Data Packet structure for the 2001 Dashboard Port.

Innovation First does not have the technical staff to answer questions about writing a program to use this data. We are supplying the following data spec as a courtesy to the teams involved in the FIRST competition. Code at your own risk.

The data sent out the Dashboard port is a stream of bytes. There are 26 bytes in a packet. The packets are transmitted approximately 40 times per second. The start of each packet is identified by a unique 0xff, 0xff (255, 255) marker. Data packets are sent out the Dashboard port exactly as they are received by the Radio Modem and may contain transmission errors. The data is, however, passed through a RS-232 driver chip to set it to proper levels for general use.

Note: The firmware in the 2001 Robot Controller changed byte 25. No other changes were made.

RS-232 port settings: 19200, No Parity, 8 data, 1 stop

Byte 1,2	0xff, 0xff	(ATTENTION, start of packet)
Byte3	ANALOG1	
Byte4	SWITCHES_A	
Byte5	ANALOG2	
Byte6	SWITCHES_B	
Byte7	ANALOG3	
Byte8	CTRL_A	(see details below)
Byte9	ANALOG4	
Byte10	CTRL_B	(see details below)
Byte11	ANALOG5	
Byte12	CTRL_C	(see details below)
Byte13	ANALOG6	
Byte14	PACKET NUMBER	
Byte15	ANALOG7	
Byte16	Reserved	
Byte17	ANALOG8/Battery Voltage	
Byte18	Reserved	
Byte19	Port 2 Y-Axis	
Byte20	BASIC Byte	(see details below)
Byte21	Port 1 Y-Axis	
Byte22	Port 4 Y-Axis	
Byte23	Port 3 Y-Axis	
Byte24	Port 2 Wheel	
Byte25	Port 1 X-Axis	(this changed in 2001 – it was Port 1 Wheel)
Byte26	AUX_Byte	(see details below)

CTRL_A, CTRL_B, and CTRL_C, have TEAM number, Channel Number and MODES, as follows

CTRL_A=	[4 bits Mode(Bits 7,6,5,4)] [4 upper bits of team number(Bits 3,2,1,0)]
CTRL_B=	[8 lower bits team number]
CTRL_C=	[2 bits Mode(Bits 7,6)] [6 Bits Channel Number (Bits 5,4,3,2,1,0)]

AUX_Byte ("Robot Controller" indicators on the Operator Interface):
Bit 7   AUX Fuse
Bit 6   Basic Run
Bit 5   Basic Run Error
Bit 4   Low Battery on Robot
Bit 3   Basic Init Error
Bit 2   Valid RX on Robot
Bit 1   No Data/Radio on Robot
Bit 0   Tether Detect

BASIC Byte ("Robot Feedback" indicators on Operator Interface):
Bit 7   RLY2_Forward   (Green)
Bit 6   RLY2_Reverse   (Red)
Bit 5   RLY1_Forward   (Green)
Bit 4   RLY1_Reverse   (Red)
Bit 3   PWM2_ Reverse (Red)
Bit 2   PWM2_ Forward (Green)
Bit 1   PWM1_ Reverse (Red)
Bit 0   PWM1_ Forward (Green)