Western Washington University Marine Technology Club
2014 ROV Control System Documentation

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Serial Communication Protocol

The control system uses an FTDI USB-to-TTL serial conversion chip. The host PC sends and reads commands from a virtual serial port that is automatically created upon connection to the ROV by the FTDI firmware.

Accepted commands and their behavior are described in figure 1. Unlisted commands have no effect on the system.

Command	**Tx Value**	**Rx Datatype**	**Rx Description**
Motor 0 Stop	' ' (0x20)	Unsigned 16-bit	ACK (0x01)
Forward	'!' (0x21)	Unsigned 16-bit	ACK (0x01)
Backward	'"' (0x22)	Unsigned 16-bit	ACK (0x01)
Motor 1 Stop	'#' (0x23)	Unsigned 16-bit	ACK (0x01)
Forward	'$' (0x24)	Unsigned 16-bit	ACK (0x01)
Backward	'%' (0x25)	Unsigned 16-bit	ACK (0x01)
Motor 2 Stop	'&' (0x26)	Unsigned 16-bit	ACK (0x01)
Forward	''' (0x27)	Unsigned 16-bit	ACK (0x01)
Backward	'(' (0x28)	Unsigned 16-bit	ACK (0x01)
Motor 3 Stop	')' (0x29)	Unsigned 16-bit	ACK (0x01)
Forward	'*' (0x2A)	Unsigned 16-bit	ACK (0x01)
Backward	'+' (0x2B)	Unsigned 16-bit	ACK (0x01)
Motor 4 Stop	',' (0x2C)	Unsigned 16-bit	ACK (0x01)
Forward	'-' (0x2D)	Unsigned 16-bit	ACK (0x01)
Backward	'.' (0x2E)	Unsigned 16-bit	ACK (0x01)
All Motors Stop	'/' (0x2F)	Unsigned 16-bit	ACK (0x01)
Toggle SW 0	'0' (0x30)	Unsigned 16-bit	ACK (0x01)
Toggle SW 1	'1' (0x31)	Unsigned 16-bit	ACK (0x01)
Toggle SW 2	'2' (0x32)	Unsigned 16-bit	ACK (0x01)
Toggle SW 3	'3' (0x33)	Unsigned 16-bit	ACK (0x01)
Toggle SW 4	'4' (0x34)	Unsigned 16-bit	ACK (0x01)
Toggle SW 5	'5' (0x35)	Unsigned 16-bit	ACK (0x01)
All Switches Off	'6' (0x36)	Unsigned 16-bit	ACK (0x01)
Get All Temps	'8' (0x38)	3x Signed 16-bit	Heat pipes 1-2 & internal ($°C$)
Get All Motor Currents	'9' (0x39)	5x Signed 16-bit	Motor 0-5 current (mA)

Figure 1: System commands and behavior