User Manual

ALCHEMY SYSTEMS LP
Model：8015-3B

Manufacturer：

Alchemy Systems LP

1. Introduction

1.1. Alchemy Systems L.P.

Alchemy Systems LP, based in Austin, Texas, provides effective solutions for developing, delivering, and tracking critical skills training to large groups of job seekers and workers that don't typically have access to computers. Courses are delivered and managed through our unique group-based training platform or as individual e-learning courses through our enterprise-ready learning management system. Alchemy's course catalog includes highly-interactive educational media and covers topics such as job search, career readiness, industrial safety, mandated training, basic supervision and job success skills as well as industry specific training courses.

1.2. Detail

Alchemy is interested in the potential of RF remote controllers for use with the SISTEM™ product. It is perceived that a change to RF remote controllers will enable SISTEM™ to meet the growing needs of our clients.

The list of high-level requirements and nice-to-have requirements that Alchemy has determined would be beneficial for the SISTEM™ product are specified in the SISTEM: Integration of Radio Frequency (RF) Remotes Business Requirements document.

The purpose of this document is to extend the Business Requirements document into technical specifications that will be use for the design and development of RF Remote Controls (Clickers) solution.

2. Technical Specifications

SISTEM Controller Software

2.1.1. SISTEM software shall be able to link a Clicker's unique identifier with a participant record.

2.1.2. SISTEM software; during questions answering mode; shall be able to display a list participants at the bottom of the screen for those participants that have not answered the question. This participant's exception list will show up at the bottom of the screen after a configured percentage of the participants have casted there vote (answer). The percentage will be specified in a configuration file and shall be defaulted to 50%. This value will be able to be changed through the SISTEM administration interface.

2.1.3. SISTEM shall support a Course Management Bar (CMB) that is found at the bottom of the screen during a course. It includes several buttons for managing the participants and the course. The bar also includes visual indicators for representing the status of student responses as well as the course. See detail requirements for CMB at the Functional Specifications document date October 3, 2007 here:
(\\Scfs01\Departments\Department Public Shares\Instructional Design Public\Projects\RF Clickers\ SISTEM_RF_FS.doc) Section 2.1.2

2.1.4. SISTEM Course Management Bar shall be used to display a list of participants that have not voted or are having problems related to remote to base station communication issues.

2.1.5. SISTEM CMB shall provide access to the Participant Management window. The purpose of the Participant Management Window is to provide roster and student management functions to course administrators during a course. The Participant Management Window includes the features specified for Option A on the functional requirements document date October 3, 2007 here:
(http://www.redminealchemy.com/redmine/documents/show/17) section 2.2 :

2.1.6. SISTEM software shall support two different methods of assigning clickers to students. The selected registration method will be specified in the registration UI screen by using a checkbox called "Self Registration". The default value of this checkbox will be stored in a configuration file and will be selected in the SISTEM administration panel.

    2.1.6.1. Method one provides for assigning one clicker to one student at a time like it is done today.

    2.1.6.2. Method two will support multiple participants registering/binding their remote to their participant record simultaneously.
Use Case:

        2.1.6.2.1. Method two will expedite the participants' registration process to support up to 150 participants. Method two will list up to 16 student's names at the same time.

        2.1.6.2.2. Each student will have a unique clicker identification number beside their name. The clicker identification number

will consist of four digits. Each digit of the number shall be 1-6 inclusive.

2.1.6.2.3. Each student will need to key in their number on the remote and SISTEM must capture the 4 key sequence for each remote to construct the pin number and match the number with a student record.

2.1.7. SISTEM software shall support multiple participants registering/binding their remote to their participant record simultaneously. This will expedited the participants' registration process to support up to 150 participants.

2.1.8. SISTEM shall support the ability to create class roster lists. This list will reduce the people list to just the people that are scheduled for training instead of the entire employee list. This is needed to support multiple participants' registration functionality.

2.1.9. The roster list shall be managed (create new student, select student, add and remove student)by SISTEM operator.

2.1.10. The roster list shall be stored locally on the targeted SISTEM computer.

2.1.11. The roster list shall be managed remotely via web browser. This will enable an instructor to prepare for the training session without having to leave his primary work area. Note: This requirement is deferred and will not be implemented as part of this project.

2.1.12. SISTEM software shall provide a web enabled interface exposes SISTEM administration features. This will enable the instructor to manage their work using the LMS as an alternate user interface and linking to SISTEM via a web browser to manage:

2.1.12.1. Database synchronization

2.1.12.2. Upload training records.

2.1.12.3. Web services

2.1.12.4. Change passwords

2.1.12.5. Manage class rosters and student registration.

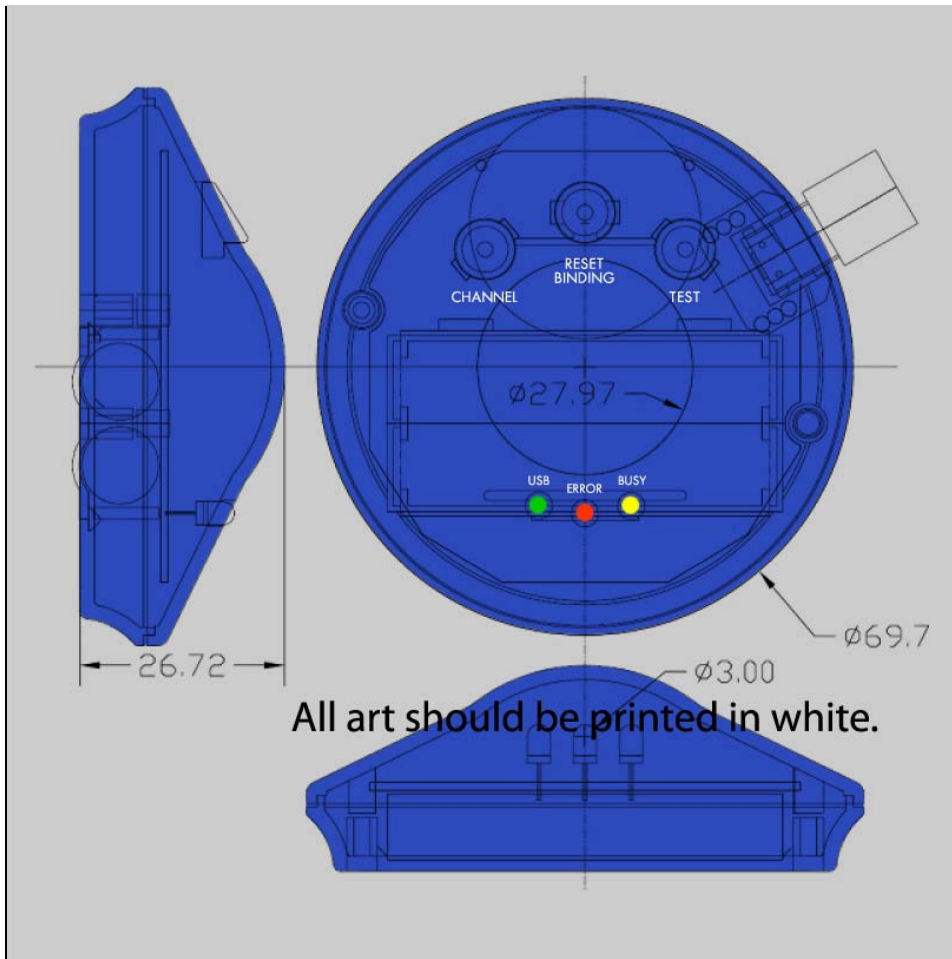Note: This requirement is deferred and will not be implemented as part of this project.

2.1.13. SISTEM shall be able to detect when the base station cannot communicate with a clicker that has been registered to a participant.

2.1.14. SISTEM shall allow a SISTEM operator to add and remove remotes that will be configured and linked to a specific SISTEM computer.

SISTEM RF Base Station

> 2.1.15. Base Station shall communicate with remote controls on 2.4 GHz frequency.
>
> 2.1.16. Base Station shall be able to communicate with remotes within a range of 150 ft.
>
> 2.1.17. Base Station shall communicate with up to 150 remote controls concurrently.
>
> 2.1.18. Base Station shall communicate with computer interface via USB 2.0.
>
> 2.1.19. Base Station shall communicate with computer as a USB to Serial interface. Ex. FTDI driver).
>
> 2.1.20. Base Station shall be powered via host computers USB interface.
>
> 2.1.21. Base Station shall support Application Programming Interface (API) to send and receive messages from the base station.
>
> 2.1.22. API function to read remote control messages from base station.
>
> 2.1.23. API function to start base station transceiver to poll/receive messages from remotes.
>
> 2.1.24. API function to stop base station transceiver from polling/receiving messages from remote.
>
> 2.1.25. API function to change Base Unit Channel/Frequency. This will support the scenario when communication interference occurs, and the SISTEM operator has to switch to a clear channel.
>
> 2.1.26. API function to read a specified remote control battery status.
>
> 2.1.27. API function to read a specified remote control "online" status. Meaning that the Base Station can communicate with a specified remote.

2.1.28. Base Station plastic case shall follow the following specifications per following drawings:

CHANNEL   RESET BINDING   TEST

Ø27.97

USB   ERROR   BUSY

Ø69.7

26.72

All art should be printed in white.

Ø3.00

eLearning 2.4 GHz Transceiver (Two-way) Base Station Design control function (EX)

LED Display state Part

LED 1: USB connection Indication Display
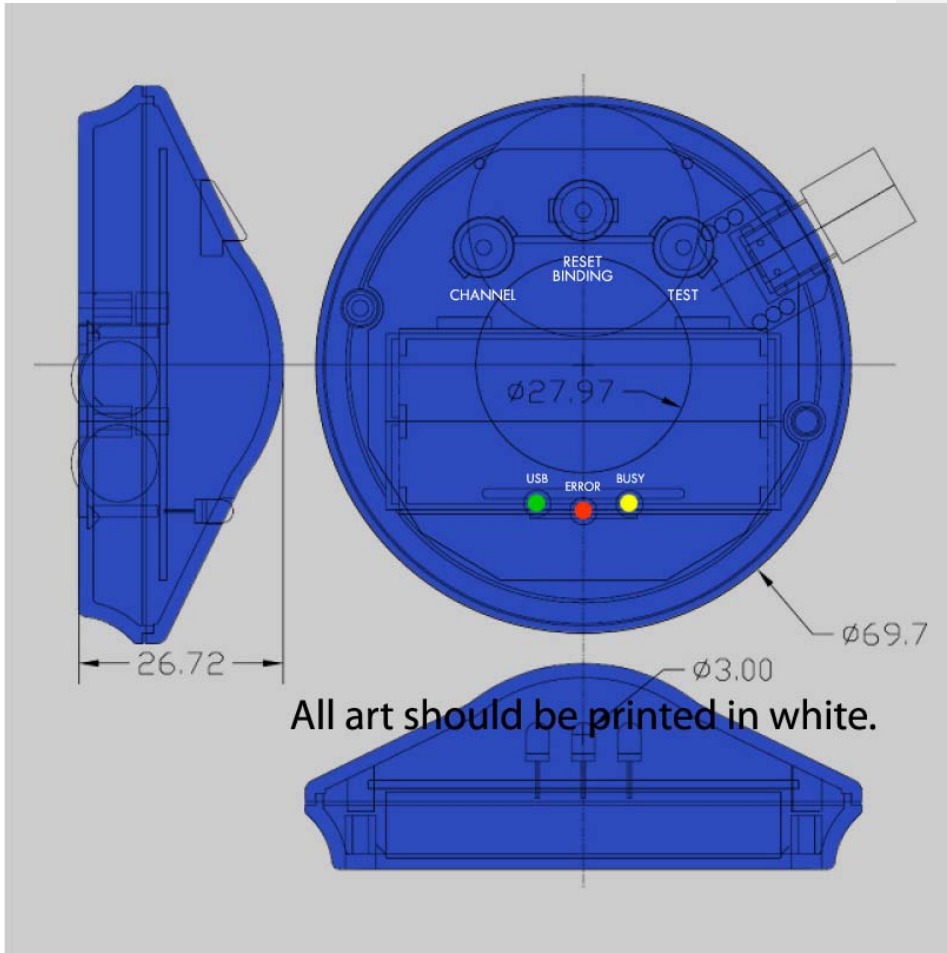
LED 2: On Line Display or Error

LED 3: Busy communication

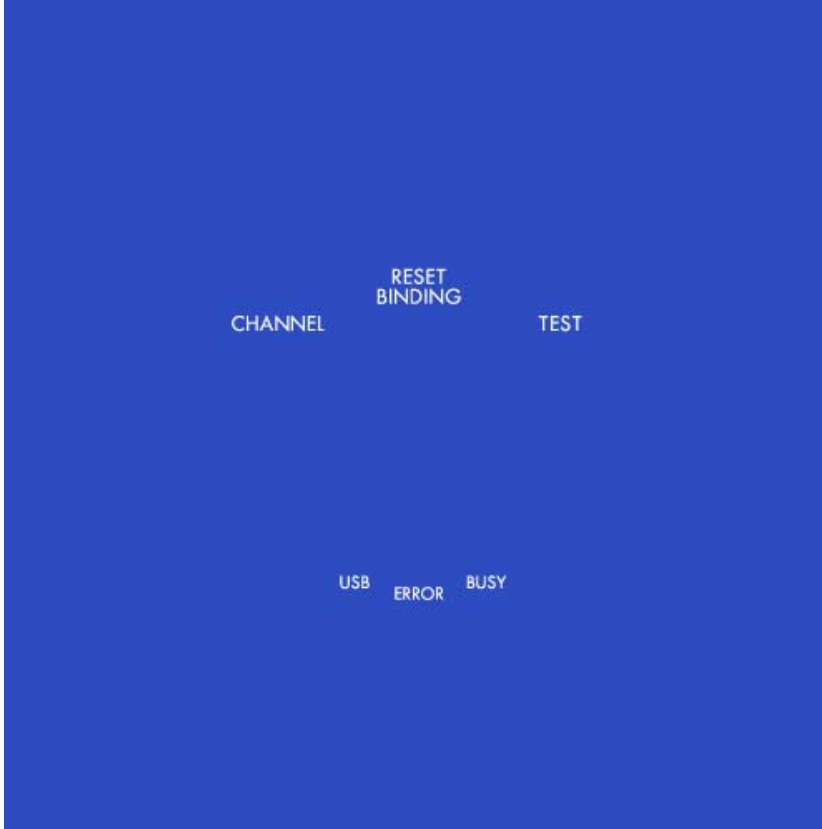SW 1: Channel (frequency) control (clear channel) Knob

SW 2: Reset (binding) Knob

SW 3 : Testing or Buard rate control Knob

Bottom cover serial no sticker Label

Mechanical Drawing Unit : m/m

2.1.29. The Base Station shall display a label at the bottom cover with the following information:
Alchemy Systems, LP
toll free: 1(888) 988-8832
Email: support@alchemysystems.com
www.alchemysystems.com

2.1.30.   Base Station shall be able to signal the clickers to turn their power off.

SITEM RF Remote Controls/Clickers

2.1.31.   Clickers shall communicate with remote controls on 2.4 GHz frequency.

2.1.32.   Clickers shall be able to communicate with base station remotes within a range of 75 ft.

2.1.33.   Clicker shall support the ability bind to a specific base station.

2.1.34.   Clicker shall provide participant feedback by using green led to indicate that message was received by the Base Station.

2.1.35.   Clicker shall provide participant feedback by using an Answer LED.

2.1.36.   The answer LED light will remain Off while there is no questions to be answered, meaning the base station is not receiving answers

2.1.37.   The answer LED light will turn on solid red, when the base station is enabled to start receiving answers.

2.1.38.   The answer LED light will remain On but change color to Green when answer is received by the base station.

2.1.39.   The answer LED light will flash red if remote fails to send an answer to the base station.

2.1.40.   During the remote-base station Simple MAC binding process:

   2.1.40.1. The answer LED light shall turned green after a remote successfully binds to its base station.

   2.1.40.2. If the remote is unable to bind then the answer LED light will flash red. This should only happen if a remote is having difficulties communicating with the base station. For example the base station power is off.

2.1.41.   The power LED will be Off when Remote is not in used.

2.1.42.   The power LED will be On solid blue when Remote is powered up.

2.1.43.   The Battery level indicator shall be implemented by using an LED battery level indicator..

2.1.44.   Clicker shall not have a dedicated power switch.

2.1.45.   Clicker shall be able to power on by pressing any of the 7 keys on the keypad.

2.1.46.   Clicker shall power off by pressing down and holding any key for 10 sec.

2.1.47.   Clicker shall power off after 60 minutes of inactivity.

2.1.48.   Clicker shall support 6 buttons that will be used for multiple choices answers.

2.1.49.   Clicker shall support a 7th button to be used for remote binding purposes. This key will display a ($\leftarrow\rightarrow$) symbol on it.

2.1.50.

2.1.51.   Clickers buttons shall be color coded as:

　　2.1.51.1. Green - 1

　　2.1.51.2. Red – 2

　　2.1.51.3. Purple – 3

　　2.1.51.4. Blue – 4

　　2.1.51.5. Yellow – 5

　　2.1.51.6. Orange – 6

　　2.1.51.7. Teal – ($\leftarrow\rightarrow$)
　　　　NOTE: use same colors as the current IR remote controls.

2.1.52.   Clickers' buttons shall be labeled:

　　2.1.52.1. Number 1 on the button with "/" and a check mark $\sqrt{}$. **(1 / $\sqrt{}$)** .

　　2.1.52.2. Number 2 on the button with "/" and an X. **(2 / X)**

　　2.1.52.3. Number 3 on the button.

　　2.1.52.4. Number 4 on the button

　　2.1.52.5. Number 5 on the button

　　2.1.52.6. Number 6 on the button

　　2.1.52.7. Symbol   "$\leftarrow\rightarrow$" on binding button.

2.1.53.   Clickers buttons positions should be equally distributed on the key pad area in the following order:
(1/$\sqrt{}$) ---- (2/X)

(3) ---- (4)

(5) ---- (6)

($\leftarrow\rightarrow$)

This picture is provided to describe the buttons layout concept and should not be used as the final remote casing design.

LEDs

⏻ ● 1) Blue = Remote is on   ↕ Bind button

? ● 2) Green = question answered

● Red = question unanswered

▭ ○ 3) Yellow = battery low

2.1.54.   Clickers shall support the ability to support 1 key press answers. Meaning that when a participant pres any one button out of the 6 answers buttons, the clicker will transmit the keypad code to the base station without the need of pressing a "send" button.

2.1.55. The Clicker shall display a label at the bottom cover with the following information: information:

Alchemy Systems, LP
toll free: 1(888) 988-8832
Email: support@alchemysystems.com
www.alchemysystems.com

Warning：

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two
conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

changes or modifications not expressly approved by the party responsible for compliancecould void the user's authority to operate the equipment.
NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different
from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help.
NOTE: This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.