# Draft: Controls suffix naming guide CLARA/VELA

## Document history

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| --- | --- | --- | --- |
| Version | Author | Amendment | Date |
| 0.1 | RFC | Initial draft | 03/01/2016 (??) |
| 0.2 | DJS | Ammendments | 13-02-2017 |
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|  |  |  |  |

## Notes:

Get: to read a value from a PV

Set: to put a value to a PV.

Anything marked VM is for the simulation mode only.

The following parameters are what have been used for VELA. Some clara systems are already different, and it may not be possible to exactly replicatet he functionality.

## Magnets

|  |  |  |
| --- | --- | --- |
| SI | Double  Amps | Set Current |
| RI | Double  Amps | Get Current |
| Sta | Enum | Get status:   |  |  | | --- | --- | | 0 | OFF | | 1 | ON | | 2 | TIMING | | 3 | UNPLUGGED | | 4 | UNDEFINED | | 5 | ON\_FAULT | | 6 | OFFLINE | |

### Magnet PSU

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| On | Enum | Set: Turn on PSU   |  |  | | --- | --- | | 0 | OFF | | 1 | ON | |
| Off | Enum | Set: Turn off PSU   |  |  | | --- | --- | | 0 | OFF | | 1 | ON | |
| Rst | Enum | Set: Reset PLC   |  |  | | --- | --- | | 0 | RESET | | 1 | RESET | |
| RIRAN | Double  VM only | Set Rnd. For VM only. Percent to randomise the PSU. Default at 5% |
| Cmi | MMBI  DIRECT  VM set | Set: 16 flags. This is set from the PLC on VELA or by hand in the VM. In the VM the default is all interlocks are GOOD and equals 65535. Ilk<n> reads these flags |
| Ilk<n> | <n> 1- 16  BI ENUM | Get: Interlock status, see Cmi above   |  |  | | --- | --- | | 0 | BAD | | 1 | GOOD | |

### Magnet Polarity – NOT all magnets have this,

|  |  |  |
| --- | --- | --- |
| PR<A,B>N:<On,Off> | Enum | Set:  Normal polarity “On”. Only changes when RI<0.5 amps  Reverse polarity “Sta” will be set to off. This is identical to reverse “Off”  Normal polarity “Off”. Only changes when RI<0.5 amps  Reverse polarity “Sta” will be set to off. This is identical to reverse “On” |
| PR<A,B>R:<On,Off> | Enum | Set:  Reverse polarity “On”. Only changes when RI<0.5 amps  Normal polarity Sta will be set to off. This is identical to Noraml “Off”  Reverse polarity “Off”. Only changes when RI<0.5 amps  Normal polarity Sta will be set to off. This is identical to Normal “On” |
| PR<A,B>N:Sta | Enum | Get:  Normal polarity on   |  |  | | --- | --- | | 0 | OFF | | 1 | ON | |
| PR<A,B>R:Sta | Enum | Get:  Reverse polarity on   |  |  | | --- | --- | | 0 | OFF | | 1 | ON | |

## BPMs

|  |  |  |
| --- | --- | --- |
| X | Waveform  Double  Size 4101  Units mm | We’ve requested this be changed, so x and y are just numbers  Please can the virtual machine can randomise these |
| Y | Waveform  Double  Size 4101  Units mm | We’ve requested this be changed, so x and y are just numbers |
| DATA:BV2 | Subarray  Size 32773 | We’ve requested this be changed, so the array is just 9 numbers  Currently we use it as:  The pick up voltages can be read from  caget -#9 EBT-INJ-DIA-BPMC-[XX]:DATA:B2V.VALA  this #9 sets number of columns  This returns a string followed by some numbers  0 - number of columns  1 - number of turns  2 - first pickup voltage  3 - second pickup voltage  4 - "c1"  5 - pedestal 1 (to be subtracted from first and second pickup voltages)  6 - third pickup voltage  7 - fourth pickup voltage  8 - "c2"  9 - pedestal 2 (to be subtracted from third and fourth pickup voltages)  So 2,3,5,6,7,9 ideally would be constantly updating in the VM (i.e. have some random noise. |

LONGIN

Read:

RA1

RA2

RD1

RD2

LONGOUT

Write:

SA1

SA2

SD1

SD2

## Camera

For the vela cameras there was a black level and gain paramers. Also, there was a camera IOC so we could turn the cameras on/off and find out which cameras were running. We can run 4 cameras simultaneously, (practically we only need 2 running simultaneously)

Waveform, size 1447980, double

ArrayData

Not sure what this one is?

Waveform, size 1000, double

DistribX

DistribY

These numbers are calculated by the AP group.

Would it be possible to have some images in EPICS that we can use as backgrounds ?? that would be very useful.

DOUBLE

X

Y

SigmaX

SigmaY

Sigma\_XY – we also look at the x-y correlation

## YAG

### Simple

### INJ: 6,7,8,9 BA2:1

Sta

On

Off

Rst

|  |  |
| --- | --- |
| Ilk<n> | <n> 1- 2  BI ENUM |

### Complex Global

### INJ: 1,2

Setters:

STOP

V/H: MABS(out, Yag, slit, RF, 50u Slit)

Getters:

V/H: PROT01

V/H: PROT02

V/H: RPWRLOSS

V/H: RPOS (mm)

PROT03 Position error (for the VM these should always be good)

PROT05 Home error (for the VM these should always be good)

### Complex: Full Controls V/H

STA🡪 Seems to be directly connected to the PLC. Get info from EDM, (for the VM machine we need the “Trajectory in Progress” bit to respond as expected when a drive Is moving

RST🡪 Reset this axis

HOM🡪Home this axis

STP🡪 Stop this axis

## Scope – we hope this is temporary and long term we will have charge measuring devices digitised and fed into EPICS without a scope.

Double:

P1, P2, P3, P4

TIMEBASE

VRANGE

Waveform, size 2002, Double:

TR1, TR2, TR3, TR4

## LLRF-RF – At the very least for the Virtual Machine we need and Amplitude (A) and Phi (phase)

(this is what was made for VELA):

Aset:RD; DBR\_DOUBLE;

Phi:WR; DBR\_DOUBLE;

Aset:WR; DBR\_LONG;

## Photo-Injector Laser Shutters

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| On | Enum | Set: Open   |  |  | | --- | --- | | 0 | OFF | | 1 | ON | |
| Off | Enum | Set: Close   |  |  | | --- | --- | | 0 | OFF | | 1 | ON | |

Sta: On, Off, Moving (ERROR?)

|  |  |
| --- | --- |
| Ilk<n> | <n> 1- 4  BI ENUM |

## Laser transport systems (TDB)

We don’t know exactly what (if) there will be anything here. At the very least I expect be able to move a mirror in two directions, and move a polariser to set the charge.

## Dummy Variables

For prototyping, etc. 10 ints, and 10 doubles (SAY?)