Extron Electronics
INTERFACING, SWITCHING AND CONTROL

eBUS® Button Panel EU and MK Series • Setup Guide

Overview

Extron offers a range of eBUS Button Panels (EBPs) in one-gang EU and MK form factors. They can be mounted into one-gang EU or MK enclosures and can also be mounted alongside other EU, MK, or Flex55 products in larger enclosures. Each panel is a fully customizable AV system control interface for use with Extron IPCP Pro Series control processors. Individual EBPs are easily configured and can be connected with other panels to provide control for large and complex AV systems.

> **NOTE:** These products are only for use with Extron UL Listed IPCP Pro controller products.

Each EBP button panel has two eBUS ports that support power and communications between the IPCP Pro control processor and eBUS devices. Up to eight eBUS devices such as EBP button panels can be connected to the control processor and to each other in various cabling topologies. Cabling topology refers to the physical layout of cabling interconnections between devices in a network such as an eBUS system. eBUS systems can include daisy chain, star, or hybrid system (a combination of both) topologies (see the *eBUS Technology Reference Guide*, available on **www.extron.com,** for basic diagrams). Every device must have a unique identification address (eBUS ID) within the system.

Setup involves setting eBUS ID DIP switches on the EBPs, then using Extron Global Configurator® Plus and Professional software, the Toolbelt utility, or Global Scripter programming software, to configure the control processor. Once configured, the AV system can be controlled from any of its EBPs.

This guide provides basic instructions for an experienced installer to install the EBP EU or MK series button panels. For more details on the EBPs, see the *eBUS Technology Reference Guide*, available on **www.extron.com**. For details on configuration or programming, see the software help files.

EBP Rear Panel Features
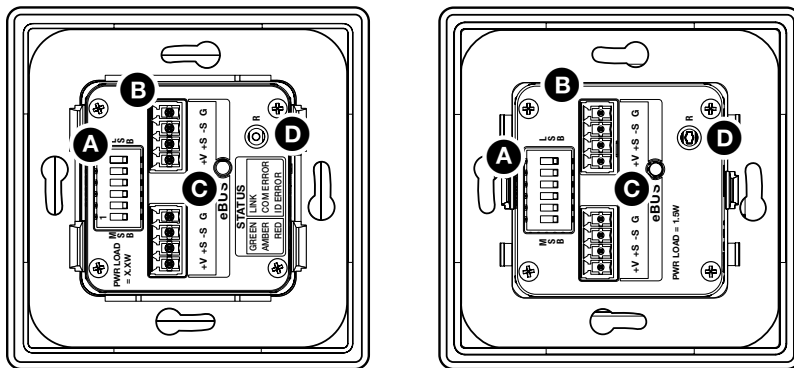
EBP 104 EU and EBP 104 MK Models   **Other EBP EU and MK Models**

Figure 1. EBP EU Models: Rear View

The features shown in figure 1 are the same for all EBP EU and MK models, except for the EBP 104 EU and EBP 104 MK.

Ⓐ DIP switches — Up to eight devices can be connected to one control processor. Each device connected to the same control processor must have a unique eBUS ID, which is set using DIP switches (see **Step 4: Set the eBUS ID on page 6**).

Ⓑ eBUS connectors (2 ports) — The four-pole captive screw connectors use the Extron eBUS protocol to connect the panel to a controller and to other panels (see **Step 5: Cable All Devices** on page 9).

Ⓒ eBUS connection status LEDs — Provide diagnostic information about the connection, communication, and power status of the panels.

- The EBP 104 EU and EBP 104 MK has a single LED that can light yellow, red, or green.
- All other EBP Decorator-style models have a single green LED.

For more information about how the LEDs are used for troubleshooting, see **Step 7: Test and Troubleshoot** on page 11.

Ⓓ Reset button — Resets the firmware to the factory installed version. To reset the firmware:

1. Disconnect the eBUS cable that is providing power.
2. While reconnecting power, press and hold down the `Reset` button.
3. Release the `Reset` button 1 second after reconnecting power.

   During the reset process, the front panel buttons are not lit. When the eBUS Status LED lights, the reset process is complete, and the EBP is functioning normally. For the EBP 104 EU and EBP 104 MK, the green Link LED lights to show that the EBP is functioning normally.

EBP Front Panel Features

Figure 2 shows the range of EBP EU front panels. The EBP MK series is the same except for the wall frame surrounding the button plate. All buttons are back-lit with LEDs to identify the active button. Inactive buttons can be backlit dimly to help identify them in low ambient lighting.
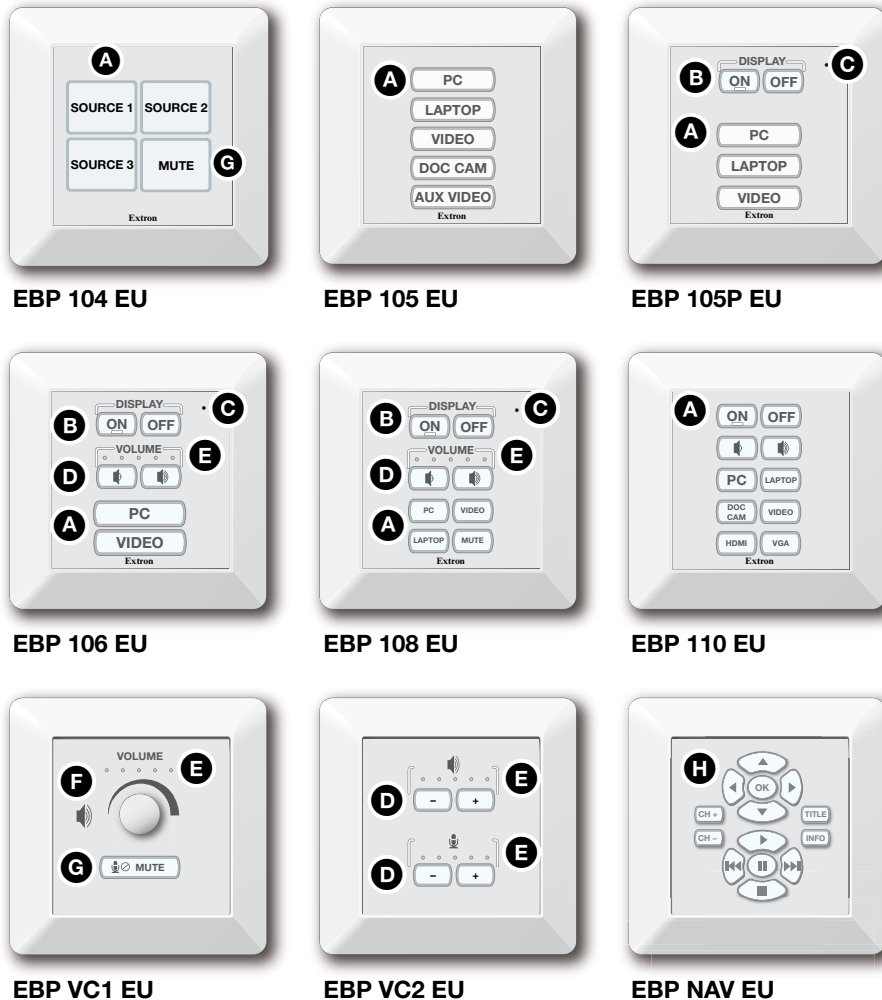
EBP 104 EU   **EBP 105 EU**   **EBP 105P EU**

EBP 106 EU   **EBP 108 EU**   **EBP 110 EU**

EBP VC1 EU   **EBP VC2 EU**   **EBP NAV EU**

Figure 2. EBP EU Series front panels

> **NOTES:**
> - The buttons and encoders must be configured or programmed to carry out their functions.
> - Use Global Configurator Plus and Professional and Toolbelt to configure the EBP buttons and LEDs.
> - Use Global Scripter to program the EBP buttons and LEDs.

Ⓐ Function buttons — These buttons must be configured to carry out various functions.

Ⓑ Power buttons — Control the power to the display device. The **On** button has a nub that can be felt with the finger tips.

Ⓒ Transmit LED — Blinks once when any button is pressed.

Volume Control

Ⓓ Volume buttons — Increment or decrement audio volume.

Ⓔ Volume LED meter — Shows the volume level.

Ⓕ Volume rotary encoder — Increment or decrement audio volume.

Ⓖ Mute button — Toggle between audio mute and unmute. You can configure the mute button so that it is backlit red when muted and white when unmuted for a visual indication of the status.

Video Control

Ⓗ Transport control buttons — Used to control a DVD or Blu-ray player.

Planning the System and Installation

When planning to install an eBUS system, consider how many EBP button panels to use, maximum cable distance, cabling topology, and mounting. See the *eBUS Technology Reference Guide* for more information about eBUS topologies.

Installation

Step 1: Get Ready

Use the following check list to prepare for the installation.

- ☐ Download and install the latest version of the software, firmware, and device drivers needed to configure or program the IPCP Pro and control the connected AV products. See the *IPCP Pro Series User Guide* (available at **www.extron.com**) for details on software and drivers.

- ☐ Obtain model names, drivers, and setup information for AV devices.

- ☐ Determine which eBUS cabling topologies to use and obtain cables, mounting hardware, and any power supplies or hubs required by that configuration.

Step 2: Prepare the Installation Site

ATTENTION:
• Installation and service must be performed by authorized personnel only. • L'installation et l'entretien doivent être effectués par le personnel autorisé uniquement.
• If the EBP will be installed into fine furniture, it is best to hire a licensed, bonded craftsperson to cut the access hole and perform the physical installation so the surface will not be damaged. • S'il est prévu d'installer le EBP dans du beau mobilier, il est préférable de faire appel à un artisan autorisé et qualifié pour couper le trou d'accès et réaliser l'installation de telle façon que la surface ne soit pas endommagée.
• Follow all national and local building and electrical codes that apply to the installation site. • Respectez tous les codes électriques et du bâtiment, nationaux et locaux, qui s'appliquent au site de l'installation.

Site preparation

The EBP EU panels fit any one-gang EU junction boxes, enclosures having 60 mm mounting centers, or Flex55 enclosures. The EBP MK panels fit any standard MK junction box. In addition, Extron offers an assortment of optional in-wall junction boxes, external wall boxes (EWBs), and surface or tabletop mounting boxes for use with the eBUS button panels (see **www.extron.com**).

> **NOTE:** For the installation to meet UL requirements and to comply with National Electrical Code (NEC), the EBP must be installed in a UL Listed junction box (not included with the EBP). The end user or installer must furnish the junction box.

Americans with Disabilities Act (ADA) compliance

When planning where to install these devices, you may need to consider factors affecting accessibility of the button panel such as height from the floor, distance from obstructions, and how far a user must reach to press the buttons. For guidelines, see sections 307 ("Protruding Objects") and 308 ("Reach Ranges") of the *2010 ADA Standards for Accessible Design* available at **http://www.ada.gov/regs2010/2010ADAStandards/2010ADAStandards.pdf**.

Step 3: Change the Buttons

You can replace a faceplate or one or more of the individual buttons. You can order replacement or custom buttons using the Custom Button Builder at **www.extron.com**. To replace the buttons:

1. If required, remove the rotary encoder knob (EBP VC1 EU or EBP VC1 MK only) (see **Remove the rotary encoder knob (VC1 models only)** on the next page).

2. Remove the button panel. For most models, see **Remove the bezel (except the EBP 104 EU and EBP 104 MK)** on the following page. The procedure is slightly different for the EBP 104 EU and EBP 104 MK (see **Remove the bezel on the EBP 104 EU or EBP 104 MK** on the following page).

3. Separate the button panel from the control panel. This step uses the same procedure for all models (see **Separate the bezel from the button board (all models)** on page 5)

4. Replace the buttons. For all models except the EBP 104 EU or EBP 104 MK, see **Replace buttons for all models (except EBP 104 EU and EBP 104 MK) on page 5**. For the EBP 104 EU and EBP 104 MK, see **Replace buttons for the EBP 104 EU and EBP 104 MK** on page 5.

Remove the rotary encoder knob (VC1 models only)

The EBP VC1 EU and EBP VC1 MK have a rotary encoder knob. Before replacing the buttons, remove the encoder, as shown here.

1. **EBP VC1 EU and EBP VC1 MK only:** Turn the rotary encoder knob (figure 3, ❶) to expose the hex screw holding the knob in place (❷).

2. Insert the provided 0.05 inch Allen wrench and turn the wrench in the direction shown (❸) to loosen the screw.

3. Pull the knob straight out to remove it.

Once the encoder knob is removed, removing the faceplate and replacing the buttons is the same for all models.
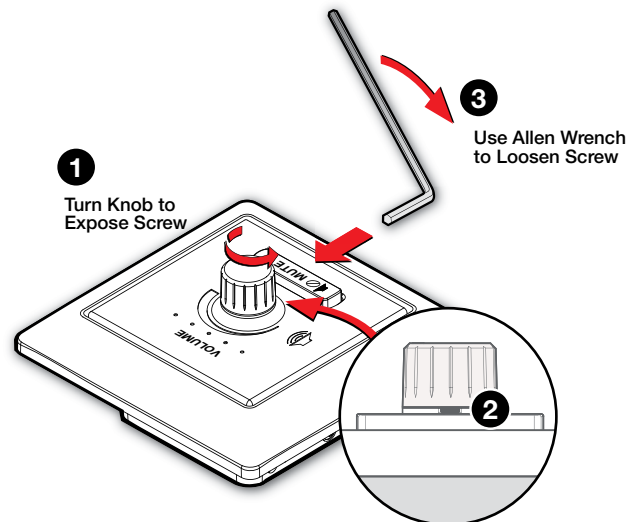
Figure 3. Remove the Rotary Encoder (VC1 models only)

Remove the bezel (except the EBP 104 EU and EBP 104 MK)

Insert the Extron pry tool into the gap between one side of the bezel and the frame. Release the locking tab holding the bezel to the metal mounting bracket (figure 4, ❶). There is a single catch in the middle of each side. If necessary, use the pry tool to release the second catch on the opposite side.

The frame is held in place by the bezel. When the bezel is removed, the frame also comes away from the wall. Pull the device and the frame away from the wall.
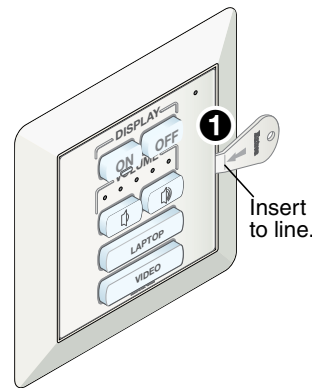
Figure 4. Release Bezel

Remove the bezel on the EBP 104 EU or EBP 104 MK

The EBP 104EU and EBP 104MK have two locking tabs at the top and two more at the bottom.

Insert the Extron pry tool between the top of the bezel and the frame and slide it to the location of one of the locking tabs (see figure 5, ❶). Pull the pry tool up so that the locking tab is pressed down, which releases it (❷).

When the first catch is released, slide the pry tool along the gap between the bezel and the frame to release the second catch.

If necessary, use the pry tool to release the catches on the bottom of the bezel.

Tip the bezel forward and remove it (❸). The frame is held in place by the bezel. When the bezel is removed, the frame will also come away from the wall. Pull the device and the frame away from the wall.
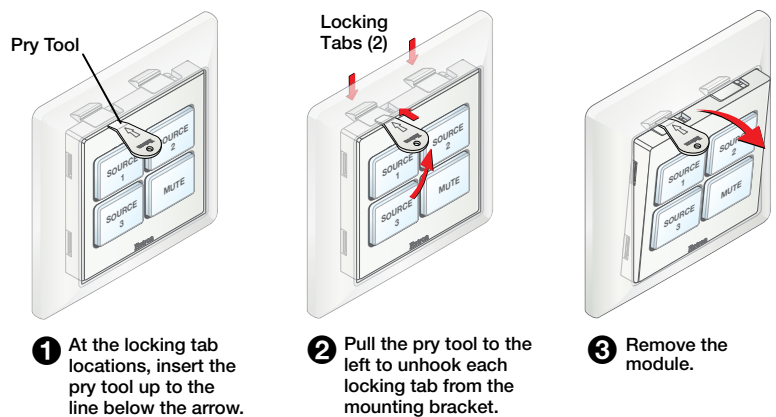
❶ At the locking tab locations, insert the pry tool up to the line below the arrow.

❷ Pull the pry tool to the left to unhook each locking tab from the mounting bracket.

❸ Remove the module.

Figure 5. Release Bezel (EBP 104 EU or EBP 104 MK)

Separate the bezel from the button board (all models)

1. Insert a small flat-bladed screw driver into one of the slots (see figure 6, ❶). There are two slots on each side.

2. Press in the blade of the screw driver until the tab is pushed out of the slot (there is an audible click when this happens).

3. Repeat steps 1 and 2 to release all four tabs holding the bezel to the button board.

4. Tilt the top of the bezel forward so the buttons do not fall out as you remove it (❷).
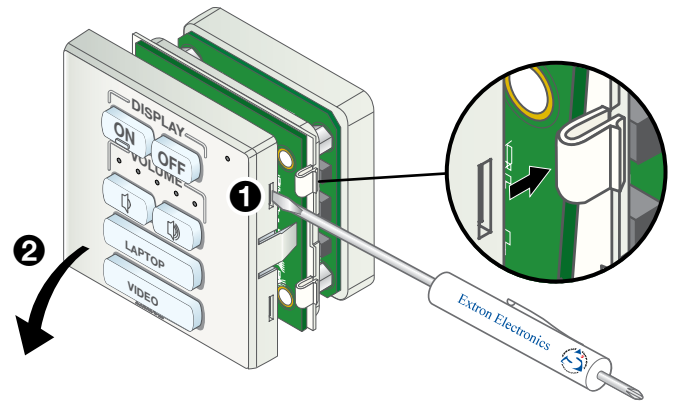
Figure 6. Releasing the Button Plate

Replace buttons for all models (except EBP 104 EU and EBP 104 MK)

1. From the front of the bezel, press the button or button pair to be replaced backward through its slots in the bezel until the membrane containing the button is free.

2. On the back of the bezel, insert the replacement button or button pair into the appropriate slots. Ensure the text is in the correct orientation. Align the two pegs in the button membrane (see figure 7, ❶) with the holes located at opposite corners of the empty space in the faceplate.

3. Press the two buttons into the bezel until the pegs on the membrane are seated in the corresponding holes.

4. Repeat steps 5 through 7 for any other buttons that you want to replace.

5. Align the button board with the bezel, and press it into place. The four tabs released in steps 1 through 3 of the previous section snap back into place. Ensure the bezel is in the correct orientation, reattach the frame, and press the bezel back into the mounting bracket, using the two catches released in **Remove the bezel (except the EBP 104 EU and EBP 104 MK)** on the previous page.

6. **EBP VC1 EU and EBP VC1 MK only:** Replace the rotary encoder knob by reversing the procedure that was described in **Remove the rotary encoder knob (VC1 models only)** on the previous page.
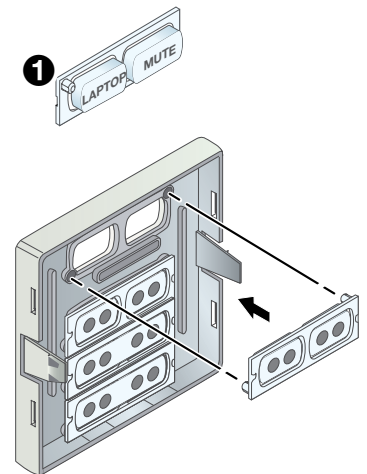
Figure 7. Replacing Buttons

Replace buttons for the EBP 104 EU and EBP 104 MK

You can replace one or more of the labels within the buttons. Some button labels ship with the unit. You can create and print your own customized labels using Extron Button Label Generator software.

To change a label, follow these instructions.

1. **Remove the bezel on the EBP 104 EU or EBP 104 MK** as described on the previous page.

2. Separate the button plate from the control plate.

3. Gently separate the button lens button cap from its white diffuser: insert the end of the provided Extron removal tool into the corner notch and gently twist the tool (see figure 8, ❶).

4. Remove the label insert from the button cap. software.

> **TIP:** If the insert does not come out easily, use a piece of sticky tape to pull it out of the button cap.

5. Select one of the button labels from the printed label sheets included with the unit. Remove the label from its backing and remove the clear, protective film from the front of the label.

6. Insert the button label into the button cap (❷).

7. Align the cap with the white diffuser and the panel opening, and press the clear cap into place on the button.

8. Reattach the faceplate to the EBP as described in **Mounting EBP EU or EBP MK Devices to an Electrical Wall Box** on page 12 or **Mounting EBP EU Devices in a Raceway** on page 13.
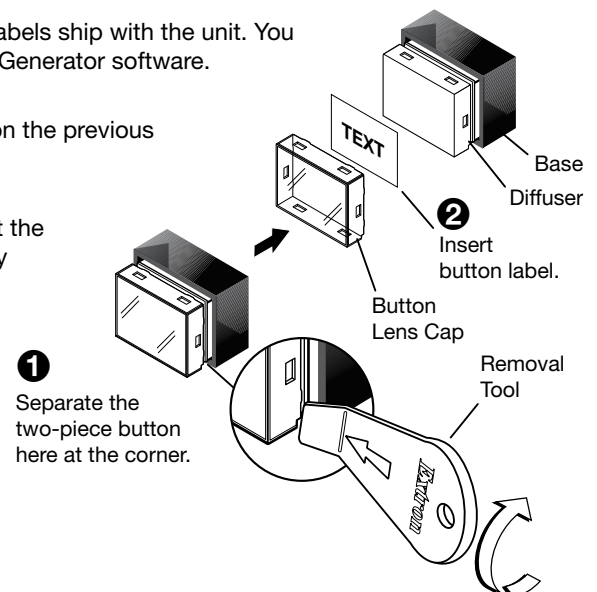
Base
Diffuser
TEXT
❷
Insert button label.
Button Lens Cap
❶
Separate the two-piece button here at the corner.
Removal Tool

Figure 8. Replacing Buttons on the EBP 104 EU and EBP 104 MK

Step 4: Set the eBUS ID

Up to eight devices can be connected to one control processor. In order for the control processor to be successfully configured, each device connected to the same control processor must have a unique six-bit, eBUS ID, which is set with the DIP switch assembly on the rear panel of the EBP (figure 9, ❶). If two or more modules have the same eBUS ID, address conflicts may cause one or more of the panels to not be recognized by the IPCP Pro control processor.

Various combinations of the six DIP switches being set to On or Off, provide 64 addresses: 0 is a reserved eBUS ID and the configurable eBUS ID range is 1 through 63 (see the table on the two following pages). The section below shows an example of binary to decimal conversion.
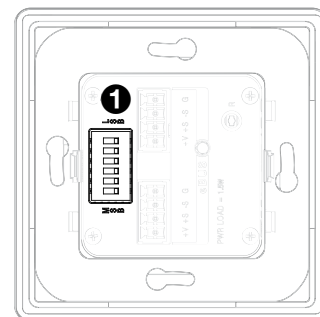

Figure 9. EU and MK eBUS Panel DIP Switches

eBUS ID Setup

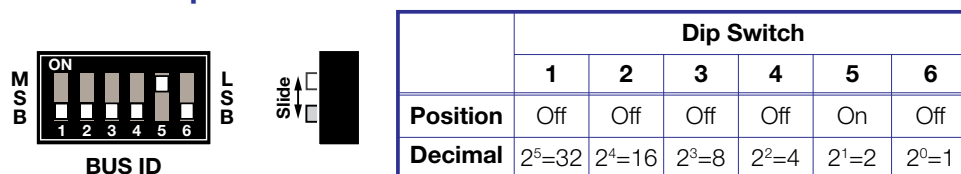|	Dip Switch					
	1	**2**	**3**	**4**	**5**	**6**
Position	Off	Off	Off	Off	On	Off
Decimal	$2^5=32$	$2^4=16$	$2^3=8$	$2^2=4$	$2^1=2$	$2^0=1$

Figure 10. eBUS ID Setup

Add the decimal numbers for each of the DIP switches that are set to On to obtain the address of the device. In figure 10, only DIP switch 5 is on and the rest are off, which means the address for the device in figure 9 is 0+0+0+0+2+0 = 2.

> **NOTES:**
> - Any address can be used except address 0 (binary: 000000), which is reserved (as the address of the controller) and may not be used.
> - Switch 1 (on the left) is the highest value (32, the most significant bit) and is labelled MSB.
> - Switch 6 (on the right) is the lowest value (1, the least significant bit) and is labelled LSB.
> - **Up** = on = **1**, **Down** = off = **Ø**

The following table shows the factory default eBUS IDs and the corresponding addresses for the EU and MK models. These IDs can be changed to any valid value.

Model	Address	eBUS ID
EBP 104 EU or MK	24	011000
EBP 105 EU or MK	6	000110
EBP 105P EU or MK	14	001110
EBP 106 EU or MK	5	000101
EBP 108 EU or MK	10	001010
EBP 110 EU or MK	11	001011
EBP VC1 EU or MK	12	001100
EBP VC2 EU or MK	16	010000
EBP NAV EU or MK	19	010011

The table on the following two pages shows the DIP switch settings for all 64 possible addresses.

	DIP Switch Setting						Decimal Value		DIP Switch Setting						Decimal Value
	1	2	3	4	5	6			1	2	3	4	5	6	
MSB / LSB	Ø	Ø	Ø	Ø	Ø	Ø	0	MSB / LSB	Ø	Ø	1	1	1	1	15
MSB / LSB	Ø	Ø	Ø	Ø	Ø	1	1	MSB / LSB	Ø	1	Ø	Ø	Ø	Ø	16
MSB / LSB	Ø	Ø	Ø	Ø	1	Ø	2	MSB / LSB	Ø	1	Ø	Ø	Ø	1	17
MSB / LSB	Ø	Ø	Ø	Ø	1	1	3	MSB / LSB	Ø	1	Ø	Ø	1	Ø	18
MSB / LSB	Ø	Ø	Ø	1	Ø	Ø	4	MSB / LSB	Ø	1	Ø	Ø	1	1	19
MSB / LSB	Ø	Ø	Ø	1	Ø	1	5	MSB / LSB	Ø	1	Ø	1	Ø	Ø	20
MSB / LSB	Ø	Ø	Ø	1	1	Ø	6	MSB / LSB	Ø	1	Ø	1	Ø	1	21
MSB / LSB	Ø	Ø	Ø	1	1	1	7	MSB / LSB	Ø	1	Ø	1	1	Ø	22
MSB / LSB	Ø	Ø	1	Ø	Ø	Ø	8	MSB / LSB	Ø	1	Ø	1	1	1	23
MSB / LSB	Ø	Ø	1	Ø	Ø	1	9	MSB / LSB	Ø	1	1	Ø	Ø	Ø	24
MSB / LSB	Ø	Ø	1	Ø	1	Ø	10	MSB / LSB	Ø	1	1	Ø	Ø	1	25
MSB / LSB	Ø	Ø	1	Ø	1	1	11	MSB / LSB	Ø	1	1	Ø	1	Ø	26
MSB / LSB	Ø	Ø	1	1	Ø	Ø	12	MSB / LSB	Ø	1	1	Ø	1	1	27
MSB / LSB	Ø	Ø	1	1	Ø	1	13	MSB / LSB	Ø	1	1	1	Ø	Ø	28
MSB / LSB	Ø	Ø	1	1	1	Ø	14	MSB / LSB	Ø	1	1	1	Ø	1	29

	DIP Switch Setting						Decimal Value		DIP Switch Setting						Decimal Value
	1	2	3	4	5	6			1	2	3	4	5	6	
MSB · LSB	Ø	1	1	1	1	Ø	30	MSB · LSB	1	Ø	1	1	1	1	47
MSB · LSB	Ø	1	1	1	1	1	31	MSB · LSB	1	1	Ø	Ø	Ø	Ø	48
MSB · LSB	1	Ø	Ø	Ø	Ø	Ø	32	MSB · LSB	1	1	Ø	Ø	Ø	1	49
MSB · LSB	1	Ø	Ø	Ø	Ø	1	33	MSB · LSB	1	1	Ø	Ø	1	Ø	50
MSB · LSB	1	Ø	Ø	Ø	1	Ø	34	MSB · LSB	1	1	Ø	Ø	1	1	51
MSB · LSB	1	Ø	Ø	Ø	1	1	35	MSB · LSB	1	1	Ø	1	Ø	Ø	52
MSB · LSB	1	Ø	Ø	1	Ø	Ø	36	MSB · LSB	1	1	Ø	1	Ø	1	53
MSB · LSB	1	Ø	Ø	1	Ø	1	37	MSB · LSB	1	1	Ø	1	1	Ø	54
MSB · LSB	1	Ø	Ø	1	1	Ø	38	MSB · LSB	1	1	Ø	1	1	1	55
MSB · LSB	1	Ø	Ø	1	1	1	39	MSB · LSB	1	1	1	Ø	Ø	Ø	56
MSB · LSB	1	Ø	1	Ø	Ø	Ø	40	MSB · LSB	1	1	1	Ø	Ø	1	57
MSB · LSB	1	Ø	1	Ø	Ø	1	41	MSB · LSB	1	1	1	Ø	1	Ø	58
MSB · LSB	1	Ø	1	Ø	1	Ø	42	MSB · LSB	1	1	1	Ø	1	1	59
MSB · LSB	1	Ø	1	Ø	1	1	43	MSB · LSB	1	1	1	1	Ø	Ø	60
MSB · LSB	1	Ø	1	1	Ø	Ø	44	MSB · LSB	1	1	1	1	Ø	1	61
MSB · LSB	1	Ø	1	1	Ø	1	45	MSB · LSB	1	1	1	1	1	Ø	62
MSB · LSB	1	Ø	1	1	1	Ø	46	MSB · LSB	1	1	1	1	1	1	63

Step 5: Cable All Devices

Attach cables using the diagrams in this section as a guide. Connect a 4-pole captive screw connector to each end of the cable, wiring both ends as shown in figure 11. In most cases the EBPs are powered by the IPCP Pro control processor that provides the eBUS signal. Power is carried on the V+ pin of each eBUS connection.

The four connectors are:

- **+V** — carries 12 VDC power from the controller, active hub, or power supply
- **+S** — carries the positive data signal
- **-S** — carries the negative data signal
- **G** — ground

Extron STP20-2/1000 or STP20-2P/1000 cable is recommended for eBUS connections.
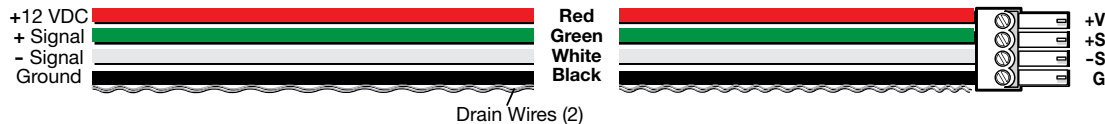
Figure 11. Basic eBUS Connector Wiring and Cable Color Code

> **NOTES:**
> - The two eBUS ports are interchangeable: either port can be used to connect the device to a controller or EBDB distribution hub and either can be used to daisy-chain the device to another EBP.
> - Connect up to eight eBUS devices for each IPCP Pro control processor.
> - Wire the connectors in the same way at both ends.
> - Do NOT power an EBP from more than one power source.
> - Do not exceed a total of 1000 feet (305 meters) of cable for connections between the IPCP Pro and all the EBP panels.
> - Power is provided by the IPCP Pro. If additional power is required, use a PS 1220EB power supply and distribution hub, or an Extron PS series desktop power supply. If more than one power source is used in a system, make sure that the devices powered by the first source are isolated from the devices powered by the second source by disconnecting the +V pin appropriately (see **figure 12** on the following page).

> **ATTENTION:**
> - Always use a power supply supplied or specified by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the end product.
> - Utilisez toujours une source d'alimentation fournie ou recommandée par Extron. L'utilisation d'une source d'alimentation non autorisée annule toute conformité réglementaire et peut endommager la source d'alimentation ainsi que le produit final.
> - If not provided with a power supply, this product is intended to be supplied by a UL Listed power source marked "Class 2" or "LPS" and rated output 12 VDC, minimum 1.0 A.
> - Si le produit n'est pas fourni avec une source d'alimentation, il doit être alimenté par une source d'alimentation certifiée UL de classe 2 ou LPS, avec une tension nominale 12 Vcc, 0,5 A minimum.
> - Unless otherwise stated, the AC/DC adapters are not suitable for use in air handling spaces or in wall cavities.
> - Sauf mention contraire, les adaptateurs CA/CC ne conviennent pas à une utilisation dans les espaces d'aération ou dans les cavités murales.
> - The installation must always be in accordance with the applicable provisions of National Electrical Code ANSI/NFPA 70, article 725 and the Canadian Electrical Code part 1, section 16. The power supply shall not be permanently fixed to building structure or similar structure.
> - Cette installation doit toujours être conforme aux dispositions applicables du Code américain de l'électricité (National Electrical Code) ANSI/NFPA 70, article 725, et du Code canadien de l'électricité, partie 1, section 16. La source d'alimentation ne devra pas être fixée de façon permanente à la structure de bâtiment ou à d'autres structures similaires.

EBPs that are relatively far from the control processor (see the *eBUS Technology Reference Guide* on **www.extron.com** for details) can be connected to an optional Extron PS 1220EB eBUS power supply and distribution hub, or an Extron PS series desktop power supply as shown in the following diagrams.
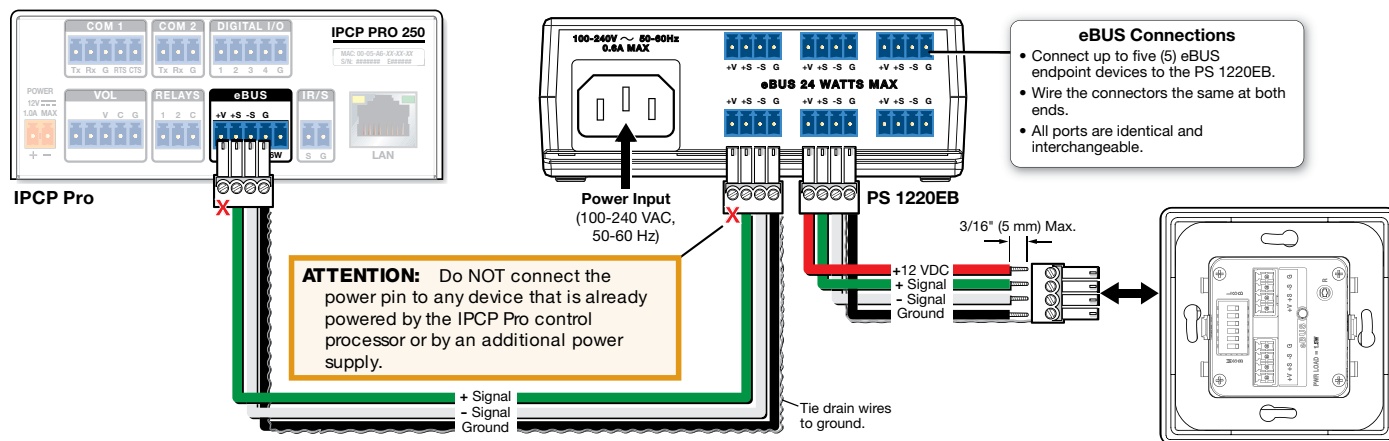

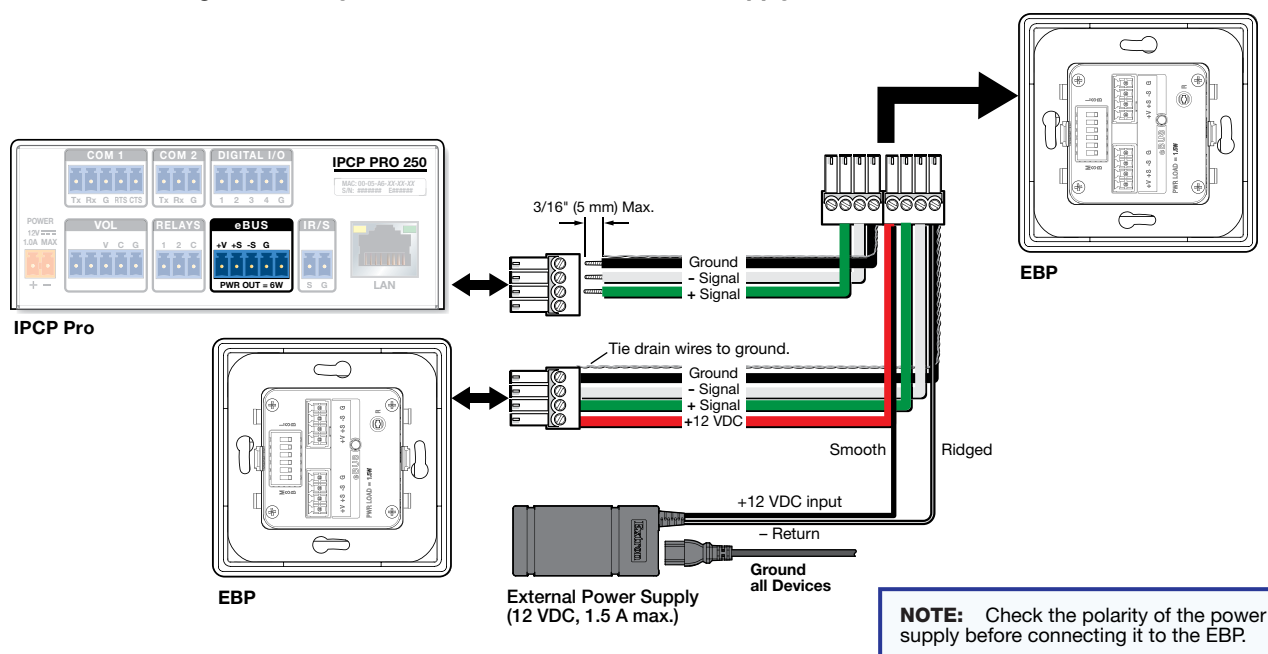**Figure 12.** Cabling an eBUS System with an PS 1220EB Power Supply and Distribution Hub

Figure 13. Cabling EBP Panels with an Extron PS Series Desktop Power Supply

NOTE: Although the rear panels for the EBP 104 EU and 104 MK are different from the rear panel shown in figures 12 and 13, power and eBUS cables are connected in exactly the same way.

Step 6: Configure the System

EBPs are shipped with pre-labelled buttons in place but these buttons do not have any functions associated with them until they are configured with Global Configurator or programmed with Global Scripter. See the *Global Configurator Help File* or the *Global Scripter Help File* for step-by-step instructions and detailed information.

Step 7: Test and Troubleshoot

1. Verify that the DIP switches on the EBPs are set to the desired address on each device and that there are no eBUS ID conflicts in the system.

2. The eBUS LED provides information about power and communication status and eBUS ID address conflicts.

   The EBP 104 EU and EBP 104 MK have an LED that shows three different colors:
   - **Off** — If the LED is off, the device is not receiving power.
   - **LED Lights Yellow**— Lights solidly when the device is receiving power but communication with the control processor is not confirmed.
   - **LED Lights Red** — Lights solidly when there is a eBUS ID address conflict.
   - **LED Lights Green** — Lights solidly when power and communication are both confirmed.

   All other Decorator-style panels have a single green LED that provides information as follows:
   - **Off** — The device is not receiving power.
   - **Slow blink** (1 blink per second)— The device is receiving power but communication with the control processor is not confirmed.
   - **Fast blink** (2 blinks per second) — There is a eBUS ID address conflict.
   - **Lights solidly** — Power and communication are both confirmed.

3. Verify that cables to and from the EBPs are wired the same at each end (pin 1 to pin 1, pin 2 to pin 2, and so forth).

4. Test the system.
   - Press buttons on the EBPs and ensure the buttons light as desired and that the appropriate control commands or functions are triggered.
   - Ensure that the audio output responds correctly to the volume knob or button. Also ensure that the volume LEDs light correctly as you increase or decrease the audio gain.

5. Make adjustments to wiring, eBUS ID address, or system configuration as needed. Remember that the rear panel ports and DIP switches will not be accessible after the EBP is mounted. If needed, upload a revised configuration to the control processor.

If you have questions during installation and setup, call the **Extron S3 Sales & Technical Support Hotline** or the Extron S3 Control Systems Support Hotline (1.800.633.9877).

Step 8: Mount the EBPs

EBP panels can be installed directly into the wall using a 1-gang wall mounting bracket (mud ring) or a wall box.

> **ATTENTION:**
> - All electrical installation should be performed by qualified personnel in accordance with local and national building codes, fire and safety codes, and local and national electrical codes.
> - Toute installation électrique devrait être effectuée par un personnel qualifié, conformément aux codes du bâtiment, aux codes incendie et sécurité, et aux codes électriques locaux et nationaux.

Prior to mounting:

1. If it has not already been done, feed all device cables through the wall or furniture.
2. Ensure that cables are connected to the EBP rear panel (see **EBP Rear Panel Features** on page 1).

> **NOTE:** The EBP VC1 EU and EBP VC1 MK are deeper than other EU or MK panels and have front panel rotary encoders that protrude from the wall more than the buttons of the other models.
>
> • Allow at least 1.44 inches (36.6 mm) depth in the wall or furniture for cables.
>
> • The EBP VC1 EU or EBP VC1 MK front panel, including the rotary encoder, extends 0.77 inches (19.6 mm) from the wall.

Mounting EBP EU or EBP MK Devices to an Electrical Wall Box

The EBP EU models can be mounted into one-gang EU junction boxes and enclosures having 60 mm mounting centers. Figure 14 shows how to mount the EBP 106 EU. Other 1-gang EU models are mounted in exactly the same way. The EBP EU models can also be mounted directly into an EU raceway (see **Mounting EBP EU Devices in a Raceway** on the following page).

The EBP MK models can be mounted in any standard 1-gang MK electrical junction box. Figure 15 shows how to mount the EBP 106 MK. Other 1-gang MK models are mounted in exactly the same way.

> **NOTES:**
>
> • The electrical wall box is not provided and must be purchased separately.
>
> • Install the electrical wall box by following the instructions provided by the manufacturer.
>
> • Use the metal bracket provided with EBP device.

Mount the EBP device as follows:

1. Decide where the panel will be located. Take into consideration the position of wall studs and windows that could obstruct cable runs.
2. Install the electrical wall box (❶) by following the instructions provided by the manufacturer.
3. Attach the provided mounting bracket (❷) using the two provided screws.

> **NOTES:**
>
> • The mounting brackets provided with the EU and MK models are different and are not interchangeable.
>
> • Ensure the bracket is in the correct orientation (with the side marked "Front" facing away from the wall.
>
> • The EU model is attached with screws at the top and bottom.
>
> • The MK model is attached with screws on both the sides.

4. Disconnect power from all devices at the source and run cables through the hole in the wall. Pass them through the metal bracket and frame and connect them to the rear panel captive screw connectors (see **Step 5: Cable All Devices** on page 9).
5. Set the DIP switches to give the panel a unique eBUS ID (See **Step 4: Set the eBUS ID on page 6**).
6. Insert the EBP into the frame (❸) and press the entire assembly into the metal bracket (❷). The EBP is secured to the metal bracket by two catches (one on each side) and holds the frame in place.

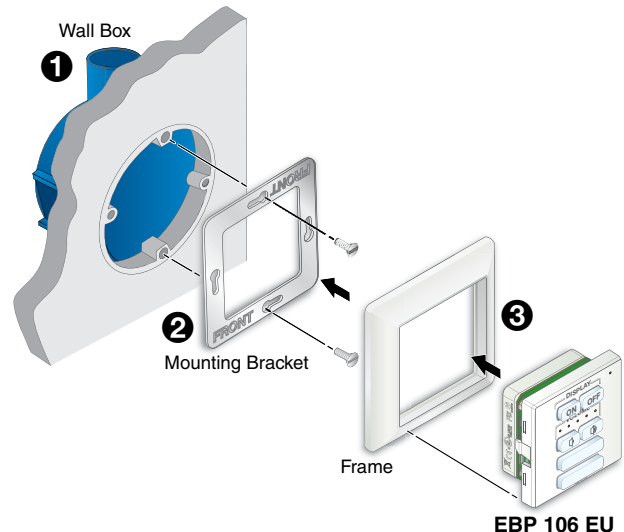> **NOTE:** The EBP 104 EU and EBP 104 MK are held in place by four catches, two on the top and two on the bottom.
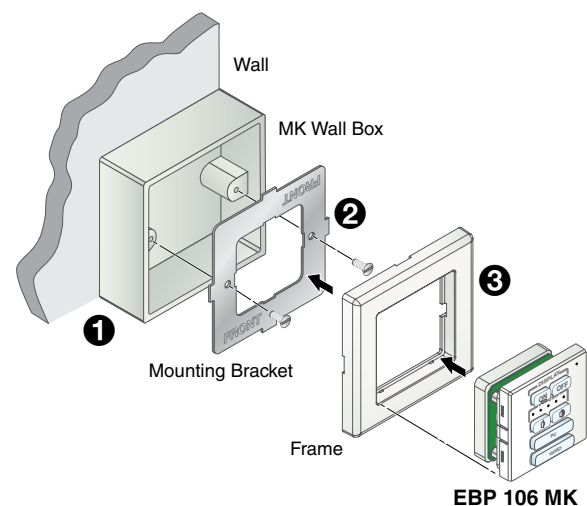

Figure 14. Mounting with an EU Wall Box

Figure 15. Mounting with an MK Wall Box

Mounting EBP EU Devices in a Raceway

> **NOTES:**
>
> - If there is a gap between the metal mounting bracket and the wall frame, insert the provided raceway spacer between the mounting bracket and the rim of the junction box (see figure 16).
>
>   The spacer looks very similar to the metal mounting bracket, but has a slightly larger center opening, has holes instead of slots for the mounting screws, and is engraved with the words "Optional Spacer" and "Place behind bracket."
>
> - Do not use the spacer instead of the metal mounting bracket. The spacer has a larger opening and will not hold the EBP securely in the wall frame.

To mount the EBP EU to a raceway using the spacer:

1. Mount an electrical box in the raceway (Figure 16, ❶). Follow the instructions provided by the manufacturer.

2. If required, align the screw holes of the provided spacer with the holes in the electrical box (❷).

3. Align the screw holes in the metal bracket with the holes in the spacer and electrical box (❸).

   > **NOTE:** Ensure that the front surface of the mounting bracket is facing out (away from the wall).

4. Secure the metal bracket and spacer to the junction box, using the two provided screws (❹). Leave the screw heads protruding approximately 1/8 inch (3.18 mm) from the surface of the spacer.

5. Rotate the metal bracket as necessary to ensure that the EBP will be aligned correctly on the mounting surface.

6. Tighten the screws to secure the bracket to the spacer.

7. Disconnect power from all devices at the source and run cables through the raceway, junction box, spacer, bracket and frame. Connect them to the rear panel captive screw connectors (see **Step 5: Cable All Devices** on page 9).

8. If you have not already done so, set the DIP switches to give the panel a unique eBUS ID (See **Step 4: Set the eBUS ID on page 6**).

9. Insert the EBP into the wallplate (❺) and press the entire assembly into the metal bracket (❻). The EBP is secured to the metal bracket by two catches (one on each side) and holds the frame in place.

   > **NOTE:** The EBP 104 EU and EBP 104 MK are held in place by four catches, two on the top and two on the bottom.
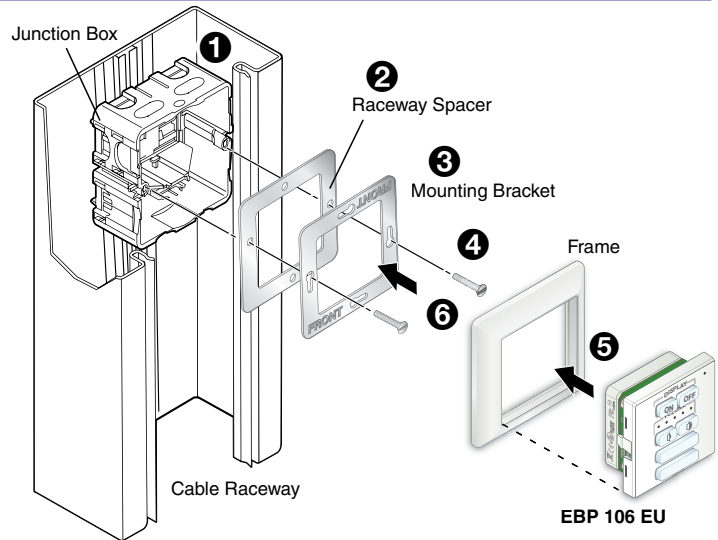

Figure 16. Mounting in an EU Raceway with Spacer

Removing EBP EU or MK Wallplates

If you need to remove an EBP EU or MK wallplate from where it is mounted, follow these steps:

1. Insert the provided Extron removal tool into the gap between the side of the button plate and the frame (figure 17, ❶).

   The tip of the tool should be inserted to the depth of the line marked on the tool.

2. Slide the removal tool along the gap until the catch on the side of the button plate (❷) is released.

3. If necessary, repeat steps 1 and 2 to release the other side of the button plate.

> **NOTE:** The EBP 104 EU and EBP 104 MK are held in place by four catches, two on the top and two on the bottom and are removed by a different procedure (see **Remove the bezel on the EBP 104 EU or EBP 104 MK** on page 4).

4. Pull the EBP away from the frame. The frame is released at the same time.

5. Remove cables.

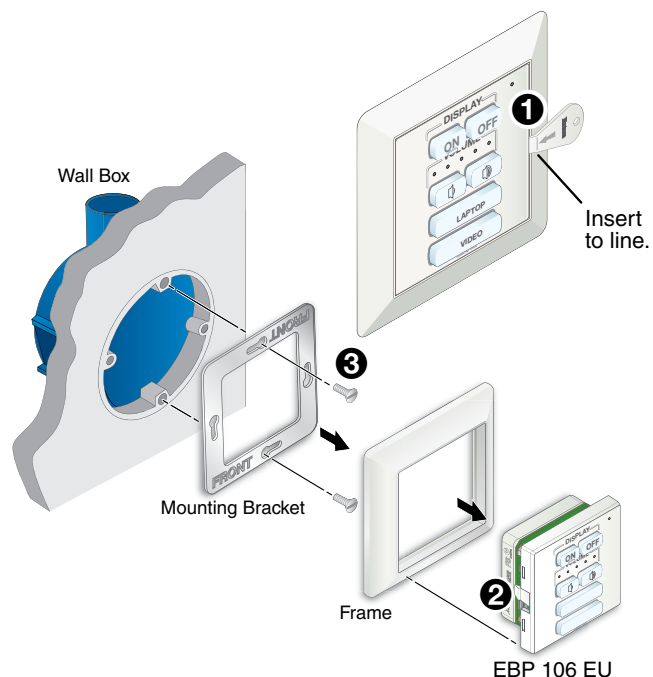6. Remove the screws holding the metal bracket to the wall box (❸)

Figure 17. Removing the EBP 106 EU