

National Bureau of Standards Certificate

Standard Reference Materials 1901, 1902, 1903, 1904

Centerline Drawings for Optical Character Recognition-B Characters

These Standard Reference Materials (SRM's) are exact copies of the centerline drawings that uniquely define each printed character shape and size used in constant strokewidth Style B Optical Character Recognition (OCR-B) applications in accordance with one or more of the following standards:

- American National Standard X3.49-1975, Character Set for Optical Character Recognition (OCR-B)
- Federal Information Processing Standards Publication 32-1974, Optical Character Recognition Character Sets
- European Computer Manufacturers Association Standard ECMA-11 for the Alphanumeric Character Set OCR-B for Optical Recognition, 3rd Edition, 1975
- Draft International Standard ISO/DIS 1073111, Alphanumeric Character Sets for Optical Recognition

Although these standards may have different repertoires, those characters that are common among them are identical. In addition these standards contain information on the nominal size, strokewidth, tolerance, and relative position of characters.

At the request of the American National Standards Institute (ANSI) and in support of the Federal Information Processing Standards (FIPS) program, the National Bureau of Standards (NBS) makes available transparent direct positive silver halide photographic reproductions of the master character drawings that are held in repository at NBS. The NBS master character drawings are derived from the print masters of the primary standard character drawings developed and maintained by the European Computer Manufacturers Association (ECMA) in Geneva, Switzerland.

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Office of Standard Reference Materials

Each character centerline representation was designed to have a constant strokewidth. The complete character shape is considered to be the area covered by a circle, with a diameter equal to the character strokewidth, placed with its center upon the centerline and traversed the entire extent of the centerline. This general rule does not always apply near stroke intersections or endings. Character stroke edges are therefore shown near stroke intersections and endings.

The original character centerline drawings were made at a scale of 100 times full size, superimposed upon a 280 mm x 380 mm rectangular grid with 2 mm spacing.¹ The NBS masters and copies are on transparent sheets of 0.1 mm (0.004 in) thick polyester stable base material, approximately 32 cm x 44 cm. Measurements performed at NBS on the grid dimensions of the NBS masters indicate the grid squares are not precisely 2 mm x 2 mm. The NBS masters vary between 99.85:1 and 99.95:1 of full size in each dimension. NBS certifies that the copies supplied in this SRM are between 1.0001:1 and 1.0006:1 of the actual size of each NBS master and are therefore between 99.86:1 and 100.01:1 of full size in each dimension.

The above tolerances in scaling apply only within a controlled environment. Storage and use areas should be maintained at 20° -22 C (68° -72°F) and 48%-52% relative humidity. When changes in relative humidity occur, each sheet should be separated and left flat for a minimum of four hours to ensure that equilibrium between the sheets and their surroundings is achieved. When changes in temperature occur, only several minutes are required to achieve equilibrium.

The box supplied with each SRM is constructed of acid-free fiberboard. Copies supplied in this SRM should be stored flat. Clean cloth gloves, as used in photographic applications, are recommended for handling. Cleaning should be attempted only with a mild film cleaner and soft cloth using light pressure.

¹Reference Drawing Number (RDN) 92 has no background grid and is included for illustrative purposes only.

The standard character drawings contained in each SRM are illustrated below.

SRM 1901
118, Size I, OCR-B characters

0123456789
 ABCDEFGHIJKLM
 NOPQRSTUVWXYZ
 abcdefghijklm
 nopqrstuvwxyz
 *+ = / . , : ; " ' _
 ? ! () < > [] % # & @ ^
 ¢ £ \$ % & ' () * + , - . / : ;
 Ä Å Æ I J Ñ Ö Ø Ù
 à æ ij ø ß ¥
 " ' ^ ~
 { } m _

SRM 1902
93, Size I, OCR-B characters

0123456789
 ABCDEFGHIJKLM
 NOPQRSTUVWXYZ
 abcdefghijklm
 nopqrstuvwxyz
 *+ = / . , : ; " ' _
 ? ! () < > [] % # & @ ^
 ¢ £ \$ ¥ ! \

SRM 1903
21, Size I, OCR-B Characters
and
SRM 1904
21, Size III, OCR-B Characters

0123456789
 CENSTXZ<>+!