

# EUCLIDES

## UB POLYTonic GREEK KEYBOARD

v. 1.0 – V/2006

User's manual



Copyright: 2005

© Electra GCID UB,  
UB Greek Philology Dept.,  
UB Applied Mathematics and Analysis Dept.  
Francesc Sebastià Martínez

# Contents

- 1. INTRODUCTION..... 5**
  - 1.1. EUCLIDES POLYTONIC GREEK ..... 5
  - 1.2. ELECTRA GCID..... 5
  - 1.3. DEVELOPMENT ..... 8
  - 1.4. MINIMUM REQUIREMENTS ..... 8
  - 1.5. ACKNOWLEDGEMENTS ..... 8
- 2. OPERATION ..... 9**
  - 2.1. ACTIVATING AND DEACTIVATING EUCLIDES POLYTONIC GREEK ..... 9
  - 2.2. COMPLETING THE EXECUTION OF EUCLIDES POLYTONIC GREEK ..... 9
  - 2.3. OTHER OPTIONS..... 10
  - 2.4. ENTERING GREEK CHARACTERS ..... 11
- 3. SYMBOLS..... 13**
  - 3.1. DIACRITICS..... 13
    - 3.1.1. *Accents*..... 13
    - 3.1.2. *Modern Greek (monotonic) accent*..... 13
    - 3.1.3. *Breathings*..... 13
    - 3.1.4. *Iota subscript/adscript*..... 13
    - 3.1.5. *Other symbols*..... 13
  - 3.2. PUNCTUATION ..... 14
  - 3.3. QUANTITY AND EDITING OF TEXTS ..... 14
  - 3.4. OTHER..... 14
- 4. LETTERS ..... 15**
  - 4.1. ALPHABET ..... 15
  - 4.2. ARCHAIC ..... 16
- APPENDICES ..... 17**
  - A. MAPPING..... 17**
    - A.1 COMPLETE MAPPING..... 17
    - A.2 UNMAPPED LETTERS/SIGNS ..... 27
  - B. QUICK REFERENCE..... 28**



# 1. Introduction

## 1.1. *Euclides Polytonic Greek*

**Euclides Polytonic Greek** is a Polytonic Greek keyboard controller for Windows 32-bit systems. This aim of this software program is to make it easier to use the polytonic Greek script (classical Greek) in Windows applications.

Until recently, working with the polytonic Greek script was time-consuming and impractical, due to the API limitations of the Windows systems keyboard. Several steps were necessary in order to enter any complex letter (that is, one containing two or more diacritics), and users had to know a large number of keys by heart. To overcome these difficulties and to make it easier for the community as a whole to use the script, the Electra Consolidated Teaching Innovation Group at the UB undertook the development of the **Euclides Polytonic Greek** software.

## 1.2. *Electra GCID*

The Electra Consolidated Teaching Innovation Group (GCID) at the University of Barcelona was established in May 2000 as a Teaching Innovation Group. It was accredited as a Consolidated Teaching Innovation Group in December 2003 and in September 2004 it was awarded the Jaume Vicens Vives prize by the Autonomous Regional Government of Catalonia "in recognition of its work in the field of innovation in teaching methodology, in the production of new teaching and learning methods and in the development of teaching materials for the improvement of the academic performance of students" (Official Bulletin of the Autonomous Regional Government of Catalonia no. 4225-23.09.2004). It currently comprises eight members of the teaching staff from the Greek Department at the University of Barcelona's Faculty of Philology, six tenured lecturers, a full-time assistant lecturer, a research assistant, two co-workers and a professor, who is the head of the project. These are:

Mrs. Júlia Alquézar Solsona, co-worker

Dr. Montserrat Camps Gaset, tenured lecturer

Dr. Maria Teresa Clavo Sebastián, tenured lecturer

Dr. Pau Gilabert Barberà, tenured lecturer

Dr. Pilar Gómez Cardó, tenured lecturer

Mr. Lluís González Julià, co-worker

Dr. Ernest Marcos Hierro, tenured lecturer

Dr. Francesca Mestre Roca, tenured lecturer

Dr. Natalia Palomar Pérez, full-time assistant lecturer

Mr. Samuel Sais Borràs, research assistant

Dr. Eulàlia Vintró Castells, Professor

The Electra GCID was formed in response to the need to adapt the contents of the first-cycle courses in Greek in the Classics degree. It had become increasingly clear that the knowledge of Greek among first year students varied widely; indeed, some students join our courses without ever having studied the language. The teaching of the Classical Languages, Latin and Greek - and to a lesser extent, of the cultures of Greece and Rome - has lost ground both in compulsory higher secondary education and in the courses studied at what used to be the Faculty of Philosophy and Arts. Indeed, whereas just a few years ago five years of Latin were taught in secondary education, including the pre-university course or a university orientation course and three years of Greek, now only two compulsory Classical Culture credits are taught in secondary schools, and those who study the Humanities stream in the two years prior to University entrance have only two compulsory years of Latin and two optional years of Greek. If we add the fact that the Philology degree now lasts four instead of five academic years, courses must now compress language studies that were previously taught over eight or eleven years - three or six years before university and five at university - into four academic years at university. However, the legacy of the Greco-Latin classics has not changed and the standards expected of students on completing their studies are the same as before; they must have a thorough knowledge of Greco-Roman antiquity based on the reading and interpretation of the original Greek or Latin texts.

The Electra GCID set out to restructure the programs of our first cycle teaching which had remained largely unchanged for the last thirty years. The group has introduced features that have produced good results in modern language learning, and has also exploited the opportunities provided by information and knowledge technologies.

With the introduction of the ECTS credit transfer system in compulsory first-cycle courses, course organisation now makes a distinction between classroom hours, guided study, self-study and assessment. In this setting the implementation of ICTs in texts, interactive grammar files and self-assessment exercises means that guided

study and even self-study can now be incorporated in the organisation and scheduling of students' work.

To create and select the self-assessment exercises in which students use Greek script we chose the new UTF-8 encoding (Unicode), as the other options presented serious difficulties (for example, the order in which characters with diacritics are typed may determine whether or not the response is correct, and it is impossible to alternate between Latin and Greek characters). There was also the technical difficulty of writing fluently in polytonic Greek (in the same way as in Latin, that is, without the need to memorise many combinations) and it was apparent that the tools available on the Internet are not fully functional, especially in the case of Spanish keyboards. For all these reasons we had to develop a program that would allow teaching staff creating materials and students carrying out the online exercises to write fluently in polytonic Greek.

Though our financial resources were limited, thanks to the Jaume Vicens Vives Prize (worth 20,000€) we were able to consult teachers at the Department of Applied Mathematics and Analysis of the UB's Faculty of Mathematics about the difficulties facing the project and to ask them to design a tailor-made program. Work began in early July 2005, and after the program's design phase and a trial period with various beta versions, the Electra GCID made the "Euclides GP" Polytonic Greek Keyboard available to the public in December 2005.

We named the program *Euclides* (in English, "Euclid") to honour two figures from Ancient Greece who each in their own way have a link with the project. The first was the greatest mathematician of the Ancient world (c. 300 B.C.), and the author of the treatise *Elements of geometry*. He probably studied in Athens, with the followers of Plato, and founded a mathematics school in Alexandria. The *Elements* has been used as a textbook for 2000 years, and even today, with slight changes, the work the basis for text books in plane geometry. The other Euclid is perhaps less well known. He was the first chief magistrate of Athens after the fall of the thirty-year tyranny of Peisistratos at the end of the Peloponnesian war. He decreed the official change of the Athenian alphabet to the Ionic alphabet of Miletus, which had also been used in Athens in the two previous decades. Because of the cultural influence of Athens, this form of the alphabet was eventually adopted throughout Greece.

From both mathematical and philological perspectives, then, *Euclides* is an appropriate name for this new tool.

### **1.3. Development**

This software was developed by Dr. Jesús Cerquides (Department of Applied Mathematics and Analysis, University of Barcelona) and Mr. Francesc Sebastià, in co-operation and under the supervision of the **Electra GCID**. To allow the entire community to use the product, the **Electra GCID** has decided to make it available under a GPL license (GNU General Public License), i.e. to make it freeware.

### **1.4. Minimum requirements**

The minimum requirements for executing **Euclides Polytonic Greek** are:

- A computer with a Windows 2000 system or later: Windows 2000, Windows XP and Windows 2003, or any version of these (e.g. Windows XP Home or Windows XP Professional).

There are no special memory or hard disk requirements.

For smooth operation, the final application, which produces the Greek letters, must support **Unicode** and use a font with the Greek letters of the polytonic Greek alphabet. See more information under point 2.4.

### **1.5. Acknowledgements**

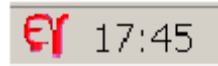
We would like to express our thanks to our colleague Jordi Campos i Miralles for his advice on free software; to Mr. Chris Maunder for the SystemTray (C/C++) class we have used in this project; and finally, to Quantum Leaps for their Hierarchical State Machine with a GPL license.





## 2. Operation

### 2.1. Activating and deactivating Euclides Polytonic Greek

Once executed, the **Euclides Polytonic Greek** program will remain in the memory, showing an icon with the program logo in red next to the Windows clock on the toolbar (by the Start button), like this:



When the icon logo is shown in red  this means that **Euclides Polytonic Greek** is inactive, and will not translate any characters. It will therefore have no effect on the entry of characters or the operation of any software being used. This is to avoid loading and unloading the **Euclides Polytonic Greek** program every time it is used, so that it can always be loaded even when its operation is deactivated. For this reason, when installing the program we recommend selecting the option of **Euclides Polytonic Greek** loading automatically when Windows starts. If you do so, it will not be necessary to have the icon on the fast toolbar.

When the logo icon is shown in green  this means that **Euclides Polytonic Greek** is active, and it will therefore translate the keys typed into the Greek alphabet.

There are three different ways of activating/deactivating **Euclides Polytonic Greek**:

1. Double clicking on the **Euclides Polytonic Greek** icon.
2. Pressing the combination of keys **AltGr+space** at the same time.
3. Clicking with the right-hand mouse button on the **Euclides Polytonic Greek** icon, and choosing the next step from the contextual menu.

Methods 1 and 2 change the status of **Euclides Polytonic Greek**: if it is active, it will become inactive, and vice versa.

A change in the status of **Euclides Polytonic Greek** will be shown in the colours of the icon logo, which is **green** when the program is active and **red** when it is inactive.

### 2.2. Completing the execution of Euclides Polytonic Greek

To complete the execution of **Euclides Polytonic Greek**, click with the second mouse button - normally the right-hand one - on the **Euclides Polytonic Greek** icon. A

contextual menu will appear. Choose the **Close** option. The program will close and the icon next to the Windows clock will disappear.

The program can be closed at any time, whether it is active or inactive. It will always be deactivated when execution is completed.

### 2.3. Other options

For other options, click with the right mouse button on the **Euclides Polytonic Greek** icon, for the application's contextual menu to appear.



The option **Compatible Menús**, marked in the image and therefore active, selects the compatibility mode with menus with Catalan and Spanish letters. This means that in a pop-up menu (File, for example), when the S key (for Save) is pressed, access to the menu option is possible because the translation to the appropriate Greek graphy for the key will not be performed. However, if **Compatible Menús** is inactive, when any key is pressed the translation to the Greek letter will be performed and the expected menu option will not be executed. We therefore recommend that the option **Compatible Menús** should always be active. This is in fact the default setting when the program starts.

The **Active at Start** option allows you to decide whether **Euclides Polytonic Greek** is active or inactive the next time you start a Windows session. If you want it to start as active, make sure that this option is selected. If so, a mark will be shown to its left. The application begins deactivated by default. If this option is activated, it will begin to operate as soon as the **Euclides Polytonic Greek** program is loaded, and will perform the translation of keys to polytonic Greek in any program being executed (e.g. Word, Internet Explorer, Excel, etc.).

**Example:** if it is active, even the website bar in Internet Explorer will be written in Greek characters.

In order to activate or deactivate the options mentioned above, it is only necessary to click on the relevant option. If this option is active (marked with the symbol on the left) it will become inactive (without a mark), and vice versa - if it is inactive it will become active.

## 2.4. Entering Greek characters

It is very easy to enter Greek characters using **Euclides Polytonic Greek**. Just remember the following points.

**N.B.:** The notation **ControlKey+ Character** where **ControlKey** may be any of the following - **Control, Shift, Alt** or **AltGr** - or a combination of these, and **Character** may represent any of the other keys, shows that the second key must be pressed without releasing the first. For example, **AltGr+B** shows that the key **AltGr** must be pressed and without releasing it, the **B** key must then be pressed.

If several keys have to be pressed but not at the same time, but consecutively, they are separated using a comma symbol (,). Example: **AltGr+', space** shows that the keys **AltGr** and **'**, must be pressed first, and after they have been released, the **space** bar must be pressed.

If there are several possible alternatives, they are separated with a slash (/). For example: **ñ/^**, shows that we can press either the **ñ** key or the **^** key, but not both.

To enter more complex Greek characters, i.e. ones created using combinations of symbols, remember the following rules.

In any combination of keys, the letter must always be typed last.

Any **diacritic symbol** must be entered before the letter. A **diacritic symbol** may be an **accent**, an **apostrophe**, a **dieresis**, a **breathing**, a **macron**, a **vrachy**, an **iota subscript/adscript** or a combination of any these.

If a character contains more than one symbol, such as an accent and an iota subscript, the order in which they are typed does not matter: the accent can be typed first followed by the iota subscript or vice versa, providing that the last key typed is the letter to which these symbols must be added.

**Example:** In order to enter lower case alpha with a rough breathing, acute accent and an iota subscript  $\alpha_{\text{rough}}^{\text{acute}}$ , type the following:

1. Enter the rough breathing, pressing <
2. Enter the acute accent, pressing ´
3. Enter the iota subscript, pressing AltGr+i
4. Enter the alpha, pressing the key a

Steps 1, 2 and 3 can be executed in any order providing that the alpha is entered at the end of the sequence.

No character will be shown until the entire sequence has been entered.

To provide a wider range of possibilities, the alternative forms of the following letters have also been included:

$\beta \rightarrow \text{B}$	$\rho \rightarrow \text{r}$
$\varepsilon \rightarrow \text{e}$	$\sigma/\varsigma \rightarrow \text{c}$
$\theta \rightarrow \text{t}$	$\Sigma \rightarrow \text{C}$
$\Theta \rightarrow \text{T}$	$\Upsilon \rightarrow \text{Y}$
$\kappa \rightarrow \text{k}$	$\varphi \rightarrow \text{f}$

They are all located on the same key as their equivalent, and can be written by pressing **AltGr+key**. For more information, see section 4.1 or appendix A.1. However, in the case of vowels, remember that only the single letters, with no combinations of diacritics, have an alternative form.

**N.B:** Euclides Polytonic Greek records the keys pressed and sends the Unicode character to the application being used, e.g. Word, Internet Explorer, Mozilla Firefox, OpenOffice Writer and MS Excel, among others. In order to see the character properly, you must have a font which contains the character, and the application you are using must be configured appropriately and compatible with Unicode.

One of the most widely used fonts with almost all the Greek characters is **Palatino linotype**. Another is **KadmosU**. For more information on Greek fonts, see the Electra GCID website: [Electra GCID - http://www.ub.es/filologiagrega/electra/](http://www.ub.es/filologiagrega/electra/) .

## 3. Symbols

### 3.1. Diacritics

#### 3.1.1. Accents

Accent	Key	Notes
Grave (`)	`	Entered in the same way as in Romance languages. However, remember that the letter is different.
Acute (´)	´	Entered in the same way as in Romance languages. However, remember that the letter is different.
Dieresis (¨)	¨	Entered in the same way as in Romance languages.
Circumflex (˜)	˜/ˆ	

#### 3.1.2. Modern Greek (monotonic accent)

	Key	Notes
´	ι	The encoding is different to the acute accent and the design of some fonts distinguishes between them.

#### 3.1.3. Breathings

Breathing	Key	Notes
Rough (´)	<	
Smooth (˘)	>	

#### 3.1.4. Iota subscript / adscript

Iota	Key	Notes
subscript / adscript (ι)	AltGr+i	If a capital is entered, the iota automatically appears with an adscript, with a single code for the entire letter.

#### 3.1.5. Other symbols

Other symbols	Key	Notes
Macron (¯)	AltGr+- AltGr+Shift+-	To be combined with vowels. To write only the letter.
Vrachy (ˇ)	AltGr+9 AltGr+Shift+9	To be combined with vowels. To write only the letter.

### 3.2. Punctuation

Punctuation	Key	Notes
.	_	
...	AltGr+.	
;	?/;	

### 3.3. Quantity and editing of texts

	Key	Notes
´ (numeric sign)	°	
˘ (numeric sign)	ª	
†	AltGr+ + (numeric keyboard)	The + sign refers to the plus sign on the numeric keyboard.
‡	AltGr+Shift+ + (numeric keyboard)	The + sign refers to the plus sign on the numeric keyboard.
[[	AltGr+Shift+[	
]]	AltGr+Shift+]	

### 3.4. Other

These symbols can be typed without deactivating **Euclides Polytonic Greek** to simplify writing.

Original symbols	Key	Notes
?	AltGr+?	
<	AltGr+<	
>	AltGr+Shift+<	

## 4. Letters

### 4.1. Alphabet

Name	Symbol	Key	Notes
Alpha	$\alpha$	a	
	A	A	
Beta	$\beta$	b	
	B	B	
	$\beta$	AltGr+b	
Gamma	$\gamma$	g	
	$\Gamma$	G	
Delta	$\delta$	d	
	$\Delta$	D	
Epsilon	$\epsilon$	e	
	E	E	
	$\epsilon$	AltGr+Shift+e	AltGr+e is the € symbol
Zeta	$\zeta$	z	
	Z	Z	
Eta	$\eta$	h	
	H	H	
Theta	$\theta$	q	
	$\Theta$	Q	
	$\vartheta$	AltGr+q	
	$\Theta$	AltGr+Q	
Iota	$\iota$	i	
	I	I	
Iota subscript / adscript	,	AltGr+i, space	
Kappa	$\kappa$	k	
	K	K	
	$\kappa$	AltGr+k	
Lambda	$\lambda$	l	
	$\Lambda$	L	
Mi	$\mu$	m	
	M	M	
Ni	$\nu$	n	
	N	N	
Csi	$\xi$	c	
	$\Xi$	C	
Omicron	$\omicron$	o	
	O	O	
Pi	$\pi$	p	

Name	Symbol	Key	Notes
	Π	P	
Rho	ρ	r	
	Ρ	R	
	ϱ	AltGr+r	
Sigma	σ	s	
	Σ	S/J	
	ς	j	Final sigma
	Ϛ	AltGr+s	Lunate sigma
	Ϝ	AltGr+S	Capital lunate sigma
Tau	τ	t	
	Τ	T	
Ypsilon	υ	u	
	Υ	U	
	Ϛ	AltGr+U	
Phi	φ	f	
	Φ	F	
	ϕ	AltGr+f	
Chi	χ	c	
	Χ	C	
Psi	ψ	y	
	Ψ	Y	
Omega	ω	w	
	Ω	W	

## 4.2. Archaic

Name	Symbol	Key	Notes
Koppa	ϛ	ς	
	ϛ̄	Ϛ	
	ϙ	AltGr+c	
	ϙ̄	AltGr+C	
Stigma	Ϟ	AltGr+t	
	Ϟ̄	AltGr+T	
Digamma	Ϸ	v	
	Ϸ̄	V	
Sampi	Ϡ	AltGr+p	
	Ϡ̄	AltGr+P	
Iod	ϡ	AltGr+j	
Omega-pi	ϣ	AltGr+w	



# Appendices

## A. Mapping

The entire mapping of all Greek keys performed by the program is shown below.

The information is shown in four columns:

- the first shows the Greek letter
- the second column shows how they are entered, which keys or combinations of keys must be used to show the letter
- the third shows the code of the Greek letter in hexadecimal base 16
- the fourth column shows where the character is located in standard Unicode documents:

- GB - U0370.pdf - Greek and Coptic

<http://www.unicode.org/charts/PDF/U0370.pdf>

- GE - U1F00.pdf - Greek Extended

<http://www.unicode.org/charts/PDF/U1F00.pdf>

### A.1 Complete Mapping

	Key	Unicode (hexadecimal)	See
´ (numeric sign)	ο	0374	GB
, (numeric sign)	α	0375	GB
.	_	0387	GB
...	AltGr+.	2026	
;	?/;	037E	GB
†	AltGr ++ numeric keyboard)	2020	
‡	AltGr+Shift+ + (numeric keyboard )	2021	
[	AltGr+Shift+[	301A	
]	AltGr+Shift+]	301B	
α	a	03B1	GB

	<b>Key</b>	<b>Unicode (hexadecimal)</b>	<b>See</b>
A	A	0391	GB
ε	e	03B5	GB
E	E	0395	GB
€	AltGr+E	03F5	GB
η	h	03B7	GB
H	H	0397	GB
ι	i	03B9	GB
I	I	0399	GB
ı	AltGr+i	037A	GB
ο	ο	03BF	GB
O	O	039F	GB
υ	υ	03C5	GB
Υ	U	03A5	GB
Υ	AltGr+U	03D2	GB
ω	w	03C9	GB
Ω	W	03A9	GB
ω	AltGr+w	03D6	GB
ά	´, a	1F71	GE
έ	´, e	1F73	GE
ή	´, h	1F75	GE
ί	´, i	1F77	GE
ό	´, o	1F79	GE
ύ	´, u	1F7B	GE
ώ	´, w	1F7D	GE
Α	´, A	1FBB	GE
Ε	´, E	1FC9	GE
Η	´, H	1FCB	GE
Ι	´, I	1FDB	GE
Υ	´, U	1FEB	GE
Υ	´, AltGr+U	03D3	GB
Ο	´, O	1FF9	GE
Ω	´, W	1FFB	GE
´	´, space	1FFD	GE
à	` , a	1F70	GE
è	` , e	1F72	GE
ή	` , h	1F74	GE
ì	` , i	1F76	GE
ò	` , o	1F78	GE
ù	` , u	1F7A	GE
ώ	` , w	1F7C	GE

	Key	Unicode (hexadecimal)	See
À	\, A	1FBA	GE
É	\, E	1FC8	GE
Η	\, H	1FCA	GE
Ι	\, I	1FDA	GE
Υ	\, U	1FEA	GE
Ο	\, O	1FF8	GE
Ω	\, W	1FFA	GE
`	\, space	1FEF	GE
ã	ñ/^, a	1FB6	GE
ñ	ñ/^, h	1FC6	GE
ĩ	ñ/^, i	1FD6	GE
ũ	ñ/^, u	1FE6	GE
õ	ñ/^, w	1FF6	GE
˜	ñ/^, space	1FC0	GE
ï	¨, i	03CA	GB
ü	¨, u	03CB	GB
Ï	¨, I	03AA	GB
Û	¨, U	03AB	GB
ÿ	¨, AltGr+U	03D4	GB
¨	¨, space	00A8	
à	>, a	1F00	GE
é	>, e	1F10	GE
ή	>, h	1F20	GE
ι	>, i	1F30	GE
ó	>, o	1F40	GE
ù	>, u	1F50	GE
ώ	>, w	1F60	GE
À	>, A	1F08	GE
É	>, E	1F18	GE
Η	>, H	1F28	GE
Ι	>, I	1F38	GE
Ο	>, O	1F48	GE
Ω	>, W	1F68	GE
ò	>, r	1FE4	GE
'	>, space	1FBF	GE
á	<, a	1F01	GE
é	<, e	1F11	GE
ή	<, h	1F21	GE

	<b>Key</b>	<b>Unicode (hexadecimal)</b>	<b>See</b>
í	<, i	1F31	GE
ó	<, o	1F41	GE
ú	<, u	1F51	GE
ŵ	<, w	1F61	GE
À	<, A	1F09	GE
È	<, E	1F19	GE
Ĥ	<, H	1F29	GE
Ì	<, I	1F39	GE
Ò	<, O	1F49	GE
Ÿ	<, U	1F59	GE
Ŵ	<, W	1F69	GE
ŕ	<, r	1FE5	GE
Ŕ	<, R	1FEC	GE
ˆ	<, space	1FFE	GE
α	AltGr+i, a	1FB3	GE
η	AltGr+i, h	1FC3	GE
ω	AltGr+i, w	1FF3	GE
Α	AltGr+i, A	1FBC	GE
Η	AltGr+i, H	1FCC	GE
Ω	AltGr+i, W	1FFC	GE
ā	AltGr+_ a	1FB1	GE
ī	AltGr+_ i	1FD1	GE
ū	AltGr+_ u	1FE1	GE
Ā	AltGr+_ A	1FB9	GE
Ī	AltGr+_ I	1FD9	GE
Ū	AltGr+_ U	1FE9	GE
˘	AltGr+_	00AF	
ǎ	AltGr+9, a	1FB0	GE
ĩ	AltGr+9, i	1FD0	GE
ũ	AltGr+9, u	1FE0	GE
Ă	AltGr+9, A	1FB8	GE
Ĭ	AltGr+9, I	1FD8	GE
Ŭ	AltGr+9, U	1FE8	GE
˙	AltGr+Shift+9	0306	Symbols
á	¡, a	03AC	GB
é	¡, e	03AD	GB
ή	¡, h	03AE	GB
í	¡, i	03AF	GB

	Key	Unicode (hexadecimal)	See
ó	¡, o	03CC	GB
ú	¡, u	03CD	GB
ó	¡, w	03CE	GB
À	¡, A	0386	GB
È	¡, E	0388	GB
Ĥ	¡, H	0389	GB
Ì	¡, I	038A	GB
Ò	¡, O	038C	GB
Ÿ	¡, U	038E	GB
Ω	¡, W	038F	GB
'	¡, space	0384	GB
ï	¨, ¡, i	0390	GB
ü	¨, ¡, u	03B0	GB
ˆ	¨, ¡, space	0385	GB
ï	¨, ´, i	1FD3	GE
ü	¨, ´, u	1FE3	GE
ˆ	¨, ´, space	1FEE	GE
ǎ	>, ´, a	1F04	GE
ě	>, ´, e	1F14	GE
ň	>, ´, h	1F24	GE
ř	>, ´, i	1F34	GE
ů	>, ´, o	1F44	GE
ů	>, ´, u	1F54	GE
ǔ	>, ´, w	1F64	GE
Ǻ	>, ´, A	1F0C	GE
Ǽ	>, ´, E	1F1C	GE
Ǿ	>, ´, H	1F2C	GE
Ǻ	>, ´, I	1F3C	GE
Ǻ	>, ´, O	1F4C	GE
Ǻ	>, ´, W	1F6C	GE
˘	>, ´, space	1FCE	GE
ǎ	<, ´, a	1F05	GE
ě	<, ´, e	1F15	GE
ň	<, ´, h	1F25	GE
ř	<, ´, i	1F35	GE
ů	<, ´, o	1F45	GE
ů	<, ´, u	1F55	GE
ǔ	<, ´, w	1F65	GE

	Key	Unicode (hexadecimal)	See
À	<, ', A	1F0D	GE
É	<, ', E	1F1D	GE
È	<, ', H	1F2D	GE
Ì	<, ', I	1F3D	GE
Ó	<, ', O	1F4D	GE
Ÿ	<, ', U	1F5D	GE
Ω	<, ', W	1F6D	GE
ˆ	<, ', space	1FDE	GE
ά	AltGr+i, ', a	1FB4	GE
ή	AltGr+i, ', h	1FC4	GE
ώ	AltGr+i, ', w	1FF4	GE
ü	;, ` , u	1FE2	GE
ï	;, ` , i	1FD2	GE
˘	;, ` , space	1FED	GE
ā	>, ` , a	1F02	GE
ē	>, ` , e	1F12	GE
ĥ	>, ` , h	1F22	GE
ī	>, ` , i	1F32	GE
ō	>, ` , o	1F42	GE
ū	>, ` , u	1F52	GE
ŵ	>, ` , w	1F62	GE
À	>, ` , A	1F0A	GE
É	>, ` , E	1F1A	GE
È	>, ` , H	1F2A	GE
Ì	>, ` , I	1F3A	GE
Ó	>, ` , O	1F4A	GE
Ÿ	>, ` , W	1F6A	GE
ˆ	>, ` , space	1FCD	GE
â	<, ` , a	1F03	GE
ê	<, ` , e	1F13	GE
ĥ	<, ` , h	1F23	GE
î	<, ` , i	1F33	GE
ô	<, ` , o	1F43	GE
û	<, ` , u	1F53	GE
ŵ	<, ` , w	1F63	GE
À	<, ` , A	1F0B	GE
É	<, ` , E	1F1B	GE
È	<, ` , H	1F2B	GE

	Key	Unicode (hexadecimal)	See
Ƨ	<, ` , I	1F3B	GE
Ƨ	<, ` , O	1F4B	GE
Ƨ	<, ` , U	1F5B	GE
Ƨ	<, ` , W	1F6B	GE
ˆ	<, ` , space	1FDD	GE
à	AltGr+i, ` , a	1FB2	GE
ñ	AltGr+i, ` , h	1FC2	GE
ô	AltGr+i, ` , w	1FF2	GE
ĩ	¨, ñ/^, i	1FD7	GE
ũ	¨, ñ/^, u	1FE7	GE
ˆ	¨, ñ/^, space	1FC1	GE
ã	>, ñ/^, a	1F06	GE
ñ	>, ñ/^, h	1F26	GE
ĩ	>, ñ/^, i	1F36	GE
ũ	>, ñ/^, u	1F56	GE
ô	>, ñ/^, w	1F66	GE
À	>, ñ/^, A	1F0E	GE
Ƨ	>, ñ/^, H	1F2E	GE
Ƨ	>, ñ/^, I	1F3E	GE
Ƨ	>, ñ/^, W	1F6E	GE
ˆ	>, ñ/^, space	1FCF	GE
ã	<, ñ/^, a	1F07	GE
ñ	<, ñ/^, h	1F27	GE
ĩ	<, ñ/^, i	1F37	GE
ũ	<, ñ/^, u	1F57	GE
ô	<, ñ/^, w	1F67	GE
À	<, ñ/^, A	1F0F	GE
Ƨ	<, ñ/^, H	1F2F	GE
Ƨ	<, ñ/^, I	1F3F	GE
Ƨ	<, ñ/^, Y	1F5F	GE
Ƨ	<, ñ/^, W	1F6F	GE
ˆ	<, ñ/^, space	1FDF	GE
ã	AltGr+i, ^, a	1FB7	GE
ñ	AltGr+i, ^, h	1FC7	GE
ô	AltGr+i, ^, w	1FF7	GE
à	AltGr+i, >, a	1F80	GE
ñ	AltGr+i, >, h	1F90	GE

	Key	Unicode (hexadecimal)	See
Ϝ	AltGr+i, >, w	1FA0	GE
Α	AltGr+i, >, A	1F88	GE
Η	AltGr+i, >, H	1F98	GE
Ω	AltGr+i, >, W	1FA8	GE
ᶘ	AltGr+i, <, a	1F81	GE
ᶙ	AltGr+i, <, h	1F91	GE
ϝ	AltGr+i, <, w	1FA1	GE
Α	AltGr+i, <, A	1F89	GE
Η	AltGr+i, <, H	1F99	GE
Ω	AltGr+i, <, W	1FA9	GE
ᶘ	AltGr+i, >, ', a	1F84	GE
ᶙ	AltGr+i, >, ', h	1F94	GE
ϝ	AltGr+i, >, ', w	1FA4	GE
Α	AltGr+i, >, ', A	1F8C	GE
Η	AltGr+i, >, ', H	1F9C	GE
Ω	AltGr+i, >, ', W	1FAC	GE
ᶘ	AltGr+i, <, ', a	1F85	GE
ᶙ	AltGr+i, <, ', h	1F95	GE
ϝ	AltGr+i, <, ', w	1FA5	GE
Α	AltGr+i, <, ', A	1F8D	GE
Η	AltGr+i, <, ', H	1F9D	GE
Ω	AltGr+i, <, ', W	1FAD	GE
ᶘ	AltGr+i, >, `, a	1F82	GE
ᶙ	AltGr+i, >, `, h	1F92	GE
ϝ	AltGr+i, >, `, w	1FA2	GE
Α	AltGr+i, >, `, A	1F8A	GE
Η	AltGr+i, >, `, H	1F9A	GE
Ω	AltGr+i, >, `, W	1FAA	GE
ᶘ	AltGr+i, <, `, a	1F83	GE
ᶙ	AltGr+i, <, `, h	1F93	GE
ϝ	AltGr+i, <, `, w	1FA3	GE
Α	AltGr+i, <, `, A	1F8B	GE
Η	AltGr+i, <, `, H	1F9B	GE
Ω	AltGr+i, <, `, W	1FAB	GE
ᶘ	AltGr+i, >, ñ/^, a	1F86	GE
ᶙ	AltGr+i, >, ñ/^, h	1F96	GE
ϝ	AltGr+i, >, ñ/^, w	1FA6	GE



	Key	Unicode (hexadecimal)	See
À	AltGr+i, >, ñ/^, A	1F8E	GE
Ĥ	AltGr+i, >, ñ/^, H	1F9E	GE
Ų	AltGr+i, >, ñ/^, W	1FAE	GE
á	AltGr+i, <, ñ/^, a	1F87	GE
ĥ	AltGr+i, <, ñ/^, h	1F97	GE
ŵ	AltGr+i, <, ñ/^, w	1FA7	GE
À	AltGr+i, <, ñ/^, A	1F8F	GE
Ĥ	AltGr+i, <, ñ/^, H	1F9F	GE
Ų	AltGr+i, <, ñ/^, W	1FAF	GE
β	b	03B2	GB
ƒ	AltGr+b	03D0	GB
B	B	0392	GB
γ	g	03B3	GB
Γ	G	0393	GB
δ	d	03B4	GB
Δ	D	0394	GB
ζ	z	03B6	GB
Z	Z	0396	GB
θ	q	03B8	GB
ϑ	AltGr+q	03D1	GB
Θ	Q	0398	GB
ϑ	AltGr+Q	03F4	GB
κ	k	03BA	GB
K	K	039A	GB
κ	AltGr+k	03F0	
λ	l	03BB	GB
Λ	L	039B	GB
μ	m	03BC	GB
M	M	039C	GB
ν	n	03BD	GB
N	N	039D	GB
ξ	x	03BE	GB
Ξ	X	039E	GB
π	p	03C0	GB
Π	P	03A0	GB
ω	AltGr+w	03D6	GB
ρ	r	03C1	GB
ρ	AltGr+r	03F1	GB
P	R	03A1	GB
σ	s	03C3	GB

	<b>Key</b>	<b>Unicode (hexadecimal)</b>	<b>See</b>
Σ	S	03A3	GB
ς	j	03C2	GB
Ϸ	AltGr+s	03F2	GB
ϸ	AltGr+S	03F9	GB
Ϲ	AltGr+j	03F3	GB
τ	t	03C4	GB
Τ	T	03A4	GB
φ	f	03C6	GB
ϕ	AltGr+f	03D5	GB
Φ	F	03A6	GB
χ	c	03C7	GB
Χ	C	03A7	GB
ψ	y	03C8	GB
Ψ	Y	03A8	GB
Ϝ	v	03DD	GB
ϝ	V	03DC	GB
Ϟ	AltGr+d	03DB	GB
ϟ	AltGr+D	03DA	GB
Ϡ	AltGr+l	03DF	GB
ϡ	AltGr+L	03DE	GB
Ϣ	AltGr+c	03D8	GB
ϣ	AltGr+C	03D9	GB
Ϥ	AltGr+p	03E1	GB
ϥ	AltGr+P	03E0	GB

**A.2 Unmapped letters/signs**

	<b>Keyboard</b>	<b>Unicode (hexadecimal)</b>	<b>See</b>
ι (iota adscript with no combination)		1FBE	GE
Ͽ (koronis)		1FBD	GE

## B. Quick reference

Diacritics can be combined in any way providing that the letter is the last key pressed.

Name	Symbol	Key
Acute accent	´	´
Grave accent	`	`
Dieresis	¨	¨
Circumflex accent	ˆ	ˆ/^
Monotonic accent	˘	˘
Rough breathing	´	<
Smooth breathing	˘	>
Iota subscript / adscript	˙	AltGr+i
Macron (for combinations)	ˉ	AltGr+_
Vrachy (for combinations)	˚	AltGr+9
Macron	ˉ	AltGr+Shift+_
Vrachy	˚	AltGr+Shift+9
Dot above	˙	_
	˚	? o ;
	˘	
	˙	AltGr+?
<	<	AltGr+<
>	>	AltGr+Shift+<