

MARK ROBERTS MOTION CONTROL

# FREED DESKTOP BOX



## QUICK START GUIDE

QSG Product code: MRMC-2270-00 Product Covered: MRMC-2157-00

## FreeD Desktop Box Quick Start Guide

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# Chapter 1 Quick Start

## Overview

Thank you for using the FreeD Desktop Box from Mark Roberts Motion Control (MRMC). The FreeD Desktop box can be used to transmit FreeD data packets from the camera both in Flair Motion Control software system or MHC system.

# Safety

- Do not use around flammable gas. All electrical equipment can generate sparks that can ignite flammable gas.
- Keep Away From Pets And Children. The track and camera heads have powerful motors that can pinch, so take care not to get your hands trapped in the gears or cabling.
- Keep the equipment dry. The system has **not** been made weatherproof. Do not use with wet hands.
- Keep cables tidy. Use cable ties to keep them out of harm's way.



# FreeD Sync Box: Setup and configuration

FreeD sync box needs to be configured before first use (normally configured at the factory).

1. Connect the FreeD box via Ethernet to the same network as that of the Flair or MHC PC.





USB to Serial used to set IP address and Port

Genlock



2. Power up the FreeD box by supply 5VDC IN.



- Install TeraTerm and set it up (free application).
   You can download it here: https://ttssh2.osdn.jp/index.html.en
- 4. Launch TeraTerm and select **Setup > Serial** port.





5. The Serial Port Setup and Connection dialog box will show the following information. Click Cancel to close the dialog box.

Tera Term: Serial port set	up and connection		×	
Port:	COM11 v	New open		
Speed:	115200 ~	-	-	
Data:	8 bit 🗸 🗸	Cancel		
Parity:	none ~			
Stop bits:	1 bit $\sim$	Help		
Flow control:	none ~			
Trans	mit delay			
0	msec/char 0	msec/line		
Device Friendly Device Instance	Name: USB Serial De ID: USB(VID_16C0&F	evice (COM11) PID_04038MI_00\7&17B2	^	
Device Manufact Provider Name:	turer: Microsoft Microsoft			
Driver Date: 6-21 Driver Version: 1	1-2006 10.0.19041.1202			
			w	
<		>		

6. Select **Setup** > **Terminal**. In the Terminal Setup dialog box, select the following options and click OK.

Terminal size	New-line OK
97 X 41	Receive: CR ~
Term size = win size	Transmit: CR+LF ∨ Cancel
Terminal ID: VT100 ~	Help
Answerback:	Auto switch (VT<->TEK)
Coding (receive)	Coding (transmit)
UTF-8 v	UTF-8 v



7. Select **Setup** > **Save Setup** to save the setup.



8. Type "AT" and press Enter. AT(Attention). If you get an 'OK' message as response, your setup was successful.

VT	COM11 - Tera Term VT											
<u>F</u> ile	Edit	Setup	Control	Window	<u>H</u> elp							
AT OK												

If you don't get any response, check your physical connection (USB, Genlock, Ethernet and 5V should all be connected).



#### 9. Type "**AT**?" to get a menu of commands.





10. AT=? will respond with system information.



#### Changing the IP address of the FreeD box

To change the IP address of the FreeD box, enter AT+LIP=192.168.1.88

To change the port to **x**, enter **AT+LP=X** 





## Testing the FreeD box in Flair Setup

1. In Flair, select **Setups > Serial Devices** Setup. The External Devices Setup window appears. In the Data Output line, ensure that FreeD is selected and assigned to the same IP address and Port as that of the FreeD box.

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	Imcode	72.5 million	<u>*</u> @ 0 0	0.ml × 35400	> 8 ⇒ L ⇒ 1	v U. U.	υ.υ	
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	L'ale l'ipic	67	<u> </u>	6 m l 🚽 > 35450	-> \$ -> 1 -> 1	v U.V.	u. v	•
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	Free Ser	cir.	<u>*</u> @ 0 0	6 m I	~ 8 ~ 1 ~ 1	v U . U .	u . u	
				La lucas		1		





2. **AT+Debug=2** command gives you the following information:

COM11 - Tex Term.	a	 - ×
Life Loft Setup Con	tiol Window Delp	
FreeD		
Freq = 50.00		
TreeD	AT+DEBUG=2	
Freq = 50.00	711-02000-2	
PreeD	command gives you tolls information	
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"**FreeD**" gets printed every time the box receives a FreeD message from Flair.

"**Freq**" determined by the Sync Generator (Genlock signal).

Disconnecting the genlock signal will change the frequency to 0.

Plug it back and the frequency change to 50 (if set to 50p).

# FreeD Box Setup for Quiet Rail System (QRS)



Requirements

- Minimum 5 ports switch
- All IP addresses must be in the same network subnet

## FreeD box IP settings (USB Serial and Teraterm)

- 1. Launch Tera Term.
- 2. Use the command **AT** = ? to see the current settings.
- 3. Set IP3 using: **AT** + **LIP** = *IP3* (IP address and port on the label on the FreeDbox)
- 4. Set Port (Listening) to 55534: **AT** + **LP** = 55534
- 5. Set IP address of Source 1 to be that of AFC 100: **AT + SRC1 = IP1**
- 6. Set IP address of Source 2 to be that of Rail: AT + SRC2 = IP2



7. To set the FreeD box to merge AFC head and rail output use the following command

AT + merge=1,0,0

8. Set IP address of destination(s) to be that of Client VR PC or Test PC:

AT	+	IP	=	1, <i>IP5</i>	(First Destination)
AT	+	IP :	=	2, <i>IP6</i>	(Second Destination)

 9. Set ports of destination(s) to be that of Client VR PC or Test Program: AT + P = 1, 19201 (As in the batch file for "FREEDCRYSTALBALL")

### Head MHC Set Up



 In MHC, in the > Robot > FreeD tab, set the IP address and port of FreeD box (IP3) both on AFC and Rail (Camera ID must be the same).



2. AFC will enable FreeD output either using real sync signal or 'Simulated Genlock' function in MHC if Sync is available. Plug it in any of the two sync ports, otherwise activate 'Simulate Genlock'.

۲	ROBOT SETTINGS Robot 2							
	Axes	Lens	Polymotion	Depth Sensing	FreeD	Tools	Environment	CV Engine
			6 m 1 m 2			El autora Caralas		
			Start Preed		naced Video	Simulate Genio		
			Camera ID	0	192.168.1.221	Port 55	534	
			Nodel point offsets on f	head ()	30 (	position coordinates		
			X algement (mm)	0	3D post	110n X (m) 0.	000	
			Y algement (mm)	0	3D post	tion Y (m) 0.	000	
			2 sharest (nor)		3D mil	tion 7 (m) 0		
			* and surgers (surg)		- so poe	uma (nij u		

- 3. QRS does not have a sync input, so ensure that 'Simulate Genlock' is active for QRS.
- 4. Click **Save to Robot**.

Axes	Lens	Polymotion	Depth Sensing	FreeD	Tools	Environment	CV Engine	
		REVERT	You have unsi Save or Revert	aved changes to Start FreeD	SAVE TO ROB	от		
		Start Presid	Interla	ced Video Sir	mulate Genlock			
		Carriers ID	0 19	92.168.1.221 Fort	55534			
		Nodal point offsets on h	ud O	3D position	n coordinates			
		X alignment (mm)	0	30 position X (	m) 0.000			
		Y alignment (mm)	0	30 position Y (	(11) 0.000			
		Z alignment (mm)	0	3D position Z (	0.000			



- 5. In the **C** > **Robot** > **Axes** tab, set the scaling of the QRS so that the poistion is in mm: 0.00035147. Set all other parameters in mm instead of cm.
- 6. In the FreeD tab, click **Start FreeD**.

## **Test FreeD**

1. Enter **AT+Debug=2** command in Tera Term.

If **FREQ=0** is displayed then there is no sync input and no FreeD output to test.

FREED means there is input data from at least one of the sources (either QRS or AFC head)

- 2. Check that when plugging or unplugging the sync signal, the FREQ toggles from 0 to the active value and FreeD output stops and restarts.
- 3. Check that when plugging or unplugging the sync signal from AFC, you see input from FreeD box going on and off and pan/tilt output data from the FreeD box stop and restart
- 4. Check that when stopping and starting FreeD output in MHC for Rail and/or AFC, you see input from FreeD box going on and off and pan/tilt output data from the FreeD box stop. Restart FreeD.

## Setting the Test Program on the Destination PC

- 1. With FREED CRYSTALBALL, unzip the folder on the destination PC (IP5 or IP6 etc.).
- 2. Edit the batch file (name of the batch file is not important) to set the destination port to match that set in the FreeD box for that destination PC and the log filename.
- 3. Launch the batch file. If there's an output, it will be printed on the console window in RT.



Notes



Notes





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