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_Win32/64_v.xx.xx** for 32 bit and 64-bit versions, accordingly.

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

Decoding SDK contains:

- C++ Windows DLL (**All.DLL**) written in MSVS 2017 and designed to perform barcode search, recognition and decoding.
- C++ Demo program **(…/MSVC_Demo.exe**) and C# Demo program **(…/Sharp_All-in-1.exe**) built in MSVS development environment (both come with source code) - to illustrate the DLL usage.
- 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. C# Demo application - GUI

Libraries included are illustrated by the C# application GUI:

The symbologies can be auto-selected by the Decoding Library or selected manually prior to decoding from the Settings Menu (to speed up decoding process).

4. Licensing / Evaluation

Stand-alone license is locked to the computer, on which it was activated, and may not be transferred to another computer. If the computer was upgraded or rebuilt the license may still be valid if its major components had not been changed.

Important:
Licensing mechanism requires two additional files for unlock and operation (in addition to Decoding Library):

- **IP2Lib64.dll** or **IP2Lib32.dll;** and
- XML-file having syntax: **[Product Name].xml**, for example: **DM Decoding Enterprise.xml**.
- Product LOGO file (**ProdLogo_**.bmp**) is also recommended but not strictly required.

By default, 2DTG supplies all these files located in the same folder as demo-application that would call the library.

We recommend activating decoding library by starting our Demo application and following the Activation Instructions below.

If you are planning to call decoding library from your own application, please, make sure to copy those 3 files to the folder where your application is located.