



Manual CodeCheckGS

Our App **CodeCheckGS** was developed to simplify checking for barcode standards.

The low-cost annual subscription offers the following features...

- Validation of GS1 barcodes to specification
- Checking of HIBC primary and secondary codes
- Verification of IFA pharmacy barcodes
- Decoding of ANSI MH10.8.2 barcodes
- Library of GS1 and ANSI identifiers
- Evaluation and reporting with e-mail
- Scan archive with access to previous scans
- Decoding of images with barcodes

Functions on start screen

This manual refers to the subscription version. We currently supporting the following standards for barcode scanning: **GS1, HIBC, IFA und ANSI**

Access to the scanner functions can be found in the start screen.

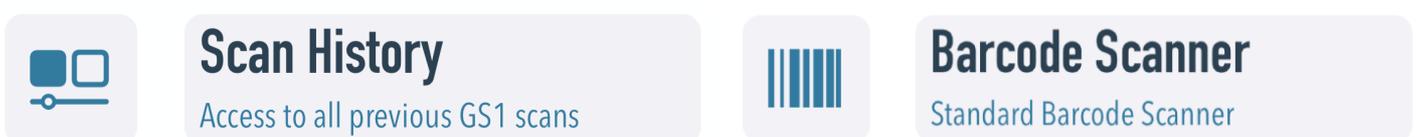


In addition to the validation of the barcodes, there is also a library for GS1 and ANSI specifications.



For permanent access to the previous barcode scans, we have added a scan history archive.

And of course, normal barcodes can also be scanned.



At the bottom of this help, all functions are explained in detail and the decoding of barcodes in images.



Annual Subscription

Premium features via Subscription



Help

In-Line Help

Without a subscription, only a normal barcode scanner is available. Although this also shows special characters in the barcode, there is no further check of barcodes.

This reduces the selection of functions to the following areas.



Barcode Scanner

Standard barcode scanner



Help

In-Line Help



Annual Subscription

Premium features via Subscription

Please note that the iWatch apps for the GS1 and ANSI library are not part of the subscription.

Both apps could be purchased separately on the iWatch and will work independent.

Barcode Detection

We are using two different scan engines to recognize the barcodes:

- Detection via pixels pattern recognition
- Apple Machine Learning Algorithm

Both versions have their advantages. The first version works quite fast and decodes control characters completely but works with a slightly poorer barcode recognition rate.

The second version recognizes more barcodes and works very quickly but requires a high processor capacity at the expense of battery drain. Older iPhones or iPads may be too slow for this. In addition, a leading FNC1 control character is ignored, which is a problem especially with GS1 barcodes. For GS1 barcodes we added both variants to choose from.



GS1 Barcodes

Decode GS1-128 and GS1 Datamatrix



GS1 Barcode Structure

GS1 Codes without FNC1 validation

The use of the second engine can be deactivated in the Apple settings for the app.

New Scan Engine



Specifications overview

To stay compliant with specifications when working with barcodes, requires knowledge that can be achieved by studying documents with several hundred pages.

To make this easier, **CodeCheckGS** offers an automatic check with reporting for the following specifications.

| GS1

GS1 barcodes are used in a wide variety of industries. In retail, food, transportation, logistic and healthcare. UDI-compliant labeling is possible with the system. Please use the old scan engine if you need to verify leading FNC1 characters. The new engine will append the FNC1 character if it is missing.

In most cases, Code-128 and Datamatrix barcode symbology is used.

| HIBC

This specification is often used in the field of medical devices. It is common to use combined barcodes or separate the data in primary and

secondary codes. HIBC can be used for UDI labeling.

Code-39, Code-128, Datamatrix, QR-Code or Aztec can be used for HIBC barcodes.

| IFA

In the pharmaceutical industry in Germany, the central pharmaceutical number PZN is used to identify drugs. This number is assigned by the IFA, but there are additional identifiers in this specification that enable UDI-compliant labeling.

While the PZN is coded as Code-39, the Datamatrix is recommended for UDI labeling.

| ANSI

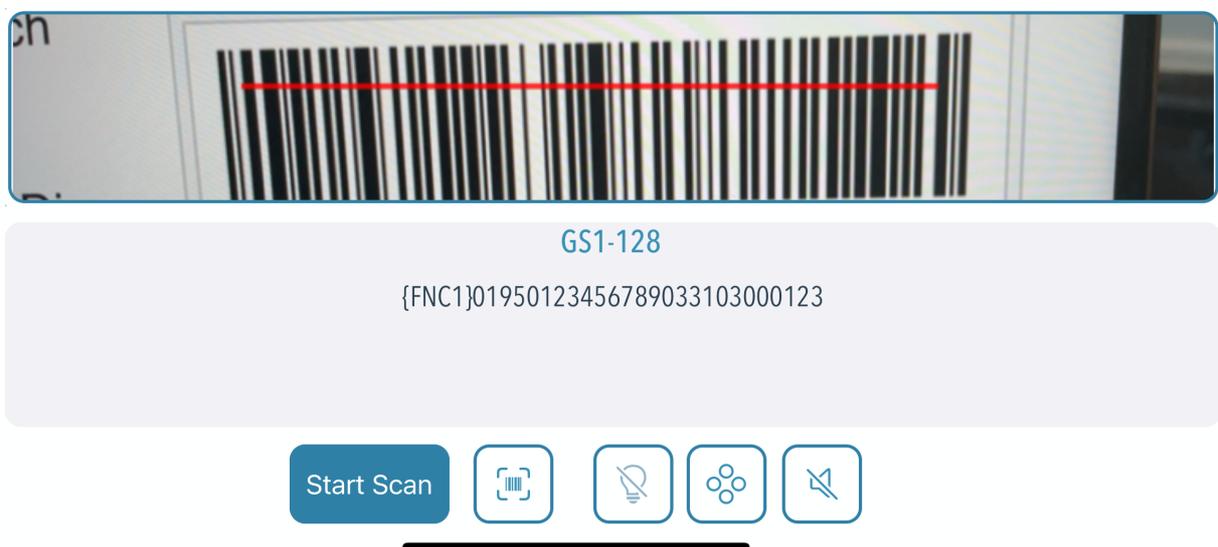
When we mention ANSI in this help, we always mean ANSI MH10.8.2. This specification is a library of identifiers that covers a very wide spectrum. The automotive industry uses ANSI identifiers in Code-39 barcodes.

Since a lot of identifiers will reference to other specifications agreed between partners, we do not check these barcodes against these specification and only show the data with short information on the identifier.

Barcode scanning

Barcode scanning is almost identical in all five areas except HIBC. For normal barcodes, the iPhone can also be rotated to capture wide barcodes. The normal view is recommended for 2D codes.

SCANNING VIEW



If the scan is started and a barcode is recognized, it is marked in red and the barcode type is displayed. In addition, the content is shown with special characters in curly brackets.

SCANNER SETTINGS

In addition to starting and stopping the scan, there are other options available depending on the Apple device or barcode type and result.



Starts the evaluation when the barcode has been successfully decoded



This can be used to activate the flashlight on the iPhone, if available



Switching to inverse scanning of 2D barcodes (white on black)



Switching sound on/off or vibration when scanning is successful

HIBC BARCODES

With these barcodes, the data can be in a combined barcode or printed separately as a primary code and secondary code.

With separate barcodes, you need to scan 2 barcodes. These are connected by a link symbol.

Therefore, there are fields for both codes and on the right, you can see if these are connected with a link character. HIBC allows to attach add-on at end of barcode, the third entry will hold this data.

P +H123M64X92S1/



S +052719/J



A



View results

If a barcode has been successfully decoded, the evaluation can be started. The respective specification is used as a basis. Here are some examples of a result...

GS1

All results are displayed with barcode information and evaluated identifiers.

Product or GTIN

09312345670000

Timestamp

11.01.2022 22:25:48

Scanner ID

B9-BEE2-86E108ACF873

Barcode Type

GS1-Datamatrix



The barcode could be decoded without errors according to our validation scheme

Scan Input Data

{FNC1}010931234567000010ABC123

It shows the **product number** (the GTIN for GS1), the **Timestamp** of the scan, the **Scanner ID** as device identifier and the **Barcode Type**.

The overall result of the evaluation and the barcode content are below.

This is followed by a list of evaluated identifiers. The display for this differs slightly in the specifications.

Identifier

01

GTIN

Global Trade Item Number GTIN

09312345670000



10

BATCH/LOT

Batch or lot number

ABC123



In the case of GS1, each item shows the application identifier (01 for the GTIN), the English short name, the translated name, and the content.

With some identifiers such as the date, a formatted data display is added to the content.

The details are displayed by tapping on the identifier.

At the bottom there are additional options for reporting.



The report of the evaluation result can be displayed directly with the button on the left. The middle button shows the image of the scanned barcode and on the right the report can be shared either as a printout or by e-mail. You can also report questions or errors for a decoding result to our developer team.

All functions are explained later.

The preparation of the report takes a moment, during this time the buttons are inactive.

HIBC

The output is like the GS1 display, but with HIBC barcodes there are significantly fewer identifiers. The primary part consists of a manufacturer ID **LIC**, the product code **PCN** and the quantity index **UOM**. An expiration date **MHD**, a lot number **LOT** or a serial number **SER** are printed on the secondary part.

Identifier

LIC Labeler Identifier

Hersteller-ID LIC

H123



PCN Product Code Number

Produktcode PCN

M64Z92S



UOM Unit of Measure

Mengenindex

1



IFA

Even with the IFA, there is only a small number of identifiers that ultimately also allow UDI-compliant identification. The most important identifiers are the product identifier as **PPN** or **HPC**, an expiration date **EXP** and the lot number **LOT**.

Identifier

HPC Health Product Code

Health Product Code <9N>

13 12345 MED777 2 27



LOT Batch number

Batch Number <1T>

ABC12345



EXP Expiry Date

Expiry Date <D>

241231 -> 31.12.2024



| ANSI

ANSI MH10.8.2 is a special case when evaluating barcodes. There are well over 350 identifiers that cover a very wide range of applications. In many cases, specifications agreed between partners form the basis for the evaluation. **CodeCheckGS** only decodes these barcodes but will not check for correct data content.

Here is an example where an IFA barcode was decoded as IFA data is based on ANSI MH10.8.2.

Identifier

9N Pharmacy Product Number

Pharmacy Product Number PPN <9N>

111234567842



D Date Format YYMMDD

Date format YYMMDD <D>

240600



33L Uniform Resource Locator

URL Uniform Resource Locator <33L>

<http://Produktthinweis.de>



In the ANSI specification, the areas are divided into letters A-Z and have numeric variants.

In the example above, the area **N** is intended for industry assigned codes and **9N** is reserved for IFA.

The area **D** stands for general dates and without a variant this is a general date in the format YYMMDD. For comparison, **14D** represents an expiration date in the format YYYYMMDD.

Area **L** is used for location references and in our example **33L** stands for an URL and is also used within IFA.

Spending a look in the automotive industry, we find some generic identifiers on the Odette label like **P** = part number, **V** = supplier number, **S** = serial number, **H** = batch number, **Q** = quantity and some more.

EVALUATING DECODING RESULTS

Our decoding, especially for GS1 barcodes, do not stop if there is an error, but continue to analyze the barcode character by character.

Here is some information about typical errors...

- If data is too long, it is only evaluated up to the maximum length. The next character is then ignored as an invalid new identifier
- If the data is too short, data from the next identifier may also be read. This also happens if the delimiter is missing in the case of variable length identifier
- If data does not result in a valid identifier, the first character is discarded and the validity of the next two characters is checked again
- There are also identifiers with a fixed length, but still require a separator per GS1 specification. In this case, we will also check this
- Identifiers that require a separator must not include it, if it is the last identifier in the barcode
- ANSI, IFA and HIBC barcodes are not evaluated character by character, but by structure

Details about identifier

For each checked identifier, we show the result and properties in the detailed view.

DATA CONTENT

Here you can see the identifier of the selected item, the English short name and the translated name. The formula provides information about the structure of the identifier. At the bottom you can see the data content plus number of characters.

AI

Info



01

GTIN der Handelseinheit

Name

Formel

GTIN

$n2+n14$

Dateninhalt - Anzahl Zeichen: 14

40012123913899

The small question top right is important. If opened, we show details about the identifier. It contains a lot of important information especially with GS1. Among other things, it displays if combinations of identifiers are necessary or prohibited.

IDENTIFIER INFO

Details on ID 01

Informations to the identifier including valid combinations

The AI01 is used to identify trade items and is available as GTIN-8 (6 Zero, 7 Data and CD), GTIN-12 (2 Zero, 11 Data and CD), as GTIN-13 (1 Zero, 12 Data plus CD) and as GTIN-14 (13 Data plus CD). GTIN-13 usually contains the EAN-13 number of the product and you could use your EAN13 number plus a leading zero to get the required 14 digits. The last character is the check digit and should be the same as

OK

In addition to the detailed information, there are features of the identifier as images.

Property Flags



Additional to the icons, the same data is listed as plain text plus the length of the identifier and the position of a check digit if required. A separator is required if the identifier has a variable length to mark the end of the data or if the GS1 has specified this.

| | | | |
|-------------------|-------------------------------------|----------------------|-------------------------------------|
| Identifier length | 2 | Check digit position | 14 |
| Indicator value | | Separator required | <input type="checkbox"/> |
| Variable length | <input type="checkbox"/> | Checkdigit required | <input checked="" type="checkbox"/> |
| Pure numeric | <input checked="" type="checkbox"/> | Special decoding | <input type="checkbox"/> |
| Date content | <input type="checkbox"/> | Not recommended | <input type="checkbox"/> |
| Country code | <input type="checkbox"/> | Currency code | <input type="checkbox"/> |

Since we also check the content (except ANSI), we show the area where an error occurred. Date, valid characters, check digits, data structure, correct separators and indicator values (1-digit code for some identifiers) are checked.

Error Flags

| | | | |
|------------|--------------------------|-------------|--------------------------|
| Characters | <input type="checkbox"/> | Indicator | <input type="checkbox"/> |
| Structure | <input type="checkbox"/> | Date | <input type="checkbox"/> |
| Separator | <input type="checkbox"/> | Check Digit | <input type="checkbox"/> |

Ideally, there should be no error and it will look like this.

Decoding Message

The data element was decoded successful without errors

As a negative example, here is an error with an invalid character in the GTIN. This results in two errors in data content and check digit.

Decoding Message

Only pure numeric data allowed © Check digit calculations for MOD 10 requires numeric data

If there is an error in identifier data or a general error in the barcode, this is in the top header.



Decoding error for application identifier (see details)

Reporting

If a barcode has been evaluated, a check report is generated in the background. Use the 3 small buttons at the bottom of the display.



Displays the report optimized for display on the screen



Displays the image of the scanned barcode in a separate window



Allows you to print the report and send it as a PDF via email

Generating the reports for display and printout takes a moment, so the buttons are deactivated at the beginning.

The report for the screen display gives a good overview, as all data and evaluations are combined including a structural graphic are displayed there.

When printing on an AirPrint printer, the identifier info details are not printed to save paper and the resolution is optimized for printing.

ON SCREEN REPORT

This report shows all information including the identifier info details, image of the scanned barcode and structure image from the library.

< Scan Report View

least the data content matches the requirements for GS1 based on our test algorithm.

Scan Image



Overview of inspections

| | |
|-------------------|---|
| Character Errors | 0 |
| Checkdigit Errors | 0 |
| Date Errors | 0 |
| Indicator Errors | 0 |
| Seperator Errors | 0 |
| Structure Errors | 0 |

The following identifiers has been detected and checked against the current specifications (except ANSI). Identifier properties and test results are listed additional.

01 : GTIN

Global Trade Item Number GTIN

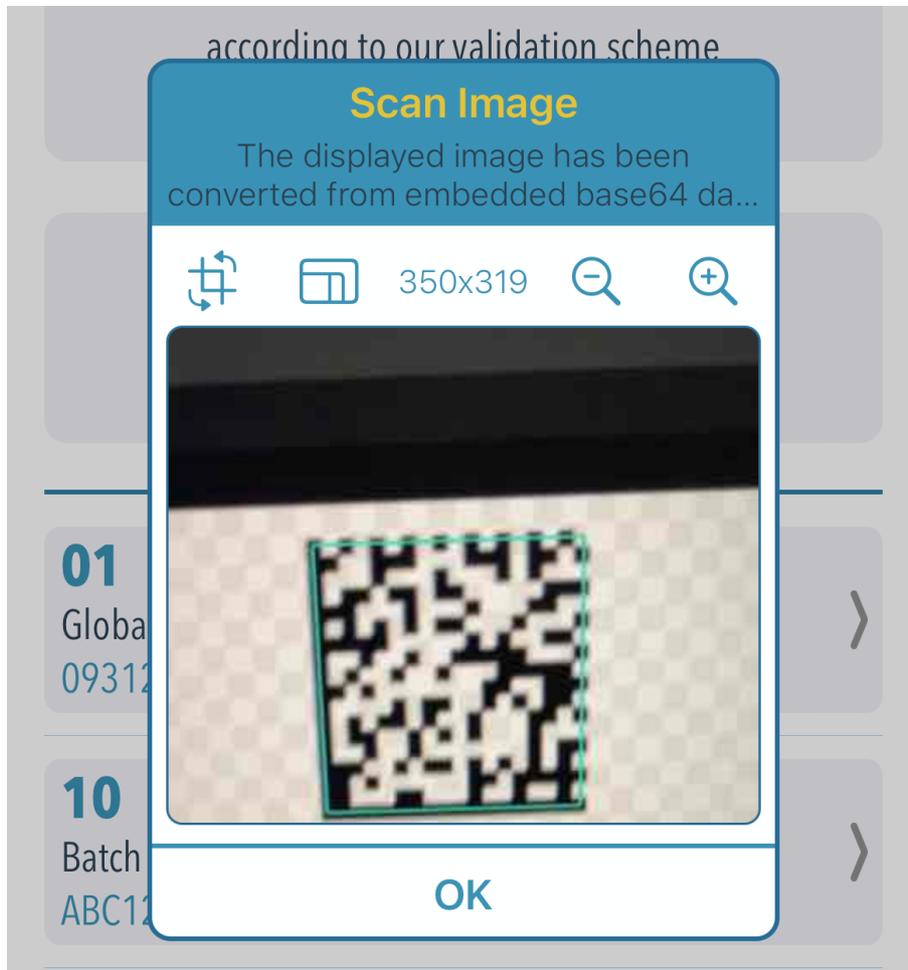
09312345670000

| Application Identifier | GTIN14 Indicator | GTIN - Global Trade Item Number | | Check-digit |
|------------------------|-----------------------------|--|------------------|-----------------------|
| | | GS1 Company Prefix → | ← Item reference | |
| 01 | K _{0/1-8/9} | N₂N₃N₄N₅ N₁₀N₁₁N₁₂N₁₃ | | N₁₄ |

FNC required: No Date Identifier: No

BARCODES IMAGE

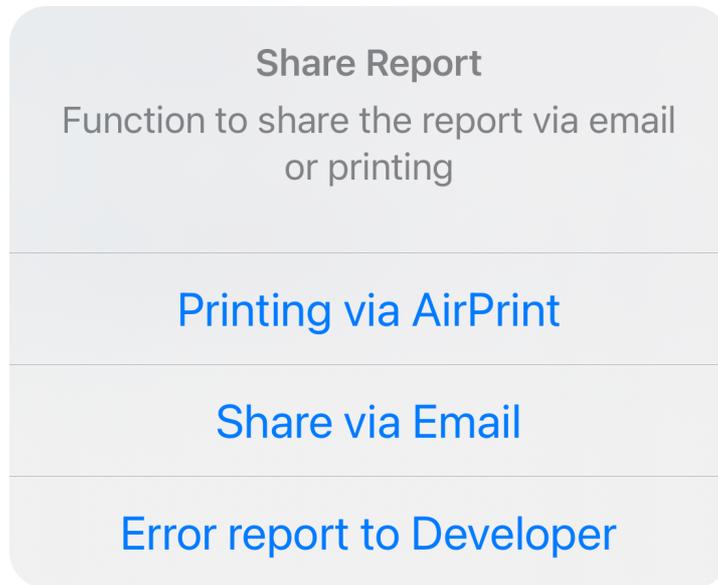
A small window will appear to display the image of the scanned barcode. You could zoom in, rotate, or fit to screen.



Important note: all evaluations are also available in the scan archive. Therefore, all scanned barcode images are saved in low resolution. If you perform a lot of evaluations, check the used memory in the scan archive from time to time.

SHARE REPORT PER MAIL

You can use sharing to print out or send the report via email (including error report to our developer team).



By default, the email address from the configuration in the Apple settings is used to send the report.

CODECHECKGS-EINSTELLUNGEN

Email : 

The name of the PDF file in the email contains the date of the evaluation...

`CodeCheckGS-DD-MM-YYYY-hh-mm-ss.pdf`

Important note: This function is only available if an e-mail account with Apple Mail has been set up. Other mail programs like Outlook do not work.

REPORT PRINTING

An AirPrint compatible printer is required for printing. It is searched in the WLAN network and displayed if found.

Cancel **Print Options** **Print**

Printer Canon iP7200 series >

Presets Default Settings >

Range All 2 Pages >

Black & White

Double-sided

Paper Size A4 >

Label ID Solutions GmbH

Quality Measure
Barcode GS1 Marking Standards

Result of the evaluation on 11.01.2022

| Scan Data | Scan Raw Data |
|---------------------------|--------------------------------|
| 6010931234567000010ABC123 | (FNC1)010931234567000010ABC123 |

The barcode was successfully checked. At least the data content matches the requirements for GS1 based on our test algorithm.

| Scan Image | Overview of inspections |
|---|-------------------------|
|  | Character Errors 0 |
| | Checkdigit Errors 0 |
| | Date Errors 0 |
| | Indicator Errors 0 |
| | Separator Errors 0 |
| | Structure Errors 0 |

The following identifiers has been detected and checked against the current specifications (except ANS1). Identifier properties and test results are listed additional.

Page 1 of 2

Identifier Lists

| 01 : GTIN | Indicator | Structure | Separator | Date | Character | Checkdigit | Indicator | Separator | Date | Character | Checkdigit |
|-------------------------------|-----------|------------------|--------------|----------------|-----------|-------------|-----------|------------|------|--|------------|
| Global Trade Item Number GTIN | 01 | [Kxxxx] | N.N.N.N.N... | No.N.N.No.N.N. | No. | | | | | | |
| 09312345670000 | | | | | | | | | | | |
| FNC required: | No | Date Identifier: | No | Character: | OK | Checkdigit: | OK | Date: | OK | Indicator: | OK |
| Variable length: | No | Pure numeric: | Yes | Indicator: | OK | Separator: | OK | Structure: | OK | The data element was decoded successfully without errors | |
| 10 : BATCH/LOT | | | | | | | | | | | |
| Batch of lot number | 10 | [Xx...] | xxxx | xxxx | | | | | | | |
| ABC123 | | | | | | | | | | | |
| FNC required: | Yes | Date Identifier: | No | Character: | OK | Checkdigit: | OK | Date: | OK | Indicator: | OK |
| Variable length: | Yes | Pure numeric: | No | Indicator: | OK | Separator: | OK | Structure: | OK | The data element was decoded successfully without errors | |



Page 2 of 2

GS1 Library

All current identifiers of the GS1 specification are available in the library. The version status and the number of identifiers is at the top and it is possible to search for words in the identifier information (e.g. "GLN" shows all identifiers that have to do with the global location number GLN).



Library View

AI's: 185

GS1 01-2021

Filtered: 185



Search for Identifier Info

00

SSCC



Serial Shipping Container Code SSCC

01

GTIN



Global Trade Item Number GTIN

0

1

2

3

4

7

8

9

In the identifier details, you will find information data, properties and description including the structure diagram.

< Identifier Details

AI

Info

411

Bill to Global Location Number

Name

BILL TO

Formula
n3+n13

Structure Image

| | |
|-------------------------------|---|
| Application Identifier | GLN - Global Location Number |
| 411 | GS1 Company Prefix → N₁N₂N₃N₄N₅N₆N₇N₈N |

Identifier Info

The AI411 contains the GLN of the invoice recipient with a location reference and a check digit at the end.

IDENTIFIER PROPERTIES

We decided to use symbols for properties of the identifier.



Shows fixed or variable length of the identifier.



Indicates whether an FNC separator is required.



Indicates if the identifier only allows numbers or is alphanumeric



If a check digit is required for the identifier, this symbol is active



Active for all identifiers that have to do with countries



It is active for all identifiers that includes a date



Active for discontinued identifiers or if not recommended

The structure diagram shows how many characters are permitted and whether the content is purely numeric. If the identifier contains an indicator character or a check digit, this can also be recognized in the diagram.

ANSI Library

The use of the ANSI library corresponds to the GS1, but with significantly more identifiers and a different grouping.

In ANSI, there are groups from A-Z, with some reserved (A, G, O, X, Y) letters. We created a shortcut code by letter below.

 **Library View**

AI's: 353 ANSI 08-2020 Filtered: 353

 Search for Identifier Info

B Container Type 
Container Type

1B Returnable Container Identificatio... 
Returnable Container Identification Code <1...

B **D** **H** **L** **N** **Q** **S** **U**

REFERENCED SPECIFICATIONS

Instead of a structure image, we show all specifications that are referenced in the identifier.



Identifier Details

AI

Info

14D

Expiration Date YYYYMMDD <14D>

Name

Expiration Date YYYYMMDD



Formula
 $an3+n8$



Referenced Specification

ANSI MH10.8.2-2016
ISO/IEC 15418

Identifier Info

Expiration date in the format YYYYMMDD. Is used with HIBC as an expiry date if the existing expiry date is not sufficient in its format.

The Scan Archive

Each time a barcode is evaluated, it is saved in the scan archive. Since this generates many entries very quickly, the view can be filtered according to specification and time ranges. In addition, there is an option to search for parts of a product or serial if included in the scan result.

 **SCAN Archive**

Total: 3204 [71,5 MB/66,9 MB] Count: 3204

Search for Product code or Serial

Search sub text

Decode Type Selection

AllGS1HIBCIFAANSI

Date Range Selection

NoneTodayWeekMonthPeriod

19.03.202219.03.2023

If the time range has been limited, there is the option of deleting all data records in the range to save some memory.

ARCHIVE VIEW

Each item in the scan archive list will contain the date of the scan, selected specification, the number of identifiers in the barcode and first two lines of the content.

07.01.2022 12:25:04

GS1

AI's

02

{FNC1}80030123456789X123{GS}
2099



07.01.2022 12:02:03

GS1

40012123913899

AI's

01

{FNC1}0140012123913899



If there is a product code like GTIN or serial number in the scanned identifier, this is saved separately, and the product code is displayed.

Important note: Note the number of records and data volume at the top header and delete data that are not required anymore. The first value is the database size and after the slash the used data. The database is always compressed the next time the app is started if the user data is less than 50% of the database size.

App settings

There are a few things that can be adjusted in Apple settings.



On the one hand, the **Language** can be switched between German and English. The entry for **Company** is used as a heading in the reports for customization. With the **Presentation Mode**, all touches are shown on the display.

The **Cognex MX Mode** is used for Cognex's special MX series scanners for difficult-to-read barcodes.

You could also deactivate the **New Scan Engine** if your device is too slow for this scan mode.

Image decoding

When decoding images, we try to detect barcodes in the image and evaluate this via image decoding.



This only works with one selected image and the option is only available in this case.



If you start decoding, the shown image will be transferred to the CodeCheckGS application to detect barcodes with their content and allow decoding based on the current GS1 or ANSI specifications

The decoding in CodeCheckGS is performed in quick mode without FNC validation

[Start Decoding](#)

With **Start decoding** the image is transferred to **CodeCheckGS** and the decoding can be started there. We are using the new version of the barcode detection. You could select the required specification before start decoding.

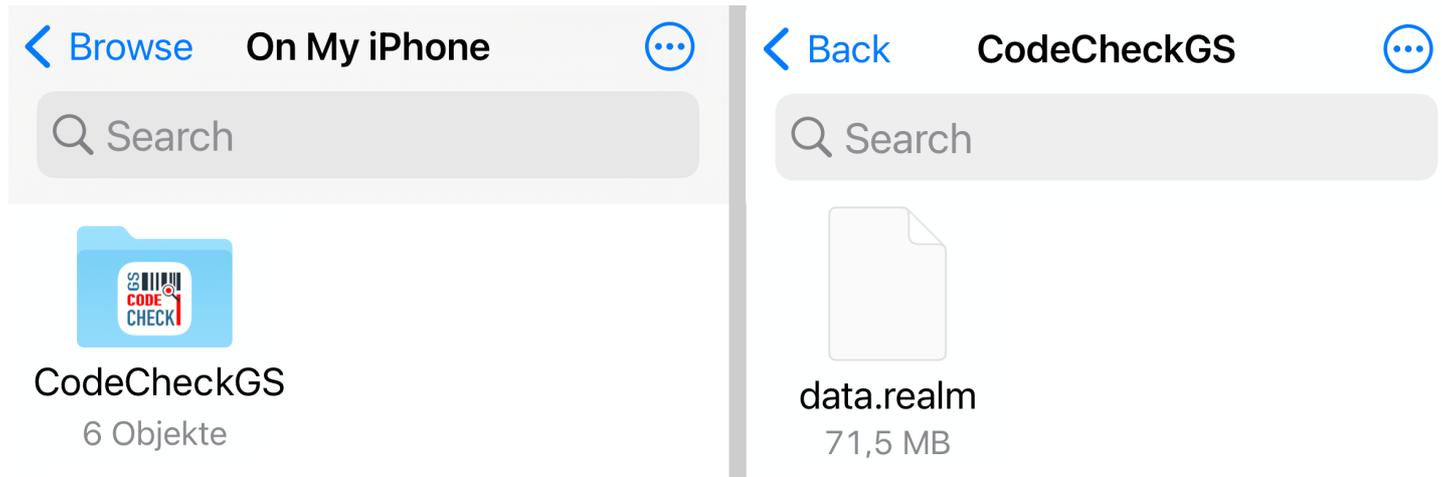
We try to detect also multiple barcodes in the image and display the result with barcode type and content. Which specification (GS1 & ANSI) to be used for evaluation can be selected by swiping to the left.



Please note that an FNC1 character is inserted when evaluating according to GS1, even if it is not present in the original barcode.

Data Backup & Restore

If you want to back up the data in the scan history or transfer it to another device, you can back up the complete database via the files APP or distribute it by mail or AirDrop.



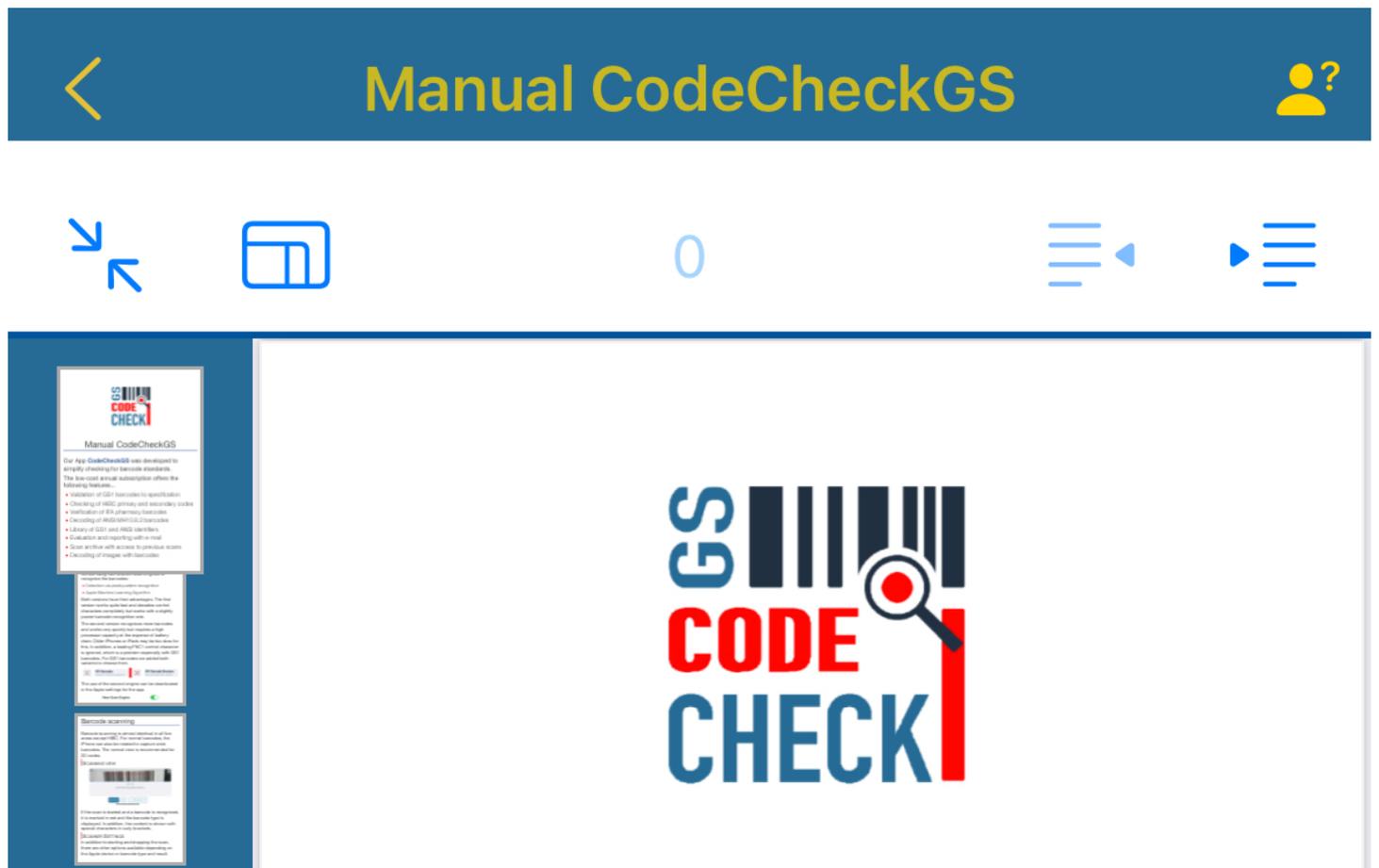
In the CodeCheckGS folder in the data on your device, all data is stored in the **data.realm** database and you can ignore all other files.

Important note: If you overwrite the database on another device or restore a backup on your device, the data currently available there will be lost and cannot be restored. There is no **import**, full local data will be overwritten.

Manual

The integrated manual allows free scaling and has an overview bar that can be hidden to maximize space.

There is a function to fit the content to screen.



The current page number is displayed in the middle and the pages can be scrolled back and forth on the right.

Subscription

The first month of subscription is free to new subscribers to allowed relaxed testing of all features.

You can renew expired subscriptions and restore it on a new installation in this view.

We think we have created a fair subscription model for you. The first month free for intensive testing...

Unlock all with Premium Subscription

Premium Subscription for \$18.49 / Year

If you already purchased CodeCheckGS Premium Subscription and it is still active, you could restore it below

Restore Purchase