

# Slow Control to DAQ communication protocol

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The whole communication is, because of different systems (big/little endian), doing in STRINGS.

Table 1 shows the available command structure. All other tables are describing the back coming values.

**Table 1**

	command	prefix 1	prefix 2	comment	comment
1.)	run			not used	send UNIX sec back (up to now)
2.)	reset			not used	only a "#" is send back
3.)	control			getting actual stage position	stage position (table 1) is send back, after all movement has been stopped
4.)	position	x pos	y pos	x and y position [mm/10]	actual position, after stage stops [mm/10]
5.)	readout			Not defined	Not defined
6.)	readout	mod	1 .. 38	get data for module 1 to 38	sending parameters for module 1 to 38
7.)	readout	CERN		beam parameters	sending parameters of CERN beam

## 1.) run

not defined up to now  
 send by DAQ: run#  
 receive: <UNIX seconds>#

### examples:

send: run#  
 receive: 1147349593#

## 2.) reset

not defined up to now  
 send by DAQ: reset#  
 receive: #

### examples:

send: "reset#"  
 receive: "#"

## 3.) control

ask for the actual stage position. A result is coming back when stage is not moving  
 send by DAQ: control#  
 receive: <timestamp in UNIX sec> <x position of stage [mm/10]> <y position of stage [mm/10]> #

### examples:

*the actual position shall be displayed (x=123.5mm and y=60.8mm)*  
 send: "control#"  
 receive: "1147349593 1235 608#"

## 4.) position

force the stage to go to a specific position and wait until it reaches the position.  
 send by DAQ: position <x pos [mm/10]> <y pos [mm/10]> #  
 receive: <timestamp in UNIX sec> <x position of stage [mm/10]> <y position of stage [mm/10]> #

### examples:

*the stage has to move to x=123.5mm and y=60.8mm*

send: "position 1235 608#"
   
receive: "1147349593 1235 608#"

5.) readout  
not defined

6.) readout mod 1..38  
the actual status of modules 1 to 38 shall send from SC to DAQ  
send by DAQ readout mod <1 to 38>#  
receive <timestamp> <module no> <data 3> ... <data 35>#

All data are INTEGER, see *Table 2, Modules*

7.) readout CERN (not available up to now)  
getting data of CERN beam  
send by DAQ readout CERN#  
receive <timestamp> CERN <data 3> .. <data n>#

all data are INTEGER, see *Table 3, CERN*

**Table 2, Modules**

Data	Comment	unit
1	timestamp	UNIX sec
2	module No	1 .. 38
3	CMB temp 1	°C/100
4	CMB temp 2	°C/100
5	CMB temp 3	°C/100
6	CMB temp 4	°C/100
7	CMB temp 5	°C/100
8	CMB temp lower	°C/100
9	CMB temp upper	°C/100
10	CMB V_calib_at_U041	V/100
11	CMB power 12V	V/100
12	CMB REF_1.235V	V/100
13	CMB VLD_upper_CMB	V/100
14	CMB VLB upper	V/100
15	CMB VLB upper	V/100
16	CMB VLD for LED	V/100
17	CMB 10V bias	V/100
18	CMB W calib at U051	V/100
19	CMB LED settings	0 .. 65535
20	CMB width	0 .. 255
21	CMB height	0 .. 255
22	CMB 12V extern	V/100
23	CMB 12V current extern	V/100
24	HBAB temp top 1	°C/100
25	HBAB temp top 2	°C/100
26	HBAB temp bot 1	°C/100
27	HBAB temp bot 2	°C/100
28	HBAB HV Volt top	V/100
29	HBAB HV Volt bot	V/100
30	HBAB HV Cur top	A/100

31	HBAB HV Cur bot	A/100
32	HBAB LV Volt top	V/100
33	HBAB LV Volt bot	V/100
34	HBAB LV Cur top	A/100
35	HBAB LV Cur bot	A/100

**Table 3, CERN**

Not available up to now !!		