IQ-BUG

USERS MANUAL

JOINMAX DIGITAL TECH. LTD. 2002

With special thanks to Ted Macy/Gorobotics for his outstanding works in putting this manual together.

CONTENTS

1 Experience the Digital Life

Congratulations! You have purchased an IQ-BUG made by Joinmax Digital! From this moment, your life will become more fun and educational! This little robot will bring hours of enjoyment to you while letting you experience programmable digital life forms!
In order to understand the remarkable features of IQ-BUG and their correct operations, we strongly recommend you to read this manual carefully. We have setup several websites where you can find help and information for your IQ-BUG.

http://groups.yahoo.com/group/IQ_BUG
http://www.iqbug.com

Should you have any questions or suggestions for this product, you can log onto these websites to get help or express your opinions. You are also sincerely welcomed to contact us via Email.

1.1. IQ-BUG Brief Introduction

IQ-BUG is an intelligent robot toy that invented by Joinmax Digital Tech. Ltd. It will let you enjoy the latest robot technology trend through play and begin to teach you about the world of artificial intelligence with amusement.
IQ-BUG is a robot beetle with digital artificial intelligence. Its initial intelligence level is not very high but you can make it become cleverer through simple software programming. You can teach it how to walk, how to avoid obstacles, how to hear, how to blink, how to sing, and so on. Its intelligence totally depends on the program that you gave it. After you are fully familiar with its characteristics, you will be surprised by its unexpected clever behaviors. Let it accompany you, and become your friend and pet!

1.2. Packing List

When opening the IQ-BUG package for the first time, please carefully check the contents of the box against on the following list.

1. One IQ-BUG robotic beetle
2. One additional pair of wings
3. One IQ-BUG users manual
4. One CD containing the IQ-BUG Explorer ^{tm} programming software
5. One programming cable.
6. One certificate of quality and a warrantee card

This list applies to the standard version of IQ-BUG. The study version has slight differences.

1.3. IQ-BUG Personal Data

1.3.1. Basic Materials

Name: IQ-BUG
Birthday: January 1, 2003 of earth time
Height: 128mm
Sex: Chosen by you
Personality: Chosen by you
Hobby: Studying, singing, playing

1.3.2. Sensation Functions

Hungry sensation: If the battery power becomes too low, IQ-BUG will make a warning sound.
Touch sensation: IQ-BUG has three feelers, one on each side of its head, and one on its tail. IQ-BUG can use them to detect obstacles and perform programmed reactions.
Sound sensation: IQ-BUG has one ear on its head. It can hear and react to one or two handclaps based on the program you create.
Light sensation: IQ-BUG has light sensitive eye on each side of its head. These eyes can sense and react to light change independently based on the program you create..
Time reaction: IQ-BUG can perform many actions based on the time interval/delay you specify in the program.

1.3.3. Reaction Functions

Lighting eyes: There are two bright LED eyes located on IQ-BUG's head. They can independently turn on or off based on the pattern you set in the program.
Singing: By using control software IQ-BUG EXPLORER that comes with the IQ-BUG, you can compose songs via your computer easily. After downloading the songs to the IQ-BUG, you will be able to hear the wonderful singing melodies from the IQ-BUG.
Movement: There are two powerful gear motors attached to wheels on either side of the IQ-BUG body. They enable the IQ-BUG to go forward/backward, turn left/right, or any combination thereof.

1.3.4. Behavior Modes

IQ-BUG follows the essential biological feature know to all animals – to react when being stimulated: Its basic behavior mode is: perceiving change of environment → calculate response → perform response. After programming, all reactions from the IQ-BUG to outside stimulus are completed autonomously.

1.3.5. Learning and Evolution Modes

Through the Windows compatible programming interface, different programs can be directly downloaded to IQ-BUG from most Windows based PCs. You determine what the IQ-BUG will and will not respond to through our easy to use, point and click, interface.

1.3.6. IQ Degree

Challenge to your own intelligence and creativity. IQ-BUG's degree of intelligence is completely up to you, so have fun and see what you can do!

1.4. IQ-BUG Appearance

The following picture shows the basic parts of an IQ-BUG:

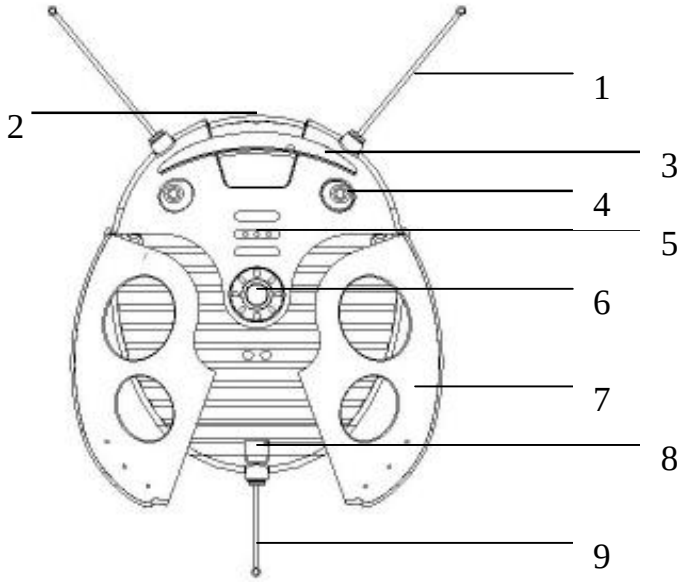


Fig1.

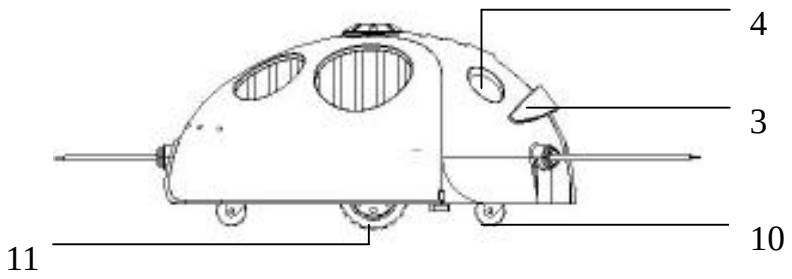
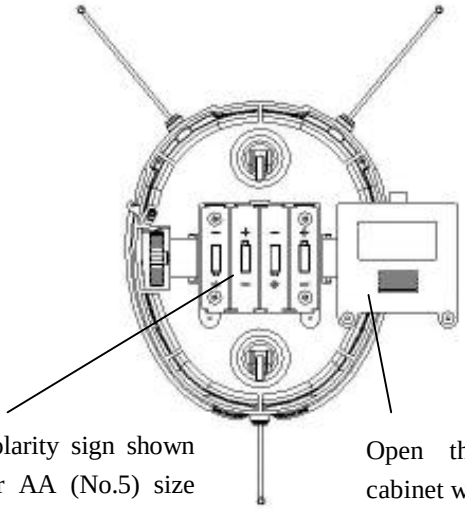


Fig2.

1.Two forehead feelers
2.Sound sensitive ear
3.Two lighting LED eyes
4.Light sensitive eyes
5.Singing mouth
6.Power switch
7.Wings
8.Program download socket
9.Tail feeler
10.Castor
11.Drive wheels

1.5. Power for IQ-BUG

To make IQ-BUG come to life, you need to provide it with a power source. Turn the IQ-BUG over on it's back and open the battery box cover with a small Phillips (+) screwdriver. Install four AA (No.5) size batteries that are in good condition. Make sure and follow the polarity (+/-) signs shown inside the battery box. Reinstall the cover being careful not to over tighten the screws.



Follow the polarity sign shown to install four AA (No.5) size batteries

Open the cover of battery cabinet with screwdriver

Important!!

- Don't use any inferior or easy leakage batteries.
- Do not mix new batteries with used ones.
- Do not mix batteries with different chemicals (e.g. alkaline, carbon zinc or rechargeable batteries).
- Make sure batteries are installed with correct polarity (+/-).
- Dead batteries are to be removed from the IQ-BUG promptly.
- Rechargeable batteries can be used. After being charged they should remain idle for half an hour or so to let their voltage stabilize.
- Do not fasten the battery cover too tight with screwdriver or the threads may be permanently damaged.

1.6. Minimum System Requirement for the IQ-BUG Operation

IBM PC or compatible
Pentium CPU with 32M memory
CDROM driver
One idle serial port (COM port)

Display mode at 16bits color
15MB free space on hard disk for installing control software IQ-BUG EXPLORER
Windows XP / Me/2000/98

2 Understand IQ-BUG Organs and Their Characteristics

2.1. The Artificial Intelligence of IQ-BUG

In the natural world a beetle does not have a very high degree of intelligence but it does have the ability of perceiving it's environment and reacting to it, just like human being. IQ-BUG is an A.I. robot whose appearance is somewhat similar to that of a beetle.
The general response procedures that a beetle use to sense and react to changes of the outside world are: sense change →judge change → react. Same for your IQ-BUG, with sensors for vision, hearing, and touch it can perceive external sound, light, and objects. IQ-BUG also has strong response organs, it can express its thoughts and feelings by singing, blinking eyes and making movements. With a strong sensing ability combined with the abundant expression styles, this lively robot will bring great pleasure to you. As you get to know the IQ-BUG better, you will be able to teach it more intricate behavior.
Let it be your favorite pet!

2.2. Brain

IQ-BUG can be programmed to be quite intelligent. This is thanks to a very powerful microprocessor at the core of IQ-BUG's brain. Just like us, IQ-BUG can perceive the some of it's environment and then make a response. Certainly, the cleverness of your IQ-BUG totally depends on your teaching method! Give it a try!

2.3. Eyes

IQ-BUG has two pairs of eyes. One pair is for detecting ambient light at its current location and the other pair is for appearance and fun. The first pair of eyes can detect small changes in ambient light and make certain responses according to your "teaching". For instance, it may follow a light beam that shines directly onto its body; or it may hide to a darker place. IQ-BUG's second set of eyes are blinking eyes located in the middle front of the head. Each of these eyes can come on or off independently according to your program. It can flash like a firefly, or it can even close an eye, watching the outside world with the other eye only.

2.4. Mouth

IQ-BUG is a singing master like cricket in midsummer. Through the **IQ-BUG EXPLORER™** interface, the IQ-BUG Control software, you can easily compose beautiful melodies at your computer and download them directly to the IQ-BUG. In addition to the ability to create songs, you can also download from your personal music collections. Certainly, how well it sings is all up to you.

2.5. Ear

IQ-BUG would be a little lazy sometimes. It may just lay there and sleep when tired of playing. If you want to wake it up you can, if programmed to do so, make a handclap and the IQ- BUG will wake up and move as you programmed. It also can identify single handclap or double handclaps and make different reactions respectively. The ear of IQ- BUG is a sound-controlled circuit that can sense most sound and is very sensitive. It may not be able to hear your handclaps while it walking or singing due to background noise.

2.6. Feelers

IQ-BUG has two feelers on its head. It can sense obstacles ahead. When its feelers touch an obstacle, it will make corresponding actions. For instance, it will stop, and look, then go away in another direction quickly. If you are naughty and touch its feelers, it may get mad and scream at you. All of these reactions are programmed by you.

2.7. Legs (Wheels)

IQ-BUG has two legs. Though its legs are not so big, it is very powerful. IQ-BUG can even push a small obstacle away. Each leg is independently driven by a powerful gear motor. With these two legs, the IQ-BUG can run in any direction you choose.

2.8. Tail

IQ-BUG also has a tail. The tail has the same function as the feelers located on its head. While going backwards, IQ-BUG is capable of sensing the obstacle behind. If you want to sport with its tail, IQ-BUG may make the violent response according to your program. Don’t be frightened by it!

2.9. Wings

IQ-BUG has a pair of beautiful transparent wings. They need your care. Usually, they

are closed like a door to protect the download port from exposure to foreign objects. When you need to download data, you can carefully open the wings to about 15 degrees and insert the download cable to its download port. Please remember to close its wings after programming has finished. ***(Important! to go beyond 15 degrees may damage the wings seriously)***,

2.10. Understand more

IQ-BUG has many sensing and reaction organs, but its reactions are not fixed. Just like natural beetles, IQ-BUG has many different reactions and a lot of expressions. All these must be setup by you through IQ-BUG EXPLORER™, a special software program for IQ-BUG. Wonder how to make your IQ-BUG get smarter? Then please continue and read the next chapter!

3 IQ-BUG Explorer Usage

3.1. What is IQ-BUG Explore

IQ-BUG Explore is a Windows program developed for IQ-BUG programming. It serves as an operation platform on which you can communicate with IQ-BUG via your PC. By programming you can enable your IQ-BUG act similar to a real bug. Some of IQ-BUG's features are:

- You can select 12 levels of PRI (PRI=Priority) for various conditions. Different settings will make IQ-BUG react differently.
- After program is downloaded to IQ-BUG, the IQ-BUG will be able to move and react freely without connection with a computer.
- With the help of the powerful IQ-BUG music editor, you can input or edit any music in your computer at your will. You can download them into IQ-BUG and let it sing what you have given it.
- With the help of IQ-BUG EXPLORER testing function, you can tell what it can feel, what it can hear, what it can see, and what it can sing.

You can change the behavior of the IQ-BUG at any time, so you can enjoy different IQ-BUG performance every day. You can, for example, program your IQ-BUG to perform as follows:

- Avoiding obstacles, searching for the light source or the dark place automatically;
- Responding to your handclap, making corresponding reaction or singing a song;
- Expressing its mood through blinking eyes and sounding.

Don't hesitate, install IQ-BUG Explorer now, and experience it in person!

3.2. Installation of IQ-BUG Explorer

Minimum system requirements for the IQ-BUG Explorer
Same as 1.6. above.

Installation Procedures:

1. If you are installing from CD and your system has the auto-run feature enabled, the installation dialog will open and you can then select the option to install IQ-BUG Explorer. If auto-run is not enabled, use Explorer to navigate to the CD drive (assuming your CD drive is D:\) and double click on the

   D:\Setup.exe program or click Start\Run and type: D: \Setup.exe

   Then click “OK.”

2. Follow the guide to complete the setup process. The setup program may ask you to type in the serial number in order to continue. You can find this number in the back cover of user manual.

3. After finishing the setup procedure, an IQ-BUG application icon will be added to the “program” item of the “start up” menu. If you double click it, the IQ-BUG EXPLORER will run.

3.3. Using IQ-BUG Explorer

Each IQ-BUG comes to you with the same behaviors preprogrammed into its brain. If you want it to be different from other IQ-BUG’s you should design a unique program for it, teaching it specific ways to respond to certain situations. IQ-BUG EXPLORER is a Windows program with a friendly, easy to use and understand graphical user interface, GUI. Most operations can be completed conveniently through mouse clicking, dragging and dropping. Via the communication cable between the IQ-BUG and your computer, you can download the program you designed into IQ-BUG. After gaining additional knowledge and experience using your IQ-BUG, you will be able to design better and more detailed programs for it.

In order to teach IQ-BUG to react differently in a given situation, you only need to choose its condition and set up a reaction to that condition. The following introduces the use of the IQ-BUG EXPLORER in detail:

3.3.1. File Operation

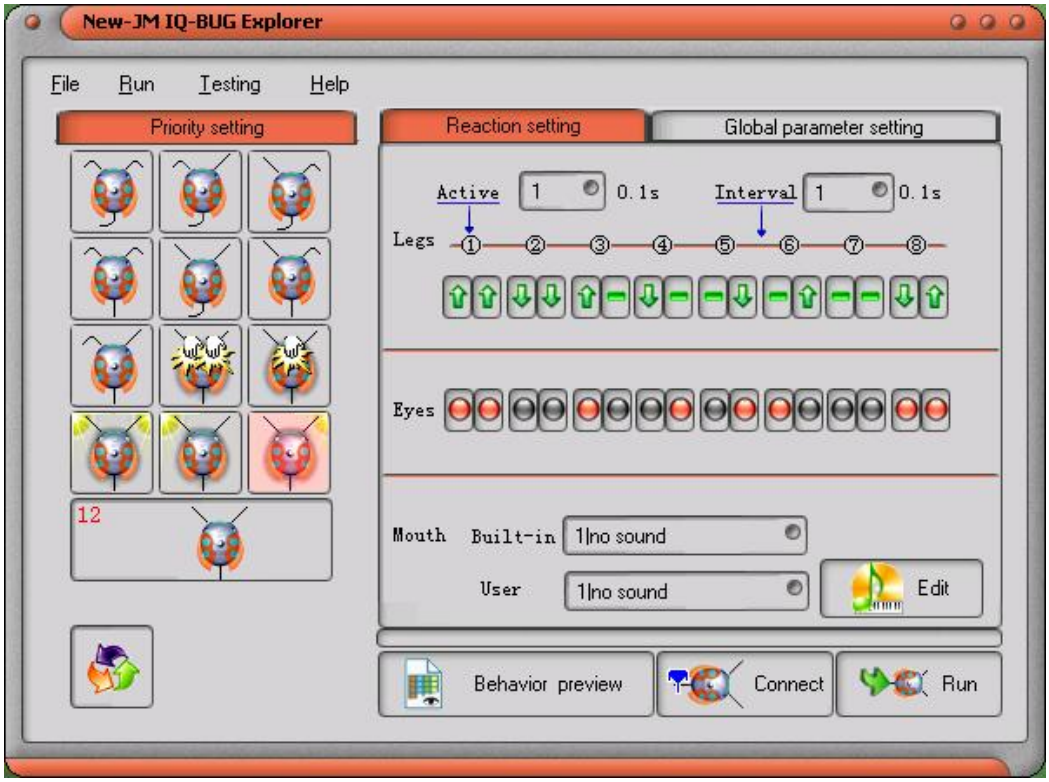
"New"----Create a new IQ-BUG setup program. Choose File>New, the IQ-BUG EXPLORER software will create a program with default settings. You can edit all these settings to meet your requirements there after.

"Save" ----After finishing the setup of your IQ-BUG, choose File>Save, select the directory in the “Location” box, type in a file name that you want, and click the button "Save". Your setup program will be saved into that file.

“Load”-----If you have already an IQ-BUG setup file in your hard disk, you can load it into the program by choosing File>Load command.

"Save as”-----If you want to save the present setup file with a different file name, Choose File>Save As command.

3.3.2. The Priority (PRI) Setting



PRI setting interfaces of IQ-BUG EXPOLOR

1. What is PRI (priority) setting?

If you set up too many conditions for your IQ-BUG without carefully adjusting the PRI settings you may have two or more organs being triggered simultaneously by different stimulas. Since IQ-BUG has only one brain, it cannot react to two or more stimulators at the same time. Therefore, we should give different PRI to different stimulating conditions. The IQ-BUG will react according to PRI settings. This means stimulating condition with higher PRI will trigger first.

2. The setting of PRI

In the “PRI setting” block, there are 12 trigger icons. Except the “normal” PRI icon

which is fixed and marked “12”, all other PRI icons that represent different stimulating conditions can be rearranged to any position of 0 to 11 as you want. The PRI icon in a smaller-numbered position has higher priority and the corresponding stimulation will be reacted first when trigging.

3. The activate and deactivate a PRI

When a PRI icon is placed in one of the numbered positions it is in an activated state. IQ-BUG will react when corresponding stimulating condition happens. If you want to deactivate a stimulating condition, you can simply drag the icon from the “PRI setting” block and drop it into the “Recycle” box  at the bottom of the “PRI setting” pane. IQ-BUG will not react to this PRI.

4. Drag & Drop Operation of PRI Icon

Clicking on the "Recycle" icon will display all deactivated PRI icons. PRI icons can be moved around among numbered positions and the "Recycle" box by clicking and holding it with left mouse key, then moving and dropping it.

5. Related reaction setting for PRI icon

An activated PRI icon is related to “Reaction Setting” column. If you click on a PRI icon in the “The PRI setting” pane, the relative reaction settings will appear in the “Reaction Setting” pane. You can change these settings to meet your design. The “Global parameter setting” is effective to all the activated stimulations.

6. The PRI icons and Their Descriptions

Icon	Description	Icon	Description
	Normal state of IQ-BUG		Head feelers and tail are touched
	Tail is touched		Left eye is triggered by the light
	Left feeler is touched		Right eye is triggered by the light
	Right feeler is touched		Both eyes are triggered by the light
	Left feeler and tail are touched		One handclap heard
	Head feelers are touched		Double handclaps heard

	touched		heard
	Right feeler and tail are touched		Recycle box (for deactivated PRI icons)

3.3.3. The Reaction Setting

Reaction settings include action time (the duration of an action) and action interval. They determine the states of legs, eyes, and mouth when triggers happen. You can set all parameters through mouse clicking. The result will show in Behavior Preview. Please read below for setting details.

1. Setting for leg 'RUN' time

- From the "single step" dropdown box, you can select a suitable time for single step of leg motion. Not like Global Settings this particular setting is applied to the selected reaction only.
- From the "time interval" dropdown box, you can select suitable pause time between two steps of leg motion, ie. on time/off time. Again, this value only affects the selected reaction.

2. Setting leg direction

You can click on the icon in each step from 1- 8 to select "forward", "backward" or "Standing" for a leg.

3. Setting for eyes

You can click on icon in each step from 1- 8 to select "light on" or "light off" state. For duration and interval setting of steps please refer to the global parameter setting in next section.

4. Setting for mouth

Selection of the songs

Select songs you like from the "Songs" dropdown combo box. The box contains some special control commands and sounds files. They are:

1. Silence -- IQ-BUG will not make any noise.
2. Random -- IQ-BUG will randomly play a song out of the user selected sound files or system built-in sounds.
3. Sequence -- IQ-BUG will play user selected sound files or system built-in sounds in order.
4. Reverse--- Is similar to "Sequence" but in reversed order.
5. System built-in sounds --The sounds in the IQ-BUG firmware. User can't edit or remove them. They can only be selected or not be selected.
6. Other sound files ----Other sound files selected by user.

Note: no matter whether chosen or not, all user-defined songs in the "Songs" dropdown combo box will be downloaded to IQ-BUG. Since the brain has a limited capacity it is impossible for it to remember all songs you have taught it. If the downloaded songs exceed its capacity, the software will prompt you to remove some of them until they fit.

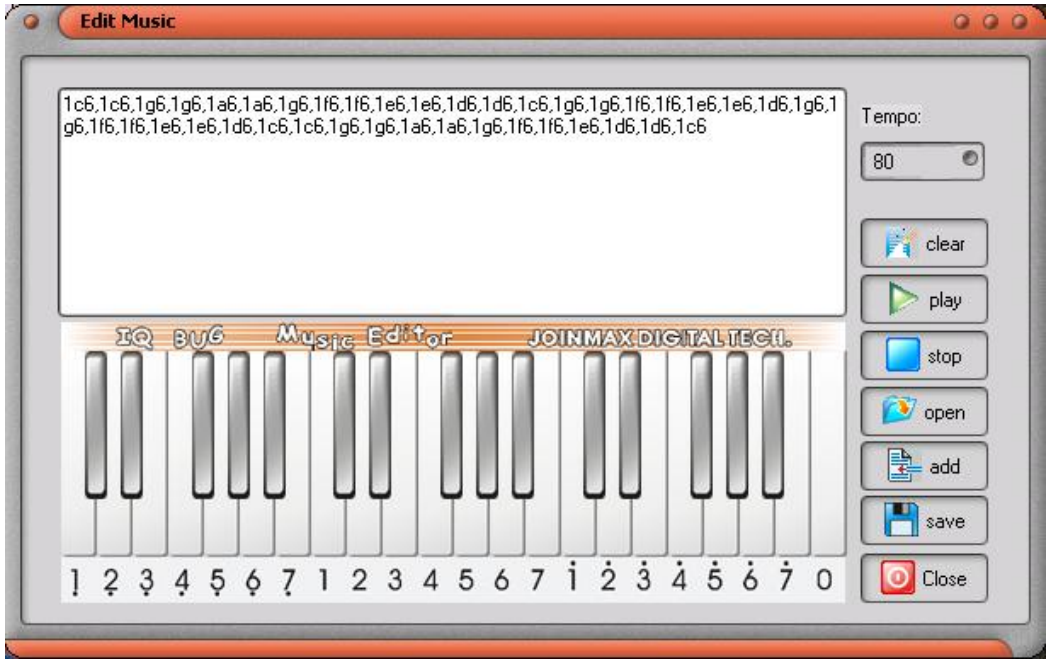
Add and delete songs

The music format of IQ-BUG is compatible to the RTTY format of mobile phone ring completely. If there are any ready-made songs files in your computer, you can add them to the dropdown combo box of “Songs”. Just click the “Edit songs” button, “Edit songs” dialog appears. Click the “Add” button, then choose the specified song file, and click the “OK” button. The song will be added to the “Song list” box. If the content of the songs files exceed the capacity of IQ-BUG, the software will prompt you to delete some from the present “song list”.

If you want to use song files in other formats, such as WAV, ASF, WMA etc, please use appropriate music tools to transfer them into MIDI format. Note: please use songs that contain only the main theme, otherwise the results might be bad. Of course, you can look for songs in MIDI format and use the mobile phone tools to transfer them to the NOKIA ringing format. Then they can be downloaded to IQ-BUG!

Be careful: Because MIDI files may contain more than one sound track. Most software can only transfer one track. So you should edit the file to contain only one track that keeps the most of original sound effects. You can refer to relative instructions for details.

Creation of songs



The song creation interface of IQ-BUG EXPLORER

If you want to create songs for your IQ-BUG simply click the “Edit songs” button in “Edit songs” dialog, and then an “Edit songs” window will pop up. If your IQ-BUG has connected to the computer’s COM port and the power is on, you can click the keys on a virtual piano keyboard with mouse, or press the corresponding keys of the PC keyboard to compose songs for your IQ-BUG.
This figure shows the correspondence of PC keys and the virtual piano keyboard:

The length of demisemiquaver and its semi quaver are of little difference. We use DELAY-INPUTTING to eliminate the wrong length input. For example, if you want to key in “Do” (or "1" in numbered musical notation), just simply type “,” key or click the white virtual piano key corresponding to “1”, IQ-BUG will sing “Do” and “4C6” appears in edit area.
(**Note**: “4C6” is one of the RTTY note format. The general type for an RTTY note is “aXbc”, where **“a”** can be one of 1, 2, 4, 8, 16 or 32 which means the length of that note. “1” is semibreve, “2” is half-note, “4” is quarter note , “8” is quaver , “16” is semiquaver , “32” is demisemiquaver. The larger is the number, the shorter is the note. **“X”** is a letter between A ~G denoting the name of the note. “A” is for “La”, “B” for “Xi”, “C” for “Do”. “D” for “Re”, “E” for “Mi”, “F” for “Fa”, and “G” for “So”, etc. “b” can be 5, 6 or 7 which means the tone in a diatonic musical scale. Larger means a sharper sound. “c” is optional . It could be “#” or “.”. “#” means the note raise semitone, while “.” means length to be extended to 150%. Not all notes have raise tone or extending.)
Press a key on keyboard or click a key on screen will get a quarter notes. By holding the key the note length will change from 4 to 8, 16, 32… and so on, and will roll back to 4. Lose the key at the right length, then that note is done. You can turn to input next note.
After editing your may click “Save” to save it, and let your IQ-BUG remember it permanently.

3.3.4 Setting of Global Parameters

Setting of eye step time and step interval:
These time parameters only need to be set once. They affect all of the blinking eyes reactions to every PRI icon (stimulating conditions). The step time is the duration for each light on or light off. The step interval is the pause between two consecutive

lighting on/off steps.

Setting for left or right light sensor:
The left or right light sensor can't be activated until the "Left light sensor" or "Right light sensor" PRI icon is chosen. When light sensors are activated, IQ-BUG can sense the ambient light intensity. The light sensor setting is a brightness threshold. IQ-BUG will be trigged if a brightness level greater (>) or smaller (<) than the threshold is sensed.

Cycle times setting for reactions of "Normal" PRI icon:
IQ-BUG will stop acting automatically after it has finished some cycle of trigged reactions. It will go into sleep mode in about 2 minutes if no (0 – 11) stimulus appear. While it is at sleep mode, only handclap can wake it up.

Enable/Disable the "Feelers &Tail PRI setting":
While "Enable" button is clicked, the IQ-bug will react totally according to all the PRI setting. So if the IQ-bug is running the reaction of higher PRI, it won't be interrupted by the same or lower one. That may cause the following situation: The IQ-bug seems to have no reactions to your second time touching to its feeler, because of the previous higher PRI reaction is still running.
To avoid this happening, you can just click the "Disable" button. Then the IQ-bug will react to the latest trigger of feelers or tail, regardless of their PRI order. That mean they will be have same priority as the highest one you set for the feelers or tail. The purpose of this setting is to make IQ-bug react more rapidly to being triggered by its feelers or tail.

3.3.5 Behavior Preview

Click the "Behavior Preview" button, then you can open a "the behavior record list" table. The PRI stimulating condition and its reactions are all recorded in this table. You can check it to see if the setting is what you want or not, you can print it out too.

3.3.6 "Run"— To Download Program to the IQ-BUG

After finishing all of the settings, you can download them to the brain of IQ_BUG. The download process is as follows:
First, get the communication cable from the packaging, plug one end to the com port of your computer, and the other end to the download socket of your IQ-BUG, as shown in the figure.

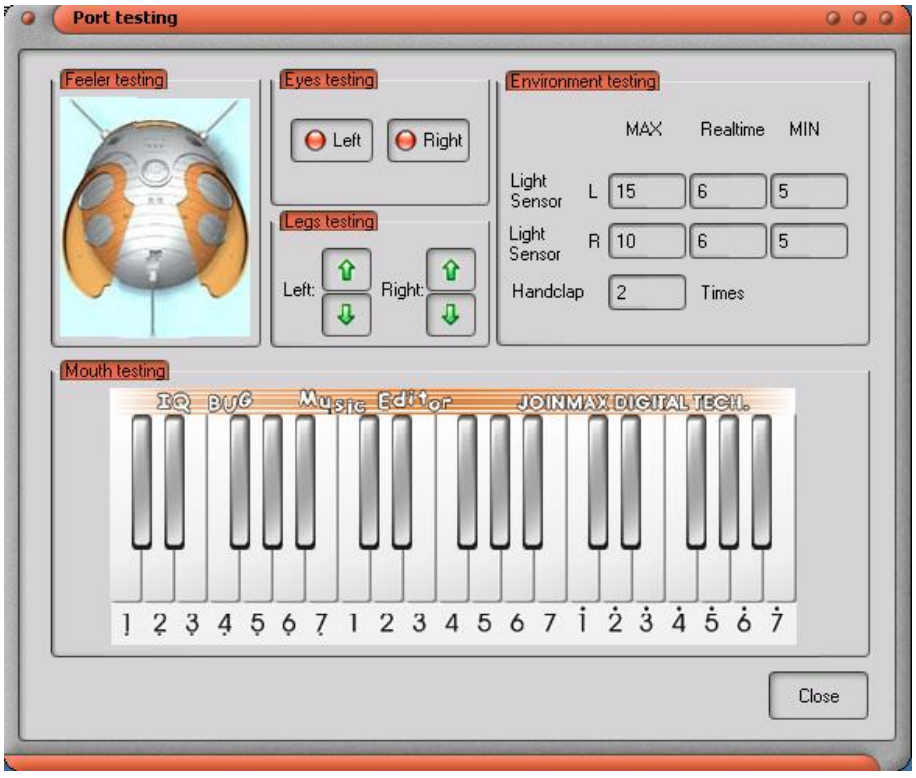
Then you should turn on the power of IQ-BUG by pressing the power button on the top, click the “Run” item of the “Run” menu (or click the “Run” button). The IQ-BUG EXPLORER will download all the setting programs in the “Behavior Table” to the brain of IQ-BUG.

After download has been finished, the IQ-BUG can be disconnected from the computer. It will start to perform behaviors according to the setting programs, and can react to various kinds of stimulus.

If the “the Data download fail!” message box popped up after the “Run” is clicked you should check if the IQ-BUG and the computer are connected properly with download cable, or if the power is switched on and its level is sufficient, or if the com port has been used by others application program, etc.

3.3.7 Hardware Function Testing of IQ-BUG

When you click **Testing>Function Testing** from the main menu, a function testing dialog will show as below:



Hardware testing interface of IQ-BUG EXPOLOR

This testing function is for testing the sensor and reaction organ of your IQ-BUG.

Note: Before doing this please make sure that the IQ-BUG is connected properly to

the computer, and the power is turned on.
The testing functions are explained in detail below:

Testing of feelers

To test the feeling of the left and right feeler and the tail, you can bend its feelers or tail, the corresponding part in the IQ-BUG picture will sway.

Environment testing

- Test and display the real, maximum and minimum values of the light sensors. These values help you to set the threshold of brightness trigger level in **Setting of global parameters** page.
- Test and display the single or double handclaps heard within 1 second.

Blinking eye testing

Click the button of left or right blinking eye, the corresponding blinking eye on the IQ-BUG should blink once as you clicking.

Mouth testing

The piano keys below the “Mouth testing” stand for different music tones. The mouth of IQ-BUG will make corresponding tones while you click on them.

4 Setting skills for IQ-BUG (Never miss them!)

If you are new to IQ-BUG and you don’t quite understand its operation principle yet, you can join us at http://www.groups.yahoo.com/group/IQ_BUG for tips, tricks and how to chat Join us and share your experiences with your new friend IQ-BUG. Below are some setting principles and skills that you can follow.

4.1. Set the priority of multiple organs higher then that of a single organ PRI.

The priority of the feelers PRI icon, for example, should be ranked from higher to lower in the following order: “head feelers + tail”, “left feeler + tail” or “right feeler + tail”, “left + right feelers”, “left feeler” or “right feeler”. Similarly, to the light sensors: “left + right sensors”, then “left sensor” or “right sensor”. Why it should be like this? We can find the answer by looking into an example. Assuming that a “left + right feelers” PRI icon is triggered, and if you set the priority of “left feeler” higher than “left + right feelers”, then the IQ-BUG will always react by the reaction setting of “left feeler”, and never react by the setting of “left and right feelers” because of its lower priority. But there won’t be such problem if the PRI of “left + right feelers” is set higher than that of “left feeler”. Think it, why?

!note: To avoid the confused PRI setting of feelers and tail, you could simply click “Disable” button of the “Feelers &Tail PRI setting” on the “Global parameter setting” page. Then the IQ-BUG will react to the latest triggered situation of feelers or tail, regardless of their PRI setting.

4.2. PRI of “sound” should be set higher than others

So doing will enable the IQ-BUG react to your handclap after more than 0.5 second stop of motors or singing, no matter what state it has been in.

4.3. PRI of “light sensor” should be at the lowest

If it isn’t set so, your IQ-BUG may always be triggered by ambient light, and won’t react to any other PRI trigger. This should be avoided unless you intentionally want it this way. You might want this in a situation where you hope your IQ-BUG will find the darkest place and stay there ignoring any other stimulus.

4.4. Use default setting file if you are a First Time Player

If you still do not fully understand what described above we strongly recommend you to use the default setting file, which can be obtained by opening the “File” menu. Don’t change the priority order of default PRI setting while you edit its reaction settings, unless you understand the IQ-BUG and the IQ-BUG EXPLORER well.

5 Troubleshooting

Item	Problems	Possible causes	Solutions
1	Download failure	1. Wrong connection of download cable. 2. The power is not turned on. 3. The batteries are exhausted. 4. The com port is occupied by another application.	1. Reconnect the download cable. 2. Turn on the power. 3. Replace with new batteries. 4. Close the application that is using the com port.

If there are any other problems, please visit the web site of IQ-BUG: http://groups.yahoo.com/group/IQ_BUG or http://www.iqbug.com. You can also send an email to support@robotplayer.com to report the problems.

6 Warranty

Thank you for purchasing this Joinmax Digital product. To get maximum use of your new product we recommend that you follow a few simple steps:

- Read the Instruction Manual for safe and efficient use.
- Read all the terms and conditions of your product's Warranty.
- Save your original receipt. You will need it for warranty repair claims.
- Should your product need warranty service, please return it to the dealer from whom it was purchased or contact your local distributor to get further information.

WHAT IS COVERED

For three (3) months from the date of original purchase, we will provide, free of charge, parts and service labour to repair or replace any part of the product that fails because of defects in materials or workmanship.

The repaired or replaced Product shall be warranted for the remaining time of the original warranty period or twenty (20) days from the date of repair, whichever is longer.

WHAT IS NOT COVERED

- Accessories
- Charges for mailing of product, service trip costs and damages caused by time delay.
- Failures caused by customer improper operation.
- Natural wear-out of product outlook.

WARRANTY VOID IF

- Product is disassembled by customer.
- Product has been repaired by an un-authorized third party.
- Tampering with any of the seals on the Product.
- Without original receipt issued to the original purchaser by the dealer, specifying the date of purchase.
- Any failure of the Product due to abnormal wear and tear, or due to misuse, including but not limited to use in other than the normal and customary manner, or failing to follow the Instruction for use and maintenance of the Product.
- Damaged caused by accident, fire, floods, or earthquake, etc.

CHARGED SERVICES

We will provide services for products that warranty have expired or not covered by any warranty. Reasonable charges will applied to both parts and services.