

INSTRUCTIONS for HDI CALIBRATION- STEP ONE

Line up your X on the Base Long & notch on the Base Code Disk

- 1. A successful Step One process MUST be completed before proceeding with Step Two.
- 2. reboot Dexter

Write files to the robot’s hard drive using WinSCP. Open WinSCP App



Host 192.168.1.142 Username: root Password: klg

In the left window locate the folder that has the Dexter files that need to be written to the Dexter Hard Drive.

In the right window locate Dexter robot’s hard drive file folder as shown below.

C:\...\OneDrive\Haddington Dynamics\DDE Files\FilesForDexter_2020_1_6				/srv/samba/share/dde_apps				
Name	Size	Type	Changed	Name	Size	Changed	Rights	Owner
..		Parent directory	1/6/2020 11:41:26 AM	..		2/11/2016 8:28:32 AM	rw-r--r--	root
Calibration Instructio...		File folder	1/6/2020 11:27:11 AM	Find_Index_Pulses_H...	39 KB	9/19/2019 1:46:37 PM	rw-r--r--	root
core		File folder	1/6/2020 11:40:05 AM					
dde_apps		File folder	1/6/2020 11:38:04 AM					
share		File folder	1/6/2020 11:37:40 AM					
www		File folder	1/6/2020 11:41:00 AM					

Open the dde_apps folder on the left and open /srv/samba/share/dde_apps/ folder on the right, Select all files on left, hit F5 and OK

C:\...\OneDrive\Haddington Dynamics\DDE Files\FilesForDexter_2020_1_6\dde_apps				/srv/samba/share/dde_apps				
Name	Size	Type	Changed	Name	Size	Changed	Rights	Owner
..		Parent directory	1/6/2020 11:38:04 AM	..		2/11/2016 8:28:32 AM	rw-r--r--	root
Find_Index_Pulses_H...	49 KB	DDE File	11/19/2019 4:11:40 PM	Find_Index_Pulses_H...	39 KB	9/19/2019 1:46:37 PM	rw-r--r--	root
PHUIZRCP.js	26 KB	JScript Script File	10/17/2019 1:51:34 PM					

Open the share folder on the left and open srv/samba/share folder on the right.
Select all files on left, hit F5 and OK

C:\...\OneDrive\Haddington Dynamics\DDE Files\FilesForDexter_2020_1_6\share				/srv/samba/share				
Name	Size	Type	Changed	Name	Size	Changed	Rights	Owner
..		Parent directory	1/6/2020 11:37:40 AM	..		1/4/2019 6:00:37 PM	rw-r--r--	root
CalSlow.make_ins	2 KB	MAKE_INS File	12/17/2019 5:50:15 PM	dde_apps		9/19/2019 1:46:34 PM	rw-r--r--	root
Defaults.make_ins	2 KB	MAKE_INS File	2/11/2016 8:28:32 AM	job		3/29/2019 9:12:53 PM	rw-r--r--	root
DexRun.c	193 KB	C Source File	1/6/2020 10:34:57 AM	www		9/19/2019 3:20:23 PM	rw-r--r--	root
RunDexRun	3 KB	File	1/6/2020 10:34:00 AM	AdcCenters.txt	1 KB	1/6/2020 10:12:14 AM	rw-r--r--	root
				autoexec.make_ins	1 KB	2/11/2016 8:30:12 AM	rw-r--r--	root
				AxisCal.txt	1 KB	8/30/2019 5:15:18 PM	rw-r--r--	root
				BootDance_IP_0.mak...	1 KB	2/11/2016 8:32:56 AM	rw-r--r--	root

Open the www folder on the left and open srv/samba/share/www folder on the right.
Select all files on left, hit F5 and OK

C:\...\Haddington Dynamics\DDE Files\CALIBRATION FILES_FOR_DEXTER_2020_01_17\www				/srv/samba/share/www				
Name	Size	Type	Changed	Name	Size	Changed	Rights	Owner
..		Parent directory	1/17/2020 2:07:38 PM	..		2/11/2016 8:30:32 AM	rw-r--r--	root
node_modules		File folder	1/17/2020 2:07:33 PM	node_modules		2/6/2019 2:51:21 PM	rw-r--r--	root
scratch		File folder	1/17/2020 2:07:57 PM	scratch		2/11/2016 8:32:31 AM	rw-r--r--	root
chat.html	6 KB	Firefox HTML Doc...	1/17/2020 1:51:04 PM	chat.html	6 KB	1/17/2020 1:51:04 PM	rw-r--r--	root
httpd.js	6 KB	JScript Script File	1/17/2020 1:51:04 PM	httpd.js	6 KB	1/17/2020 1:51:04 PM	rw-r--r--	root
index.html	2 KB	Firefox HTML Doc...	1/17/2020 1:51:04 PM	index.html	2 KB	1/17/2020 1:51:04 PM	rw-r--r--	root
package.json	1 KB	JSON File	1/17/2020 1:51:04 PM	package.json	1 KB	1/17/2020 1:51:04 PM	rw-r--r--	root
package-lock.json	1 KB	JSON File	1/17/2020 1:51:04 PM	package-lock.json	1 KB	1/17/2020 1:51:04 PM	rw-r--r--	root

Open the core folder on the left and open root/documents/dde/core folder on the right.
Select all files on left, hit F5 and OK

C:\...\OneDrive\Haddington Dynamics\DDE Files\FilesForDexter_2020_1_6\core				/root/Documents/dde/core				
Name	Size	Type	Changed	Name	Size	Changed	Rights	Owner
..		Parent directory	1/6/2020 11:40:05 AM	..		8/18/2019 3:30:57 PM	rw-r--r--	root
index.js	5 KB	JScript Script File	10/17/2019 1:51:34 PM	dextersim.js	22 KB	1/24/2019 1:39:06 PM	rw-r--r--	root
				gcode.js	7 KB	1/24/2019 1:39:06 PM	rw-r--r--	root
				index.js	5 KB	9/19/2019 1:46:06 PM	rw-r--r--	root
				instruction.js	178 KB	2/11/2016 8:44:22 AM	rw-r--r--	root
				job.js	102 KB	9/19/2019 1:40:35 PM	rw-r--r--	root
				object_system.js	25 KB	1/24/2019 1:39:06 PM	rw-r--r--	root
				out.js	7 KB	9/19/2019 1:40:32 PM	rw-r--r--	root
				robot.js	123 KB	2/11/2016 8:42:58 AM	rw-r--r--	root

Step Two is Almost COMPLETE – Power cycle Dexter

Follow the steps below to modify the time on the new Dexter. Start the PuTTY App



The login is root the password is klg

```
root@localhost:/srv/samba/share
login as: root
root@192.168.1.142's password:
Last login: Thu Feb 11 16:54:46 2016
Welcome to the Xillinux-2.0 distribution for Xilinx Zynq.

You may communicate data with standard FPGA FIFOs in the logic fabric by
writing to or reading from the /dev/xillybus_* device files. Additional
pipe files of that sort can be set up with a custom Xillybus IP core.

For more information: http://www.xillybus.com.

To start a graphical X-Windows session, type "startx" at shell prompt.

root@localhost:~# cd /srv
root@localhost:/srv# cd /srv/samba/share/
root@localhost:/srv/samba/share# date -s "12Dec19"
```

At root@localhost:~# type cd /srv/samba/share/

Hit Enter

At root@localhost:/srv/samba/share# Type date -s "12Dec19"

Hit Enter



(Enter today's date in this format)

```
root@localhost:/srv/samba/share
login as: root
root@192.168.1.142's password:
Last login: Thu Feb 11 16:54:46 2016
Welcome to the Xillinux-2.0 distribution for Xilinx Zynq.

You may communicate data with standard FPGA FIFOs in the logic fabric by
writing to or reading from the /dev/xillybus_* device files. Additional
pipe files of that sort can be set up with a custom Xillybus IP core.

For more information: http://www.xillybus.com.

To start a graphical X-Windows session, type "startx" at shell prompt.

root@localhost:~# cd /srv
root@localhost:/srv# cd /srv/samba/share/
root@localhost:/srv/samba/share# date -s "12Dec19"
Thu Dec 12 00:00:00 UTC 2019
root@localhost:/srv/samba/share#
```

When you see the screen show the updated time to the left, this process is finished.

```
root@localhost:/srv/samba/share
login as: root
root@192.168.1.142's password:
Last login: Thu Dec 12 00:01:46 2019 from 192.168.1.46
Welcome to the Xillinux-2.0 distribution for Xilinx Zynq.

You may communicate data with standard FPGA FIFOs in the logic fabric by
writing to or reading from the /dev/xillybus_* device files. Additional
pipe files of that sort can be set up with a custom Xillybus IP core.

For more information: http://www.xillybus.com.

To start a graphical X-Windows session, type "startx" at shell prompt.

root@localhost:~# cd /srv/samba/share/
root@localhost:/srv/samba/share# date -s "12Dec19"
Thu Dec 12 00:00:00 UTC 2019
root@localhost:/srv/samba/share# ./pg
```

At root@localhost:/srv/samba/share#

Type ./pg

Hit Enter

(It may take a minute)

```
root@localhost: /srv/samba/share
login as: root
root@192.168.1.142's password:
Last login: Thu Dec 12 00:01:46 2019 from 192.168.1.46
Welcome to the Xillinux-2.0 distribution for Xilinx Zynq.

You may communicate data with standard FPGA FIFOs in the logic fabric by
writing to or reading from the /dev/xillybus_* device files. Additional
pipe files of that sort can be set up with a custom Xillybus IP core.

For more information: http://www.xillybus.com.

To start a graphical X-Windows session, type "startx" at shell prompt.

root@localhost:~# cd /srv/samba/share/
root@localhost:/srv/samba/share# date -s "12Dec19"
Thu Dec 12 00:00:00 UTC 2019
root@localhost:/srv/samba/share# ./pg
changing directory
gcc -g -Wall -I. -O3 -pthread -lm -Wno-unused-result -Wno-unused-variable -Wno-u
nused-but-set-variable -c -o DexRun.o DexRun.c
DexRun.c: In function 'SetParam':
DexRun.c:4246:2: warning: dereferencing type-punned pointer will break strict-al
iasing rules [-Wstrict-aliasing]
    unsigned int *uia2 = *(unsigned int*)&fa2;
    ^
DexRun.c:4246:23: warning: initialization makes pointer from integer without a c
ast [-Wint-conversion]
    unsigned int *uia2 = *(unsigned int*)&fa2;
    ^
gcc -g -Wall -I. -O3 -pthread -lm -Wno-unused-result -Wno-unused-variable -Wno-
unused-but-set-variable -o DexRun.o DexRun.c -lrt -lm
root@localhost:/srv/samba/share#
```

After a minute or so you will see the rest of this printout as shown.

```
root@localhost: /srv/samba/share
login as: root
root@192.168.1.142's password:
Last login: Thu Feb 11 16:50:13 2016 from 192.168.1.46
Welcome to the Xillinux-2.0 distribution for Xilinx Zynq.

You may communicate data with standard FPGA FIFOs in the logic fabric by
writing to or reading from the /dev/xillybus_* device files. Additional
pipe files of that sort can be set up with a custom Xillybus IP core.

For more information: http://www.xillybus.com.

To start a graphical X-Windows session, type "startx" at shell prompt.

root@localhost:~# cd /srv/samba/share/
root@localhost:/srv/samba/share# nano Defaults.make_ins
```

To update the serial number

At root@localhost:/srv/samba/share#

Type nano Defaults.make_ins

Hit Enter

```
GNU nano 2.5.3 File: Defaults.make_ins
; These values describe the physical robot to the firmware and set the default opera
; Edit this file to accommodate the exact physical makeup of the arm.
; Dexter Serial Number: DEX-000023
; DexRun modified 2019-12-12T00:00:38Z
; xillydemo modified 2019-09-16T17:04:17Z
; OS version Ubuntu 16.04 LTS

; AxisCal is the gear ratio times the steps per revolution times the microstepping mS
; e.g. for a 52:1 drive with a 400 step motor in 16 over stepping, it would be 52*400
;S, AxisCal, -332800, -332800, -332800, -36000, -36000 ;Defaults for Dexter HD
;S, AxisCal, -332800, -332800, -332800, -86400, -86400 ;Defaults for Dexter HDI HarmS
;S, AxisCal, -320000, -320000, -320000, -86400, -86400 ;Defaults for Dexter HDI Cone S

; Interpolation factor for each joint
;S, Interpolation, 1, 1, 1, 16, 16 ;Default for Dexter HD
;S, Interpolation, 1, 1, 1, 1, 1 ;Default for Dexter HDI

; Length of each link in the robot, in microns. L5 is first, L1 last.
;S, LinkLengths, 82551, 50801, 330201, 320676, 228600;

; Limits to the motion of each joint, in arcseconds from center
;S, J1BoundryHigh, 684010; 186
;S, J1BoundryLow, -684010;
;S, J2BoundryHigh, 360000; 100 was 97
;S, J2BoundryLow, -360000;
;S, J3BoundryHigh, 594000; 160 was 158
;S, J3BoundryLow, -594000;
;S, J4BoundryHigh, 450000; 125 was 108
;S, J4BoundryLow, -450000;

Get Help Write Out Where Is Cut Text Justify Cur Pos
Exit Read File Replace Uncut Text To Spell Go To Line
```

Update the six digit Dexter Serial Number with the new Dexter's unique serial number displayed on the Pivot. Replace the XXXXXX with six digit serial number.

Hit Ctrl+O, then hit enter to save the file, then hit Ctrl+X to exit.

This number is used to set the MAC address and is needed to avoid network collisions between two or more Dexters on the same network.

Power cycle then,

Proceed to Step Two