Feed Control Commands and Functions
2014-08-02, Ver 0

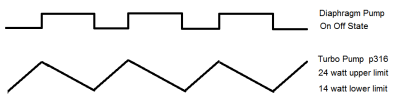
Other related files may be stored in folder “Testing”.

The feed control board communicates with the Rim Box via RS-232. The board has a set of commands for monitor and control of devices in the feed. The board also passes several commands through to the Cooler Control and the Vacuum Control. Three tables of commands are shown in the pages that follow. The following notes apply.

- All commands are delivered to the Feed Control Board, but some are passed through to other controllers.
- No commands are identical among controllers. (Ackermann, Pfeiffer, Sunpower)
- All commands to the Cooler Control Board are in upper case. (Sunpower)
- On a functional terminal screen, after command entry, the response will appear on the next line beow.
- We may have mislabeled or forgotten some commands.
- More cooler commands are listed in the separate Sunpower controller manual. (version etc ?)
- More vacuum commands are listed in the separate Pfeiffer controller manual. (version etc ?)
- On some commands a 0 before decimal may be needed ????
- An o in the item column indicates a change might be needed.
- An x in the item column indicates we would like to add this command.

Feed Control Board Commands (Ackermann, direct) (via RS-232)			
Item	Command	Response	Description (direct to Feed Control Board)(always lower case)
	help	big list	Display a list of supported commands. (feed control only ?)
	getfanpwm	25	Display fan power. (% on time) (pulse width modulation)
	setfanpwm 30	ok	Set new fan power. (% on time)
	getfanspeed	2420	Display current fan speed. (rpm)
o	gettemp a0	21.1	Display Control on board temperature. (°C xx.x) (near ambient)
o	gettemp a1	38.3	Display Cooler housing temperature. (°C xx.x) (back of housing)
x	gettemp a2	31.6	Display Cooler rejection temperature. (°C xx.x) (near to fins)
	gd -v	0.527	Display LNA diode voltage. (_-v gives)(volts x.xxx) (maybe getdiode ?)
x	name (gd maybe)	68.0	Display LNA temperature. (Kelvin xx.x) (uses equation to calculate) (T = -67792 X3 + 1661 X2 - 1794.7 X + 899.38 from excell)
o	gv	1.2 E-5	Display vacuum gauge. (change to mbar)(equation)(if gauge is present) (p = 10^(1.667xU-d) (U volts) (d = 11.33 for mbar) (5 volts = 1.0E-3)
x	name (gr mabe)		Display vacuum ratio. (% time increasing 14 to 24w / hr) (function p316 watts or p310 amps)

x	name		Set Relay closed. (maybe inhibit cooler)(maybe for valve)
x	name		Set Relay open.
x	name		Return a log, time Vac system on, time cooler on, max values / whatever.
x	name		Alarm, some temp too high. (maybe several needed)
x	name		record max something is some time period.
?	prefix + name		(Should we use a prefix to allow any Pfeifer command pass thru)
?	uppercase		(always means Sunpower command pass thru)



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Vacuum Control Board Commands (Pfeiffer, passed through Feed Control Board) (prefix p) (RS-485)			
Item	Command	Response	Description (always lower case ?)
	p009 (1)	?	Acknowledge Errror.
x	p010 (0)	?	Set pumping station, turbo & diaphragm. (0 = on, 1 = off) Also acknowledge error.
x	p023 (0)	?	Set turbo. (0 = on, 1 = off)
x	p304	0	Display Excess Temp Electronics. (0 = no, 1 = yes)
x	p305	0	Display Excess Temp Turbo. (0 = no, 1 = yes)
x	p310	2.0	Display Turbo current consumption. (amps)
x	p311	?	Display Station operation hours.
	p316	22	Display Turbo power consumption. (watts)(77 max)(14 good)
	p326	34	Display Electronics control board temperature. (°C xx.x) (tenths ?)
x	p330	35	Display Turbo bottom temperature. (°C xx.x) (tenths ?)
	p342	39	Display Turbo bearing temperature. (°C xx.x) (tenths ?)
x	p346	31	Display Turbo motor temperature. (°C xx.x) (tenths ?)
	p398	90030	Display Turbo speed. (rpm)(90,000 max)
?	p794	?	Set extended parameter set. (0 = basic, 1 = extended set, like p710 etc)
?	p700	?	Set value run-up time. (min) (1 to 120)
x	p710 (14)	?	Set point diaphragm intermittent on. (based on turbo power p316)
x	p711 (24)	?	Set point diaphragm intermittent off. (based on turbo power p316)
	p340	1.2 E-4	display pressure from gauge. (only from Pfeiffer DCU) (p738 gauge type)

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Cooler Control Board Commands (Sunpower, passed through Feed Control Board) (via RS-232)			
Item	Command	Response	Description (always upper case ?)
	SET SSTOPM=1 *1	1	Set Soft Stop Mode. (0 = stop via SSTOP , 1 = stop via pin 5)
	SET SSTOP=1 *1	1	Set Soft Stop. (0 = restart motor, 1 = stop motor)
	SET MAX=210 *1	210	Set Max user defined power. (watts) Not PWOUT. Factory < 240.
	SET MIN=100 *1	80	Set Min user defined power. (watts) Not PWOUT. Factory > 70.
	SET PID=0 *1	000.00	Set control to power mode. (0 = power, 2 = temp)
	SET TTARGET=65 *1	065.00	Set cold-head temp target to number. (Kelvin) (risk if below 60)
	SET PWOUT=200 *1	200.00	Set power target to number. (watts) (while in PID mode 0)
o	TC	65	Display Temperature Coldhead. (°C xx.x) (risk if below 60)
	P	210	Display current power. (watts)
	E	120 70 120	Max allowable power. (watts) (varies with cold, usually 240) Min allowable power. (watts) (never less than 70) Current power. (watts) (usually < 240 during regulation)
	SHOW MX	80 210	Display Min & Max. (watts)
	STATE	list	Display status list of 14 commanded states.
	RESET=F	RESETTING	Resets all parameters to factory default.
	ERROR	000 001 000 010 000 100 001 000 010 000 100 000 100 001	Display error messages. (both LEDs are flashing repeatedly) 1 LED Flash, Over Current 2 LED Flashes, Jumper Error 3 LED Flashes, Serial Error (Baud 4800, None, Data 8, Stop 1) 4 LED Flashes, Non-volatile Memory Error 5 LED Flashes, Watchdog Error. 6 LED Flashes, Temperature Sensor Error. Multiple Errors, Over Current & Temp Sensor.
			*1 To display current value for most commands, type the command without an " =number". Example: SET TTARGET displays 065.00
			*2 PID means proportional, integral, differential, a control method.

Cryo Cooler Notes		
	Operation	Cooler should start within 11 seconds of power on for SSTOP=0.
	Conditions	Needs 48 VDC +/- ? Needs 6 watts minimum load. Needs 100 cu-ft/min air. achieve 1.0E-4 or better vacuum.
	LED on Red	Unit in cool down mode above Set Point Temp.

	LED on Green	Unit regulating within 0.5 Kelvin of Set Point Temp. (pin 4 high)
	Inhibit motor on/off	see feed control board relay. (maybe)(pin 10 at 5 VDC to pin 5 soft stop)