



3.3 Structure

An ITF-14 Bar Code can encode a GTIN-14, GTIN-13 or a GTIN-12. However, as the total number of digits encoded must be 14, one filler zero should be added in front of a GTIN-13 and two filler zeros in front of a GTIN-12 when these GTINs are encoded in an ITF-14 Bar Code.

All ITF-14 Bar Codes follow a standard structure:

- Left Quiet Zone
- Start pattern
- Representation of the digit pairs
- Stop pattern
- Right Quiet Zone

Bearer Bars are required above and below. Where printing plates are required the bar code is surrounded by a Bearer Bar. See the GS1 Australia User Manual - Numbering and Bar Coding for more information on Bearer Bars.

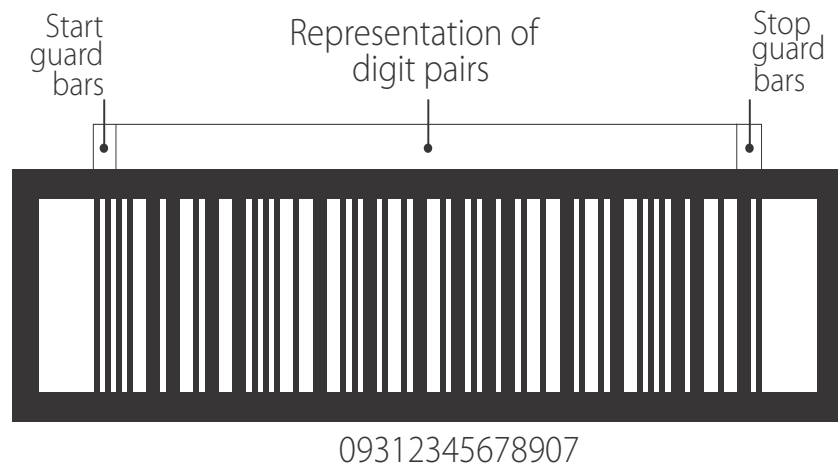


Figure 7 - ITF-14 Bar Code Format



3.4 Encoding ITF-14 Symbols

The Human Readable Interpretation is encoded in an ITF-14 Bar Code in interleaved pairs. The first character in each pair is represented by five dark bars, and the second is represented by five light bars. This is called a symbol character.

ITF-14 Symbols have only two bar widths; wide and narrow. The bar width ratio (comparison between the narrow and wide bars) is 2.5:1, meaning that the wide bars are 2.5 times the width of a narrow bar. While the preferred ratio is 2.5:1, the acceptable range is 2.25:1 - 3.0:1.

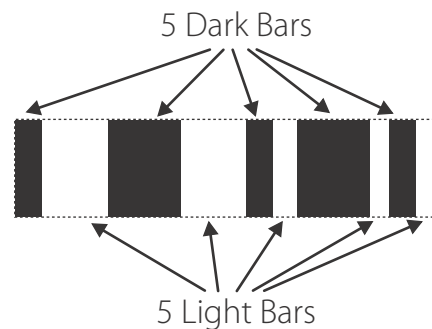


Figure 8 - ITF-14 Symbol Character

Auxiliary symbol characters are in addition to the symbol characters representing the human readable digits. They comprise fewer modules and are used as start and stop patterns for the beginning and end of the symbol.



3.4.1 How to Compose an ITF-14 Bar Code

Take the 14 human readable digits and form digit pairs.

1 9 3 4 3 2 7 8 6 5 9 7 0 8

Using Table 10 on page 16, convert each digit pair into its wide (1) and narrow (0) representation. Start with the first pair on the left of the GTIN. Repeat the conversion for every pair of digits.

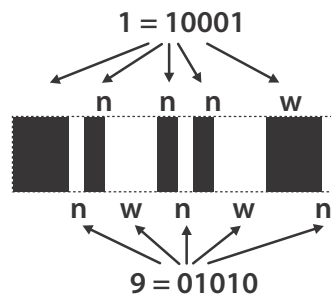
In each pair of digits, the:

- **left**-hand digit is represented by **dark** bars.
- **right**-hand digit is represented by **light** bars.

Place the zeros and ones alternatively, starting with the left digit. Repeat for every pair of digits in the GTIN.

Convert the zeros and ones into narrow and wide, and dark or light bars

1 is the *left digit* so it is represented by *dark bars*



9 is the *right digit* so it is represented by *light bars*

Figure 9 - Sample ITF-14 Digit Pair Converted into Wide (1) and Narrow (0) Bars

Repeat this for all digit pairs; then add stop and start patterns. Each subsequent representation of a digit pair immediately follows the previous one. For example, the number 3852 looks like.

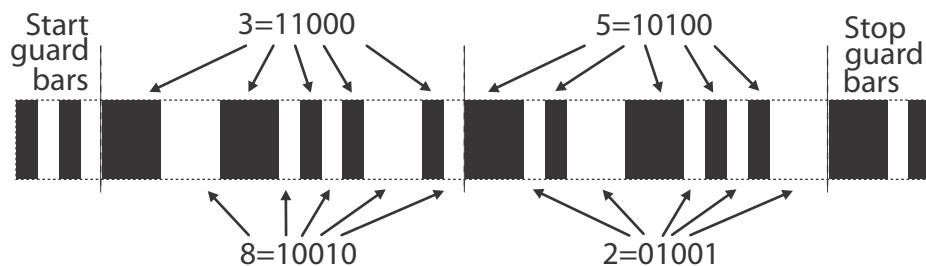


Figure 10 - Sample ITF-14 Start Pattern, two Digit Pairs, and Stop Pattern



3.4.2 ITF-14 Character Module Composition

Use the tables below to determine the module composition of each character..

Symbol Characters.

Value of the digit	Structure
0	0 0 1 1 0
1	1 0 0 0 1
2	0 1 0 0 1
3	1 1 0 0 0
4	0 0 1 0 1
5	1 0 1 0 0
6	0 1 1 0 0
7	0 0 0 1 1
8	1 0 0 1 0
9	0 1 0 1 0

Note: 0 represents a narrow bar and 1 represents a wide bar.

TABLE 10. ITF-14 Human Readable Digit Representations in Bars

Auxiliary Characters

Each ITF-14 Bar Code has two auxiliary characters that each consist of five modules; start pattern, and a stop pattern.

A start pattern comprises:

- one narrow dark bar
- one narrow light bar
- one narrow dark bar, and
- one narrow light bar

A stop pattern comprises:

- one wide dark bar
- one narrow light bar, and
- one narrow dark bar

For a graphical representation of the start and stop patterns see Figure 10 on page 15.

