

# Universal Multiple-Octet Coded Character Set (UCS)

ISO/IEC JTC 1/SC 2 N 3861  
ISO/IEC JTC 1/SC 2/WG 2 N 3104  
Date: 2006-04-27

**Source:** WG 2 meeting 48,  
Microsoft Campus, Mountain View, CA, USA; 2006-04-24/27  
**Title:** Resolutions of WG 2 meeting 48  
**Action:** For approval by SC 2 and for information to WG 2  
**Status:** Adopted at meeting 48 of WG 2  
**Distribution:** ISO/IEC JTC 1/SC 2 and WG 2

Experts from Canada, Finland, Ireland, Japan, Korea (Republic of), Poland, Taipei Computer Association (Liaison), the Unicode Consortium (Liaison) and the USA were present when the following resolutions were adopted (see attached attendance list).

*Character count 99016 (till end of Amd. 2)  
+ PDAM3 had 517 additions = 99533*

## RESOLUTION M48.1 (Latin phonetic and orthographic characters from M47):

**Unanimous**

With reference to documents N2945 on additional Latin phonetic and orthographic characters, WG2 accepts the following seven (7) Latin characters and five (5) Modifier Tone Letters, with their glyphs that are similar to those shown in document N2945, for inclusion in Amendment 3 to the standard:

2C6D LATIN CAPITAL LETTER ALPHA  
2C6E LATIN CAPITAL LETTER M WITH HOOK  
2C6F LATIN LETTER TRESILLO  
2C70 LATIN LETTER CUATRILLO  
(Note: the above two characters have been subsequently replaced in M48; see resolution M48.2)  
2C71 LATIN SMALL LETTER V WITH RIGHT HOOK  
2C72 LATIN CAPITAL LETTER W WITH HOOK  
2C73 LATIN SMALL LETTER W WITH HOOK  
in the Latin Extended-C block, and  
A71B MODIFIER LETTER RAISED UP ARROW  
A71C MODIFIER LETTER RAISED DOWN ARROW  
A71D MODIFIER LETTER RAISED EXCLAMATION MARK  
A71E MODIFIER LETTER RAISED INVERTED EXCLAMATION MARK  
A71F MODIFIER LETTER LOW INVERTED EXCLAMATION MARK  
in the Modifier Tone Letters block.

*(already included) 99533*

## RESOLUTION M48.2 (Changes to Mayanist characters):

**Unanimous**

With reference to document N3082, and in response to PDAM3 ballot comments in document N3071 from Ireland, UK and USA, regarding Mayanist characters, WG2 accepts the following:

- a. Add two new characters to the Latin Extended-D block:  
A726 LATIN CAPITAL LETTER HENG  
A727 LATIN SMALL LETTER HENG  
with their glyphs that are similar to those shown in document N3082.
- b. Replace the following two (2) caseless characters in Latin Extended-C block:  
2C6F LATIN LETTER TRESILLO  
2C70 LATIN LETTER CUATRILLO  
with the following eight (8) case-paired characters in Latin Extended-D block:  
A728 LATIN CAPITAL LETTER TZ  
A729 LATIN SMALL LETTER TZ  
A72A LATIN CAPITAL LETTER TRESILLO  
A72B LATIN SMALL LETTER TRESILLO

A72C LATIN CAPITAL LETTER CUATRILLO  
A72D LATIN SMALL LETTER CUATRILLO  
A72E LATIN CAPITAL LETTER CUATRILLO WITH COMMA  
A72F LATIN SMALL LETTER CUATRILLO WITH COMMA  
with their glyphs that are similar to those shown in document N3082.

99533+8=99541

**RESOLUTION M48.3 (Changes to Vai script):**

**Unanimous**

With reference to document N3081 and Irish PDAM3 ballot comment T.3 in document N3071, WG2 accepts to replace the existing Vai block with the charts and names lists as shown in document N3059, which include the following changes:

- a. extending the Vai block by 1 column to end at A62F
- b. addition of the following fourteen (14) characters to the Vai block:  
Ten Vai Digits - Zero through Nine and Four new Vai syllables EEN, IN, OON and UN.

99541+14=99555

**RESOLUTION M48.4 (Change name of one Saurashtra character):**

**Unanimous**

With reference to document N3058 and Irish PDAM3 ballot comment T.4 in document N3071, WG2 accepts to change the name of A8B4 in the Saurashtra block:

from SAURASHTRA LETTER UPAKSHARA  
to SAURASHTRA CONSONANT SIGN HAARU.

**RESOLUTION M48.5 (PDAM3 Disposition of Comments):**

**Unanimous**

WG2 accepts the disposition of comments on PDAM3 ballot in document N3098 and instructs its editor to prepare the final text of Amendment 3 incorporating the dispositions. The following are noted in particular:

- a. Changes noted in resolution on 'changes to Mayanist characters'
- b. Changes noted in resolution on 'changes to Vai script'
- c. Correct the shape of new A555 VAI SYLLABLE KPAN
- d. Change noted in resolution on 'change name of one Saurashtra character'

**RESOLUTION M48.6 (Lycian script):**

**Unanimous**

WG2 resolves to encode the Lycian script proposed in document N3019 in a new block 10280 -1029F in the SMP, named 'Lycian', and populate it with twenty nine (29) characters with the names, glyphs and code position assignments as shown on pages 10 and 11 in document N3019.

99555+29=99584

**RESOLUTION M48.7 (Lydian script):**

**Unanimous**

WG2 resolves to encode the Right-to-Left Lydian script proposed in document N3019 in a new block 10920 -1093F in the SMP, named 'Lydian', and populate it with twenty seven (27) characters with the names, glyphs and code position assignments as shown on pages 12 and 13 in document N3019.

99584+27=99611

**RESOLUTION M48.8 (Carian script):**

**Unanimous**

WG2 resolves to encode the Carian script proposed in document N3020 in a new block 102A0 -102DF in the SMP, named 'Carian', and populate it with forty nine (49) characters with the names, glyphs and code position assignments as shown on pages 12 and 13 in document N3020.

99611+49=99660

**RESOLUTION M48.9 (Sundanese script):****Unanimous**

WG2 resolves to encode the Sundanese script proposed in document N3022 in a new block 1B80 -1BBF in the BMP, named 'Sundanese', and populate it with fifty five (55) characters (some of which are combining) with the names, glyphs and code position assignments as shown on pages 7 and 8 in document N3022.

**99660+55=99715****RESOLUTION M48.10 (Rejang script):****Unanimous**

WG2 resolves to encode the Rejang script proposed in document N3096 in a new block A930 -A95F in the BMP, named 'Rejang', in a future amendment to the standard, and populate it with thirty seven (37) characters (some of which are combining) with the names (without the annotations), glyphs and code position assignments as shown on pages 5 and 6 in document N3096.

**99715+37=99752****RESOLUTION M48.11 (Kayah Li script):****Unanimous**

WG2 resolves to encode the Kayah Li script proposed in document N3038 in a new block A900 -A92F in the BMP, named 'Kayah Li', and populate it with forty eight (48) characters (some of which are combining) with the names, glyphs and code position assignments as shown on pages 7 and 8 in document N3038.

**99752+48=99800****RESOLUTION M48.12 (CJK Strokes):****Unanimous**

With reference to document N3063, WG2 accepts to encode twenty (20) additional characters in code positions 31D0 to 31E3 in the CJK Strokes block, with names, glyphs and code position assignments as shown on page 2 of document N3063.

**99800+20=99820****RESOLUTION M48.13 (Phaistos disc symbols):****Unanimous**

WG2 resolves to encode the Phaistos disc symbols proposed in document N3066 in a new block 101D0 - 101FF in the SMP, named 'Phaistos Disc', and populate it with forty six (46) characters (one of which is combining) with the names, glyphs and code position assignments as shown on pages 14 and 15 (excluding two characters at 101FE and 101FF) in document N3066.

**99820+46=99866****RESOLUTION M48.14 (108 Medievalist characters):****Unanimous**

With reference to document N3027, WG2 accepts to encode the following in the standard:

- a. Twenty six (26) characters in the Combining Diacritical Marks Supplement block from pages 52 and 53 (excluding 1DE4)
- b. Nine (9) characters in the Latin Extended Additional block from pages 54 and 55; with the name change for 1E9F to LATIN SMALL LETTER DELTA
- c. Seventy three (73) characters in the Latin Extended-D block from pages 58 and 59 (excluding A761 to A766)

The final glyphs, names and code position assignments are reflected in the charts in document N3059.

**99866+108=99974**

**RESOLUTION M48.15 (7 Myanmar additions):**

**Unanimous**

With reference to documents N3043 and N3099, WG2 accepts the following changes in the Myanmar block:

Add the following seven (7) characters:

102B MYANMAR VOWEL SIGN TALL AA

103A MYANMAR SIGN ASAT

103B MYANMAR CONSONANT SIGN MEDIAL YA

103C MYANMAR CONSONANT SIGN MEDIAL RA

103D MYANMAR CONSONANT SIGN MEDIAL WA

103E MYANMAR CONSONANT SIGN MEDIAL HA

103F MYANMAR LETTER GREAT SA

with their glyphs that are similar to those shown in document N3043.

Change the glyphs for the following:

104E MYANMAR SYMBOL AFOREMENTIONED

1039 MYANMAR SIGN VIRAMA

to the glyphs that are similar to those shown in document N3043.

99974+7=99981

**RESOLUTION M48.16 (14 Myanmar characters for Mon and S'gaw Karen):**

**Unanimous**

WG2 accepts to encode in the Myanmar block the fourteen (14) characters, some of which are combining, with their glyphs that are similar to those shown in document N3044:

1028 MYANMAR LETTER MON E

1033 MYANMAR VOWEL SIGN MON II

1034 MYANMAR VOWEL SIGN MON O

105A MYANMAR LETTER MON NGA

105B MYANMAR LETTER MON JHA

105C MYANMAR LETTER MON BBA

105D MYANMAR LETTER MON BBE

105E MYANMAR CONSONANT SIGN MON MEDIAL NA

105F MYANMAR CONSONANT SIGN MON MEDIAL MA

1060 MYANMAR CONSONANT SIGN MON MEDIAL LA

1061 MYANMAR LETTER SGAW KAREN SHA

1062 MYANMAR LETTER SGAW KAREN EU

1063 MYANMAR TONE MARK SGAW KAREN HATHI

1064 MYANMAR TONE MARK SGAW KAREN KE PHO

99981+14=99995

**RESOLUTION M48.17 (2 combining marks for Lithuanian phonetics):**

**Unanimous**

With reference to document N3048, WG2 accepts the following two (2) combining marks in the Combining Diacritics Supplement block:

1DCB COMBINING BREVE-MACRON

1DCC COMBINING MACRON-BREVE

with their glyphs that are similar to those shown in document N3048; both are combining characters.

99995+2=99997

**RESOLUTION M48.18 (4 Malayalam characters):****Unanimous**

With reference to document N3015, WG2 accepts the following four (4) additional Malayalam characters, with their glyphs that are similar to those shown in document N3015 to encode in the Malayalam block:

0D44 MALAYALAM VOWEL SIGN VOCALIC RR  
0D62 MALAYALAM VOWEL SIGN VOCALIC L  
0D3D MALAYALAM PRASLESHAM (avagraha)  
0D79 MALAYALAM DATE MARK

**99997+4=100001****RESOLUTION M48.19 (3 Uralic Phonetic characters):****Unanimous**

With reference to document N3070, WG2 accepts the following three (3) characters in the Latin Extended-C block:

2C7B LATIN LETTER SMALL CAPITAL TURNED E  
2C7C LATIN SUBSCRIPT SMALL LETTER J  
2C7D MODIFIER LETTER CAPITAL V

with their glyphs that are similar to those shown in document N3070.

**100001+3=100004****RESOLUTION M48.20 (4 Tibetan characters):****Unanimous**

WG2 accepts the following four Tibetan characters to encode in the Tibetan block:

- a. 0FCE TIBETAN SIGN RDEL NAG RDEL DKAR  
with its glyph similar to that shown in document N3011
- b. 0FD2 TIBETAN MARK NYIS TSHEG  
with its glyph similar to that shown in document N3032, and,
- c. 0FD3 TIBETAN MARK INITIAL BRDA RNYING YIG MGO MDUN MA  
0FD4 TIBETAN MARK CLOSING BRDA RNYING YIG MGO SGAB MA  
with their glyphs that are similar to those shown in document N3033,

**100004+4=100008****RESOLUTION M48.21 (3 Phonetic characters for Swedish dialects in Finland):****Unanimous**

With reference to document N3031, WG2 accepts the following three (3) characters to the Latin Extended-C block::

2C78 LATIN SMALL LETTER E WITH TAIL  
2C79 LATIN SMALL LETTER TURNED R WITH TAIL  
2C7A LATIN SMALL LETTER O WITH LOW RING INSIDE (changed name)  
with their glyphs that are similar to that shown in document N3031.

**100008+3=100011****RESOLUTION M48.22 (2 Mathematical Brackets):****Unanimous**

With reference to document N3040, WG2 accepts the following two (2) characters in the Miscellaneous Mathematical Symbols-A block:

27EC MATHEMATICAL LEFT WHITE TORTOISE SHELL BRACKET  
27ED MATHEMATICAL RIGHT WHITE TORTOISE SHELL BRACKET  
with their glyphs that are similar to those shown in document N3040.

**100011+2=100013****RESOLUTION M48.23 (1 Mongolian character):****Unanimous**

With reference to document N3041, WG2 accepts the following character in the Mongolian block:

18AA MONGOLIAN LETTER MANCHU ALI GALI LHA  
with its glyph similar to that shown in document N3041.

**100013+1=100014**

**RESOLUTION M48.24 (4 Latin Egyptological characters):****Unanimous**

With reference to document N2241 and item 4 in document N3045, WG2 accepts the following four (4) characters to the Latin Extended-D block:

A722 LATIN CAPITAL LETTER EGYPTOLOGICAL ALEF

A723 LATIN SMALL LETTER EGYPTOLOGICAL ALEF

A724 LATIN CAPITAL LETTER EGYPTOLOGICAL AIN

A725 LATIN SMALL LETTER EGYPTOLOGICAL AIN

with their glyphs that are similar to those shown in document N2241.

100014+4=100018

**RESOLUTION M48.25 (2 Gurmukhi characters):****Unanimous**

WG2 accepts the following two (2) Gurmukhi characters for encoding in the Gurmukhi block:

a. 0A51 GURMUKHI SIGN UDAAT

with its glyph similar to that shown in document N3021

b. 0A75 GURMUKHI SIGN YAKASH

with its glyph similar to that shown in document N3073; this is a combining character.

100018+2=100020

**RESOLUTION M48.26 (Named sequences for Lithuanian):****Unanimous**

With reference to document N3090, WG2 accepts the named sequences for composite characters for Lithuanian repertoire identified in the table in Addendum II less the following:

Entry 14, which is already encoded as LATIN SMALL LETTER I WITH DOT ABOVE AND ACUTE, 0069 0307 0301 (identical to the requested sequence) in clause 29 Amendment 2 to the standard.

WG2 further instructs its project editor to add text to the standard to clarify the rules for adding and naming Named Sequences, with particular attention to those resulting in canonically equivalent composed characters.

**RESOLUTION M48.27 (Extended Collections):****Abstention: Japan****Approval: Canada, Finland, Ireland, Korea (Republic of), Poland and the USA**

WG2 accepts the definition of 'Extended Collection' given in document N3105 for inclusion in the standard.

**RESOLUTION M48.28 (Lithuanian Extended Collection):****Unanimous**

WG2 accepts the inclusion in the standard of an extended collection named 'Contemporary Lithuanian Letters', an extended collection of standalone characters and named sequences, corresponding to the repertoire shown in Addendum I in document N3090.

**RESOLUTION M48.29 (5 collections corresponding to Japanese standards):****Unanimous**

With reference to the five requested collections in document N3091, WG2 accepts to define five new collections in the standard based on information provided in attachment (N3091-A) to document N3091.

**RESOLUTION M48.30 (Hangul clarification):****Unanimous**

WG2 accepts removing the word 'character' (that occurs three times in the parenthetical notations in the first paragraph) in clause 26.1 in the standard.

**RESOLUTION M48.31 (Model for Hangul Jamos):****Unanimous**

Republic of Korea is invited to prepare a document on 'a new model for using Hangul Jamos' and send to the convener no later than 2006-07-15, for distribution to and review by WG2 experts.

**RESOLUTION M48.32 (Ideographic Variation Database):****Unanimous**

WG2 accepts the proposed replacement of two paragraphs in clause 20.4 with three new paragraphs and one normative reference to UTS #37, as detailed in document N3035, in order to include by reference the Variation Sequences defined in the Ideographic Variation Database in that standard.

**RESOLUTION M48.33 (Information on control characters):****Unanimous**

With reference to document N3046 and to item a regarding control characters in ITU-T SG17 request document N3013, WG2 resolves to add to the standard:

- a. normative definitions for relevant terms related to control characters and control functions
- b. an informative annex showing the default content of 0000 to 001F, 007F, and 0080 to 009F blocks and charts similar to those published in the Unicode Standard, and names in the form of annotations - "(control) (long name from ISO/IEC 6429)".

WG2 further instructs its project editor to prepare appropriate text including the feedback from the discussion on document N3059 at meeting 48.

**RESOLUTION M48.34 (Additions of UTF-16BE and other forms):****Unanimous**

WG2 accepts the request from ITU-T SG17 in document N3013, item b, to add explicit text for UTF-16BE and other similar forms, and instructs its editor to prepare appropriate text for inclusion in the standard.

**RESOLUTION M48.35 (Updating collection 307 definition):****Unanimous**

WG2 accepts updating definition of collection '307 Unicode 5.0' to include the four Devanagari characters 097B, 097C, 097E and 097F (encoded in Amendment 3) to correspond to the repertoire of Unicode 5.0.

**RESOLUTION M48.36 (Annotations for 4 Lao characters):****Unanimous**

With reference to item 6 in document N3045 WG2 accepts to add annotations for the following four (4) characters in the Lao block:

- 0E9D LAO LETTER FO TAM (fo fon)
- 0E9F LAO LETTER FO SUNG (fo fay)
- 0EA3 LAO LETTER LO LING (ro)
- 0EA5 LAO LETTER LO LOOT (lo).

**RESOLUTION M48.37 (Progression of Amendment 3):****Unanimous**

WG2 resolves to include all the items accepted for inclusion in the standard noted in the various resolutions above along with the changes arising out of the disposition of comments into Amendment 3. WG2 instructs its project editor to prepare the revised text of Amendment 3 and forward it along with the disposition of comments document N3098 to the SC2 secretariat for a second PDAM ballot. The final set of charts and names lists are in document N3059. The schedule for this work item is revised accordingly to: PDAM 2006-05-31, FPDAM 2006-10-31, and FDAM 2007-05 (starting dates are given).

**RESOLUTION M48.38 (Request from ITU-T SG17):****Unanimous**

WG2 has reviewed the document N3013 from ITU-T SG17 and has the following responses for SC2 to consider:

1. ITU-T should be discouraged from the proposed common-text approach and pursue referencing ISO/IEC 10646, similar to what ITU-T has done with other SC2 standards in the past; for example, a normative reference can be added to recommendation such as T.51.
2. As to their requests a through f:
  - item a: ISO/IEC 10646 already references ISO/IEC 6429 in a normative way. Further new text will be added to the standard to facilitate ease of reference of the control characters from ISO/IEC 10646.

- item b: New text will be added to clarify explicitly the definitions of terms such as UTF-16BE in the standard.
- items c, d and e: We need further clarification on the nature of the request from ITU-T SG17. WG2 requests SC2 to invite ITU-T representatives to participate in the next WG2 meeting. The project editor will review these items and draft appropriate text for discussion at the next WG2 meeting.
- item f: WG2 agrees with ITU-T SG17 that there are trademark issues and we are not in favour of changing the expansion of the term UCS.

3. WG2 nominates its convener Mr. Mike Ksar to be the liaison representative to ITU-T and requests SC2 to approve this nomination, and to prepare a liaison statement communicating SC2's response in more detail, along with a reference to document N3057 regarding the Unicode Consortium's status as an ARO.

**RESOLUTION M48.39 (CJK Ext C1):**

**Unanimous**

WG2 takes note of item 3 in document N3064, in particular that CJK Ext C1 repertoire is expected to be finalized at IRG meeting 26 in June 2006, and accepts the delay in its submission for WG2 consideration at its next meeting.

**RESOLUTION M48.40 (CJK comments on FDAM1):**

**Unanimous**

WG2 instructs the IRG to review and prepare a response to the various issues raised regarding CJK Unified Ideographs in the FDAM1 ballot response in document SC2 N3814.

**RESOLUTION M48.41 (IRG rapporteur):**

**By Acclamation**

WG2 nominates Dr. Lu Qin as the IRG Rapporteur for one more term, and requests SC2 to approve this appointment.

**RESOLUTION M48.42 (Future meetings):**

**Unanimous**

WG 2 meetings:

- Meeting 49 – 2006-09-25/29, Tokyo, Japan
- Meeting 50 – 2007-04-16/20, Frankfurt, Germany
- Meeting 51 - Fall 2007 - Japan or Hong Kong or Taipei to be confirmed)
- Meeting 52 - April 2008, Republic of Korea (to be confirmed)

IRG meeting:

- IRG #26 - 2006-06-5/9, Hue, Vietnam
- IRG #27 - 2006-11-27/12-01, Taipei (host: TCA)
- IRG #28 - 2007 May / June, Hangzhou, China (to be confirmed)
- IRG#29 - 2007 November, San Jose, California, USA (host Adobe).

**RESOLUTION M48.43 (Roadmap snapshot):**

**Unanimous**

WG2 instructs its convener to post an updated snapshot of the roadmaps (in document N3005) to the WG2 web site.

**RESOLUTION M48.44 (Liaison request from UC Berkeley):**

**Unanimous**

WG2 requests SC2 to accept the liaison request from UC Berkeley in document N3068.

**RESOLUTION M48.45 (Appreciation to DKUUG for web site support):**

**By Acclamation**

WG 2 thanks DKUUG and its staff, in particular Mr. Kristen Nielsen, for its continued support of the web site for WG 2 document distribution and the e-mail server.



**RESOLUTION M48.46 (Appreciation to Host):**

**By Acclamation**

WG 2 thanks the US national body, Microsoft Corporation and its staff, and the Unicode Consortium and its staff, in particular Ms. Magda Danish, for hosting the meeting, their kind hospitality, and for providing excellent meeting facilities.

### Meeting 48 Attendance List

JTC1/SC2/WG2 Meeting 48, Microsoft Campus, Mountain View, CA, USA; 2006-04-24/27

The following **25** delegates representing **6** national bodies, **2** liaison organizations, SC2 secretariat and **1** guest organization were present at different times during the meeting.

Name	Representing	Affiliation
Alain LaBonté	Canada Editor 14651	Ministère des services gouvernementaux du Québec
V. S. (Uma) Umamaheswaran	Canada; Recording Secretary	IBM Canada Ltd.
Erkki I. Kolehmainen	Finland	Research Institute for the Languages of Finland
U Thein OO	Guest (Myanmar)	Myanmar Computer Federation
Zaw HTUT	Guest (Myanmar)	Myanmar Computer Federation
Michael Everson	Ireland; Contributing Editor	Evertype
Qin LU	IRG Rapporteur	Hong Kong Polytechnic University
Kazuhito OHMAKI	Japan	National Institute of Advanced Industrial Science and Technology
Yasuhiro ANAN	Japan	Microsoft Japan
KIM Hanbitnari	Korea (Republic of)	Korean Language Society
KIM Kyongsok	Korea (Republic of)	Pusan National University
Dae Hyuk AHN	Korea (Republic of)	Microsoft Korea
Elżbieta Broma-Wrzesień	Poland	Telekomunikacja Polska, Poland
Tatsuo KOBAYASHI	SC2 Chair, Japan	Justsystem Corporation
Toshiko KIMURA	SC2 Secretariat	IPSJ/ITSCJ
TSENG Shih-Shyeng	TCA	Academia Sinica
WEI Lin-Mei	TCA	Chinese Foundation Of Digitization Technology
Ienup Sung	USA	Sun Microsystems
Deborah Anderson	USA	University Of California At Berkeley
Lisa Moore	USA	IBM Corporation
Eric Muller	USA	Adobe, Inc.
Asmus Freytag	USA Liaison - The Unicode Consortium; Contributing Editor	Unicode Inc.
Ken Whistler	USA; Contributing Editor	Sybase Inc.
Mike Ksar	USA; Convener	Microsoft Corporation
Michel Suignard	USA; Project Editor	Microsoft Corporation