Peloton MCB Protocol (Proprietary and Confidential)

Console to MCB Commands: **Protocol Version : 0.07**

Command	Packet Start	ID	Data Size	Data	CRC (1 byte)	Packet End	Packet Length
Get MCB HW Verison	0xdead	0x00	0x01	0x00	-as calc-	0xbeef	8
Get MCB FW Version	0xdead	0x01	0x01	0x00	-as calc-	0xbeef	8
Get current speed	0xdead	0x02	0x01	0x00	-as calc-	0xbeef	8
Get current incline	0xdead	0x03	0x01	0x00	-as calc-	0xbeef	8
Set speed unit	0xdead	0x04	0x01	0xXX	-as calc-	0xbeef	8
Get speed unit	0xdead	0x05	0x01	0xXX	-as calc-	0xbeef	8
Set Speed	0xdead	0x06	0x01	0xXX	-as calc-	0xbeef	8
Set Incline	0xdead	0x07	0x01	0xXX	-as calc-	0xbeef	8
Set "0" incline	0xdead	0x08	0x04	uint8[4]	-as calc-	0xbeef	11
Get "0" incline	0xdead	0x09	0x01	uint8[4]	-as calc-	0xbeef	11
Set max incline	0xdead	0x0a	0x01	0xXX	-as calc-	0xbeef	8
Get max incline	0xdead	0x0b	0x01	0x00	-as calc-	0xbeef	8
Set max speed	0xdead	0x0c	0x01	0xXX	-as calc-	0xbeef	8
Get max speed	0xdead	0x0d	0x01	0x00	-as calc-	0xbeef	8
Set speed ratio	0xdead	0x0e	0x01	0xXX	-as calc-	0xbeef	8
Get speed ratio	0xdead	0x0f	0x01	0x00	-as calc-	0xbeef	8
Start auto calibration	0xdead	0x10	0x01	0x00	-as calc-	0xbeef	8
Get calibration status	0xdead	0x11	0x01	0x00	-as calc-	0xbeef	8
Get calibration data	0xdead	0x12	0x01	0x00	-as calc-	0xbeef	8
Set max acceleration	0xdead	0x13	0x01	0x00	-as calc-	0xbeef	8
Get max acceleration	0xdead	0x14	0x01	0x00	-as calc-	0xbeef	8
Set max incline change allowed	0xdead	0x15	0x01	0xXX	-as calc-	0xbeef	8
Get max inline change allowed	0xdead	0x16	0x01	0x00	-as calc-	0xbeef	8
Set MCB serial no	0xdead	0x17	0x10	char[16]	-as calc-	0xbeef	23
Set Chasis serial number	0xdead	0x18	0x10	char[16]	-as calc-	0xbeef	23
Write to memory	0xdead	0xaa	0x01	0x00	-as calc-	0xbeef	8
Get MCB serial	0xdead	0x1a	0x01	0x00	-as calc-	0xbeef	8
Get Chasis serial	0xdead	0x1b	0x01	0x00	-as calc-	0xbeef	8
Read odometer	0xdead	0x1c	0x01	0x00	-as calc-	0xbeef	8
Get seconds from power up	0xdead	0x1d	0x01	0x00	-as calc-	0xbeef	8
Get system status	0xdead	0x1e	0x01	0x00	-as calc-	0xbeef	8
Get error states	0xdead	0x1f	0x01	0x00	-as calc-	0xbeef	8
Get error time	0xdead	0x20	0x01	0x00	-as calc-	0xbeef	8
Clear error	0xdead	0x21	0x01	0xXX	-as calc-	0xbeef	8
Get Thermistor data(4 hot zones)	0xdead	0x22	0x01	0x00	-as calc-	0xbeef	8
Switch to OTA mode	0xdead	0xFF	0x01	0x00	-as calc-	0xbeef	8
Get person present flag	0xdead	0x23	0x01	0x00	-as calc-	0xbeef	8
Get Pulses per Revolution	0xdead	0x24	0x01	0x00	-as calc-	0xbeef	8
Set Pulses per revolution	0xdead	0x25	0x01	0xXX	-as calc-	0xbeef	8
Get Current RPM	0xdead	0x26	0x01	0x00	-as calc-	0xbeef	8
Clear Pending Errors	0xdead	0x27	0x01	0x00	-as calc-	0xbeef	8
Enable ErP	0xdead	0x28	0x01	0x00	-as calc-	0xbeef	8
Get Running Parmeters	0xdead	0x29	0x01	0x00	-as calc-	0xbeef	8
Get Calibraition Parameters	0xdead	0x2A	0x01	0x00	-as calc-	0xbeef	8
Get Error Parameters	0xdead	0x2B	0x01	0x00	-as calc-	0xbeef	8

Get Filtered Current	0xdead	0x2C	0x01	0x00	-as calc-	0xbeef	8	Depreciated
Get Average Current	0xdead	0x2D	0x01	0x00	-as calc-	0xbeef	8	Depreciated
Reset Calibration Defaults	0xdead	0x2E	0x01	0xXX	-as calc-	0xbeef	8	
Get MCB ID	0xdead	0x2F	0x01	0xXX	-as calc-	0xbeef	8	New
Get Extra Serial Number 1	0xdead	0x30	0x01	0xXX	-as calc-	0xbeef	8	New
Set Extra Serial Number 1	0xdead	0x31	0x10	char[16]	-as calc-	0xbeef	23	New
Get Extra Serial Number 2	0xdead	0x32	0x01	0xXX	-as calc-	0xbeef	8	New
Set Extra Serial Number 2	0xdead	0x33	0x10	char[16]	-as calc-	0xbeef	23	New
Get MCB motor type	0xdead	0x35	0x01	0x00	-as calc-	0xbeef	8	New
Set MCB motor type	0xdead	0x36	0x01	0xXX	-as calc-	0xbeef	8	New

All "set/write/start/clear" commands need to be responded with an ack from MCB

	Packet Start	Ack Response ID	Data Size	Data		CRC (1 byte)	Packet End	Packet Length
The ack format is :	0xdead	0xbb	0x05	uint8[4]: time	cmd rcv	-as calc-	0xbeef	12
The nak format is :	0xdead	0xee	0x05	uint8[4]: time	cmd rcv	-as calc-	0xbeef	12

MCB to console Response

Response	Packet Start	ID	Data Size	Data	CRC (1 byte)	Packet End	Packet Length	
Get MCB HW version response	0xdead	0x00	0x04	uint8[4]	-as calc-	0xbeef	11	
Get MCB FW Version response	0xdead	0x01	0x04	uint8[4]	-as calc-	0xbeef	11	
Get current speed response	0xdead	0x02	0x01	0xYY	-as calc-	0xbeef	8	
Get current incline response	0xdead	0x03	0x01	0xYY	-as calc-	0xbeef	8	
Get speed unit response	0xdead	0x05	0x01	0xYY	-as calc-	0xbeef	8	
Get "0" incline response	0xdead	0x09	0x04	uint8[4]	-as calc-	0xbeef	11	
Get max incline response	0xdead	0x0b	0x01	0xYY	-as calc-	0xbeef	8	DEAD EE05 0000 02B3 0336 BEEF
Get max speed response	0xdead	0x0d	0x01	0xYY	-as calc-	0xbeef	8	
Get speed ratio response	0xdead	0x0f	0x01	0xYY	-as calc-	0xbeef	8	
Get calibration status response	0xdead	0x11	0x01	0xYY	-as calc-	0xbeef	8	
Get calibration data response	0xdead	0x12	0x08	uint8[8]	-as calc-	0xbeef	11	
Get max acceleration response	0xdead	0x14	0x01	0xYY	-as calc-	0xbeef	8	
Get max inline change allowed response	0xdead	0x16	0x01	0xYY	-as calc-	0xbeef	8	
Get MCB serial response	0xdead	0x1a	0x10	char[16]	-as calc-	0xbeef	23	
Get Chasis serial response	0xdead	0x1b	0x10	char[16]	-as calc-	0xbeef	23	
Read odometer response	0xdead	0x1c	0x04	uint8[4]	-as calc-	0xbeef	11	
Get seconds from power up response	0xdead	0x1d	0x04	uint32	-as calc-	0xbeef	11	
Get system status response	0xdead	0x1e	0x01	0xYY	-as calc-	0xbeef	8	
Get error response(last 4 errors)	0xdead	0x1f	0x04	uint8[4]	-as calc-	0xbeef	11	
Get error time(last 4 errors)	0xdead	0x20	0x10	uint32[4]	-as calc-	0xbeef	23	
Get Thermistor data(4 hot zones)	0xdead	0x22	0x10	uint32[4]	-as calc-	0xbeef	23	
Get person present flag response	0xdead	0x23	0x01	uint8	-as calc-	0xbeef	23	
Get Current RPM	0xdead	0x26	0x02	uint16	-as calc-	0xbeef	9	
Get Running Parmeters	0xdead	0x29	0x14	see below	-as calc-	0xbeef	27	
Get Calibraition Parameters	0xdead	0x2A	0x34	see below	-as calc-	0xbeef	59	
Get Error Parameters	0xdead	0x2B	0x14	see below	-as calc-	0xbeef	27	
Get Filtered Current	0xdead	0x2C	0x01	uint8	-as calc-	0xbeef	8	Depreciated
Get Average Current	0xdead	0x2D	0x01	uint8	-as calc-	0xbeef	8	Depreciated
Get MCB ID	0xdead	0x2F	0x01	uint8	-as calc-	0xbeef	8	New
Get Extra Serial Number 1	0xdead	0x30	0x10	char[16]	-as calc-	0xbeef	23	New
Get Extra Serial Number 2	0xdead	0x32	0x10	char[16]	-as calc-	0xbeef	23	New
Get MCB motor type	0xdead	0x36	0x01	uint8	-as calc-	0xbeef	8	New

Manufacturing commands will be defined by the MCB vendor

System states :

Code	Description
0xaa	All good
0x11	Doing speed calibration
0x22	Doing incline calibration
0x33	Both calibrating
0xbb	Soft error - cleared via sw
0xcc	Hard error - only cleared via power reset
0xdd	Emergency stop engaged
0xee	MCB in bootloader mode

New

Calibration Status:

Code	Description	
0x00	No calibration done	
0xXE	Doing speed calibration	Modified
0xEX	Doing Incline calibration	Modified
0xX1	Speed Calibration done	Modified
0x1X	Incline calibration done	Modified
0x11	Speed & Incline calibration done	

Person Present Flag		
	0x00	No person present
	0x01	Person detected

Error codes :

Code	Description	DCI Implemented	DCI Error Clear Action
0x01	Speed sensor error	Yes	Safety key reset
0x02	Abnormal armature voltage	No	
0x03	Undervoltage protection tripped	No	
0x04	Overvoltage protection tripped	No	
0x05	DC motor open / poor connection	No	
0x06	Abnormal acceleration	Yes	Safety key reset
0x07	Incline motor moving in wrong direction	Yes	Safety key reset
0x08	Incline calibration failure	Yes	Safety key reset
0x09	Speed calibration failure	Yes	Safety key reset
0x0a	MOSFET failure	Yes	Safety key reset
0x0b	EEPROM failure	Yes	Power cycle
0x0c	Motor PWM error	No	
0x0d	Motor connector short - poweron	No	
0x0e	Motor connector short - running	No	
0x0f	Incline motor anti-lock tripped	No	
0x10	Incline motor position signal loss	Yes	Safety key reset
0x11	DC Motor Overspeed	Yes	Safety key reset
0X12	Elevation runaway	Yes	Safety key reset
0x13	busenable	Yes	Power cycle
0x14	MCB MCU performance issue (loopspersecond low)	Yes	Power cycle
0x15	Motor over current	Yes	Safety key reset
0x16	Calibration set points	Yes	Safety key reset

Running Parameters:	**Bytes**	**Description**
	1	System Status
	1	Calibration Status
	1	Person Present
	1	Units
	1	Target Speed

1	Current Speed
2	RPM
1	Target Incline
1	Current Incline
2	Current Incline ADC
4	Running Time
4	Odometer
20	Length

Calibration Parameters:	**Bytes**	**Description**
	1	Speed Calibration Done
	1	Maximum Speed
	1	1/2 Maximum Speed
	1	Minimum Speed
	2	Maximum Speed PWM
	2	1/2 Maximum Speed PWM
	2	Minimum Speed PWM
	1	Incline Calibration Done
	1	Maximum Incline
	1	Minimum Incline
	2	Maximum Incline ADC
	2	Minimum Incline ADC
	1	Pulses per Revolution
	1	Speed Ratio
	1	Acceleration Time
	16	MCB Serial Number
	16	Chassis Serial Number
	52	Length

Bytes	**Description**
1	Error Code 1
4	Time 1
1	Error Code 2
4	Time 2
1	Error Code 3
4	Time 3
1	Error Code 4
4	Time 4
20	Length

MCB motor type:	Valid values	
	0	Default
	1	Turban motor
	2	McMillan motor