM_FONT_08X16 - C56PM_FONT_12X24 - C56PM_FONT_16X16 - C56PM_FONT_24X24 - C56PM_FONT_MAG_2X (from FW V2.01) - C56PM_FONT_MAG_3X (from FW V2.01) - C56PM_FONT_MAG_4X (from FW V2.01) - C56PM_DOUBLE_WIDTH - C56PM_DOUBLE_HEIGHT
C56_PRINT_QUALITY	Enumeration type used to specify the parameter of the “printing quality” command ”GS E + [n]”:

	- C56PQ_LOW - C56PQ_HIGH
C56_DETECTION_FUNCTION	Bit mask type used to specify the parameter of the “detection function enable/disable setting” command ”FS 9 + [n]”: - C56DF_PAPER_NEAR_END - C56DF_PAPER_OUT
C56_BARCODE_TYPES	Enumeration type used to specify the parameter of the “bar code printing” command ”GS k + [m] + [n] + [d1]..[dn]”: - C56BT_UPCA - C56BT_UPCE - C56BT_EAN13 - C56BT_EAN8 - C56BT_CODE39 - C56BT_ITF - C56BT_CODABAR - C56BT_CODE128
C56_REG_IMG_PRINT_MODE	Bit mask type used to specify the parameter of the “print registered image data” command ”GS ‘ + [m] + [n]”: - C56RIPM_NORMAL_1 - C56RIPM_DOUBLE_WIDTH_1 - C56RIPM_DOUBLE_HEIGHT_1 - C56RIPM_DOUBLE_WIDTH_HEIGHT_1 - C56RIPM_NORMAL_2 - C56RIPM_DOUBLE_WIDTH_2 - C56RIPM_DOUBLE_HEIGHT_2 - C56RIPM_DOUBLE_WIDTH_HEIGHT_2

Detailed information on the C-56 emulation command set can be found in “Operator Manual - Thermal Printer C-56 [1]”.

5.2.1.3.2 Job Monitoring Types

Following data types are used for job monitoring:

Data Type	Description
C56_JOBSTATUS	Bit mask type used to specify the status of a print job (document print out): - C56JS_IDLE - C56JS_SPOOLING - C56JS_SPOOLED - C56JS_PRINTING - C56JS_PRINTED - C56JS_CONFIRMED

5.2.1.3.3 Character Set Types

Following data types are used for upload and printout of character sets:

Data Type	Description
C56_CHARSET_TYPE	Enumeration type specifying the character set type: - C56CST_PRIMARY - C56CST_SECONDARY
C56_CHARSET_SIZE	Enumeration type specifying the character set size: - C56CSS_08X16 - C56CSS_12X24

5.2.1.4 Functions Part

The “FUNCTIONS” part in file C56SDK.h specifies following function types:

- Printer Management Functions
- Job Management Functions
- Printer Status Functions
- Document Management Functions
- Emulation Command Set Functions
- Printer Properties Functions
- Data Upload Functions
- Sample Printout Functions
- Printer Spooler Functions
- General Purpose Functions

5.2.1.4.1 Printer Management Functions

Following functions are available for printer management:

Function	Return		Parameter	
	Description			
C56Sdk_PmStartEnumPrinter	Starts enumeration of the printer names of all installed printers which model matches the default C-56 model name.			
	HANDLE	hPrinter	VOID	
C56Sdk_PmEndEnumPrinter	End enumeration of the printer names of all installed C-56 printers.			
	VOID		HANDLE	hPrinter
C56Sdk_PmEnumPrinter	Returns the printer name of an installed C-56 printer.			
	LPSTR	pszName	HANDLE	hPrinter
			BOOL	fReset
C56Sdk_PmGetDriverName	Returns the default C-56 model name.			
	LPSTR	pszName	VOID	
C56Sdk_PmIsPrinterName	Checks if a name of a printer matches the default C-56 model name.			
	BOOL	fMatch	LPSTR	lpszPrinter

Note that the name of a C-56 printer may differ from the default C-56 model name and that you may have multiple C-56 printer installed with equal C-56 model, but with different names.

5.2.1.4.2 Job Management Functions

Following functions are available for job management:

Function	Return	Parameter
	Description	
C56Sdk_PmGetJobStatus	Returns the job status of a specific job (0..30) for a specific C-56 printer	
	C56_JOBSTATUS eJobStatus	LPSTR lpszPrinter
		BYTE bJobNr
C56Sdk_PmSetJobStatus	Sets the job status of a specific job (0..30) for a specific C-56 printer	
	BOOL fDone	LPSTR lpszPrinter
		BYTE bJobNr
		C56_JOBSTATUS eJobStatus
C56Sdk_PmGetJobNr	Returns a job number (0..31) for a specific C-56 printer and increases the internal job number counter	
	BYTE bJobNr	LPSTR lpszPrinter

5.2.1.4.3 Printer Status Functions

Following functions are available for printer status information:

Function	Return	Parameter
	Description	
C56Sdk_PmGetPrinterStatus	Returns the status dword of a C-56 printer and, if required, the age of the status in ms. For information on the status dword, see GS a+[n] command in “Operator Manual - Thermal Printer C-56 [1]”	
	DWORD dwStatus	LPSTR lpszPrinter
		PDWORD pdwAgeMs
C56Sdk_PmGetJobNrConfirmed	Returns the number of the last confirmed job (see parameter command), which is invalid if greater 30.	
	BYTE bJobNr	LPSTR lpszPrinter
C56Sdk_PmGetFwVersion	Retrieves the version number of the C-56 firmware if the firmware is greater than Version 2.00.	
	INT nSize	LPSTR lpszPrinter
		LPSTR lpszVersion
		INT nSize

5.2.1.4.4 Document Management Functions

Following functions are available for document (print job) management :

Function	Return		Parameter	
	Description			
C56Sdk_DmStartDocument	Start printout of a specific document on a specific C-56 printer. Note that a document printout and a print job are regarded equal			
	HANDLE	hDocument	LPSTR	lpszPrinter
			LPSTR	lpszDocument
C56Sdk_DmAddDocumentData	Adds a specific amount of data to the document printout whereas this data can be an escape command from the “Operator Manual - Thermal Printer C-56 [1]” . Note that all data “added” to a document is buffered until printed,			
	BOOL	fDone	HANDLE	hDocument
			LPBYTE	lpData
			DWORD	dwSize
C56Sdk_DmPrintDocument	Causes all bufferde data previously “added” to the document to be send to the printer (e.g. spooled), whereas a job number is returned for job status monitoring using a job management function.			
	BYTE	bJobNr	HANDLE	hDocument
C56Sdk_DmPrintDocument2	Causes all bufferde data previously “added” to the document to be send to the printer (e.g. spooled) without job monitoring			
	BOOL	fDone	HANDLE	hDocument
C56Sdk_DmGetDocumentStatus	Returns the job status of a document printout that has previously been sent to the printer.			
	C56_JOBSTATUS	eJobStatus	HANDLE	hDocument
C56Sdk_DmEndDocument	Closes the document printout.			
	VOID		HANDLE	hDocument

Note that all emulation command set functions use the document handle returned by C56Sdk_Dm-StartDocument(…) to add escape sequences to the document.

5.2.1.4.5 Emulation Command Set Functions

Following functions are available for adding emulation commands (e.g. escape commands) to the document printout:

Function	Description	
	Return value	Parameter overview
C56Sdk_DcAddEndOfPage	Adds the “end of page” command “ESC [CD]+[00]+[70]” to the document.	
	BOOL fDone	HANDLE hDocument
C56Sdk_DcAddPrintSpeed	Adds the “print speed” command “ESC s+[n]” to the document.	
	BOOL fDone	HANDLE hDocument
		C56_PRINT_SPEED eSpeed
C56Sdk_DcAddPrintSpeedExtended	Adds the “extended print speed” command “ESC [CD] + [02] + [42] + [n] + [m]” to the document.	
	BOOL fDone	HANDLE hDocument
		unsigned char ubSpeedMmSec
C56Sdk_DcAddMotorExcitation	Adds the “extended print speed” command "ESC X + NULL + [n]” to the document.	
	BOOL fDone	HANDLE hDocument
		unsigned char ubTimeSec
C56Sdk_DcAddPrintQuality	Adds the “print quality” command “GS E + [n]” to the document.	
	BOOL fDone	HANDLE hDocument
		C56_PRINT_QUALITY eQuality
C56Sdk_DcAddImprEnergyCorrection	Adds the “impressed energy correction” command “FS E + [n]” to the document.	
	BOOL fDone	HANDLE hDocument
		unsigned char ubCorrection
C56Sdk_DcAddLineSpacing	Adds the “line spacing setting” command “ESC A + [n]” to the document.	
	BOOL fDone	HANDLE hDocument
		unsigned char ubDotLines
C56Sdk_DcAddPageLength	Adds the “page length setting” command “ESC C + [n]” to the document.	
	BOOL fDone	HANDLE hDocument
		unsigned char ubLines
C56Sdk_DcAddPrintMode	Adds the “printing mode specification” command “ESC ! + [n]” to the document.	
	BOOL fDone	HANDLE hDocument
		C56_PRINT_MODE eMode
C56Sdk_DcAddLinePitch	Adds the “line pitch setting” command “ESC 3 + [n]” to the document.	
	BOOL fDone	HANDLE hDocument
		unsigned char ubDotLines
C56Sdk_DcAddLinePitch16Inch	Adds the “1/6-inch line pitch setting” command “ESC 2” to the document.	
	BOOL fDone	HANDLE hDocument

C56Sdk_DcAddHorizontalTabPos	Adds the “horizontal tab pos setting” command “ESC D + [d1]..[dn] + NULL” to the document.			
	BOOL	fDone	HANDLE	hDocument
			unsigned int	uiTab1
			unsigned int	uiTab2
				….
			unsigned int	uiTabN
				0
C56Sdk_DcAddEnableReversePrinting	Adds the “black-white reversed printing specification” command “ESC RS” to the document.			
	BOOL	fDone	HANDLE	hDocument
C56Sdk_DcAddDisableReversePrinting	Adds the “black-white reversed printing cancellation” command “ESC US” to the document.			
	BOOL	fDone	HANDLE	hDocument
C56Sdk_DcAddReversePrinting	Adds the “black-white reversed printing specification/cancellation” commands “ESC RS” and “ESC US” to the document.			
	BOOL	fDone	HANDLE	hDocument
			BOOL	fEnabled
C56Sdk_DcAddHorizontalTab	Adds an amount of “horizontal tab” commands “HT” to the document.			
	BOOL	fDone	HANDLE	hDocument
			int	siAmount
C56Sdk_DcAddLineFeed	Adds an amount of “line feedh” commands “LF” to the document.			
	BOOL	fDone	HANDLE	hDocument
			int	siAmount
C56Sdk_DcAddFormFeed	Adds an amount of “form feed” commands “FF” to the document.			
	BOOL	fDone	HANDLE	hDocument
			int	siAmount
C56Sdk_DcAddFeedReduction	Adds the “feed reduction” command “ESC [CD] + [01] + [80] + [n]” to the document.			
	BOOL	fDone	HANDLE	hDocument
			unsigned char	ubPercent
C56Sdk_DcAddFeedLengths	Adds the “feed length specification” command “ESC [CD] + [02] + [81] + [n] + [m]” to the document.			
	BOOL	fDone	HANDLE	hDocument
			unsigned char	ubDotLineInsert,
			unsigned char	ubDotLineOut OfPaper
C56Sdk_DcAddPrinterReset	Adds the “printer resetting” command “ESC @” to the document.			
	BOOL	fDone	HANDLE	hDocument
C56Sdk_DcAddForwardPaperFeed	Adds the “forward paper feed” command “ESC J + [n]” to the document.			
	BOOL	fDone	HANDLE	hDocument
			unsigned char	ubDotLines
C56Sdk_DcAddBackwardPaperFeed	Adds the “backward paper feed” command “ESC K + [n]” to the document.			
	BOOL	fDone	HANDLE	hDocument
			unsigned char	ubDotLines

C56Sdk_DcAddRotation	Adds the “text, image and barcode rotation” command “ESC V + [n] + [m]” to the document.		
	BOOL	fDone	HANDLE hDocument
			C56_ROTATE_TYPE eType
			C56_ROTATE_DIRECTION eDirection
C56Sdk_DcAddForwardLineFeed	Adds the “forward n-line feed” command “ESC d + [n]” to the document.		
	BOOL	fDone	HANDLE hDocument
			unsigned char ubLines
C56Sdk_DcAddBackwardLineFeed	Adds the “backward n-line feed” command “ESC e + [n]” to the document.		
	BOOL	fDone	HANDLE hDocument
			unsigned char ubLines
C56Sdk_DcAddUpsideDownPrinting	Adds the “upside down printing setting/cancellation” command “ESC { + [n]” to the document.		
	BOOL	fDone	HANDLE hDocument
			BOOL fEnabled
C56Sdk_DcAddDetectionFunction	Adds the “detection function enable/disable setting” command “FS 9 + [n]” to the document.		
	BOOL	fDone	HANDLE hDocument
			C56_DETECTION_FUNCTION eFunction
C56Sdk_DcAddBarCodeWidth	Adds the “bar code width setting” command “GS e + [n] + [m]” to the document.		
	BOOL	fDone	HANDLE hDocument
			unsigned char ubDotsNarrow,
			unsigned char ubDotsWide
C56Sdk_DcAddBarCodeHeight	Adds the “bar code height setting” command “GS h + [n]” to the document.		
	BOOL	fDone	HANDLE hDocument
			unsigned char ubDots
C56Sdk_DcAddBarCodeWidth	Adds the “bar code width magnification setting” command “GS w + [n]” to the document.		
	BOOL	fDone	HANDLE hDocument
			unsigned char ubMultiplier
C56Sdk_DcAddText	Adds a plain zero terminated text string to the document.		
	BOOL	fDone	PSTR pszTxt
C56Sdk_DcAddGraphicsLine	Adds the “print raw uncompressed graphics” command “ESC [CD] + [38] + [08] + [d0]..[d55]” to the document. Note that a pointer to an array with 56 bytes representing 448 dots is to be passed to this function.		
	BOOL	fDone	HANDLE hDocument
			unsigned char * pubDotLine
			int siDots
C56Sdk_DcAddPrintInfo	Adds the “print info (FW)” command “ESC [CD] + [00]+ [FF]” to the document.		
	BOOL	fDone	HANDLE hDocument
C56Sdk_DcAddSoftReset	Adds the “soft reset” command “ESC [CD] + [00] + [F9]” to the document.		
	BOOL	fDone	HANDLE hDocument
			unsigned char ubLines

C56Sdk_DcAddPrintInfoEnabled	Adds the “print info enabled/disabled” command “ESC [CD] + [01] + [82] + [n]” to the document.			
	BOOL	fDone	HANDLE	hDocument
			BOOL	fOn
C56Sdk_DcAddReset	Adds the “printer resetting” command “ESC @ >to the document.			
	BOOL	fDone	HANDLE	hDocument
C56Sdk_DcAddBarCodePrint	Adds the “bar code printing” command “GS k + [m] + [n] + [d1]..[dn]” to the document. Note that you can enable/disable the internal validity filter.			
	BOOL	fDone	HANDLE	hDocument
			C56_BARCODE_TYPES	eType
			unsigned char	ubNrOfChar
			unsigned char *	pubData
			BOOL	fFilter
C56Sdk_DcAddStatusRequest	Adds the “setting and cancellation of auto status transmission” command “GS a + [n]” to the document.			
	BOOL	fDone	HANDLE	hDocument
			C56_STATUS_REQUEST	eRequest
C56Sdk_DcAddExtRegCharSet	Adds the “external registration character set selection” command “ESC % + [n]” to the document.			
	BOOL	fDone	HANDLE	hDocument
			BOOL	fEnabled
C56Sdk_DcAddExtRegCharDef	Adds the “external registration character definition” command “ESC & + NUL + [c1] + [c2] + NUL + [d1]..[dn]” to the document.			
	BOOL	fDone	HANDLE	hDocument
			C56_PRINT_MODE	eMode
			unsigned char	ubStart
			unsigned char	ubEnd
			unsigned char *	pubFont
C56Sdk_DcAddExtRegCharDel	Adds the “external registration character deletion” command “ESC ? + [n]” to the document.			
	BOOL	fDone	HANDLE	hDocument
			unsigned char	ubStart
			unsigned char	ubEnd
C56Sdk_DcAddExtRegCharClr	Adds the “external registration character set clearing” command “ESC ? + NUL” to the document.			
	BOOL	fDone	HANDLE	hDocument
C56Sdk_DcAddRegImgDef	Adds the “registration of image data” command “GS & + [m] + [x] + [y1] + [y2] + [d1]..[dn]” to the document.			
	BOOL	fDone	HANDLE	hDocument
			unsigned char	ubId
			unsigned char	ubWidth
			BOOL	uiHeight
			unsigned char *	pubImg

C56Sdk_DcAddRegImgClr	Adds the “deletion of registered image data” command “GS & + NUL + NUL + NUL + NUL” to the document. Note that the parameter ubId is ignored (set to zero).			
	BOOL	fDone	HANDLE	hDocument
			unsigned char	ubId
C56Sdk_DcAddRegImgPrint	Adds the “print registered image data” command “GS ‘ + [m] + [n]” to the document.			
	BOOL	fDone	HANDLE	hDocument
			unsigned char	ubId
			C56_REG_IMG_PRINT_MODE	eMode
C56Sdk_DcAddLeftMargin	Adds the “left margin specification” command “GS IL + [n] + [m]” to the document.			
	BOOL	fDone	HANDLE	hDocument
			BOOL	uiDots
C56Sdk_DcAddMarkDetectionExecution	Adds the “mark detection execution” command “GS <” to the document.			
	BOOL	fDone	HANDLE	hDocument
C56Sdk_DcAddEscCmd	Adds a zero terminated ASCII/HEX command string to the document.This string may contains following special commands: - \A -> switch to ASCII mode - \X -> switch to HEX mode - \n -> initiate line feed - \f -> initiate form feed - \\ -> initiate back slash Note that the ASCII/HEX command starts as ASCII mode.			
	BOOL	fDone	PSTR	pszTxt
C56Sdk_DcAddBarCodeSubTitle	Adds the “bar code sub title” command “ESC [CD]+[00]+[E7] +[n]” to the document.			
	BOOL	fDone	BOOL	fEnable
			unsigned char	ubFont
C56Sdk_DcAddFlashWriteProtect	Adds the “flash write protect enable/disable” command “ESC [CD]+[01]+[EA]+ [n]” to the document.			
	BOOL	fDone	BOOL	fEnable

Detailed information on the C-56 emulation command set can be found in “Operator Manual - Thermal Printer C-56 [1]”.

5.2.1.4.6 Printer Properties Functions

Following functions are available for adding printer properties settings (as set in the user interface of this driver) to the document printout:

Function	Description			
	Return value		Parameter overview	
C56Sdk_DmAddDocumentInitialSettings	Adds the initial printer properties to the document. - Initial escape commands - Initial paper feed - Print speed setup - Print quality setup - Pre-print escape commands			
	BOOL	fDone	VOID	
C56Sdk_DmAddDocumentFinalSettings	Adds the final printer properties to the document. - Post-print escape commands - Final paper feed - Final escape commands			
	BOOL	fDone	VOID	

Following functions are available to get or set the settings from the printer properties dialog:

Function	Return		Parameter	
	Description			
C56Sdk_PmGetProperties	Retrieves the printer properties as hex string.			
	INT	nSize	LPSTR	lpszPrinter
			LPSTR	lpszSettings,
			INT	nSize
C56Sdk_PmSetProperties	Restores the printer properties from an hex string.			
	BOOL	fDone	LPSTR	lpszPrinter
			LPSTR	lpszSettings,
			INT	nSize

5.2.1.4.7 Data Upload Functions

Following data upload functions are provided by the SDK:

Function	Description			
	Return value		Parameter overview	
C56Sdk_PmUploadFirmware	Uploads an INTEL hex firmware file into the C-56 flash memory. Note that the version number of the current installed firmware is retrieved from the printer properties settings.			
	BOOL	fDone	LPSTR	lpszPrinter
			LPSTR	pszFile

C56Sdk_PmUploadFirmware2	Uploads an INTEL hex firmware file into the C-56 flash memory. Note that the version number of the current installed firmware is passed as a parameter (e.g. 200 for V2.00).			
	BOOL	fDone	LPSTR	lpszPrinter
			LPSTR	pszFile
			WORD	wVersion
C56Sdk_PmUploadCharset	Uploads a primary/secondary 8x16/12x24 character set file which is standard windows bitmap with 1,4,8,24 bit resolution.			
	BOOL	fDone	LPSTR	lpszPrinter
			LPSTR	pszFile
			C56_CHARSET_TYPE	eType
			C56_CHARSET_SIZE	eSize
C56Sdk_PmUploadBinary	Uploads a binary file containing escape commands into the C-56			
	BOOL	fDone	LPSTR	lpszPrinter
			LPSTR	pszFile

5.2.1.4.8 Sample Printout Functions

Following sample printout functions are provided by the SDK:

Function	Description			
	Return value		Parameter overview	
C56Sdk_PsPrintoutFirmwareVersion	Causes the C-56 to printout it's actual firmware version. Obsolete, use C56Sdk_PsPrintoutPrinterInfo(…) instead			
	BOOL	fDone	LPSTR	lpszPrinter
C56Sdk_PsPrintoutPrinterInfo	Causes the C-56 to printout it's actual settings.			
	BOOL	fDone	LPSTR	lpszPrinter
C56Sdk_PsPrintoutCharset	Causes the C-56 to printout it's primary/secondary character set			
	BOOL	fDone	LPSTR	lpszPrinter
			C56_CHARSET_TYPE	eType
C56Sdk_PsPrintoutPaperfeed	Causes the C-56 to feed paper over a specific amount of dot lines (min 16)			
	BOOL	fDone	LPSTR	lpszPrinter
			int	nDotLines

5.2.1.4.9 Printer Spooler Functions

Following printer spooler functions are provided by the SDK:

Function	Description	
	Return value	Parameter overview
C56Sdk_PmIsSpoolerEmpty	Checks if the spooler is empty	

	BOOL	fEmpty	LPSTR	lpszPrinter
C56Sdk_PmGetSpoolerJobCount	Returns number of jobs in the spooler			
	INT	nJobs	LPSTR	lpszPrinter
C56Sdk_PmClearSpooler	Deletes all jobs from the spooler			
	BOOL	fDone	LPSTR	lpszPrinter

5.2.1.4.10 General Purpose Functions

Following general purpose functions are provided by the SDK:

Function	Description			
	Return value		Parameter overview	
C56Sdk_GpCalcEstBurnTime	Calculates the estimated burn time in us from print quality, impressed energy correction and print head temperature.			
	int	siBurnTimeUs	C56_PRINT_QUALITY	ePrintQuality
			int	siImpressedEnergy
			int	siPhTempC
C56Sdk_GpExpandStatus	Extracts information from the C-56 status dword			
	BOOL	fDone	DWORD	dwStatus
			C56_STATUS_RESPONSE *	peResponse
			int *	psiPhTempC
			int *	psiPaperState
			unsigned char *	pubParameter
C56Sdk_GpGetVersion	Returns version of the C-56 printer driver			
	BOOL	fDone	PSTR	pszVersion
			DWORD	dwSize

5.2.1.4.11 Printer I/O Functions

Following printer I/O functions are provided by the SDK:

Function	Description			
	Return value		Parameter overview	
C56Sdk_PioPrinterOpen	Opens the connection to the printer.			
	HANDLE	hPrinter	LPSTR	pszPrinterName
			DWORD	dwTimeOutMs
C56Sdk_PioPrinterRead	Reads an amount of bytes from the printer.			
	DWORD	dwBytesRead	HANDLE	hPrinter
			unsigned char *	pubData
			DWORD	nData
			DWORD	dwTimeOutMs
C56Sdk_PioPrinterReadClear	Clears any pending bytes read from the input buffer.			
	BOOL	fDone	HANDLE	hPrinter
C56Sdk_PioPrinterWrite	Writes an amount of bytes to the printer.			

	DWORD	dwBytesWritten	HANDLE	hPrinter
			unsigned char *	pubData
			DWORD	nData
			DWORD	dwTimeOutMs
C56Sdk_PioPrinterClose	Closes the connection to the printer.			
	BOOL	fDone	HANDLE	hPrinter

5.2.1.5 Variables Part

There are no variables exported by the C-56 SDK.

5.3 C-56 API Coding Examples

This chapter contains following C-56 API coding examples:

- Printer Enumeration Coding Example
- Document Printing Coding Example
- Print Job Monitoring Coding Example

5.3.1 Printer Enumeration Coding Example

Printer enumeration is done to determine what C-56 printers are installed within the system.

Following C-Programming example is an extract from the C56SdkDemo01 application and shows the procedure of printer enumeration:

```
//-- Setup printer selection combo box with available C-56 printers
{
   HANDLE hEnumPrinter; // Handle for enumeration

   //-- Start access SDK to go through all C-56 printers
   if ((hEnumPrinter = C56Sdk_PmStartEnumPrinter()) != NULL) {

      LPSTR       lpszPrinter;   // Name of printer
      CComboBox * pPrinterList;  // Pointer to combo box item

      //-- Get printer selection combo box item
      if (pPrinterList = ((CComboBox *) this->GetDlgItem(IDC_COMBO_PRINTER_LIST))) {

         //-- Clear printer selection combo box
         pPrinterList->ResetContent();

         //-- Go through all C-56 printers
         for ( lpszPrinter = C56Sdk_PmEnumPrinter(hEnumPrinter, TRUE)
             ; lpszPrinter != NULL
             ; lpszPrinter = C56Sdk_PmEnumPrinter(hEnumPrinter, FALSE)
             ) {

            //-- Add printer to printer selection combo box
            pPrinterList->AddString(lpszPrinter);
         }

         //-- Select 1st printer in printer selection combo box
         pPrinterList->SetCurSel(0);
      }

      //-- End of enumeration, free handle
      C56Sdk_PmEndEnumPrinter(hEnumPrinter);
   }
}
```

Use C56Sdk_PmStartEnumPrinter() to get printer enumeration handle.

Use C56Sdk_PmEnumPrinter() to get the printer name of all available C-56 printers.

Use C56Sdk_PmEbdEnumPrinter() to end printer enumeration.

5.3.2 Document Printing Coding Example

Document printing through the C-56 SDK is done to initiate print outs on a pre-selected C-56 printer.

Following C-Programming example is an extract from the C56SdkDemo03 application and shows the procedure for document printout through the C-56 SDK:

```
HANDLE hDocument; // Handle to document

//-- Start this document
if ((hDocument = C56Sdk_DmStartDocument(lpszPrinter, "C56SdkDemo03")) != NULL) {

   //-- Add initial setttings
   C56Sdk_DmAddDocumentInitialSettings(hDocument);

   //-- Set print mode to 8x16 (for the initial linefeed)
   C56Sdk_DcAddPrintMode(hDocument, C56PM_FONT_08X16);

   //-- Set initial linefeeds to power up the motor
   C56Sdk_DcAddLineFeed(hDocument, 1);

   //-- Add text to print to document
   {
      CEdit  * pTextToPrint; // Pointer to text to print box

      //-- Get text to print (dialog item edit box)
      if ((pTextToPrint = ((CEdit *) this->GetDlgItem(IDC_EDIT_TEXTTOPRINT))) != NULL) {

         char szTextToPrint[3000+1]; // Buffer for text

         //-- Get text to print
         if (pTextToPrint->GetWindowText(szTextToPrint, sizeof(szTextToPrint)-1) > 0) {

            //-- Set print mode to 8x16 (as initial text)
            //.. disable reverse printing
            //.. select primary font
            //.. etc. etc. etc.
            {
                C56Sdk_DcAddPrintMode(hDocument, C56PM_FONT_08X16);
                C56Sdk_DcAddDisableReversePrinting(hDocument);
                C56Sdk_DcAddExtRegCharSet(hDocument, FALSE);
            }

            //-- Add "text to print" to document data
            C56Sdk_DcAddEscapeCmd(hDocument, szTextToPrint);
         }
      }
   }

   //-- Set print mode to 8x16 (for the final linefeeds)
   C56Sdk_DcAddPrintMode(hDocument, C56PM_FONT_08X16);

   //-- Add linefeeds to get text out of the chute
   C56Sdk_DcAddLineFeed(hDocument, 50);

   //-- Add final settings
   C56Sdk_DmAddDocumentFinalSettings(hDocument);
```

Use C56Sdk_DmStartDocument () to create a document printout handle for the specified printer.

Add initial settings from the „Printer Properties“ dialog to the document.

Add print mode setting for the subsequent initial linefeed

Add a single linefeed to allow a motor power up.

Add print mode and character set setup for subsequent escape commands.

Add ASCII/HEX escape commands to the document.

Add print mode setting for the subsequent final linefeed

Add 50 linefeeds to get the paper out of the chute

Add final settings from the „Printer Properties“ dialog to the document.

```
      //-- Print document and get job number
      m_bJobNr = C56Sdk_DmPrintDocument(hDocument);

      //-- End of document
      C56Sdk_DmEndDocument(hDocument);
   }
```

Initiate the document printout and remember the job number – assigned this the print job – for future job monitoring.

Close the document.

Note that C56Sdk_DmPrintDocument() automatically increases the job number in domain (0..30).

5.3.3 Print Job Monitoring Coding Example

The C-56 SDK offers an interface for monitoring the status of a print job (document printout) which is identified by it's job numer (0...30). Note that this job number is returned by C56Sdk_DmPrint-Document(…) and C56Sdk_PmGetJobNr(..).

Following C-Programming example is an extract from the C56SdkDemo03 application and shows the procedure for job monitoring through the C-56 SDK:

```
   //-- Update Job status
   {
      C56_JOBSTATUS       eJobStatus;   // C56 Job status

      //-- Get Job status
      eJobStatus = C56Sdk_PmGetJobStatus(lpszPrinter, m_bJobNr);

      //-- Update dialog items
      this->GetDlgItem(IDC_RADIO_STATUS_JOB_SPOOLER)->EnableWindow(m_bJobNr != 0xFF);
      this->CheckDlgButton(IDC_RADIO_STATUS_JOB_SPOOLER, (eJobStatus & (C56JS_SPOOLING |
C56JS_SPOOLED)) != 0);
      this->GetDlgItem(IDC_RADIO_STATUS_JOB_SPOOLER)->SetWindowText
         (eJobStatus & C56JS_SPOOLED  ? "Print job has been spooled"
         :eJobStatus & C56JS_SPOOLING ? "...... SPOOLING ......"
         :                              "Print job is to be spooled"
         );
      this->GetDlgItem(IDC_RADIO_STATUS_JOB_PRINTER)->EnableWindow(m_bJobNr != 0xFF);
      this->CheckDlgButton(IDC_RADIO_STATUS_JOB_PRINTER, (eJobStatus & (C56JS_PRINTING |
C56JS_PRINTED)) != 0);
      this->GetDlgItem(IDC_RADIO_STATUS_JOB_PRINTER)->SetWindowText
         (eJobStatus & C56JS_PRINTED  ? "Print job has been printed"
         :eJobStatus & C56JS_PRINTING ? "...... PRINTING ......"
         :                              "Print job is to be printed"
         );
      this->GetDlgItem(IDC_RADIO_STATUS_JOB_CONFIRMED)->EnableWindow(m_bJobNr != 0xFF);
      this->CheckDlgButton(IDC_RADIO_STATUS_JOB_CONFIRMED, (eJobStatus & C56JS_CONFIRMED) !=
0);
   }
```

Use C56Sdk_PmGetJobStatus() to get the status of a specific job for the specified printer.

Note that the job status is either C56JS_IDLE or any combination of C56JS_SPOOLING, C56JS_SPOOLED, C56JS_PRINTING, C56JS_PRINTED and C56JS_CONFIRMED.

5.3.4 Coding Samples Overview

The SDK contains several sample programs C56SdkDemoXX.exe, which demonstrates usage of the SDK interface.

All sample applications have been developed with Microsoft Visual C++ using:

- Microsoft Development Environment 2003, Version 7.1.3088
- Microsoft.NET framwork 1.1, Version 1.1.4322

The application sources are distributed as part of the driver in corresponding zip-files (e.g. C56SdkDemo08.zip).

If you have installed the driver with SDK, then you can find these sample application in directory “C:\Program Files\HENGSTLER\C-56\SDK” and launch them through “START->PROGRAMS->HENGSTLER->C-56>SDK”.

5.3.4.1 C56SdkDemo01.exe

The C-56 SDK demo application Nr. 01 demonstrates how documents (e.g. sequence of escape comments) are printed.

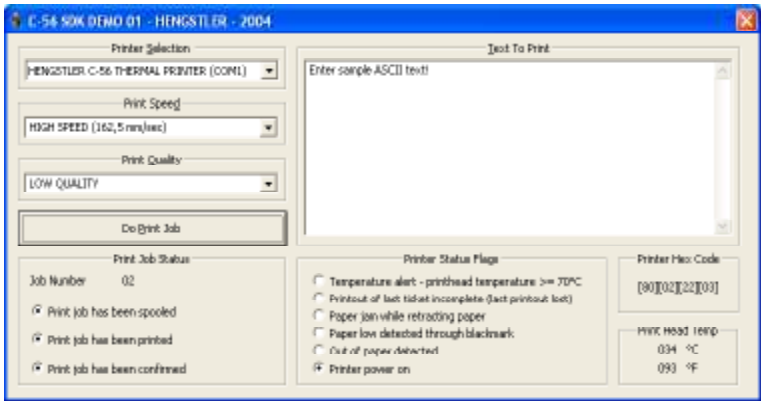


Figure 45: C-56 SDK Demo Application 01

5.3.4.2 C56SdkDemo02.exe

The C-56 SDK demo application Nr. 02 demonstrates how the printer properties settings (from the printer properties dialog) can be included in a document printout.

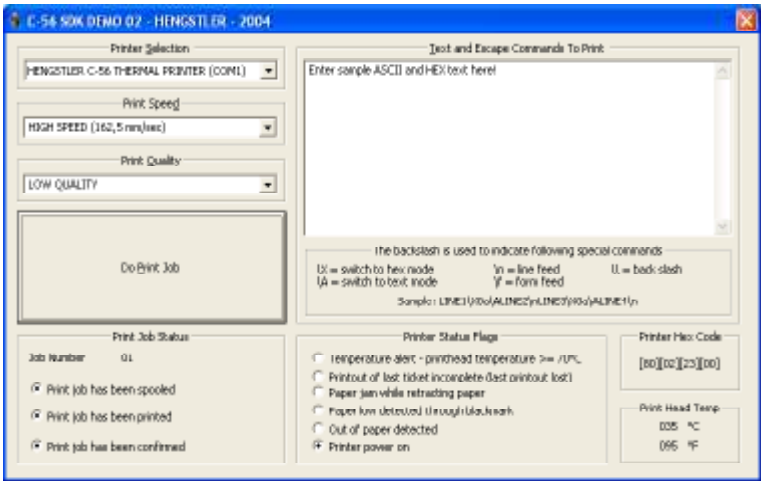


Figure 46: C-56 SDK Demo Application 02

5.3.4.3 C56SdkDemo03.exe

The C-56 SDK demo application Nr. 03 demonstrates how print job monitoring is done.

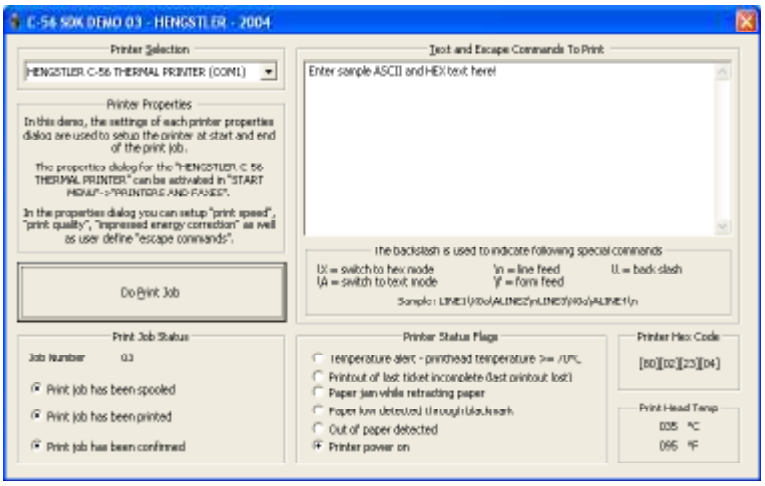


Figure 47: C-56 SDK Demo Application 03

5.3.4.4 C56SdkDemo04.exe

The C-56 SDK demo application Nr. 04 demonstrates how firmware and character sets can be uploaded into the C-56 printer. This demo application has been removed since driver R2-V1_09.

5.3.4.5 C56SdkDemo05.exe

The C-56 SDK demo application Nr. 05 demonstrates continuous printout of a sample HENGSTLER ticket.

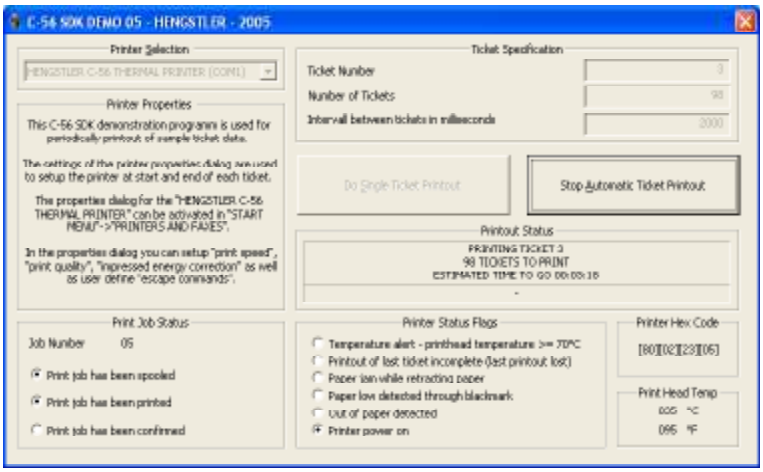


Figure 48: C-56 SDK Demo Application 05

5.3.4.6 C56SdkDemo06.exe

The C-56 SDK demo application Nr. 06 demonstrates how the printer properties settings (from the printer properties dialog) can be loaded from and saved to a file.

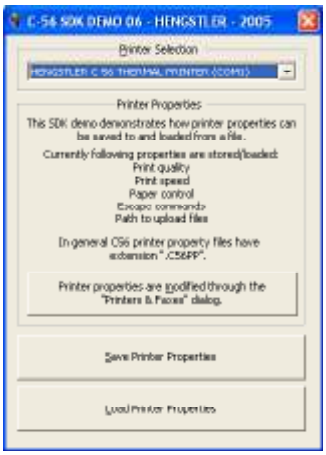


Figure 49: C-56 SDK Demo Application 06

5.3.4.7 C56SdkDemo07.exe

The C-56 SDK demo application Nr. 07 demonstrates how binary files (containing escape commands) are to be uploaded into the C56 printer.

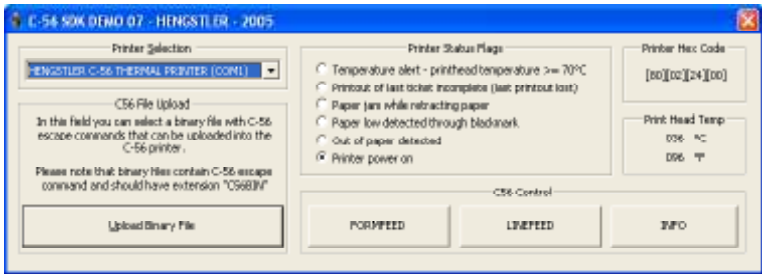


Figure 50: C-56 SDK Demo Application 07

5.3.4.8 C56SdkDemo08.exe

The C-56 SDK demo application Nr. 08 demonstrates how escape command scripts can be loaded from and saved to a file.

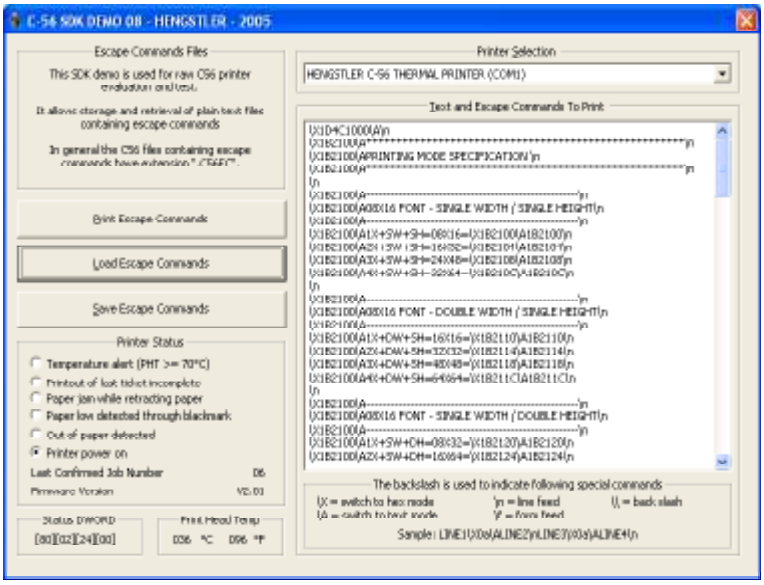


Figure 51: C-56 SDK Demo Application 08

5.3.4.9 C56SdkDemo09.exe

The C-56 SDK demo application Nr. 09 demonstrates how registered images can be uploaded and printed.

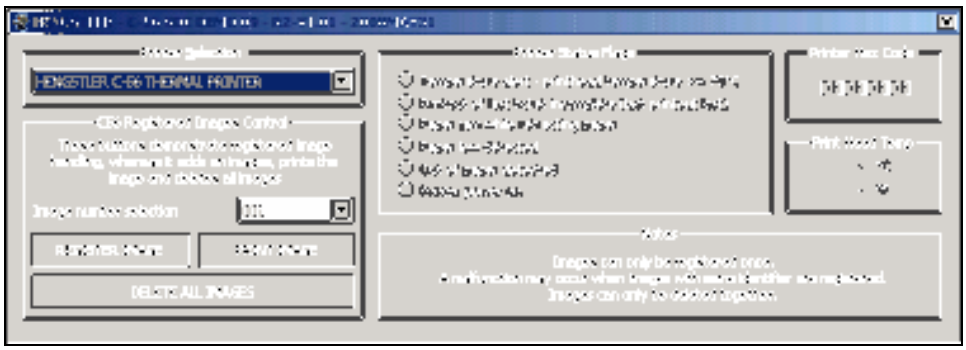


Figure 52: C-56 SDK Demo Application 09

5.3.4.10 C56SdkDemo10.exe

The C-56 SDK demo application Nr. 10 can be used for periodical printout of a sample ticket.

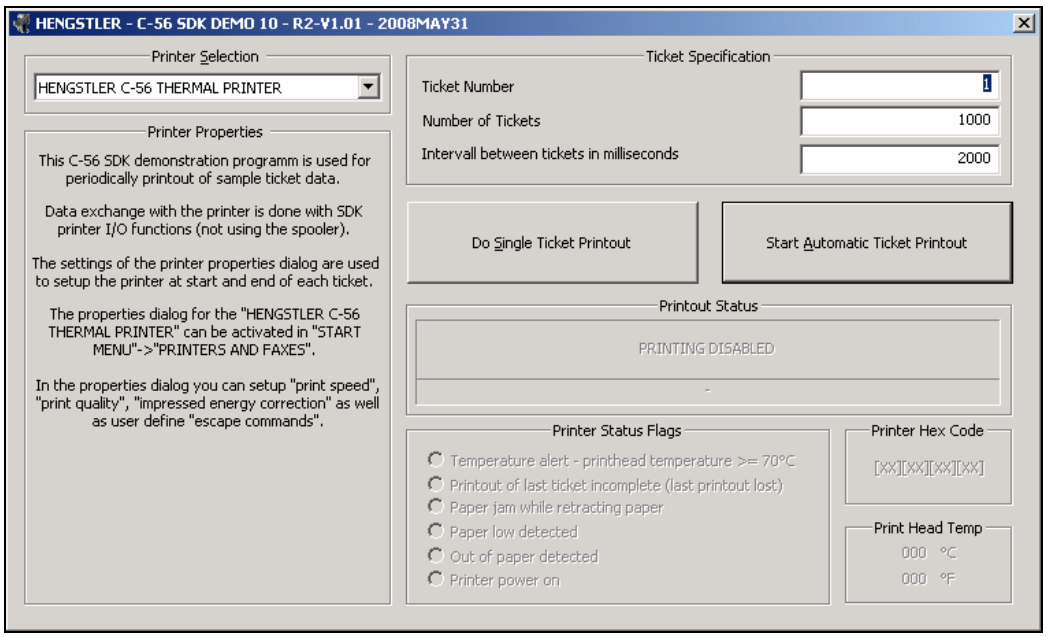


Figure 53: C-56 SDK Demo Application 10

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