Naming Convention Original

LCLS EPICS Record Naming Convention (First Proposal - No Longer in Effect)

EPICS Record Naming Convention

This page describes the EPICS database record naming convention for all LCLS records.

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- LCLS Collaboration EPICS Record Naming Convention, Apr 5, 2005

Description

In order to limit the number of alias names required, naming is used that allows LCLS PVs to be used by SLC control system CA clients and also provides for simple translation from SLC control system names to PV names by the SLC-aware IOC. These names may also fit in more nicely with existing SLAC documentation tools.

The [LCLS Linac Current Beamline Design Optics Files|http://www-ssrl.slac.stanford.edu/lcls/linac/optics] is a good reference when creating device names. The current primary, location, units for optics elements in the injector and sector 21 is here. The ["How to Add an EPICS Process Variable" |http://www.slac.stanford.edu/grp/cd/soft/share/slaconly/how-to/add_pv.html] for ESD IOC applications is a good reference. A similar page for LCLS IOC applications needs to be written.

The SLC-aware IOC naming conventions are VERY strict, stricter than those for the SLC CA clients, and so drive the requirements:

PRIM:LOCA:UNIT:ATTRIBUTE

- 1. All record names consist of exactly 4 parts separated by colons.
- 2. All upper-case.
- First part (PRIM) indicates device type and is 1 to 4 characters. For records on SLC-aware IOCs that are used by the SLC control system, PRIM must be one of the SLC control system primaries.
- 4. Second part (LOCA) is location and must be 4 characters, no more, no less. The first two characters must be non-numeric and the last two characters must be numeric.
- 5. Third part (UNIT) is the device "unit" integer number between 1 and 9999 (with no leading zeros) and is unique for the specified PRIM and LOCA. It's like a simple serial number. For "one-of" items, use 1. When 2 values are needed for a unit number (ie, device 3 on girder 2), use a zero to separate (ie, 203). For devices on girders, the first part of the unit number is the girder number for the sector and the second part is the count of that device on the girder. The preference is for unit numbers no greater than 3 characters.
- 6. Fourth part (ATTRIBUTE) is the device attribute and is 1 to 12 characters. In the SLC control system, attributes are known as secondaries.

IOC Micro Name List

Micro names for the existing SLC control system are listed in microname.dat file. All SLC-aware IOCs must be assigned a unique micro name which is then added to this file using the ESD ["Adding a Micro to the SLC Control System"|http://mccdev.slac.stanford.edu/doc\$database/how_to_add_micro. mem] procedure. A micro name is used as the location (LOCA) name in a record if the record is IOC-specific. Micro names for IOCs are listed in the LCLS production IOCs and LCLS development IOCs.

Record Name Examples

XCOR:LI21:302:BACT

X Corrector, LINAC sector 21, IOC micro LM21, corrector 2 on girder 3 in sector 21, readback of magnetic field (ACT stands for actual)

BPMS:LI21:201:S

BPM, LINAC sector 21, IOC micro LB21, BPM 1 on girder 2 in sector 21, position in the LINAC

DT:XE00:1:V

Diagnostics tank, X-ray beamline front end enclosure, unit 1, HVPS voltage readback

VVPG:XN01:99:STATE

Vacuum pneumatic gate valve, X-ray beamline near experimental hall hutch 1, unit 99, open/closed/transition/invalid state

SLC:LC28:1:EXRESTART

Restart the SLC-aware interface via the exec task on BPM IOC micro LC28, LINAC sector 28

• add more examples here....

Primary (PRIM) List

Some of the following list of primaries are extracted from the SLC control system [primary.dbs|http://www-mcc. slac.stanford.edu/ref_dbsfile/primary.dbs] file for devices that are SLC-Aware.

- 1. Controlled Devices (SLC-Aware):
 - BEND BEND (LARGÉ DIPOLE) MAGNET
 - BTRM BEND MAGNET TRIM WINDINGS
 - SOLN SOLENOID MAGNET
 - QTRM QUAD MAGNET TRIM WINDINGS
 - QUAD QUADRUPOLE MAGNET
 - XCOR HORIZONTAL STEERING CORRECTOR MAGNET
 - YCOR VERTICAL STEERING CORRECTOR MAGNET
 - KICK KICKER MAGNET
 - LGPS LARGE POWER SUPPLY
 - SMPS SMALL POWER SUPPLY
- 2. Controlled Devices (non-SLC-Aware):
 - WIRE MOVING WIRE SCANNER
 - CAMR Camera
 - COLL COLLIMATOR
 - KICK KICKER MAGNET
 - MIRR Alignment Mirror
- 3. Gated ADC Devices (SLC-Aware):
 - BPMS BEAM POSITION MONITOR (Attributes are X,Y,TMIT)
 - TORO TOROID (Attribute is TMIT)
 - BLEN Bunch Length Monitor (Attribute is WIDTH?)
- 4. Gated ADC Devices (non-SLC-Aware):
 - PMTS Photo Multiplier Tube Beam Loss Monitor Signal
 - PICS Protection Ion Chamber Signal
 - YAGS YAG screen
 - OTRS OTR screen
 - PHOS Phosphor screen
 - PROF YAGS, OTRS, PHOS monitor (SLC dummy devices only)
- 5. Vacuum Gauges:
 - VGKL = Vacuum Gauge associated with a Klystron
 - VGPR = Vacuum Pirani Gauge
 - VGCC = Vacuum Cold Cathode Gauge
 - VGTC = Vacuum ThermoCouple Gauge
 - VGCP = Vacuum Convection-enhanced Pirani Gauge
 - VGHF = Vacuum Hot Filament Gauge
- 6. Vacuum Valves:
 - VVKL = Vacuum Valve associated with a Klystron
 - VVPG = Vacuum Pneumatic Gate Valve
 - VVMG = Vacuum Manual Gate Valve
 - VVPR = Vacuum Pneumatic Roughing Valve
 - VVMR = Vacuum Manual Roughing Valve
 - VVPF = Vacuum Pneumatic Fore Valve
 - VVMF = Vacuum Manual Fore Valve
 - VVPV = Vacuum Pneumatic Vent Valve
 - VVMV = Vacuum Manual Vent Valve
 - VVFS = Vacuum Fast Valve
- 7. Vacuum Pumps:
 - VPKL = Vacuum Pump associated with a Klystron
 - VPCR = CRyo Pump
 - VPIO = IOn Pump
 - VPTM = TurboMolecular Pump
 - VPTS = Ti Sublimation Pump
 - VPFO = Fore Pump
 - VPRO = Roughing Pump
- 8. Other Devices:
 - PLIC Panofsky Long Ion Chamber (Attribute is LOSS)
 - FAN Fan (Attribute is SPEED)
 - DT Diagnostic tank
 - GASA Gas Attenuator
 - KLYS Klystron
 - SBST Sub-Booster
 - FARC Faraday Cup
 - DOOR PPS Door · STPR - Beam Stopper

- SBD Single Beam Dump
- LENS LENS MAGNET
- SEPT SEPTUM MAGNET
- CATH Cathode
- DUMP Beam Dump
- · Add others here...
- 9. Subsystems and Groups/Collections:
 - LLRF Low Level RF
 - LCW Low Conductivity Water
 - AIR Air
 - PPS PPS (Personel Protection System)
 - MPS MPS (Machine Protection System)
 - BCS Beam Containment System
 - HVAC Heating, Ventilation, and AC System
 - SLC SLC-Aware IOC Diagnostics
 - MDEF Measurement Definition
 - · ARRY Group of Channels on a Gated ADC for SLC-Aware only
 - Add others here...
- 10. Controls Hardware:

 - IOC Input/Output Controller
 PLC Programmable Logic Controller
 - CRAT VME Crate
 - BPMP BEAM POSITION MODULE
 - GADC Gated ADC Module (not BPMP)
 - EVG Event Generator
 - EVR Event Receiver
 - MPG MASTER PATTERN GENERATOR
 - PNET PNET Module
 - DTIZ DIGITIZER
 - ADC ADC MODULE
 - VSAM VME Smart Analog Module
 - DAC DAC MODULE
 - TDC TIME-TO-DIGITAL CONVERTER
 - DOM DIGITAL OUTPUT MODULE
 - DIM DIGITAL INPUT MODULE
 - SCLR SCALER MODULE
 - LVDT Linear Variable Differential Transformer
 - · Add others here...

Location (LOCA) List

- 1. Gun and Injector
 - IN20: Gun and Injector Near Sector 20
 - LI20: CAMAC-controlled Injector klystrons (rerouted from LINAC sector 20)
- 2. LINAC and Beam Switchyard (BSY)
- o LE20: PNET/EVG Timing System in Sector 20
 - LI21 to LI30: Sectors 21 to 30
 - o BY01: BSY Front End
 - o BY02: BSY Back End
 - o CA11: CAMAC-controlled devices in BSY front end
 - o CB00: CAMAC-controlled devices in BSY back end
- 1. LINAC-to-Undulator (LTU) and Undulator
- o LTUW: LTU West
 - o LTUE: LTU East
 - o U???: Undulator
- 1. X-ray Transport and Optics Diagnostics (XTOD)

Xabc, where:

- X = XTOD
 - \circ a = area, where:
- E = Front End Enclosure
- N = Near Hall
- F = Far Hall
- T = Transport
- X = non-specific (XTOD-wide)
 - b = hutch or section (rough Z), where:
- 1 to 3 for hutch

1 to 9 for section

0 for non-specific (area-wide)

o c = equipment or split beam line (tunnel) or vacuum station (fine Z), where:

C = Collimator

D = Diagnostic (tank)

I = Ion-chamber

1 to 3 for split beam line (tunnel) or vacuum station

0 = non-specific (hutch-wide or section-wide)

o or bc combined = specific device, where:

GA = Gas Attenuator

FL = FLipper Mirror

Mm = Mirror m (m=A, B, C)

XS = Xray Slit

Attribute (or Secondary) List

- 1. Analog:
- o V or VACT voltage readback

 - I or IACT current readback
 B or BACT magnetic field readback
 - o A or AACT amplitude readback
 - O P or PACT phase readback
 - VACM vacuum readback
 - o TEMP temperature readback
 - o TMIT bunch charge
 - o FLOW flow rate
 - o SPEED speed readback
 - o RAMP ramp rate
 - LOSS loss rate
 - o WIDTH pulse width o DELAY - pulse delay
 - TIME delta time

 - O CNT count
 - $^{\circ}~$ ID unique integer identification
 - ENER energy
 - PWR power
 - FREQ frequency
 - o ANGL angle
 - o POSN- position
 - GAP gap
 - o X, Y, Z, H horizontal, vertical, longitudinal, and ?? position
 - S beamline position (m)
 - ROLL, PITCH, YAW for motors?
 - $^{\circ}~$ xAVG average of x where x is one of the above
 - o xRMS RMS
 - o xMAX or xHI maximum
 - $^{\circ}~$ xMIN or xLO minimum
 - o xDES x setpoint
 - o xACT x readback
 - o xHST x history
 - o Add others here...
- 1. IOC Attributes:
- O MEM Memory in-use
 - o CPU CPU in-use
- o CACONNCNT CA connection count
 - o CACHANCNT CA connected channel count
- o FDCNT File descriptor in-use count
 - o MBUFCNT Memory buffer in-use count
- o GOTIME Time since boot
 - o RESTARTTOD Date/time of IOC restart

- o TOD Current date/time
- 1. Event Timing Attributes:
- o YY unique meas acq trigger number
 - o PP beam code number
 - PULSEID synchronized beam pulse ID
 - o MODIFIER part of the timing pattern that "modifies" the beam code
 - INCLUSION timing pattern modifier inclusion mask
 EXCLUSION timing pattern modifier exclusion mask
- 1. Finite State (Digitals and Multibits):
- $^{\circ}~$ STAT special bit mask reserved for the SLC control system
 - STATUS status (for inputs)
 - STATE state (for inputs)
 - MODE mode (for inputs and outputs)
 - CTRL control or command (for outputs)
 - RESET reset action (for outputs)
 - RESTART restart action (for outputs)
 GO go action (for outputs)

 - STOP stop action (for outputs)
 - CHECK check action (for outputs)
 - o xHI, xLO high or low state for x (x=LIMIT, V, I, VACM, TEMP, FLOW, SYS, etc)
- 1. XTOD States:
- o DEGAS degas on/off state
 - o EMISSION emission high/low state
 - AUTOVENT auto-vent state
 - o STARTMODE start mode
- 1. Strings and other record types:
- NAME name
 - USERNAME user ID
 - o FAN or FANOUT fanout
 - TOD timestamp (date/time)

::[SLC-Aware IOC Home Page|http://www.slac.stanford.edu/grp/lcls/controls/global/sw/slc_ioc/] | [LCLS Controls|http://www.slac.stanford.edu/grp/lcls/controls/] |

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