

Plankton Raiden MCU command table

Google Chromium Project

<https://www.chromium.org/chromium-os/plankton>

Author: Pin-chih Lin (johnylin@google.com)

Control Source

In Dolphin, we will control either from Micro-B or Type-C and both of them are connected to DUT. USB MUX(SW14) on PR can switch the USB2 source from either Micro-B or Type-C port, which controls both MCU and ethernet dongle. Note that it also switches USB3 signal to either USB C2A port or USB HUB (DS-1 and DS-2). That is, if we want to control MCU by Type-C port, the path for USB3 will be chosen to USB HUB.

Furthermore, by switching SW3 we can control MCU through PL connector or MCU CON (CN15).

SW3 (DEBUG_USB_SEL)	H: Larvae USB	H: Larvae USB	L: EXT USB	L: EXT USB
SW14 (TYPE_C_TO_HUB_SWITCH)	H: Swap USB	L: Normal USB	H: Swap USB	L: Normal USB
MCU Control	PL Connector MCU CON	PL Connector MCU CON	USB Type-C	USB HUB-US
USB3 source to USB HUB DS-1 and DS-2	USB Type-C	USB HUB-US	USB Type-C	USB HUB-US
USB3 source to USB C2A	None	USB Type-C	None	USB Type-C

MCU commands

Main Command Description	UART Command
Charge to DUT (5V from Larvae via PL connector)	usbc_action 5v
Charge to DUT (12V from Larvae via PL connector)	usbc_action 12v
Charge to DUT (20V from Larvae via PL connector)	usbc_action 20v
Connect to DP 4 lane	usbc_action dp
Connect to USB2 Type-A	usbc_action dp usbc_action dev
Connect to USB3 Type-A	usbc_action usb usbc_action dev
Flip polarity (after connect to DP or USB3.0)	usbc_action flip
Other Command Description	UART Command
Set console output channel to 0: command channel (In case other output affects readback result)	chan 0
Reset Plankton Raiden USB Hub (Note: will cause disconnection to MCU from CN3 or CN5)	hub_reset
Perform Raiden port disconnection for an interval %d1: wait interval before start (msec) %d2: duration interval (msec)	fake_disconnect %d1 %d2
Check FW version	version
Check Raiden port INA measure (voltage, current...)	ina 0
Check Raiden port status (CC polarity, role, state...)	pd 0 state
I2C write to Plankton Raiden IO-expander %x1: register address (0xhh format) %x2: write value (0xhh format) *1	i2cxfer w 1 0x40 %x1 %x2
I2C read from Plankton Raiden IO-expander %x1: register address (0xhh format) *1	i2cxfer r 1 0x40 %x1

*1: refer to IO-expander settings

NXP IO EXPANDER

How to use command to change value?

i2cxfer <r/w> 1 0x40 <0x00/0x01/0x03> [value]

r/w : read or write (if write, add value behind)

Register address 0x00 : input value (read only)

0x01 : output value (default all 1's)

0x03 : I/O config (0:output, 1:input, default all 1's)

IO-expander value:

P00	USB_DN_PWREN	Power supply for USB Hub (H: on, L: off)
P01	REDRIVER_RST	
P02	EXPANDER_ACCESS	
P03	USB3MICROB_DET	Readback H: power supplied from USB Micro-B port CN5
P04	USB2_MUX_SW	Same as SW18 (H: switch Raiden USB2 signal to CN7, L: normal)
P05	DEBUG_USB_SEL	Same as SW3 (H: Larvae USB, L: Ext USB)
P06	TYPEC_TO_HUB_SW	Same as SW14 (H: Swap USB, L: Normal USB)
P07	USBHUB_RST_L	USB Hub reset signal