PhaseSpace instructions

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# IMU details

Hi,

1. The example IMU code (Python and C++) can be found at:

customers.phasespace.com/anonymous/SDK/5.2/Python/experimental    (login: anonymous, password: guest)

(The Python example is also attached.)

To enable the IMU on the physical Microdriver, one first has to determine how many Microdrivers one would like to enable the IMU on. The rxaddr that is set on the Microdrivers depends on the total number of IMUs enabled.

1 driver, mask=0x00, select=0x00:  
driver-1: rxaddr=

2 drivers, mask=0x01, select=[0x00|0x01]:  
driver-1: rxaddr=0x8100  
driver-2: rxaddr=0x8101

4 drivers, mask=0x03, select=[0x00|0x01|0x02|0x03]:  
driver-1: rxaddr=0x8300  
driver-2: rxaddr=0x8301  
driver-3: rxaddr=0x8302  
driver-4: rxaddr=0x8303

To set the rxaddr, one first has to login as root to the server (password: phasespace) and then run:

fwload -r <rxaddr >

Thus, for example if using just enabling one Microdriver IMU, the command would be:

fwload -r 0x8000

There would then be a message stating "Waiting for driver / microdriver...". At this point, make sure that the Microdriver in question is completely off and then while holding the red button down on the Microdriver plug it in to a USB port on the server.

You should then see an output indicating that the rxaddr has been set.

2. Matlab / Simulink: I have attached an implementation from one of our customers at UCSF.

3. Will gather more information on this. Basically the lower positive condition number the better. In the system configuration we have set an upper bound of 100 so any data with condition numbers above 100 are rejected. One can lower this bound either in the system configuration or in code.

4. The DB9 pinouts will depend on whether the DB9 connector needs a Male or Female Terminal Block. Not all the pinouts are enabled. The main ones that customers use are TTL in and Frame Count out.

DB9 pinout (20210317 Note: HUB to Male Term block)

1 VCC5  
2 TXD (TIMECODE OUT)  
3 RXD (TTL IN)  
4 STRING0  
5 GND  
6 I/O (FRAME CLOCK)  
7 XCK  
8 GENLOCK  
9 STRING1  
SHELL GND

20210317: pinouts Hub to Female Term block numbers.

1 = 5 VCC5  
2 = 4 TXD (Timecode Out)  
3 = 3 RXD (TTL in)  
4 = 2 STRING0  
5 = 1 Ground  
6 = 9 Frame out  
7 = 8 XCK  
8 = 7 GENLOCK  
9 = 6 STRING1

This means numbers on the Female Term block should correspond to:  
1 Ground  
2 STRING0  
3 RXD (TTL in)  
4 TXD (Timecode Out)  
5 VCC5  
6 STRING1  
7 Genlock  
8 XCK  
9 Frame out

5a. Will gather information on this.

5b. Attached.

5c. Link for old LED

<http://www.mouser.com/ProductDetail/Osram-Opto-Semiconductor/LR-W5AM-HZJZ-1-Z/?qs=6S5Watp5UnI5tCl8wiPhRQ%3d%3d>

6. The DIY kit is basically an LED harness without the LEDs soldered to the wires. Some customers prefer this as they either are running the wires through something and / or would like to cut the wires to length themselves.

On 30-Aug-23 01:48, Sri Harsha Turlapati wrote:

Hi Kan

How have you been? I hope you don’t mind the long email that follows 😊

Following up from our training session, I wanted to share the list of items we wanted from you to develop our code/designs:

1. IMU access with the files you mentioned- *example\_imu1.cl*; *example\_imu-optical.py*
2. You mentioned some Simulink support also?
3. May I please ask for the white papers for making sense of accuracy and the condition numbers the dataset collects?
4. Is there any documentation on DB9 for hardware synchronisation with real time systems like Quanser?
5. Some help on CAD
   1. The calibration wand has a nice USB type C charger design for the LED driver. Could you please share the specifications of this?
   2. Please resend the Wrist band step file.
   3. Old marker design.
   4. Any additional marker mount examples you may have.
6. What’s the DIY kit you mentioned? May I request some specifications on that, so we can decide whether to purchase with this round of accessories?

I also did a quick experiment with the wand and moved it around the space. I’m working on coding the analysis for it, so I can check whether the inter-marker distances were accurate enough compared to the json file which has the wand’s CAD. I will share this soon, and hope to use your white papers to associate uncertainty with these measurements, i.e., in the form of a covariance matrix for each marker.

Thanks again Kan! I look forward to hearing back from you…

Regards

Harsha

# Logging into the PhaseSpace server

Open Powershell

ssh [demo@192.168.1.230](mailto:demo@192.168.1.230)

Password: demo

su

Password: phasespace

To set up IMU, after logging into the root on PhaseSpace server, you’ll need to run the fwload command as discussed in [IMU details](#_IMU_details).

# Useful links

<http://customers.phasespace.com/anonymous/SDK/5.2/psdoc/cpp/annotated.html>

<http://customers.phasespace.com/anonymous/SDK/5.2/psdoc/cpp/events_guide.html>

<http://customers.phasespace.com/anonymous/SDK/5.2/psdoc/cpp/#downloads_section>

<http://customers.phasespace.com/anonymous/SDK/5.2/psdoc/webadmin/>

<http://customers.phasespace.com/anonymous/SDK/5.2/>

<http://customers.phasespace.com/anonymous/SDK/>