



MyScript Language Packs provide full recognition resources for a wide range of Asian, Cyrillic and Latin languages.

Two types of language packs are provided with MyScript Software Development Kits:

- **MyScript Lingo:** recommended for note taking to form processing applications, covering recognition from isolated characters to full natural cursive text.
- **MyScript Letra:** designed particularly for embedded platforms.

Vision Objects consistently develops new languages through a perfectly mastered industrial process based on the collection of complete writing samples which has proved its worth, as today, accuracy rates beat all records.

AT THE HEART OF MYSCRIPT HANDWRITING RECOGNITION

Recognizing different types of handwriting

In order to be recognized, handwriting first needs to be segmented into characters, words and sentences. This segmentation differs according to the style of writing. We count three different types of handwriting:



Natural handwriting

Isolated characters: each character is written separately in boxed fields and the segmentation of consecutive characters is explicit. This is often used in form processing.

Natural handwriting: the most difficult type to recognize. It requires the additional use of lexicons and language models for reliable, accurate recognition.

Language specificities

The recognizer takes into account a large amount of language specificities. Indeed, each language has its own set of characters. Some languages are based on alphabets (e.g. English, Greek, Cyrillic), others use ideograms (e.g. Chinese or Japanese). Language can also be written in different directions (left to right, right to left). The recognizer needs to know all of these characteristics.

Variation in writing styles

The main challenge in handwriting recognition is to deal with individual's handwriting style, its slant or its shapes. Also, handwriting varies from country to country. English, for example, is spoken in many countries (UK, USA, Canada, etc.) but the vocabulary and writing styles may vary from one place to another.

Handwritten text analysis

A language is a complex entity, with a vocabulary and specific rules for building sentences. The recognizer needs to take into account the grammar and semantics in order to perform accurate recognition.

VISION OBJECTS' ADVANCED RECOGNITION SOLUTIONS

In-depth language analysis

For each new language, Vision Objects conducts an in-depth analysis including a study of the alphabet, words, phrases and ways of writing common items such as dates or phone numbers for instance.

Handwriting understanding

To manage the complex nature of a language, MyScript takes into account a large range of linguistic information:

- **Lexicons:** narrow down the recognition possibilities and therefore increase accuracy.
- **Data formats:** describe the expected format for specific information (e.g. phone numbers, email addresses, etc).
- **Language models:** supply "linguistic intelligence" to the recognition engine. They describe statistically how common language is formed and the probability of written words occurring together.

Language offering

Vision Objects offers two lines of linguistic resources:

	MyScript Lingo	MyScript Letra
Different types of handwriting		
ISOLATED CHARACTERS	☑	☑
<i>Natural handwriting</i>	☑	
Character recognition • Alphabets, numerals, punctuation, symbols	☑	☑
Recognition of words in their context • Use of lexicons, data formats and language models	☑	

MyScript Lingo is a set of **29 language** packs available with MyScript Builder Standard Edition (SE) or MyScript Builder Embedded Edition (EE) software development kits. MyScript Lingo is designed particularly for form processing, note taking and other applications requiring cursive handwriting, including for embedded platforms.

MyScript Lingo **includes in-depth linguistic resources such as language-specific sets of characters, lexicons and data formats.** It also takes into account **variations in writing styles** and the **linguistic context** in order to provide **highly accurate recognition of all types of handwriting:** from isolated characters to natural handwriting.



Market Application

MyScript Lingo's language packs are designed particularly for applications for note-taking and interactive whiteboards or for recognizing fields in form processing.

MyScript Lingo is also available for embedded platforms using natural cursive handwriting as a text input method.



BENEFITS

+ The best handwriting recognition technology

In order to provide the best handwriting recognition, the MyScript engine has been trained on thousands of written samples. It uses language and country-specific information and can recognize any type of handwriting.

+ All major language groups covered

MyScript Lingo is available in a wide range of languages (Asian, Cyrillic, Latin, etc.) addressing markets in the Americas, Europe, Middle East and Asia Pacific.

+ Specific lexicons for vertical markets

Specific linguistic resources such as sophisticated lexicons can be designed on-demand for vertical markets such as:

- Healthcare,
- Insurance,
- Finance,
- Logistics,
- Administration etc.

Examples: names of drugs, product reference, customer listings, etc.



LANGUAGES

- Arabic
- Chinese (Simpl. and Trad.)
- Czech
- Danish
- Dutch
- English (CA/UK/US)
- Finnish
- French (CA/FR)
- German
- Greek
- Hungarian
- Italian
- Japanese
- Kazakh
- Korean
- Norwegian
- Polish
- Portuguese (BR/POR)
- Russian
- Spanish (SP/MEX)
- Swedish
- Turkish
- Vietnamese



PERFORMANCES*

The table below shows an example of the recognition time for different types of handwriting.

English	Isolated characters** 3750 char/sec 3750 char/sec 3448 char/ sec 293 char/ sec 224 char/ sec
German	
French	
Simplified chinese	
Japanese	
English	Cursive handwriting*** 92 char/sec 73 char/sec 73 char/ sec
German	
French	

* These performances are obtained on a machine running under Windows Vista Professional (API: C) with the following characteristics: Intel Core 2 Quad; CPU : 2.40 GHz; RAM: 2046 Mo - ** Without Linguistic resources - *** With Linguistic resources

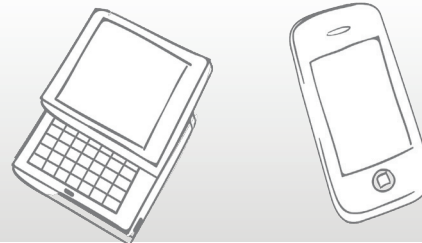
MyScript Letra is a pack of resources available for the MyScript Builder Embedded Edition and MyScript Builder Standard Edition software development kit.

It includes language-specific sets of characters such as alphabets, numerals, punctuation and symbols in order to recognize isolated characters in **89 languages**.



Market Application

MyScript Letra is specially designed for integration into embedded platforms using touch screen and stylus/finger-based user interfaces such as: smartphones, PDAs, electronic tablets, Mobile Internet Devices (MIDs), GPS, game consoles and so on.



BENEFITS

+ The largest worldwide language coverage

MyScript Letra offers the largest choice of languages on the market. MyScript recognizes 86 different languages addressing markets in the Americas, Asia-Pacific, Europe, the Middle East, Oceania and North Africa.

This is ideal for mobile device manufacturers who are expanding worldwide and wish to localize their solutions.

+ Recognition of country/ language specificities

MyScript Letra takes into account country-specific handwriting and characters: left to right and right to left handwriting, upper case and lower case, accented characters, digits, punctuation marks and special characters.

+ Natural & interactive text input methods

MyScript Letra enables manufacturers to design natural and interactive user interfaces (touch screens and stylus/finger) for mobile handsets using handwriting as a text input method.

+ Specially designed for small footprint platforms

MyScript Letra is specifically designed for low memory resources devices and ensures optimal application performance and memory usage.



TECHNICAL SPECIFICATIONS

+ Resource size*

Alphabets delivered with MyScript Letra:

	Arabic, Cyrillic, Greek, Hebrew, Latin	100 - 400Kb
	Chinese, Japanese, Korean, Devanagari, Thai, Tamil	500 - 3300Kb

+ Prerequisite

MyScript Builder Embedded Edition 2.1 and later
MyScript Builder Standard Edition 4.2 and later



PERFORMANCES

The performances** below have been measured on a portable phone in a text field, using isolated characters.

Isolated characters / Western languages	26 char/ sec
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* Resource size can be adapted according to the supported features, platforms and level of accuracy required

** These performances are obtained on a mobile phone; CPU: 100 MIPS, Cache: 32 Kb, 520 Mhz

88 different languages supported!



AVAILABLE LANGUAGES

- MyScript Lingo and Letra
- MyScript Letra only

Afrikaans

Albanian

Arabic

Basque

Bahasa (Indonesia/ Malaysia)

Belarusian (C + L)

Bosnian (C + L)

Bulgarian

Catalan

Cebuano

Chinese (Simp. & Trad.)

Chinese (Hong Kong)

Croatian

Czech

Danish

Dutch

English (CA / GB / US)

Estonian

Faroese

Fijian

Finnish

Flemish

French (CA / FR)

Gagauz (C + L)

Galician

German

Greek

Hebrew

Hindi / Devanagari

Hungarian

Icelandic

Indonesian

Ingush

Irish

Italian

Japanese

Kabardian

Kazakh

Kirghiz

Korean

Kurdish (C + L)

Latvian

Lezgi

Lithuanian

Luxembourgish

Macedonian

Malay

Maori

Marathi

Moldavian (C + L)

Mongolian

Norwegian

Oromo

Polish

Portuguese (BR/ POR)

Rhaeto-Romanic

Romanian

Russian

Samoan

Serbian

Slovak

Slovenian

Sotho

Spanish (SP/ MEX)

Swahili

Swazi

Swedish

Tagalog

Tahitian

Tamil

Tatar (L)

Thai

Tongan

Turkish

Turkmen (L)

Ukrainian

Vietnamese

Wallon

Welsh

Xhosa

Zulu

C: Cyrillic - L: Latin

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