

EPICS Beamline PVs with APS-U

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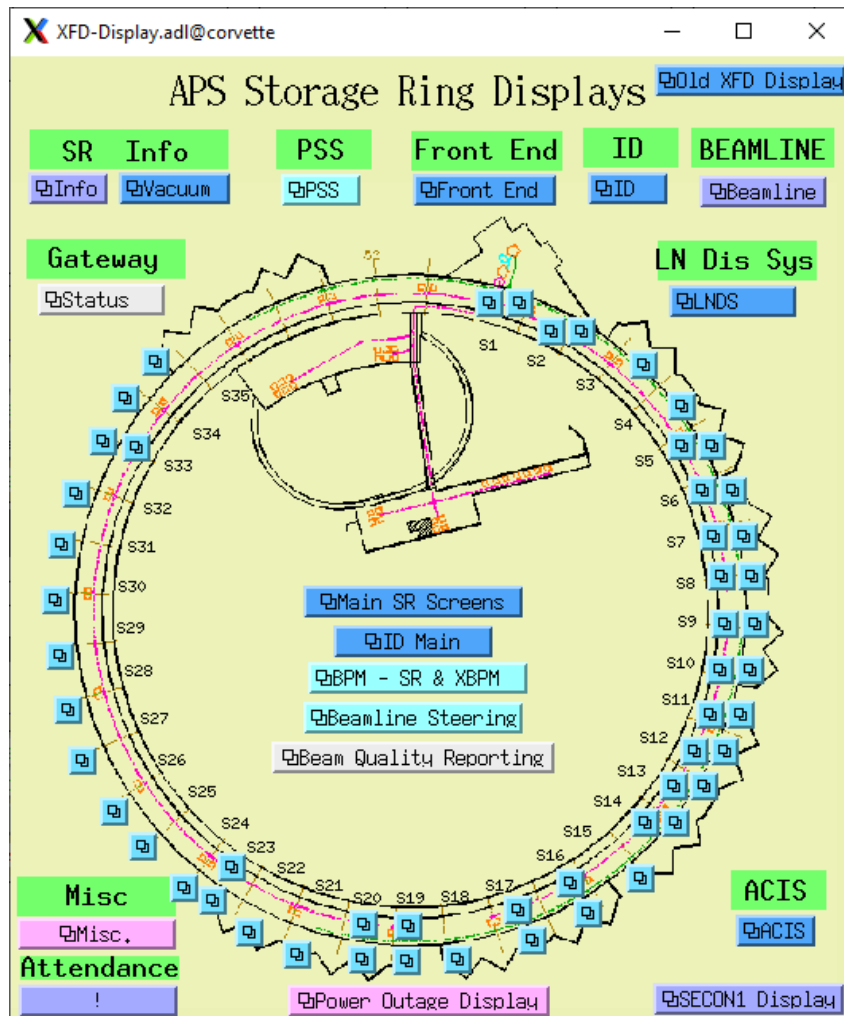
This document describes how to locate the relevant beamline EPICS medm screens that work with APS-U. Once the screens for a beamline are located and running it is easy to find the names of the EPICS Process Variables (PVs) by right clicking on a blank area on the display, selecting “PV Info”, and then left clicking on the widget with the PV of interest.

Top-level Screen XFD-Display.adl

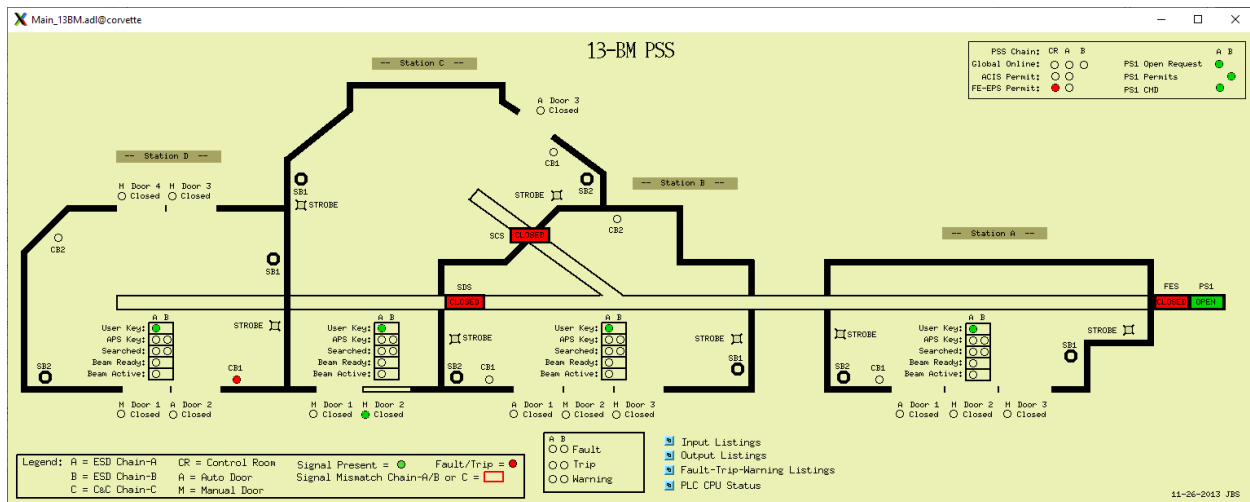
The top-level screen is called XFD-Display.adl. It can be started by running the following script on a Linux machine with medm installed.

```
/APSShare/adlsys/xfd-display
```

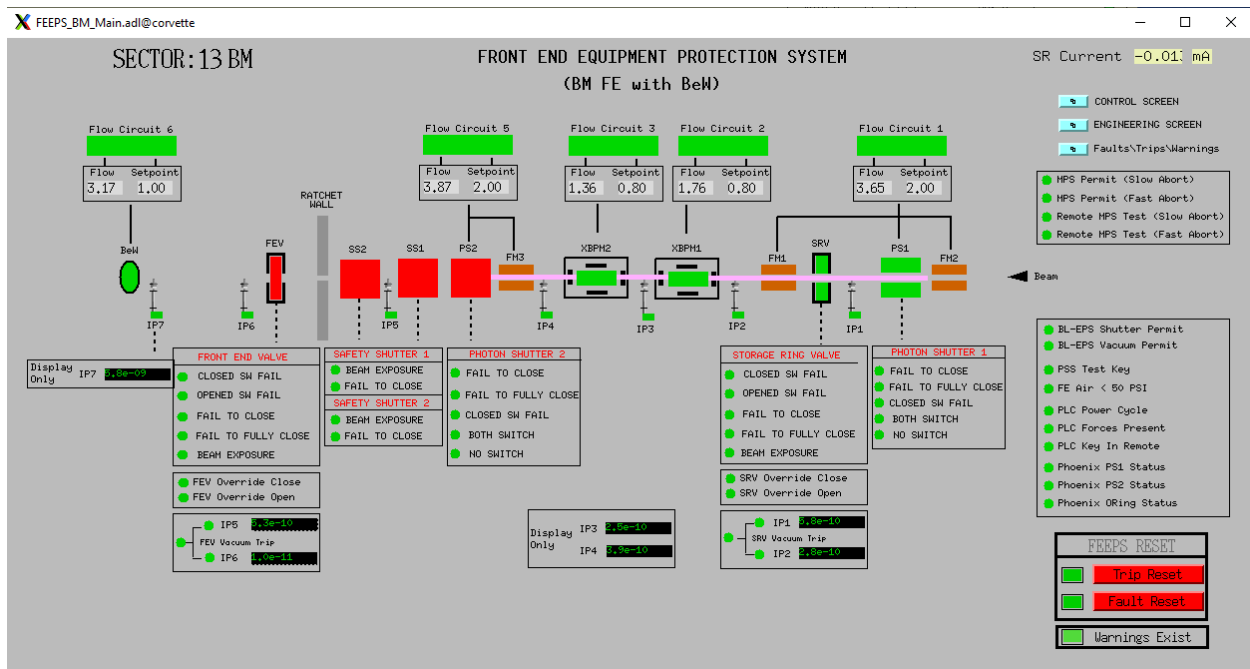
That brings up this screen:



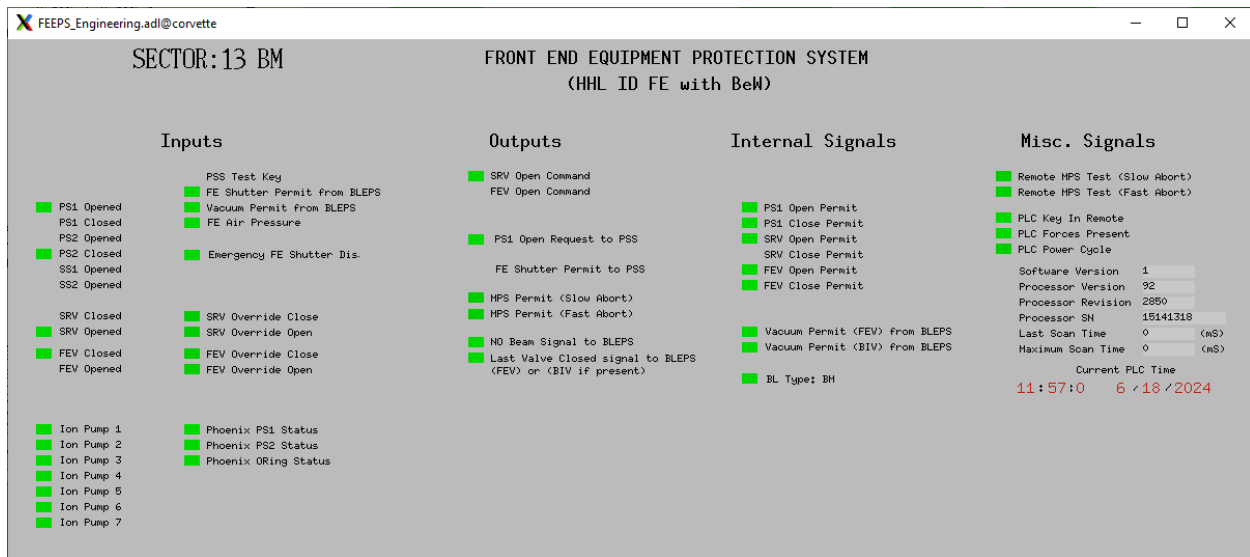
Clicking on the left S13 related display button can bring up the 13-BM PSS screen:



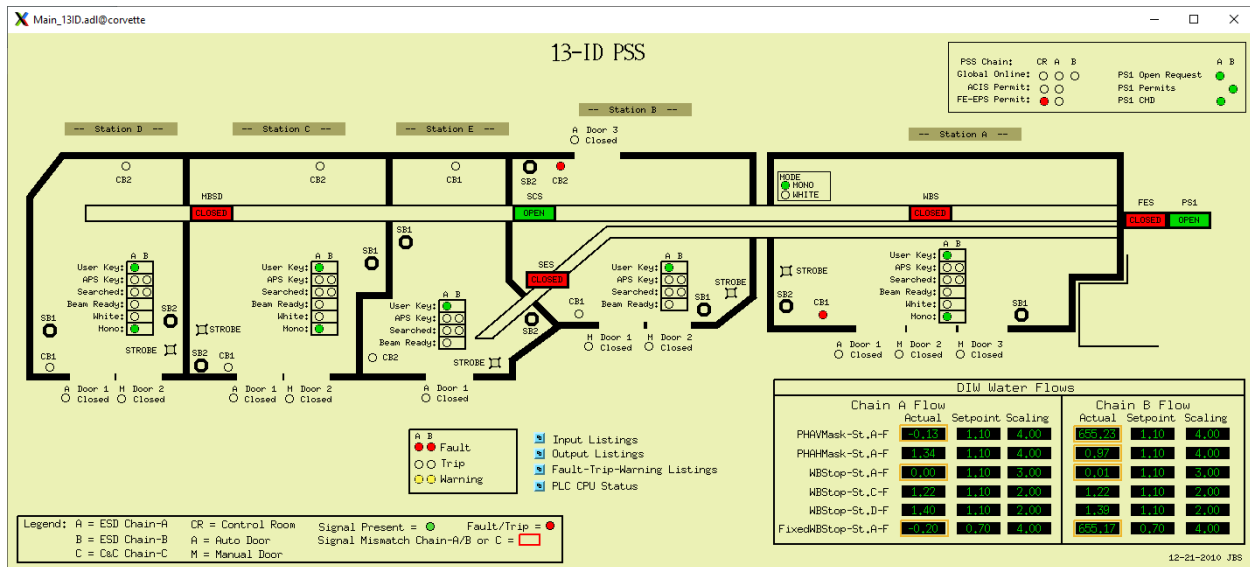
Clicking on the left S13 related display button can bring up the 13-BM FEEPS screen.



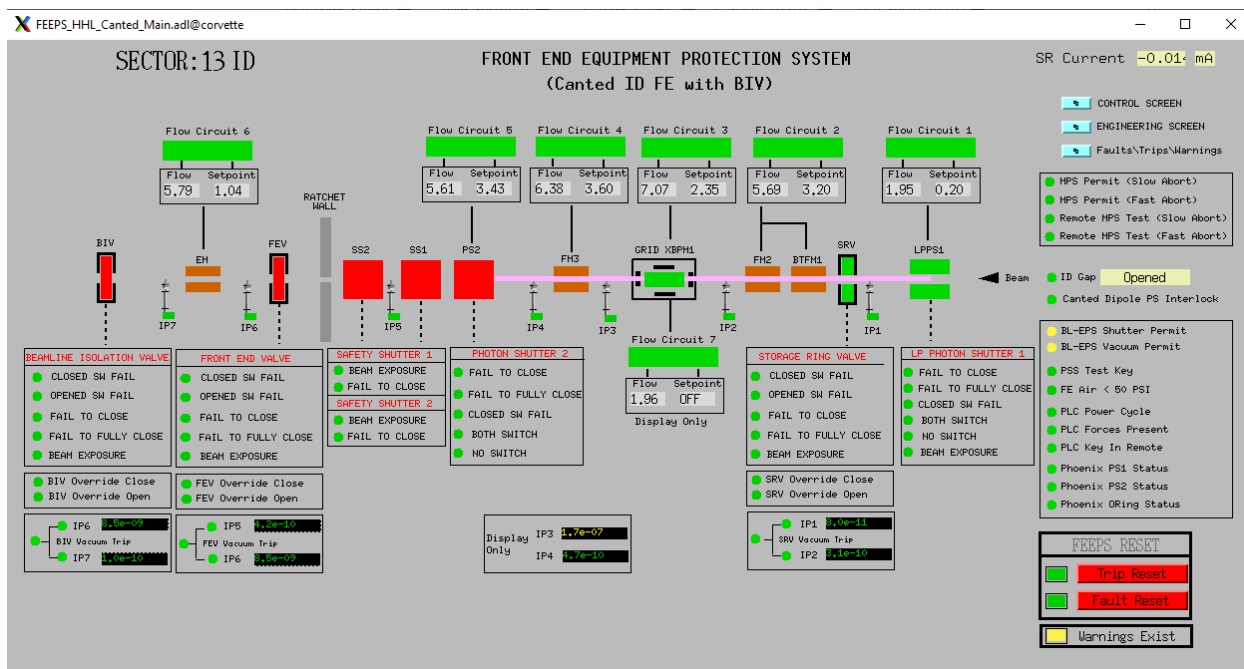
From that screen we can bring up the FEEPS Engineering screen:



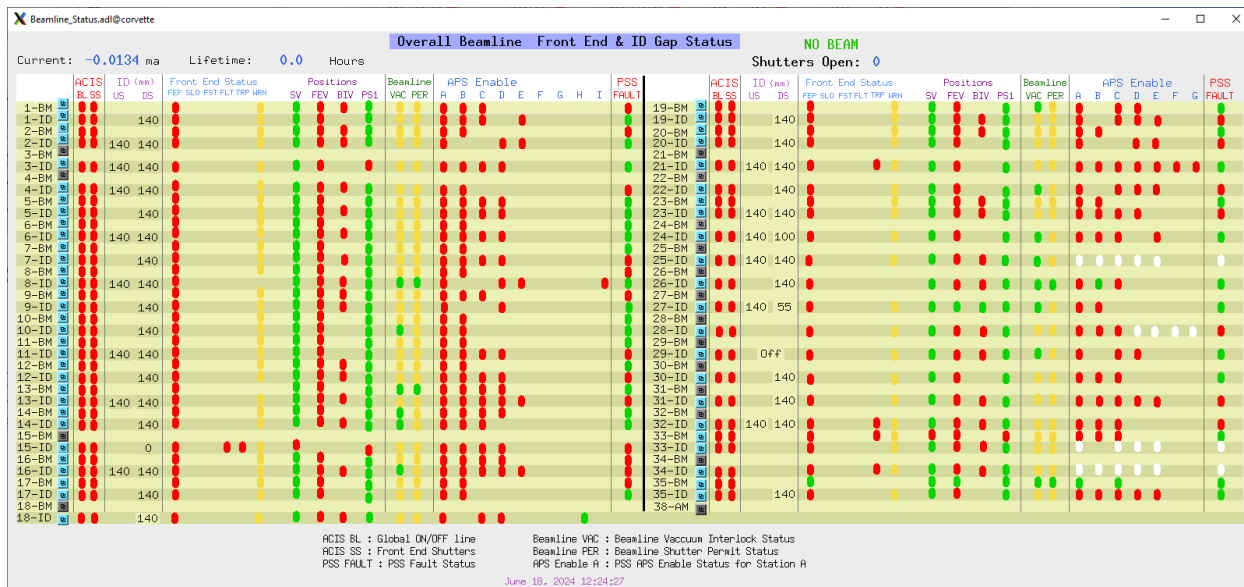
Clicking on the right S13 related display button on XFD-Display can bring up the 13-ID PSS screen:



Clicking on the right S13 related display button can bring up the 13-ID FEEPS screen:



Clicking on XFD-Display/Beamline button shows the status of all front-ends and ID gaps:



SR Operating Mode : NO BEAM

Global Commands -> Global

Set Average Gap

User Mode

BI Oper. Limit

Set Mode

Sector

Min. (Safety) Gap (mm)

Max. ID Gap (mm)

Gap (mm)

START Moving

STOP All Motion

Sector	Min. (Safety) Gap (mm)	Max. ID Gap (mm)	Gap (mm)
01US	9.000	140.000	8.500
01DS	9.000	140.000	151.000
02US	9.000	140.000	8.500
02DS	9.000	140.000	151.000
03US	9.000	140.000	8.500
03DS	9.000	140.000	151.000
04US	9.500	140.000	9.000
04DS	9.500	140.000	151.000
05US	9.000	90.000	9.000
05DS	9.000	140.000	151.000
06US	9.000	140.000	8.500
06DS	9.000	140.000	151.000
07US	9.000	140.000	8.500
07DS	9.000	140.000	151.000
08US	9.000	140.000	8.500
08DS	9.000	140.000	151.000
09US	9.000	140.000	8.500
09DS	9.000	140.000	151.000
10US	10.500	140.000	10.000
10DS	10.500	140.000	151.000
11US	9.500	140.000	9.000
11DS	9.500	140.000	151.000
12US	9.000	140.000	8.500
12DS	9.000	140.000	151.000
13US	10.500	140.000	10.000
13DS	9.000	140.000	8.500
14US	8.000	140.000	8.000
14DS	8.000	140.000	151.000
15US	8.700	140.000	8.700
15DS	9.000	140.000	8.300
16US	9.000	140.000	8.300
16DS	10.500	140.000	10.000
17US	10.500	140.000	10.000
17DS	10.500	140.000	151.000
18US	10.500	140.000	10.000
18DS	10.500	140.000	151.000

Global Commands -> Global

Set Average Gap

User Mode

BI Oper. Limit

Set Mode

Sector

Min. (Safety) Gap (mm)

Max. ID Gap (mm)

Gap (mm)

START Moving

STOP All Motion

Sector	Min. (Safety) Gap (mm)	Max. ID Gap (mm)	Gap (mm)
19US	9.000	140.000	8.500
19DS	9.000	140.000	151.000
20US	9.000	140.000	8.400
20DS	9.000	140.000	151.000
21US	9.500	140.000	9.000
21DS	9.000	140.000	8.500
22US	10.500	140.000	10.000
22DS	10.500	140.000	10.000
23US	10.500	140.000	10.000
23DS	9.500	140.000	9.000
24US	9.500	140.000	9.000
24DS	9.000	100.000	8.500
25US	9.000	30.000	8.500
25DS	9.000	140.000	8.500
26US	9.000	140.000	8.500
26DS	9.000	140.000	8.500
27US	24.999	55.000	8.500
27DS	24.999	55.000	55.000
28US			
28DS			
29US			
29DS			
30US			
30DS	9.000	140.000	8.500
31US	10.500	140.000	10.000
31DS	10.500	140.000	10.000
32US	9.000	140.000	8.500
32DS	9.000	140.000	8.500
33US			
33DS	8.500	140.000	8.500
34US	9.000	149.000	8.500
34DS	8.500	140.000	8.500
35US	8.500	140.000	8.500
35DS	9.000	140.000	8.500

Selecting the 13US related display on the above screen brings up control of the sector 13 upstream undulator:

newIDControl_Planar.adl... — □ ×

ID Gap Control

S13ID-UpStream

Device:APS33#31S Magnet:APS33#31S
Software Version:1.04-4.06

Avg	139.998	10.346
Current		
Tpr	-0.003	0.000

Avg	140.000	140.000
Desired		
Tpr	0.000	-nan

Gap (mm) Energy (keV)

Optimum Taper: 0.000

Start **Stop**

Access Mode : Machine Physics

Machine Physics ▾

Harmonic Select (1-7): 1

Gap Deadband (micron): 0

BL Comm. Limit (mm): 10.500

Total Power: 0 W /200ma

Status Messages:

Beamline Limit Value OK

Energy <=> Gap Out of Range!!

ID Info: !

Similarly selecting 13DS brings up control of the sector 13 downstream undulator:

newIDControl_Planar.adl... — □ ×

ID Gap Control

S13ID-DownStream

Device: APS27#3S Magnet: APS27#3S
Software Version: 1.04-4.06

Avg	140.001	12.646
Current		
Tpr	-0.008	0.000

Avg	140.000	140.000
Desired		
Tpr	0.000	-nan

Gap (mm) Energy (keV)

Optimum Taper: 0.000

Start **Stop**

Access Mode : Machine Physics

Machine Physics ▾

Harmonic Select (1-7): 1

Gap Deadband (micron): 0

Bl. Comm. Limit (mm): 9.000

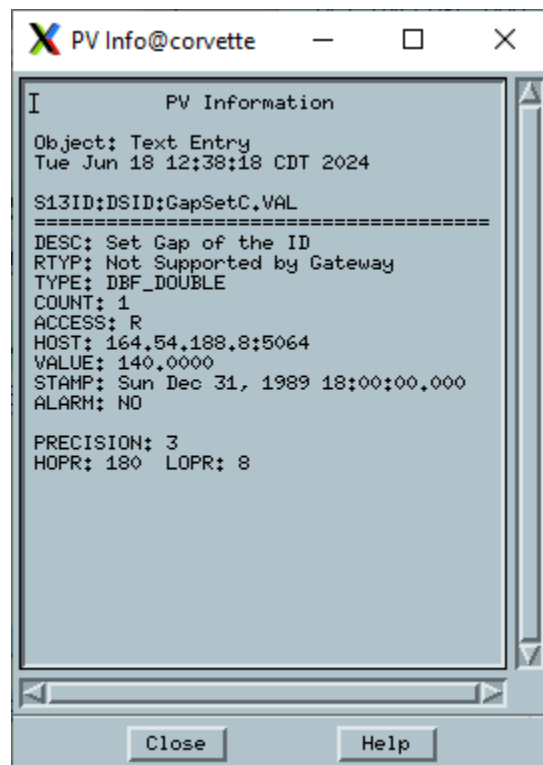
Total Power: 0 W /200ma

Status Messages:

Beamline Limit Value OK
Energy <=> Gap Out of Range!!

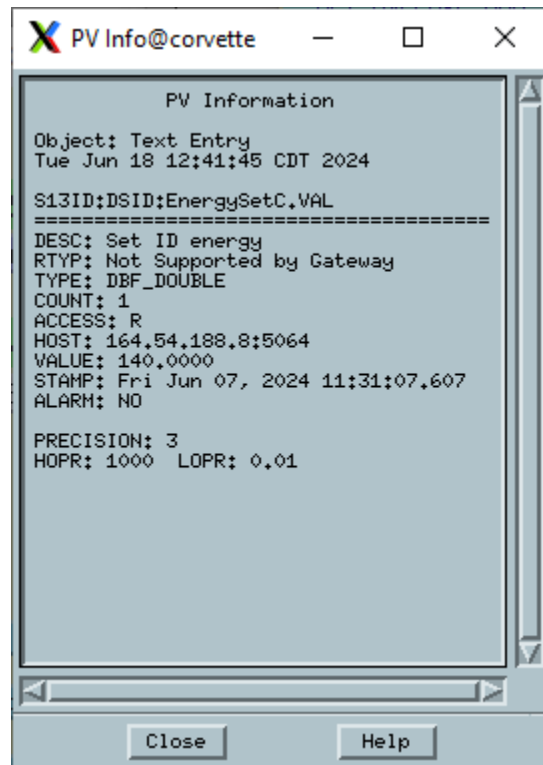
ID Info: !

Selecting PV Info for the average gap control value (140 in blue above) brings up this screen.



This shows that the name of the PV for the average gap is S13ID:DSID:GapSetC.VAL. That is the PV one needs to write to control the gap.

Similarly, selecting PV for the Energy control (also 140 in blue above) brings up this screen:



This shows that the name of the PV for the average gap is S13ID:DSID:EnergySetC.VAL. That is the PV one needs to write to control the energy.

The “BPM – SR & XBPM” in the center of XFD-Display can bring up this BM XPM display:

BM Vertical Beam Position(um)			
Location*	PS1 Status*	P1 Position*	P2 Position*
BM 1	Open	-955,096 um	-1357,420 um
BM 2	Open	415,983 um	-1,446 um
BM 3	no beamline		
BM 4	no beamline		
BM 5	Open	622,309 um	720,306 um
BM 6	Open	-397,617 um	-708,585 um
BM 7	Open	1087,231 um	1504,329 um
BM 8	Open	-960,485 um	185,200 um
BM 9	Open	174,521 um	-505,026 um
BM 10	Open	-428,931 um	1291,641 um
BM 11	Open	737,468 um	808,860 um
BM 12	Open	746,238 um	966,507 um
BM 13	Open	861,284 um	975,185 um
BM 14	Open	-508,136 um	-559,190 um
BM 15	no beamline		
BM 16	Open	-263,946 um	-516,455 um
BM 17	Open	-264,766 um	7,494 um
BM 18	no beamline		
BM 19	Open	1099,729 um	1444,116 um
BM 20	Open	-784,453 um	-921,710 um
BM 21	no beamline		
BM 22	no beamline		
BM 23	Open	-84,441 um	-266,089 um
BM 24	no beamline		
BM 25	no beamline		
BM 26	no beamline		
BM 27	no beamline	SR DCCT(mA) 27.2139	
BM 28	no beamline		
BM 29	no beamline		
BM 30	no beamline		
BM 31	no beamline		
BM 32	no beamline		
BM 33	Closed	2664,879 um	2175,965 um
BM 34	no beamline		
BM 35	Open	1050,245 um	8239,998 um

Clicking on P1 or P2 in the BM 13 fields above opens this display:

xbpm2bm.adl@corvette

S13BMFE-XBPM: Details

Slow PV

tetras

XBPM	P1	P2
Y(um)	561.141	437.985
Upper Blade(nA)	103	36
Lower Blade(nA)	29	18
CalFactor(um)	1000.000	1290.000
Offset(um)	0.000	0.000
Z(m)	15.403	19.813

The “BPM – SR & XBPM” in the center of XFD-Display can bring up this ID XPM display:

ID XBPM Horizontal & Vertical Position Data/Configuration															SR DCCT		5,6252		mA	
Location	Gaps		DS	H-Position	V-Position	Sum Signal	H-Position	V-Position	Sum Signal	PSI Status	H-Position	V-Position	H-Position	V-Position						
	US																			
ID 1		140,000					1315,137	1233,971	um 0,466	Open			-370,623	um 22,446	ID 1					
ID 2	135,099	140,000		346,602	um 453,414	um 10,415	-504,578	-242,197	um 16,372	Open	482,556	um 821,872	um -271,919	um -637,614	ID 2					
ID 3	140,000	140,000					67,903	3196,739	um 0,234	Closed			-343,439	um -332,141	ID 3					
ID 4	140,000	140,000					2964,260	-94,658	um -0,264	Open			-5227,616	um -198,007	ID 4					
ID 5		140,000					279442,434	68120,194	um 0,001	Open			-9,830	um 449,715	ID 5					
ID 6	140,000	140,000		275,204	um -265,944	um 7,731	-103,385	354,258	um 17,056	Open	402,883	um 147,577	um 114,565	um 666,071	ID 6					
ID 7		140,000					582,034	2275,632	um 0,161	Open			2386,137	um 232,168	ID 7					
ID 8	140,000	140,000					-705,366	-19886,448	um 0,062	Open			-205,356	um -423,354	ID 8					
ID 9		140,000					141,936	-224,982	um 0,618	Open			161,968	um 187,149	ID 9					
ID 10		140,000					520,944	-3686,740	um 0,410	Open			2557,150	um 317,085	ID 10					
ID 11	140,000	140,000		12,936	um 184,016	um 8,663	-26,744	437,428	um 25,315	Open	333,268	um 422,343	um -71,225	um 946,583	ID 11					
ID 12	140,000	140,000		714,828	um -344,970	um 9,532	-17,591	486,931	um 25,299	Open	-532,961	um -289,989	um -1,704	um 970,596	ID 12					
ID 13	135,099	140,000		466,638	um -462,600	um 6,403	-195,395	488,383	um 22,557	Open	-380,787	um 36,310	um 215,749	um 1081,316	ID 13					
ID 14		140,000					26,793	5210,945	um -0,490	Open			-1131,696	um -760,087	ID 14					
ID 15	0,000	0,000		-9028,290	um -35576,658	um -0,073	-581,866	32,002	um 0,642	Closed	536,518	um -769,937	um -243,002	um 249,426	ID 15					
ID 16	135,099	135,099		244,033	um -441,663	um 11,566	-149,032	275,590	um 18,078	Open	-974,822	um -788,835	um -30,221	um 820,860	ID 16					
ID 17		140,000					369,785	1147,368	um 0,673	Open			-8685,044	um -1869,331	ID 17					
ID 18		140,000					47,950	-8981,543	um 0,454	Open			9,303	um -222,864	ID 18					
ID 19	140,000	140,000					-16383,353	37121,151	um 0,014	Open			5341,051	um 88,995	ID 19					
ID 20	140,000	140,000					8960,007	-57326,575	um -0,072	Open			1802,669	um -932,619	ID 20					
ID 21	140,000	140,000		36,702	um -413,509	um 11,747	-136,301	376,246	um 22,202	Open	-917,541	um -764,108	um -0,530	um 832,841	ID 21					
ID 22	140,000	135,099		162,720	um -484,117	um 8,772	-284,409	443,228	um 27,394	Open	-169,402	um -341,800	um 0,843	um 913,502	ID 22					
ID 23	140,000	135,099		241,621	um -529,055	um 5,482	50,882	199,953	um 12,424	Open	316,260	um -279,250	um 31,845	um 399,321	ID 23					
ID 24	135,099	135,099		70,703	um -336,855	um 11,084	-76,014	461,380	um 23,881	Open	-61,816	um 22,717	um 82,239	um 962,388	ID 24					
ID 25	80,000	80,000		199,703	um -219,904	um 8,220	-106,739	453,087	um 22,290	Open	292,726	um 103,044	um -174,780	um 269,410	ID 25					
ID 26	140,000	140,000					1562,978	6130,703	um 0,424	Open			6,421	um -1184,891	ID 26					
ID 27	140,000	80,000					753,310	19941,557	um 0,103	Open			-10290,611	um -110,560	ID 27					
ID 28				65,236	um 50,152	um 22,584	113,762	-756,581	um 1,873	Open	-173,585	um 86,931	um -277,320	um -242,782	ID 28					
ID 29							-3459,743	-68,871	um 3,398	Open			-8981,016	um -324,007	ID 29					
ID 30		140,000					-228,998	9348,208	um -0,356	Open			-41,842	um -797,456	ID 30					
ID 31	140,000	140,000		339,997	um -326,761	um 10,681	-230,691	219,885	um 14,924	Open	183,642	um -416,969	um -309,769	um 475,559	ID 31					
ID 32	140,000	140,000		474,048	um 21,393	um 7,480	-113,158	252,806	um 12,493	Open	339,316	um -122,807	um -168,596	um 663,599	ID 32					
ID 33		0,000					-2236,818	-339,712	um 2,678	Open			178,005	um 3760,567	ID 33					
ID 34	140,000	140,000		14,886	um 714,352	um 3,671	18,838	-90,685	um 10,254	Open	133,660	um 725,168	um -229,917	um 82,467	ID 34					
ID 35		140,000					126,457	4469,171	um 0,727	Open			-1454,014	um 225,709	ID 35					

Clicking on the ID 13 number fields above opens displays like this:

position.adl@corvette

Beam Positions(S13IDFE-XBPM:Plus:)

	Position(um)	Delta/Sum	CalFactor	Offset		
X1	727.524	0.146	5000.000	0.000	Filtered PV	
X2	615.619	0.123	5000.000	0.000	Machine Study	
Y1	-464.358	-0.929	500.000	0.000	calibration	
Y2	-465.892	-0.932	500.000	0.000	Background	
X	618.549	Weight	Auto	0.026	0.500	Normalization
			Manual			
Y	-465.035	Weight	Auto	0.559	0.500	TetraMM
			Manual			

The “BPM – SR & XBPM” in the center of XFD-Display can bring up this BM source point display:

BMSrcPointsOverview.adl@corvette

BM Calculated Source Point

X		Y		In Use		X		Y		In Use	
Position (mm)	Angle (microrad)	Position (mm)	Angle (microrad)	B:P5	B:P6	Position (mm)	Angle (microrad)	Position (mm)	Angle (microrad)	B:P5	B:P6
BM1	0.11581	0.3	-0.01165	0.2		BM21					
BM2	0.01420	0.1	0.01424	0.1		BM22					
BM3						BM23	-0.00477	0.1	0.03361	-0.1	
BM4						BM24					
BM5	-0.03966	0.2	-0.02557	-0.1		BM25					
BM6	-0.00660	0.1	0.06246	0.1		BM26					
BM7	-0.01224	-0.0	0.04354	0.2		BM27					
BM8	-0.01361	-0.0	0.06116	0.1		BM28					
BM9	-0.09295	0.1	0.02760	0.2		BM29					
BM10	-0.06715	-0.1	0.07505	0.0		BM30					
BM11	-0.08688	0.1	0.00479	0.1		BM31					
BM12	-0.07373	-0.1	-0.06396	0.1							
BM13	-0.02297	-0.0	0.01846	0.2		BM33	-0.01752	-0.0	0.03191	-0.0	
BM14	-0.05087	-0.1	0.05461	0.2		BM35	-0.02492	-0.0	0.41113	0.8	
BM16	-0.03474	0.2	0.02383	0.1							
BM17	0.00735	0.1	0.00710	0.1							
BM19	0.01398	0.1	0.05429	0.0							
BM20	-0.06545	0.1	-0.02129	0.1							

Computations based on
B:P6/P5 RF Bpm's

Status Legend

● RF BPM In Use

□ Input PV Invalid

The “BPM – SR & XBPM” in the center of XFD-Display can bring up this ID source point display:

IDSrcPointsOverview.adl@corvette															
ID Calculated Source Point															
	X		Y			X		Y			X		Y		
	Position	Angle	Position	Angle		Position	Angle	Position	Angle		Position	Angle	Position	Angle	
	(mm)	(microrad)	(mm)	(microrad)	A:P1	(mm)	(microrad)	(mm)	(microrad)	A:P1	(mm)	(microrad)	(mm)	(microrad)	A:P1
					In Use					In Use					In Use
					A:P0					A:P0					A:P0
					B:P0					B:P0					B:P0
					B:P1					B:P1					B:P1
ID1	0.03392	2.6	0.00903	-2.7	●										
ID2	0.01955	-4.7	0.04724	15.8											
ID3	0.00707	-3.6	0.00337	4.8											
ID4	0.01558	2.8	-0.01353	1.1											
ID5	0.01011	4.3	-0.00564	1.6											
ID6	0.02059	-6.1	-0.00491	-3.3											
ID7	0.00122	-1.6	-0.00339	4.0											
ID8	0.04256	1.5	-0.00671	10.6											
ID9	0.00204	-6.3	-0.02373	-0.6											
ID10	0.00659	-1.8	-0.00968	-5.8											
ID11	0.03425	-10.2	-0.03394	-0.8											
ID12	0.00107	5.4	0.01515	7.1											
ID13	0.00798	-11.5	0.00869	-6.4											
ID14	0.00767	8.6	0.01586	8.6											
ID15	0.01754	-3.4	0.01537	5.0											
ID16	0.03245	1.1	-0.03124	2.2											
ID17	0.03322	1.1	0.01627	-3.7											
ID18	0.01858	-6.0	-0.02348	-1.1											
ID19	0.00863	0.6	-0.03652	-6.2											
ID20	0.01046	-4.9	0.00462	9.5											
ID21	0.00784	-1.3	0.01575	-0.7											
ID22	0.02321	-0.9	-0.00757	4.4											
ID23	0.02494	-1.4	-0.02075	-6.7											
ID24	0.00821	-1.4	0.01019	-2.5											
ID25	0.01022	24.9	-0.00747	-9.4											
ID26	0.01660	-4.5	0.00341	-1.8											
ID27	0.02572	4.4	0.01394	14.3											
ID28	0.00624	-0.7	-0.00149	-10.7											
ID29	0.00534	25.2	0.00637	6.7											
ID30	0.01627	1.7	-0.00280	0.4											
ID31	0.00468	-0.9	-0.01130	-1.3											
ID32	0.04048	-0.4	0.02349	6.5											
ID33	0.00875	-3.9	0.00771	3.2											
ID34	0.00461	-1.9	0.05376	-3.8											
ID35	0.04171	-3.8	0.01319	3.3											

Computations based on P0 or P1 RF Bpm's

Status Legend

- RF BPM In Use
- Input PV Invalid