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Balyo Combox V2 PRD

OPP00610

Project : Balyo Combox V2

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Date	Version	Author	List of changes
27/01/2021	C00	Thibault Lestavel	Creation
28/04/2021	C01	Martin Bruder	Update
11/05/2021	C02	Martin Bruder	Add material type and remove daughter board from table versions
3/6/2021	C03	Martin Bruder	Add standard version with and without I/O boards
27/1/2022	C04	Martin Bruder	Change request on the color of LEDs for the button backlight

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1 INTRODUCTION

This document is the PRD of the project/product: Balyo Combox V2

1.1 Abbreviation and glossary

Acronyms	Definition
BOM	Bill of Materials
B2B ~ B2C	Business to Business - Business to Consumer
COGS	Cost of Goods. (Includes: BOM – VAM - Testing - Shipment) VAT & Duties are excluded from the COGS
FOB	“Free on Board” Cost that includes the shipment from the assembler to the shipping location
LCA	Life Cycle Analysis
MSRP	Manufacturer Suggested Retail Price
TTM	Time to Market
VAM	Value Added Margin (cost from the Assembler (EMS))
VAT	Value Added Taxes

1.2 Reference documents

N°	Description	Reference
DR01	Combox V2 mechanical CAD – Button version	20-MACOMBAT-B20.SLDASM
DR02	Combox V2 mechanical CAD – Standard version	20-MACOMBIO-B20.SLDASM
DR03	Combox V2 mechanical CAD – Display version	20-MACOMDIS-B20.SLDASM
DR04	Assembly contract between Kickmaker & Balyo (feb 2020)	Balyo Combox - Contrat d'Assemblage document vx.docx

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DR05	Motherboard (or main board) schematic	20-EAMB-KMB10 - Combox Main Board B10 Schematic.PDF
DR06	Daughter (or additional board) schematic	20-EADB-KMB10 - Combox Daughter Board B10 Schematic.PDF

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3 PRODUCT CONCEPT SUMMARY

3.1 Product Description



Describe the complete product system, including accessories, packaging, software, and services platform.

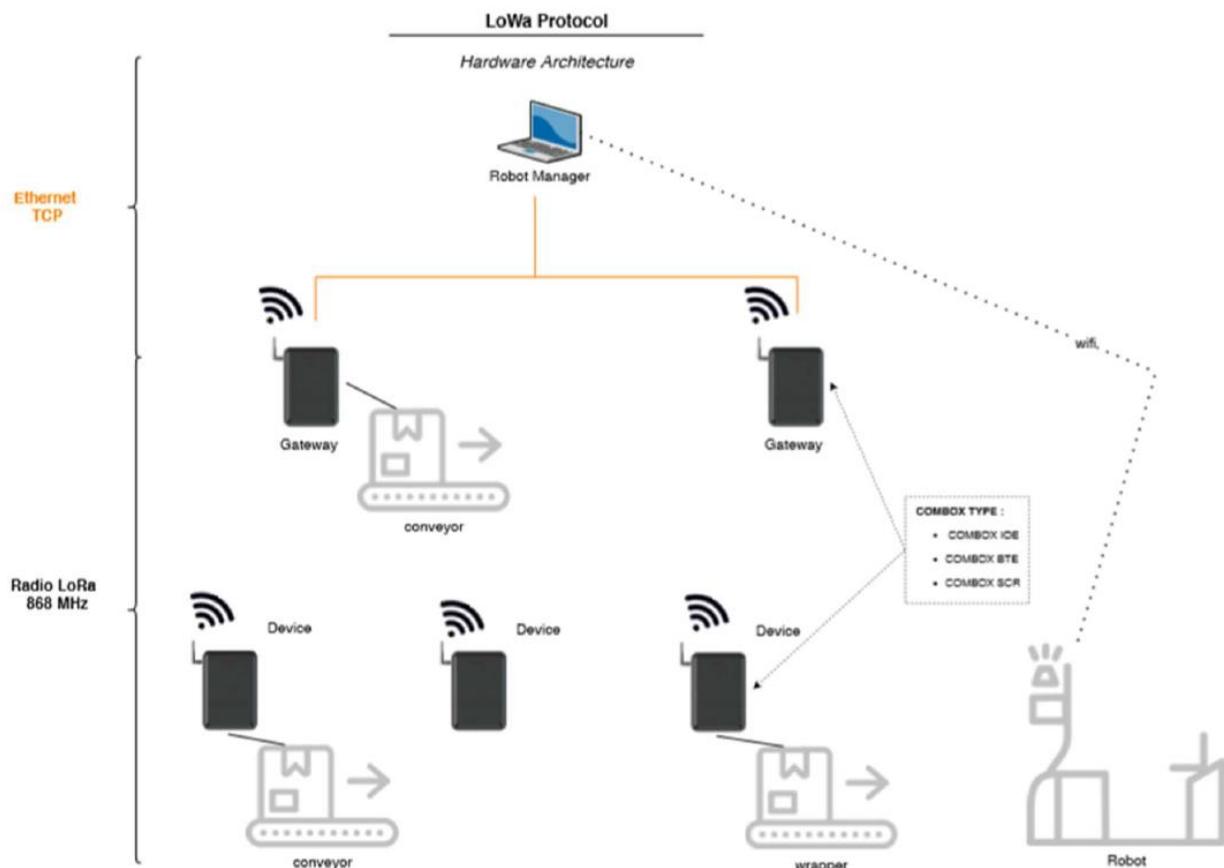
The Balyo Combox V2 aims to replace the current Balyo Combox.

The Combox and its accessories have been designed for integration in a global solution of Balyo automation. It permits communication between the environment, the Robots and the Balyo automation solution supervisor.

A practice example would be for the Combox to unlock an automated door once Balyo AGV gets in front of it.

The principle of operation is described below:

1. The “Robot Manager” is hardwired to a Gateway (which is a Combox)
2. The Gateway transmits & receive messages to the deployed Combox Devices
3. The Device then act as a relay (radio or physical)



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3.2 Value Proposition



Describe the basic value proposition of the product. Why will users buy it? How is it better than or different than existing product offerings? What is the pivotal feature or feature set that makes it great?

As the Combox V2 intends to replace the current Balyo Combox V1, the product design shall consider the following:

1. Cost effectiveness: the Combox V1 is made from off-the-shelf parts which are not designed especially for Balyo's usage. Moreover, assembly time is significant
2. Feature-centric: the Combox V2 shall be feature-centric to serve Balyo usage in a warehouse environment (see 3.3 Feature Set).
3. Versioning: the Combox could be enhanced with features according to the customer and/or the application (display, pushbutton, ...)
4. Installation ease: the Combox installers are not sensitive to the product design and to the fact that the electronic assembly can be quite fragile. The design shall be fool-proof and shall prevent the user from damaging the device during this phase

3.3 Feature Set



List the major feature sets of the proposed product. Besides the functional attributes, be sure to include connectivity, charging, and compatibility with ancillary products.

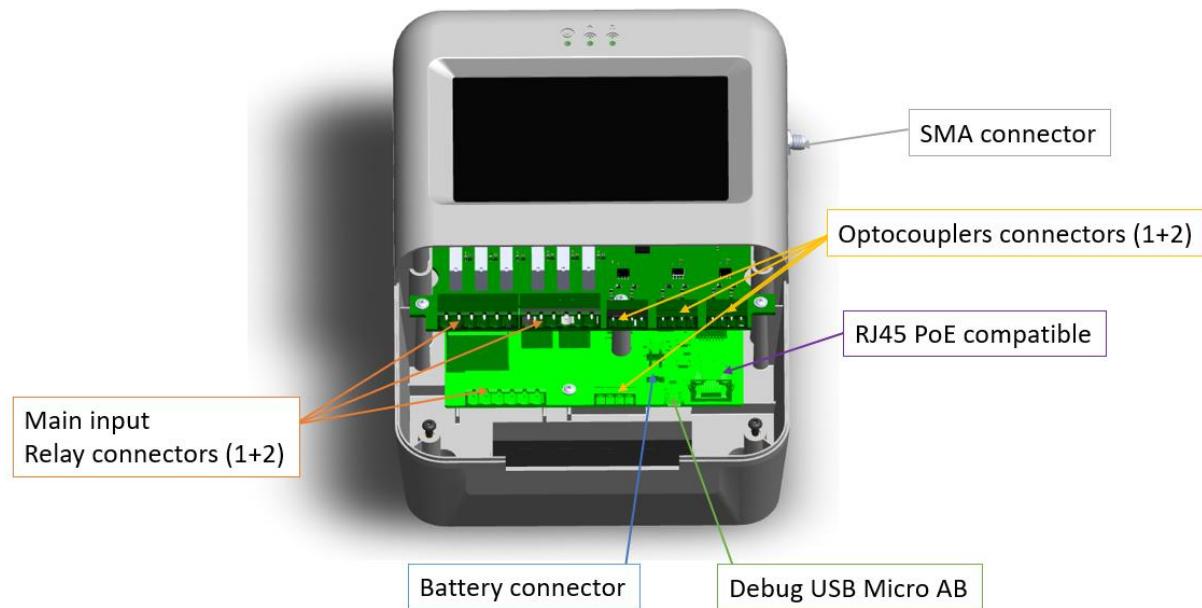
3.3.1 Feature set

The Combox V2 shall have the following features:

- Be powered by main supply
- Be powered by battery
- Be powered by Power Over Ethernet (PoE)
- LORA communication (868MHz)
- 2 optocoupler inputs
- 2 relay outputs
- Service USB
- A light indicator for power
- Two light indicators for RF transmission (RX and TX)
- Optional 6 inputs + 6 outputs
- Option in PCB to add WiFi communication in a future release (2.4GHz & 5GHz)

3.3.2 Connectors

The product connector interface shall be as follow:



Purpose	Connector	Example reference
Main input (110V – 230V)	Terminal block 5.08mm	Phoenix Contact 1757284
Relay outputs (all types)	Terminal block 5.08mm	Phoenix Contact 1757284
Optocouplers inputs	Terminal block 3.81mm	Phoenix Contact 1803293
RJ45 – PoE compatible	RJ45	Amphenol RJHSE5485
Battery	3.96mm keyed connector	Molex 9652028
Debug USB Micro AB	USB2.0 Micro AB	Amphenol 10103594-0001LF
RF Antenna	50ohm RE-SMA female	PCB MHF to panel SMA Female connector

3.4 Competitors Benchmark



Define the upcoming competitor Market with clear view over pricing mapping, features differences, end-customer targeted and tear downs.

No competitor as this is first a Balyo-usage oriented device

3.5 COGS, FOB, & MSRP Targets



List the target COGS and FOB targets as well as the MSRP assumption for the product. Be sure to include the annual manufacturing volume level associated with the values. For CE products sold direct to consumer, a mark-up of 2x FOB (50% margin) is typical.

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The product Component BOM (CBOM) shall be as follow:

Product version	Max CBOM cost
Standard	100€
Display	150€
Button and battery	120€
Extended IO	Additional 25€

It is planned to recover development cost within the 600 first units.

The retail price of the Combox V2 has not been divulgated as it is mostly included in the installation fees and not directly purchased by the end customer.

Target added value (VAM) is not here stated.

3.6 Product Roadmap

 Share the current TTM of the product and highlight key project Milestones. (Clinical trials, Marketing Presentation...)
 Describe the evolution of the product over the next 2 to 4 years. Is the product a line extension of an existing product line? Will it start a new product line? How will the feature set evolve over time? What accessories will follow as part of the product ecosystem?

The development and industrialization roadmap is the following (considering a start the 15th of February 2021):

Event	Date
R&D closure (for DVT)	End of February 2021
DFM	End of March 2021
Tooling manufacturing	End of June 2021
Certification	End of August
First batch of 300 units	November 2021
Second batch of 300 units	First semester of 2022

3.7 History & Legacy of the Project

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Advise the project legacy (Previous design / PCC/ ...), reasons of project shifts.

4 INDUSTRIAL DESIGN REQUIREMENTS

At this point on, mechanical CAD stated in DR01, DR02 and DR03 shall be used as mechanical references.

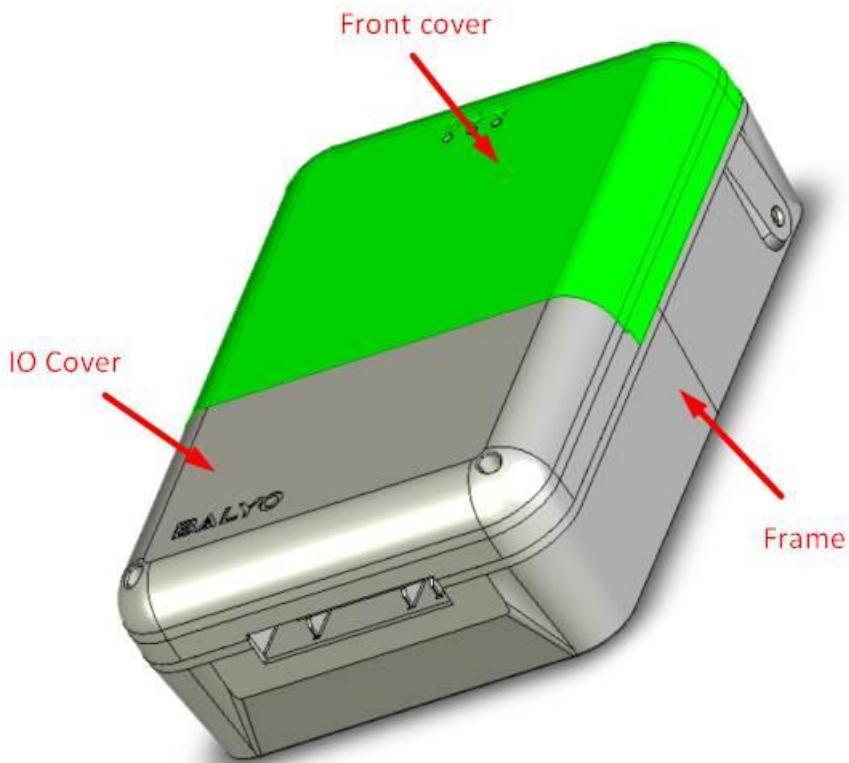
4.1 Color, Material, & Finish



List any materials that are deemed a requirement to achieve the ID vision for the product.
Metal exterior enclosures, glass, textiles, specific finishes (gloss, mirror finishes. PVD), and color matching.

The Balyo Combox V2 mechanical consists in a 3-part casing, such as:

- Frame: attached to the wall and support for the electronic
- Front Cover: only accessible for service (from the Frame back screws). Exist in 3 versions.
- IO Cover: can be accessed by removing the two front screws to provide access to the Combox V2 interfaces



The part CMF shall be according to the following table:

Element	Color	Material	Finish
Frame	Grey – RAL7021	ABS UL94-V0	Charmille 30
IO Cover	Grey – RAL7021	ABS UL94-V0	Charmille 30
Front cover – standard version	Grey – RAL7021	ABS UL94-V0	Charmille 30
Front cover – display version	Grey – RAL7021	ABS UL94-V0	Charmille 30
Front cover – button version	Grey – RAL7021	ABS UL94-V0	Charmille 30

Above LED indicators, the following logos shall be integrated to the Front Cover design (same for all 3 versions).



4.2 Product Versions & Configurations



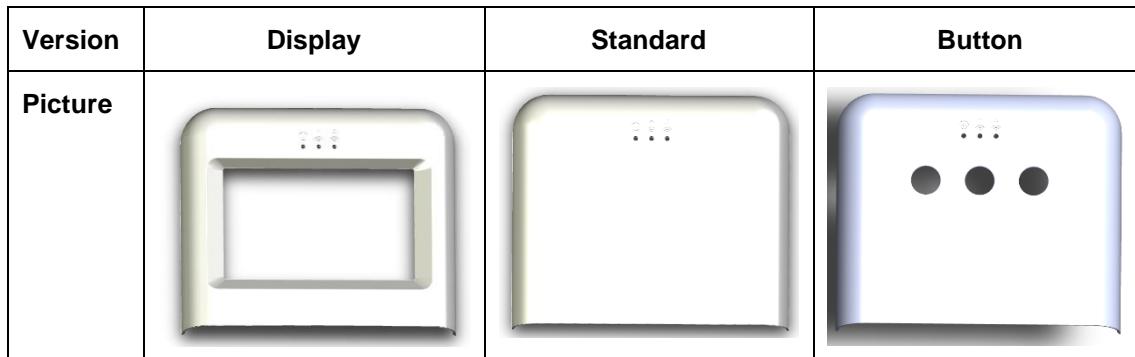
List any known permutations of the product including color schemes, premium and budget versions, limited editions, and sizes.

The Combox V2 shall be configurable according to the following table:

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VERSION	STANDARD	EXT-IO	TOUCH-SCREEN	BUTTON WITHOUT BATTERY	BUTTON WITH BATTERY
FRONT COVER	Standard	Standard	Display	Button	Button
DISPLAY	Not available	Not available	Available	Not available	Not available
BACKLIT BUTTON	Not available	Not available	Not available	3	3
AAA BATTERY	Not available	Not available	Not available	Not available	Available
CONNECTIVITY	LoRA	LoRA	LoRA	LoRA	LoRA
ETHERNET & POE	Available	Available	Available	Available	Not available
230V POWER	Available	Available	Available	Available	Not available
I/O NUMBER	2	2	2	2	2
ADDITIONAL I/O	Not available	+6	Not available	Not available	Not available

Front covers:



4.3 Rendering

5 USER EXPERIENCE REQUIREMENTS

5.1 Out-Of-Box Experience



List any specific expectations or requirements around experiencing the product for the first time (removing the product from the packaging and initial exploration).

5.2 Product Touch Points



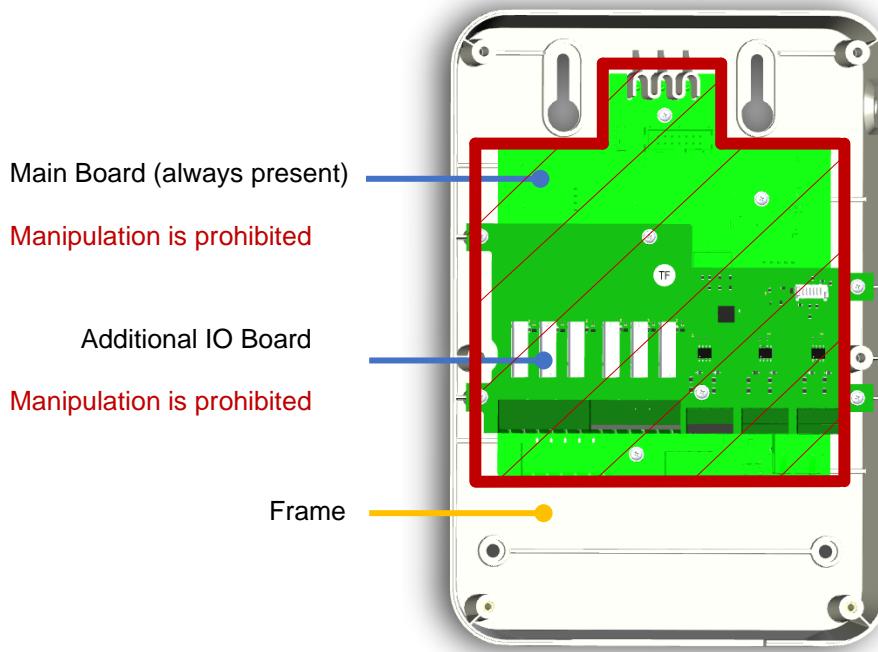
List all the relevant touch points on the product that the user is expected to interact with. Include buttons, switches, input surfaces, handles, grips, areas of tactile interest, etc.

5.2.1 Installation & service

Installation

The installer will receive the Combox V2 fully assembled. In order to fix it over the wall, he will need to disassemble it according to the [Service Manual – Installer section \(version TBD by Balyo\)](#).

In all case, touching the electronic shall be prohibited in order not to damage it (red area below).



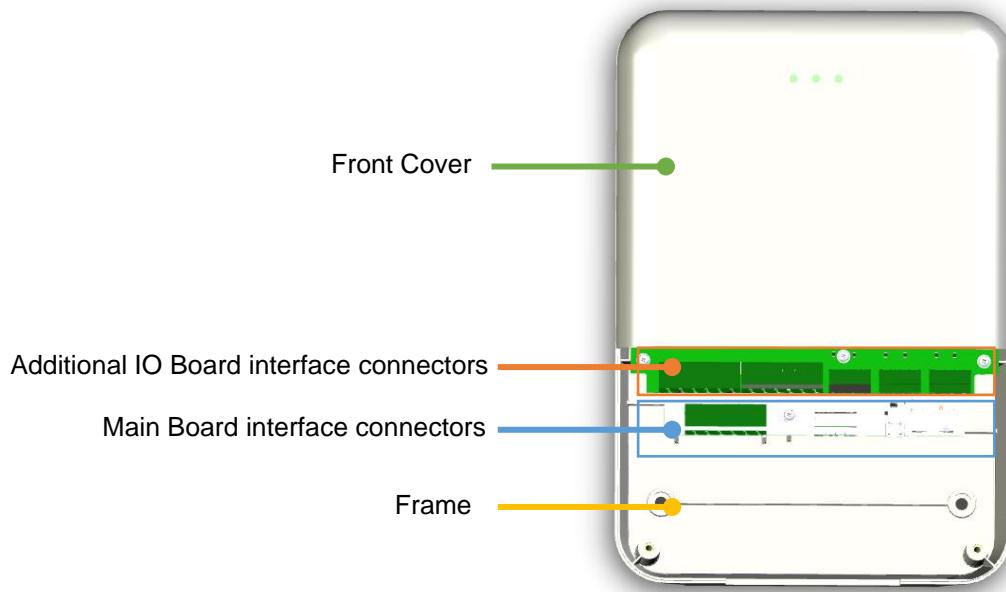
The installer shall always wear ESD glove as long as the Front Cover is opened in order to prevent ESD discharge which can occur at reasonable distance.

Service

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The end user or service person would only be granted the access to the interface connectors.

Yet, the PCBA components can still be accessed so care shall be taken during manipulation.



5.2.2 End user

The end shall only have access to:

- Front Cover indicators (3 in total)
- Buttons – for the Button version (3 in total)
- Touchscreen – for the Display version

5.3 Human Factors & Ergonomic Considerations



List any interaction points of the product where consideration of human factors will be important. Wearable products should include expectations on the size range the product should be compatible with; include max input force requirements, readability/legibility of text, weight and size considerations for handheld products, user comfort, and user confusion issues. Consider indicator recognition, audible queues, max level of sound emitted (fans, motors), etc.

5.3.1 Installation & service

The Combox V2 can be powered by the Main Supply (110Vac to 230Vac) which can cause serious harm to the installer.

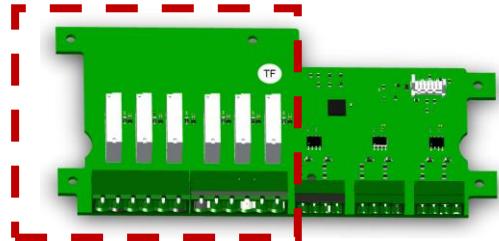
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Prior installation, main supply shall always be cut off.

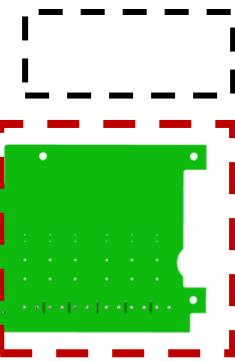
After installation, and especially during servicing, the Hot area can still be accessed. Extreme care shall be taken.

The Hot (230V-compatible) area surrounds the “bigger connectors” for both the Main and Additional IO Boards, such as:

Additional I/O Board

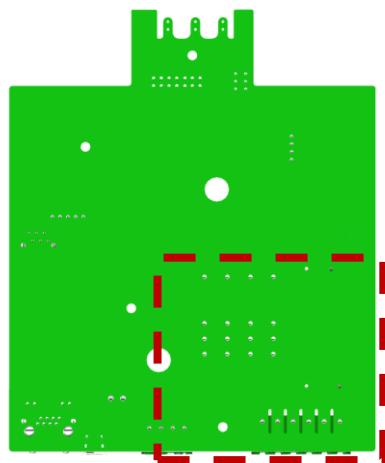
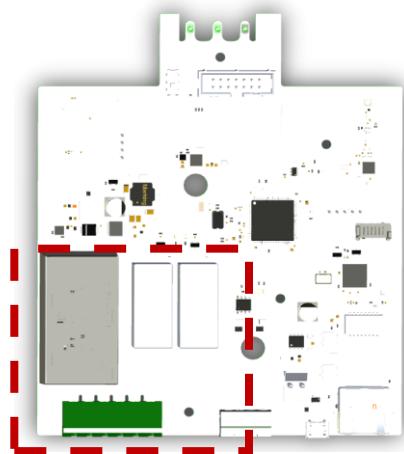


Top view

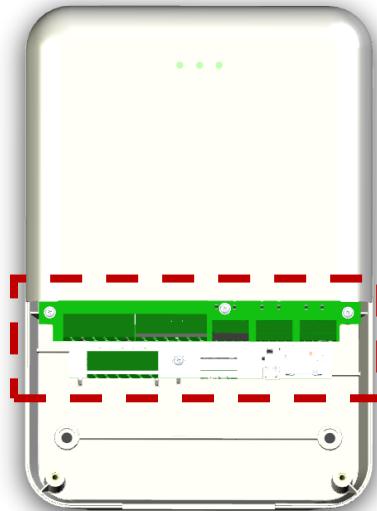


Main Board

Bottom view



Combox V2 – Cover off

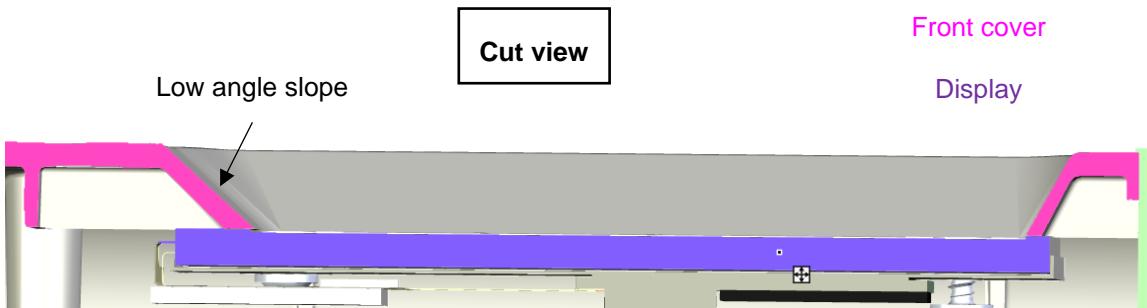


5.3.2 End user

The end user will have access to the display touchscreen (Display version) as well as to the three Buttons (Button version).

Display

Consideration regarding the touchscreen side and corner access is to be considered. A proposal is to have slopes to ease the access:



5.4 Use Cases



Describe the user interaction with the product under both normal and extreme conditions. Be sure to include average number of interactions per day, expected battery life, expected product abuse, and possible extreme use cases. Also include all the various environments that the product could be found.

The Combox V2 will be attached to warehouse inner wall. This environment is not subjected to water ingress but dust ingress is to be foreseen. Yet, no IP rating is required.

The Combox V2 will be exposed to a 0°C to 40°C temperature range.

The Combox V2 will be exposed to a 20% to 80% humidity range.

Previous values are valid below 2000ft from sea level. Higher level use is out of the current scope.

Interaction with local workers could occur by the mean of the pushbuttons (for the Button version) as well as by the display (for the Display version).

Only service authorized personnel shall have access to the inner device (IO cover or Front cover off).

The Battery version of the Combox V2 has not requirement regarding its expected battery life.

5.5 Maintenance



On-Line Product Support: List any plans for supporting users with on-line information, user groups, and customer support services.

Reparability: What are the maintenance process the End User should be able to achieve and with what type of tools.

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Maintenance shall only be allowed as follow:

- Software/firmware servicing: Balyo authorized personnel
- Any other servicing: Kickmaker authorized personnel

5.6 Made in" Requirements



Describe the "Made in" requirements for the product. (France ? EU ? China?).
List key components of the BOM and final assembly suggested or required manufacturing location.

No requirement

5.7 Eco- Design Requirements



List "must have" & "nice to have" Eco-friendly requirements

No requirement

5.8 Product Size



List any critical product dimensions and control surface sizes that must be met, and describe why it is a hard requirement. If specific dimensions are not required, state that these dimensions are reference and are allowed to change as the design develops.

The product maximum size is (not considering button and antenna connector):

- Length: 228.55mm
- Width: 158.44mm
- Thickness: 70.1mm

DR01, DR02 and DR03 can be used as references.

5.9 Product Weight



If weight is a concern or critical to function or user experience, it needs to be measured.
If not, state that it is a reference and not critical to function.

No requirement.

5.10 Artwork, Logo, & Labeling



Include any requirements on product labeling and branding. Include specifics around secondary operations (laser marking, pad printing, hot stamping), badges, decals, and in-molded graphics.

The BALYO logo shall be present on the bottom left hand side of the IO Cover, such as:

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Refer to DR01, DR02 and DR03 for validated artwork.

5.11 User Inputs



List any required control surfaces or input features such buttons, switches, capacitive touch areas, levers, or triggers. Include any specific gesture requirements for each input such as stroke length, input force, click feel, etc.

5.11.1 Optocouplers

There shall be 2 optocouplers on the Mother Board and 6 additional on the optional Daughter Board:

Item	Rating
Insulation voltage (Viorm)	>500Vpeak
Input voltage	16V to 32V
Recommended current	5mA to 20mA

Recommended reference: Omron MOCD207R2M

5.11.2 Buttons

There shall be 3 buttons on the Button version of the Combox V2. These pushbuttons shall embed a LED.

Example:



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5.12 Information Outputs



List any physical indicators on the product including light indicators, displays, audio queues, and haptic feedback. Also include any data-out interfaces such as connectors (audio jack, microUSB) or RFID tags.

5.12.1 LED indicators

The Combox V2 shall have 3 LED indicators:

- Power: indicates when the device is turned on. Its color shall be **RED**.
- Radio emitting: indicates when a TX LORA transfer is occurring. Its color shall be **GREEN**.
- Radio receiving: indicated when a RX LORA transfer is occurring. Its color shall be **GREEN**.

Refer to 4.1 chapter for applicable logos.

5.12.2 Pushbuttons LED (Button version)

The Buttons version shall have LED such as:



1. Left button LED color: **RED**
2. Center button LED color: **GREEN**
3. Right LED color: **BLUE**

5.12.3 Display (Display version)

The Display UX and screens is out of this document scope.

The Display shall have the following characteristics:

Item	Rating
Type	TFT
Resolution	800x480

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Size	5 inches
Interface	SPI
	FTDI FT812
Touchscreen	Resistive

5.12.4 Mechanical relays

There shall be 2 relays on the Mother Board:

Item	Rating
Type	General purpose 1 pole DC relay
Operating voltage	>4V
Rated coil power	<500mW
Rated voltage	250VAC
Rated current (resistive load)	12A
UL certified	Yes

Recommended reference: TE Connectivity 5-1393238-9

⚠ Board copper tracks cannot withstand current above 5A for a prolonged period (>5seconds).

There shall be 6 relays on the Optional Daughter Board:

Item	Rating
Type	General purpose 1 pole DC relay
Operating voltage	>4V
Rated coil power	<150mW
Rated voltage	250VAC

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Rated current (resistive load) 5A

UL certified Yes

Recommended reference: Omron G6DN-1A-SL DC5

5.13 Material Requirements



List any product materials that are not negotiable, such as non-metal enclosures for wireless connectivity, avoiding certain materials due to allergy concerns, metals for thermal performance, ROHS compliant materials, or special coatings to address specific environmental exposure concerns.

Not applicable

5.14 Aesthetic design Requirements



List any aesthetic design requirements that are not negotiable, such as material, finish, color, shape, position, size...

6 ELECTRICAL REQUIREMENTS



List any known hardware components that will be required to achieve the product performance requirements.

6.1 Block Diagram



Illustrate the basic structure of the electrical solution.

TBC

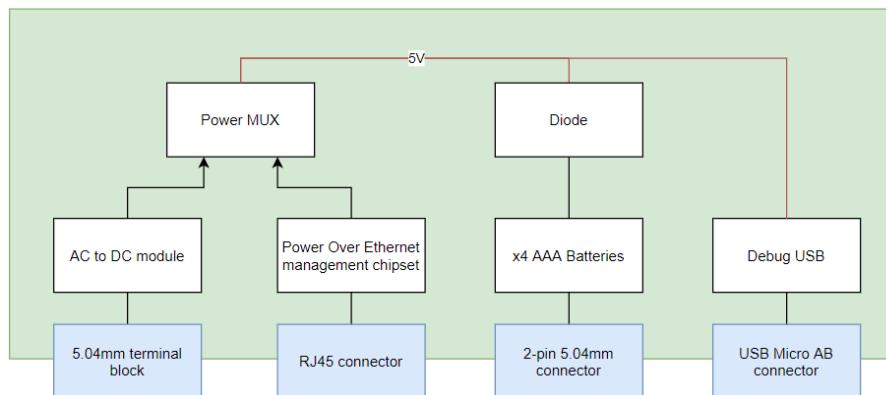
6.2 Power Management



Battery technology, battery performance characteristics, rail definition, start-up sequence, max sleep current.

6.2.1 Power tree

Power supply input is as follow:



The electronic can be power supplied by 4 means:

- Main power supply (worldwide compatibility)
- Power Over Ethernet
- 2 blocks of 4 AAA batteries
- USB Micro (!! DEBUG only, shall not be used for providing power to the Combox)

6.2.2 Main power supply (AC to DC)

AC Main power supply shall have the following specs:

Item	Rating
Input voltage	90V to 250V

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Output voltage	5V±5%
Output power	10W with WiFi
	5W without WiFi
Line regulation	±1%
Load regulation	±1%
Efficiency	>75%
Certification	CE, UL

Recommended reference: [Mean Well IRM-10-5](#)

6.2.3 Power Over Ethernet (PoE)

The Combox V2 shall be equipped with IEEE802.3at PoE-capable input taken out of the RJ45 connector. The interface specs shall be as follow:

Item	Rating
Input voltage	0V to 55V
Operating voltage	32V to 55V
Current limit	500mA

A load resistor (5.11kohm) might be needed to be compatible with some market PoE switches.

Recommended reference: [Texas Instruments TPS2378](#)

6.2.4 Battery

The Combox V2 could be power supplied using 2 group of 4 AAA batteries (Button version only)

6.2.5 Power priority

AC Main always have priority over the Power Over Ethernet (PoE).

There is no priority over battery, USB and AC main or PoE.

6.3 Connectivity

 Wireless technologies such as WiFi, Bluetooth, Zigbee, cellular, associated chipsets, and data rate requirements (video concerns). Connection range requirements, privacy/security of data. Wired technologies such as USB, SPI, UART, I2C, including data rate requirements.

6.3.1 LORA connectivity

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The Combox V2 shall have a LORA 868MHz interface. The chipset to use in the Semtech SX1261.

6.3.2 WiFi connectivity

None in the current version. A footprint in the PCB for a future release is required.

6.3.3 Antenna

An antenna (LORA or WiFi (if applicable)) shall be connected outside of the device casing.

The antenna interface shall be a SMA male.



LORA Antenna performances shall be:

Item	Rating
Type	Bipolar
Impedance	50ohm
Frequency range	868MHz
Gain	>1dBi
Size	<200mm
Connector interface	SMA Male

6.3.4 LORA & WiFi management

Not applicable

6.3.5 Optional Daughter Board connection

The interface between the Main Board and the Daughter Board shall include a I2C link as well as a suitably rated power supply:

Item	Rating
------	--------

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Pin current	$\geq 0.5A$
Suitable for	100kHz I2C communication
Pin number	4 to 6
Power & GND	Yes, 2 pins

Recommended reference: Molex 90325-0006.

The interconnexion length between the two boards shall be limited to the minimum due to EMC possible interference.

6.4 Interfaces



Microphones, buzzers, speakers, driver sizes, frequency response, displays, touch interfaces. Consider sensors such as proximity, hall-effect, accelerometer, capacitive, ambient light, temperature. Cameras including image and video resolution, frames per second, viewing angle, image stabilization, flash/illumination, special effects.

6.5 Actuators



Solenoids, motors, pumps, valves, etc. Size, voltage, current draw, torque/speed specification, total stroke.

6.6 Processing



MCU or MPU, processing “horse power”, processing speed, memory considerations.

The MCU to be used is the STMicroelectronics STM32F407VGT6TR in the LFQP100 package.

6.7 Analog



ACDC requirements, amplifiers, noise, ripple, measurement resolution and accuracy.

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7 FIRMWARE & SOFTWARE REQUIREMENTS

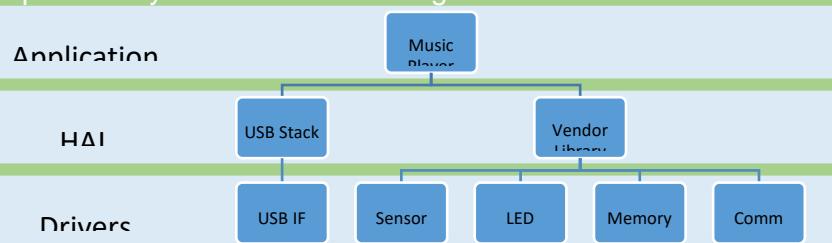


Describe the high level firmware requirements for the product. If specifics are not known, describe the expected or preferred behavior in every state the product can be in.

TBC by Balyo

7.1 Block Diagram

Illustrate the basic structure of the firmware modules and their relationships. As an example of a layered architecture diagram:



7.2 State Diagram



For each mode of operation, describe each state the firmware application will assume, as well as, the transitions between these states. For example, in normal operation mode, the following states may exist, with the possible transition criteria identified:

7.3 Real-Time Constraints

What are the timing constraints on any operations the device may need to meet? An example might be to receive a piece of data, or capture a button press, and then react by toggling a pin, within a certain time window. It is important to get an idea of all possible "hard" real-time events that must be handled simultaneously.



- On receipt of audio stream data, which may occur in any state and at any time, all data should be stored to memory, if 'recording' mode is activated.
- When a potentiometer dial is rotated, move the robotic arm in accordance with the dial position.
- Read the battery level every two seconds. If the battery level is 'low', toggle the red LED. Otherwise, toggle the green LED.

7.4 Communications



Identify any communications busses to be used within the device, or interfacing to other devices, and their anticipated maximum bandwidth. If this device will communicate with other machines (such as another processor), describe the application-layer protocol.

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7.5 Data Storage



What data will the firmware be required to maintain over resets (non-volatile memory)?
What (non-implementation) application data is required to be maintained during runtime?

7.6 Security or Safety-Critical Applications



Are there any security-related or safety-critical functions that the firmware application will be responsible for?

7.7 Coding Standards & Algorithms



Will the code base be required to adhere to any specification? If so, list them. Are there any mathematical algorithms, which must be developed, or any existing algorithms, which must be implemented?

7.8 Certifications



Must the development process or output firmware image be subject to any certification processes?

7.9 Loading & Upgradability



How is the firmware loaded and tested on the production line? Is the user expected to update the revisions in the software? How will he/she do it?

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8 MECHANICAL PERFORMANCE REQUIREMENTS



List all known performance requirements for the product including all general reliability test points as well as any tests unique to the product's feature set. Be sure to include information on test conditions if applicable.

No requirements

8.1 Drop Performance



State the criterion for success with as much specificity as possible.

8.2 Overall Product Cycle Life



State the criterion for success with as much specificity as possible.

8.3 Wear Out For Specific Features



State the criterion for success with as much specificity as possible.

8.4 Crush Resistance, Sit Test



State the criterion for success with as much specificity as possible.

8.5 Temperature & Humidity Exposure



State the criterion for success with as much specificity as possible. Be sure to include limits on temperature exposure for both storage and operating conditions.

8.6 Ultraviolet Light Exposure



State the criterion for success with as much specificity as possible. Be sure to include both mechanical and cosmetic stability.

8.7 Water Ingress Protection Rating

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State the criterion for success with as much specificity as possible.

8.8 Scratch Resistance, Tumble Test



State the criterion for success with as much specificity as possible.

8.9 Vibration Test



State the criterion for success with as much specificity as possible.

8.10 Chemical Resistance Test



State the criterion for success with as much specificity as possible.

8.11 Skin Compatibility



State the criterion for success with as much specificity as possible.

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9 MANUFACTURING REQUIREMENTS



Define the manufacturing processes for the major parts, and the basic assembly method to build the product. If possible, describe all tools, special machines, post ops, and time-intensive assembly steps. Also include any manufacturing steps with outputs that must be confirmed 100% of the time due to criticality.

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10 PACKAGING REQUIREMENTS



Describe the packaging design in general terms (single retail, multipack shipper, kitting options, slider box, clamshell, etc). Include any information on materials (recyclable?), design for impact resistance, tamper-proof features, instruction manuals, quick start guides, and unique user interaction touch points.

No requirements

10.1 Packaging Design Concept



Include a reference image of the packaging concept. This can be a rendering or a picture of an existing packaging solution.

10.2 Accessories



Describe any additional components required in the packaging solution including charging accessories, cleaning cloths, protective wrappers, or dual purpose packaging.

10.3 Graphics, Artwork, & Decals



Include any graphics, artwork, labels, or decals that is associated with the packaging solution. These can be placeholders for now.

10.4 Testing Requirements & Shipping Conditions



List any known testing requirements for the product packaging. Include requirements on shelf life expectations (product expiration date).

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11 ANCILLARY HARDWARE & SOFTWARE COMPATIBILITY



List any existing products or software that the product must be compatible with including cables, stands, phones, tablets, tools, applications, and protocols.

Not applicable

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12 REGULATORY AND CERTIFICATION REQUIREMENTS



FCC, UL, CE, IC, SAA, CB, CE-RTTE...

Describe test and length of time needed to complete it. How many units are needed, and how complete do they need to be for testing to be valid?

The Combox V2 shall comply to the following standards

12.1.1 Europe

ITEM	Standard	Estimated duration	Sample	Comments
<u>CE-RED LORA</u>	EN300220, EN301489, EN62479		2pcs of samples per each model + 1pcs LORA RF engineering sample	(sur le principe que le module LORA est identique pour les 4 modèles EU 868MHz)
<u>CE-RED WIFI</u>	EN300328, EN301893, EN62311, EN301489	20	2pcs of samples per each model + 1pcs WIFI RF engineering sample	Pour tous les modèles (sur le principe que le module Wifi est identique pour tous les modèles) Vérification en cours pour la nécessité de tester plusieurs modèles avec module certifié Wifi certification will not be pursued in a first phase.
<u>CE-EMC</u>	EN55032, EN55035, EN61000-3-2/3		1 pc de chaque modèle	Pour tous les modèles
<u>Safety EU</u>	EN62368-1	25	2pcs of sample Touch Screen + 2pcs of samples Button cell	

12.1.2 USA & Canada

ITEM	Norme	Estimated duration	Sample	Comments
<u>FCC SDOC</u>	FCC part15 subpart B			
<u>FCC ID</u>	FCC part15 subpart C	20	2pcs of samples per each model	Le module a déjà un FCC ID / IC ID (verification en cours pour besoin LoRa)
<u>IC</u>	ICES-003, RSS-210			Sur le principe que le module LORA est identique sur les 4 modèles (FCC 915MHz)
<u>Safety US/ Canada</u>	UL/CSA62368-1	25		Sur la base de l'EN62368-1

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Note: assuming the 230V AC power supply is EN60950 or EN62368 certified. If not, we shall add this part separately.

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13 SALES & DISTRIBUTION REQUIREMENTS



Sales avenues - big box retail, on line, direct, B2B, etc. Where will this be sold, and what regulations will be applicable for that region.

No requirements

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14 MAINTENANCE, SERVICEABILITY, CALIBRATION, & WARRANTY



RMA, call center, hot line, web site, product support. What happens when a consumer has a bad product? Return policies, design for serviceability. What happens at the end of its useful life?

Refer to Balyo Combox - Contrat d'Assemblage document.

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15 OUT OF SCOPE



List any technologies, design solutions, or manufacturing concepts that should not be considered for the final product solution.

Not applicable.

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16 APPENDIX



Include any component specifications, artwork, schematics, or other reference material associated with the product.