



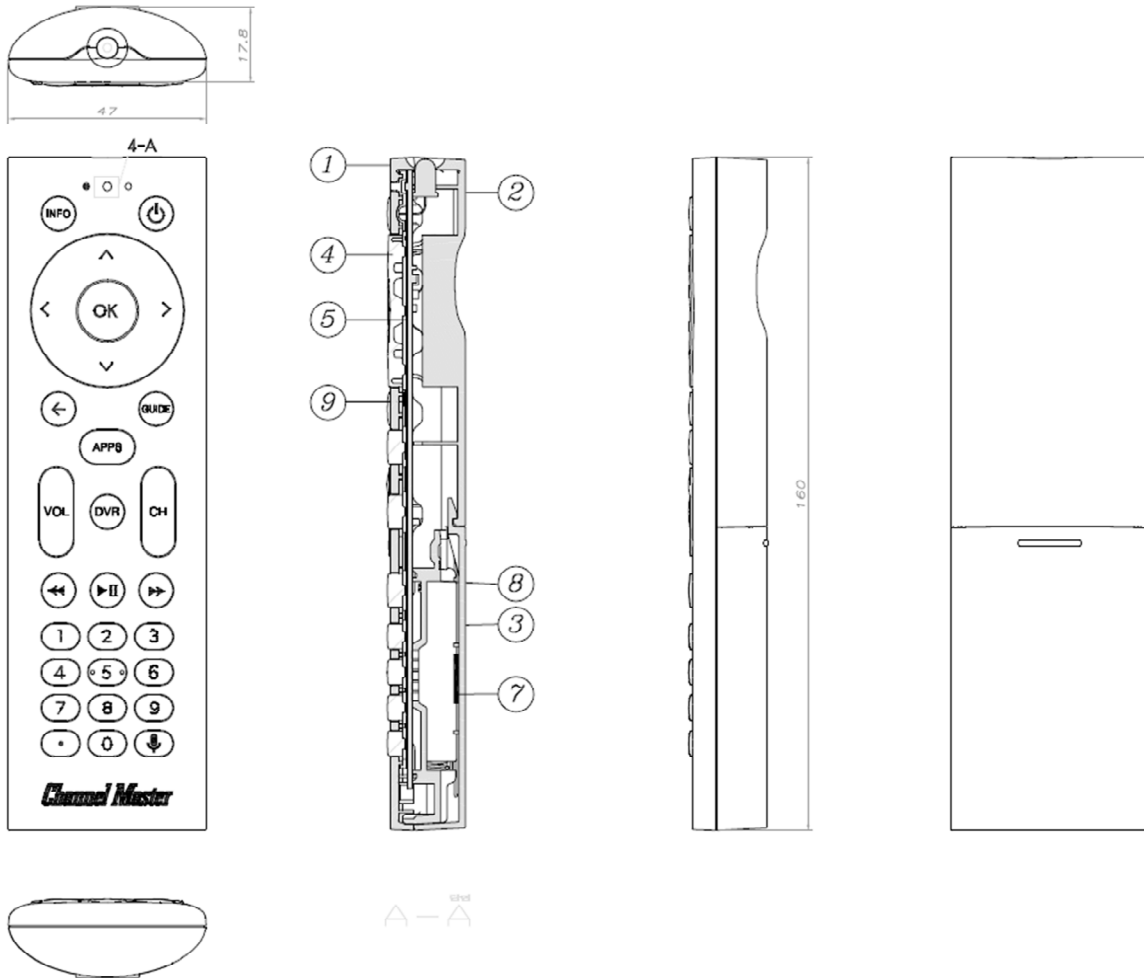
APPENDIX H
: USER'S MANUAL

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1 - Mechanical Requirements

1.1 - Design

- Dimensions : 160 x 47 x 17.8mm



TOP CASE	MATERIAL	ABS
	MATERIAL COLOR	BLACK
	PRINT COLOR	SMI-G 715 (BLACK)
BOTTOM CASE BATTERY COVER	MATERIAL	ABS
	MATERIAL COLOR	BLACK
RUBBER BUTTON	MATERIAL	SILICONE RUBBER
	FORMING COLOR	BLACK
	FORMING COLOR 4-A	TRANSLUCENT CLEAR
	PRINTING COLOR	WHITE
	SURFACE TREATMENT	SILICONE COATING

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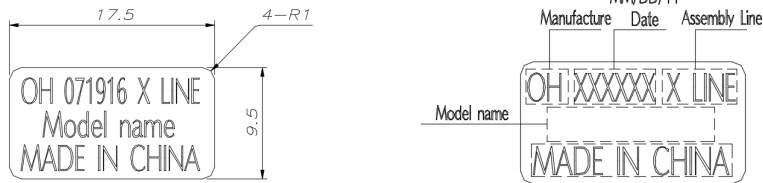
1.2 - Picture (for reference only)



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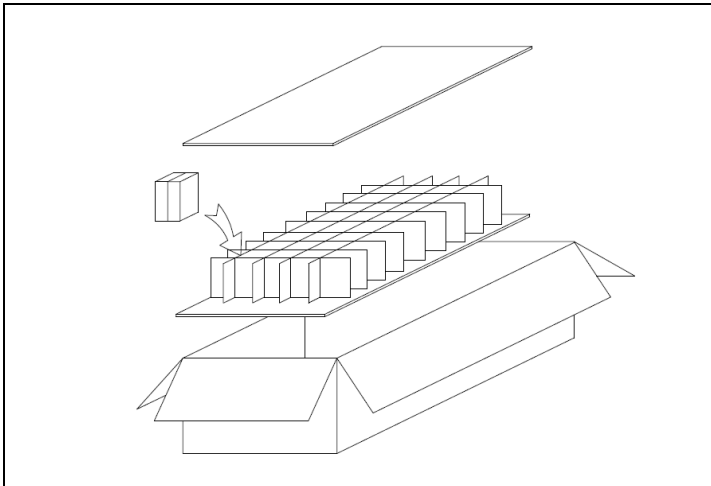
1.3 - Batch Number

Adhesive label is attached at the inside part of the battery cover



1.4 - Packing

1.4.1 - Packing Process



- PE bag dimensions : 83 x 286 mm (LDPE 0.05t)
- Quantity Per Box: 140pcs
- Box dimensions : W 600 x D 400 x H 200 mm

1.4.1 - Palett definition

- Pallet dimension : W 1200 x D 800 x H 170 mm
- Full pallet dimension : W 1200 x D 800 x H 1770 mm
- Quantity per pallet : 4,480pcs (4 boxes / layer - 8 layers)

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2 - Electrical Requirements

2.1 - Electrical Characteristic

Parameter		Condition	Spec	Unit
Frequency Range		Bluetooth Low Energy Specification	2.402 ~ 2.480	[GHz]
Channel			40	[Num]
RF Power			0	[dBm]
Test channel		TC-3000 (RF measuring instrument)	19	[Num]
RF Power	PAvg		0±1	[dBm]
	PMax		+1	[dBm]
	Pmin		-1	[dBm]
Modulation Characteristics	Δf1 avg		225~275	[KHz]
	Δf2 avg		≥ 185	[KHz]
	Δf2/Δf1		0.8	
	Δf2min		≥ 92.5	[KHz]
	Δf2rate		≥ 99	[%]
Carrier Frequency Offset and Drift	fTx-fn		≤ 150	[KHz]
	Δf0-fn	≤ 50	[KHz]	
	f1-f0	≤ 20	[KHz]	
	Δfn-f(n-5)	≤ 20	[KHz]	
Operating Voltage		RF (Bluetooth)	2.0~3.6	[V]
LVI Voltage		Low Voltage Indicate	2.25 ± 0.2	[V]
Operating current (IR)		Power: 3V	≤35	[mA]
Operating current (RF KEY)		Power: 3V Non-directional distance	≤12	[mA]
Operating current (RF+Voice)			≤25	[mA]
Leakage current			≤10	[μA]
RF range (distance)			≥10	[m]
IR Range		Direct	12	[m]
		Horizontal	7 (±30°)	[m]
VOICE	300Hz	Voice Inspection JIG	-15 ~ -5	[dB]
	2KHz		-21 ~ -2	[dB]
	3.8KHz		20 ~ 0	[dB]

- Hardware Version: V1.0

3 - Software Requirements

3.1 - Bluetooth 4.2 LE identification

- a) Device Name: Channel Master Remote
- b) Vender ID: 0x02AF
- c) Product ID: 0x2025
- d) Software Version : V0007

3.2 - Pairing mode

- a) At first time pairing or after Factory Reset, RCU works only in IR.
- b) Press [OK] and [APPS] keys for longer than 4 seconds. LED stays ON while pressing [OK] and [APPS] keys.
- c) After 4 seconds, the LED starts blinking so that to confirm the remote has entered into pairing mode.
- d) After RCU has entered pairing mode, RCU can send the IR signal of Up, Down, Left, Right and OK keys.
- e) If pairing is successfully made, the LED goes OFF and remote starts working in Bluetooth.
- f) If the user presses any key during pairing mode, the remote stops pairing and goes back to IR mode, excepted Up, Down, Left, Right and OK keys.
- g) If pairing is not successfully made for 90 seconds, the LED goes ON for 4 seconds and then goes OFF. The remote stops pairing and goes back to IR mode if first time pairing and after Factory Reset.

3.3 - Re-pairing mode

- a) Press [OK] and [APPS] keys for longer than 4 seconds. LED stays ON while pressing [OK] and Google [APPS] keys.
- b) After 4 seconds, the LED starts blinking so that to confirm the remote has entered into pairing mode.
- c) After RCU has entered pairing mode, RCU can send the IR signal of Up, Down, Left, Right and OK keys.

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- d) If pairing is successfully made, the existing pairing table is deleted, the LED goes OFF and the remote works in Bluetooth with the new device.
- e) If the user presses any key during pairing mode, excepted Up, Down, Left, Right and OK keys, the remote stops pairing and the previous paired status is restored,
- f) If pairing with new device is not successfully made for 90 seconds, the LED goes ON for 4 seconds and then goes OFF. The previous paired status is restored.

3.4 - Factory Reset mode

- a) Press [APPS] and [0] keys for longer than 4 seconds. LED stays ON while pressing [APPS] and [0] keys.
- b) The remote blinks 3 times to confirm that it is deleting the existing pairing table and TV & Audio IR setting.
- c) When Factory Reset is completed, LED goes OFF and the remote works in IR mode.

3.5 - IR backup in paired mode

- a) If, for any reason, the RF connection is lost, the remote sends the IR code of the corresponding pressed key.
- b) The remote tries to reconnect for sending the RF code.

3.6 - Voice Search initiated by the remote

- a) For Voice function, it is recommended to be within 5 meters from the receiver.
- b) Distance between mouth and microphone should be within 40 cm (15~20cm recommended).
- c) Microphone key pressed and released, remote sends “key pressed event, key released event” to the STB and the STB sends back the START command to the remote.
- d) The LED starts blinking, the remote transmits the voice data for 10sec timeout duration.
- e) After timeout duration, the remote stops transmitting the voice data and the LED is turned off.
- f) Or When the remote receive the stop command from STB, thre remote stops transmitting the voice data and the LED is turned off.

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Note: if any key is pressed within the timeout duration, the remote stops transmitting the voice data and activate the pressed key event.

3.7 - Voice Search initiated by the launcher

- a) For Voice function, it is recommended to be within 5 meters from the receiver.
- b) Distance between mouth and microphone should be within 40 cm (15~20cm recommended)
- c) User selects and validates the voice search on the launcher by using navigation and OK keys.
- d) STB sends the voice search START command to the remote.
- e) After timeout duration, the remote stops transmitting the voice data and the LED is turned off.
- f) Or When the remote receive the stop command from STB, thre remote stops transmitting the voice data and the LED is turned off.

Note: if any key is pressed within the timeout duration, the remote stops transmitting the voice data and activate the pressed key event.

3.8 – Setup for TV & Audio

- a) As long as the RCU is paired to the STB, the RCU can then automatically be set up by the STB for TV or Audio control.
- b) The STB can set the RCU's IR using the command defined in Appendix1.
- c) When the setting is completed, the Volume key and the Power key output the IR signal according to the set value.
- d) If the RCU receives the “send keycode” command, it outputs the IR signal of the corresponding key. However, the RCU will not store the set value.
- e) The TV database uses the set number from 0001 to 1999.
- f) The Audio database uses the set number from 3001 to 4999

3.9 – Remove the TV & Audio

- a) Press [OK] and [V-] keys for longer than 4 seconds. LED stays ON while pressing [OK]
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and [V-] keys.

- b) After 4 seconds, LED will be blink 3 times.
- c) Press 01 to remove the TV setting. Or press 02 to remove the Audio setting.
- d) LED will be blink 3 times to confirm the remote has remove the setting.

3.10 - Couch mode

- a) If a key or multiple keys are pressed continuously for more than 30s, the remote stops transmission (except pairing combination) in order to protect the battery discharge.

3.11 - OAD mode

- a) OAD proceeds according to the RTK specification.

3.12 - Key codes

- a) In Bluetooth mode, HID Profile is used.
- b) In IR Mode, NEC format is used
 - Structure of the NEC format: Custom1 - Custom2 – Data – Inverse data
 - For MUTE to be seen as 0x16-0x20-0x25. Another alternative is 0x1620-0x25
 - Custom1: 0x16
 - Custom2: 0x20
- c) Code list is detailed in Table 1

Key Code Name	Event constant name	IR Code (Data)	HID	
			Usage Page	Usage ID
Info	KEYCODE_PROG_GREEN	0xA6	0x07	0x006A
Power	KEYCODE_POWER	0x21	0x0C	0x0030
D-pad up	KEYCODE_DPAD_UP	0x15	0x0C	0x0042
D-pad down	KEYCODE_DPAD_DOWN	0x16	0x0C	0x0043
D-pad left	KEYCODE_DPAD_LEFT	0x17	0x0C	0x0044
D-pad right	KEYCODE_DPAD_RIGHT	0x18	0x0C	0x0045
D-pad center	KEYCODE_DPAD_CENTER	0x19	0x0C	0x0041
Back	KEYCODE_BACK	0x48	0x0C	0x0224
Guide	KEYCODE_SELECT_PROGRAM_GUIDE	0xC0	0x0C	0x008D
APPS	KEYCODE_HOME	0x47	0x0C	0x0223
Volume +	-	-	-	-

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Volume -	-	-	-	-
DVR	KEYCODE_MEDIA_SELECT_HOME	0xA0	0x0C	0x009A
Channel +	KEYCODE_CHANNEL_UP	0x33	0x0C	0x009C
Channel -	KEYCODE_CHANNEL_DOWN	0x34	0x0C	0x009D
Rewind	KEYCODE_MEDIA_REWIND	0x51	0x0C	0x00B4
Play/Pause	KEYCODE_MEDIA_PLAY_PAUSE	0x52	0x0C	0x00CD
Fast Forward	KEYCODE_MEDIA_FAST_FORWARD	0x53	0x0C	0x00B3
1	KEYCODE_1	0x01	0x07	0x001E
2	KEYCODE_2	0x02	0x07	0x001F
3	KEYCODE_3	0x03	0x07	0x0020
4	KEYCODE_4	0x04	0x07	0x0021
5	KEYCODE_5	0x05	0x07	0x0022
6	KEYCODE_6	0x06	0x07	0x0023
7	KEYCODE_7	0x07	0x07	0x0024
8	KEYCODE_8	0x08	0x07	0x0025
9	KEYCODE_9	0x09	0x07	0x0026
0	KEYCODE_0	0x0A	0x07	0x0027
•	KEYCODE_ and >4	0xA1	0x07	0x0037
Microphone	KEYCODE_SEARCH	0x46	0x0C	0x0221

Table 1: Code list

3.13 - Battery level

- RCU sends the information for battery level using Bluetooth battery service.
- Level of LVD is $2.25V \pm 0.2V$.
- If the battery voltage as reached the LVD value, RCU cannot enter the pairing mode.
- If the battery voltage is under 2.0V, RCU does not operate.
- When the battery voltage is 2.1V or more, the RCU operates again.

4 - EMC Conformity

Assesment of compliance of the product to the requirements relating to Electromagnetic Compatibility is based on the following standards:

4.1 – FCC : FCC Part 15 Subpart C 15.247

4.2 – IC : RSS-210, RSS-247

4.3 – Mexico : IFETEL, NOM

FCC Statement

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.

Caution

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Note : The manufacturer is not responsible for any Radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. End users must follow the specific operating instructions for satisfying RF exposure compliance.

Industry Canada(IC) Statement

[English]

Statement

This device complies with Industry Canada's License-exempt RSSs.

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.

Industry Canada Statement

(For Canada)

This device complies with Industry Canada's license-exempt RSSs.

Operation is subject to the following two conditions:

- (1) This device may not cause interference; and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

IC Radiation Exposure Statement

(For Canada)

This equipment complies with IC radiation exposure limits set forth for an Uncontrolled environment.