



## Thermal Printer Family eXtendo

Windows Driver  
XP/7/8/10

S684015  
R9-V2.05-2018SEP14  
FINAL

Release Note

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## Document History

Revision	Mod. Nr	Status	Description
1	4 211207 HOR2	Closed	Initial version: created for eXtendo XP-Driver S684015 / Release 1 / Version 1.00 / 21 December 2007
2	4 310508 HOR2	Closed	Second version: created for eXtendo XP-Driver S684015 / Release 2 / Version 1.01 / 31 May 2008
3	4 300410 HOR1	Closed	Third version: created for eXtendo XP-Driver S684015 / Release 3 / Version 1.02 / 30 April 2010
4	4 180713 HOR1	Closed	Fourth version: created for eXtendo XP-Driver S684015 / Release 4 / Version 2.00 / 18 July 2013
5	4 070515 HOR1	Closed	Fifth version: created for eXtendo XP-Driver S684015 / Release 5 / Version 2.01 / 05 May 2015
6	4 250516 HOR1	Closed	Sixth version: created for eXtendo XP-Driver S684015 / Release 6 / Version 2.02 / 25 May 2016
7	4 200417 HOR1	Closed	Seventh version: created for eXtendo XP-Driver S684015 / Release 7 / Version 2.03 / 20 April 2017
8	4 020718 HOR1	Closed	Eight version: created for eXtendo XP-Driver S684015 / Release 8 / Version 2.04 / 02 July 2018
9	4 140921 HOR1	Closed	Ninth version: created for eXtendo XP-Driver S684015 / Release 9 / Version 2.05 / 14 September 2021

## Applicable Documentation and Software

Id	Part Nr	Description
[1]	D 684 112	Thermal Printer Family Extendo - Emulation Command Set Reference Manual - Types: X-56 and X-80
[2]	S 684 015	Windows Driver for Thermal Printer Family eXtendo
[3]	D 684 131	Thermal Printer Family Extendo – Windows Driver Manual
[4]	D 684 307	Extendo Application Note Bundle

## Comments

Revision	Comments
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## **1 Introduction**

This release note describes all modifications done to the eXtendo printer driver with HENGSTLER part number S684015 for Windows-XP, Windows 7 (32/64 Bit) and Windows 8 (32/64 Bit) since the first release R1-V1.00 on 21. December 2007.

The latest released Windows-XP printer driver is S684015-R5-V2.01-2015MAY07.

This Windows printer driver is regarded to be backward compatible to earlier released and/or beta versions them and replaces them all.

## 2 Driver Changes Prior to Current Release

### 2.1 EXTENDO XP-DRIVER S684015-R1-V1.00-2007DEC21

### 2.2 EXTENDO XP-DRIVER S684015-R2-V1.01-2008MAY31

List of modifications			
=> R2-V1.01 – 2008 MAY 31 – RELEASED FINAL VERSION			
2 <sup>nd</sup> released version of the extendo printer driver for windows XP.			
Mod-Id	Component	Version	Description
M-R2-001-HOR	Exo-ConfigurationTool	R2-V1_01	Park position #2 added (rubber roll, 0,5 mm before the dot-line).
M-R2-002-HOR	Exo-UniDrv.dll Exo-UserInterface.dll Exo-Tb.dll Exo_X56.dat Exo_X80.dat	R2-V1_01	Improvement of the rendering engine. Pattern rendering has been replaced by error correction rendering. Gray shift has been renamed to brightness. Gray squeeze has been renamed to contrast.
M-R2-003-HOR	Exo-ExhibitionTool2008	R2-V1_01	New tool for the KIOSK 2008.
M-R2-004-HOR	Exo-Uninstaller	R2-V1_01	Deletion of Extendo X80 oem*.inf files corrected.
M-R2-005-HOR	Exo-PrintMon	R2-V1_01	Data logging timestamp corrected.
M-R2-006-HOR	Exo-ManufacturingTool	R2-V1_01	Paper park position #0 and #1 are exchanged. Position #0 is relative to cutter and position #1 is relative to the dot line.
M-R2-007-HOR	Exo-UniDrv.dll	R2-V1.01	Print speed, print density, formfeed and end-of-print are also added when printing large pages through GDI.
M-R2-008-HOR	Exo-API.dll	R2-V1.01	Wrong value for packet identifier D_EXO_API_PID_TX_PRINTER_FLASH changed to 0x05.
M-R2-009-HOR	Exo-Tb.dll	R2-V1.01	Compression of dot lines improved.
M-R2-010-HOR	Exo-PrintMon.dll	R2-V1.01	Failure in event logging of print manager corrected.
M-R2-011-HOR	Exo-ManufacturingTool Exo-ConfigurationTool	R2-V1.01	Current printer settings are requested during the initialization phase of the tool.
M-R2-012-HOR	Exo-PrintMon.dll	R2-V1.01	All spooled print jobs are removed from the spooler at start of the print monitor.
M-R2-013-HOR	Hengstler-Extendo-X56.inf Hengstler-Extendo-X80.inf	R2-V1.01	Corrected a windows vista installation failure.
M-R2-014-HOR	Exo-ConfigurationTool	R2-V1.01	The 16 checksum of the configuration data updated when configuration data is saved into a file.
N/A	All applications	R2-V1.01	All application icons have been improved.
N/A	All files	R2-V1.01	Changed the version information of all files to R2 / 2008MAY31.

## 2.3 EXTENDO XP-DRIVER S684015-R3-V1.02-2010APR30

## List of modifications

## =&gt; R3-V1.02 – 2010 APR 30 -- RELEASED FINAL VERSION

3<sup>rd</sup> release version of the eXtendo printer driver for windows XP.

Mod-Id	Component	Version	Description
M-R3-001-HOR	Exo-OptionsTool.exe Exo-ComponentsTool.exe Exo-Tb.dll	R3-V1_02a	New eXtendo options and components tool added.
M-R3-002-HOR	Exo-ManufactureTool.exe Exo-OptionsTool.exe Exo-Tb.dll Exo-Tb2.dll	R3-V1_02a	The eXtendo manufacture tool and options tool only work when an USB dongle is installed.
M-R3-003-HOR	Exo-FwPatchTool.exe	R3-V1_02a	The firmware patch tool is extended with firmware patch 0x00000002. This patch is available from extendo firmware V1.02a-BETA. It is intended to be used in combination with early eXtendo printers which have an inverted print head up/down switch. The patch is not to be used for printers that are manufactured after june 2008.
M-R3-004-HOR	Exo-ConfigTool.exe Exo-Tb.dll	R3-V1_02a	Option "Add flag to USB serial number" added to the configuration tool. By setting this flag, up to 4 different printers can be distinguished by the USB.
M-R3-005-HOR	Exo-ConfigTool.exe	R3-V1_02a	The configuration tool automatically generates the filename from the part number when [save to file] is selected.
M-R3-006-HOR	Exo-Tb.dll	R3-V1_02a	Integrated new functionality for generating loop presenter control commands.
M-R3-007-HOR	Exo-Tb.dll Exo-EnduranceTest.dll	R3-V1_02a	Recorded data now contains number of presenter jams instead of number of sleep commands received
M-R3-008-HOR	Exo-Tb.dll Exo-UserInterface.dll Exo-UniDrv.dll	R3-V1_02a	Driver settings extended with bundler capacity and presentation timeout. Presenter control integrated in the driver.
M-R3-009-HOR	Exo-API.dll Exo-DiagnosticTool.exe	R3-V1_02a	The printer status error word is extended with presenter specific error information.
M-R3-010-HOR	Exo-ManufacturingTool.exe Exo-Tb.exe	R3-V1_02a	Manufacturing data extended with presenter unit selection.
M-R3-011-HOR	Exo-API.dll Exo-Tb2.dll Exo-DiagnosticTool.exe	R3-V1_02a	New presenter status packet added and diagnostic tool dialog extended with presenter status information.
M-R3-012-HOR	Exo-ConfigTool.exe	R3-V1_02a	Dot history can be defined from 0%-100% (instead of 0%-50%).
M-R3-013-HOR	Exo-API.exe	R3-V1_02a	Printer status DWORD in packet TS_EXO_API_PCKT_PRINTER_STATUS extended with D_EXO_API_PRINTER_STATUS_PSDW_EEPROM_ISSING
M-R3-014-HOR	Exo-ConfigurationTool.exe Exo-Tb.dll	R3-V1_02b	Configuration data extended with paper presentation offset.
M-R3-015-HOR	Exo-SpeedTestTool.exe	R3-V1_02b	Speed test tool extended with density setting.

M-R3-015-HOR	Exo-ConfigurationTool.exe Exo-Tb.dll	R3-V1_02b	Configuration data extended with mark cut correction.
M-R3-016-HOR	Exo-ConfigurationTool.exe Exo-Tb.dll	R3-V1_02b	Configuration data extended with print start correction.
M-R3-017-HOR	Exo-ConfigurationTool.exe Exo-Tb.dll	R3-V1_02b	Configuration data extended with "print whole objects only" flag.
M-R3-018-HOR	Exo-Tb.dll	R3-V1_02c	The flag "UseDefaultSettings" in the driver dat-file is lowered only after successful storage of the settings in the registry.
M-R3-019-HOR	Exo-ManufacturingTool.exe	R3-V1_02c	Extended with new 12V thermal print heads for X56 and X80.
M-R3-020-HOR	Exo-DiagnosticTool.exe	R3-V1_02c	Display of A/C converter measurements as hex string.
M-R3-021-HOR	Exo-ManufacturingTool.exe Exo-Tb.dll	R3-V1_02c	Cutter type "NONE" added.
M-R3-022-HOR	Exo-ConfigurationTool.exe	R3-V1_02c	Park position "USER" added.
M-R3-023-HOR	Exo-FontTool.exe	R3-V1_02c	Modified for processing font files with both 256 and 256+96 characters. Font input files which can be processed have width 32 characters and height 8 or 11 characters. Note that until eXtendo firmware R2-V1.02o all fonts have 256 characters and that, from this firmware version, fonts have 256+96 characters.
M-R3-024-HOR	Exo-DiagnosticTool.exe Exo-EnduranceTestTool.exe	R3-V1_02c	Added new states for cutter test and paper eject.
M-R3-025-HOR	Exo-EnduranceTestTool.exe	R3-V1_02c	Extended with cutter test feature.
M-R3-026-HOR	Exo-Tb.dll Exo-ManufacturingTool.exe	R3-V1_02c	Extension of manufactory data with controller revision.
M-R3-027-HOR	Exo-PrintTerminal.exe	R3-V1_02c	Soft reset changed to hard reset.
M-R3-028-HOR	Exo-API.h	R3-V1.02	Printer status DWORD in packet TS_EXO_API_PCKT_PRINTER_STATUS extended with D_EXO_API_PRINTER_STATUS_PSDW_PARCUT flags.
M-R3-028-HOR	Exo-ExhibitionTool.exe	R3-V1.02	All exhibition tools are removed from the driver package.
M-R3-029-HOR	Exo-UniDrv.dll	R3-V1.02	Division-by-zero bug resolved regarding printing empty documents whereas flag "remove trailing blanks" is enabled.



## 2.4 EXTENDO XP/7/8 DRIVER S684015-R4-V2.00-2013JUL18

List of modifications			
Mod-Id	Component	Version	Description
M-R4-001-HOR	Exo-ComponentsTool.exe	R4-V2_00a	Extendo components tool extended with Chinese and Korean font.
M-R4-002-HOR	Exo-ConfigurationTool.exe	R4-V2_00a	Maximum setting for paper end detect distance limited to 650.
M-R4-003-HOR	Exo-FwPatchTool.exe	R4-V2_00a	Firmware patch 0x00000004 added which initializes the width of the narrow and wide barcode stripes equal to that of firmware version R2-V1.01 (equivalent with command "GS 'e'+[02]+[06]"). Note that these defaults have been changed in version R3-V1.02c (see M-R3-009-HOR).
M-R4-004-HOR	Exo_Api.dll Exo_CommandTool.exe Exo_PrintMon.dll Exo_Tb.dll Exo	R4-V2_00a	Modules adapted to VS2010 and, if required, 64 bit (x64). Redesign of various tools.
M-R4-005-HOR	Exo_Api.dll Exo_DiagnosticTool.dll	R4-V2_00a	Diagnostic tool extended with life cycle data display (available from firmware R4-V1.03b-Beta)
M-R4-006-HOR	Exo_PrintMon.dll Exo_PrintMon_x64.dll	R4-V2_00b	Clearing of data reception buffer at start of GDI printing improved.
M-R4-007-HOR	Exo_PrintMon.dll Exo_PrintMon_x64.dll	R4-V2_00b	Application programming interface data reception timeout enlarged.
M-R4-008-HOR	Exo_UserInterface.dll Exo_UserInterface_x64.dll	R4-V2_00b	Error in driver information display for 64 bit installation corrected.
M-R4-009-HOR	Exo_PrintMon.dll Exo_PrintMon_x64.dll	R4-V2_00c	Error in loading 64 bit print monitor plugin resolved.
M-R4-010-HOR	Exo-DiagnosticTool.exe	R4-V2_00c	Various failures in print test tab corrected.
M-R4-011-HOR	Exo-FwPatchTool.exe	R4-V2_00c	Extended with firmware patch 0x00000008. This patch is available from eXtendo firmware V1.03g-BETA and extends the paper jam detect distance by 3,5 cm.
M-R4-012-HOR	Exo_PrintMonPlugin.dll Exo_PrintMonPlugin_x64.dll	R4-V2_00c	Compiler switch "UNICODE" added. Was removed in M-R4-004-HOR when adapted to VS2010.
M-R4-013-HOR	Exo-API.dll Exo-DiagnosticTool.dll Exo-PrintMonitor.dll	R4-V2_00c	Printer status extended with presenter available and presenter active flag. This new flag is available from firmware version V2.00a.
M-R4-014-HOR	Exo-API.dll Exo-DiagnosticTool.dll Exo-PrintMonitor.dll	R4-V2_00c	Presenter status packet adapted to that of firmware version V2.00a.
M-R4-015-HOR	Exo-OptionsTool.dll Exo-Tb.dll Exo-ComponentsTool.dll	R4-V2_00c	Extended with paper roll holders P7 and P8.
M-R4-016-HOR	Exo-ServiceTool	R4-V2.00c	New command line tool for upload of firmware and storage/recovery of printer/driver settings

M-R4-017-HOR	Exo-ConfigurationTool.dll Exo-Tb.dll	R4-V2.00c	New firmware configuration setting "Mark Threshold Correction" added, which is available for Extendo firmware R4-R1.03j and up. The "Mark Threshold Correction" value selected reduces the mark detection scope between "white" and "black" (approx. 1.0 volt) with 10% (approx. 0.1 volt). The setting may help detecting low quality or reflective black marks.
M-R4-018-PS	Exo_ApiWrapper_NET.dll	R4-V2.00c	New .NET library added, which wraps the C++ Printer API to .NET. The provided functions use common .NET variable types. See application note #0002 for additional information.
M-R4-019-PS	S-684-015-Extendo-WindowsXpDriver-ApplicationNote-0001.pdf	R4-V2.00c	New application note added describing how-to use Exo_ApiWrapper_NET.dll within .NET applications.
M-R4-019-TKA	Exo_VendorSetup.dll	R4-V2.00c	Extended with automatic paper path selection at the end of the printer driver setup phase.
M-R4-020-HOR	Exo-CodePages.zip	N/A	First character in each code page cleared.
M-R4-021-TKA	Exo-Setup.exe	N/A	New setup tool added for driver setup within windows 7.
M-R4-022-HOR	Exo-ServiceTool.exe	R4-V2.00c	New argument /cmd="<Command-Sequence>" added.
M-R4-023-HOR	Exo-ConfigTool.exe Exo-Tb.dll	R4-V2.00d	Configuration data structure extended with new option "assign model specific USB device identifier".
M-R4-024-HOR	Hengstler-Extendo-X56.inf Hengstler-Extendo-X56.x64.inf Hengstler-Extendo-X80.inf Hengstler-Extendo-X80.x64.inf	R4-V2.00d	New unique model specifications "Hengstler X-56" and "Hengstler X-80" added.
M-R4-025-HOR	Exo-API.dll Exo-Uninstaller.exe Exo-Setup.exe	N/A	New printer models "Hengstler X-56" and "Hengstler X-80" added.
M-R4-026-HOR	Exo-CodePages.zip	N/A	Characters in the codepages update.
M-R4-027-HOR	Exo-Setup.exe	R4-V2.00d	Setup tool reviewed and extended with a command line interface.
M-R4-028-HOR	Exo-ConfigTool.exe Exo-Tb.dll	R4-V2.00d	Configuration data structure extended with option "disable retract at print start". If enabled, this option will cause the printer to immediately start printing and not to retract top of paper to print head.
M-R4-029-HOR	Exo-Tb.dll Exo-ConfigTool.exe	R4-V2.00e	Option "unjam paper on init" replaced by "enable automatic recovery on init".
M-R4-030-HOR	Exo-Tb.dll	R4-V2.00e	Presenter controls at end of print adapted to firmware V2.00a.
M-R4-031-HOR	Exo-Userinterface.dll Exo-PrintMon.dll	R4-V2.00e	Failure in data logging feature corrected.
M-R4-032-HOR	Exo-API.dll Exo-Tb.dll	R4-V2.00e	Configuration data structure moved from Exo-Tb.h to Exo-API.h
M-R4-033-HOR	Exo-API.dll Exo-Tb.dll	R4-V2.00e	Configuration data option "Automatic Recovery on init" (0x00000400 / D_EXO_CD_OPTION_ENABLE_AUTOMATIC_RECOVERY_ON_INIT / D_EXO_CD_OPTION_UNJAM_PAPER_ON_INIT) is no longer available since firmware R4-V2.00e. The printer will automatically recover on init if possible.
M-R4-034-HOR	Exo-DiagnosticTool.dll Exo-Tb.dll	R4-V2.00e	Presenter information adapted to firmware R4-V2.00a.
M-R4-035-HOR	Exo-UserInterface.dll	R4-V2.00e	Presenter bundle capacity setup removed.

M-R4-036-HOR	Exo-ConfigurationTool.exe Exo-API.dll	R4-V2.00e	Option "pre-pull form before print" added to configuration data, which is available since firmware R4-V2.00a.
M-R4-037-HOR	Exo-ConfigurationTool.exe Exo-API.dll	R4-V2.00e	Speed settings for paper load, paper advance and paper reverse added to configuration data, which are available since firmware R4-V2.00a.
M-R4-038-HOR	Exo-OptionsTool.exe Exo-ComponentsTool.exe	R4-V2.00e	Option X80 "Omit Paper Guides" added
M-R4-039-HOR	Exo-API.dll Exo-ConfigTool.exe		Option "use improved burn time determination" added to configuration data, which is available since firmware R4-V2.00a.
M-R4-040-HOR	Exo-Setup.exe	R4-V2.00e	Extended for usage under Windows XP. Minor corrections.
M-R4-041-HOR	Exo-PrintMon.dll Exo-Tb.dll	R4-V2.00e	Improvement of data inquiry (e.g. from diagnostic tools and others) (effective with slow printer<->host connections).
M-R4-042-HOR	Exo-DiagnosticTool.exe Exo-API.dll	R4-V2.00e	Sensor readings data package (GS 'a' +[n]) extended with presenter sensor #1 and #2 information.
M-R4-043-HOR	Exo-EnduranceTestTool.exe	R4-V2.00e	Tool extended with presenter test settings that are available since extendo firmware V2.00a. The cutter test is removed due to incompatibility with extendo firmware V2.00a.
M-R4-044-HOR	Exo-Vs.exe	R4-V2.00e	After installation vendor setup selects a paper size of 300 cm.
M-R4-045-HOR	Exo-PrintMonitor.dll	R4-V2.00f	Failure in data logging file naming resolved.
M-R4-046-HOR	Exo-PrintMonitor.dll	R4-V2.00f	Decrement of the duration of a data read from a port at which no received data is available.
M-R4-047-HOR	Exo-PrintTerminal.exe	R4-V2.00f	Input buffer for reception of data from the printer decreased to 32 bytes.
M-R4-048-HOR	Exo-API.dll	R4-V2.00f	Review of the presenter status structure.
M-R4-049-HOR	Exo-Tb.dll Exo-UserInterface.dll	R4-V2.00f	Cutter control can now be specified individually for end of page and end of document.
M-R4-050-HOR	Exo-ConfigTools.dll	R4-V2.00f	Distances are now input in mm instead of 1/10 mm.
M-R4-051-HOR	Exo-ConfigTools.dll Exo-API.dll	R4-V2.00g	Configuration data extended with a paper load setting that disables reverse motion when paper load fails. Currently loaded paper is rejected when the paper exit sensor remains unoccupied during paper load. This reverse motion without paper could damage the platen, especially when paper is frequently loaded, such as in ticket in/out applications. By enabling the "disable paper reject on paper load fail" option, the printer will stop the paper load process immediately and will not reject the inserted paper.
M-R4-052-HOR	Exo-ConfigTools.dll Exo-API.dll	R4-V2.00g	Configuration data extended with a presenter setting that disables the auto reject function of the driver. If enabled, then this "disable auto presenter reject feature" causes the presenter to wait for the host command before rejecting the ticket.
M-R4-053-HOR	Whole driver package	R4-V2.00g	Globalsign signature "HENGSTLER" added to driver and components.

M-R4-054-HOR	Exo-API.dll Exo-Toolbox.dll Exo-PrintMon.dll	R4-V2.00g	An application or tool can now communicate with the printer via the drivers API without having administrator rights.
M-R4-055-HOR	Whole driver package	R4-V2.00g	Package adapted to Windows 8.
M-R4-056-HOR	Exo-ConfigTool.exe	R4-V2.00h	Failure in processing decimals input resolved.
M-R4-057-HOR	<del>Exo-ConfigTool.exe</del> <del>Exo-API.dll</del>	R4-V2.00h	<del>Option "mark look ahead (on mark detection fail)" added to configuration data. When enabled, this flag causes the firmware to scan the next form in case a paper mark has not been detected in the current form.</del>
M-R4-058-HOR	Exo-CaTool.exe	R4-V2.00h	Driver package extended with a company confidential CA-Tool. This tool sets the CA-Code in an Extendo BETA firmware (firmware version R4-V2.00h or higher).
M-R4-059-HOR	N/A	R4-V2.00	Windows Driver Application Note 003 added to the driver packet.
M-R4-060-HOR	N/A	R4-V2.00	Windows Driver Application Note 004 added to the driver packet.

## 2.5 EXTENDO XP/7/8 DRIVER

### S684015-R5-V2.01-2015MAY07

List of modifications			
Mod-Id	Component	Version	Description
M-R5-001-HOR	Exo-ConfigurationTool.exe Exo-API.dll	R5-V2_01a	Configuration settings extended with option "DISABLE SCAN OUTSIDE MARK AREA". If enabled, paper mark detection is limited to the defined paper mark area +- 10 mm.
M-R5-002-HOR	Exo-PrintMon.dll	R5-V2_01a	GDI printing does no longer keep the printer open when the port is occupied.
M-R5-003-HOR	Exo-API.dll Exo_ApiWrapper_NET.dll	R5-V2_01a	API extended with function Exo_Api_Pio_PrinterPrintImage. This function loads a black and white image from a file, converts it to emulation commands and sends these commands to the printer. Note that no color to monochrome rendering is done.
M-R5-004-HOR	Exo-API.dll	R5-V2_01a	Function Exo_Api_Pio_PrinterPrintImage renders the image using rendering settings specified in the printer properties dialog.
M-R5-005-HOR	Exo-ServiceTool.exe	R5-V2_01a	Service tool extended with image print feature (Exo-ServiceTool - image=<filename>).
M-R5-006-HOR	Exo-PrintTerminal.exe	R5-V2_01a	Print terminal is now capable of receiving and displaying larger data packets.
M-R5-007-HOR	Exo-ManufacturingTool.exe	R5-V2_01a	Manufacturing tool update.
M-R5-008-HOR	Exo-API.dll	R5-V2_01b	Configuration data extended with sensor current adjustment setting. This setting allows a 4 bit current automatic adjustment of the paper entry sensor and a 2 bit adjustment of the paper exit (chute) sensor. The adjustment is done during paper load.
M-R5-009-HOR	Exo-FwPatchTool.exe	R5-V2_01b	Extended with firmware patch #5 (0x00000010). This patch is available from eXtendo firmware V2.01b-BETA and causes the printer to remain in printing mode after a power down or reset. The patch has no effect on printers that have a presenter attached.
M-R5-010-HOR	Exo-Tb.dll Exo-ManufacturingTool.exe	R5-V2_01b	Manufacturing data entry printer revision removed (obsolete).
M-R5-011-HOR	Exo-Tb.dll Exo-ManufacturingTool.exe	R5-V2_01b	Manufacturing data entry controller revision removed (obsolete).
M-R5-012-HOR	Exo-Tb.dll Exo-ManufacturingTool.exe	R5-V2_01b	Manufacturing data extended with sensor settings regarding sensor mounting and sensor current adjustment (available from firmware V2.01g).
M-R5-013-HOR	Exo-API.dll Exo-ConfigurationTool.exe	R5-V2_01b	Settings for dynamic sensor current adjustment feature added to configuration data.
M-R5-014-HOR	Exo-PrintTerminal.exe	R5-V2_01b	Image printing feature added which uses the driver API function Exo_Api_Pio_PrinterPrintImage(..) to print the contents of an image file (jpg,bmp,tiff,gif,png).

M-R5-015-HOR	Exo-API.dll Exo-ConfigurationTool.exe Exo-DiagnosticTool.exe	R5-V2_01b	By default, the automatic sensor adjustment is done during the initial paper load only. This is done to assure best possible backward compatibility for application in which a sensor calibration feature is undesired.
M-R5-016-HOR	Exo-API.dll Exo-ConfigurationTool.exe	R5-V2_01b	Configuration data structure extended with a pre-mark validation distance, which defines the minimum length of the "white" area that precedes the paper mark. Note that this setting is available from firmware R5-V2.01i.
M-R5-017-HOR	Exo-API.dll Exo-ConfigurationTool.exe	R5-V2_01b	Configuration data structure extended with a post-mark validation distance, which defines the minimum length of the "white" area that succeeds the paper mark. Note that this setting is available from firmware R5-V2.01i.
M-R5-018-HOR	Exo-API.dll Exo-ConfigurationTool.exe	R5-V2_01b	Configuration data extended with a minimum and maximum dynamic paper entry sensor current adjustment settings. This setting assures that, when, for the paper entry sensor, dynamic current adjustment is enabled, the selected current does not get beyond the defined minimum / above the defined maximum. A value of 0 for the minimum or maximum dynamic paper enter sensor current adjustment selects default values. With firmware V2.01i following defaults are used. For reflex sensors, the default minimum / maximum current is 11.8 mA / 26.6 mA. For through light sensors, the default minimum / maximum current is 9.6 mA / 26.6 mA.

## 2.6 EXTENDO XP/7/8/10 DRIVER S684015-R6-V2.02-2016MAY25

List of modifications			
Mod-Id	Component	Version	Description
M-R6-001-HOR	Exo-ImageTool.exe	R6-V2_02a	Image tool extended with creation of a flexible upload file for eXtendo-XF printer.
M-R6-002-HOR	Exf-SysFontConverter.exe Exo-Tb.dll	R6-V2_02a	Driver package extended with a new system font conversion tool for eXtendo-XF printers.
M-R6-003-HOR	Exf-DiagnosticTool.exe Exo-Tb.dll	R6-V2_02a	Driver package extended with a new diagnostic tool for eXtendo-XF printers.
M-R6-004-HOR	Exf-ConfigurationTool.exe Exo-Tb.dll	R6-V2_02a	Driver package extended with a new configuration tool for eXtendo-XF printers.
M-R6-005-HOR	Exo-UploadTool.exe	R6-V2_02a	The upload tool has been extended with functionality to upload firmware and fonts for eXtendo-XF
M-R6-006-HOR	Exo-UploadTool.exe	R6-V2_02b	Wrongly implemented usage restriction corrected (V2.02a).
M-R6-007-HOR	Complete package	R6-V2_02b	Driver package migrated to VS2015 and adapted to Windows 10.

## 2.7 EXTENDO XP/7/8/10 DRIVER S684015-R7-V2.03-2017APR20

List of modifications			
Mod-Id	Component	Version	Description
M-R7-001-HOR	Exo-ComponentsTool.exe Exo-OptionsTool.exe Exo-Tb.dll	R7-V2_03a	Tools extended with Extendo-XF Printer Type and GB18030 Font.
M-R7-002-HOR	Exo-ManufacturingTool.exe Exo-Tb.dll	R7-V2_03a	Manufacturing data extended with operating mode feature "ISO 86 INVALIDATOR".
M-R7-XXX-HOR	Driver package release note	R7-V2_03	Document "D-684-118-Extendo-WindowsDriver-ReleaseNote" changed to "S-684-015-Extendo-WindowsDriver-ReleaseNote"
M-R7-XXX-HOR	Complete driver package	R7-V2_03	Driver package split-up into a Windows 7/8/10 and a Windows Xp version.
M-R7-003-HOR	Complete driver package	R7-V2_03	Print monitor plugin "Exo-PrintMonPlugin.dll" is no longer installed by default. If needed, then copy this file by hand into the windows system32 directory. Note that this windows directory also contains "Exo-PrintMon.dll".



## 2.8 EXTENDO XP/7/8/10 DRIVER S684015-R8-V2.04-2018JUL02

List of modifications			
Mod-Id	Component	Version	Description
M-R8-001-HOR	Exo-FixTool.exe	R8-V2_04a	The fix tool is now also available for usage within Windows XP.
M-R8-002-HOR	Exf-SysFontConverter.exe	R8-V2_04a	Tool extended with codepage 1256 (Arabic).
M-R8-003-HOR	Exo-EnduranceTestTool.exe Exo-Tb.dll	R8-V2_04a	Complete redesign of the endurance test tool with integrated relays control.
M-R8-004-HOR	Exo-PrintMonitor.dll Exo-PrintMonitorPlugin.dll	R8-V2_04a	Print monitor plugin interface extended with TF_Exo_Pmp_StartMonitor2(...) which allows plugins to specify the service interval in milliseconds with no minimum service interval.
M-R8-005-HOR	Exo-Tb.dll Exo-ManufacturingTool.exe	R8-V2_04a	System configuration extended with USB 2.0.
M-R8-006-HOR	Exo-FwPatch.exe		For backward compatibility reasons, firmware patch 0x00000020 "USE V2-00 REFERENCE POSITIONS" has been implemented, which disables the reference position adjustment done since eXtendo firmware V3.00.
M-R8-007-HOR	Exo-ConfigTool.exe	R8-V2_04a	Button "Select Default Preferences" added.
M-R8-008-HOR	Exo-API.dll, Exo-DiagnosticTool.exe	R8-V2_04a	Partial cut monitoring flags PARTIAL CUT HOLDING PRINT (e.g. partial cut value 0x00100000) and PARTIAL CUT PRINT TAKEN (e.g. partial cut value 0x00200000) are no longer raised when PARTIAL CUT HOLDING PRINT is set (e.g. partial cut value 0x00300000).
M-R8-009-HOR	Exo-API.dll, Exo-ConfigurationTool.exe	R8-V2_04a	Configuration data has been extended with a print length correction settings (available since firmware V2.01x).
M-R8-010-HOR	Exo-DiagnosticTool.exe	R8-V2_04a	Tool extended with button "Create XML Report".
M-R8-011-HOR	Exo-CodeSigner.exe	R8-V2_04a	Integration of the USB token signing certificate.
M-R8-012-HOR	Exo-CodeSigner.exe	R8-V2_04a	Added a driver development clean up tool.
M-R8-013-HOR	Exo-Setup.exe Exo-Setup.x32.exe Exo-Setup-x64.exe	R8-V2_04a	Renewal of console based and dialog based setup (execute "Exo-Setup -h" from a command shell with administrator for help).
M-R8-014-HOR	Exo-DiagnosticTool.exe	R8-V2_04	Release of driver version R8-V2_04 (8.2.4.0).

### 3 EXTENDO XP/7/8/10 DRIVER S684015-R9-V2.05-2021SEP14

#### Description

The eXtendo printer driver S684015-R9-V2.05-2021SEP14 for Windows-XP (32-Bit), Windows-7 (32-Bit and 64-Bit), Windows-8 (32-Bit and 64-Bit) and Windows-10 (32-Bit and 64-Bit) is operational with all currently available eXtendo type printers (X56/X80. USB/RS232).

#### Package overview

```
| S-684-015-Extendo-Windows7810Driver-R9-V2.05-FINAL-2021SEP14.zip
| S-684-015-Extendo-WindowsXpDriver-R9-V2.05-FINAL-2021SEP14.zip
|
+---Driver
| | Hengstler-Extendo-X56.inf
| | Hengstler-Extendo-X56.cat
| | Hengstler-Extendo-X56_x64.inf
| | Hengstler-Extendo-X56_x64.cat
| | Hengstler-Extendo-X80.inf
| | Hengstler-Extendo-X80.inf.cat
| | Hengstler-Extendo-X80_x64.inf
| | Hengstler-Extendo-X80_x64.cat
| | Exo-Setup.exe
| | Exo-Setup.x32.exe
| | Exo-Setup.x64.exe
| | difxapi.dll
| | difxapi.x64
| |
| \---Data
| | Exo_Api.dll
| | Exo_Api_x64.dll
| | Exo_PrintMon.dll
| | Exo_PrintMon_x64.dll
| | Exo_PrintMonPlugin.dll
| | Exo_PrintMonPlugin_x64.dll
| | Exo_Tb_x64.dll
| | Exo_Tb.dll
| | Exo_UniDrv.dll
| | Exo_UniDrv_x64.dll
| | Exo_UniDrv.ini
| | Exo_UniDrv_x64.ini
| | Exo_UserInterface.dll
| | Exo_UserInterface_x64.dll
| | Exo_Vs.dll
| | Exo_Vs_x64.dll
| | Exo_X56.dat
| | Exo_X56.dll
| | Exo_X56_x64.dll
| | Exo_X56.gpd
| | Exo_X56_x64.gpd
| | Exo_X56.prn
| | Exo_X80.dat
| | Exo_X80.dll
| | Exo_X80_x64.dll
| | Exo_X80.gpd
| | Exo_X80_x64.gpd
| | Exo_X80.prn
| | STDNAMES.GPD
|
+---Documents
| | S-684-015-Extendo-WindowsDriver-ReleaseNote.pdf
|
+---Fonts
| | Exo-CodePages.zip
| | Exo-StandardFont.zip
| | Exo-WideFont.zip
|
```

```

+---Other
|   NET_START_SPOOLER.lnk
|   NET_STOP_SPOOLER.lnk
|
+---Samples
|   Exo-GdiDemo-X56-056x125.doc
|   Exo-GdiDemo-X56-Test.doc
|   Exo-GdiDemo-X80-080x125.doc
|   Exo-GdiDemo-X80-Test.doc
|
+---Api
|   Exo_Api.h
|   Exo_Api.lib
|   Exo_PrintMonPlugin.h
|   Exo_ApiWrapper_NET.dll
|
+---Sources
|   Exo-PrintMonPluginTest.zip
|   Exo_PrintMonPlugin.zip
|
\---Tools
    Exf-ConfigurationTool.exe
    Exf-DiagnosticTool.exe
    Exo-CommandTool.exe
    Exo-ConfigurationTool.exe
    Exo-DiagnosticTool.exe
    Exo-FontTool.exe
    Exo-FwP@tchTool.exe
    Exo-ImageTool.exe
    Exo-PrintMonInfo.exe
    Exo-PrintMonPluginTest.exe
    Exo-PrintTerminal.exe
    Exo-Uninstaller.exe
    Exo-UploadTool.exe
    Exo-WideFontTool.exe
    Exo_Api.dll
    Exo_Tb.dll
    Exo_Tb2.dll
    Mfc140.dll

```

List of Files	
File	Description
S-684-015-Extendo-Windows7810Driver-R9-V2.05-FINAL-2021SEP14.zip	Complete Windows 7/8/10 driver package as zip file
S-684-015-Extendo-WindowsXpDriver-R9-V2.05-FINAL-2021SEP14.zip	Complete Windows XP driver package as zip file
S-684-015-Extendo-WindowsDriver-ReleaseNote.pdf	Release note of the eXtendo Windows driver package (this document)
Hengstler-Extendo-X56.inf Hengstler-Extendo-X56.cat Hengstler-Extendo-X56.x64.inf Hengstler-Extendo-X56.x64.cat	Driver component => information and catalog file required for installation of the X56 driver (32/64 BIT)
Hengstler-Extendo-X80.inf Hengstler-Extendo-X80.cat Hengstler-Extendo-X80.x64.inf Hengstler-Extendo-X80.x64.cat	Driver component => information and catalog file required for installation of the X80 driver (32/64 BIT)
Exo-Setup.exe Exo-Setup.x32 Exo-Setup.x64	Setup tool(s) (batch and GUI) for Windows XP (32 BIT), Windows 7 (32/64 BIT), Windows 8 (32/64 BIT) and Windows 10 (32/64 BIT).
difxapi.dll difxapi.x64	Driver component => driver information framework files which are required during installation.
Exo_Api.dll Exo_Api_x64.dll	Driver component => application programming interface (32/64 BIT)
Exo_PrintMon.dll Exo_PrintMon_x64.dll	Driver component => print job monitor (32/64 BIT)
Exo_PrintMonPlugin.dll Exo_PrintMonPlugin_x64.dll	Driver component => print job monitor plugin (32/64 BIT)

Exo_Tb.dll Exo_Tb_x64.dll	Driver component => tool box (32/64 BIT)
Exo_Tb2.dll	Driver component => tool box 2
Exo_UniDrv.dll Exo_UniDrv_x64.dll	Driver component => uni-driver (32/64 BIT)
Exo_UniDrv.ini Exo_UniDrv_x64.ini	Driver component => uni-driver (32/64 BIT)
Exo_UserInterface.dll Exo_UserInterface_x64.dll	Driver component => user interface / printer properties (32/64 BIT)
Exo_X56.dat	Driver component => settings file for the X56 driver
Exo_X56.dll Exo_X56_x64.dll	Driver component => resource file for the X56 driver (32/64 BIT)
Exo_X56.gpd Exo_X56_x64.gpd	Driver component => general printer definition file for the X56 driver (32/64 BIT)
Exo_X56.prn	Driver component => test print file for the X56 driver
Exo_X80.dat	Driver component => settings file for the X80 driver
Exo_X80.dll Exo_X80_x64.dll	Driver component => resource file for the X80 driver (32/64 BIT)
Exo_X80.gpd Exo_X80_x64.gpd	Driver component => general printer definition file for the X80 driver (32/64 BIT)
Exo_X80.prn	Driver component => test print file for the X80 driver
STDNAMES.GPD	General printer definitions file from Windows XP, used when installing in windows Vista.
Exo-CodePages.zip	Zip file containing various code page images that can be uploaded onto the printer. Useable with Extendo firmware only!
Exo-StandardFont.zip	Zip file containing the standard font images that are included in the firmware. Useable with Extendo firmware only!
Exo-WideFont.zip	Zip file containing wide font images that can be uploaded onto the printer. Useable with Extendo firmware only!
NET_START_SPOOLER.lnk	Command for starting the spooler
NET_STOP_SPOOLER.lnk	Command for stopping the spooler
Exo-GdiDemo-X56-056x125.doc	Sample document for GDI printing
Exo-GdiDemo-X56-Test.doc	Sample document for GDI printing
Exo-GdiDemo-X80-080x125.doc	Sample document for GDI printing
Exo-GdiDemo-X80-Test.doc	Sample document for GDI printing
Exo_Api.h	Header file describing the application programming interface (API)
Exo_Api.lib Exo_Api_x64.lib	API library, included in applications (32/64 BIT)
Exo_Exo_ApiWrapper_NET.dll	.NET library, which wraps the C++ Printer API to .NET. The provided functions use common .NET variable types.
Exo_PrintMonPlugin.h	Header file describing the print monitor plugin interface
Exo_PrintMonPlugin.zip	Zip file containing the Visual C++ sources of the print monitor plugin.
Exo_PrintMonPluginTest.zip	Zip file containing the Visual C++ sources of the print monitor plugin test tool.
Exo-CommandTool.exe	Command tool which is used for evaluating a set of emulation commands (e.g. a sample ticket). Operates with Extendo and Extendo-XF firmware!
Exo-ConfigurationTool.exe	Configuration tool which is used for configuring the X56 and X80 type printers. Operates with Extendo Firmware only!
Exo-DiagnosticTool.exe	Diagnostic tool which is used for displaying printer status and other information. Operates with Extendo firmware only!
Exo-FontTool.exe	Font tool which is used for generating a font upload file from windows bitmaps. Operates with Extendo firmware only!
Exo-FwP@tchTool.exe	Firmware patch tool which is used for enable/disable specific firmware patches. Operates with Extendo firmware only!
Exo-ImageTool.exe	Image tool which is used of creating an image upload file from windows bitmaps. Operates with Extendo and Extendo-XF

	firmware!
Exo-PrintTerminal.exe	Terminal tool which is used for evaluating emulation commands. Operates with Extendo and Extendo-XF firmware!
Exo-Uninstaller.exe	Un-installation tool which is used to remove all eXtendo driver components for a windows XP installation.
Exo-UploadTool.exe	Upload tool which is used for upload of firmware, fonts, widefonts and images. Operates with Extendo and Extendo-XF firmware!
Exo-WideFontTool.exe	Wide font tool which is used for generating a wide font upload file from windows bitmaps. Operates with Extendo firmware only!
Exo_PrintMonInfo.exe	Print monitor info tool which is used for monitoring the services that are done by the eXtendo print monitor.
Exo_PrintMonPluginTest.exe	Print monitor plugin test tool which is used for display of information that is collected by the print monitor plugin
Mfc140.dll	Windows libraries, used in various tools and/or applications
Exf-ConfigurationTool.exe	Configuration tool which is used for configuring the X56 and X80 type printers. Operates with Extendo-XF firmware only!
Exf-DiagnosticTool.exe	Diagnostic tool which is used for displaying printer status and other information. Operates with Extendo-XF firmware only!

#### Installation on Windows XP

To prevent an eXtendo driver component version mismatch, it is required that all previously installed eXtendo drivers are removed from the system (see "Un-Installing on Windows XP" below).

The printer driver for X56/X80-type printers can be pre-installed within the driver framework with use of the "setup.exe" tool.

Installation of an X56/X80-RS232-type printer must be done manually by selecting [START MENU]->[PRINTERS&FAXES]->[ADD NEW PRINTER].

Installation of an X56/X80-USB-type printer is automatically performed by connecting the printer through USB.

The driver information files for X56-type printers are "Hengstler-Extendo-X56.inf" and "Hengstler-Extendo-X56.x64.inf".

The driver information files for X80-type printers are "Hengstler-Extendo-X80.inf" and "Hengstler-Extendo-X80.x64.inf".

The printer driver manual contains more detailed information on printer driver installation on Windows Xp.

#### Installation on Windows 7

To prevent an eXtendo driver component version mismatch, it is required that all previously installed eXtendo drivers are removed from the system (see "Un-Installing on Windows XP" below) ( see "Un-Installing on Windows 7" below).

Installation of the eXtendo printer driver for usage with X56/X80-RS232-type printers is started by selecting [START MENU]->[DEVICES&PRINTERS]->[ADD NEW PRINTER].

Installation of the eXtendo printer driver for usage with X56/X80-USB-type printers is started by connecting the printer through USB, whereas the eXtendo printer will appear in the printers&faxes dialog. The actions required for successfully installing the driver may depend on the system setting. The eXtendo driver will automatically be installed when the eXtendo driver has already been loaded in the driver store. If not, then press the right mouse button on the eXtendo printer in the "printers&faxes dialog, select "properties", go to the "Hardware" register, select "properties", go to the "Driver" register and update (attach) the eXtendo driver from there.

**Un-Installation on Windows XP**

Removal of installed eXtendo drivers and eXtendo OEM driver files within Windows XP can be done with the Exo-Uninstaller tool, which is included in the driver package.

**Un-Installation on Windows 7**

Removal of installed eXtendo drivers within Windows 7 can be done with by deleting the eXtendo printer within the printers and faxes dialog. Extendo OEM driver files can be removed from Windows 7 by using the Windows 7 Tool "pnputil.exe" ("pnputil -e" lists all OEM drivers, "pnputil -d oem0.inf" deletes the particular OEM driver.

A setup tool for un-installing is currently in development and is expected to be available in the next to come driver version.

**List of anomalies and bugs**

Currently no anomalies or bugs are known.

**List of incompatibilities to previous versions**

Currently no incompatibilities are known.

**List of restrictions**

This driver version is intended for usage with printers that have either Extendo or Extendo-XF firmware. Usage of some of the tools which the driver contains is restricted to the type of firmware which the printer contains. Following table shows which tools are available for the specific firmware type:

Component	Extendo	Extendo XF
Exf-ConfigurationTool	NO	YES
Exf-DiagnosticTool	NO	YES
Exo-CommandTool	YES	YES
Exo-ConfigurationTool	YES	NO
Exo-DiagnosticTool	YES	NO
Exo-FontTool	YES	NO
Exo-FwPatchTool	YES	NO
Exo-ImageTool	YES	YES
Exo-PrintTerminal	YES	YES
Exo-ServiceTool	YES	NO
Exo-Setup	YES	YES
Exo-UploadTool	YES	YES
Exo-WideFontTool	YES	NO

**Notes**

It is advised that the hardware flow control is enabled in both eXtendo printer driver and eXtendo printer when uploading firmware onto a serial board. The hardware flow control can be enabled in the printer properties dialog.

Firmware patch #00000001 must be enabled with use of the Exo-FwPatchTool when eXtendo firmware has been installed on early prototype X56 and X80 printers which have controller board A or B.

Firmware patch #00000002 must be enabled with use of the Exo-FwPatchTool when eXtendo firmware has been installed on pre-production X56 and X80 printers which have the head up switch inverted.

Application note "S-684-015-Extendo-WindowsXpDriver-ApplicationNote-0001.pdf" informs on how this windows driver within windows Vista.

List of modifications			
Mod-Id	Component	Version	Description
M-R9-001-HOR	Exo-EnduranceTestTool.exe	R9-V2_05	Development of a limited version of the endurance test tool.
M-R9-002-HOR	Exo-PrintTerminal.exe	R9-V2_05	Duration of connect after transmission of data enlarged to 5 seconds.
M-R9-003-HOR	Exo-ConfigTool.exe Exo-API.dll	R9-V2_05	Configuration data extended with the "OMIT 2D BARCODE QUIET ZONE" option (bit number 21, e.g. bit mask 0x00200000).
M-R9-004-HOR	Exo-DiagnosticTool.exe Exo-EnduranceTool.exe	R9-V2_05	Fault in processing of print files resolved.
M-R9-005-HOR	Exo-API.dll	R9-V2_05 (2020MAR24)	Function Exo_Api_Pio_PrinterPrintImage-Ex(...) added which supports rotated printing of images.
M-R9-006-HOR	Exo-API.dll	R9-V2_05 (2020APR21)	Function Exo_Api_Pio_PrinterPrintImageToFile(...) added which supports printing of images to a file.
M-R9-007-HOR	Exo-ManufacturingTool.exe Exo-Tb.dll Exo-FixTool.exe	R9-V2_05 (2021FEB03)	Printer model "EXTENDO-GALILEI" added. Manual configuration of model settings removed.
M-R9-008-HOR	Exo_Api_x64.dll Exo_Api.dll Exo_ApiWrapper_NET.dll Exo-APIWrapper_NET-Demo.exe	R9-V2_05 (2021MAR31)	Resolved an API issue with .NET 4.7.2 which caused the application to crash. Added function Exo_Api_Pe_Printer-EnumName(..) to Exo_Api.dll to prevent using type "string" as return value between API and .NET wrapper. Changed .NET wrapper type bool to uint to prevent type mismatch between C and C#. For compatibility reasons Exo_Api-Wrapper_NET.dll remains build for .NET framework 2. The test application Exo-APIWrapper_NET-Demo.exe is now build for .NET framework 4.7.2.
M-R9-009-HOR	Exo_Api_x64.dll Exo_Api.dll Exo_ConfigTool.exe	R9-V2_05 (2021JUN01)	Mark cut offset can now be specified either relative to the end or to the center of the paper mark.
M-R9-010-HOR	Exo_CodeSigner.exe	R9-V2_05 (2021SEP13)	Code signing tool adapted to 2021 signature token.
M-R9-011-HOR	Exo_X56.gpd Exo_X56_x64.gpd Exo_X80.gpd Exo_X80_x64.gpd	R9-V2_05 (2021SEP13)	Added form length "85,5mm (ISO-7810/ID-1)".