



Aug 14, 2012
(Mar 03, 2012)

Severity: **Information**

Eugeny Brychkov, RU

Using GR8BIT Language Pack and PS/2 Keyboard

Overview: Language pack allows you to easily switch between locales – character sets and keyboard layouts, without need to change GR8BIT main ROM chip or its contents. These properties may be changed independently, but not all combinations are valid.

Support statement: Currently supported configurations are

JA-JA	Japanese character set with native Japanese compatible keyboard
JA-PS2	Japanese character set with PS/2 keyboard
RU-RU	Russian character set with native Russian compatible keyboard
RU-PS2	Russian character set with PS/2 keyboard
Intl	International character set, can be used with JA or PS2 layout (untested)
PT	Portuguese character set, can be used with JA or PS2 layout (untested)

Description: When GR8BIT starts, you may press and hold GRAPH and CTRL keys (for compatible keyboards) or ALT and CTRL keys (for PS/2 keyboard) to invoke Language configuration menu. During the initialization you can see the current saved configuration – Japanese character set (fig. 1a), or Russian character set (fig. 1b). If no configuration displayed, it is assumed that international or Portuguese character set is selected.

Once you got to Language setup menu, you can select character set and keyboard layout from the list (fig. 2). Fields in brackets are changeable by the pressing and releasing space key. Item Save is used to save settings to the RTC chip (non-volatile memory) so that GR8BIT remember your preference and next time start with saved locale configuration.

Item Use! does not save locale settings to the NVRAM, but exits setup program using selected settings for current session. If you do not save settings to NVRAM using Save item, your changes will be lost after next reboot or power cycle.



(a) (b)
Figure 1. GR8BIT system configuration display

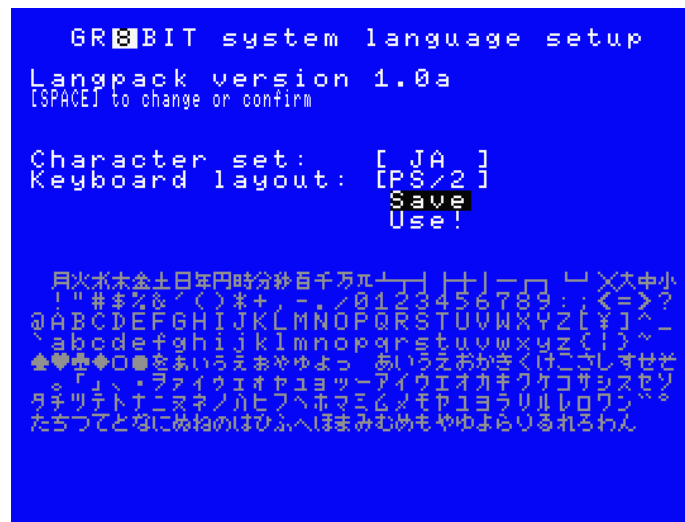


Figure 2. GR8BIT language pack setup menu

You also have an opportunity to change Language settings in the BASIC using LANG command.

LANG <charset>[,<keyboard layout>]

Argument <charset> is required, argument <keyboard layout> is optional. Character set is assigned as follows: 0=Japanese, 1=Russian, 2=International, 3=Portuguese. Keyboard layouts are: 0=Japanese, 1=PS/2, 2=Russian, 3=International.

Using PS/2 keyboard: You can enjoy PS/2-type keyboard with GR8BIT, connected to the PS/2 port of the main board. In order for PS/2 keyboard to function, the following prerequisites should be met:

1. Your GR8BIT should have functional PS/2 controller installed on the main board – IC2, microcontroller PIC16F1828;
2. Your GR8BIT should have jumpers JP2 and JP4 configured properly;
3. Keyboard you connect should be PS/2-type keyboard.

You may have PS/2 keyboard connected to the GR8BIT before power up, or after power up. As soon as keyboard gets power (after power up or after it got connected to your GR8BIT), microcontroller initializes it. This initialization takes about 4 seconds, and is exhibited by flashing keyboard LEDs. **You should not type or press/release any keyboard keys during this time.** Therefore if you wish to get to Language Pack setup menu, please wait until keyboard will complete initialization and only then press CTRL and ALT keys.

* Please note that information described in section below applies to GR8BIT PS/2 keyboard microcontroller firmware version 1.0b and above.

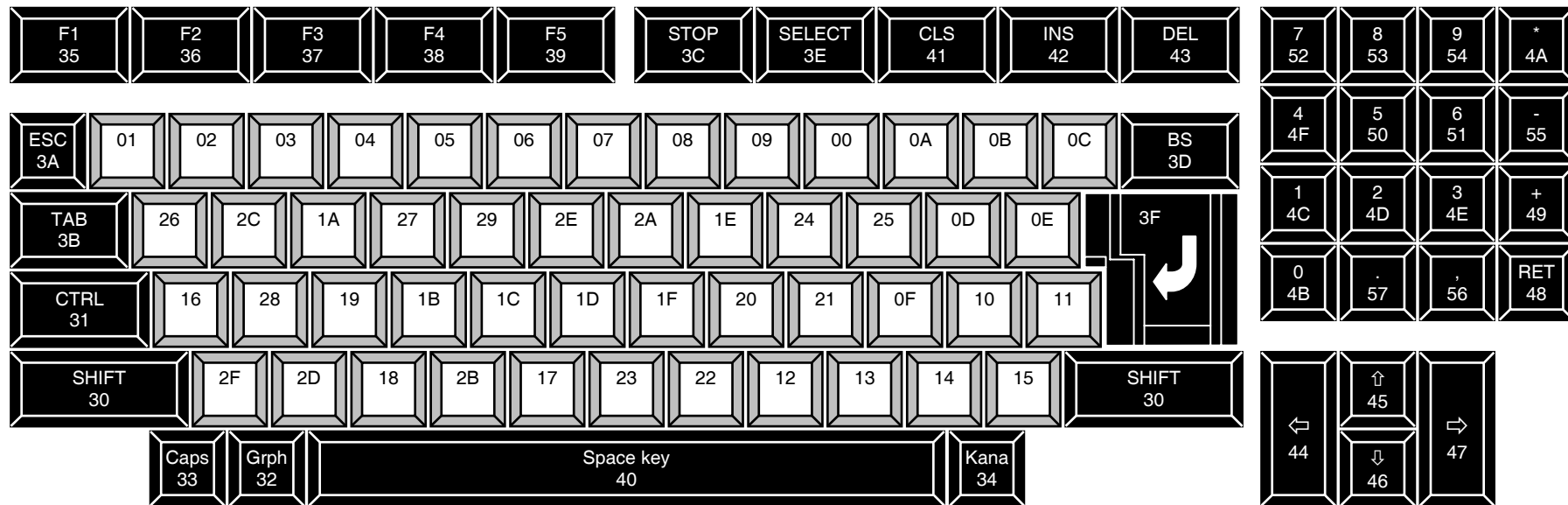
Using Compatible keyboard with PS/2 controller installed*: Unfortunately due to electrical conflict both devices – PS/2 keyboard and Compatible MSX keyboard – can not be used simultaneously. If PS/2 controller is active and Compatible keyboard is connected to GR8BIT, PS/2 keyboard will work properly, but Compatible keyboard may not.

There're several ways how you can manage your keyboards:

1. Use Compatible (MSX) keyboard only – remove PS/2 keyboard controller (IC2);
2. Use PS/2 keyboard – do not connect Compatible keyboard;
3. Use both PS/2 and Compatible keyboards, one at a time – configure JP2 on the GR8BIT main board according to your Compatible keyboard specifications, and open main board's jumper JP4 (as described in GR8BOOK1 section 3.10 and GR8BOOK2 section 3.5). You use PS/2 keyboard when PS/2 controller is enabled. If you wish to use Compatible keyboard (e.g. for gaming), you disable output of PS/2 controller by pressing F12 key on the PS/2 keyboard (Num Lock LED will turn on), and then Compatible keyboard works without issues. If you want to use PS/2 keyboard back again, press its F12 key to enable it (Num Lock LED will go off).

KB article release notes: KB0004 was initially released on March 03, 2012, covering operation of Language pack only. It was re-released on August 14, 2012, to cover operation of the PS/2 keyboard.

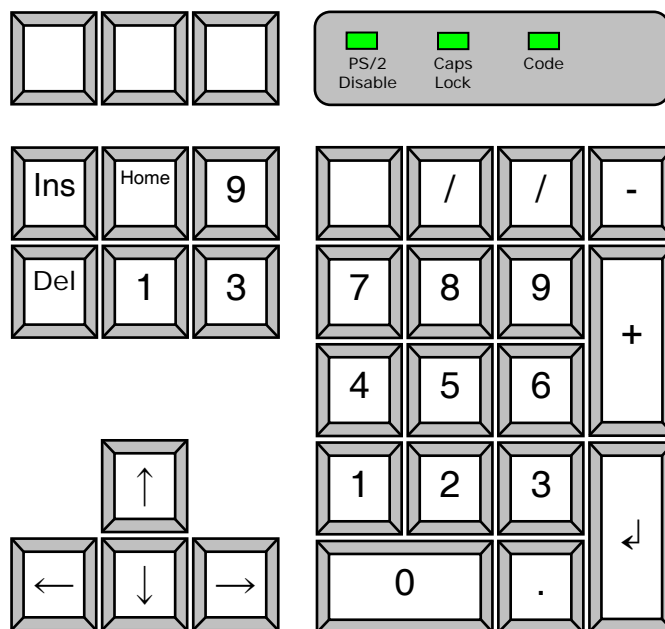
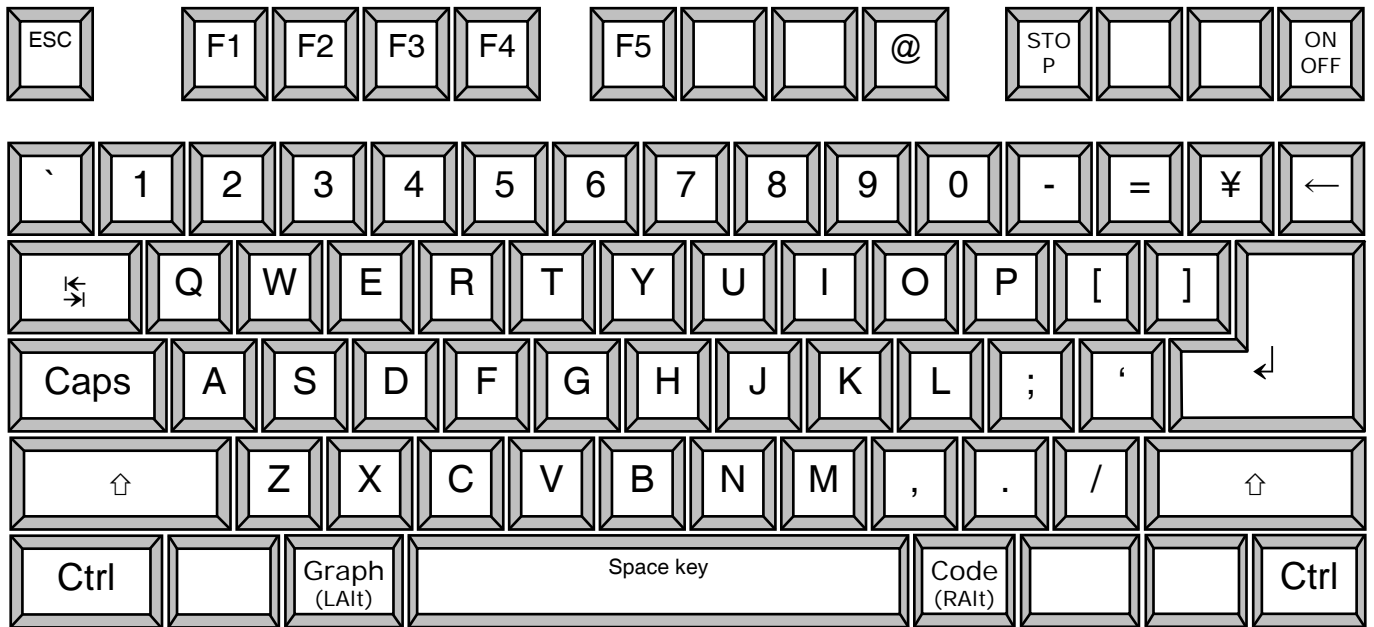
MSX Keyboard Scan Codes



- **Black keys are control keys with same functional assignment across all the keyboard layouts**
- **Specific keyboard may have different layout of the keys, but keys will keep same scan codes as specified above**
- **Kana** key may function as a trigger key (toggle alternate char set), or as a modifier key (hold the key to type character from alternate char set)

PS/2 keyboard layout

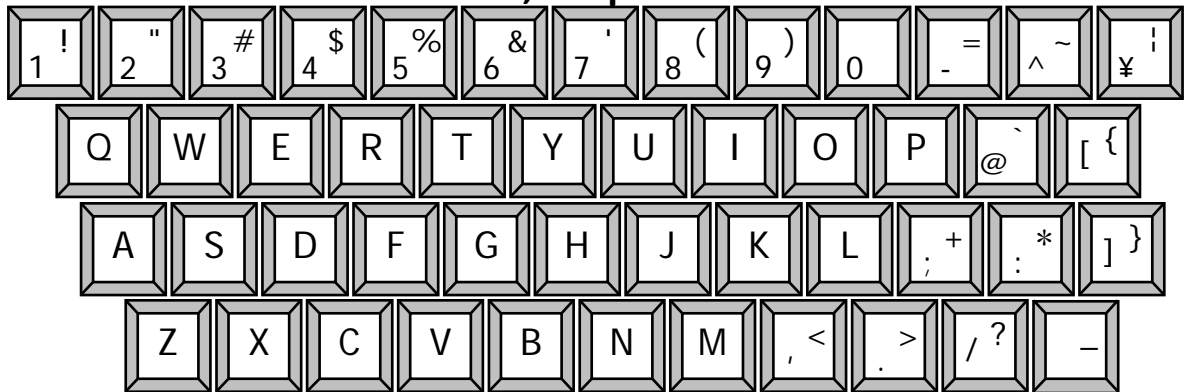
When using GR8BIT PS/2 keyboard controller



- Keys with no label have no assignment
- Num Lock LED indicates state of PS/2 controller output: off=enabled, on=disabled
- STOP key is assigned to F9 PS/2 key
- F12 key toggles tri-state of the keyboard controller output port
- Keys F6-F10 are activated when holding SHIFT key
- Alphanumerical assignment may slightly differ between locales

日本のキーボードレイアウト (Japanese Keyboard layout)

Kana = off, Graph = released



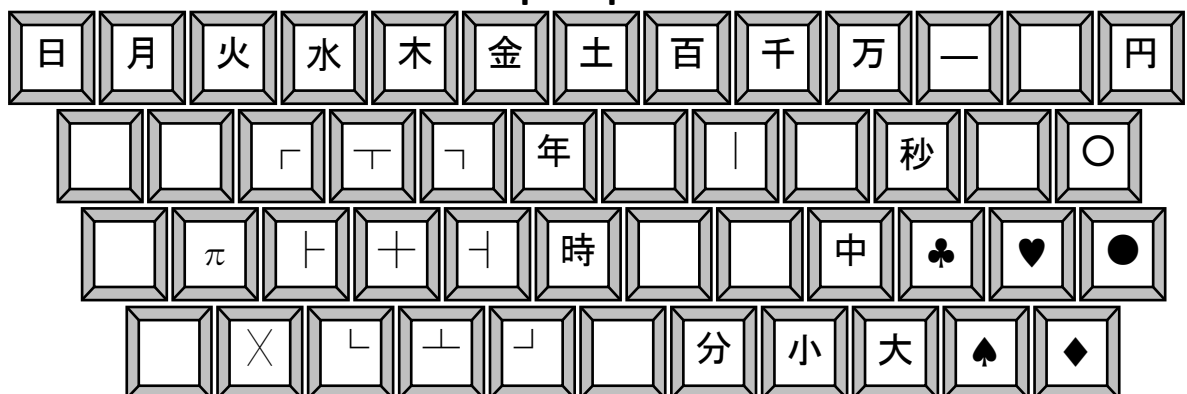
- Non-alpha keys: Bottom left characters are typed with SHIFT released, top right – with SHIFT pressed. CAPS status does not matter
- Alpha keys: lower case letters when SHIFT is released and CAPS is inactive, and when SHIFT is pressed and CAPS is active; otherwise capital letters

Kana = on, Graph = released



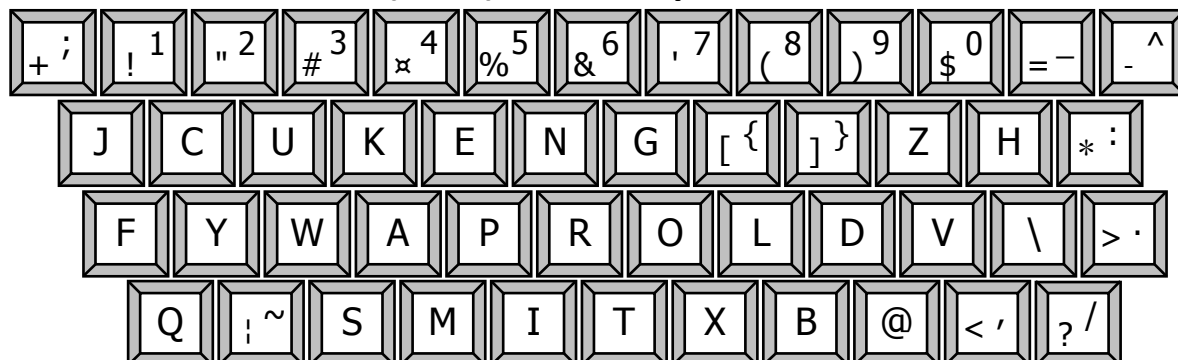
- Hiragana (left): CAPS mode off, Katakana (right): CAPS mode on
- Bottom characters: SHIFT is released, top characters: SHIFT is pressed

Graph = pressed



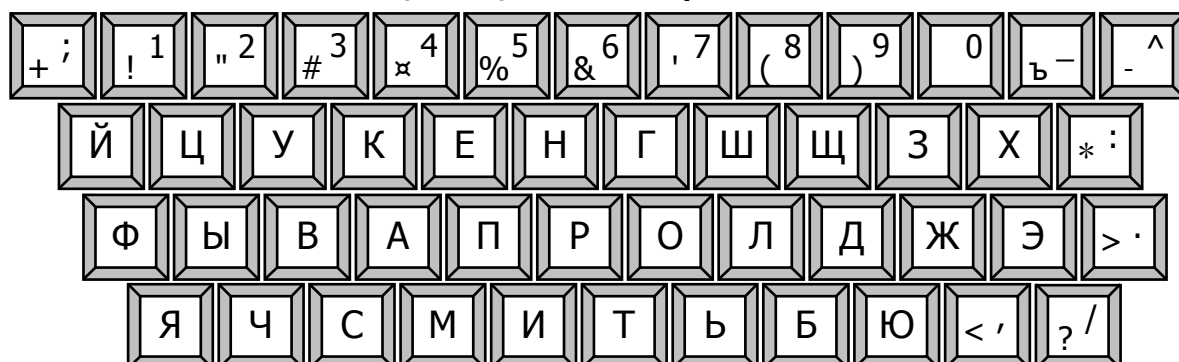
Русская раскладка клавиатуры (Russian Keyboard layout)

Kana (РУС) = off, Graph = released



- Non-alpha keys: Bottom left characters are typed with SHIFT released, top right – with SHIFT pressed. CAPS status does not matter
- Alpha keys: lower case letters when SHIFT is released and CAPS is inactive, and when SHIFT is pressed and CAPS is active; otherwise capital letters

Kana (РУС) = on, Graph = released



- Non-alpha keys: Bottom left characters are typed with SHIFT released, top right – with SHIFT pressed. CAPS status does not matter
- Alpha keys: lower case letters when SHIFT is released and CAPS is inactive, and when SHIFT is pressed and CAPS is active; otherwise capital letters

Graph = pressed

