Sheet 1 Header Address Sub-Address Command Data Length Data
Hander Address Sub-Address Command Data Leagth Data
neader Address Sub-Address Command Data Length Data
0 0 0 0 FF 0-FF 0-FF 0-FF 0-FF

Notes	Action	Sub-Address	Command	Command (HEX) Data Length	Data Byte:1	2	3	4	- 5	6	7 8	9	10	11
140,000	NOOP	0	0	0	0	Dytc. 1	-	- u		Ť	-	-	$+$ $\dot{-}$	+ "	
	Reserve for core protocol	0	1	1	0					-	_	_	-	+	
Starts planned move	Start	0	2	2	0					-	_	_	-	+	
Starts planned move				_						-	_	_	-	-	
	Pause	0	3	3	0					-	_	_	-	+	
Stops planned move. Must be executed										1	1				
before controller will accept other	Stop	0	4	4	0					1	1				
commands.										_					
Toggles on/off state of debug LED	Debug LED	0	5	5	0										
	Timing Master	0	6	6	0										
	Set Stored Name	0	7	7	1-10		String [1-10	Characters, Null-terminated, Null p	added]						
	Set Device Address	0	8	8	1	2-255 [Byte]						$\overline{}$	$\overline{}$		
	Set Common Line for Step Pulsing	0	9	9	1	0,1,2 [Byte]				-				+	
	Return Home All Motors	0	10	A	0	5,1,2 (2)10				-	_		-	+	
	Motors Max Step Rate	0	11	B	2	Cto	eps/Second [Int]			-	_	_	-	+	
	Woldis Wax Step Nate		- "	В		Sie	paraecond (int)			_			$\overline{}$		
	Alt Input Edge (RISING, FALLING, or CHANGE)		100			0.4070.13				_			$\overline{}$		
		0	12	С	1 1	0,1,2 [Byte]				-		_	-	+	
	Alt I/O Mode	0	13	D	2	Ring (0-255) [Byte]	Tip (0-255) [Byte]			_					
	Set Joystick Watchdog	0	14	E	1	True/False (1,0) [Byte]									
	Alt Output Before Shot Delay Time	0	15	F	2	Т	lime (ms) [int]								
	Alt Output After Shot Delay Time	0	16	10	2	Т	ime (ms) [Int]								
	Alt Output Before Shot Time	0	17	11	2	Т	ime (ms) [Int]							\top	
	Alt Output After Shot Time	0	18	12	2		ime (ms) [Int]			1			\neg	+	
	Alt Output Trigger level	0	19	13	1	HIGH/LOW (1,0) [Byte]	1			_			-	+	
	Max Program Run Time	0	20	14	4	TilGLILOW (1,0) [Byte]	Max Run Time (mS) [Ulon	ol .		_	_	_	-	+	
		0	20	15	4					-	-	_	-	+	
	Start Program Delay			+	-	0.00100 4.77	Start Time Delay (seconds) [U	iongj		_	-	-	-	+	
	Set SMS / Continuous Program Mode	0	22	16	1	0 (SMS), 1 (Time Lapse Cont.)	k.	1		1	1				1
						2 (Video Cont.) [Byte]				_					
	Set Joystick Mode	0	23	17	1	True/False (1,0) [Byte]									
Causes the motors to go back and forth	Cat Dian Dana Flan	0	24	18	1	Tour/Enlan (4.0) (Duta)									
Between the start and stop positions	Set Ping-Pong Flag	0	24	18	1	True/False (1,0) [Byte]									
	Send all Motors to Program Start	0	25	19	0										
	Set Program Start point	0	26	1A	0										
	Set Program Stop point	0	27	1B	0		-								
True indicates 24 FPS, false indicates 3		-	21	ID	- 0										
EDC	Set Frames/Second Flag	0	28	1C	0	True/False (1,0) [Byte]									
FPS	Set Frames/Second Flag	0	28	1C	0	True/False (1,0) [Byte]									
FPS	Set Frames/Second Frag			1C	0										
FPS	Status Request	0	100			<status type=""></status>		<returns> with header</returns>	and master addr	ress in f	front (00 00	00 00 00	F 00 00 01 I	ength Data)	
FPS	Status Request Firmware Version	0	100	64	0	<status type=""> Value Type [Byte]</status>	Version #	<returns> with header</returns>	and master addr	ress in f	front (00 00	00 00 00	F 00 00 01 I	Length Data)	
FPS	Status Request Firmware Version Run Status	0 0	100 100 101	64 65	0	<status type=""> Value Type [Byte] Value Type [Byte]</status>	Version # 0 = Stopped, 1 = Paused, 2 = Running	<returns> with header</returns>	and master addr	ress in f	front (00 00	00 00 00	F 00 00 01 I	Length Data)	
FPS	Status Request Firmware Version	0	100	64	0	<status type=""> Value Type [Byte] Value Type [Byte]</status>		<pre><returns> with header</returns></pre> Time (ms)	and master addr	ress in f	front (00 00	00 00 00	F 00 00 01 v	Length Data)	
FPS	Status Request Firmware Version Run Status	0 0	100 100 101	64 65	0	<status type=""> Value Type [Byte] Value Type [Byte] Value Type [Ulong]</status>			and master addr	ress in t	front (00 00	00 00 00	F 00 00 01	Length Data)	
FPS	Status Request Firmware Version Run Status Run Time	0 0 0 0	100 100 101 102	64 65 66	0 0 0	<status type=""> Value Type [Byte] Value Type [Byte] Value Type [Ulong] Value Type [Byte]</status>	0 = Stopped, 1 = Paused, 2 = Running		and master addr	ress in f	front (00 00	00 00 00	F 00 00 01	Length Data)	
TO NULLEUS 2411 O, lasse multiples S	Status Request Firmware Version Run Status Run Time Currently Exposing Timing Master Value	0 0 0	100 100 101 102 103 104	64 65 66 67 68	0 0 0	<status type=""> Value Type [Byte] Value Type [Byte] Value Type [Ulong] Value Type [Byte] Value Type [Byte]</status>	0 = Stopped, 1 = Paused, 2 = Running True/False	Time (ms)				00 00 00	F 00 00 01	Length Data)	
FPS Inducties 24110, lase inducties	Status Request Firmwere Version Run Status Run Time Ourretty Exposing Timng Master Value Name	0 0 0 0 0	100 100 101 102 103 104 105	64 65 66 67 68 69	0 0 0 0 0	<status type=""> Value Type [Byte] Value Type [Byte] Value Type [Ulong] Value Type [Byte] Value Type [Byte] Value Type [String]</status>	0 = Stopped, 1 = Paused, 2 = Running True/False True/False	Time (ms) String [1-10 Characters,				00 00 00	F 00 00 01	Length Data)	
FPS	Status Request Firmware Version Run Status Run Time Currently Exposing Timing Status Name Motors Max Stap Rate	0 0 0 0 0 0	100 100 101 102 103 104 105 106	64 65 66 67 68 69 6A	0 0 0 0 0	<status type=""> Value Type (Byte) Value Type (Birrig) Value Type (Unit)</status>	0 = Stopped, 1 = Paused, 2 = Running True/False True/False Steps/Sect	Time (ms) String [1-10 Characters, and	Null-terminated			00 00 00	F 00 00 01	Length Data)	
THE INJURIES 24114, least influences	Status Request Firmware Verson Run Status Currently Exposing Timing Master Value Name Motors May Step Rate Voltage Reading	0 0 0 0 0 0 0	100 100 101 102 103 104 105 106	64 65 66 67 68 69 6A 6B	0 0 0 0 0 0	<status type=""> Value Type [Byte] Value Type [Byte] Value Type [Ulong] Value Type [Byte] Value Type [Byte] Value Type [String] Value Type [Vint] Value Type [Vint] Value Type [Vint]</status>	0 = Stopped, 1 = Paused, 2 = Running True/False True/False Steps/Seco Voltage (V) (Fixed poin	Time (ms) String [1-10 Characters. and t - must divide by 100 on master s	Null-terminated			00 00 00	F 00 00 01	Length Data)	
TPS Control of the Co	Status Request Firmware Version Run Status Run Time Currently Exposing Timing Master Value Name Motors Mas Stap Rate Voltage Reading Current to Motors	0 0 0 0 0 0	100 100 101 102 103 104 105 106 107 108	64 65 66 67 68 69 6A 6B	0 0 0 0 0 0 0	Status Type Value Type (Byte) Value Type (Init) Value Type (Fixed) Value Type (Fixed)	0 = Stopped, 1 = Paused, 2 = Running True/False True/False Steps/Secc Voltage (V) (Fixed poin Current (amps) (Fixed p	Time (ms) String [1-10 Characters, and	Null-terminated			00 00 00	F 00 00 01	Length Data)	
PRS Landers 24114, least shunders	Status Request Firmware Version Fan Status Run Status Aun Trans Au	0 0 0 0 0 0 0 0	100 100 101 101 102 103 104 105 106 107 108	64 65 66 67 68 69 6A 6B 6C 6D	0 0 0 0 0 0 0 0	<status (byte)="" (byte)<="" (fixed)="" (init)="" td="" type="" value=""><td>0 = Stopped, 1 = Paused, 2 = Running TrueFalse TrueFalse Steps/Sect Voltage (V) (Fixed poin Current (amps) (Fixed poin 0,1,2</td><td>Time (ms) String [1-10 Characters, and transit divide by 100 on master sint – must divide by 100 on master.</td><td>Null-terminated</td><td></td><td></td><td>00 00 00</td><td>F 00 00 01</td><td>Length Data)</td><td></td></status>	0 = Stopped, 1 = Paused, 2 = Running TrueFalse TrueFalse Steps/Sect Voltage (V) (Fixed poin Current (amps) (Fixed poin 0,1,2	Time (ms) String [1-10 Characters, and transit divide by 100 on master sint – must divide by 100 on master.	Null-terminated			00 00 00	F 00 00 01	Length Data)	
TPS 24 FT V, isses shinkings VPS	Status Request Firmove Vivines Firmove Master Value Name Motors Max Ship Rate Vivines Pesadroy Vivines Pesadroy Alt Input Edge (RISING, FALLING, or CHANGE) Alt Unique Edge (RISING, FALLING, or CHANGE)	0 0 0 0 0 0 0 0 0	100 100 101 102 103 104 105 106 107 108 109 110	64 65 66 67 68 69 6A 6B 6C 6D 6E	0 0 0 0 0 0 0 0 0	<status [byte]="" [fixed]="" [treed]="" td="" type="" value="" value<=""><td>0 = Stopped, 1 = Paused, 2 = Running TrueFalse TrueFalse Steps/Sec Voltage (V) (Fixed point Current (ample, Fixed pc 0,12 Byte 0 Ring (0-255)</td><td>Time (ms) String [1-10 Characters, and t-must divide by 100 on master s int - must divide by 100 on master s [Byte 1] Tip (0-255)</td><td>Null-terminated</td><td></td><td></td><td>00 00 00</td><td>F 00 00 01</td><td>Length Data)</td><td></td></status>	0 = Stopped, 1 = Paused, 2 = Running TrueFalse TrueFalse Steps/Sec Voltage (V) (Fixed point Current (ample, Fixed pc 0,12 Byte 0 Ring (0-255)	Time (ms) String [1-10 Characters, and t-must divide by 100 on master s int - must divide by 100 on master s [Byte 1] Tip (0-255)	Null-terminated			00 00 00	F 00 00 01	Length Data)	
TPS Understand 24114, leads inhubites	Status Request Firmware Verson Run Status Run Status Run Time Currently Exposing Timing Master Value Motors Mar Step Rate Voltage Reading Current to Motors At Ingu Edge (RISING, FALUNG, or CHANGE) At I (U) Mode Limit Switch Highly Low Status Limit Switch Highly Low Status	0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 103 104 105 106 107 108 109 110	64 65 66 67 68 69 6A 6B 6C 6D 6E	0 0 0 0 0 0 0 0 0	-Status Type- Value Type (Syte) Value Type (Syte) Value Type (Syte) Value Type (Inter) Value Type (Syte) Value Type (Syte) Value Type (Syte) Value Type (Syte) Value Type (Fixed) Value Type (Fixed) Value Type (Fixed) Value Type (Syte) Value Type (Syte) Value Type (Syte) Value Type (Int) Value Type (Int)	0 = Stopped, 1 = Paused, 2 = Running TrueFalse TrueFalse Steps/Sect Vottage (V) (Fixed poin Current (amps) (Fixed poin 0.1.2 [Byte 0] Ring (0.255) [Byte 0] Ring, HighTow (1.0)	Time (ms) String [1-10 Characters, and 1- must divide by 100 on master s int – must divide by 100 on master [Byte 1] Tip (0-25) [Byte 1] Tip, HighLow(1,0)	Null-terminated			00 00 00	F 00 00 01	Length Data)	
FIS	Status Request Frimora'e Verson Run Trine Gurrent's Exposing Timing Master Value Name Motors Mac Step Rate Voltage Residing Current to Motors At Input Edge Rother Mac CHANGE) At Input Edge Rother Mac CHANGE Limit Switch High Low Status At Outgus Before Shot Deby Time Limit Switch High Low Status At Outgus Before Shot Deby Time	0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 103 104 105 106 107 108 109 110	64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70	0 0 0 0 0 0 0 0 0 0 0	Status Type Value Type (Byte)	0 = Stopped, 1 = Paused, 2 = Running TrusFides TrusFides Steps/Sec Voltage (V) (Fixed poin Current (amps) (Fixed poin 0,12 [Byte 0] Ring (0.255) [Byte 0] Ring, HighLow (1,0)	Time (ms) String [1-10 Characters, and 1 must divide by 100 on master sint—must divide by 100 on master [Byte 1] Tip (0-255) [Byte 1] Tip (1-255)	Null-terminated			00 00 00	=F 00 00 01	Length Data)	
PRS Landers 24114, least stunders .	Status Request Firmware Version Run Status Ren Status Run Time Currently Exposing Timing Master Value Motors Name Voltage Reading Current to Motors At Ingut Edge (RSING, FALUNG, or CHANGE) At I (Duty March Status At Output Before Shot Delay Time At Output After Shot Delay Time	0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 103 104 105 106 107 108 109 110 111 111 112	64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70	0 0 0 0 0 0 0 0 0 0 0 0	-Status Type- Value Type (Byte) Value Type (Byte) Value Type (Byte) Value Type (Mong) Value Type (Fined) Value Type (Fined) Value Type (Int)	0 = Stopped, 1 = Paused, 2 = Running TrusFides TrusFides Stepa/Sec Votage (V) (Fixed poor Current (amos) (Fixed poor (Byte 0) Ring (0.255) (Byte 0) Ring, Highly (1.0) True (m) True (m)	Time (ms) String [1-10 Characters and to must divide by 100 on master sint – must divide by 100 on master sint – must divide by 100 on master [Byte 1] Tip (0-255) [Byte 1] Tip (High/Low(1,0))	Null-terminated			00 00 00	=F 00 00 01	Length Data)	
PIS	Status Request Frimora'e Verson Run Trine Gurrent's Exposing Timing Master Value Name Motors Mac Step Rate Voltage Residing Current to Motors At Input Edge Rother Mac CHANGE) At Input Edge Rother Mac CHANGE Limit Switch High Low Status At Outgus Before Shot Deby Time Limit Switch High Low Status At Outgus Before Shot Deby Time	0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 103 104 105 106 107 108 109 110	64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70	0 0 0 0 0 0 0 0 0 0 0	Status Type Value Type (Byte)	0 = Stopped, 1 = Paused, 2 = Running TrusFides TrusFides Steps/Sec Voltage (V) (Fixed poin Current (amps) (Fixed poin 0,12 [Byte 0] Ring (0.255) [Byte 0] Ring, HighLow (1,0)	Time (ms) String [1-10 Characters and to must divide by 100 on master sint – must divide by 100 on master sint – must divide by 100 on master [Byte 1] Tip (0-255) [Byte 1] Tip (High/Low(1,0))	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
PRS A THE PROPERTY OF THE PROP	Status Request Firmware Version Run Status Ren Status Run Time Currently Exposing Timing Master Value Motors Name Voltage Reading Current to Motors At Ingut Edge (RSING, FALUNG, or CHANGE) At I (Duty March Status At Output Before Shot Delay Time At Output After Shot Delay Time	0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 103 104 105 106 107 108 109 110 111 111 112	64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70	0 0 0 0 0 0 0 0 0 0 0 0	-Status Type- Value Type (Byte) Value Type (Byte) Value Type (Byte) Value Type (Mong) Value Type (Fined) Value Type (Fined) Value Type (Int)	0 = Stopped, 1 = Paused, 2 = Running TrusFides TrusFides Stepa/Sec Votage (V) (Fixed poor Current (amos) (Fixed poor (Byte 0) Ring (0.255) (Byte 0) Ring, Highly (1.0) True (m) True (m)	Time (ms) String [1-10 Characters, and Inc. Inc. Inc. Inc. Inc. Inc. Inc. Inc.	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
PRS Annual State of the State o	Status Request Firmware Version Run Status Run Status Run Time Currently Exposing Timing Master Value Motors Mas Sign Pate Motor Motors Mas Sign Pate Motors Mas Sign Pate All In Jud Mode Limit Switch Highly Low Status All Output Affer Shot Delay Time All Output Affer Shot Rolly Time All Output Affer Shot Rolly Time All Output Affer Shot Time All Output Affer Shot Time	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115	64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 770 71	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Status Type> Value Type (Byte) Value Type (Byte) Value Type (Byte) Value Type (Uorq) Value Type (Uorq) Value Type (Byte) Value Type (Byte) Value Type (Byte) Value Type (Frace) Value Type (Frace) Value Type (Frace) Value Type (Frace) Value Type (Byte) Value Type (Byte) Value Type (Byte) Value Type (Byte) Value Type (Ind)	0 = Stopped, 1 = Paused, 2 = Running TrusFidee TrusFidee TrusFidee Steps/Sect Voltage (V) (Fixed point Current (amos) Fixed pr 0,1,2 [Syte 0] Reng (0.255) [Syte 0] Reng, 1+gy1cbox (1.0) True (im True (im True (im True (im True (im)	Time (ms) String [1-10 Characters, and Inc. Inc. Inc. Inc. Inc. Inc. Inc. Inc.	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
FIS	Status Request Firmware Version Run Status Run Status Currently Exposing Timing Master Value Name Motors Mas Stap Rate Voltage Reading Current to Motors At Input Edge (RISING, FALLING, or CHANGE) At Input Edge (RISING, FALLING, or CHANGE) At County County County County County At County County County County At County County County At County After Star Colley Time At Output After Star County At County County	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115	64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Status Types Vatar Type (Byte) Vatar Type (Fract) Vatar Type (Fract) Vatar Type (Fract) Vatar Type (Fract) Vatar Type (Byte) Vatar Type (Unit)	0 = Stopped, 1 = Passed, 2 = Running TrusFalse TrusFalse TrusFalse Steps Steps Votage (V) (Fixed poin Current (amps) (Fixed poin 0,12 Byte O) Ring (0,255) Gyte O) Ring, Highlow (10) Time (ms Time (ms HIGHLOW (1,0)	Time (ms) String [1-10 Characters, and Indiana String Indiana Str	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
PRS A THE PROPERTY OF THE PROP	State SRequest Fernmes Velocio	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 103 104 105 106 107 108 109 110 111 111 112 113 114 115 116	64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Status Type> Value Type (Byte) Value Type (Byte) Value Type (Byte) Value Type (Uong) Value Type (Byte) Value Type (Byte) Value Type (Byte) Value Type (Byte) Value Type (Fixed) Value Type (Fixed) Value Type (Fixed) Value Type (Fixed) Value Type (Ind) Value Type (Ind) Value Type (Unit) Value Type (Unit) Value Type (Unit) Value Type (Ind)	0 = Stopped, 1 = Paused, 2 = Running Trus-Fidee Trus-Fidee Trus-Fidee Steps/Sect Vottage (V) (Fixed pool Current (amos) Fixed pool 0,1,2 [Syste G) Reng (0,255) [Syste G) Reng, HighLow (1,0) Tree (ms Tree (ms HIGHLOW (1,0) Start Start HIGHLOW (1,0) Start Star	Time (ms) String [1-10 Characters, and Inc. Inc. Inc. Inc. Inc. Inc. Inc. Inc.	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
PIS Annual Section (1997) (1996) Indicates (1997)	Status Request Firmware Version Run Status Run Trine Run Status Run Trine Run	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117	64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Status Types Vata Type (Byte)	0 = Stopped, 1 = Paused, 2 = Running TrueFalse TrueFalse TrueFalse Votage (V) (Fased por Current (emps) (Fased por 0,12 (Byte 0) Ring, (0,255) (Byte 0) Ring, Hightow (10) Time (im Time (im HIGHLOW (1,0) Start 0 (SMS), 1 (Cont.), 2 (Vod. Cont.)	Time (ms) String [1-10 Characters, and Indiana String Indiana Str	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
TPS CONTROL OF THE CO	Status Request Firmware Verson Run Trine Currently Exposing Timing Master Value Name Motors Max Step Pate Voltage Reading Voltage Reading Alt Input Edward Master Alt Input Edward Master Voltage Limit Switch High Low Status Alt Output After Shot Delay Time Alt Output After Shot Delay Time Alt Output After Shot Delay Time Alt Output After Shot Time Start Program Delay SMS J Continuous Program Mode Controller Power Cycle	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 101 102 103 104 105 106 107 108 109 110 111 111 113 114 115 116 117 118	64 65 66 67 68 69 6A 6B 6C 6D 0D 6E 6F 70 71 72 73 74 75 76	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Slatus Type> Value Type (Byte) Value Type (Byte) Value Type (Byte) Value Type (Ulong) Value Type (Stre) Value Type (Byte) Value Type (Inf)	0 = Stopped, 1 = Paused, 2 = Running TrusFidee TrusFidee Steps/Sec Voltage (V) (Fixed point Current (amps) (Fixed point (Byte O) (Fixed point) (Byte O) (Fixed point) (Byte O) (Fixed point) (Fixed po	Time (ms) String [1-10 Characters, and Indiana String Indiana Str	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
PRS A THE PROPERTY OF THE PROP	Status Request Firmware Version Run Status Run Tires Ann	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 101 102 103 104 105 106 107 108 109 110 111 111 112 113 114 115 116 117 118 119	64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Status Types Value Type (Byte)	0 = Stopped, 1 = Paused, 2 = Running Trus-False Trus-False Stepa/Sec Votage (V) (Truser point Current faren) (Fauser point 0,1,2 (Byte 0) Ring, (2,25) (Byte 0) Ring, Hightow (1,0) Time (ms Time (ms HIGHLOW (1,0) Start 0,5885, 1 (Cont.), 2 (Vot. Cont.) Trus-False (1,0) Trus-False (1,0)	Time (ms) String [1-10 Characters, and Indiana String Indiana Str	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
FIS	Status Request Frimora'e Verson Run Trine Gurrent's Exposing Timing Master Value Name Motors Max Step Rate Voltage Reading Current to Motors At Input Edge (RSIMS, PALL MN, or CHANGE) Limit Switch High Low Status All Input Edge (RSIMS, PALL MN, or CHANGE) Limit Switch High Low Status All Output Before Shot Delay Time All Output After Shot Delay Time All Output After Shot Time All Output After Shot Time All Output Refore Refore Refore Shot Shot Time All Output Refore R	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120	64 65 66 66 67 68 88 69 60 60 60 66 67 70 71 72 73 74 75 76 77 77	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Slatus Type- Value Type (Byte)	0 = Stopped, 1 = Paused, 2 = Running TrusFalse TrusFalse TrusFalse Steps/Sec Voltage (V) (Fixed point Current (amps) (Fixed point 0, 1, 2 [Byte 0] Ring (0-255) [Byte 0] Ring, High Low (1 in) Time (ms Time (ms HIGHLOW (1, 0) Start 0 (SMs), 1 (Cont.), 2(Vid. Cont.) TrusFalse (1, 0) TrusFalse (1, 0) TrusFalse (1, 0)	Time (ms) String [1-10 Characters, and Indiana String Indiana Str	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
FPS	Status Request Firmware Verson Run Status Motors Mac Step Rate Voltage Reading Current to Motors Alt Input Edge (RISING, FALLING, or CHANGE) Alt IVO Mode Limit Swotch High/Low Status Alt Output Before Short Delay Time Alt Output After Short Delay Time Alt Output After Short Delay Time Alt Output After Short Status Run	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 101 102 103 104 105 106 107 108 109 110 111 111 112 113 114 115 116 117 118 119	64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Status Types Value Type (Byte)	0 = Stopped, 1 = Paused, 2 = Running Trus-False Trus-False Stepa/Sec Votage (V) (Truser point Current faren) (Fauser point 0,1,2 (Byte 0) Ring, (2,25) (Byte 0) Ring, Hightow (1,0) Time (ms Time (ms HIGHLOW (1,0) Start 0,5885, 1 (Cont.), 2 (Vot. Cont.) Trus-False (1,0) Trus-False (1,0)	Time (ms) String [1-10 Characters, and Indiana String Indiana Str	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
FPS Reports the percentage complete of the	Status Request Firmware Version Run Status Run Time Run Status Run Time Motors Max Step Rate Voltage Reading Current to Motors Alt Input Edge (RISING, FALLING, or CHANGE) ARI LVD Mode Limit Switch HighTu Co Status Alt Coupus Retere Shart Delay Time Alt Coupus After Shart Time Alt Coupus Aft	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 102 103 104 105 106 106 107 108 110 111 112 113 114 115 116 117 118 119 120	64 65 65 66 67 68 69 6A 6B 6C 6D 6E 6F 77 71 72 73 74 75 76 77 78	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Status Types Vata Type (Byte)	0 = Stopped, 1 = Paused, 2 = Running Trus-False Trus-False Trus-False Steps/Sec Votage (V) (Exer poin Current (anne), (Faus p. 0.1,2 0.1,2 (Byte 0) Ring, (225) (Byte 0) Ring, Hightow (10) Time (imitine	Time (ms) String [1-10 Characters, and Indiana String Indiana Str	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
FPS	Status Request Firmware Verson Run Status Motors Mac Step Rate Voltage Reading Current to Motors Alt Input Edge (RISING, FALLING, or CHANGE) Alt IVO Mode Limit Swotch High/Low Status Alt Output Before Short Delay Time Alt Output After Short Delay Time Alt Output After Short Delay Time Alt Output After Short Status Run	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120	64 65 66 66 67 68 88 69 60 60 60 66 67 70 71 72 73 74 75 76 77 77	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Slatus Type- Value Type (Byte)	0 = Stopped, 1 = Paused, 2 = Running TrusFalse TrusFalse TrusFalse Steps/Sec Voltage (V) (Fixed point Current (amps) (Fixed point 0, 1, 2 [Byte 0] Ring (0-255) [Byte 0] Ring, High Low (1 in) Time (ms Time (ms HIGHLOW (1, 0) Start 0 (SMs), 1 (Cont.), 2(Vid. Cont.) TrusFalse (1, 0) TrusFalse (1, 0) TrusFalse (1, 0)	Time (ms) String [1-10 Characters, and Indiana String Indiana Str	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
Reports the percentage complete of the current program as a whole number.	State SRequest Firmmer Velocia Firmmer Velocia Firms Veloc	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 102 103 104 105 106 106 107 108 110 111 112 113 114 115 116 117 118 119 120	64 65 65 66 67 68 69 6A 6B 6C 6D 6E 6F 77 71 72 73 74 75 76 77 78	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Status Types Vata Type (Byte)	0 = Stopped, 1 = Paused, 2 = Running Trus-False Trus-False Trus-False Steps/Sec Votage (V) (Exer poin Current (anne), (Faus p. 0.1,2 0.1,2 (Byte 0) Ring, (225) (Byte 0) Ring, Hightow (10) Time (imitine	Time (ms) String [1-10 Characters, and Indiana String Indiana Indiana String Indiana String Indiana String Indiana String Indiana String Indiana String Indiana	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
Reports the percentage complete of the current program as a whole number. The three least spinicant bits of the byt	Status Request Frimware Verson Ron Status Frimware Verson Ron Status Currently Exposing Timing Master Value Name Motors Max Stap Rate Voltage Reading Current to Motors At Input Edge (RISING, FALLING, or CHANGE) Limit Swift Di Motor Limit Swift Di Motor At Output After Shot Delay Time At Output After Shot Delay Time At Output After Shot Toley Time At Output After Shot Delay Time At Output After S	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 119 122 123	64 65 66 67 67 68 69 60 60 60 60 60 70 71 72 73 74 75 77 78	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Slatus Type- Value Type (Byte)	0 = Stopped, 1 = Passed, 2 = Running TrusFalse TrusFalse TrusFalse TrusFalse Steps Seec Votage (V) (Fixed poin Current (amps) (Fixed poin 0,1,2 [Byte Of Ring, 16255) [Byte Of Ring, Highlow (10) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0)	Time (ms) String [1-10 Characters, and Indiana String Indiana Indiana String Indiana String Indiana String Indiana String Indiana String Indiana String Indiana	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
Reports the percentage complete of the Apparent the percentage complete of the Apparent the percentage complete of the Apparent the App	Status Request Firmware Verson Run Trine Currently Exposing Timing Master Value Name Motors Max Step Pate Voltage Residency At Iron Current to Motors At Iron Current to Motors At Iron Courrent to Motors At Iron Status At Output Before Shot Delay Time At Output After Shot Delay Time At Output Hafter Shot Delay Time	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 102 103 104 105 106 106 107 108 110 111 112 113 114 115 116 117 118 119 120	64 65 65 66 67 68 69 6A 6B 6C 6D 6E 6F 77 71 72 73 74 75 76 77 78	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Status Types Vata Type (Byte)	0 = Stopped, 1 = Paused, 2 = Running Trus-False Trus-False Trus-False Steps/Sec Votage (V) (Exer poin Current (anne), (Faus p. 0.1,2 0.1,2 (Byte 0) Ring, (225) (Byte 0) Ring, Hightow (10) Time (imitine	Time (ms) String [1-10 Characters, and Indiana String Indiana Indiana String Indiana String Indiana String Indiana String Indiana String Indiana String Indiana	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
Reports the percentage complete of the current program as a whole number. The three least spiritizant tots of the yold of the motors. Midot of ± bild, motor 2 who will be the current program as a whole number.	Status Request Firmware Verson Run Trine Currently Exposing Timing Master Value Name Motors Max Step Pate Voltage Residency At Iron Current to Motors At Iron Current to Motors At Iron Courrent to Motors At Iron Status At Output Before Shot Delay Time At Output After Shot Delay Time At Output Hafter Shot Delay Time	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 119 122 123	64 65 66 67 67 68 69 60 60 60 60 60 70 71 72 73 74 75 77 78	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Slatus Type- Value Type (Byte)	0 = Stopped, 1 = Passed, 2 = Running TrusFalse TrusFalse TrusFalse TrusFalse Steps Seec Votage (V) (Fixed poin Current (amps) (Fixed poin 0,1,2 [Byte Of Ring, 16255) [Byte Of Ring, Highlow (10) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0)	Time (ms) String [1-10 Characters, and Indiana String Indiana Indiana String Indiana String Indiana String Indiana String Indiana String Indiana String Indiana	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
Reports the percentage complete of the current program as a whole number. Then three teads spinificant tota of the byte of the motors. Motor 1 = bit 0, motor 2 = 1, motor 3 = bit 0, motor 2 = 1, motor 3 = bit 0, motor 2 = 1, motor 3 = bit 0, motor 4 = bit 0, motor 3 = bit 0, motor 4 = bit 0, motor 5 = bit 0, mo	Status Request Frimware Verson Run Trine Gurrently Exposing Timing Master Value Name Motors Max Step Pate Voltage Reading Current to Motors At Input Calege (RSIMS, CALLAN), or CHANGE) Limit Switch High Low Status At Input Calege (RSIMS, CALLAN), or CHANGE) Limit Switch High Low Status At Output Refers Shot Delay Time At Output After Shot Delay Time At Output After Shot Time At Output Skins SMS Output Skins SMS Output Skins SMS Output Skins SMS Output Skins Frogram Delay Joyetick Watchdog Mode Status Program % Complete Let Chek Motor Attachment	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 119 122 123	64 65 66 67 67 68 69 60 60 60 60 60 70 71 72 73 74 75 77 78	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Slatus Type- Value Type (Byte)	0 = Stopped, 1 = Passed, 2 = Running TrusFalse TrusFalse TrusFalse TrusFalse Steps Seec Votage (V) (Fixed poin Current (amps) (Fixed poin 0,1,2 [Byte Of Ring, 16255) [Byte Of Ring, Highlow (10) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0)	Time (ms) String [1-10 Characters, and Indiana String Indiana Indiana String Indiana String Indiana String Indiana String Indiana String Indiana String Indiana	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
Reports the percentage complete of the current program as a whole number. The three least significant bias for the progresser the malest for as expressers the malest for as 1, motor 3 = bit 2, motor 3 = bit 3, motor 2 = bit 3, motor 3 = bit 4, motor 3 = bit 3, motor 3 = bit 4,	Status Request Firmware Version Run Status Run Run Run Run Run Run Run Run Run Name Motors Mar Step Rate Voltage Reading Current to Motors Alt Input Edge (RISING, FALLING, or CHANGE) ARI LOY Mode Limit Sworth High/Low Status Alt Cutyat Refere Shat Deley Time Alt Cutyat Refere Shat Deley Time Alt Cutyat Refere Shat Time Alt Cutyat Gordinaus Program Mode Cortroller Power Cycle Joystick Mode Pring Progr Tieg Joystick WatchCog Mode Status Program % Complete Let Chack Motor Attachment of	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 100 101 102 102 103 104 108 109 109 110 111 111 112 113 114 115 116 117 118 119 120 121 122 123	64 65 65 66 67 67 68 69 60 60 60 60 60 60 77 77 72 73 74 75 76 77 78	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Slatus Type- Value Type (Byte)	0 = Stopped, 1 = Passed, 2 = Running TrusFalse TrusFalse TrusFalse TrusFalse Steps Seec Votage (V) (Fixed poin Current (amps) (Fixed poin 0,1,2 [Byte Of Ring, 16255) [Byte Of Ring, Highlow (10) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0)	Time (ms) String [1-10 Characters, and Indiana String Indiana Indiana String Indiana String Indiana String Indiana String Indiana String Indiana String Indiana	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
Reports the percentage complete of the current program as a whole number. The three least significant bits of the by represent the motor attach states for as of the motors. Albor 1 = bit 0, motor 2 = 0 feet on the current program as a whole number. The program bead on the current program is not the program based on currently set.	Status Request Frimware Version Ren Status Ren Status Ren Status Currently Exposing Timing Master Value Name Motors Max Step Pate Voltage Reading Current to Motors At Input Edge (RISING, FALLING, or CHANGE) At IVO Mode At IVO Mode At Coupt After Shot Delay Time At Output After Shot Delay Time At Output After Shot Delay Time At Output After Shot Time At Output After Shot Time At Output After Shot Time Coupt State Shot Time At Output After Shot Shot Time At Output After Shot Delay Time At Output After Shot Shot Time At Output After Shot Shot Time At Output After Shot Delay Time At Output Before Shot Time At Out	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 102 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 119 122 123	64 65 66 67 67 68 69 60 60 60 60 60 70 71 72 73 74 75 77 78	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Slatus Type- Value Type (Byte)	0 = Stopped, 1 = Passed, 2 = Running TrusFalse TrusFalse TrusFalse TrusFalse Steps Seec Votage (V) (Fixed poin Current (amps) (Fixed poin 0,1,2 [Byte Of Ring, 16255) [Byte Of Ring, Highlow (10) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0)	Time (ms) String [1-10 Characters, and Indiana String Indiana Indiana String Indiana String Indiana String Indiana String Indiana String Indiana String Indiana	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
Reports the percentage complete of the current program as a whole number. The three least significant bias for the progresser the malest for as expressers the malest for as 1, motor 3 = bit 2, motor 3 = bit 3, motor 2 = bit 3, motor 3 = bit 4, motor 3 = bit 3, motor 3 = bit 4,	Status Request Frimware Version Ren Status Ren Status Ren Status Currently Exposing Timing Master Value Name Motors Max Step Pate Voltage Reading Current to Motors At Input Edge (RISING, FALLING, or CHANGE) At IVO Mode At IVO Mode At Coupt After Shot Delay Time At Output After Shot Delay Time At Output After Shot Delay Time At Output After Shot Time At Output After Shot Time At Output After Shot Time Coupt State Shot Time At Output After Shot Shot Time At Output After Shot Delay Time At Output After Shot Shot Time At Output After Shot Shot Time At Output After Shot Delay Time At Output Before Shot Time At Out	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 100 101 102 102 103 104 108 109 109 110 111 111 112 113 114 115 116 117 118 119 120 121 122 123	64 65 65 66 67 67 68 69 60 60 60 60 60 60 77 77 72 73 74 75 76 77 78	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Status Type> Value Type (Byte) Value Type (Fine) Value Type (Fine) Value Type (Byte)	0 = Stopped, 1 = Passed, 2 = Running TrusFalse TrusFalse TrusFalse TrusFalse Steps Seec Votage (V) (Fixed poin Current (amps) (Fixed poin 0,1,2 [Byte Of Ring, 16255) [Byte Of Ring, Highlow (10) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0)	Time (ms) String [1-10 Characters and Lemistal divide by 100 on master s in the must divide by 100 on master s in the must divide by 100 or master s [Byte 1] Tip (0-255) [Byte 1] Tip (1-255) [Byte 1] Tip (1-255) Time Delay (seconds)	Null-terminated			00 00 00 10	FF 00 00 01	Length Data)	
Reports the percentage complete of the current program as a whole number. The three least significant bits of the by represent the motor attach states for as of the motors. Albor 1 = bit 0, motor 2 = 0 feet on the current program as a whole number. The program bead on the current program is not the program based on currently set.	Status Request Firmware Version Rus Status Firmware Version Rus Status Currently Exposing Timing Master Vallue Name Motors Max Step Rate Voltage Reading Current to Motors At Input Edge (RISING, FALLING, or CHANGE) At Input Edge (RISING, FALLING, or CHANGE) At Input Edge (RISING, FALLING, or CHANGE) At Output After Shot Delay Time At Output After Shot Delay Time At Output After Shot Delay Time At Output After Shot Time At Output Af	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 101 102 103 104 105 106 107 107 108 111 111 111 115 116 117 118 119 119 119 119 119 119 119 119 119	64 65 65 66 67 77 88 69 99 9A 68 66 60 77 71 72 72 73 74 75 75 77 75 77	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Status Type> Value Type [Byte] Value Type [Byte] Value Type [Byte] Value Type [Ulorq] Value Type [Ulorq] Value Type [Infe Value Type [Infe] Value Type [Infe Value Type [Infe] Value Type [Infe]	0 = Stopped, 1 = Paused, 2 = Running TrueFalse TrueFalse TrueFalse TrueFalse Steps@cc. Votage (V) Fried poin Current (emps) (Fried poin 0,1,2 (Byte 0) Ring (0,255) (Byte 0) Ring, Hightow (1,0) True (imiting the control of the cont	Time (ms) String [1-10 Characters and Lemistal divide by 100 on master s in the must divide by 100 on master s in the must divide by 100 or master s [Byte 1] Tip (0-255) [Byte 1] Tip (1-255) [Byte 1] Tip (1-255) Time Delay (seconds)	Null-terminated			00 00 00	FF 00 00 01	Length Data)	
Reports the percentage complete of the format the f	Status Request Frimoral Verson Run Trine Currently Exposing Timing Master Value Name Motors Max Step Pate Voltage Resides At Input Edge Rother State At Input Edge Rother State At Output After Shot Delay Time At Output Before Shot Delay Time At Output After Shot Delay Time At Output After Shot Time At Output States SMS / Cortinuous Program Mode Controller Power Cycle Joyatick Woode Ping-Pong Rag Joystick Woode Ping-Pong Rag Joystick Woode Ping-Pong Rag Total Program Scannel Chack Motor Attachment Of Chack Motor Attachment Total Program Run Time Total Program Run Time	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 100 101 102 102 103 104 108 109 109 110 111 111 112 113 114 115 116 117 118 119 120 121 122 123	64 65 65 66 67 67 68 69 60 60 60 60 60 60 77 77 72 73 74 75 76 77 78	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-Status Type> Value Type (Byte) Value Type (Fine) Value Type (Fine) Value Type (Byte)	0 = Stopped, 1 = Passed, 2 = Running TrusFalse TrusFalse TrusFalse TrusFalse Steps Seec Votage (V) (Fixed poin Current (amps) (Fixed poin 0,1,2 [Byte Of Ring, 16255) [Byte Of Ring, Highlow (10) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0) TrusFalse (1,0)	Time (ms) String [1-10 Characters and Lemistal divide by 100 on master s in the must divide by 100 on master s in the must divide by 100 or master s [Byte 1] Tip (0-255) [Byte 1] Tip (1-255) [Byte 1] Tip (1-255) Time Delay (seconds)	Null-terminated			00 00 00 00	FF 00 00 01	Length Data)	
Reports the percentage complete of the current program as a whole number. The three least significant bits of the by represent the motor attach states for as of the motors. Albor 1 = bit 0, motor 2 = 0 feet on the current program as a whole number. The program bead on the current program is not the program based on currently set.	Status Request Frimoral Verson Run Trine Currently Exposing Timing Master Value Name Motors Max Step Pate Voltage Resides At Input Edge Rother State At Input Edge Rother State At Output After Shot Delay Time At Output Before Shot Delay Time At Output After Shot Delay Time At Output After Shot Time At Output States SMS / Cortinuous Program Mode Controller Power Cycle Joyatick Woode Ping-Pong Rag Joystick Woode Ping-Pong Rag Joystick Woode Ping-Pong Rag Total Program Scannel Chack Motor Attachment Of Chack Motor Attachment Total Program Run Time Total Program Run Time	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 100 101 101 102 103 104 105 106 107 107 108 111 111 111 115 116 117 118 119 119 119 119 119 119 119 119 119	64 65 65 66 67 77 88 69 99 9A 68 66 60 77 71 72 72 73 74 75 75 77 75 77	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Status Type> Value Type [Byte] Value Type [Byte] Value Type [Byte] Value Type [Ulorq] Value Type [Ulorq] Value Type [Infe Value Type [Infe] Value Type [Infe Value Type [Infe] Value Type [Infe]	0 = Stopped, 1 = Paused, 2 = Running TrueFalse TrueFalse TrueFalse TrueFalse Steps@cc. Votage (V) Fried poin Current (emps) (Fried poin 0,1,2 (Byte 0) Ring (0,255) (Byte 0) Ring, Hightow (1,0) True (imiting the control of the cont	Time (ms) String [1-10 Characters and Lemistal divide by 100 on master s in the must divide by 100 on master s in the must divide by 100 or master s [Byte 1] Tip (0-255) [Byte 1] Tip (1-255) [Byte 1] Tip (1-255) Time Delay (seconds)	Null-terminated			00 00 00	FF 00 00 01	Length Data)	

Motors		NOOP	1-3	0	0	0								
		Reserve for core protocol	1-3	1	1	_								
	Cuts power to motor when not executing a move. True by default.	Motor Sleep	1-3	2	2	1	True/False (1,0) [Byte]							
	Must enabled before executing a move.	Motor Enable	1-3	3	3	1	True/False (1,0) [Byte]							
	Stops motor, even if a planned move is in				_		rider disc (1,0) [byte]							
	progress.	Stop Motor Now	1-3	4	4	0								
	Number of steps the motor should move in addition to the commanded distance when reversing direction.	Set Backlash Steps	1-3	5	5	2	:	Steps [Uint]						
General Motor Commands	Number of microsteps per full motor step. There are 200 full steps per rotation of the motor (and ~3800 full steps per gearbox	Set Microstep Value	1-3	6	6	1	1, 2, 4, 8, 16 [Byte]							
	output shaft rotation)													
		Set Motor Max Step Speed	1-3	7	7	2	Step	s/Second [Uint]						
	Flips motor direction, regardless of current	Set Direction	1-3	8	8	1	0, 1 [Byte]							
	program Saves home limit position	Set Home Limit Here	1-3	9	9	0								
	Saves end limit position	Set End Limit Here	1-3	10	A	0								
	ouves and mine position	Send Motor to Home Limit	1-3	11	В	0								
		Send Motor to End Limit	1-3	12	Č	0								
				•										<u> </u>
	Does not apply to finite manual moves	Set Continuous Speed	1-3	13	D	4		Steps/Second [float]						
Manual Move	Does not apply to finite manual moves	Set Motor Continuous Motion Accel/Decel Rate	1-3	14	E	4		Steps/Second^2 [float]						
Commands	Direct move command, does not require	Execute Simple Motor Move	1-3	15	F	5	Dir (0, 1) [Byte]		Steps [Ulong]					
	use of "start" and "stop" commands.						(-) (-) (-)							
	1	Cat Decrease Start agint	1-3	16	10			Cton and its first						
		Set Program Start point Set Program Stop point	1-3	16	10	4		Step position [long] Step position [long]			+		-	
	1 = Linear, 2 = Quadratic, 3 = Inverted							Step position [long]			+ +			
	Quadratic Quadratic, 3 = Inverted	Set Easing (Ramping) Mode	1-3	18	12	1	1, 2, 3							
Programmed Travel	How many shots should this motor wait before moving?	Set Lead-In Shots / Time	1-3	19	13	2	Shots (SMS or time lapse	cont.) / Time ms (Video cont.) [Uint]						
Commands		Set Travel Shots(SMS) / Travel Time (Cont.)	1-3	20	14	4		Shots (SMS) or Total Travel Time (ms)	(cont.) [Ulong]					
		Set Program Accel	1-3	21	15	4		Accel Period - Shots (SMS) or Time in me	s (Cont.) [Ulong)]					
		Set Program Decel	1-3 1-3	22	16 17	0		Decel Period – Shots (SMS) or Time in m	is (Cont.) [Ulong]				_	
		Send Motor to Program Start Point Send Motor to Program Stop Point	1-3	23	17	0								
		Send Word to Flogram Stop Funt	150	24	10	U	l .							
Stop-Motion Travel	Manual SMS movement. Not yet implemented.	Advance One SMS Increment	1-3	25	19	0								
Commands	Manual SMS movement. Not yet	Go Back One SMS Increment	1-3	26	1A	0								
	implemented.	OU DUCK ONE ONE INCIDING		20	174	ŭ								
	Sets the current position as home, disables limits, and sets start/stop positions to home position.	Reset Limits and Program Start/Stop Positions	1-3	27	1B	0								
	The controller will automatically select the highest resolution microstepping (up to 14 appropria) that can be used pring use the program parameters. It will also report back the setting it uses. 0 will be reported when the command is called at an illegal time (i.e. when the motor is in motion), 255 will be reported when the specif equient du by the current plan parameters exceeds the controller's top speed.	Auto Set Program Microsteps	1-3	28	1C	0	Value Type [Byte]	0, 4, 8, 16, 255						
		Set Start Here	1-3	29	1D	0								
		Set Stop Here	1-3	30	1E	0								
		Status Request	1-3	100			<status type=""></status>		<returns> with header an</returns>	d master address in	n front (00 00 00 0	0 00 FF 00 00	01 Length Data)	
		Motor Enable Backlash Steps	1-3 1-3	100	64 65	0	Value Type [Byte]	True/False (1,0)			+	-		
			1-3	101	66	0	Value Type [Uint] Value Type [Byte]	Steps			+	-		
General Motor		Microstep Value Direction	1-3	102	67	0	Value Type [byte]	1, 2, 4, 8, 16	 		+ +	\vdash		
Query		Motor Max Step Speed	1-3	103	68	0	Value Type [Byte] Value Type [Int]	0, 1 Steps/Seco	ond		+ +			
Commands		Find Limit Position	1-3	104	69	0	Value Type [Long]	Steps/Sect.	Position		 			
		Current Motor Position	1-3	106	6A	0	Value Type [Long]		Position		-			
		Motor Running	1-3	107	6B	0	Value Type [Byte]	True/False (1,0)	1		1			
							, , , , , ,							
Manual Move		Continuous Speed	1-3	108	6C	0	Value Type [Psudo-float-Fixed point – must divide by 100 on master side]		Steps/Second					
Query Commands		Motor Continuous Motion Accel/Decel Rate	1-3	109	6D	0	Value Type [Psudo-float–Fixed point – must divide by 100 on master side]		Steps/Second^2					
		Easing (Ramping) Mode	1-3	110	6E	0	Value Type [Byte]	1, 2, 3						
		Program Start point	1-3	111	6F 70	0	Value Type [Long]		Position Position			-		
Programmed		Program Stop point	1-3 1-3	112	70	0	Value Type [Long]	Char (Chic)				-		
Travel Query		Travel Shots(SMS) / Travel Time (Cont.)		113		0	Value Type [Ulong]		r Total Travel Time (ms) (cont.)			-		
Commands		Lead-In Shots / Time Program Accel	1-3	114	72 73	0	Value Type [Int] Value Type [Ulong]	Shots (SMS or time lapse cont.)	/ Time ms (Video cont.) nots (SMS) or Time in ms (Cont.)			\vdash	\rightarrow	
		Program Accel Program Decel	1-3 1-3	115	73	0	Value Type [Ulong] Value Type [Ulong]	Nacel Period - St	hote (SMS) or Time in me (Cont.)					
		Check Motor Sleep State	1-3	117	75	1	Value Type [Oldrig] Value Type [Byte]	True/False (1,0)	hots (SMS) or Time in ms (Cont.)		_			
		Oncor motor orcep orace					Table Type [Dyte]	11001 000 (1,0)				-		

																_
	NOOP	4	0	0	0											_
	Reserve for core protocol	4	1	1	0											
	Camera Enable	4	2	2	1	True/False (1,0) [Byte]										
Triggers exposure with length set by "Exposure Time" command.	Expose Now	4	3	3	0											
	Trigger Time	4	4	4	4		Exposure Time (mS) [Ulor	ngl								
	Focus Time	4	5	5	2	Focus	Time (mS) [Uint]	ſ								1
The system will stop a move once it reaches the max number of camera exposures.	Max Shots	4	6	6	2		Count [Uint]									
	Exposure Delay	4	7	7	2	De	lay (mS) [Uint]									ï
	Focus w Shutter	4	8	8	1	True/False (1,0) [Byte]										
This causes two trigger signals to be ser the camera in the event that the user has the camera in "mirror up" mode.	nt to Mirror Up (Repeat Shot)	4	9	9	1	True/False (1,0) [Byte]										•
Length of SMS interval	Interval	4	10	A	4		Interval Time (mS) [Ulong	3]								
	Camera Test Mode	4	11	В	1	True/False (1,0) [Byte]										
		•	•	•	•		•	•	•							
	Status Request	4	100			<status type=""></status>		<returns> with header</returns>	and master addr	ress in front (00 00 00 00 00 FF 00 00 01 Length Data)						ì
	Camera Enable	4	100	64	0	Value Type [Byte]	True/False (1,0)									
	Exposing now?	4	101	65	0	Value Type [Byte]	True/False (1,0)									
	Trigger Time	4	102	66	0	Value Type (Ulong)	E	posure Time (mS)								
	Focus Time	4	103	67	0	Value Type [Uint]	Focus Time	(mS)								
	Max Shots	4	104	68	0	Value Type (Ulong)		Count								
	Exposure Delay	4	105	69	0	Value Type [Uint]	Delay (m									
	Focus w Shutter	4	106	6A	0	Value Type [Byte]	1, 0									
	Mirror Up (Repeat Shot)	4	107	6B	0	Value Type [Byte]	True/False (1,0)									1
	Interval Time	4	108	6C	0	Value Type [Ulong]	lr	nterval Time (mS)								
Number of shots that have been taken s far during the current program.	Current Snots	4	109	6D	0	Value Type [Uint]	Number of sho	ts taken								
	Camera Test Mode	4	110	6E	0	Value Type [Byte]	True/False (1.0)									

			Address	Sub-Address	Command	Data Length	Data
Broadcasts	These function the same as the start, stop.	Start	1	0	1	0	
	and pause commands above, but can be used to synchronize movement of multiple controllers.	Stop	1	0	2	0	
		Pause	1	0	3	0	
cous	Use this to assign an address to a controller with an unknown address. Don't use when controllers are daisy-chained together.	Assign Address	1	0	4	1	2-255

Note: nodes do not give a response to broadcast commands.

Query Value Types	
0	Byte
1	Unsigned Int
2	Int
3	Long
4	Unsigned Long
5	Float
6	String

The floats are actually fixed points. They are multiplied by 100 and transmitted as longs, so they need to be divided by 100 on the master side to resolve the true value.