

SYSTEM CONFIGURATOR

USER GUIDE



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1. INTRODUCTION

The D-BOX System Configurator is a free software tool used to update and configure your **G2**, **G3** or **G5** haptic systems.

Haptic system users can use the D-BOX System Configurator to:

- Update the firmware of a KCU-1P (G2 and G3), Haptic Bridge (G5) and associated D-BOX hardware.
- Configure (or modify) a haptic system.
- Change the Main Secondary ACMs arrangement (G3 only).

If you require a reconfiguration on your G1 haptic system, please contact our support team.

D-BOX Technical Support

2172 rue de la Province, Longueuil, Québec, Canada, J4G 1R7

BY EMAIL: <u>support@d-box.com</u>

BY PHONE: 1-888-442-3269 ext. 931 (toll-free CAN/US) 1-450-442-3003 ext. 931 (other regions)

2. BEFORE RUNNING THE SYSTEM CONFIGURATOR

2.1 Haptic System Generations

For **G2** & **G3** haptic systems, each ACM holds a programming specific to its actuator's configuration (firmware + programming).

For **G5** haptic systems, firmware + programming is applied to the Haptic Bridge and Haptic Actuators.



Name	ACM-II	ACM-II	ACM-G3 FLEX	G5 Haptic System
Generation	G2	G2	G3	G5
Stroke	1.5 in, 3 in	6 in	1.5 in, 3 in, 6 in	1.5 in
Max. Number of Actuators	3	2	2	4
				8 (with the Haptic Expander*)

* See <u>G5 Haptic System User Guide</u> for more details on the Haptic Expander.

2.2 Actuator Positions

The logo used to represent the actuator positions is a man sitting on a sofa (top view). The following figure describes the characters used to define the actuator positions.

LEGEND	POSITION	PICTOGRAM REFERENCE
FL	Front-Left	
FC	Front-Center	
FR	Front-Right	
BL	Back-Left	≪sw ((((((((((((((((((
BC	Back-Center	
BR	Back-Right	BL BC BR
SU	Surge	
SW	Sway	Y SU
Y	Yaw	- V



3. SOFTWARE INSTALLATION

The D-BOX System Configurator is compatible with Microsoft Windows 7, 8, 10 & 11 - 64 bit.

- **STEP 1:** Make sure you have the latest version of D-BOX HaptiSync Center installed on your PC before installing and running the D-BOX System Configurator. D-BOX HaptiSync Center package is available on our <u>website</u>.
- STEP 2: Download and install (Setup.exe) the D-BOX System Configurator package available on our website.

4. G5 HAPTIC SYSTEM

4.1 Starting the System Configurator



Do not interrupt the update process while it is running. Interrupting the update process before it has completed may cause improper operation.

- STEP 1: Connect the hardware to your computer. See your haptic system user guide if necessary: D-BOX G5 Installation, User & Troubleshooting Guide
- STEP 2: Start the D-BOX System Configurator from the D-BOX folder.
- NOTE: Running the software requires administrative privileges.

4.2 G5 Firmware Update

The Firmware Update tab is the active tab when you start the application. This tab allows you to update the firmware of the Haptic Bridge and Haptic Actuators.

STEP 1: Click the **Refresh Firmware Status** button. This action refreshes the status of the firmware and updates the status to *Outdated* (if a newer firmware version is available) or *Up to date* (if the latest firmware is already in use).





The Device icon displays the firmware's status.

Device Icon	Status	Action required
	Unknown: Refresh firmware status	Initial status. Refresh the status by clicking Refresh Firmware Status .
	Outdated: Firmware should be updated	A newer firmware version is available. Update firmware by clicking Update Firmware .
	Up to date: No action required	The latest firmware is installed. No action required.

STEP 2: If your components are outdated, select the Haptic Bridge, then press the **Update Firmware** button. A dialog box will appear asking you if you want to proceed with the update. Click **OK**.

D-BOX System Configurator		D	вох
Firmware Update Configuration Update ACM Rearrangement (G3 only)			
🖦 D-BOX Haptic Bridge (00000121) [Outdated (Update firmware)]		Refresh Firmware Status	Update Firmware
ריק Platform 01 Set Haptic Bridge (00000121) Haptic Actuator (00000363)	Please connect all system co	mponents	1
AC218 SM0602 (22030633)			
Proceed with update? Avoid disconnecting or powering off D-BOX hardware while the firmware upda	te is in progress. Interrupting the pro	ocess may cause problems.	Cancel
			Execution Details



NOTE: The update process may take a few minutes. Click the Execution Details button at any time to see details about the ongoing operation.

D-BOX System Configurator	DBOX
Firmware Update Configuration Update ACM Rearrangement (G3 only	
L D-BOX Haptic Bridge (00000121) [Outdated (Update firmware)]	Refresh Firmware Status Update Firmware
Platform 01 Haptic Bridge (00000121) Haptic Actuator (00000363) AC218 SM0602 (22030633) Haptic Actuator (00000364) AC218 SM0602 Haptic Actuator (00000372) AC218 SM0602 (22100055) Haptic Actuator (00000437) Operation i AC218 SM0602 (22030733)	Please connect all system components
	Execution Details

Once the update process is complete, the following window will appear. Click **OK**.



Your firmware is now up to date.



4.3 G5 Configuration Updates

The Configuration Update tab allows you to:

- Configure your haptic system (Haptic Actuator positions and axes (Degrees of Freedom DOF))
- Change the position assigned to each actuator.
- Change the number of actuators in the configuration.

The following are the possible axes (DOF) that can be configured for a D-BOX haptic system.



STEP 1: From the Hardware Selection box, select the communication device (D-BOX Haptic Bridge) linked to the haptic system you want to configure, then select the platform number (if multiple haptic systems are connected).

D-BOX System Configurator	DBOX
Firmware Update Configuration Update ACM Rearrangement (G3 only) Hardware Selection Actual DOF Configuration Communication Device Platform D-BOX Haptic Bridge (00000121) 1 OF Configuration Filter 1	Compatible Configuration Selection
Interface Count Actuator Count Configuration Axes 5 4 Image: Roll Image: Rol	No configuration selected
ConfigurationDescription1052PH - 4 Actuators - 5 Intf (M, S-FC0, S-FC0, S-BC0, S-BC0)10774RPH - 4 Actuators - 5 Intf(M, S-FR0, S-FL0, S-BL0, S-BR0)	
	Apply Configuration Refresh Information
	Execution Details



The Actual DOF Configuration box shows the actual configuration (might appear empty for a new system).

D-BOX System Configurator	DBOX
Firmware Update Configuration Update ACM Rearrangement (G3 only)	
Hardware Selection Actual DOF Configuration Communication Device Platform D-BOX Haptic Bridge (00000121) 1 1 10774 Roll ✓ Yaw Pitch ✓ Surge Harve ✓ Sway	Compatible Configuration Selection
Interface Count Actuator Count Configuration Axes 5 4 Roll Yaw Pitch Surge Heave Sway	No configuration selected
10774 RPH - 4 Actuators - 5 Intf(M, S-FR0, S-FL0, S-BL0, S-BR0)	
	Apply Configuration Refresh Information
	Execution Details

STEP 2: The DOF Configuration Filter box helps you find the available configurations for your haptic system.

	(73-ck)	DBOX
Firmware Update Configuration Update ACM Ref Hardware Selection Communication Device Platform D-BOX Haptic Bridge (00000121) 1 1 DOF Configuration Hiter Interface Count Configuration Filter	Parrangement (G3 only) Configuration Axes 10774 Roll ✓ Yaw Pitch ✓ Surge Heave ✓ Sway	ation Selection
5 4 Configuration Description 1052 PH - 4 Actuators - 5 Intf (M, S-FC0, S 10774 RPH - 4 Actuators - 5 Intf(M, S-FR0,	Roll Yaw Pitch Surge Heave Sway	
	Apply Configuration	Refresh Information Execution Details



OPTION A: You can manually enter the configuration number (see below) into the Configuration box (see Appendix A or C for more details).



Make sure to connect each actuator (RJ45) cable to the lettered port of the Haptic Bridge as indicated in the image above.

NOTE: See G5 Haptic System User Guide for configurations with five to eight actuators using the Haptic Expander.

OPTION B: Filter by configuration attributes (see <u>Appendix A</u> or <u>C</u> for common configurations) by:

- 1. Validating that the number of interfaces (Haptic Bridge + actuators) detected is accurate. If they do not, check the system connections and click the **Refresh Information** button.
- 2. Validating that the number of actuators detected match your requested configuration. Otherwise, manually change the value as desired.
- 3. <u>Optional</u>: Checking the boxes of the desired axes (degrees of freedom) you require.



STEP 3: The Configuration and Description box lists all the available configurations using the information you have entered into the DOF Configuration Filter.

D-BOX System Configurator	DBOX
Firmware Update Configuration Update ACM Rearrangement (G3 only)	
Hardware Selection Actual DOF Configuration Communication Device Platform D-BOX Haptic Bridge (00000125) 1 Image: Selection Device 1 <tr< th=""><th>Compatible Configuration Selection</th></tr<>	Compatible Configuration Selection
DOF Configuration Filter Interface Count Actuator Count Configuration Axes 3 2 2 Roll Yaw Pitch Surge Heave Sway	No configuration selected
Configuration Description 1044 RP - 2 Actuators - Front (as Back) 3 ACMs (M, S-FR0, S-FL0) 1045 RP - 2 Actuators - Right (No Mix) 3 ACMs (M, S-BR0, S-FR0) 1047 RP - 2 Actuators - Back (No Mix) 3 ACMs (M, S-BL0, S-BR0) 1048 RP - 2 Actuators - Front (No Mix) 3 ACMs (M, S-FR0, S-FL0) 1049 RP - 2 Actuators - Front (No Mix) 3 ACMs (M, S-FR0, S-FL0) 10719 RP - 2 Actuators - Front 3 ACMs (M, S-FR0, S-FL0) 10721 RP - 2 Actuators - Back 3 ACMs (M, S-BL0, S-BR0)	
	Apply Configuration Refresh Information
	Execution Details

By selecting a configuration, its layout appears in the Compatible Configuration Selection box. The layout displays the positions of the Haptic Actuator(s) on the simulator, chair, or platform, and the associated port on the Haptic Bridge.

D-BOX System Configurator			DBOX
Firmware Update Configuration Update ACM R	earrangement (G3 only)		
Hardware Selection Communication Device Platform D-BOX Haptic Bridge (00000121) 1 DOF Configuration Filter	Actual DOF Configuration Configuration Axes 10774 Roll ✓ Yaw Pitch ✓ Surge Heave ✓ Sway	Compatible Configuration Selection	
Interface Count Actuator Count Configu 5 4 Configuration Description	ration Axes Roll Yaw Pitch Surge Heave Sway	PORT D M PORT A D	
1052 PH - 4 Actuators - 5 Intf (M, S-FCQ, 1 10774 RPH - 4 Actuators - 5 Intf(M, S-FRQ,	S-FLO, S-BLO, S-BCO) S-FLO, S-BLO, S-BRO)	Actuator Assignation D Roll, Pitch, Heave G Roll, Pitch, Heave J Roll, Pitch, Heave M Roll, Pitch, Heave Apply Configuration Refresh Information	Position Front Right Front Left Rear Left Rear Right
			Execution Details



STEP 4: Once the configuration is chosen, click **Apply Configuration** to start the configuration update process, then follow the instructions.

D-BOX System Configurator		DBOX
Firmware Update Configuration Update ACM I	Rearrangement (G3 only)	
Hardware Selection Communication Device Platform D-BOX Haptic Bridge (00000125) 1	Actual DOF Configuration Configuration Axes 10721 Roll V Pitch V Heave S	Yaw Surge Sway
Proceed with update? Avoid disconnecting or powering of		nfiguration update is in progress. Interrupting the process may cause problems.
10719 RP - 2 Actuators - Front 3 ACMs (N 10721 RP - 2 Actuators - Back 3 ACMs (M 10723 PH - 2 Actuators - Front/Back 3 AC 10725 YSw - 2 Actuators - 3 ACMs (M, S-1 10727 YSu - 2 Actuators - 3 ACMs (M, S-1 10729 SwSu - 2 Actuators - 3 ACMs (M, S-1	I, S-FR0, S-FL0) S-BL0, S-BR0) Ms (M, S-FC0, S-BC0) (0, S-Sw0) 0, S-Su0) -Sw0, S-Su0)	Apply Configuration Refresh Information
		Execution Details

D-BOX System Configurator	DBOX
Firmware Update Configuration Update ACM Rearrangen	nent (G3 only)
D-BOX Haptic Bridge (00000121) 1 1 Configuration Description 1052 PH - 4 Actuators - 5 Intf (M, S-FC0, S-FC0, S-b 10774 RPH - 4 Actuators - 5 Intf(M, S-FR0, S-FL0, S-F	107774 Operation in progress. This may take a few minutes. Please wait CU, S-BRO) Actuator Assignation Position D Roll, Pitch, Heave Front Left J Roll, Pitch, Heave Rear Left M Roll, Pitch, Heave Rear Right Apply Configuration Refresh Information
	Execution Details

Once the configuration update is complete, the following confirmation window appears. Click **OK**.

D-BOX System Configurator			DBOX
Firmware Update Configuration Update ACM	Rearrangement (G3 only)		
Hardware Selection Communication Device Platform	Actual DOF Configuration – Configuration Axes		Compatible Configuration Selection
D-BOX Haptic Bridge (00000125) • 1	10721 Roll √ Pitch √ Heave	Yaw Surge Sway	
Operation completed			
Update process completed successf			
			Ok
10719 RP - 2 Actuators - Front 3 ACMs (N 10721 RP - 2 Actuators - Back 3 ACMs (M 10723 PH - 2 Actuators - Front/Back 3 AC 10725 YSw - 2 Actuators - 3 ACMs (M, S-10725 10727 YSu - 2 Actuators - 3 ACMs (M, S-10727	1, S-FR0, S-FL0) , S-BL0, S-BR0) Ms (M, S-FC0, S-BC0) /0, S-Sw0) /0, S-Su0)		
10729 SwSu - 2 Actuators - 3 ACMs (M, S	-Św0, S-Śu0)		Apply Configuration Refresh Information
			Execution Details

5. G2 and G3 HAPTIC SYSTEMS

5.1 Starting the System Configurator



Do not interrupt the update process while it is running. Interrupting the update process before it has completed may cause improper operation.

STEP 1: Connect the hardware to your computer. See your haptic system User Guide if necessary.

 G2 Motion System Installation Guide

 G3 Installation, User & Troubleshooting Guide

STEP 2: Start the D-BOX System Configurator from the D-BOX folder.

NOTE: Running the software requires administrative privileges.

5.2 G2 and G3 Firmware Updates

The Firmware Update tab is the active tab when you start the application. This tab allows you to update the firmware of the G2, G3 and G3 FLEX ACM(s), KCU-1P, KCA, and KCA-T.

A firmware update can also change the actuator model (G3 only). For example, if you replace 1.5-inch actuators with 3-inch actuators, you will need to update the firmware see section 5.3 for more details).



A firmware update applies to a KCU-1P and all subcomponents (ACM, KCA, KCA-T). If you have multiple KCU-1Ps, **you must update them one at a time**.

STEP 1: Click **Refresh Firmware Status**. This refreshes the status of the firmware and updates the status to *Outdated* (if a newer firmware version is available) or *Up to date* (if the latest firmware is already in use).

D-BOX System Configurator	DBOX
Firmware Opdate Configuration Update ACM Rearrangement (G3 only)	
La D-BOX KCU (00004431) [Outdated (Update firmware)]	Refresh Firmware Status Updated
 Platform 01 ACM (G3) (Main) (21160076) 1.5in - i Series - 250lb (AC7 AKM22C, 16176046) 	Please connect all system components
1.5in - i Series - 250lb (AC7 AKM22C) (23299030)	
	Execution Details



The Device icon displays the firmware's status.

Device Icon	Status	Action required
	Unknown: Refresh firmware status	Initial status. Refresh the status by clicking Refresh Firmware Status .
	Outdated: Firmware should be updated	A newer firmware version is available. Update firmware by clicking Update Firmware .
	Up to date: No action required	The latest firmware is installed. No action required.

STEP 2: If your components are outdated, select the KCU-1P you need to update, then press **Update Firmware**. A dialog box appears asking if you want to proceed with update. Click **OK**.

D-BOX System Configurator		D	BOX
Firmware Update Configuration Update ACM Rearrangement (G3 only)			
D-BOX KCU (00004431) [Outdated (Update firmware)]		Refresh Firmware Status	Update Firmware
 Platform 01 ACM (G3) (Main) (21160076) 1.5in - i Series - 250lb (AC7 AKM22C) (16176046) 1.5in - i Series - 250lb (AC7 AKM22C) (22200020) 	Please connect all system co	omponents	
Proceed with update? Avoid disconnecting or powering off D-BOX hardware while the firmware updat	te is in progress. Interrupting the pro	ocess may cause problems.	Cancel
			Execution Details

NOTE: The update process may take a few minutes. Click the Execution Details button at any time to see details about the ongoing operation.

D-BOX System Configurator	Ľ	рвох
Firmware Update Configuration Update ACM Rearrange	ement (G3 only)	
 D-BOX KCU (00004431) [Outdated (Update firmware)] Platform 01 ACM (G3) (Main) (21160076) 1.5in - i Series - 250lb (AC7 AKM22C) (16176046) 1.5in - i Series - 250lb (AC7 AKM22C) (23299030) 	Refresh Firmware Stat	us Update Firmware
	Operation in progress. This may take a few minutes. Please wait	
		Execution Details

Once the update process is complete, the following window appears. Click $\ensuremath{\textbf{OK}}$.

D-BOX System Configurator		D	вох
Firmware Update Configuration Update ACM Rearrangement (G3 only)			
D-BOX KCU (00004431) [Up-to-date (No action required)]		Refresh Firmware Status	Updated
Platform 01	Please connect all system co	omponents	
 ACM (G3) (Main) (21160076) 1 Sin - i Series - 250lb (AC7 AKM22C) (16176046) 		in ponono	
1.5in - i Series - 250lb (AC7 AKM22C) (23299030)			
Operation completed			
Update process completed			
			-
		Ok	-
			Execution Details
			Execution Details



5.3 Changing the Actuator Type (G3 only)

A firmware update must be performed when there is a mismatch between the configured actuator(s) and the connected actuator(s). For example, if you connect 3-inch actuators, instead of 1.5-inch actuators, a red window appears indicating the mismatch, indicating that the configuration is different from when the ACM was initially configured.



NOTE: You cannot use this function with a G2 system.

To proceed with the firmware update, select the KCU-1P device then click **Update Firmware**, and then follow the instructions.





D-BOX System Configurator		D	вох
Firmware Update Configuration Update ACM Rearrangement (G3 only)			
D-BOX KCU (00004431) [Outdated (Update firmware)] Platform 01 ACM (G3) (Main) (08520126)	Please connect all system co	Refresh Firmware Status Pmponents	Update Firmware
Configured in ACM: 1.5in - i Series - 250lb (AC7 AKM22C) (14476046) Currently connected: 3in - i Series - 400lb (AC231 AKM24D)			
Proceed with update?			
Avoid disconnecting of powering on D-BOX hardware while the infinware upda	e is in progress. Interrupting the pro	ocess may cause problems.	
		Ok	Cancel
			Execution Details

Firmware Update Configuration Update ACM Rearrangement (G3 only) → D-BOX KCU (00004431) [Outdated (Update firmware)] → Platform 01 → ACM (G3) (Main) (08520126) Plate ← Configured in ACM: 1.5in - i Series - 250lb (AC7 AKM22C) (14476046) Plate Plate ↓ 1.5in - i Series - 250lb (AC7 AKM22C) ↓ 0000000000000000000000000000	Refresh Firmware Status ase connect all system components a few minutes.	Update Firmware
D-BOX KCU (00004431) [Outdated (Update firmware)] Platform 01 ACM (G3) (Main) (08520126) Configured in ACM: 1.5in - i Series - 250lb (AC7 AKM22C) (14476046) Currently connected: 3in - i Series - 400lb (AC231 AKM24D) 1.5in - i Series - 250lb (AC7 AKM22C) Operation in progress. This may take a Please wait	Refresh Firmware Status ase connect all system components a few minutes.	Update Firmware

Once the operation is completed, click **OK**. Your haptic system is now up to date.

D-BOX System Configurator	D	BOX
Firmware Update Configuration Update ACM Rearrangement (G3 only)		
 D-BOX KCU (00004431) [Up-to-date (No action required)] Platform 01 ACM (G3) (Main) (08520126) 3in - i Series - 400lb (AC231 AKM24D) (14476046) 3in - i Series - 400lb (AC231 AKM24D) 	Refresh Firmware Status Please connect all system components	Update Firmware
Operation completed Update process completed	Ok	
		Execution Details

5.4 G2 and G3 Configuration Updates

The **Configuration Update** tab allows you to:

- Configure your haptic system (Actuator positions and axes (Degrees of Freedom DOF)
- Change the position assigned to each actuator.
- Change the number of actuators in the configuration.
- Modify the number of ACMs in the configuration.

The following are the possible axes (DOF) that can be configured for a D-BOX haptic system.





STEP 1: From the Hardware Selection box, select the communication device (KCU-1P) linked to the haptic system(s) you want to configure, then select the platform number (if multiple haptic systems are connected).

D-BOX System Configurator	DBOX [*]
Firmware Update Configuration Update ACM Rearrangement (G3 only)	
Hardware Selection Actual DOF Configuration Communication Device Platform D-BOX KCU (00004431) 1 D-BOX KCU (00004431) 1 D-BOX KCU (00004431) 1 DOF Configuration Filter 1 DOF Configuration Filter Sway Interface Count Actuator Count Configuration Axes 1 2 Roll Yaw Pitch Surge Pitch Surge	Compatible Configuration Selection
Configuration Description 1020 RP - 2 Actuators - Front (as Back) 1 Intf (M-FR0-FL1) 1022 RP - 2 Actuators - Right (No Mix) 1 Intf (M-BR0-FR1) 1025 RP - 2 Actuators - Front (No Mix) 1 Intf (M-FR0-FL1) 1026 RP - 2 Actuators - Front (No Mix) 1 Intf (M-FR0-FL1) 10004 RP - 2 Actuators - Front 1 Intf(M-FR0-FL1) 10006 RP - 2 Actuators - Front 1 Intf(M-FR0-FL1) 10008 PH - 2 Actuators - Front 1 Intf(M-FC0-BC1) 10008 PH - 2 Actuators - Front 7 Back 1 Intf(M-FC0-BC1) 10010 YSw - 2 Actuators - 1 Intf(M-Y0-Sw1) 10012 YSu - 2 Actuators - 1 Intf(M-Sw0-Su1) 10014 SwSu - 2 Actuators - 1 Intf(M-Sw0-Su1)	Apply Configuration Refresh Information
	Execution Details

The Actual DOF Configuration box shows the actual configuration.

D-BOX System Configur	ator		DBOX
Firmware Update Configuration Up	date ACM Rearranger	ment (G3 only)	
- Hardware Selection Communication Device D-BOX KCU (00004431)	Platform Configu	DOF Configuration uration Axes 10093 Roll / Yaw Pitch / Surge Heave Sway	Compatible Configuration Selection
DOF Configuration Filter	/ <mark>!</mark>		
Interface Count Actuator Count 1 2 Configuration Description 1020 RP - 2 Actuators - Fro 1025 RP - 2 Actuators - Rig 1026 RP - 2 Actuators - Bac 1020 RP - 2 Actuators - Bac 1026 RP - 2 Actuators - Fro 10006 RP - 2 Actuators - Fro	Configuration	Axes Roll Yaw Pitch Surge Heave Sway R0-FL1) R0-FL1) R0-FL1)	No configuration selected
10008 PH - 2 Actuators - Fro 10010 YSw - 2 Actuators - 1 10012 YSu - 2 Actuators - 1 10014 SwSu - 2 Actuators -	nt/Back 1 Intf(M-FCO-Bi Intf(M-Y0-Sw1) Intf(M-Y0-Su1) 1 Intf(M-Sw0-Su1)	C1)	Apply Configuration Refresh Information
			Execution Detail



STEP 2: The DOF Configuration Filter box helps you find the available configurations for your haptic system.

D-BOX System Configurator		DBOX [*]
Firmware Update Configuration Update ACM Re	earrangement (G3 only)	
Hardware Selection Communication Device Platform D-BOX KCU (00004431) 1	- Actual DOF Configuration Compatible Configura Configuration Axes 10093 Roll ✓ Yaw Pitch ✓ Surge Heave Sway	ation Selection ————————————————————————————————————
DOF Configuration Filter Interface Count Actuator Count Configur 1 2	ration Axes Roll Yaw Pitch Surge Heave Sway	No configuration selected
Configuration Description 1020 RP - 2 Actuators - Front (as Back) 1 I 1022 RP - 2 Actuators - Right (No Mix) 1 I 1025 RP - 2 Actuators - Back (No Mix) 1 I 1026 RP - 2 Actuators - Bront (No Mix) 1 I 10004 RP - 2 Actuators - Front (No Mix) 1 I 10006 RP - 2 Actuators - Front 1 Intf(M-RI0 10008 PH - 2 Actuators - Back 1 Intf(M-BL0 10010 YSw - 2 Actuators - 1 Intf(M-YO-Sw1 10012 YSu - 2 Actuators - 1 Intf(M-YO-SV5 10014 SwSu - 2 Actuators - 1 Intf(M-Sw0-SV5	ntf (M-FR0-FL1) ntf (M-BR0-FR1) itf (M-BR0-BR1) ntf (M-FR0-FL1) -FL1) -BR1) M-FC0-BC1) j u1) Apply Configuration	Refresh Information
		Execution Details

OPTION A: If you know the number of the configuration, you can select it from the list then proceed with the programming (see <u>Appendix B</u> or <u>C</u> for common configurations).

OPTION B: Filter by configuration attributes (see <u>Appendix B</u> or <u>C</u> for common configurations) by:

- 1. Validating that the number of ACMs detected (Interface Count) is accurate. If it is not, check the system connections and click **Refresh Information**.
- 2. Validating that the number of actuators detected match your requested configuration. Otherwise, manually change the value as desired.
- 3. <u>Optional</u>: Checking the boxes of the desired axes (degrees of freedom) you require.
- **STEP 3:** The Configuration and Description section lists all the available configurations, using the information you entered into the DOF Configuration Filter.

D-BOX System Configurator		DBOX
Firmware Update Configuration Update ACM R	earrangement (G3 only)	
Hardware Selection Platform Communication Device Platform D-BOX KCU (00004431) 1 DOF Configuration Filter 1 Interface Count Actuator Count Configuration 1 2	Actual DOF Configuration Configuration Axes 10093 Roll ✓ Yaw Pitch ✓ Surge Heave Sway ration Axes Roll Yaw Roll Yaw	- Compatible Configuration Selection No configuration selected
ConfigurationDescription1020RP - 2 Actuators - Front (as Back) 11022RP - 2 Actuators - Right (No Mix) 11025RP - 2 Actuators - Back (No Mix) 11026RP - 2 Actuators - Front (No Mix) 110004RP - 2 Actuators - Front 1 Intf(M-FR10006RP - 2 Actuators - Back 1 Intf(M-BLC	M Pitch Surge Heave Sway Heave Sway Intf (M-FR0-FL1) Intf (M-BL0-BR1) Intf (M-FR0-FL1) 0-FL1) 0-BR1)	
		Apply Configuration Refresh Information
		Execution Details

A selected configuration's layout is displayed in the Compatible Configuration Selection box. It shows the following elements:

- The connected ACM(s) with their arrangement Main and Secondary.
- The connected actuator(s) and their assigned connection ports on the ACM.
- The positions of the actuator(s) on the simulator, chair, or platform.

D-BOX System Configurator		DBOX
Firmware Update Configuration Update ACM F	Rearrangement (G3 only)	
Hardware Selection Communication Device Platform D-BOX KCU (00004431) 1	Configuration Axes Configuration Axes 10093 Roll -/ Yaw Pitch -/ Surge Heave Sway	election
DOF Configuration Filter Interface Count Actuator Count Configu 1 2 Configuration Description	Axes Roll Yaw Pitch Surge Heave Sway MAIN SECONDARY KC IN-ACTIVICAN	
1020 RP - 2 Actuators - Front (as Back) 1 1022 RP - 2 Actuators - Right (No Mix) 1 1025 RP - 2 Actuators - Back (No Mix) 1 1026 RP - 2 Actuators - Back (No Mix) 1 10004 RP - 2 Actuators - Front (No Mix) 1 10006 RP - 2 Actuators - Back 1 Intf(M-BL	Intf (M-FR0-FL1) Intf (M-BR0-FR1) Intf (M-BL0-BR1) Intf (M-FR0-FL1) O-FL1) O-BR1) A Roll, Pitch B Roll, Pitch	Position Rear Left Rear Right
	Apply Configuration Ref	fresh Information Execution Details



STEP 4 Once the configuration is chosen, click **Apply Configuration** to start the configuration update process, then follow the instructions.

D-BOX System Configurator		DBOX
Firmware Update Configuration Update AC	M Rearrangement (G3 only)	
Hardware Selection Communication Device Platform D-BOX KCU (00004431) 1	n Configuration Axes 10093 Roll \checkmark Yaw Pitch \checkmark Surge Heave Sway	Compatible Configuration Selection
Proceed with update? Avoid disconnecting or powering	off D-BOX hardware while the configuration	n update is in progress. Interrupting the process may cause problems.
10004 RP - 2 Actuators - Front 1 Intf(N 10006 RP - 2 Actuators - Back 1 Intf(M	-FRO-FL1) -BLO-BR1)	Ok Cancel
		Execution Details

D-BOX System Configurator	DBOX
Firmware Update Configuration Update ACM Rearrangen	nt (G3 only)
D-BOX KCU (00004431) 1 Image: Configuration Image: Configuration 1020 RP - 2 Actuators - Front (as Back) 1 Intf (M-FR 1022 RP - 2 Actuators - Right (No Mix) 1 Intf (M-BI 1025 RP - 2 Actuators - Back (No Mix) 1 Intf (M-BI 1026 RP - 2 Actuators - Front (No Mix) 1 Intf (M-BI 1026 RP - 2 Actuators - Front (No Mix) 1 Intf (M-FR 10004 RP - 2 Actuators - Front (No Mix) 1 Intf (M-FRO-FL1) 10006 RP - 2 Actuators - Back 1 Intf(M-BL0-BR1)	004 Image: Constraint of the second seco
	Execution Details



Once the configuration update is complete, the following confirmation window appears. Click **OK**.

D-BOX System Configurator		DBOX
Firmware Update Conliguration Update ACM Rearrangement (G3 only) D-BOX KCU (00004431) 1 1 10004 1 2 1 1 1		
Operation completed		
		Ok
	Apply Configuration	Refresh Information
		Execution Details

5.5 ACM G3 and ACM G3 FLEX Rearrangement

The ACM Rearrangement (G3 only) tab allows you to change the arrangement of an ACM from Main to Secondary, and vice-versa.

NOTE: If an ACM Main is connected, only the Switch to Secondary ACM button is available. Conversely, if an ACM Secondary is connected, only the Switch to Main ACM button is available.



Connect only one (1) ACM to the KCU-1P at a time to perform this operation.

STEP 1: Click the Refresh Firmware Status button to view the actual configuration of the ACM.



STEP 2: Click the Switch to Secondary ACM (or Switch to Main ACM) button to switch your ACM from Main to

Secondary or vice-versa.

D-BOX System Configurator	DBOX
Firmware Update Configuration Update ACM Rearrangement (G3 only)	
	Refresh Firmware Status Select ACM first
ACM Secondary	Make sure to connect only one ACM to the communication unit
	Execution Details

D-BOX System Configurator	E	рвох
ACM Kearrangement (GS only) Configuration Update ACM Kearrangement (GS only) ACM Secondary	Refresh Firmware Status Make sure to connect only one ACM to the cor	Switch to Main ACM
Proceed with update? Avoid disconnecting or powering off D-BOX hardware while the firmware upda	te is in progress. Interrupting the process may cause proble	rms. Ok Cancel



NOTE: Click the Execution Details button at any time to see details about the ongoing operation.

D-BOX System Configurator	DBOX
Firmware Update Configuration Update ACM Rearrangement (G3 only)	
D-BOX KCU (00004431)	Refresh Firmware Status Select ACM first
ACM Main	You may need to change your system configuration by using the Configuration Update tool.
	Make sure to connect only one ACM to the communication unit
Operation completed	
Switch process completed	
	Ok
	Execution Details

Once the ACM is configured:

- 1. Replace the ACM arrangement sticker on top of the ACM.
- 2. Rearrange the connections between ACMs (see User Guide, if needed).
- 3. Change your system configuration by using the Configuration Update tab if necessary.
- 4. Run your application to check if your haptic system is in operational order.



APPENDIX A: G5 COMMON CONFIGURATIONS (1 - 3 DOF)

NB of Actuators	Actuator Position	Config. #	Config. Description	Pictogram Reference
1	Back Center	1050	P - 1 Actuator - Back 2 ACMs (M, S-BCO)	
2	Front	10719	RP - 2 Actuators - Front 3 ACMs (M, S-FRO, S-FLO)	
2	Back	10721	RP - 2 Actuators - Back 3 ACMs (M, S-BLO, S-BRO)	
3	1 Front / 2 Back	10731	RPH - 3 Actuators - 1Front/2Back 4 ACMs (M, S-BL0, S-BR0, S-FC0)	
3	2 Front / 1 Back	10733	RPH - 3 Actuators - 2Front/1Back 4 ACMs (M, S-FRO, S-FLO, S-BCO)	
4	Front / Rear	10774	RPH - 4 Actuators - 5 ACMs (M, S-FR0, S-FL0, S-BL0, S-BR0)	

R = Roll, P = Pitch, H = Heave



APPENDIX B: G2/G3 COMMON CONFIGURATIONS (1-3 DOF)

NB of Actuators	NB of ACMs	Actuator Position	Config. #	Config. Description	Pictogram Reference
1	1	Back Center	1028	P - 1 Actuator - Back 1 ACM (M-BC1)	
2	1	Front	10004	RP - 2 Actuators - Front 1 ACM (M-FR0-FL1)	
2	2	Front	10005	RP - 2 Actuators - Front 2 ACMs (M-FR1, S-FL1)	
2	1	Back	10006	RP - 2 Actuators - Back 1 ACM (M-BLO-BR1)	
2	2	Back	10007	RP - 2 Actuators - Back 2 ACMs (M-BL1, S-BR1)	
3	1	1 Front / 2 Back	10022	RPH - 3 Actuators - 1Front/2Back 1 ACM (M-BLO-FC1-BR2)	
3	2	1 Front / 2 Back	10023	RPH - 3 Actuators - 1Front/2Back 2 ACMs (M-BL0-BR1, S-FC1)	
3	3	1 Front / 2 Back	10024	RPH - 3 Actuators - 1Front/2Back 3 ACMs (M-BL1, S-BR1, S-FC1)	
3	1	2 Front / 1 Back	10025	RPH - 3 Actuators - 2Front/1Back 1 ACM (M-FRO-BC1-FL2)	
3	2	2 Front / 1 Back	10026	RPH - 3 Actuators - 2Front/1Back 2 ACMs (M-FR0-FL1, S-BC1)	
3	3	2 Front / 1 Rear	10027	RPH - 3 Actuators - 2Front/1Back 3 ACMs (M-FR1, S-FL1, S-BC1)	
4	2	Front / Rear	10093	RPH - 4 Actuators - Front/Back 2 ACMs (M-FRO-FL1, S-BLO-BR1)	
4	2	Left / Right	10233	RPH - 4 Actuators - Left/Right 2 ACMs (M-FLO-BL1, S-BRO-FR1)	
4	4	-	10235	RPH - 4 Actuators - 4 ACMs (M-FR1, S-FL1, S-BL1, S-BR1)	

R = Roll, P = Pitch, H = Heave

APPENDIX C - MIXING G5 AND G3 HAPTIC SYSTEMS (ACM G3 FLEX ONLY)

These configurations require connecting your PC to a KCU-1P—the KCU-1P to the main ACM G3 FLEX—main ACM G3 FLEX to a Haptic Expander—Haptic Expander to the G5 actuators.

NOTE:

- Remember to update your firmware whenever making a change to your setup/configuration.
- A Haptic Expander (HX4) is required when mixing a G3 haptic system (ACM G3 FLEX only) using one or more actuators (maximum of four) and a G5 haptic system using two or more actuators (connected to the REMOTE port of the Main ACM).





Option 2 (4 G5s Roll-Pitch-Heave /3 G3s Yaw-Sway-Surge)





Option 3 (4 G3s Roll-Pitch-Heave/2 G5s Yaw-Sway, Yaw-Surge, or Sway-Surge)





Common Configurations

NOTE: The following list does not represent every possible mixed configuration. See the System Configurator for more information.

Actuators	Number of ACM G3 FLEX	Configuration #	Description
4-G5, 1-G3	1	1098	G5 Roll-Pitch-Heave / G3 Yaw (M-Y1, S-FRO, S-FLO, S-BLO, S-BRO)
4-G5, 1-G3	1	1099	G5 Roll-Pitch-Heave / G3 Sway (M-Sw1, S-FRO, S-FLO, S-BLO, S-BRO)
4-G5, 1-G3	1	1100	G5 Roll-Pitch-Heave / G3 Surge (M-Su1, S-FRO, S-FLO, S-BLO, S-BRO)
4-G5, 2-G3	1	1095	G5 Roll-Pitch-Heave / G3 Yaw-Sway (M-Y0-Sw1, S-FR0, S-FL0, S-BL0, S-BR0)
4-G5, 2-G3	1	1096	G5 Roll-Pitch-Heave / G3 Yaw-Surge (M-YO-Su1, S-FRO, S-FLO, S-BLO, S-BRO)
4-G5, 2-G3	1	1097	G5 Roll-Pitch-Heave / G3 Sway-Surge (M-Sw0-Su1, S-FR0, S-FL0, S-BL0, S-BR0)
4-G5, 3-G3	2	1089, 1090 or 1091	G5 Roll-Pitch-Heave / G3 Yaw-Sway-Surge 1089 (M-YO-Sw1, S-Su1, S-FRO, S-FLO, S-BLO, S-BRO) 1090 (M-YO-Su1, S-Sw1, S-FRO, S-FLO, S-BLO, S-BRO) 1091 (M-Y1, S-SwO-Su1, S-FRO, S-FLO, S-BLO, S-BRO)
3-G5, 4-G3	2	1108	G3 Roll-Pitch-Heave / G5 Yaw-Sway-Surge (M-FR0-FL1, S-BL0-BR1, S-Y0, S-Sw0, S-Su0)
3-G5, 4-G3	2	1115	G3 Roll-Pitch-Heave / G5 Yaw-Sway-Surge (M-FLO-BL1, S-BRO-FR1, S-YO, S-SwO, S-SuO)



Actuators	Number of ACM G3 FLEX	Configuration #	Description
2-G5, 4-G3	2	1109	G3 Roll-Pitch-Heave / G5 Yaw-Sway (M-FRO-FL1, S-BLO-BR1, S-YO, S-SwO)
2-G5, 4-G3	2	1116	G3 Roll-Pitch-Heave / G5 Yaw-Sway (M-FLO-BL1, S-BRO-FR1, S-YO, S-SwO)
2-G5, 4-G3	2	1110	G3 Roll-Pitch-Heave / G5 Yaw-Surge (M-FR0-FL1, S-BL0-BR1, S-Y0, S-Su0)
2-G5, 4-G3	2	1117	G3 Roll-Pitch-Heave / G5 Yaw-Surge (M-FLO-BL1, S-BRO-FR1, S-YO, S-SuO)
2-G5, 4-G3	2	1111	G3 Roll-Pitch-Heave / G5 Sway-Surge (M-FR0-FL1, S-BL0-BR1, S-Sw0, S-Su0)
2-G5, 4-G3	2	1118	G3 Roll-Pitch-Heave / G5 Sway-Surge (M-FLO-BL1, S-BRO-FR1, S-Sw0, S-Su0)
1-G5, 4-G3	2	1112	G3 Roll-Pitch-Heave / G5 Yaw (M-FRO-FL1, S-BLO-BR1, S-YO)
1-G5, 4-G3	2	1119	G3 Roll-Pitch-Heave / G5 Yaw (M-FLO-BL1, S-BRO-FR1, S-YO)
1-G5, 4-G3	2	1113	G3 Roll-Pitch-Heave / G5 Sway (M-FR0-FL1, S-BL0-BR1, S-Sw0)
1-G5, 4-G3	2	1120	G3 Roll-Pitch-Heave / G5 Sway (M-FLO-BL1, S-BRO-FR1, S-SwO)
1-G5, 4-G3	2	1114	G3 Roll-Pitch-Heave / G5 Surge (M-FR0-FL1, S-BL0-BR1, S-Su0)



Actuators	Number of ACM G3 FLEX	Configuration #	Description
1-G5, 4-G3	2	1121	G3 Roll-Pitch-Heave / G5 Surge (M-FLO-BL1, S-BRO-FR1, S-SuO)
4-G5, 2-G3	2	1092	G5 Roll-Pitch-Heave / G3 Yaw-Sway (M-Y1, S-Sw1, S-FR0, S-FL0, S-BL0, S-BR0)
4-G5, 2-G3	2	1093	G5 Roll-Pitch-Heave / G3 Yaw-Surge (M-Y1, S-Su1, S-FRO, S-FLO, S-BLO, S-BRO)
4-G5, 2-G3	2	1094	G5 Roll-Pitch-Heave / G3 Sway-Surge (M-Sw1, S-Su1, S-FRO, S-FLO, S-BLO, S-BRO)
4-G5, 3-G3	3	1088	G5 Roll-Pitch-Heave / G3 Yaw-Sway-Surge (M-Y1, S-Sw1, S-Su1, S-FR0, S-FL0, S-BL0, S-BR0)
3-G5, 4-G3	4	1101	G3 Roll-Pitch-Heave / G5 Yaw-Sway-Surge (M-FR1, S-FL1, S-BL1, S-BR1, S-YO, S-SwO, S-SuO)
2-G5, 4-G3	4	1102	G3 Roll-Pitch-Heave / G5 Yaw-Sway (M-FR1, S-FL1, S-BL1, S-BR1, S-YO, S-SwO)
2-G5, 4-G3	4	1103	G3 Roll-Pitch-Heave / G5 Yaw-Surge (M-FR1, S-FL1, S-BL1, S-BR1, S-YO, S-SuO)
2-G5, 4-G3	4	1104	G3 Roll-Pitch-Heave / G5 Sway-Surge (M-FR1, S-FL1, S-BL1, S-BR1, S-Sw0, S-Su0)
1-G5, 4-G3	4	1105*	G3 Roll-Pitch-Heave / G5 Yaw (M-FR1, S-FL1, S-BL1, S-BR1, S-YO)
1-G5, 4-G3	4	1106*	G3 Roll-Pitch-Heave / G5 Sway (M-FR1, S-FL1, S-BL1, S-BR1, S-SwO)



Actuators	Number of ACM G3 FLEX	Configuration #	Description
1-G5, 4-G3	4	1107*	G3 Roll-Pitch-Heave / G5 Surge (M-FR1, S-FL1, S-BL1, S-BR1, S-Su0)