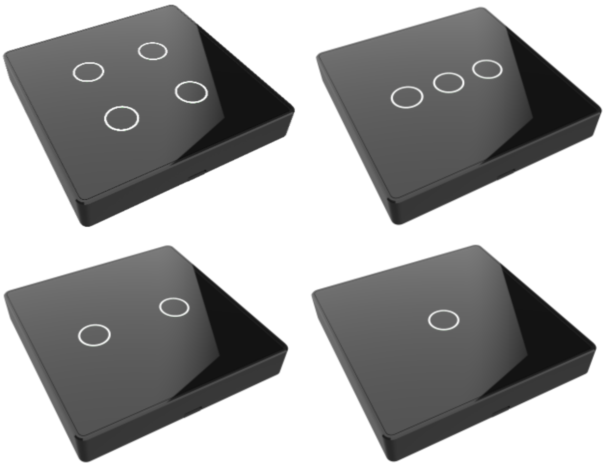
Capacitive Touch Panel CTP40 Datasheet

1 Introduction

The CTP40 is a modern and elegantly designed device tailored for the modern workplace and smart home. It features a 4-inch capacitive touch panel with multiple button options, making it adaptable for a wide range of applications.

Equipped with an inbuilt buzzer, the CTP40 enhances user interaction through tap detection, providing responsive and intuitive functionality. Its sleek design and robust performance make it an excellent choice for controlling lighting, climate, security, and other automation systems in smart environments.

With no mechanical components in its capacitive touch switches, the CTP40 delivers a significantly longer lifespan compared to traditional mechanical counterparts.



1.1 Features

- Capacitive touch technology supports one / two / three / four touch buttons.
- A built-in buzzer that can be configured to be silent or beep when touch is detected
- Supports BRTSys LDSBus protocol.
- Low Power Consumption
- Operating temperature range: 0°C to +70°C
- Mounting options include flush mount, glass mount, and an electric box mount.
- Sealed design ensuring top performance and wear resistance; anti-fade and non-deformation; long life span.
- Its reliability can replace various panels, such as metal keypads, membrane keypads, etc
- Supported platforms:
  - BRTSys PanL Smart Living
  - LDSBus Python SDK
  - LDSBus .Net SDK

Visit https://brtsys.com/resources for more information.

Neither the whole nor any part of the information contained in, or the product described in this manual, may be adapted, or reproduced in any material or electronic form without the prior written consent of the copyright holder. This product and its documentation are supplied on an as-is basis and no warranty as to their suitability for any particular purpose is either made or implied. BRT Systems Pte Ltd (BRTSys) will not accept any claim for damages howsoever arising as a result of use or failure of this product. Your statutory rights are not affected. This product or any variant of it is not intended for use in any medical appliance, device, or system in which the failure of the product might reasonably be expected to result in personal injury. This document provides preliminary information that may be subject to change without notice. No freedom to use patents or other intellectual property rights is implied by the publication of this document. BRT Systems Pte Ltd, 1 Tai Seng Avenue, Tower A, #03-01 Singapore 536464. Singapore Registered Company Number: 202220043R.

2 Part Numbers/Ordering Information

Part#	Description
LC-0401-01A	LDSBus CTP40 1-Button Device – General Version
LC-0402-01A	LDSBus CTP40 2-Button Device – General Version
LC-0403-01A	LDSBus CTP40 3-Button Device – General Version
LC-0404-01A	LDSBus CTP40 4-Button Device – General Version
LA-0301-01A	LDSBus RJ12-JST Cable (5m)
LC-0411-01A	LDSBus CTP40 1-Button Device -Wall Box Mount
LC-0412-01A	LDSBus CTP40 2-Button Device -Wall Box Mount
LC-0413-01A	LDSBus CTP40 3-Button Device -Wall Box Mount
LC-0414-01A	LDSBus CTP40 4-Button Device -Wall Box Mount

Table 1- Part Numbers / Ordering Information

Table of Contents

1 Introduction 1
1.1 Features 1
2 Part Numbers/Ordering Information 2
3 Specifications 4
4 FCC Compliance Statement 5
5 Hardware Features 6
5.1 Power Supply 8
5.2 JST6 Port 8
5.3 Buzzer 8
6 Mounting Options 9
7 LED Status Indicator 12
8 Default System Settings 13
9 Mechanical Dimensions 14
10 Contact Information 19
Appendix A - References 20
Document References 20
Acronyms and Abbreviations 20
Appendix B - List of Figures and Tables 21
List of Figures 21
List of Tables 21
Appendix C – Revision History 22

3 Specifications

Features	Panel Options	4-Buttons / 3-Buttons / 2-Buttons / 1-Button
	Button LED Colour	RGB
	Brightness	Adjustable
	Buzzer	YES
	Connectivity	RS-485 with power using JST-6 pin connector
	RS485 Termination	YES (Programmable)
Power	Input Voltage	5V DC
	CTP40 4-Button	Typ. 0.30W
	CTP40 3-Button	Typ. 0.25W
	CTP40 2-Button	Typ. 0.20W
	CTP40 1-Button	Typ. 0.15W
	Idle Mode	Typ. 0.105W
Physical Characteristics	Colour	Black
	Housing	Polycarbonate Black Colour
	Mounting Type options	Wall Mount/Glass Mount/Electric Box Mount
	Dimensions	89.1mm x 89.1mm x 12mm
	Weight	Typ. 70 grams
Environmental Limits	Operating Temperature	0 to 70°C
	Storage Temperature	-20 to 85°C
	Ambient Relative Humidity	5 to 85% (non-condensing)
Package Contents (General Version)*	Device	1x CTP40 Device
	Mounting Accessories	1x Grey Cover Sheet
		1x Surface mount Rear Cover
		2x 3M Double Sided Mounting Tape
	Cable	1x 5-M JST6-RJ12 Cable
Package Contents (Wall Box Mount)**	Device	1x CTP40 Device
	Mounting Accessories	1x Wall Box Mounting Bracket
	Cable	1x 5-M JST6-RJ12 Cable

*****General Version Package supports Wall Mount/86 Electrical Box Mount/Glass Mount
******Wall Box Mount package supports Metal Electrical Socket.

Table 2 - LDSBus CTP40 Specifications

4 FCC Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) These devices may not cause harmful interference, and

(2) These devices must accept any interference received, including interference that may cause undesired operation.

NOTE: The 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 the 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:

- Re-orient 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.

To maintain compliance with FCC's RF exposure guidelines, at least 20cm of separation distance between the **LDSBus Capacitive Touch Panel CTP40** device and the user's body must be always maintained.

FCC Radiation Exposure Statement

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment and it also complies with Part 15 of the FCC RF Rules. This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and consider removing the no-collocation statement.

Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

5 Hardware Features

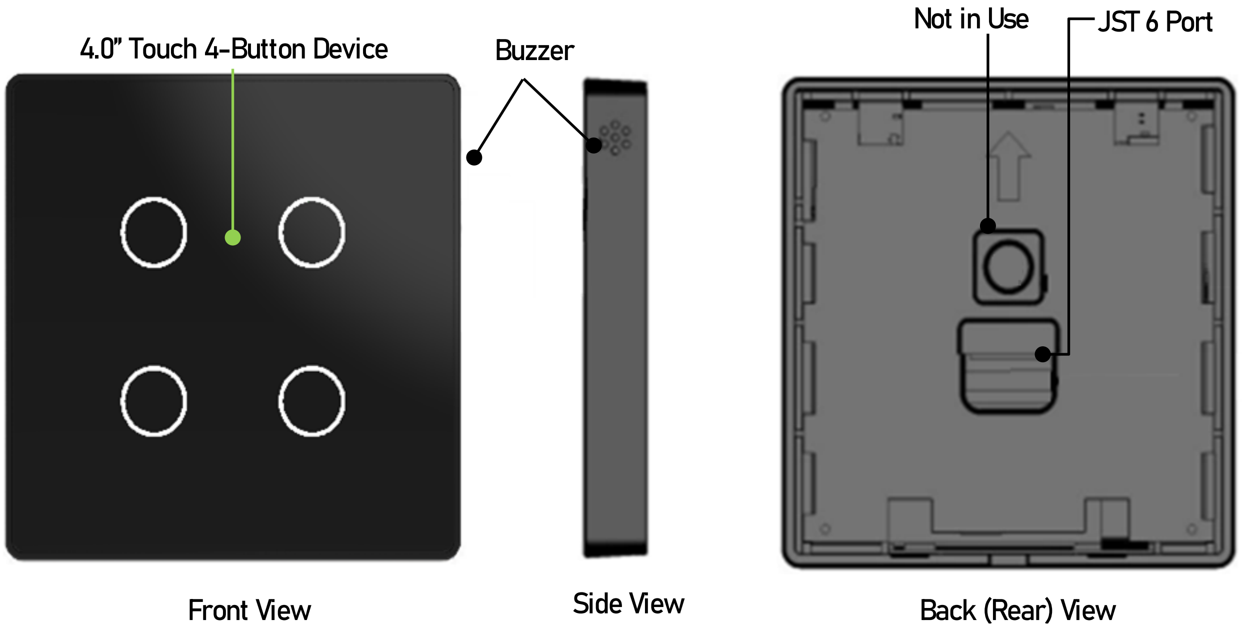

4.0" Touch 4-Button Device
Buzzer
Not in Use
JST 6 Port
Front View
Side View
Back (Rear) View

Figure 1 - CTP40 4-Button Device – Hardware Features

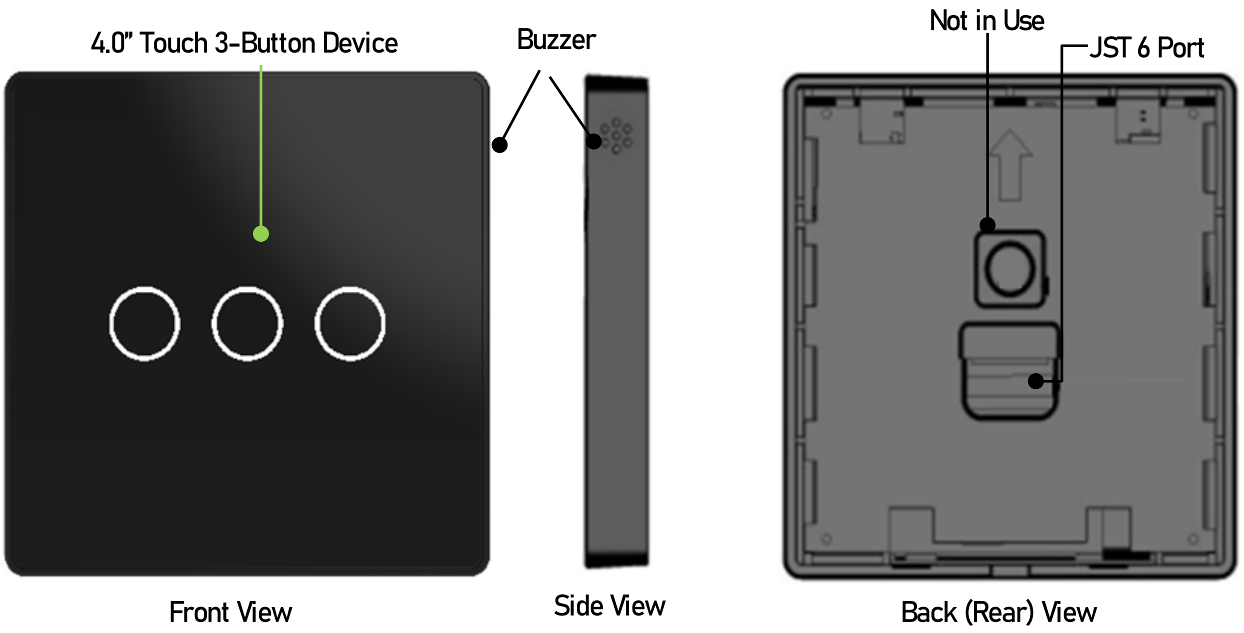

4.0" Touch 3-Button Device
Buzzer
Not in Use
JST 6 Port
Front View
Side View
Back (Rear) View

Figure 2 - CTP40 3-Button Device – Hardware Features

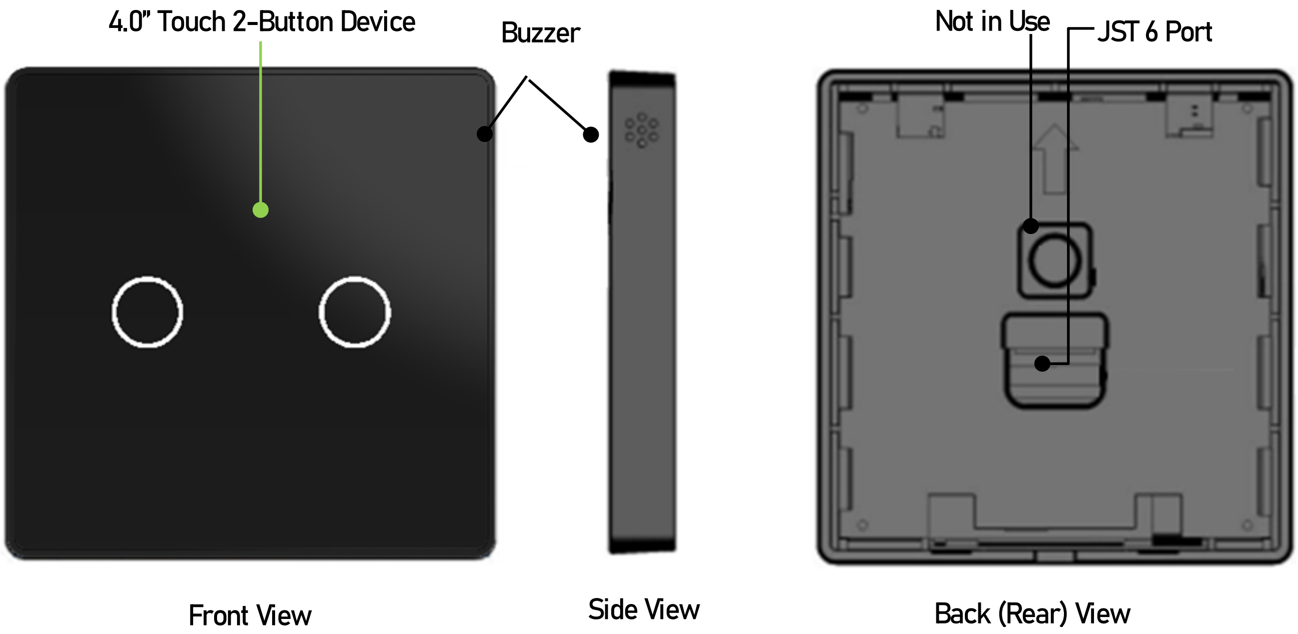

4.0" Touch 2-Button Device
Buzzer
Not in Use
JST 6 Port
Front View
Side View
Back (Rear) View

Figure 3 - CTP40 2-Button Device – Hardware Features

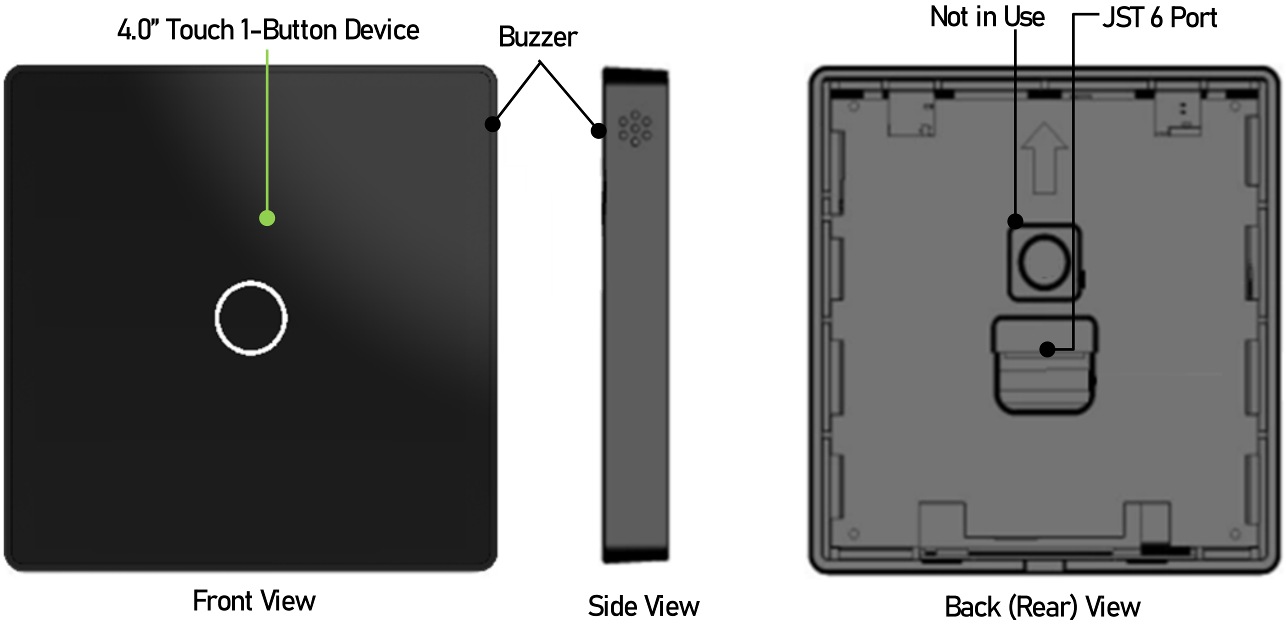

4.0" Touch 1-Button Device
Buzzer
Not in Use
JST 6 Port
Front View
Side View
Back (Rear) View

Figure 4 - CTP40 1-Button Device – Hardware Features

5.1 Power Supply

On the CTP40, power is received from PanL Hub via Quad T-Junction through RJ12 to JST 6 Port. A nominal current of 60mA is delivered by a 5V DC power supply.

5.2 JST6 Port

Power and data are provided by JST6 (1.5mm pitch) port connected to the PanL Hub through LDSBus Quad T-Junction which provides DC5V/60mA and data.

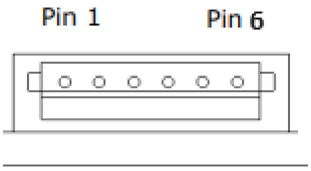


Figure 5 – JST6 Port

Pin Number	1,2	3	4	5,6
Function	Ground	RS485 A/Y	RS485 B/Z	DC5V IN

Table 3 - JST6 Port Pin Function

5.3 Buzzer

The buzzer allows users to enable / disable touch sound for audible feedback, facilitating the perception and confirmation of touch interactions with the touch button.

6 Mounting Options

CTP40 can be mounted in one of the following ways –

- Wall Mounting
- Glass Mounting
- 86 Type Electrical Box Mounting
- Wall Box Mounting

Note: Wall Mounting, Glass Mounting and 86 Type Electrical Box Mounting may use the same Rear Cover Mounting Bracket while Wall Box Mounting will use a different one as Wall Box Mounting Backet.

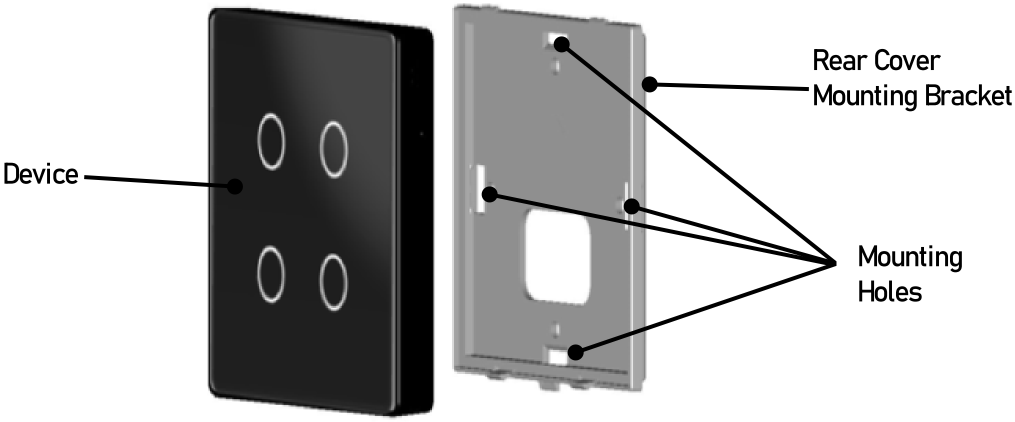

Rear Cover
Mounting Bracket
Device
Mounting
Holes

Figure 6 - Wall Mounting

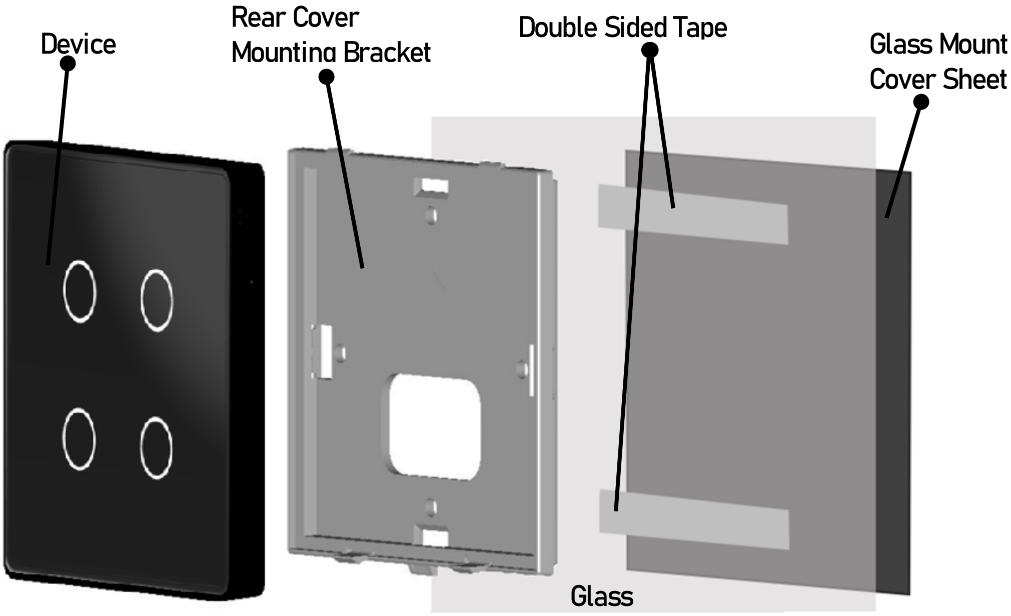

Device
Rear Cover
Mounting Bracket
Double Sided Tape
Glass Mount
Cover Sheet
Glass

Figure 7 – Glass Mounting

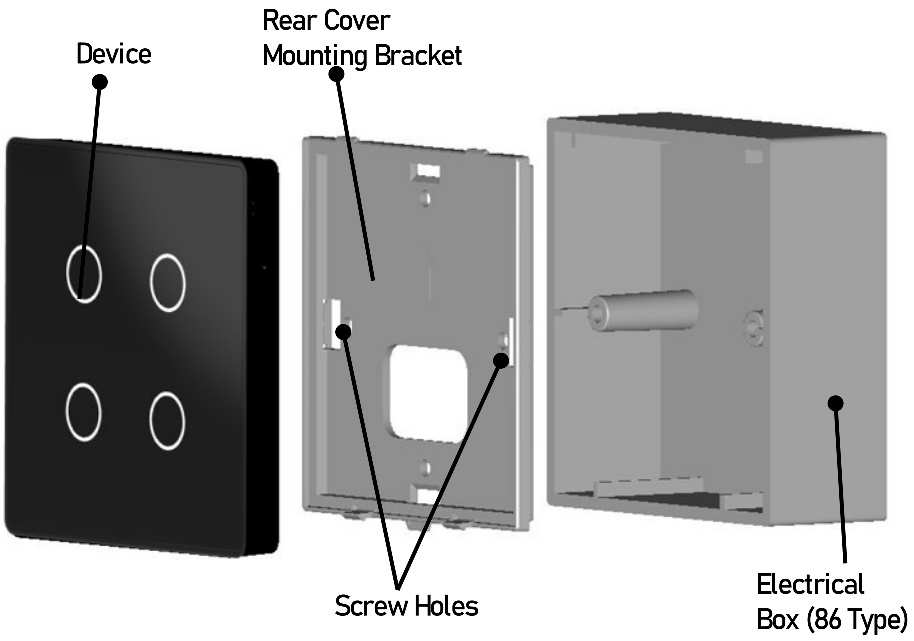

Device
Rear Cover
Mounting Bracket
Screw Holes
Electrical
Box (86 Type)

Figure 8 – Electrical Box (86 Type) Mounting

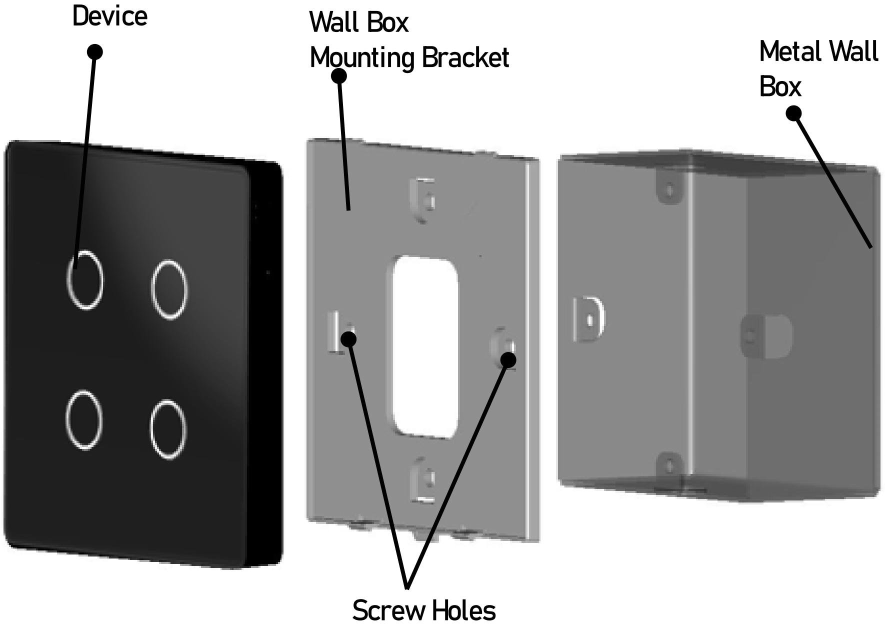

Device
Wall Box
Mounting Bracket
Metal Wall
Box
Screw Holes

Figure 9 – Wall Box Mounting

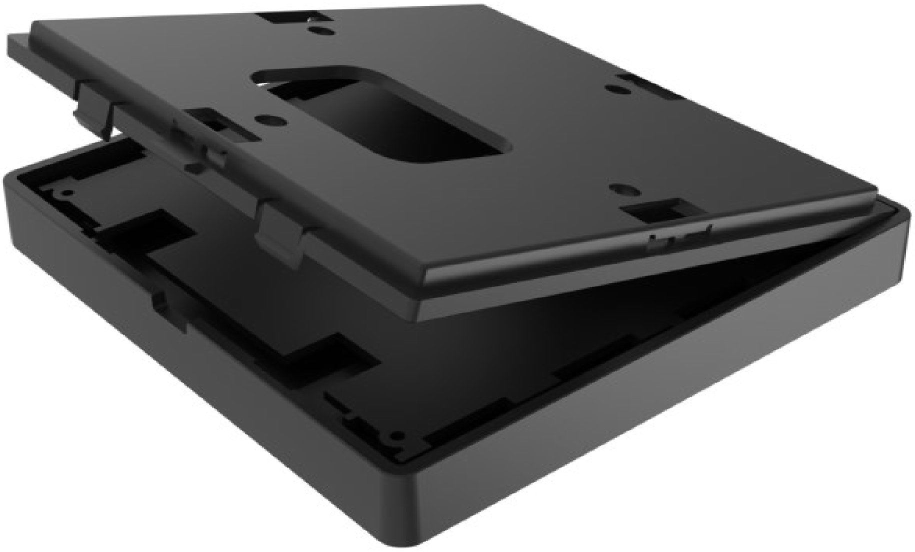


Figure 10– Wall Mounting assembly

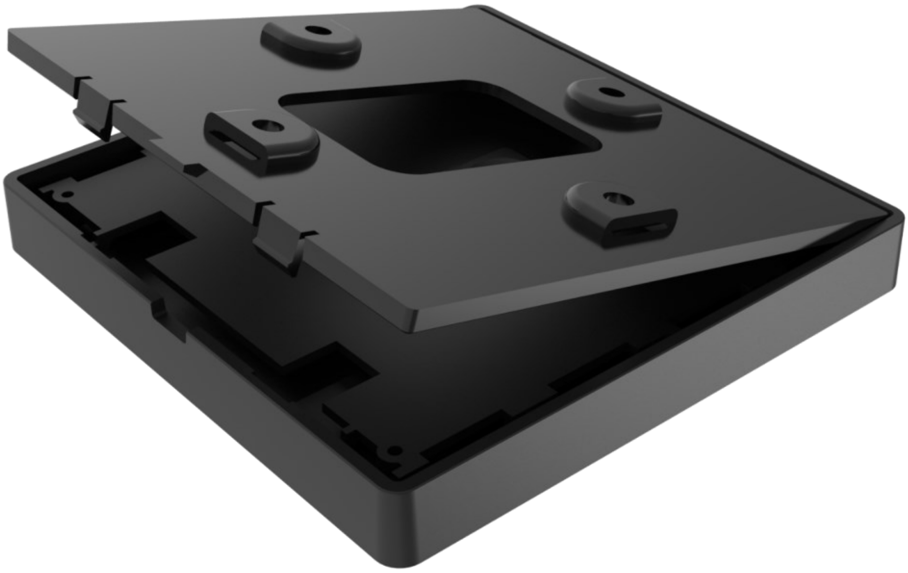


Figure 11– Wall Box Mount assembly

7 LED Status Indicator

Button Tap Indication:

Button tap refers to single tap / multi-tap / long tap gestures. Each button has 2 states (OFF and ON) and operates independently of any other buttons.

At power on, button will be in OFF state colour (default is OFF).

When a button tap is detected, LED will flash between button ON state colour (default is BLUE) and button OFF state colour (default is OFF) for 2s.

In case a host is connected, host can respond to set the button state to ON or OFF and the LED colour will change to button ON state colour (default is BLUE) and button OFF state colour (default is OFF).

In case no host is connected, button will return to OFF state colour (default is OFF) after flashing.

System Indication:

On multi button devices, all buttons indicate identical status.

Summary:

Device Status	LED Colour Factory Default		LED Brightness Level (%) Factory Default(1)	Non-volatile (Configurable by Utility)	Volatile (Configurable by Host)
Button Tap Indication					
Button ON state indication	BLUE	100%	●	YES	YES
Button OFF state indication	OFF	100%	○	YES	YES
Button Tap indication	Flashes between BLUE and OFF for 2 seconds	100%	● ⇄ ○	YES	NO
System Indication					
Standby mode	No change (BLUE or OFF)	5%	○	YES	NO
Identified device	Flashes between GREEN and OFF for 10 seconds	71%	● ⇄ ○	NO	NO
Firmware update	YELLOW	71%	●	NO	NO

Table 4 – LED Status Indicator

Notes:

1. LED brightness level is applicable when LED colour is not OFF.

8 Default System Settings

This table summarises information regarding default settings:

Description	Factory Default Setting	Configurable by Utility	Configurable by Host	Frequency
AUDIO				
Buzzer sound	Disabled	YES	YES	2kHz (fixed)
BUTTON TAP				
Single Tap indication	Enabled	NO	NO	NA
Multi Tap indication	Enabled	YES	NO	NA
Long Tap indication	Enabled	YES	NO	NA
Minimum Tap duration	10 ms	YES	NO	NA
Tap Detection duration	500 ms	YES	NO	NA
Long Tap duration	1000 ms	YES	NO	NA
LED Flashing duration	2 secs	NO	YES	1Hz
STANDBY MODE				
Mode setting	Disabled	YES	YES	NA
Mode activation duration	60 secs of no activity	YES	YES	NA

Table 5 – Default Settings

9 Mechanical Dimensions

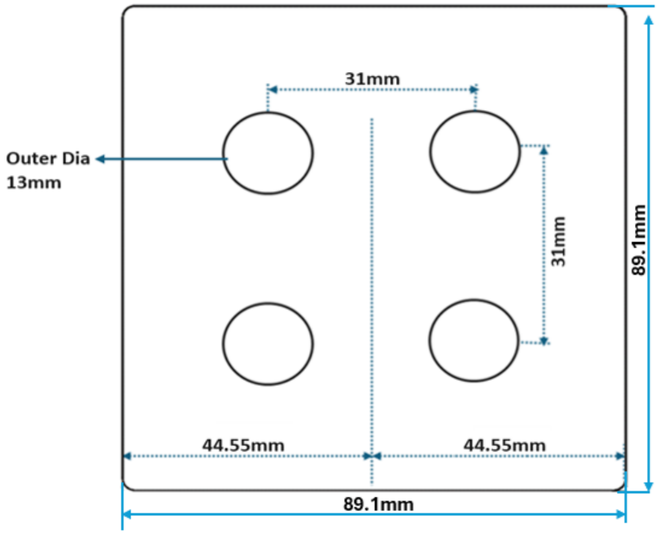

31mm
Outer Dia
13mm
31mm
89.1mm
44.55mm
44.55mm
89.1mm

Figure 12– CTP40 Device (4-Button) Dimension – Front View

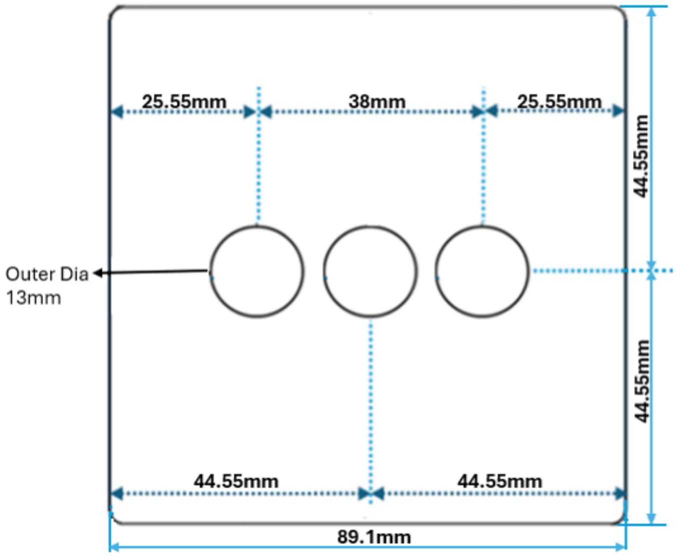

25.55mm
38mm
25.55mm
44.55mm
Outer Dia
13mm
44.55mm
44.55mm
44.55mm
89.1mm

Figure 13– CTP40 Device (3-Button) Dimension – Front View

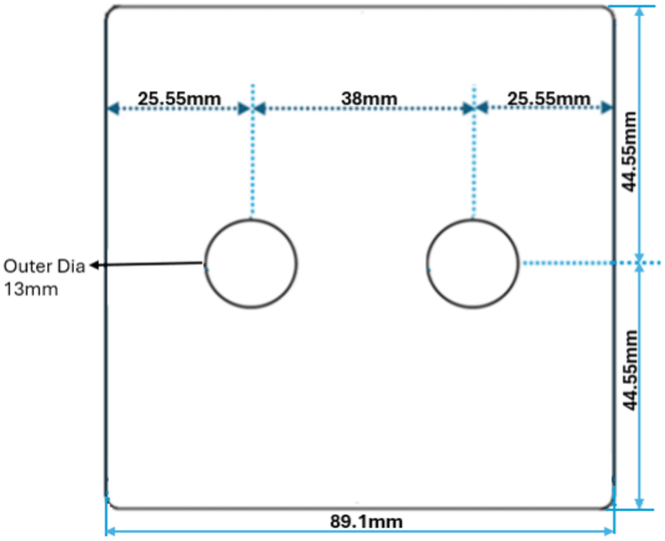

25.55mm
38mm
25.55mm
44.55mm
44.55mm
Outer Dia
13mm
89.1mm

Figure 14– CTP40 Device (2-Button) Dimension – Front View

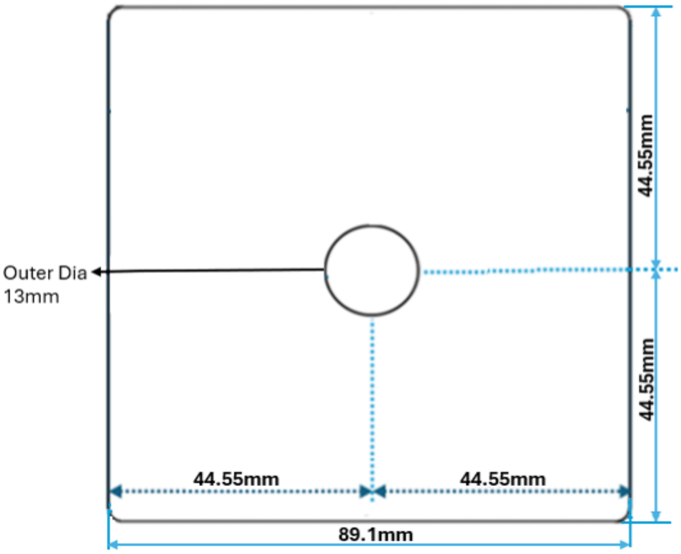

44.55mm
44.55mm
Outer Dia
13mm
44.55mm
44.55mm
89.1mm

Figure 15– CTP40 Device (1-Button) Dimension – Front View

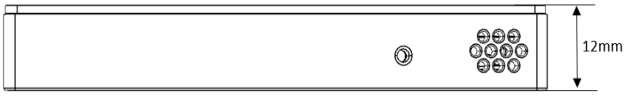


Figure 16– CTP40 Device (1/2/3/4 - Button) Dimension – Front View

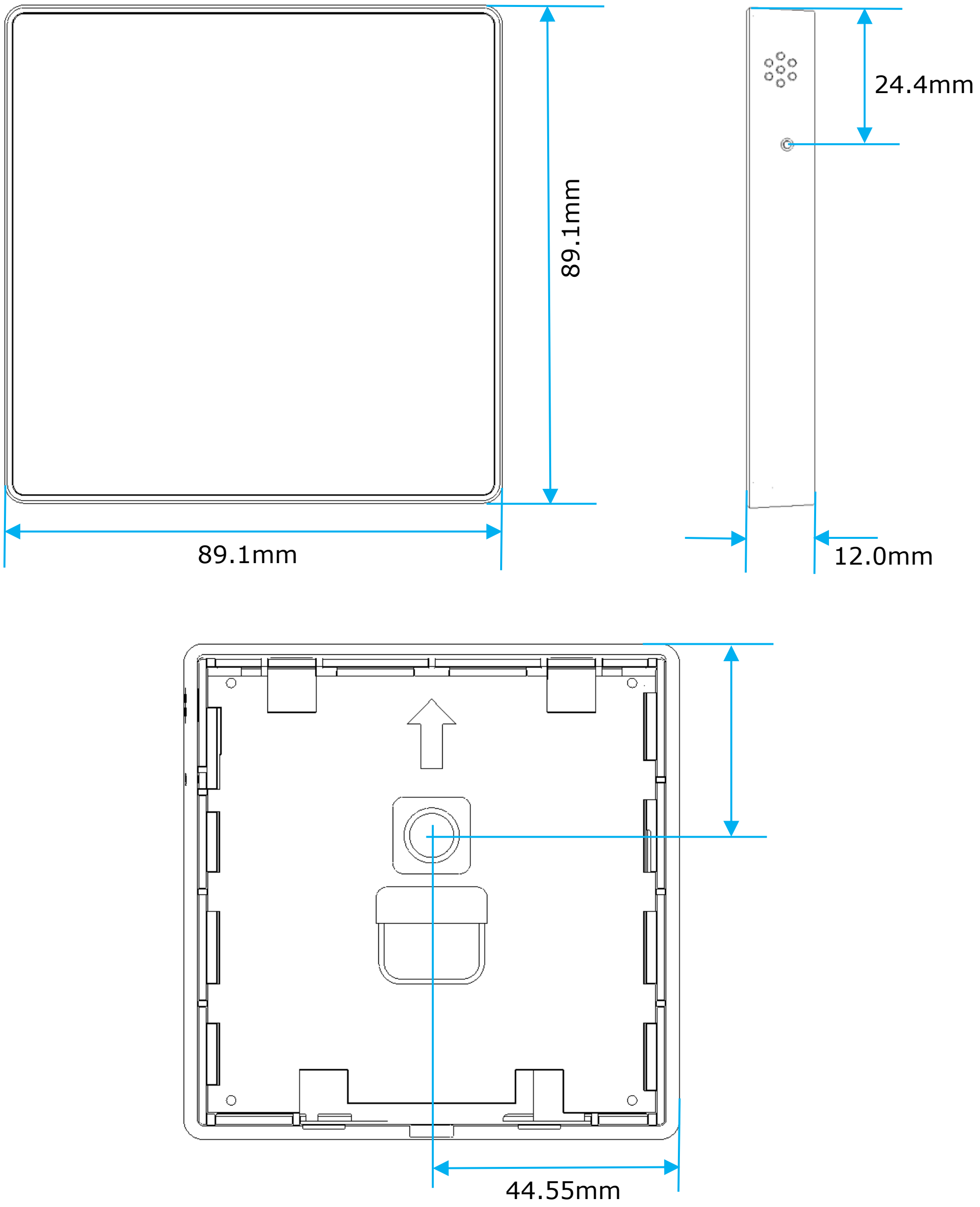

89.1mm
89.1mm
24.4mm
12.0mm
44.55mm

Figure 17– CTP40 Device Body Dimensions

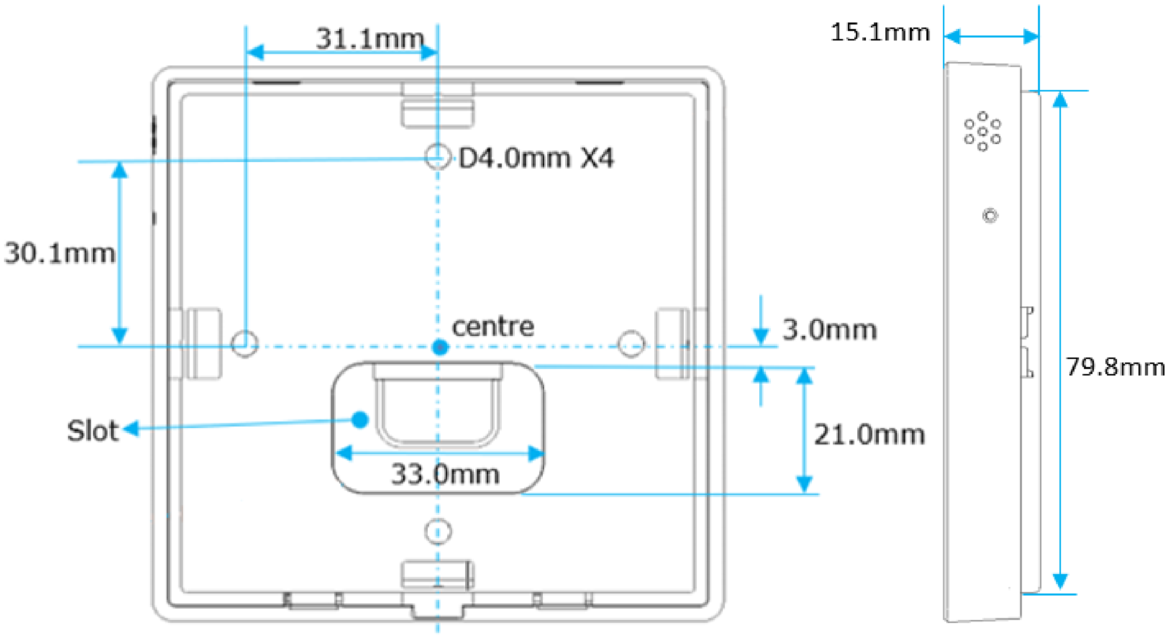

31.1mm
D4.0mm X4
30.1mm
centre
Slot
33.0mm
3.0mm
21.0mm
15.1mm
79.8mm

Figure 18– CTP40 Device Rear Cover's Slots and Screw Holes Drawings (Back View / Side View)

The above picture illustrates:

a. The dimensions of the slots and screw holes on CTP40 rear cover, as measured from CTP40 rear cover's centre.
b. The dimensions of CTP40 device when fitted with the rear cover.

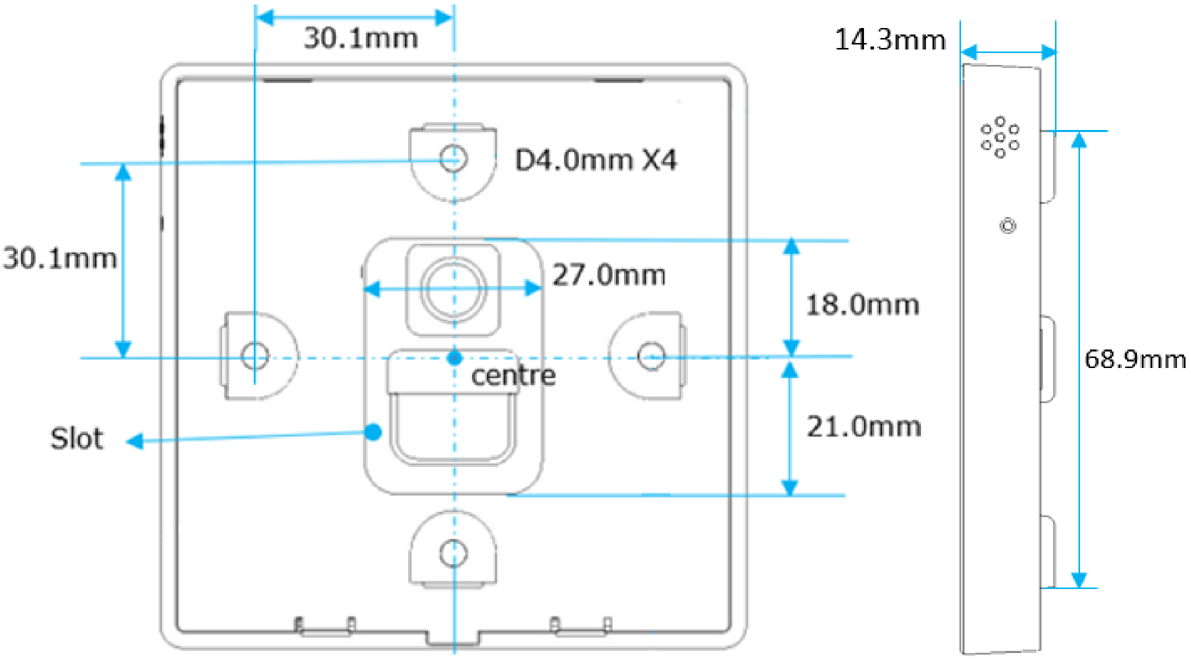

30.1mm
14.3mm
D4.0mm X4
30.1mm
27.0mm
18.0mm
centre
68.9mm
Slot
21.0mm

Figure 19– CTP40 Device Wall Box's Mount Bracket Slots and Screw Holes Drawings (Back View / Side View)

The above picture illustrates:

a. The dimensions of the slots and screw holes of the Wall-Box mounting bracket, as measured from the bracket's center.
b. The dimensions of CTP40 device when fitted with a Wall-Box mounting bracket.

Note: All dimensions are in millimetres.

10 Contact Information

Refer to https://brtsys.com/contact-us/ for contact information.

System and equipment manufacturers and designers are responsible to ensure that their systems, and any BRT Systems Pte Ltd (BRTSys) devices incorporated in their systems, meet all applicable safety, regulatory and system-level performance requirements. All application-related information in this document (including application descriptions, suggested BRTSys devices, and other materials) is provided for reference only. While BRTSys has taken care to assure it is accurate, this information is subject to customer confirmation, and BRTSys disclaims all liability for system designs and for any applications assistance provided by BRTSys. Use of BRTSys devices in life support and/or safety applications is entirely at the user's risk, and the user agrees to defend, indemnify, and hold harmless BRTSys from any and all damages, claims, suits, or expense resulting from such use. This document is subject to change without notice. No freedom to use patents or other intellectual property rights is implied by the publication of this document. Neither the whole nor any part of the information contained in, or the product described in this document, may be adapted, or reproduced in any material or electronic form without the prior written consent of the copyright holder. BRT Systems Pte Ltd, 1 Tai Seng Avenue, Tower A, #03-01, Singapore 536464. Singapore Registered Company Number: 202220043R.

Appendix A - References

Document References

BRTSYS_AN_001_LDSBus Configuration Utility Guide

BRTSYS_API_001_LDSBus_Python_SDK_Guide

BRTSYS_API_004 LDSBus DotNet SDK Guide

Acronyms and Abbreviations

Terms	Description
CTP	Capacitive Touch Panel
DC	Direct Current
LED	Light Emitting Diode
LDSBus	Long Distance Sensor Bus
SDK	Software Development Kit

Appendix B - List of Figures and Tables

List of Figures

Figure 1 - CTP40 4-Button Device – Hardware Features....6
Figure 2 - CTP40 3-Button Device – Hardware Features....6
Figure 3 - CTP40 2-Button Device – Hardware Features....7
Figure 4 - CTP40 1-Button Device – Hardware Features....7
Figure 5 – JST6 Port....8
Figure 6 - Wall Mounting....9
Figure 7 – Glass Mounting....9
Figure 8 – Electrical Box (86 Type) Mounting....10
Figure 9 – Wall Box Mounting....10
Figure 10– Wall Mounting assembly....11
Figure 11– Wall Box Mount assembly....11
Figure 12– CTP40 Device (4-Button) Dimension – Front View....14
Figure 13– CTP40 Device (3-Button) Dimension – Front View....14
Figure 14– CTP40 Device (2-Button) Dimension – Front View....15
Figure 15– CTP40 Device (1-Button) Dimension – Front View....15
Figure 16– CTP40 Device (1/2/3/4 - Button) Dimension – Front View....15
Figure 17– CTP40 Device Body Dimensions....16
Figure 18– CTP40 Device Rear Cover's Slots and Screw Holes Drawings (Back View / Side View)....17
Figure 19– CTP40 Device Wall Box's Mount Bracket Slots and Screw Holes Drawings (Back View / Side View)....18

List of Tables

Table 1- Part Numbers / Ordering Information....2
Table 2 - LDSBus CTP40 Specifications....4
Table 3 - JST6 Port Pin Function....8
Table 4 – LED Status Indicator....12
Table 5 – Default Settings....13

Appendix C – Revision History

Document Title:	LDSBus Capacitive Touch Panel CTP40 Datasheet
Document Reference No.:	BRTSYS_000143
Clearance No.:	BRTSYS#089
Product Page:	https://brtsys.com/ldsbus/
Document Feedback:	Send Feedback

Revision	Changes	Date
Version 1.0	Initial Release	23-10-2024
Version 1.1	Table 4: Updated LED Button On / Button Off colours and brightness levels Table 5: Updated standby mode settings	26-11-2024