Fargo M30e CUPS Driver User Guide (Rev. 1.0.3)

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The revision number for this document will be updated to reflect changes, corrections, updates and enhancements to this document.

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These reference documents were thoroughly reviewed to provide Fargo with professional and international standards, requirements, guidelines and models for our technical, training and user documentation. At all times, the *Copyright Protection Notice* for each document was adhered to within our Fargo documentation process. This reference to other documents does not imply that Fargo is an ISO-certified company at this time.

ANSI/ISO/ASQ Q9001-2000 American National Standard, (sub-title) Quality Management Systems - Requirements (published by the American Society of Quality, Quality Press, P.O. Box 3005, Milwaukee, Wisconsin 53201-3005)

The ASQ ISO 9000:2000 Handbook (editors, Charles A. Cianfrani, Joseph J. Tsiakals and John E. West; Second Edition; published by the American Society of Quality, Quality Press, 600 N. Plankinton Avenue, Milwaukee, Wisconsin 53203)

Juran's Quality Handbook (editors, Joseph M. Juran and A. Blanton Godfrey; Fifth Edition, McGraw-Hill)

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Supported Linux Distributions

Ubuntu 7.10

Fields	**Description**
Name	Ubuntu
Version	7.10
Media	ubuntu-7.10-desktop-i386.iso
Dependencies	
CUPS version	1.3.2
Kernel version	2.6.22-14-generic
File structure	
CUPS service name & path	/etc/init.d/cupsys
CUPS PPD model path	/usr/share/ppd/custom
CUPS filter path	/usr/lib/cups/filter
CUPS config path	/etc/cups
LOG directory	/var/log

Fedora Core 8

Fields	Description
Name	Fedora
Version	8
Media	Fedora-8-i386-DVD.iso
Dependencies	
CUPS version	1.3.5
Kernel version	2.6.23.14-107.fc8
File structure	
CUPS service name & path	/etc/init.d/cups
CUPS PPD model path	/usr/share/cups/model
CUPS filter path	/usr/lib/cups/filter
LOG directory	/var/log/cups

Fedora Core 7

Fields	**Description**
Name	Fedora
Version	7
Media	F-7-i386-DVD.iso
Dependencies	
CUPS version	1.2.10
Kernel version	2.6.21-1.3194.fc7
File structure	
CUPS service name & path	/etc/init.d/cups
CUPS PPD model path	/usr/share/cups/model
CUPS filter path	/usr/lib/cups/filter
LOG directory	/var/log/cups

Red Hat Enterprise 5

Fields	**Description**
Name	RedHat Enterprise Desktop 5
Version	5
Media	Rhel-5-client-i386-disc1-5.iso
Dependencies	
CUPS version	1.2.4
Ghostscript version	8.5.12
Kernel version	2.6.18-8el5
File structure	
CUPS service name & path	/etc/init.d/cups
CUPS PPD model path	/usr/share/cups/model
CUPS filter path	/usr/lib/cups/filter
LOG directory	/var/log/cups

openSuse 10.3

Fields	**Description**
Name	openSuse
Version	10.3
Media	openSUSE-10.3-GM-KDE-i386.iso
Dependencies	
CUPS version	1.2.12
Kernel version	2.6.22.5-31-default
File structure	
CUPS service name & path	/etc/init.d/cups
CUPS PPD model path	/usr/share/cups/model
CUPS filter path	/usr/lib/cups/filter
LOG directory	/var/log/cups

Installation Procedures

Installing the CUPS Driver

Note: On some Linux Distributions, it may be necessary to disable SELinux capabilities in order to install or use the CUPS Driver. Refer to the SELinux web site at: www.nsa.gov/selinux/ or the documentation for your specific distribution for more information.

Step	Procedure
1	Unpack the driver tar-ball by running the following command as root from the directory the file was downloaded to: # tar -xzvPf fargoM30e-1.0.0.1.tgz (**Note**: If an existing driver was already present on the system, it may be necessary to restart CUPS to allow the file changes to take effect.)

Adding a USB Printer

The primary CUPS interface can be accessed on the local computer using a web browser. The address for the CUPS interface is: http://localhost:631/

Step	Procedure
1	Attach Power and USB to the printer.
2	From a Terminal window, run lshal to retrieve the list of devices.
3	Refer to the Example Output for lshal below for a sample of output to look for to identify the printer. Record the Device URI to be able to add the printer. Example Device URI: `/org/freedesktop/Hal/devices/usb_device_9b0_2112_A8010217_if0_printer_A8010217`
4	Choose **Add Printer**. (**Note**: If you are asked for a username and password, enter your login username and password or the “root” username and password.)
5	a. Enter a Name, Location and Description for the Printer. b. Click **Continue**.
6	a. If an entry exists in the dropdown, select the HAL Printing backend option OR b. Select Internet Printing protocol (ipp) c. Click **Continue**.
7	a. Enter the Device URI recorded previously using the HAL printer Backend Example: `hal:///org/freedesktop/Hal/devices/usb_device_9b0_2112_A8010217_if0_printer_A8010217` b. Click **Continue**.
8	a. Select Fargo Electronics from the Make list. b. Click **Continue**. Note: If Fargo Electronics is not listed in the Make list, it may be necessary to restart CUPS and begin the process to add the printer again.
9	a. Select M30e (en) from the Model list. b. Click **Add Printer**.
10	After installation is complete, it may be necessary to specify the page scaling options for the Print Queue.

Example output from lshal

```
udi = '/org/freedesktop/Hal/devices/usb_device_9b0_2110_A8010217_if0_printer_A8010217'
  info.addons = {'hal_lpadmin --add'} (string list)
  info.callouts.remove = {'hal_lpadmin --remove'} (string list)
  info.capabilities = {'printer'} (string list)
  info.category = 'printer'  (string)
  info.interfaces = {'org.freedesktop.Hal.Device.Printer'} (string list)
  info.parent = '/org/freedesktop/Hal/devices/usb_device_9b0_2111_A8010217_if0'  (string)
  info.product = 'M30e'  (string)
  info.udi =
'/org/freedesktop/Hal/devices/usb_device_9b0_2110_A8010217_if0_printer_A8010217'  (string)
  info.vendor = 'Fargo Electronics Inc '  (string)
  linux.device_file = '/dev/usb/lp0'  (string)
  linux.hotplug_type = 2  (0x2)  (int)
  linux.subsystem = 'usb'  (string)
  linux.sysfs_path = '/sys/devices/pci0000:00/0000:00:1d.1/usb6/6-1/6-1:1.0/usb/lp0'
(string)
  printer.commandset = {'NONE'} (string list)
  printer.description = 'M30e Card Printer'  (string)
  printer.device = '/dev/usb/lp0'  (string)
  printer.originating_device =
'/org/freedesktop/Hal/devices/usb_device_9b0_2111_A8010217_if0'  (string)
  printer.product = 'M30e'  (string)
  printer.serial = 'A8010217'  (string)
  printer.vendor = 'Fargo Electronics Inc '  (string)
```

Reviewing the File Listing

/usr/share/cups/model/M30e.ppd	PPD File for the M30e Card Printer
/usr/lib/cups/filter/rastertofargoM30e	Raster Filter for the M30e Card Printer
/usr/share/fargo/M30e/M30eTst.prn	Test Print file
/usr/ share/fargo/M30e /RibbonCal.prn	Ribbon Sensor Calibration File
/usr/ share/fargo/M30e/CleanPrinter.prn	Clean Printer File

Printing a Sample Card

Entering the Print Only Command

Run the following command:

```
# lp –d [PrintQueueName] [filename]
```

Entering the Print with Mag Encoding Command

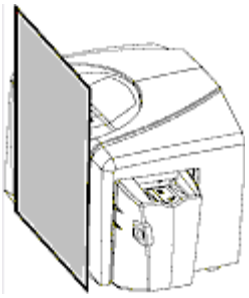
Run the following command:

```
# lp –d [PrintQueueName] –o “Magtrack1=%25MAGTEST1%3F
Magtrack2=%3B1234567890%3F Magtrack3=%3B1234567890%3F” [filename]
```

Printer Maintenance

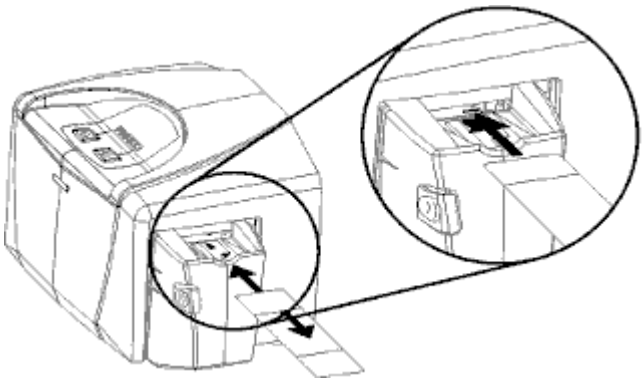
Performing a Ribbon Sensor Calibration

Step	Description
1	Remove all cards from the Card Hopper and close the Hopper door.
2	Open the Front Cover, remove the Ribbon Cartridge and close the Printer's front cover.
3	Place a notebook or a completely opaque sheet of paper in front of the Printer to block the ambient light.
4	From a terminal window enter: lpr -l "/usr/share/fargo/M30e/RibbonCal.prn"
5	When completed, the Printer will beep twice.



Cleaning the Printer

Step	Description
1	Remove all cards from the Card Hopper and close the Hopper door.
2	Open the Front Cover and remove the Ribbon Cartridge.
3	Remove the paper backing from both sides of the Cleaning Card.
4	Place the Cleaning card into the Single Feed Slot.
5	From a terminal window, enter: lpr -l “/usr/share/fargo/M30e/CleanPrinter.prn”



Printing a Test Card

Step	Description
1	Ensure that cards are in the Input Hopper.
2	Ensure that the YMCKO Ribbon is installed in the Printer.
3	From a terminal window, enter: lpr -l “/usr/share/fargo/M30e/M30eTst.prn”
4	When completed, a test card should be printed.

Driver Options

Using the Device Options

Selecting the Card Size

Command Line Usage	CUPS option	Description
PageSize = CR80	Media Size = CR80	Sets the Page Size for the print job to CR-80 (3.375"L x 2.125"W / 85.6mmL x 54mmW).
PageSize = CR79	Media Size = CR79	Sets the Page Size for the print job to CR-79 (3.295"L x 2.043"W / 83.7mmL x 51.9mmW).

Selecting the Ribbon Types

Command Line Usage	CUPS option	Description
Ribbon = StandardResin	Ribbon Type = Standard Resin	Sets the Ribbon type for the print job to Standard Resin.
Ribbon = PremiumResin	Ribbon Type = Premium Resin	Sets the Ribbon type for the print job to Premium Resin.
Ribbon = ColoredResin	Ribbon Type = Colored Resin	Sets the Ribbon type for the print job to Colored Resin. This option should be used for any of the colored resin Ribbons (Red, Blue, Green, or White)
Ribbon = MetallicResin	Ribbon Type = Metallic Resin	Sets the Ribbon type for the print job to Metallic Resin. This option should be used for any of the metallic resin Ribbons (Gold, Silver).
Ribbon = KOPremiumResinWithOvelay	Ribbon Type = KO Premium Resin with Overlay	Sets the Ribbon type for the print job to KO – Premium Resin/Overlay.
Ribbon = BODyeSubBlackWithOverlay	Ribbon Type = BO Dye-Sub Black with Overlay	Sets the Ribbon type for the print job to BO – Dye Sub Black withy Overlay

Selecting the Disable Printing Option

Command Line Usage	CUPS option	Description
DisablePrinting = True	Disable Printing = Yes	Select it to encode or re-encode cards to save time and avoid the use of printing supplies.
DisablePrinting = False	Disable Printing = No	Select it to perform full printing and encoding operations.

Selecting the Print Both Sides Option

Command Line Usage	CUPS option	Description
PrintBothSides = True	Print Both Sides = Yes	If the Printer is equipped with a Flipper Module, it will print the second page of a print job on the back side of a card
PrintBothSides = False	Print Both Sides = No	If the print job has multiple pages, it will print on separate cards.

Selecting the Resin Dither Options

Requires: Resin Ribbon or Print Both Sides = True

Command Line Usage	CUPS option	Description
ResinDither = Graphics	Resin Dither = Optimized for Graphics	Select **Optimized for Graphics** when printing drawings and graphics with resin.
ResinDither = Photo	Resin Dither = Optimized for Photos	Select **Optimized for Photo** when printing photo quality images with resin.

Print and Overlay Options

Reviewing the Front Print Area

Command Line Usage	CUPS Options	Description
PrintAreaFront = FullCardPrintAndOverlay	Front Print Area = Full Card Print and Overlay	The full card will be printed, and overlay will be applied.
PrintAreaFront = OmitSmartChipPrintAndOverlay	Front Print Area = Omit Smart Chip Print and Overlay	An area (corresponding to the ISO location for a smart chip) will be omitted from print and overlay.
PrintAreaFront = OmitMagStripePrintAndOverlay	Front Print Area = Omit Mag Stripe Print and Overlay	An area (corresponding to the ISO location for a Magnetic stripe) will be omitted from print and overlay.
PrintAreaFront = OmitSignatureAreaPrintAndOverlay	Front Area Print = Omit Signature Area Print and Overlay	An area (corresponding to the ISO location for a Signature Stripe) will be omitted from print and overlay.
PrintAreaFront = VisualSecurityUpperLeftVerimark	Front Area Print = Visual Security Upper Left Verimark	An area 25mmL X 27mmW in the upper left corner of the card will be omitted from print and overlay.
PrintAreaFront = VisualSecurityUpperLeftHolomark	Front Area Print = Visual Security Upper Left Holomark	An area 23mmL X 23mmW in the upper left corner of the card will be omitted from print and overlay.
PrintAreaFront = VisualSecurityUpperRightVerimark	Front Area Print = Visual Security Upper Right Verimark	An area 25mmL X 27mmW in the upper right corner of the card will be omitted from print and overlay.

Continued on the next page

Reviewing the Front Print Area

Command Line Usage	CUPS Options	Description
PrintAreaFront = VisualSecurityUpperRightHolomark	Front Area Print = Visual Security Upper Right Holomark	An area 23mmL X 23mmW in the upper right corner of the card will be omitted from print and overlay.
PrintAreaFront = VisualSecurityLowerLeftVerimark	Front Area Print = Visual Security Lower Left Verimark	An area 21.1mmL X 27mmW in the lower left corner of the card will be omitted from print and overlay.
PrintAreaFront = VisualSecurityLowerLeftHolomark	Front Area Print = Visual Security Lower Left Holomark	An area 23mmL X 23mmW in the lower left corner of the card will be omitted from print and overlay.
PrintAreaFront = VisualSecurityLowerRightVerimark	Front Area Print = Visual Security Lower Right Verimark	An area 21.1mmL X 27mmW in the lower right corner of the card will be omitted from print and overlay.
PrintAreaFront = VisualSecurityLowerRightHolomark	Front Area Print = Visual Security Lower Right Holomark	An area 23mmL X 23mmW in the lower right corner of the card will be omitted from print and overlay.

Reviewing the Back Print Area

If you are using Split Ribbon Print, this option must be set to one of the “Print Only” values

See the examples on the next page.

Command Line Usage	CUPS Options	Description
PrintAreaBack = FullCardPrintAndOverlay	Back Print Area = Full Card Print and Overlay	The full card will be printed and overlay will be applied
PrintAreaBack=FullCardPrintOnly	Back Print Area = Full Card Print Only	The full card will be printed and overlay will not be applied
PrintAreaBack = OmitSmartChipPrintAndOverlay	Back Print Area = Omit Smart Chip Print and Overlay	An area (corresponding to the ISO location for a smart chip) will be omitted from print and overlay.
PrintAreaBack = OmitSmartChipPrintOnly	Back Print Area = Omit Smart Chip Print Only	An area (corresponding to the ISO location for a smart chip) will be omitted from print.
PrintAreaBack= OmitMagStripePrintAndOverlay	Back Print Area = Omit Mag Stripe Print and Overlay	An area (corresponding to the ISO location for a Magnetic stripe) will be omitted from print and overlay.
PrintAreaBack = OmitMagStripePrintOnly	Back Print Area = Omit Mag Stripe Print Only	An area (corresponding to the ISO location for a Magnetic stripe) will be omitted from print.
PrintAreaBack = OmitSignatureAreaPrintAndOverlay	Back Area Print = Omit Signature Area Print and Overlay	An area (corresponding to the ISO location for a Signature Stripe) will be omitted from print and overlay.
PrintAreaBack = OmitSignatureAreaPrintOnly	Back Area Print = Omit Signature Area Print Only	An area (corresponding to the ISO location for a Signature Stripe) will be omitted from print.

Reviewing the Back Print Area (Examples)

Display: Omit Smart Chip Example

Display: Omit Magnetic Stripe Example

Display: Omit Signature Area Example

Magnetic Encoding Options

Setting the Encoding Mode

Command Line Usage	CUPS option	Description
MagEncodingMode = ISO	Magnetic Stripe Encoding Mode = ISO	Sets the Encoding Mode for the Print job to ISO. See Sending ISO Magnetic Encoding Information for additional information.
MagEncodingMode = JIS2	Magnetic Stripe Encoding Mode = JIS II	Sets the Encoding Mode for the Print job to JIS II. See Sending JISII Magnetic Encoding Information for additional information.
MagEncodingMode = Raw	Magnetic Stripe Encoding Mode = Raw	Sets the Encoding Mode for the Print job to RAW. See Sending ISO Magnetic Encoding Information for additional information.

Setting the Coercivity

Command Line Usage	CUPS option	Description
Coercivity = High	Coercivity = High	Sets the coercivity for magnetic encoding to 2750 Oersted
Coercivity = Low	Coercivity = Low	Sets the coercivity for magnetic encoding to 300 Oersted

Sending ISO Magnetic Encoding Information

The CUPS Driver uses URL Encoding when defining data to be encoding to the Magnetic Stripe. Any special characters (such as start and end sentinels) must be described with URL encoding to be recognized. See the URL Encoding Reference for additional information.

- The first character of this data string must be the track's specific Start Sentinel (SS) and the last character must be the specific End Sentinel (ES).
- The characters or data in between the SS and ES can include all of the valid characters specific to each track.
- The number of these characters, however, is limited by each track's maximum character capacity.

When segmenting track data, the appropriate Field Separator (FS) must be used. The table below shows the SS, ES, FS and the valid characters defined for each track.

Track	Start Sentinel	End Sentinel	Field Separator	Valid Characters	Maximum Number of Characters
Track 1	%	?	^	ASCII 32-95	78
Track 2	;	?	=	ASCII 48-63	39
Track 3	;	?	=	ASCII 48-63	109

Sending JIS II Magnetic Encoding Information

The CUPS Driver uses URL Encoding when defining data to be encoding to the Magnetic Stripe. Any special characters (such as start and end sentinels) must be described with URL encoding to be recognized. See the URL Encoding Reference for additional information.

Sending RAW Magnetic Encoding Information

The CUPS Driver uses URL Encoding when defining data to be encoding to the Magnetic Stripe. Any special characters (such as start and end sentinels) must be described with URL encoding to be recognized. See the URL Encoding Reference for additional information.

Reviewing the URL Encoding Reference

!	*	'	(	)	;	:	@	&
%21	%2A	%27	%28	%29	%3B	%3A	%40	%26
=	+	$	,	/	?	%	#	
%3D	%2B	%24	%2C	%2F	%3F	%25	%23	

Reviewing the ASCII Code and Character Table

ASCII Code	Character	ASCII Code	Character	ASCII Code	Character
32	space	56	8	80	P
33	!	57	9	81	Q
34	“	58	:	82	R
35	#	59	;	83	S
36	$	60	<	84	T
37	%	61	=	85	U
38	&	62	>	86	V
39	'	63	?	87	W
40	(	64	@	88	X
41	)	65	A	89	Y
42	*	66	B	90	Z
43	+	67	C	91	[
44	'	68	D	92	\
45	-	69	E	93	]
46	.	70	F	94	^
47	/	71	G	95	_
48	0	72	H		
49	1	73	I		
50	2	74	J		
51	3	75	K		
52	4	76	L		
53	5	77	M		
54	6	78	N		
55	7	79	O		

Using the Image Color Capabilities

Following the Dye-Sub Intensity Procedure

Command Line Usage	CUPS option	Description
DyeSubIntensity=0 <-50 to 50>	Dye-Sub Intensity (YMC) = 0	1. Adjust the Dye-Sub Intensity value higher to use more heat when transferring dye-sub colors to the card. (**Note:** This will produce a darker, more saturated image.) 2. Adjust the dye-sub Intensity value lower to use less heat when transferring dye-sub colors to the card. (**Note:** This will produce a lighter print.)

Following the Resin Heat Front Procedure

Command Line Usage	CUPS option	Description
ResinHeatFront=0 <-100 to 100>	Resin Heat Front (K) = 0	1. Adjust the Resin Heat Front value higher to use more heat to transfer resin to a card. 2. Adjust the Resin Heat Front value lower to reduce the amount of heat (used to transfer resin to the card).

Following the Resin Heat Back Procedure

Command Line Usage	CUPS option	Description
ResinHeatBack = 0 <-100 to 100>	Resin Heat Back (K) = 0	1. Adjust the Resin Heat Back value higher to use more heat and increase the transfer of resin to a card. 2. Adjust the Resin Heat Back value lower to reduce the amount of heat used and reduce the transfer of resin to the card.

Following the Overlay Heat Procedure

Command Line Usage	CUPS option	Description
OverlayHeat = 0 <-50 to 50>	Overlay Heat (O) = 0	1. Adjust the Overlay Heat value higher to use more heat and increase the transfer of overlay to a card. 2. Adjust the Overlay Heat value lower to reduce the amount of heat used and reduce the transfer of overlay to the card.

Using the Image Position Function

Selecting the Horizontal Option

Note: Adjusting the Horizontal offset may result in ribbon breaking.

Command Line Usage	CUPS option	Description
HOffset=0 <-100 to 100>	Horizontal Offset = 0	Use the Horizontal adjustment to move the image toward the card output side of the Printer (if a positive number is entered) and toward the card input side of the Printer (if a negative number is entered).

Selecting the Vertical Option

Command Line Usage	CUPS option	Description
VOffset=0 <-100 to 100>	Vertival Offset = 0	Use the Vertical adjustment to move the image toward the front of the Printer (if a positive number is entered) and toward the rear of the Printer (if a negative number is entered).