

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. All commands are little-endian.

Command	Tx Value	Rx Datatype	Rx Description
Motor 0 Stop	' ' (0x20)	Unsigned 16-bit	ACK (0x06) (Command sucessful)
Forward	!' (0x21)	Unsigned 16-bit	ACK (0x06) (Command sucessful)
Backward	'" (0x22)	Unsigned 16-bit	ACK (0x06) (Command sucessful)
Motor 1 Stop	'# (0x23)	Unsigned 16-bit	ACK (0x06) (Command sucessful)
Forward	'\$ (0x24)	Unsigned 16-bit	ACK (0x06) (Command sucessful)
Backward	'% (0x25)	Unsigned 16-bit	ACK (0x06) (Command sucessful)
Motor 2 Stop	'& (0x26)	Unsigned 16-bit	ACK (0x06) (Command sucessful)
Forward	' ' (0x27)	Unsigned 16-bit	ACK (0x06) (Command sucessful)
Backward	(' (0x28)	Unsigned 16-bit	ACK (0x06) (Command sucessful)
Motor 3 Stop	(' (0x29)	Unsigned 16-bit	ACK (0x06) (Command sucessful)
Forward	'* (0x2A)	Unsigned 16-bit	ACK (0x06) (Command sucessful)
Backward	+' (0x2B)	Unsigned 16-bit	ACK (0x06) (Command sucessful)
Motor 4 Stop	'\ (0x2C)	Unsigned 16-bit	ACK (0x06) (Command sucessful)
Forward	.' (0x2D)	Unsigned 16-bit	ACK (0x06) (Command sucessful)
Backward	.' (0x2E)	Unsigned 16-bit	ACK (0x06) (Command sucessful)
All Motors Stop	'/' (0x2F)	Unsigned 16-bit	ACK (0x06) (Command sucessful)
Toggle SW 0	'0 (0x30)	Unsigned 16-bit	ACK (0x06)/NAK (0x15) (Switch state on/off)
1	'1 (0x31)	Unsigned 16-bit	ACK (0x06)/NAK (0x15) (Switch state on/off)
2	'2 (0x32)	Unsigned 16-bit	ACK (0x06)/NAK (0x15) (Switch state on/off)
3	'3 (0x33)	Unsigned 16-bit	ACK (0x06)/NAK (0x15) (Switch state on/off)
4	'4 (0x34)	Unsigned 16-bit	ACK (0x06)/NAK (0x15) (Switch state on/off)
5	'5 (0x35)	Unsigned 16-bit	ACK (0x06)/NAK (0x15) (Switch state on/off)
All Switches Off	'6 (0x36)	Unsigned 16-bit	ACK (0x06)
Get Motor Status	'7 (0x37)	5x Unsigned 16-bit	ACK (0x06)/NAK (0x15) (Motor healthy/sick)
Get Temps	'8 (0x38)	3x Signed 16-bit	Heat pipes 1-2 & internal ($^{\circ}C$)
Get Motor Currents	'9 (0x39)	5x Unsigned 16-bit	Motor 0-5 current (mA)
Get Water Conductivity	:' (0x3A)	Unsigned 16-bit	Conductivity (mS)
Get Sonar Distance	;' (0x3B)	Unsigned 16-bit	Distance (CM)
Get Compass Heading	'< (0x3C)	Signed 16-bit	($^{\circ}N$)

Figure 1: System commands and behavior