All-in-1 Barcode Decoding SDK - Linux

User's Guide

Contents

1. Introduction.

1.1 Scope

This document is applicable to the All-in-1 Decoding SDK.

SDK is notated as **All_In_1_Linux-64_rtl**.

The Library interface is the same for Windows, Linux, and certain embedded platforms. Both static and dynamic libraries are available.

The library is designed to decode all major barcode symbologies in accordance with the corresponding ISO/IEC specifications.

Library processes **8-bit** images only.

1.2 Normative references

ISO/IEC 16022 - Symbology specification - Data Matrix
ISO/IEC 18004 - Symbology specification - QR Code
ISO/IEC 24778:2008 - Aztec Code bar code symbology specification
ISO/IEC 15438:2006 - Symbology specification – PDF417
ISO/IEC 15420:2009 - EAN/UPC bar code symbology specification
ISO/IEC 16388:2007 - Code 39 bar code symbology specification
ISO/IEC 15417:2007 - Code 128 bar code symbology specification
ISO/IEC 16390:2007 - Interleaved 2 of 5 bar code symbology specification
ISO/IEC 24724:2006 - Reduced Space Symbology (RSS) barcode symbology specification
ISO/IEC 15416:2000 - Bar code print quality test specification — Linear symbols
Laetus Pharmacode Guide, 4th and 5th Editions
GS1 General Specifications, Version 12, Issue 1, Jan-2012

1.3 SDK package composition

Following files are supplied within SDK:
libDMatrix.so - library with decoding functions for application development

Source codes for demo program that applies the library:
xxx_Types.h - header files describing interfaces of particular library
Demo_Opn.cpp - source code of sample application that uses our library
LoadBMP.c, LoadBMP.h - the functions for loading "BMP" files

Executable files:
demo_so.out - demo program (application) that was built from Demo_Opn.cpp source code.
TwoDtgLicense - GUI application for license activation and deactivation management.

SDK description:
readme.txt
Current User’s Guide.

1.4 Features Description

The following barcode decoding libraries are included into the package:

- Data Matrix, Enterprise Edition (DM_EP)
- QR Code, Professional Edition (QRC_PRO)
- Aztec Code (AZC)
- 1D Barcodes (1D_EP) including:
  - Linear symbologies: EAN 13, EAN 8, UPCE, Code 39, Code 128, Interleaved 2 of 5 and Codabar
  - GS1 Databar (former RSS14 family)
  - Postal codes: USPS PostNet, USPS IMB, New Zealand PostCode, SwissPostCode, and
  - Pharmacode
- PDF417 (PDF_PRO)

Library features are the same as for the full Windows versions. They are described in detail in the corresponding User's Guides.

The library can be used on any Windows v. 7-10/32&64, Linux 32&64 or Embedded platform.

It's **GS1 compliant** - returns Symbology Identifier that can be used by GS1 users when building their applications (Data Matrix, QR Code and 1D symbologies only).

Data Matrix decoder includes "Dot Peen capabilities" extending its use to DPM (Direct Part Making) area.

2. Using All-in-1 Library

"All-in-1" Library is a Container comprising all 2DTG decoding libraries. The interfaces of all these libraries are left unchanged, therefore their use is like using these libraries as separate products (see list of individual interface descriptions in Section 2.4).

2.1 Creating decoders and options.

At the beginning of working with the library one needs to create decoders and options for all required symbologies. To create decoders, use functions like Connect_[ ]_Decoder. The exact function names for each symbol are shown in the table:

Function Name	**Symbology**
Connect_DM_Decoder	DataMatrix

Connect_L_Decoder	Linear
Connect_QR_Decoder	QRCode
Connect_PDF417_Decoder	PDF417
Connect_AZ_Decoder	Aztec

Next, create options for each of the symbologies. To create options, use functions like Create_[ ]_Options. The exact function names for each symbology are shown in the table:

Function Name	**Symbology**
Create_DM_Options	DataMatrix
Create_L_Options	Linear
Create_QR_Options	QRCode
Create_PDF417_Options	PDF417
Create_AZ_Options	Aztec

Embedded Platform:
It's recommended not to engage "multiple" symbologies option when using All-in-1 library.

2.2 Decoding and decode results

After creating the decoders, you can proceed to decoding. Decoding is performed for each symbology separately. For decoding, you need to call functions like Decode_[ ]_Bits. The exact function names for each symbology are shown in the table:

Function Name	**Symbology**
Decode_DM_Bits	DataMatrix
Decode_L_Bits	Linear
Decode_QR_Bits	QRCode
Decode_PDF417_Bits	PDF417
Decode_AZ_Bits	Aztec

Decode result (successful or not) can be found by calling functions like Get[ ]_ImageInfo. The exact function names for each symbol are shown in the table below:

Function Name	**Symbology**
GetDM_ImageInfo	DataMatrix
GetL_ImageInfo	Linear
GetQR_ImageInfo	QRCode
GetPDF417_ImageInfo	PDF417
Get_AZ_ImageInfo	Aztec

These functions return structures containing the “RejectionReason” (RR) and “[ ]Count” fields. If RR equals zero, and Count is greater than zero, then decoding is successful. More detail interpretation/explanation of decode results is shown in the table:

RR	[ ]Count	Interpretation
RR = 0	Count >= 1	Symbology is found and decoded
RR > 0	Count = 1	Probable symbology candidate is found but decoding failed
RR > 0	Count = 0	NO “likely” symbology candidate found within the image

Decoded text, bar code coordinates, quality parameters can be obtained by calling a function like Get _Info. The exact function names for each symbol are shown in the table:

Function Name	Symbology
GetDM_Info	DataMatrix
GetL_Info	Linear
GetQR_Info	QRCode
GetPDF417_Info	PDF417
Get_AZ_Info	Aztec

2.3 Removing decoders.

To remove decoders and free allocated resources, you need to use the functions Disconnect_ _Decoder. The exact function names for each symbol are shown in the table:

Function Name	Symbology
Disconnect_DM_Decoder	DataMatrix
Disconnect_L_Decoder	Linear
Disconnect_QR_Decoder	QRCode
Disconnect_PDF417_Decoder	PDF417
Disconnect_AZ_Decoder	Aztec

2.4 Interfaces of individual symbologies

Header file	Symbology	User’s Guide title	Link to User’s guide, interface description
DMPro_Types.h	DataMatrix	DM_EP_User_Guide.pdf	https://2dtg.com/products/data-matrix-decoding-library

L_Types.h	Linear	1D_EP_User_Guide.pdf	https://2dtg.com/products/1d-barcode-decoding-library
QRPro_Types.h	QRCode	QRC_PRO_UG.pdf	https://2dtg.com/products/qr-code-decoding-library
PDF417Pro_Types.h	PDF417	PDF417_User's_Guide.pdf	https://2dtg.com/products/pdf417-decoding-library
Az_Types.h	Aztec	Aztec_User's_Guide.pdf	https://2dtg.com/products/aztec-code-decoding-library

3. Licensing / Evaluation

Stand-alone license is locked to the computer, on which it was activated. License can be activated at any time during 30-days trial/evaluation period.

Trial license is fully functional but limited to 30 days after the first use of library.

Licensing can be done either from the customer's app or by executing **TwoDtgLicense a**pp, provided by 2DTG as part of the SDK package.

License may be transferred to another computer after it's deactivated from the first one. Deactivation can be done in "on-line mode" only, so internet connection is required.

3.1 Licensing from TwoDtgLicense app

3.1.1 Executing TwoDtgLicense

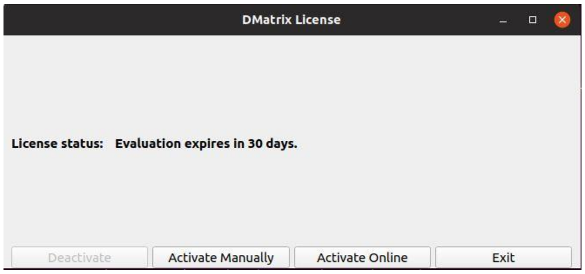
libqt5widgets.so.5 is required for the licensing application to function. It has been reported that some versions of Linux do not have this application installed. If you receive an error reporting no such file found you just need to install the missing item using the following command:

```
sudo apt-get install libqt5widgets5
```

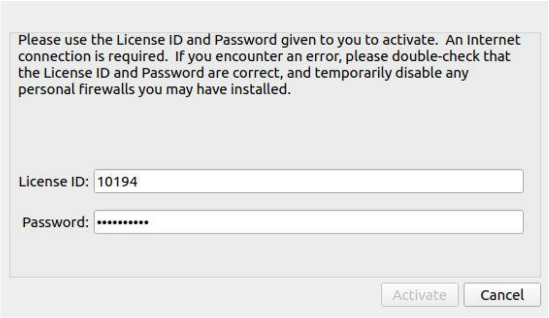
3.1.2 Online Activation

Once starting the GUI you will have a couple of activation options, either Online or Manually.

Select the "Activate Online" button and you will then be prompted to enter your
License ID and Password:



License status: Evaluation expires in 30 days.



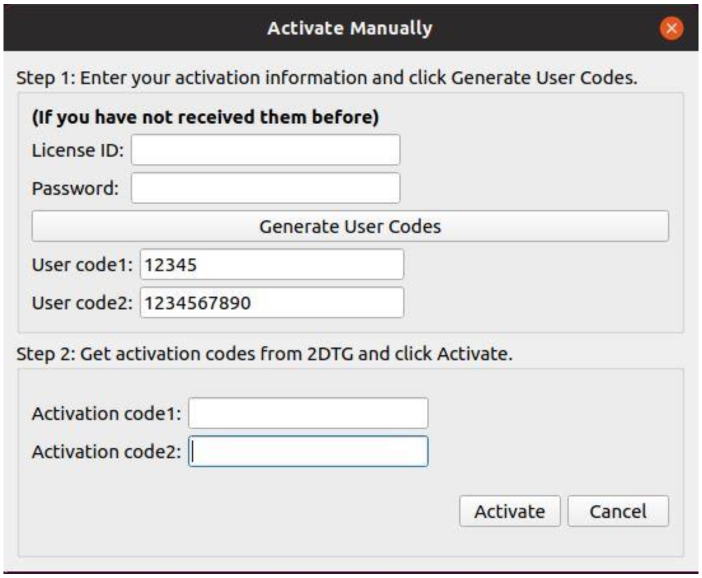
Please use the License ID and Password given to you to activate. An Internet connection is required. If you encounter an error, please double-check that the License ID and Password are correct, and temporarily disable any personal firewalls you may have installed.

License ID: 10194

Password: ••••••••••

3.1.3 Manual Activation

If you are working on a device that does not have internet access you also have the option for activating your license manually. Simply select the “Activate Manually” button and you will then be prompted with the manual activation window below.



Step 1: Enter your activation information and click Generate User Codes.

(If you have not received them before)

License ID:

Password:

User code1: 12345

User code2: 1234567890

Step 2: Get activation codes from 2DTG and click Activate.

Activation code1:

Activation code2:

You will first need to enter your License ID and Password and click the Generate User Codes button. Once selected you will see User Code 1 and User Code 2 which you will need to provide to any 2DTG representative via telephone* or email** and they will provide you with the required Activation Code 1 and Activation Code 2. Once entered just click the Active button and that’s it!

3.2 Licensing from User’s Application

The description of how to activate (begin trial period) of the library from your application can be found in **twodtg_license.h.**

3.2.1 Licensing system initialization.

Licensing system must be initialized before the first use of the Decoding library.

Call '**EvaluationDayCount**' function from your application to start 30-days trial period. This call requires root access. All subsequent calls of the decoding library do not require administrative privileges.

To check out if administrative privileges are required you can call '**RequredRootAcess**' function.

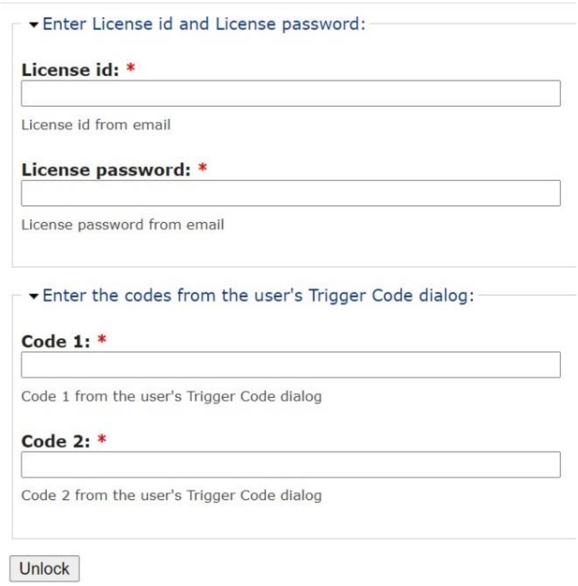
3.2.2 On-line library activation on 2DTG website.

Call '**ActivationOnline**' function from your application and pass ‘License ID’ and ‘License password’ received during the purchase.

3.2.3 Manual activation (no access to the Internet from your PC).

A. Call '**GetUserCodes**' function – it will generate userCode1 и userCode2 - OUTPUT parameters from your PC, required for Trigger Code dialog on 2DTG website.
(If this function returns ‘0’ for one or both parameters, please, contact 2DTG technical support).

B. Log-in to your account on 2DTG website from a PC having access to the Internet, open your Order page and then ‘Manual Unlock License’ page:



▾ Enter License id and License password:

License id: *

License id from email

License password: *

License password from email

▾ Enter the codes from the user's Trigger Code dialog:

Code 1: *

Code 1 from the user's Trigger Code dialog

Code 2: *

Code 2 from the user's Trigger Code dialog

Enter required data and click ‘Unlock” – the system will return to you ‘ActivationCode1’ and ‘ActivationCode2’.

C. Call '**ActivationManual**' function from your application and pass received ‘ActivationCode1’ and ‘ActivationCode2’.