

Proposal to encode a Middle Asterisk as referred to in the German standard DIN 2137

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Replaces: L2/17-152

1. Introduction

The Middle Asterisk was proposed in 2017 in L2/17-152 as a character representing the “star” on common telephone keypads, as its vertical position and size does not match the common U+002A ASTERISK, which in fact resembles a “superscript asterisk” in common fonts and uses.

It is intended to match the usual asterisk in its font-specific form (which can differ considerably between fonts), but in size and (especially) vertical position matching the number sign. Thus, the description of the bottom row of a telephone keypad may look like (shown in different fonts):

Arial *0# not *0# – Times New Roman *0# not *0# – Cambria *0# not *0#

This proposal was rejected by UTC #151, arguing that U+002A is appropriate for that purpose.

However, at that time, a revision of the German keyboard standard DIN 2137 was ongoing.

One of the goals was it to allow the direct input of characters needed for good typography, e.g. the en dash, the em dash, and the minus sign besides the usual hyphen-minus.

In doing this, it also was decided to define a key combination for the “telephony star”, to enter an asterisk which looks typographically correct (i.e. matching size and vertical position) when shown as a telephony symbol together with the other characters found on a telephony keypad (the digits and the number sign “#”).

This was the reason for me (as a member of the DIN committee devising the keyboard standard) to submit L2/17-152. The 2018 revision of DIN 2137 explicitly refers to L2/17-152, specifying for key position B07 Group 2 Level 2:

The character is the telephony star (middle asterisk) which matches the character „#“ by position and size (see ITU-T recommendation E.161 and Unicode document L2/17-152). Whenever this character is available as Unicode character, the listed key combination should effect the entering of this character. Otherwise, it must effect the entering of the character U+2217.

As L2/17-152 did not succeed, this text appears almost unchanged in the 2023 revision of DIN 2137 (DIN 2137-01:2023-08; only the last “must” is replaced by “should”).

Now, as implementations of the E1 layout according to that revision start to appear (e. g. in the current “Insider Preview” edition of Microsoft Windows 11), these in fact allow to enter U+2217 ASTERISK OPERATOR by the Extra key specified there (AltGr + f) followed by Shift + m: *.

However, this is not satisfactory. U+2217 is a mathematical character, causing e. g. in the current edition of Microsoft Word to change the font to Cambria Math after inputting *, which continues to be selected for any text entered subsequently until the user get aware of this (which causes a problem especially for touch typists).

Also, as U+2217 is targeted for a specific usage (mathematical typesetting), it is available in special fonts designed for such usage, but not in common fonts like Arial or Times New Roman. Moreover, where the glyphs are contained, they are not really “middle asterisks”:

Cambria Math *0# – Linux Libertine *0#

- ❖ Therefore, before DIN has to recommend font designers to include glyphs for U+2217 which correspond to another objective than the original purpose of U+2217, the UTC is kindly requested to revise its decision from 2017 and to accept this revised proposal.

2. The Middle Asterisk as “telephony star”

The “star” is one of the two symbols which are present on telephony keypads besides the decimal digits (the other one is the number sign “#”).

These two symbols are standardized in the recommendation ITU-T E.161 “*Arrangement of digits, letters and symbols on telephones and other devices that can be used for gaining access to a telephone network*” [1]. Here, the symbols are named “star” and “square”, respectively.

Modern telephone keypad designs show a wide spectrum of glyph forms for both symbols.

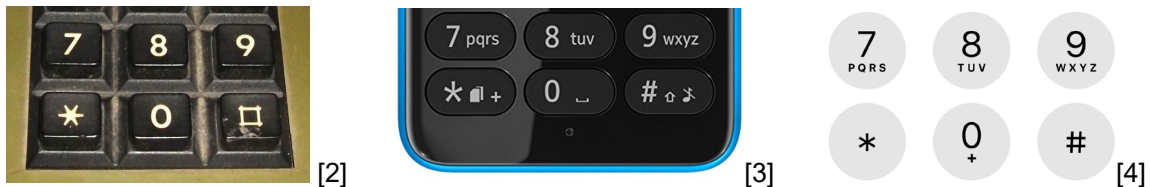


Fig. 1: Telephone keyboards designed 1982, 2013, and 2024, showing different shapes of the star

The “square” usually has the shape of the number sign (some older telephones show a design more similar to U+2317 VIEWDATA SQUARE ▣), and has a height matching the one of the decimal digits. Thus, U+0023 NUMBER SIGN is suited to represent this symbol, due to its similar height.

The “star” has the shape of an asterisk, showing all the glyph variation of modern fonts. Thus, it may have five or six spokes, which may end in points, rectangles or teardrops.

However, it commonly matches the digits and the number sign by size and especially by its vertical position: its center lies on the height of the center of the number sign or below.

The Unicode character U+002A ASTERISK, on the other hand, is usually smaller and elevated. In fact, it is a “superscript asterisk” (suitable for footnote references, birth date marking, and for marking reconstructed or ungrammatical forms in linguistics), as shown in the sample collection:



Fig. 2: U+002A ASTERISK together with an uppercase I (to mark the caps height) using the fonts: Arial, Times New Roman, Calibri, Cambria, Adobe Garamond Pro, Palatino Linotype, DejaVu Sans, DejaVu Serif, Cardo, Andron Mega Corpus, Courier New, Consolas.

This collection also shows the glyphic variation regarding the basic shape (true star with peaks / spoked asterisk / teardrop asterisk) and the peak/spoke count (five / six).

There are circumstances where typographic quality is requested on the character level, e. g. where the minus sign is to be exactly represented by U+2212 MINUS SIGN instead of U+002D HYPHEN-MINUS or U+2013 EN DASH even in running text.

In this case, it can be considered appropriate that the “telephony star” also cannot be represented by an in fact “superscript asterisk”, as U+002A ASTERISK appears in fact in almost any font.

The German keyboard standard DIN 2137 addresses this situation, and therefore it provides a key combination to input a typographically correct “telephony star”, i. e. a “middle asterisk”.

Unicode V15.1 contains no asterisk character which is suited to represent the telephony star in running text in this way (i. e., by matching the design and the vertical position of the number sign, while allowing the glyph variation of U+002A as well as the one of real existing stars of telephony keyboards).

Therefore, a new character MIDDLE ASTERISK is proposed here for this purpose, which can be used for descriptions of the telephone keypad and its functions, as shown in fig. 3 and 4.

Die Taste * dient der Steuerfunktion »Befehl eingeben«, die Taste # gibt den Befehl an die Zentrale »Information abrufen«. Das

Fig. 3: MIDDLE ASTERISK in a book describing the German "Bildschirmtext" service, 1983 [5].

Anrufschutz - Gruppe *28* Gruppennr. # #28* Gruppennr. #
Durchbrechen *60* Nebenstelle #

Fig. 4: MIDDLE ASTERISK in an instruction for use of a phone system, 1999 [6].

While there are several asterisks in Unicode, all of these are too specific to allow the glyphic variation of U+002A ASTERISK and the proposed MIDDLE ASTERISK.

- U+2055 FLOWER PUNCTUATION MARK has to match with the Indic scripts it is designed for (usually it has eight spokes).
- U+2217 ASTERISK OPERATOR has to contrast to U+22C6 STAR OPERATOR and therefore is not able to be represented by star-like glyphs (with true peaks rather than spokes). Also, it is constrained by design requests for mathematical operators.
- The asterisks in the "Dingbat" (2700...27BF) and "Geometric Shapes Extended" (1F780...1F7FF) blocks have specific glyph appearances denoted by their name.

Adding the MIDDLE ASTERISK to Unicode does not implicate any special challenge to font designers. The glyph of U+002A ASTERISK can be reused by only adjusting its vertical position (while providing a somewhat enlarged glyph usually is appropriate).

3. Encoding Considerations

The character is proposed as punctuation mark in the block "Supplemental Punctuation", to keep it in line with the other asterisks which are subject to similar glyphic variation, which all are encoded as punctuation marks:

U+204E LOW ASTERISK
U+2042 ASTERISM
U+2051 TWO ASTERISKS ALIGNED VERTICALLY.

The proposed name indicates its vertical positioning similar to U+00B7 MIDDLE DOT.

4. Proposed Character

Block: Supplemental Punctuation

* U+2E62 MIDDLE ASTERISK
 = "star" on telephone keypads
 → 002A asterisk
 → 00B7 middle dot
 → 204E low asterisk
 → 2217 asterisk operator
 → 273D heavy teardrop-spoked asterisk

Properties:

2E62;MIDDLE ASTERISK;Po;0;ON;;;;;N;;;;;

5. References

- [1] publicly available at <http://www.itu.int/rec/T-REC-E.161-200102-I/en> , current edition: 02/2001
- [2] Detail of the German telephone FeTAp 751, produced 1982 by Siemens for the Deutsche Bundespost (German Federal Mail). Source: <https://commons.wikimedia.org/wiki/File:Detail-Tastatur-FeTAp-751-1982.JPG> – © CC-BY-SA 3.0 by Wikipedia user Rotkaeppchen68
- [3] Detail of Nokia 108 Dual SIM mobile telephone Compact (released Oct 2013). Source: <https://www.amazon.de/Nokia-108-Dual-SIM-Mobiltelefon-Compact/dp/B00GIF5ZQK>
- [4] Part of a screenshot of the dialing panel of an Apple iPhone using iOS 17
- [5] Hans-Peter Förster, *Bildschirmtext*, Humboldt-Taschenbuchverlag München (Munich, Germany) 1983, ISBN 3-581-66457-7, p. 104
- [6] *Bedienungsanleitung Dialog 3210, 3211 und 3212 Systemtelefone* (Instructions for use for telephone models Dialog 3210, 3211, 3212; German), DE/LZT S 102 2552 R A, Ericsson GmbH 1999, p. 89

**ISO/IEC JTC 1/SC 2/WG 2
PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS
FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646¹**

Please fill all the sections A, B and C below.

Please read Principles and Procedures Document (P & P) from <http://www.dkuug.dk/JTC1/SC2/WG2/docs/principles.html> for guidelines and details before filling this form.

Please ensure you are using the latest Form from <http://www.dkuug.dk/JTC1/SC2/WG2/docs/summaryform.html>.

See also <http://www.dkuug.dk/JTC1/SC2/WG2/docs/roadmaps.html> for latest Roadmaps.

A. Administrative

1. Title:	<i>Proposal to encode a Middle Asterisk in the UCS</i>
2. Requester's name:	<i>Karl Pentzlin</i>
3. Requester type (Member body/Liaison/Individual contribution):	<i>Individual (in arrangement with German NB)</i>
4. Submission date:	<i>2024-06-06</i>
5. Requester's reference (if applicable):	<i>Member of the German NB</i>
6. Choose one of the following:	
This is a complete proposal:	<input checked="" type="checkbox"/> Yes
(or) More information will be provided later:	<input type="checkbox"/>

B. Technical – General

1. Choose one of the following:		
a. This proposal is for a new script (set of characters):	<input type="checkbox"/> No	
Proposed name of script:		
b. The proposal is for addition of character(s) to an existing block:	<input checked="" type="checkbox"/> Yes	
Name of the existing block:	<i>Supplemental Punctuation</i>	
2. Number of characters in proposal:	<i>1</i>	
3. Proposed category (select one from below - see section 2.2 of P&P document):		
A-Contemporary <input checked="" type="checkbox"/>	B.1-Specialized (small collection) <input type="checkbox"/>	B.2-Specialized (large collection) <input type="checkbox"/>
C-Major extinct <input type="checkbox"/>	D-Attested extinct <input type="checkbox"/>	E-Minor extinct <input type="checkbox"/>
F-Archaic Hieroglyphic or Ideographic <input type="checkbox"/>	G-Obscure or questionable usage symbols <input type="checkbox"/>	
4. Is a repertoire including character names provided?	<input checked="" type="checkbox"/> Yes	
a. If YES, are the names in accordance with the “character naming guidelines” in Annex L of P&P document?	<input checked="" type="checkbox"/> Yes	
b. Are the character shapes attached in a legible form suitable for review?	<input checked="" type="checkbox"/> Yes	
5. Fonts related:		
a. Who will provide the appropriate computerized font to the Project Editor of 10646 for publishing the standard?	<i>n/a (the proposed symbol is a positional variant in a row of already encoded characters)</i>	
b. Identify the party granting a license for use of the font by the editors (include address, e-mail, ftp-site, etc.):		
6. References:		
a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided?	<input checked="" type="checkbox"/> Yes	
b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached?	<input checked="" type="checkbox"/> Yes	
7. Special encoding issues:		
Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transliteration etc. (if yes please enclose information)?	<input type="checkbox"/> no	

8. Additional Information:

Submitters are invited to provide any additional information about Properties of the proposed Character(s) or Script that will assist in correct understanding of and correct linguistic processing of the proposed character(s) or script. Examples of such properties are: Casing information, Numeric information, Currency information, Display behaviour information such as line breaks, widths etc., Combining behaviour, Spacing behaviour, Directional behaviour, Default Collation behaviour, relevance in Mark Up contexts, Compatibility equivalence and other Unicode normalization related information. See the Unicode standard at <http://www.unicode.org> for such information on other scripts. Also see Unicode Character Database (<http://www.unicode.org/reports/tr44/>) and associated Unicode Technical Reports for information needed for consideration by the Unicode Technical Committee for inclusion in the Unicode Standard.

¹ Form number: N3902-F (Original 1994-10-14; Revised 1995-01, 1995-04, 1996-04, 1996-08, 1999-03, 2001-05, 2001-09, 2003-11, 2005-01, 2005-09, 2005-10, 2007-03, 2008-05, 2009-11, 2011-03)

C. Technical - Justification

1. Has this proposal for addition of character(s) been submitted before? If YES explain	<i>The necessity is explained in this version in more detail</i>	Yes
2. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)? If YES, with whom? If YES, available relevant documents:	<i>German NB responsible for keyboards</i> <i>see text</i>	Yes
3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included? Reference:	<i>All users of telephone keypad descriptions</i>	Yes
4. The context of use for the proposed characters (type of use; common or rare) Reference:	<i>All users of telephone keyboards</i> <i>see text</i>	
5. Are the proposed characters in current use by the user community? If YES, where? Reference:	<i>see text</i>	Yes
6. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP? If YES, is a rationale provided? If YES, reference:	<i>1.) To overcome special restrictions of the current Microsoft keyboard driver model.</i> <i>2.) To keep them in line with similar characters</i>	Yes Yes
7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)?		n/a
8. Can any of the proposed characters be considered a presentation form of an existing character or character sequence? If YES, is a rationale for its inclusion provided? If YES, reference:		No
9. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters? If YES, is a rationale for its inclusion provided? If YES, reference:		No
10. Can any of the proposed character(s) be considered to be similar (in appearance or function) to an existing character? If YES, is a rationale for its inclusion provided? If YES, reference:		No
11. Does the proposal include use of combining characters and/or use of composite sequences? If YES, is a rationale for such use provided? If YES, reference: Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided? If YES, reference:		No
12. Does the proposal contain characters with any special properties such as control function or similar semantics? If YES, describe in detail (include attachment if necessary)		No
13. Does the proposal contain any Ideographic compatibility characters? If YES, are the equivalent corresponding unified ideographic characters identified? If YES, reference:		No