

# CARMEN<sup>®</sup> FOR LINUX

## INSTALLATION GUIDE

**Carmen Ver.: 7.3.1.18 and above**

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## INTRODUCTION

Tested under Ubuntu, Fedora and Debian latest. This package contains source codes, documentation, shared libraries and utilities for 32 bit and 64 bit systems. The available scripts for installation and uninstallation are the following:

- `_install_all-x86.sh` and `_install_all-x86_64`: install files to appropriate destinations
- `_remove_all.sh`: removes all ARH files from your system

### Note

Read the license agreement before installing the packages.

For the installation you need "GNU Make" (tested with "GNU Make 3.82"), "GNU C/C++" compiler (tested with "GNU C/C++ 4.5.1") and the corresponding GLIBC.

Since the kernel drivers are provided as source code, you need to compile the kernel objects (.ko) from them.

For this, you need to have the kernel headers and configuration files installed.

SWIG has to be installed if Java support is required.

# CONTENTS OF THE INSTALL PACKAGE

A module may consist of the following files (not every module includes all of them):

<b>Modulename-x.x.x-x-x86.tar.gz</b>	32 bit runtime libraries
<b>Modulename-x.x.x-x-x86_64.tar.gz</b>	64 bit runtime libraries
<b>Modulename-x.x.x-x-noarch.tar.gz</b>	32 and 64 bit driver sources
<b>Modulename-x.x.x-x-sdk.tar.gz</b>	Examples, documentations, development libraries and swig (java) sources

- **GX system**

- gx-x.x.x-x-sdk.tar.gz – sample codes for image and device handling
- gx-x.x.x-x-x86\_64.tar.gz – base system (libraries, image and device handling functions)
- gx-kernel-src-x.x.x-x-noarch.tar.gz – source of the gxsd kernel driver

- **FXMC\_USB NNC (if you have an USB NNC device)**

- fxmc\_usb-kernel-src-x.x.x-x-noarch.tar.gz – source of the fxmc\_usb kernel driver

- **FXMC\_PCIE**

- fxmc\_pcie-kernel-src-x.x.x-x-noarch.tar.gz – source of the fxmc\_pcie kernel driver

- **CARMEN ANPR**

- cmanpr-x.x.x-xx-sdk.tar.gz – CARMEN® ANPR libraries, sample codes and documentation
- CARMEN\_ANPR-x.x.x-x-x86\_64.tar.gz – binary runtime packages of CARMEN® ANPR
- cmanpr-gen-x.x.xx-xxx-x86\_64.tar.gz - CARMEN® ANPR engine

- **CAEMEN OCR**

- cmaccr-x.x.x-sdk.tar.gz – sample codes for CARMEN® OCR libraries
- cmaccr-x.x.x-x-x86\_64.tar.gz - CARMEN® OCR – binary runtime packages
- cmaccr-iso-x.x.x-x-x86\_64.tar.gz - CARMEN® OCR – ACCR engine

# THE INSTALLATION PROCEDURE

## 1. INSTALLING FROM .TAR.GZ FILES

The files of the install package are arranged into the same directory structure as the installed files on Linux systems. When simply extracting the files of the install pack, they will be unpacked to appropriate directories (no further copying/renaming needed).

The installation can be executed according to the following:

Use the `_install_all-x86-sh` or `_install_all-x86_64.sh` script. These scripts copy the appropriate files to the `usr/lib32` (32 bit modules) and `/usr/lib64` (64bit modules) directories installed on the Linux system.

### Note

The setup scripts extract and copy all files from the corresponding directory, so leave only those files in the dir which are to be installed.

Dependencies:

- GX: none
- FXMC\_USB: GX
- FXMC\_PCIE: GX
- CMANPR 7.x: GX
- CMANPR 7.x.x.x: CMANPR 7.x, GX
- CMACCR 7.x.x.x: GX

## 2. COMPILING KERNEL MODULES

You can use the configured kernel source package of your distribution. It is to be found here: `/lib/modules/"kernel_version"/build` - ("kernel-devel" or "kernel-headers" package in most distributions).

If you have an older GX version in the kernel tree then remove it manually by using the `_remove_all.sh` script.

Or make sure that the kernel config files are installed and check the following directory:  
`/lib/modules/$(KERNEL_VERSION)/build`

### Compile the kernel drivers (gxsd & USB/PCIe).

#### Note

In previous versions, you may have been using a user space driver. This option was removed in order to achieve stability, reliability and to enhance performance. You do need the kernel driver to run CARMEN ®

#### Note

The running kernel has to have exactly the same version number as the kernel source which the drivers are compiled under, otherwise the binaries cannot be loaded with `insmod`.

1. **First, enter the `/usr/src/gx/kernel/gxsd` directory and enter the 'make' command.**

#### Note

If the gxsd driver does not compile, edit the `gxsd.c` and remove the comment from the following line: `#define get_current() current`.

2. **After the gxsd kernel driver has compiled, you need to compile the other drivers according to your hardware key:**

- /usr/src/gx/kernel/fxmc\_usb
- /usr/src/gx/kernel/fxmc\_pcie

### 3. INSTALLING NEW KERNEL MODULES

- For FXMC\_PCIE:
  - /sbin/insmod /usr/src/gx/kernel/gxsd/gxsd.ko
  - /sbin/insmod /usr/src/gx/kernel/fxmc\_pcie/fxmc\_pcie.ko
- For FXMC\_USB:
  - /sbin/insmod /usr/src/gx/kernel/gxsd/gxsd.ko
  - /sbin/insmod /usr/src/gx/kernel/fxmc\_usb/fxmc\_usb.ko

### 4. CHECK gxsd.dat FILE

**under /var/gx. It should contain these lines:**

```
<?xml version="1.0" ?>
<!-- GX PROPERTY FILE -->
<gxproperty>
  <default>
    ...
    <cmanpr value="cmanpr-7.3.10.242:gen" />
  </default>
<gen>
  <cmanpr value="cmanpr-7.3.10.242:gen" />
  <cmanpr-7.3.10.242>
    <size value="" />
    <size_max value="" />
    <size_min value="" />
    <slant value="" />
    <slant_max value="" />
    <slant_min value="" />
    ...
    <datafile value="cmanpr-10.242-gen.dat" />
  </cmanpr-7.3.10.242>
</gen>
</gxproperty>
```

---

If the example above, `cmanpr-7.x.x.x` is the name of the `cmanpr` engine included in the install package. This package also includes a `cmanpr-7.x.x.x-x86.tar.gz` or `cmanpr-7.x.x.x-x86_64.tar.gz` archive.

If you find something else, rename the `gxsd-cmanpr.dat` to `gxsd.dat`.

## AFTER INSTALLATION

After installation, you can find the manual for the GX system under `/usr/share/doc/gx`. The header files can be found in `/usr/include/gx`, the library files in `/usr/lib32/gx` (under 32 bit systems) and `/usr/lib64/gx` (under 64 bit systems).

The basic GX library is in `/usr/lib32` and `/usr/lib64` (`libgxsd.so.7`). The file containing the property data is `/var/gx/gxsd.dat`.

After the kernel modules have started, you can check the state of the running drivers under `/proc/gx`.

Sample programs can be found in `/usr/src/gx` in the examples directory.

### ! Important

Samples are instructional and may not include all security mechanisms required for a production environment.

If the packages have not been installed to the default directories (but e.g. to the home directory of the user) then the following environmental variables have to be defined by the user for the appropriate operation of the system.

- `LD_LIBRARY_PATH:` for shared objects (\*.so)  
(`/usr/lib, /usr/lib64, /usr/lib/gx, /usr/lib64/gx`)
- `GX_VAR_PATH:` for properties (`gxsd.dat`) and global locks  
(`/var/gx`)
- `GX_SHARE_PATH:` for shared data (`cmanpr-xx.dat`)  
(`/usr/share/gx`)



IF USING JAVA:

1. First, install the `default-jdk` java development kit.

To check whether it is installed properly, enter the `java -version` command.

2. Make sure that `swig` is installed as well.
3. Once this is done, check the content of `makefile.config`

The `JAVA_INC_PATH` contains the actual path to the folder that includes the java files used by CARMEN®.

4. Run `make.sh` then `install.sh`.

 Note

The `Readme.txt` file contains the scripts on how to compile and run Java sample codes.

# MINIMAL INSTALLATION FOR EMBEDDED SYSTEMS

Files for minimal installation:

- **Property data**
  - /var/gx/gxsd.dat
- **The base GX library**
  - /usr/lib/libgxsd.so.7
- **Other GX libraries**
  - /usr/lib/gx/\*.so
- **Required shader libraries:**
  - gxproperty.so, gxpropfile.so: for property handling
  - gximage.so: for image handling
- **Other libraries (not needed for minimal system):**
  - gxbmp.so, gxpng.so, gxjpeg2k.so: for BMP, PNG and JPEG-2000 handling
  - gxjpeg8.so: for 8 bit JPEG handling
  - gxjpeg12.so: for 12 bit JPEG handling
  - gxwatchdog.so: for watchdog handling
  - gxlog.so: for logging
  - gxmotdet.so: for motion detection
  - gxtrafo.so: for transformation (required for passport reader)
  - gxzlib.so: for compression/decompression

- **ENGINE FILES**

/usr/libxx/gx/cmanpr-7.3.9.55.so  
/usr/share/gx/cmanpr-7.3.xx.xxx.dat  
libinfo.so...etc.

#### Note

Do not forget to start the kernel drivers after each boot up (you can copy them from a fully installed system compiled on the same kernel version):

- gxsd
- fxmc\_usb (if you use an USB NNC device)
- fxmc\_pcie (if you use the FXMC PCI-E card)

## ENGINE INSTALLATION FOR LINUX

**Recommended easy installation:** From engine versions 7.3.10.238 and above, a simple script is available for installing (and uninstalling) engines. For details, please see the “**Engine manager PRO user manual**” at: <http://doc.arh.hu/carmen/>

Engines are to be downloaded from ATSS. There will be 3 files in the package (let’s take cmanpr-gen-7.3.10.169\_19Q1 engine for example):

Files in the package:

```
cmanpr-gen-7.3.10-169_19Q1-x86_64.tar.gz
_install_cmanpr-gen-7.3.10-169_19Q1-x86_64.sh
_uninstall_cmanpr-gen-7.3.10-169_19Q1-x86_64.sh
```

Where “***\_install\_cmanpr-gen-7.3.10-169\_19Q1-x86\_64.sh***” is the script for installing the engine and “***\_uninstall\_cmanpr-gen-7.3.10-169\_19Q1-x86\_64.sh***” is the script for uninstalling the engine.

The install script does all the necessary file copies to the relevant folders and inserts the engine properties into the gxsd.dat. The engine will be **set as the default engine**.

**In order to install the engines manually, please do the following:**

- copy the cmanpr\*.so file to /usr/lib/gx or /usr/lib64/gx (the same directory which contains the cmanpr.so symlink),
- copy the lib\* files /usr/lib or /usr/lib64 (to the parent directory of the above),
- copy the .dat file to /usr/share/gx
- make sure that the cmanpr.so points to the cmanpr.so.7.3.1.9 file:

```
$ ls -l /usr/lib64/gx/ | grep cmanpr
-rwxr-xr-x 1 root root 3187864 May 26 13:54 cmanpr-7.3.9.55.so
lrwxrwxrwx 1 root root 17 Jun 3 09:39 cmanpr.so -> cmanpr.so.7.3.1.9
-rwxr-xr-x 1 root root 123920 Jun 3 09:39 cmanpr.so.7.3.1.9
```

- **make sure to update your gxsd.dat file.**

When installing the 9.57-arab engine, include the following entries in gxsd.dat:

```
<default>
...
<cmanpr value="cmanpr-7.3.9.57:arab.dat"/>
<default/>
<arab>
  <cmanpr value="cmanpr-7.3.9.57:arab"/>
  <cmanpr-7.3.9.57>
    <datafile value="cmanr-9.57-arab.dat"/>
    <plateconf value="0"/>
  </cmanpr-7.3.9.57>
</arab>
```

If done correctly, when you initialize the cmAnpr object with "default", the application will use the new engine.

## UNINSTALLATION OF CARMEN

If you want to uninstall the ARH files then use `_remove_all.sh`

## CONTACT INFORMATION

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The ARH Technical Support System (ATSS) is designed to provide clients with fast and proficient assistance.

Information regarding hardware, software, manuals and FAQs are easily accessible for clients who are already registered in ATSS. In addition to offering assistance, the system is also designed to provide high levels of protection while managing your business information.

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All registered ATSS customers receive a personal access link by email. If you previously received a confirmation message from ATSS, it contains an embedded link that allows you to securely enter the support site.

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