

XDP GUI GUIDE

Version 1.1

March 25th, 2023

restricted

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INSTALLATION : Process

– User Beta version of the XDP GUI, provided by FAEs

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INSTALLATION : License file

- When starting GUI for the first time, it may ask for a license file.
- Ask your PDE/FAE for this file.
- Filename: ***IR DPDC License.txt***
- License can be saved anywhere but recommend to save license file it in same directory as the GUI
- When GUI asks for License, point to the saved license file.
- GUI will remember this until license expires.

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HOME SCREEN

Update coming soon!

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OFFLINE DESIGN

– Coming Soon!

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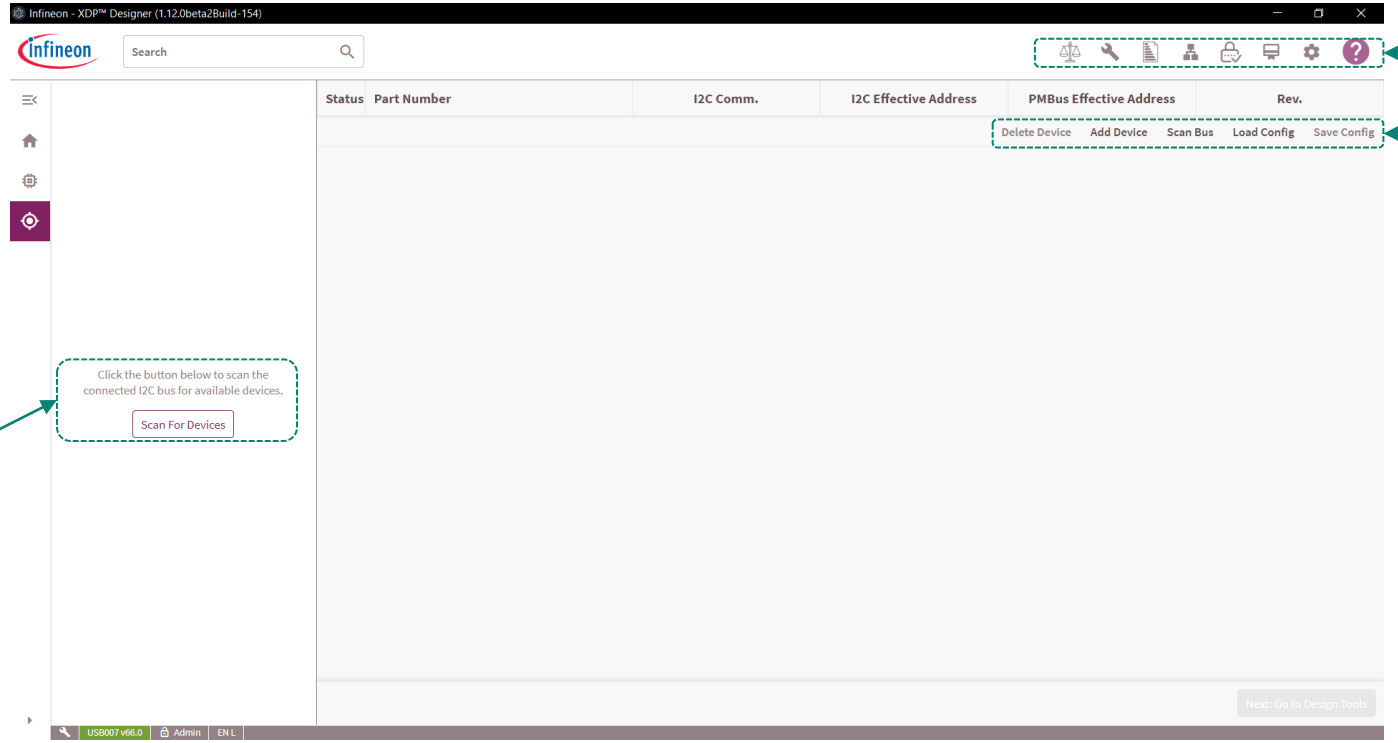
TUNNING AND DEBUGGING : Home Screen



Note : This is without any device connected, home screen will change after device detection

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TUNNING AND DEBUGGING : Home Screen

- Scan button
  - First place to start from
  - Button to scan for the device
  - This will search for available I2C device* on the channel
- Utility tools
  - Provides different utility options for device, including communication, Firmware related actions, helping tools such as I2C custom commands, config comparator etc.
  - This will change based on selected device
- Device and config tools
  - Quick action to scan, add and delete the device
  - Provides options to load various config files to the device and save from the device

* Displays only Infineon specific devices if detected

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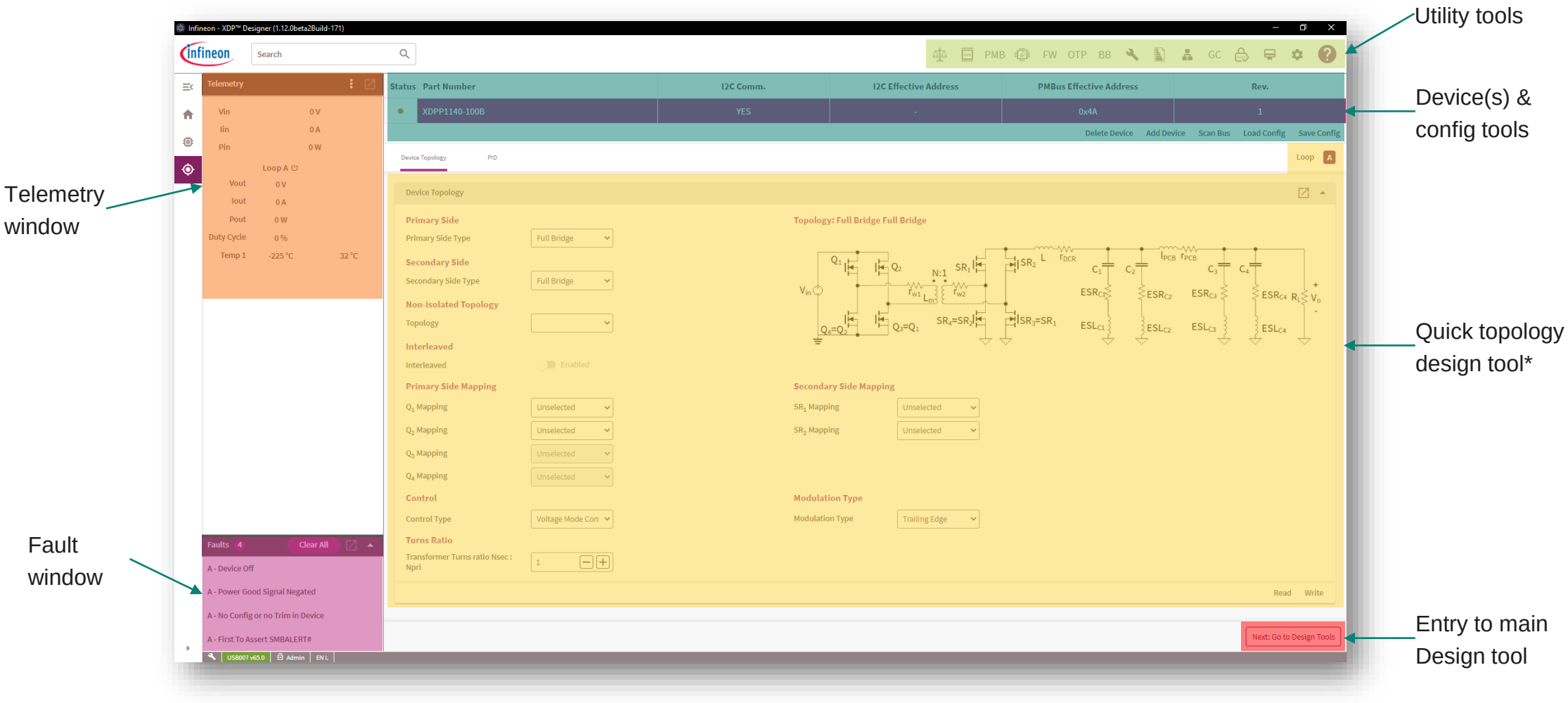
TUNNING AND DEBUGGING : Home Screen (with the device)



* Explained in *Design Tool*

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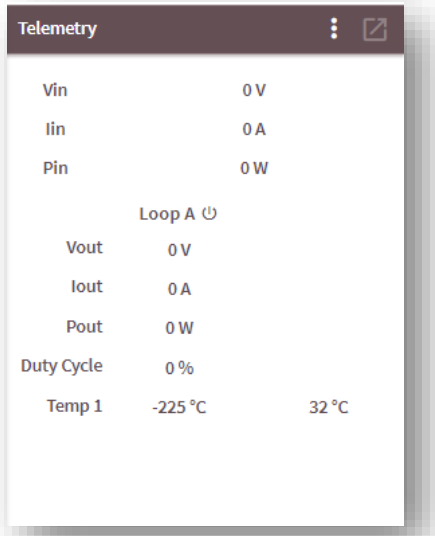
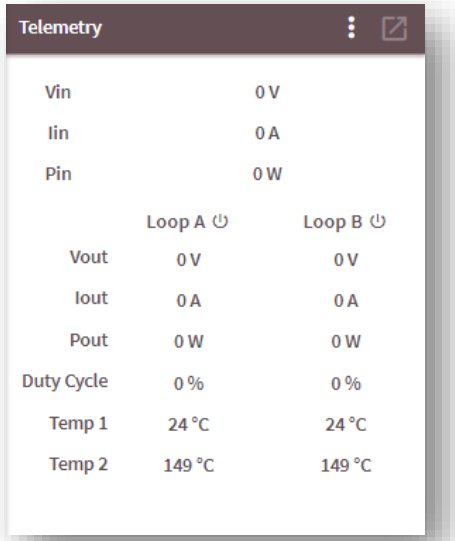
Telemetry Window

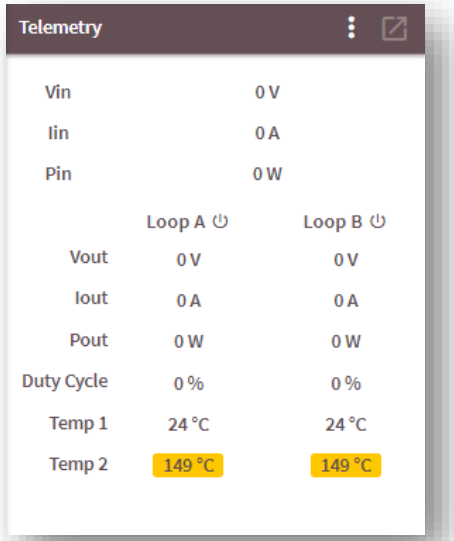
- Provides quick telemetry glance to user
- User will be able to read Voltage, Current and Power for input and output
- It supports 2 temperature and duty cycle in percentage
  - If temperature crosses Warn limit, it will be highlighted
- Depends on device, it displays multiple loops (Langley has only 1)
- When selected a single device it also shows *Active Controller*
- It can be disabled by clicking on 3 dots (top right corner)



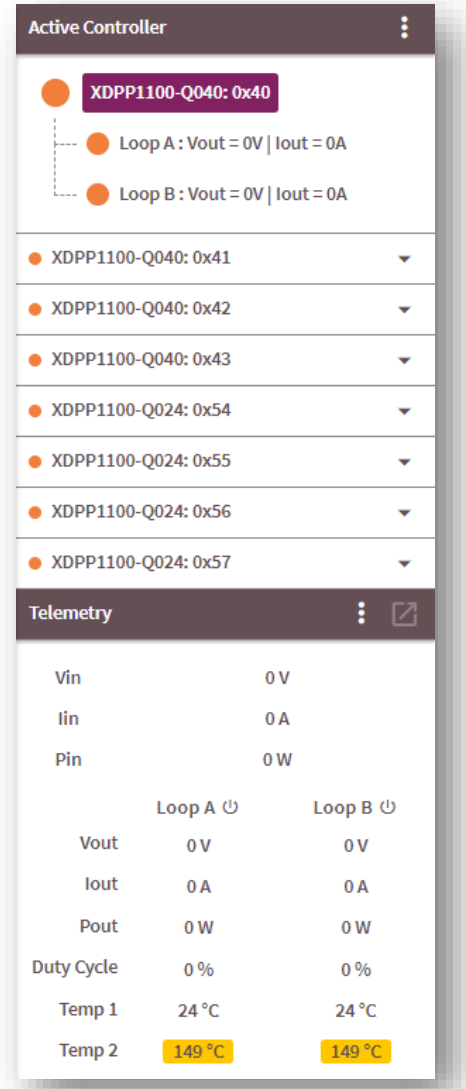
Telemetry window for Single loop



Telemetry window for Multi loop



Telemetry window with OT warn/fault



Telemetry window with multiple devices

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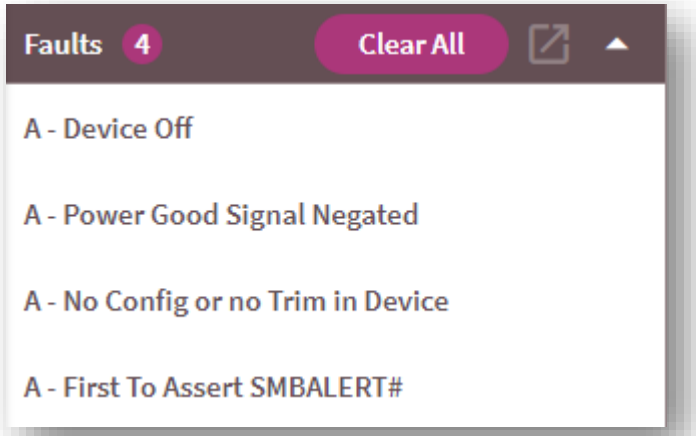
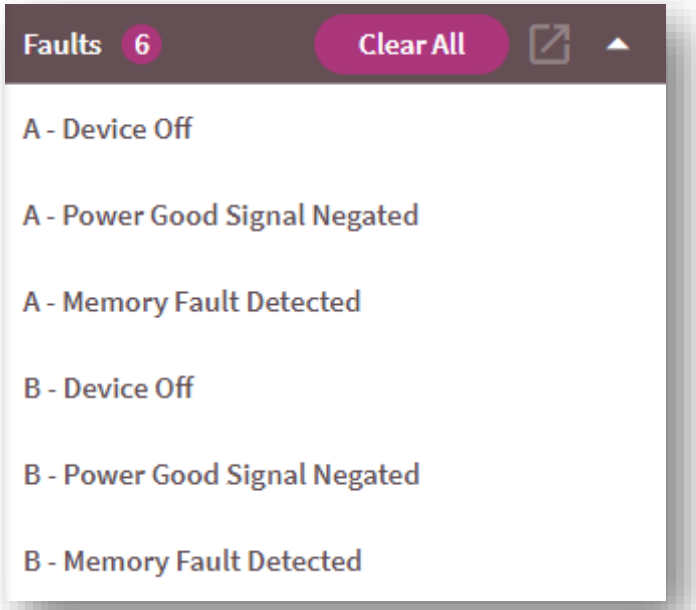
Fault Window

- A floating window to display to show selected device's fault
- Total number of faults are shown on top
- Fault format : ***Loop – Fault***
- Expand icon will expand the window and shows all the active fault
- User can clear all fault with "Clear All" button.
  - This button will send pmbus command 0x03



Fault window for single loop device



Fault window for multi loop device

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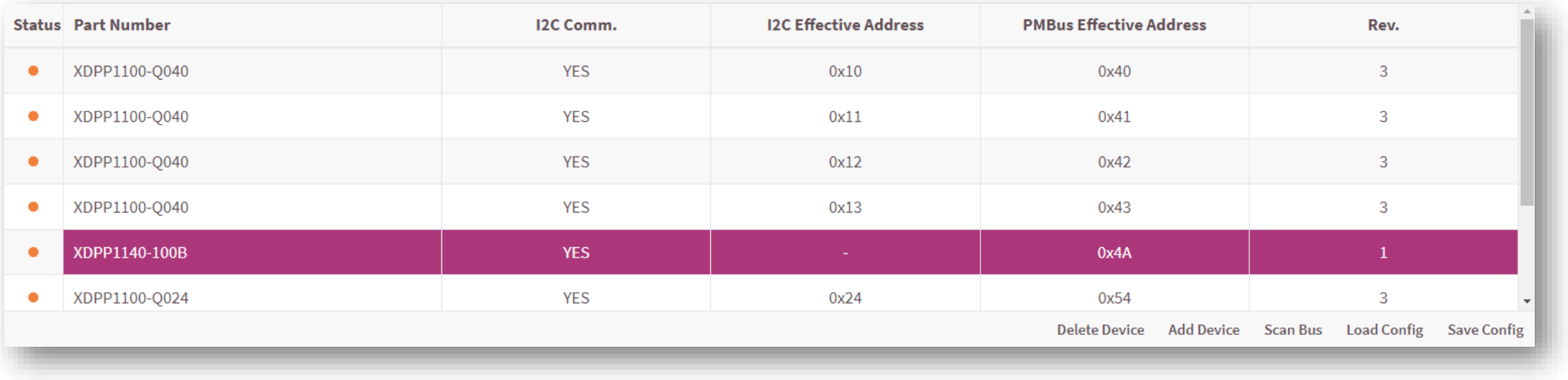
Device and Config tools

- Main panel to show detected devices and its address
- If GUI lose communication, *Status* will turn to dark gray
- *Part Number* will be the official device name
- User can see effective I2C* and PMBus address of the connected device
- *"Rev."* column represents revision of the device (starting from 0).



Status	Part Number	I2C Comm.	I2C Effective Address	PMBus Effective Address	Rev.
●	XDPP1100-Q040	YES	0x10	0x40	3
●	XDPP1100-Q040	YES	0x11	0x41	3
●	XDPP1100-Q040	YES	0x12	0x42	3
●	XDPP1100-Q040	YES	0x13	0x43	3
●	XDPP1140-100B	YES	-	0x4A	1
●	XDPP1100-Q024	YES	0x24	0x54	3

Delete Device Add Device Scan Bus Load Config Save Config

* Langley does not support I2C

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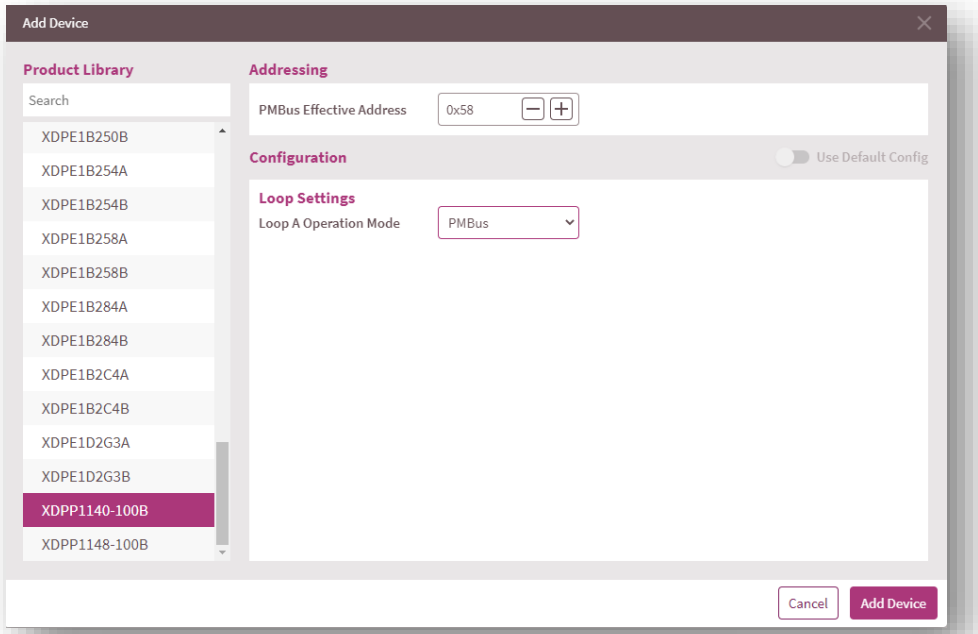
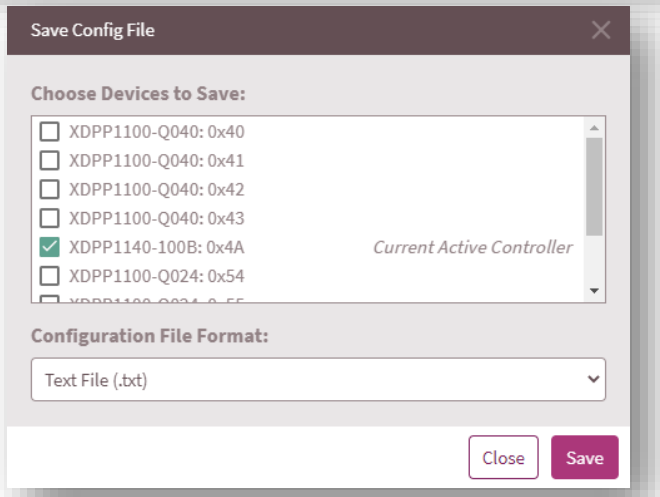
Device and Config tools

- User can add device manually, if address is known
- Click on *Add Device* and select the device you want to add (i.e. XDPP1140-100B)
- Set correct address and hit *Add Device*
- GUI will create an offline version of device if address is not matched with connected device
- Selected device can be deleted by clicking on *Delete Device* button

- User can load file with *Load Config* option, it will open file explorer and user can select .xdp or .txt file to load
- Config can be saved individually by clicking on *Save Config* button.
- It support 3 format : xdp, txt and mic file





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Utility Tools

– Utility tool comprises of different tools such as :

- Configuration File Comparator
- Register Map
- PMBus Commands
- Device Programmer
- Firmware Patcher
- Config File Converter
- Multi-Image Configuration File
- Group Commands
- Customer Login
- License
- Utility tool Manager
- Help

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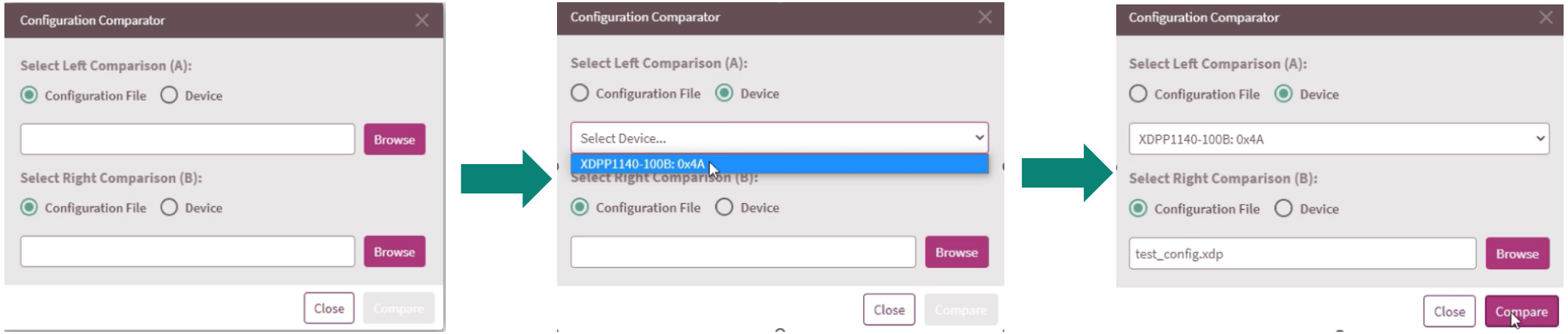
Utility Tools : Configuration File Comparator

- Currently, it supports same device type comparison
- User can perform ***Device to Device*** or ***Device to file*** comparison
- Click on Configuration File comparator and select device as shown in video



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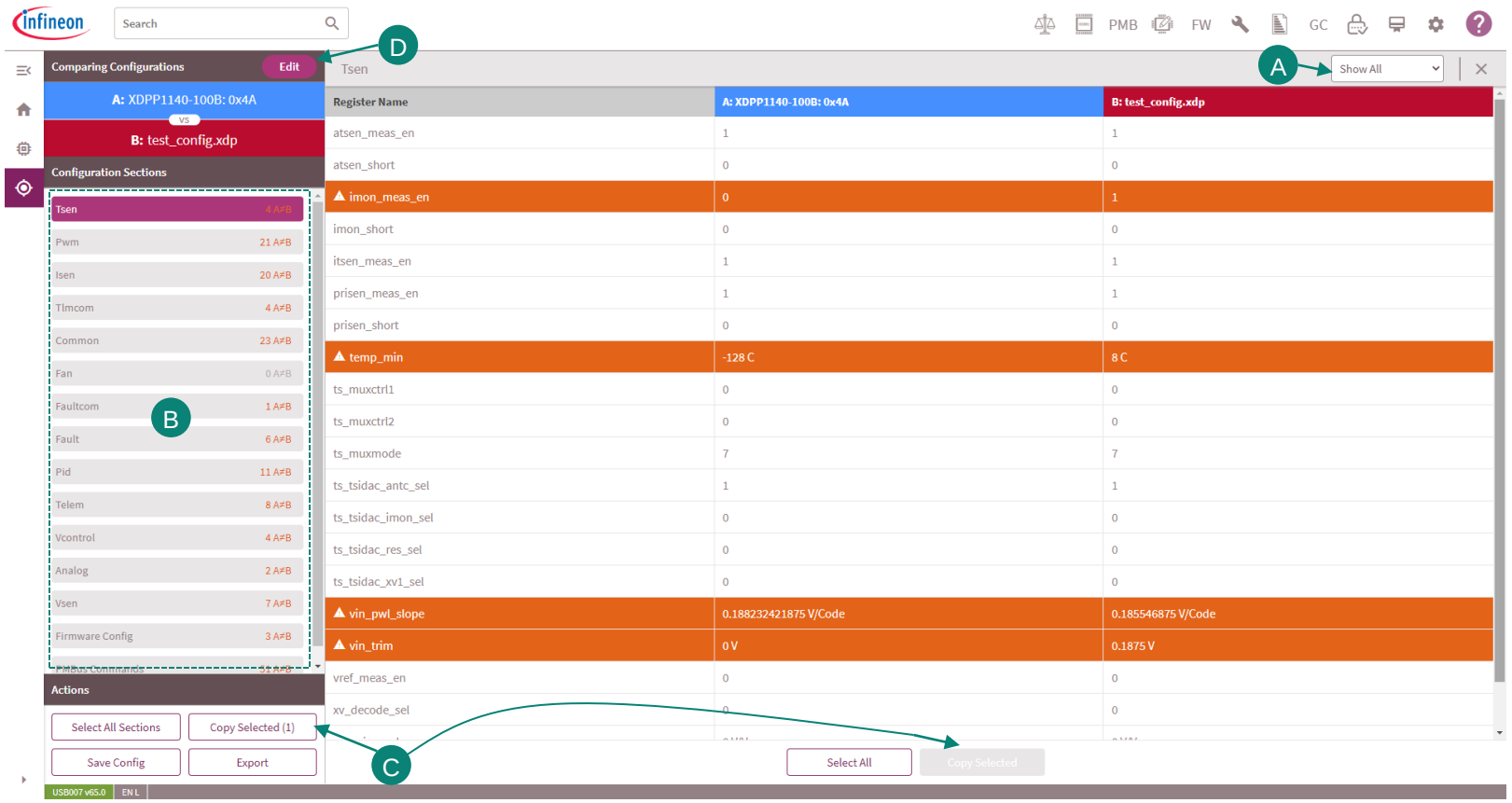
Utility Tools : Configuration File Comparator

A Show all will show all the register and Show Difference will show only one with different value

B Here we can see all the registers category wise

C Select one or multiple or all register to that you want to copy to another config and then Select option A->B or B->A

D User can select different file from ***Edit*** button on top



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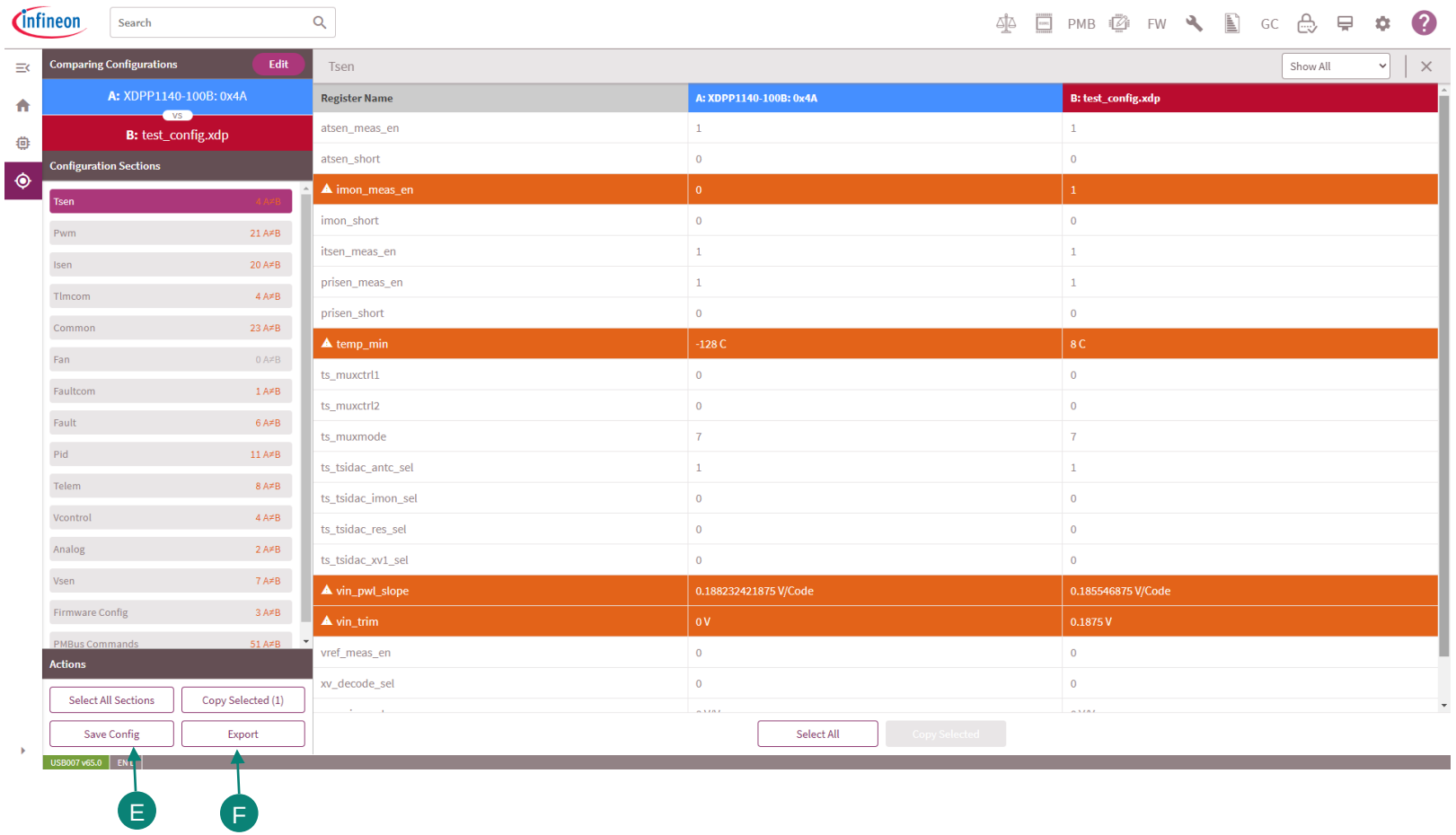
Utility Tools : Configuration File Comparator

E User can save both the config individually using ***Save Config*** button

F ***Export*** will export the Excel file containing following information

- *Register Name*
- *Register address*
- *Bit range*
- *Hex value from config A*
- *Decoded value from config A*
- *Hex value from config B*
- *Decoded value from config B*

Which will be useful for advance debugging



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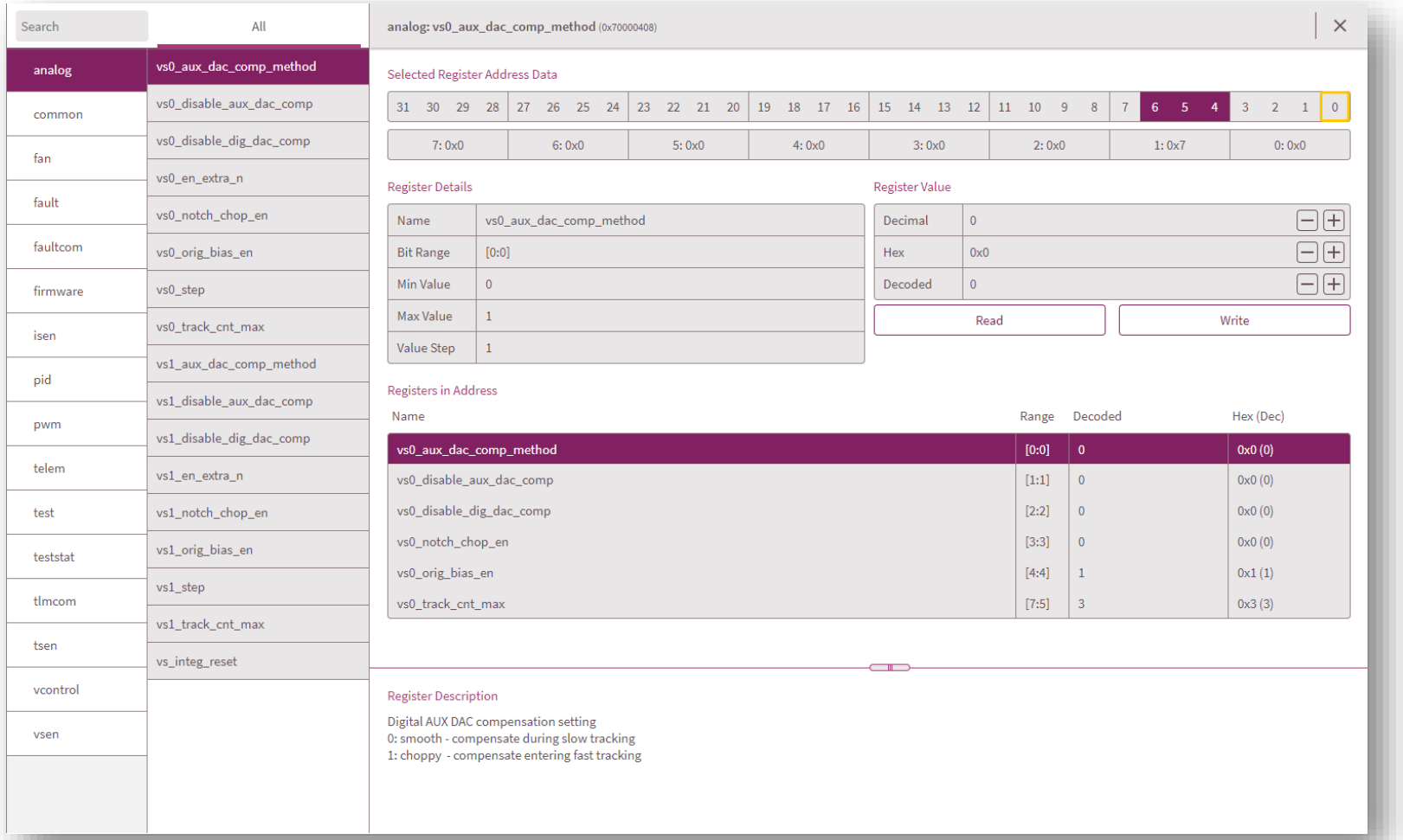
Utility Tools : Register Map

- This page is heart of the device as it allows user to access all the registers from a single point
- User can read, write search, any hardware, firmware, from this panel
- It has key features such as :
  - Allow user to write decoded value
  - Show register info like min, max, lsb values
  - Shows decode, hex and decimal real time value
  - Whole 32-bit register is shows with highlighted registers
  - List all the registers which belongs to a single 32-bit register



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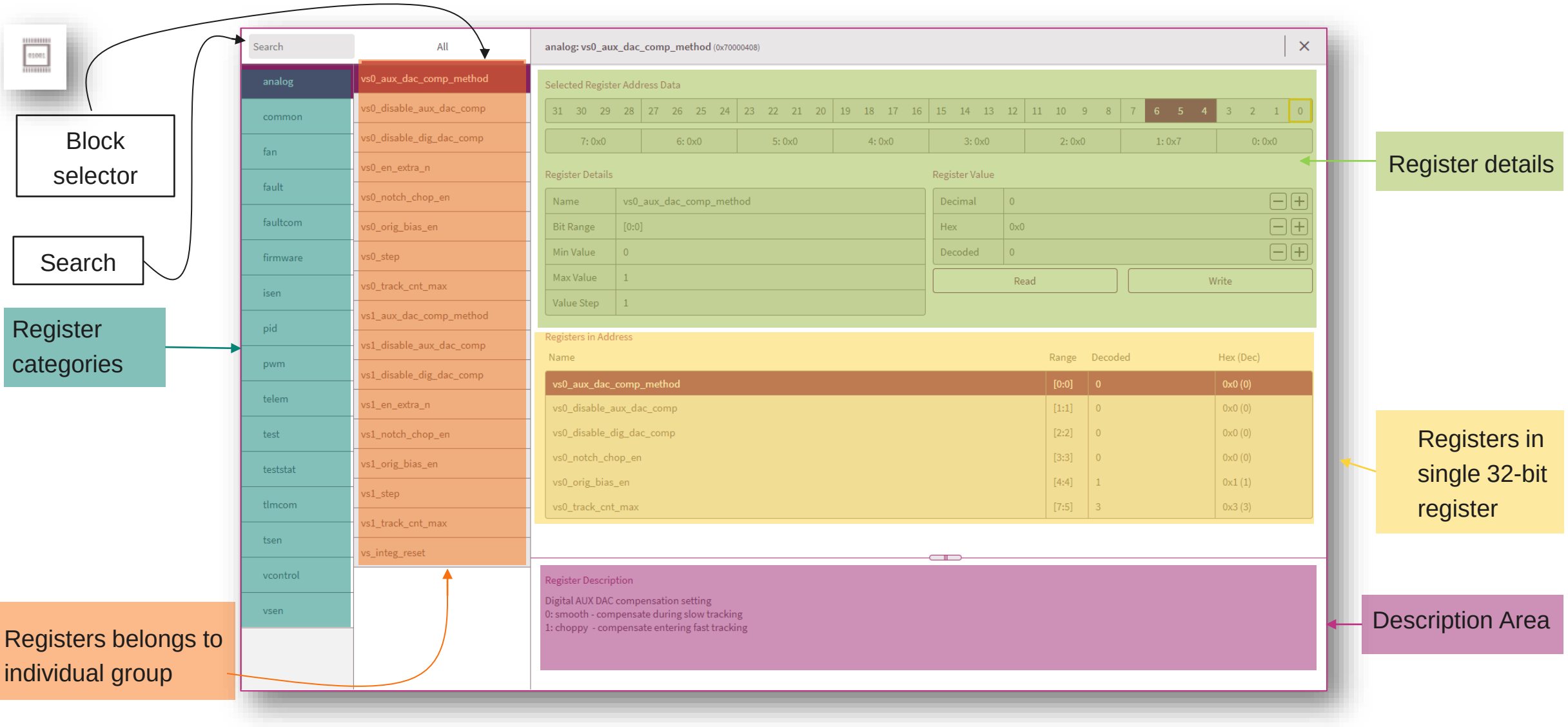
Utility Tools : Register Map



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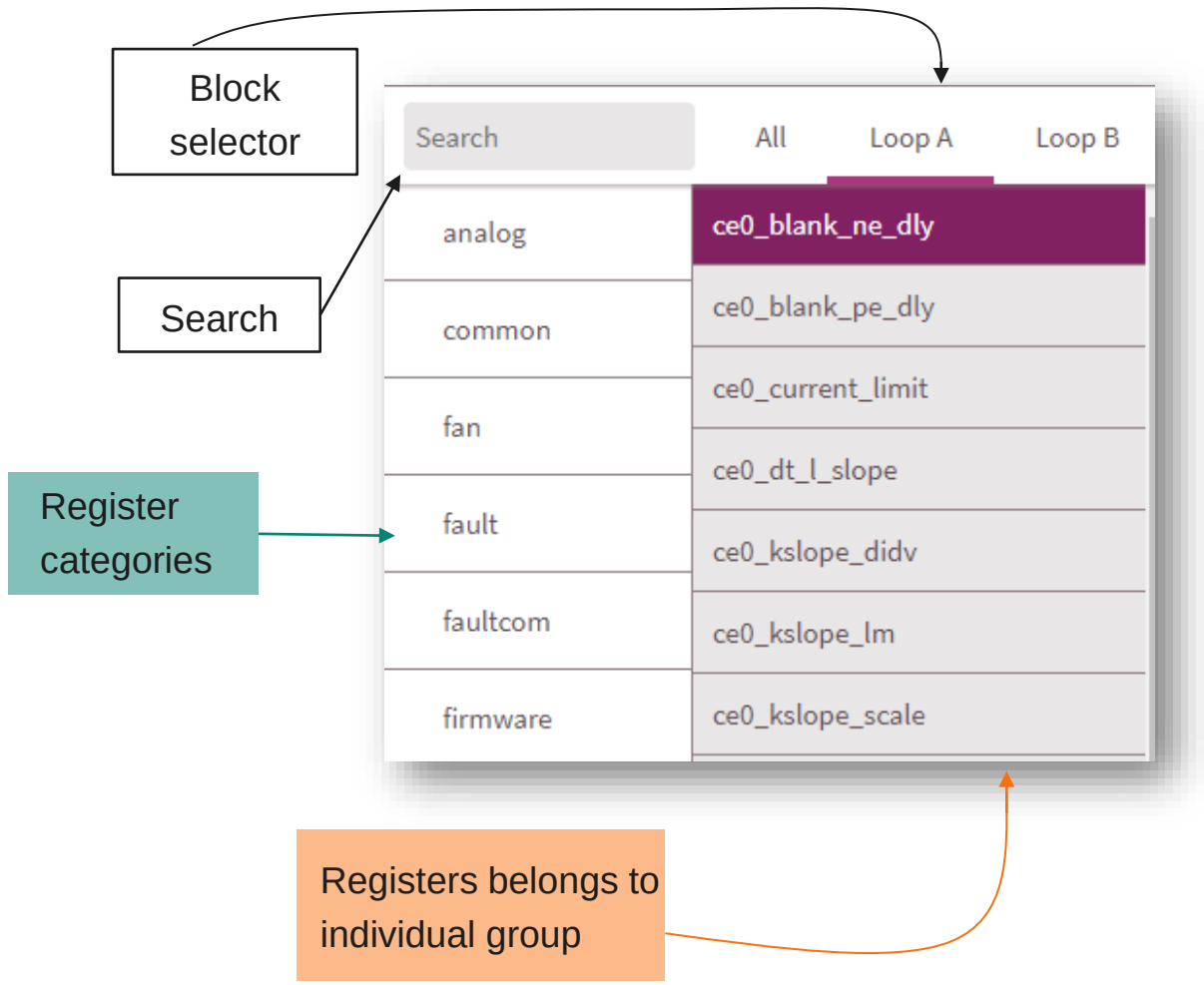
Utility Tools : Register Map

- Block selector : Langley has 2 version, XDPP1140 with 2 VSEN and XDPP1148 with 2 ISEN, block selector helps to select register for respective block
- Search : User can search register using it
- Register Categories will list all the hardware, firmware and trim registers
- Section the right side of categories will show all the register that belongs to the same category



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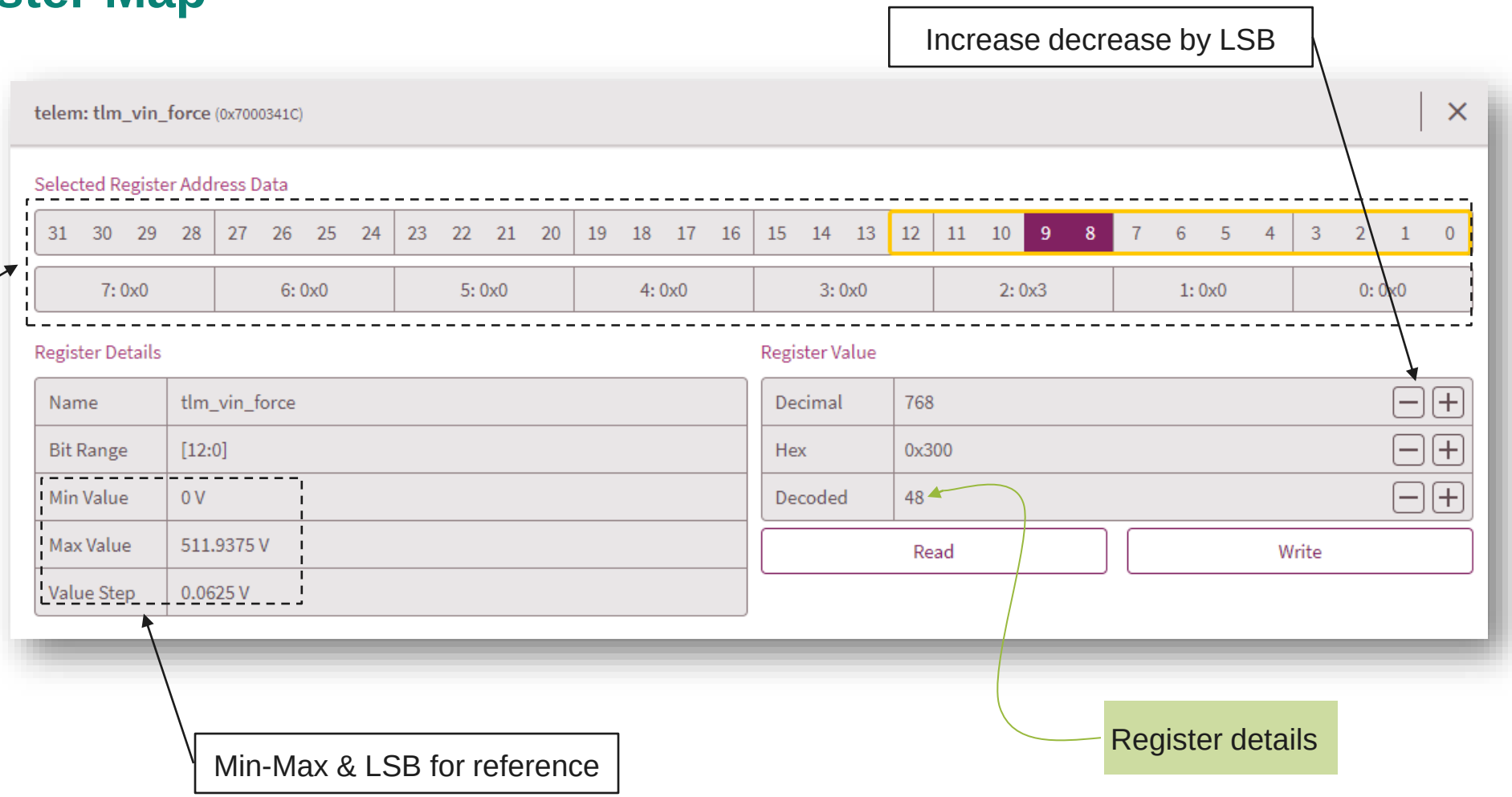
Utility Tools : Register Map

- Register name is show in top
- Value visualization in actual 32-bit register
- User can directly write decoded value, GUI will show respective hex and decimal value



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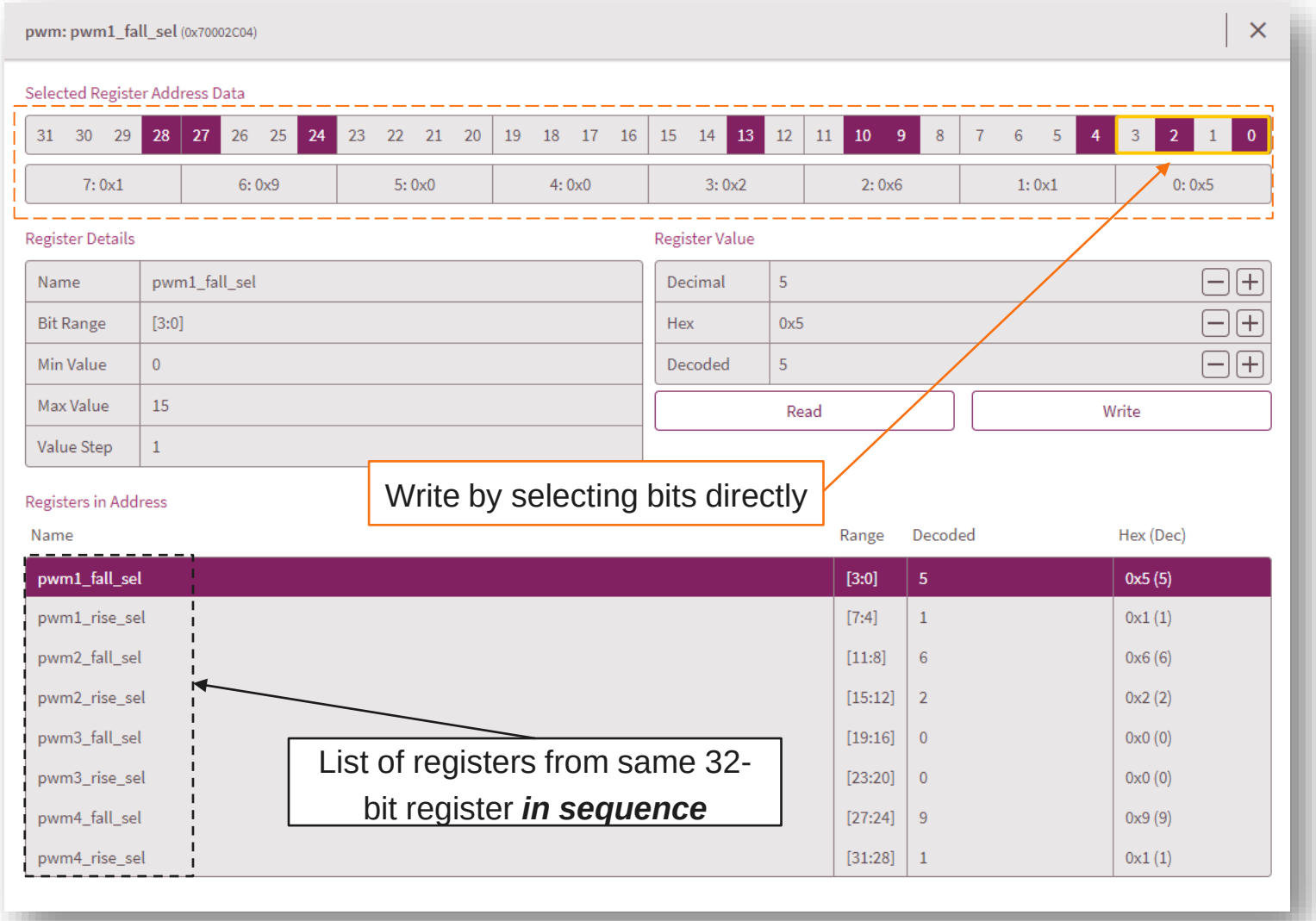
Utility Tools : Register Map

- Registers in given 32-bit register helps user to understand and decode whole value
- Selected register's bit will be highlighted
- User can see decoded value for each register
- Saves time to search for another related register
- User can see impact of changing one bit in between on whole value



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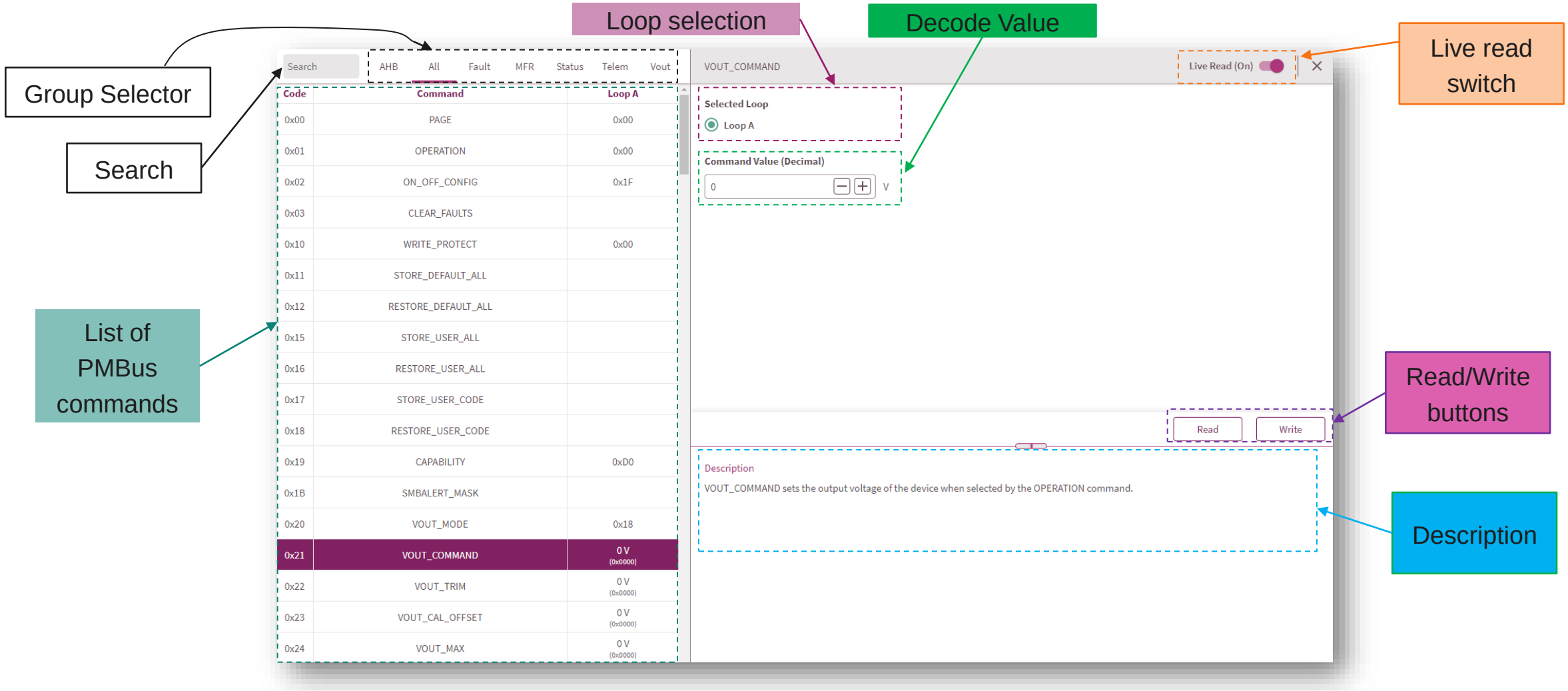
Utility Tools : PMBus Commands



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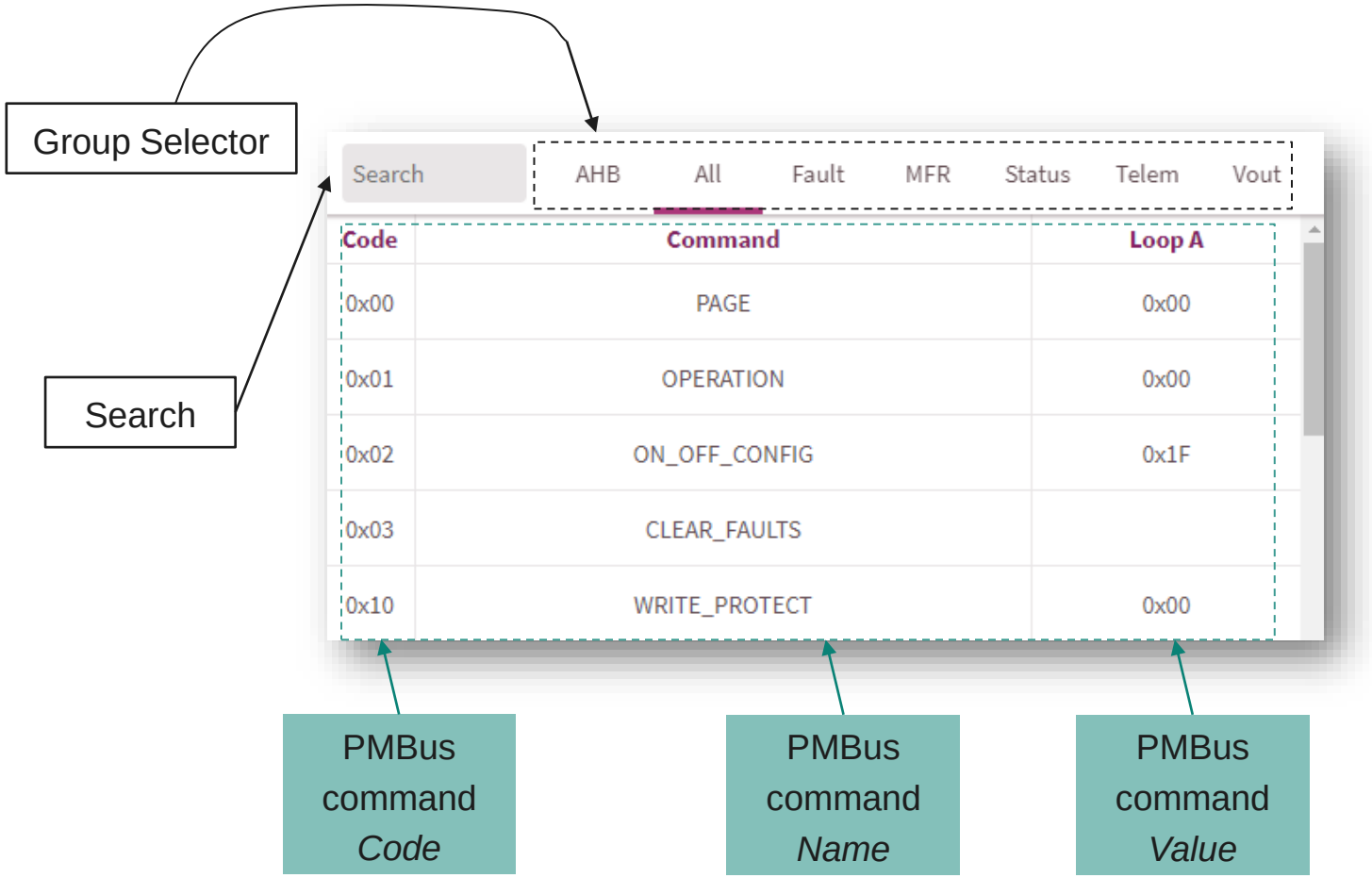
Utility Tools : PMBus Commands

- This window works as a brain of the device as it list all the PMBus commands
- It has main 3 category, ***CODE***, ***NAME*** and ***VALUE*** (decoded and hex) for each command
- If device has 2 loop, there will be another column for that loop, representing value for loop B
- Each group will list command related to that field (i.e. All fault related commands are under ***Fault***)
- AHB group will list pmbus commands used for I2C communication



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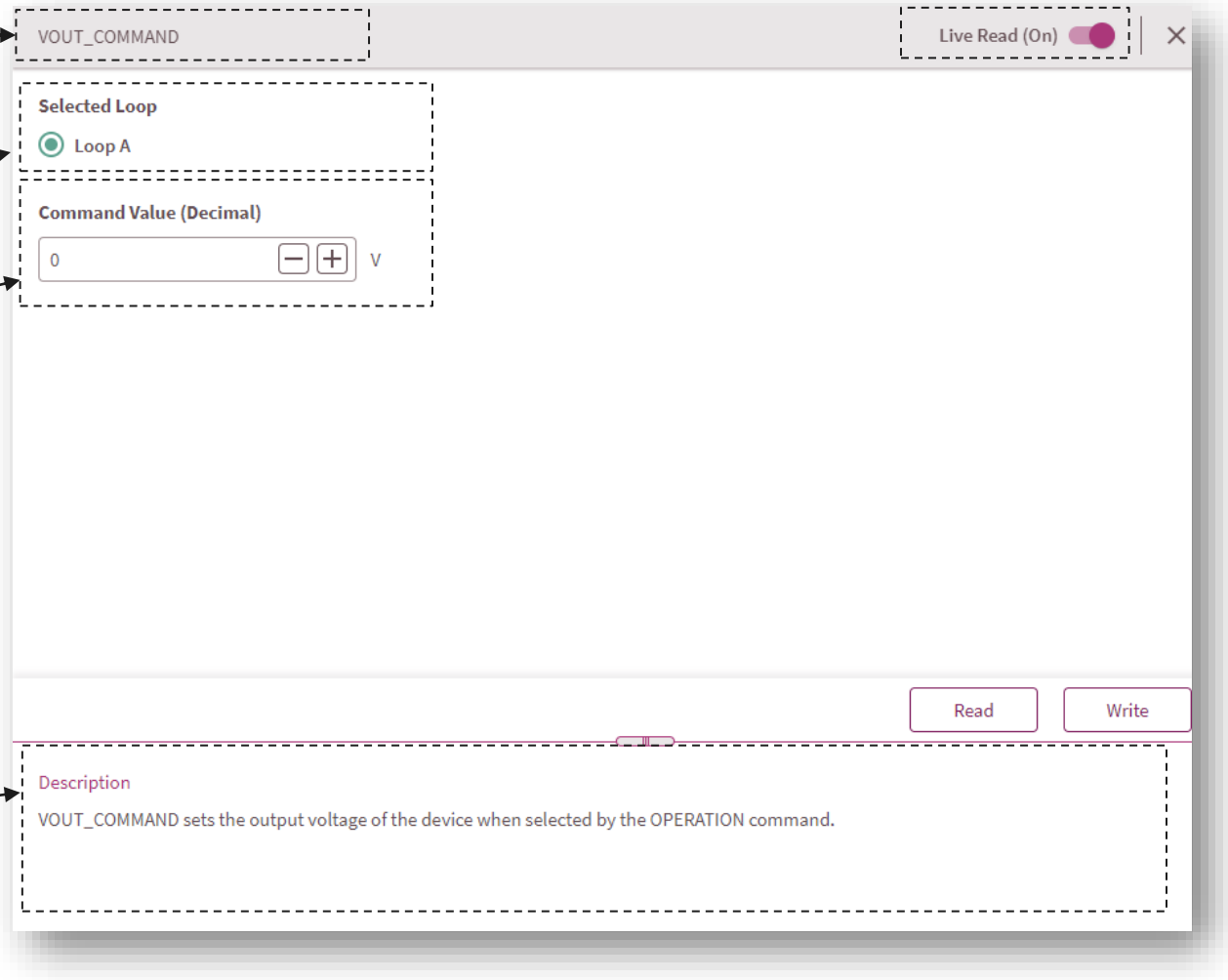
Utility Tools : PMBus Commands

- When user will select any pmbus command, it will display name here
- Loop can be selected from here
- Can write hex value directly here
  (+ and - will change based on LSB)
- Live read On/Off toggle switch will turn On/Off reading for pmbus command when selected
- Description for the register can be found here



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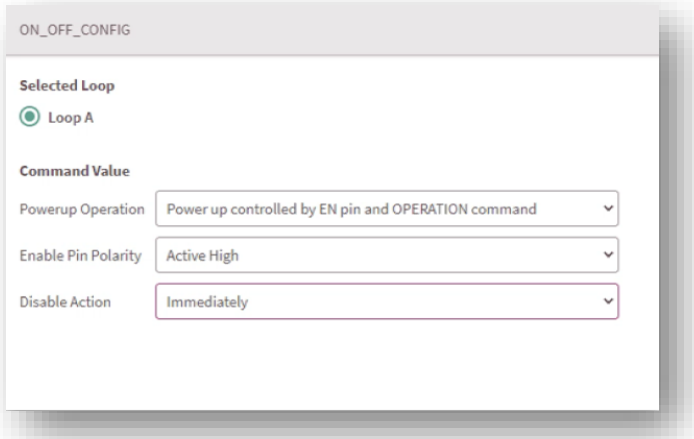
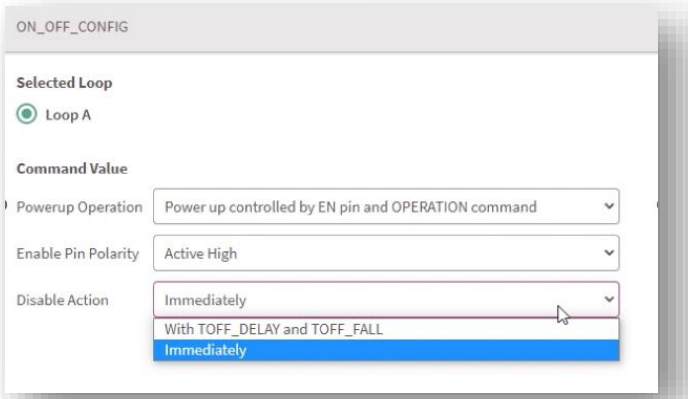
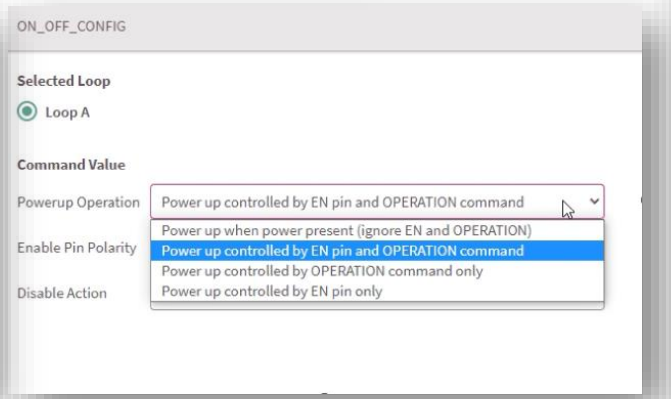
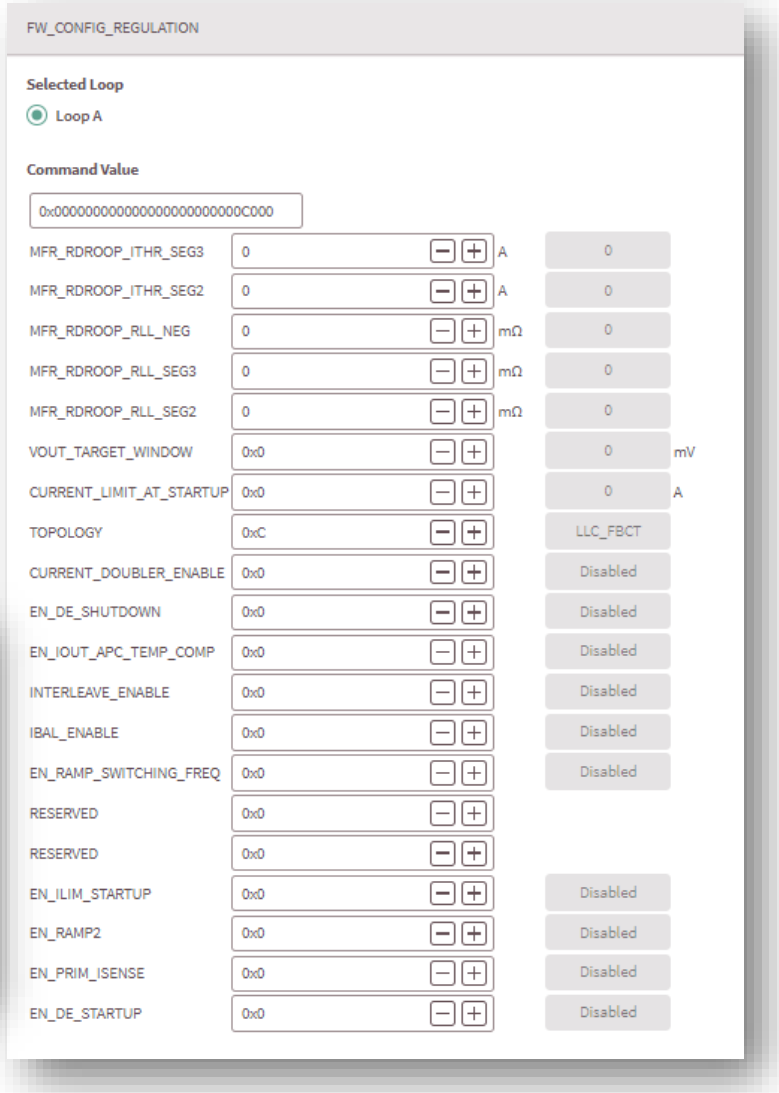
Utility Tools : PMBus Commands

– Example of PMBus commands with different layout









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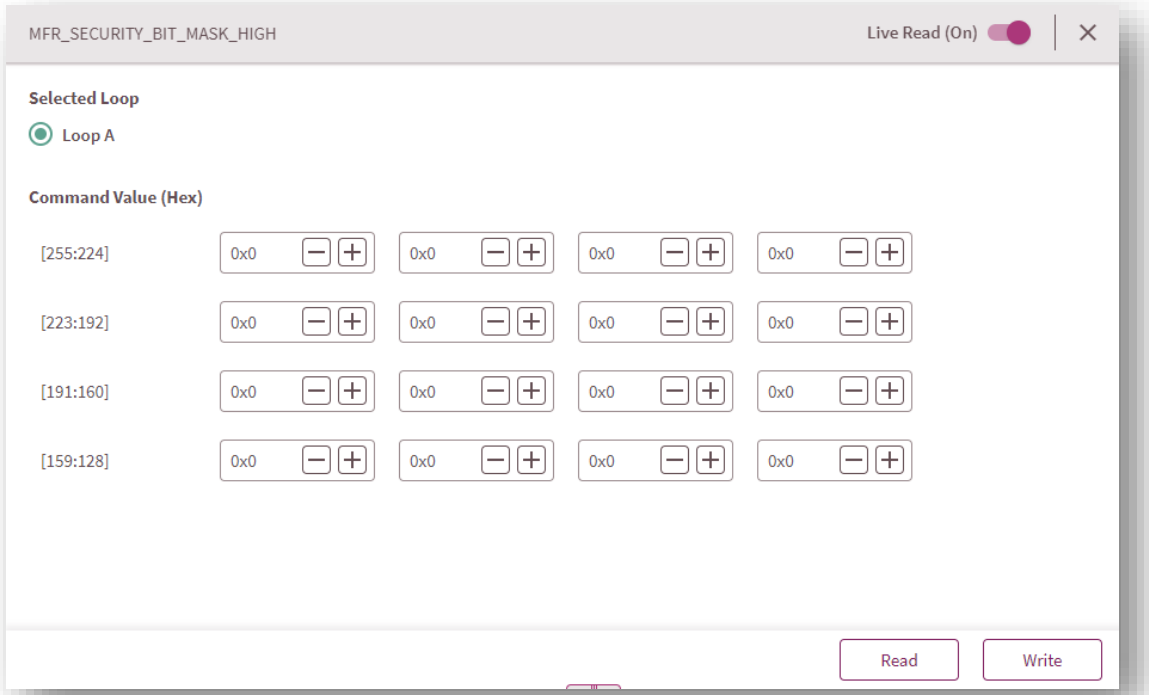
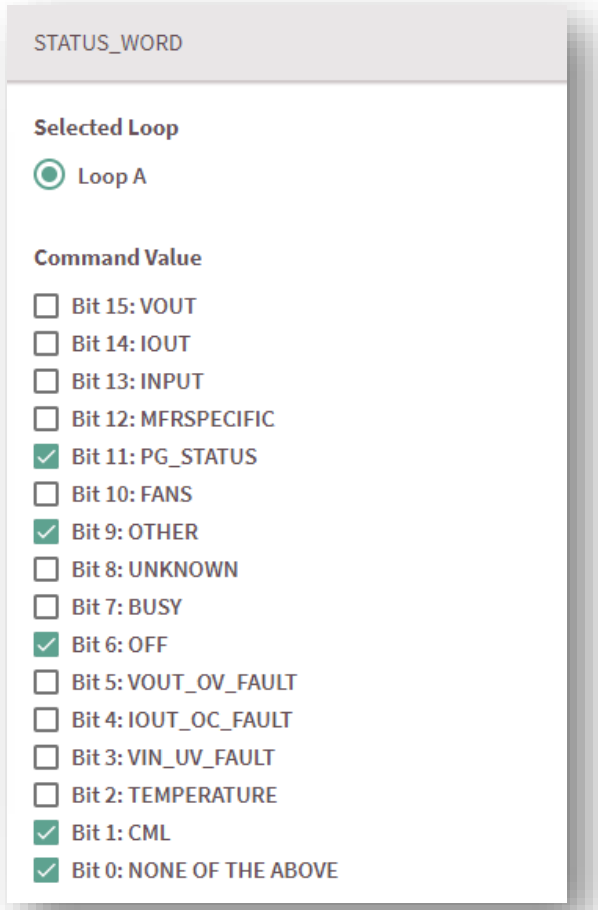
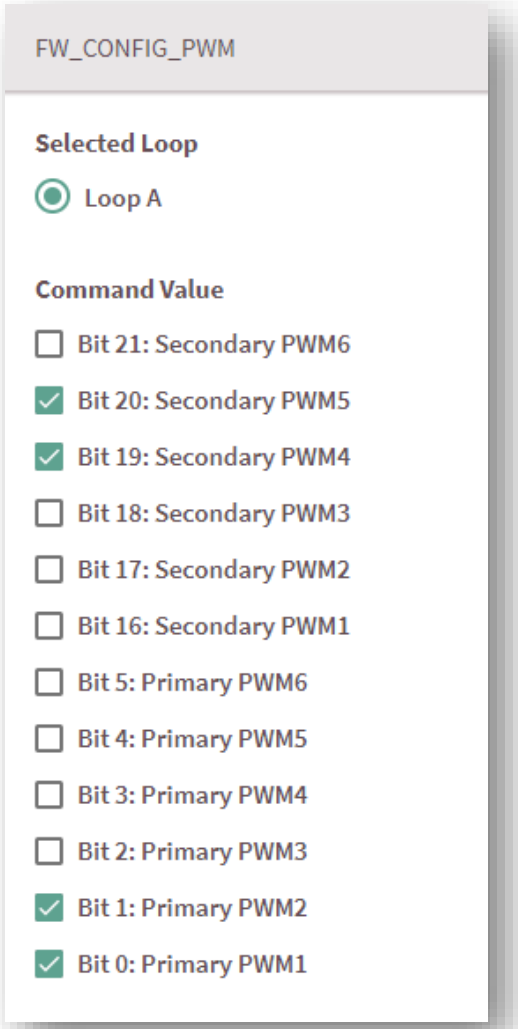
Utility Tools : PMBus Commands

– Example of MFR/Status commands with different layout







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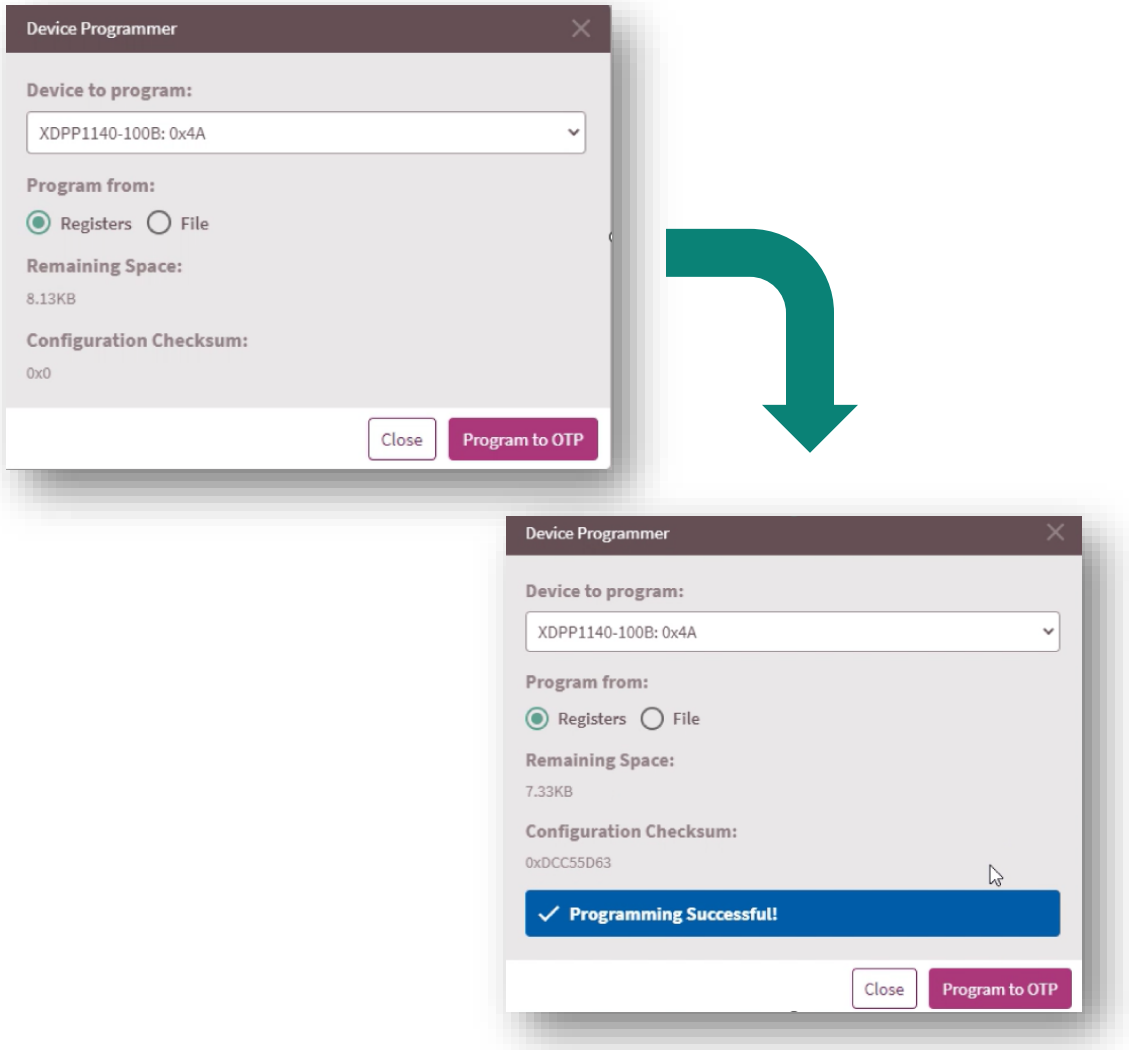
Utility Tools : Device Programmer

- Device programmer will allow user to program config into the OTP

- Select device you want to program
  - It will show remaining size in partition and Configuration checksum for selected device

- 2 way to load config.
  - Store existing value (from RAM to OTP)
  - Store a new set of values from a file directly

- Once config is stored, it will say ***Programming Successful!***
  - If it fails, it will print error message
  - it shows Configuration Checksum to verify it store correct config or not



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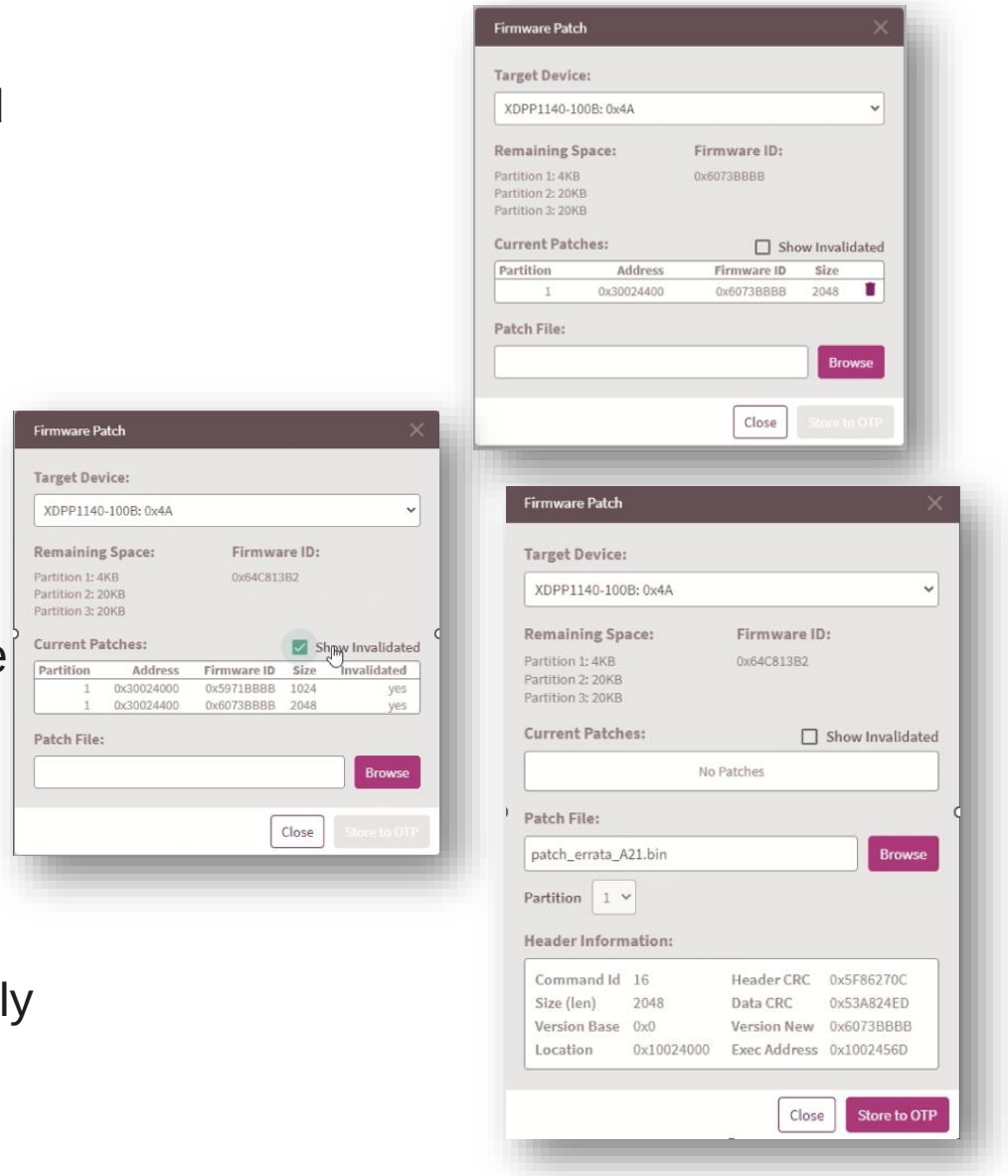
Utility Tools : Firmware Patcher

FW

- This tool allows user to see is there any active or invalidated patch available in the OTP or not
- Also, allow user to store a new patch in OTP and Memory (coming soon!)
- Select device from the Target Device dropdown
- Tool will show how many partitions are there and what is the remaining size for each partition
- User will be able to invalidate patch by clicking Trash Icon
- Select a patch file you want to load and GUI will automatically select the partition it belongs to



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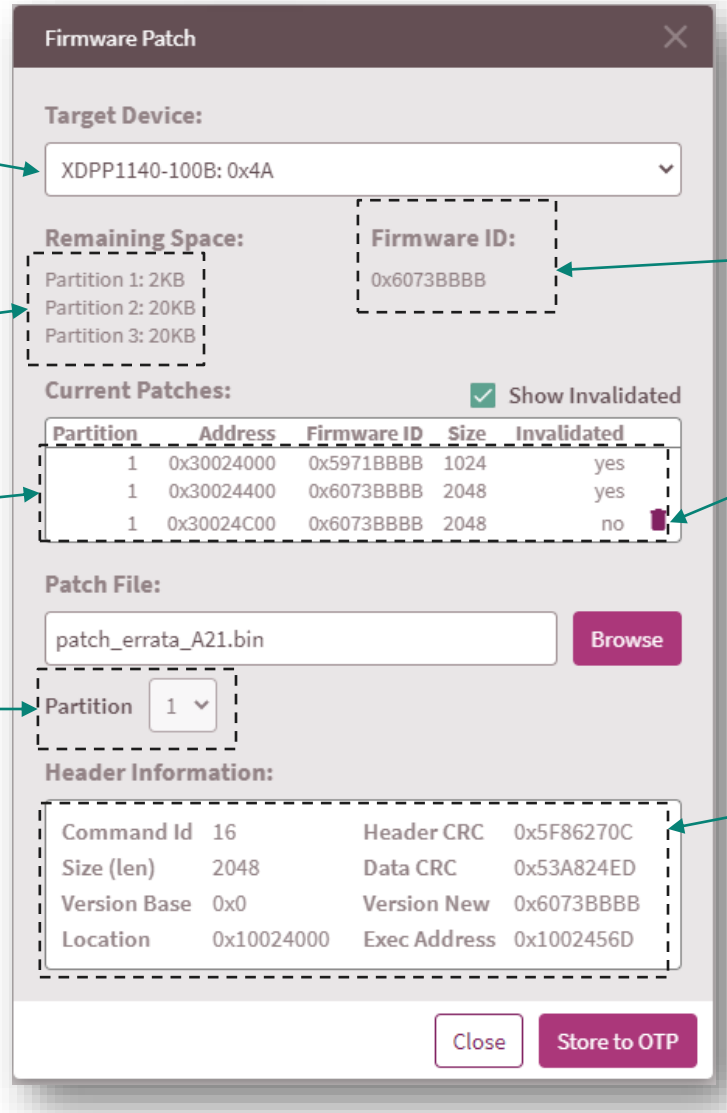
Utility Tools : Firmware Patcher

FW



Device Selector

Partition information with remaining size

Invalidate patch information (size, location and partition)

Automatically selects correct partition

Shows existing firmware ID with current active patch

Click here to invalidate the current patch

Patch Meta-data

: Size = Total size of a patch

: Base version = Show for which ROM, Patch it is made for

: Version new = Will be the new firmware ID (can be seen in Firmware ID after successful load)

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Utility Tools : Config File Conversion

Coming Soon!

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Utility Tools : Multi-File Configuration Tool

Coming Soon!

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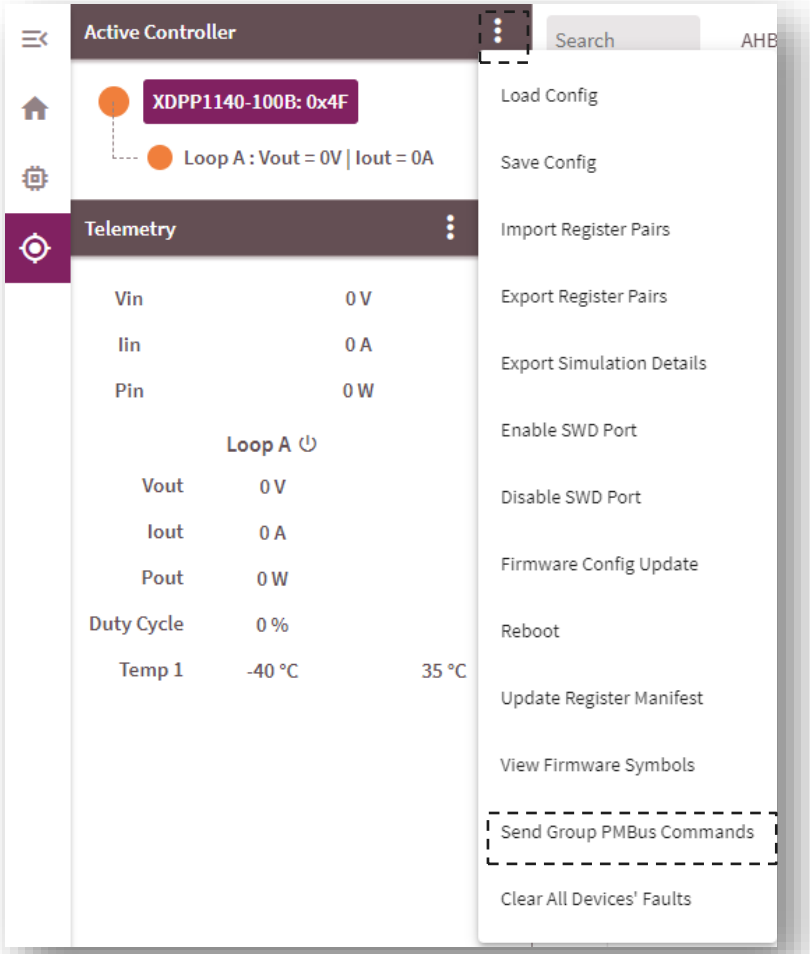
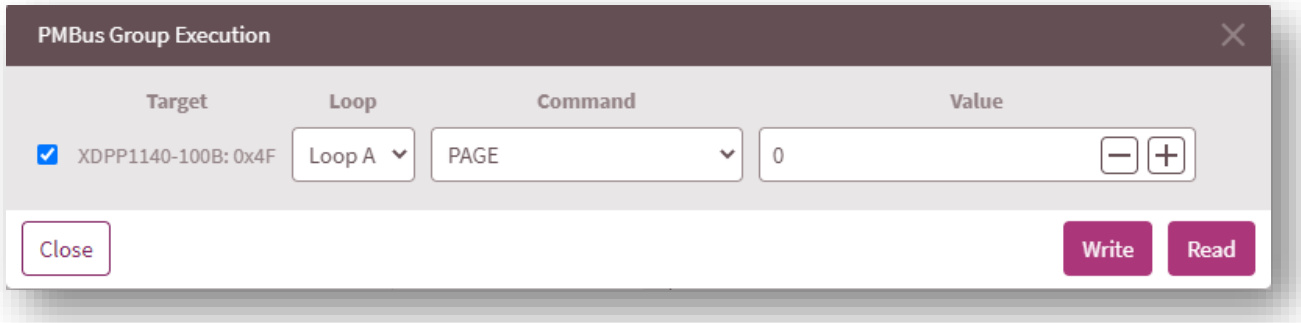
Utility Tools : Group Commands

- Click on 3 dots on Active controller window
- Select Send Group PMBus commands from the list
- It will open a box, which lets user select the device, loop and Pmbus command along with its value
- Click on Write to send that value, it will send to all the selected devices





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Utility Tools : GUI User/ Customer Login

- Use to give user the admin privilege over regular use
- User will be able to see, send and control more information to the device
- Able to access more advance features such as debugging, OTP reading and many more!

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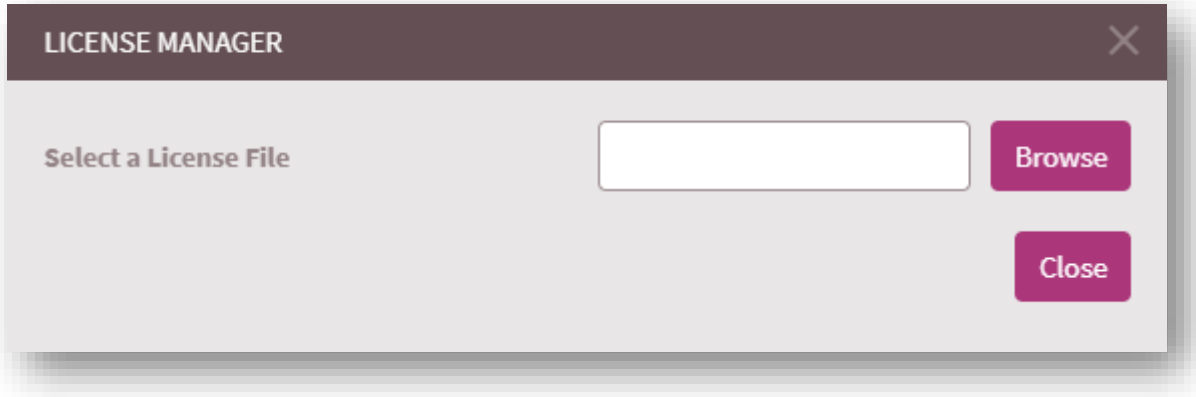
Utility Tools : Add a License

- User can load license from this location
- Open this window by clicking on Add a license icon and select a license file



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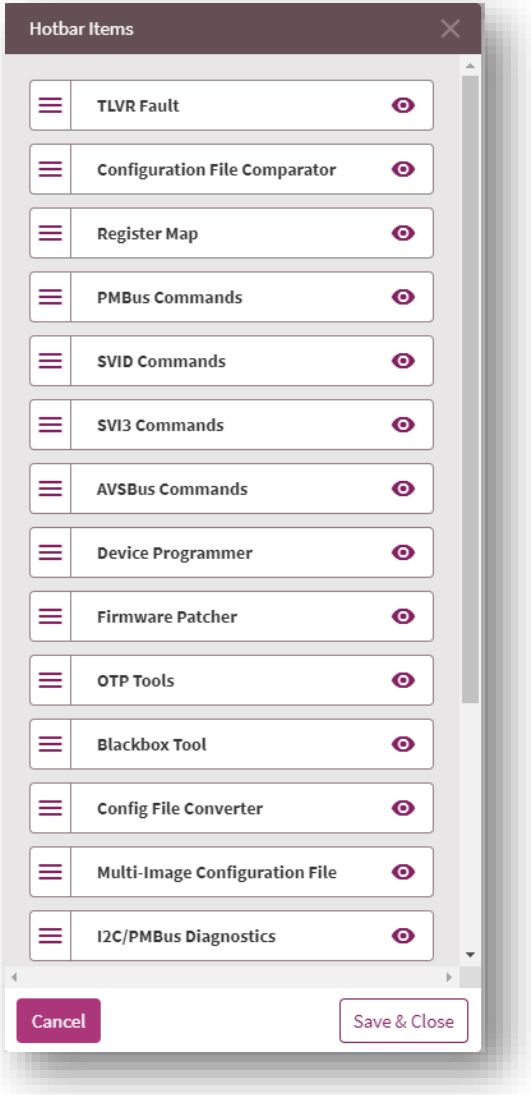
Utility Tools : Hot bar Manager

- User can hide-unhide different utility tools from this tool
- Order of the tools can be change from this location as well

- Click on icon to hide-unhide any tool
- Use to change the order of the tools
- Click on Save & Close once desire changes are made



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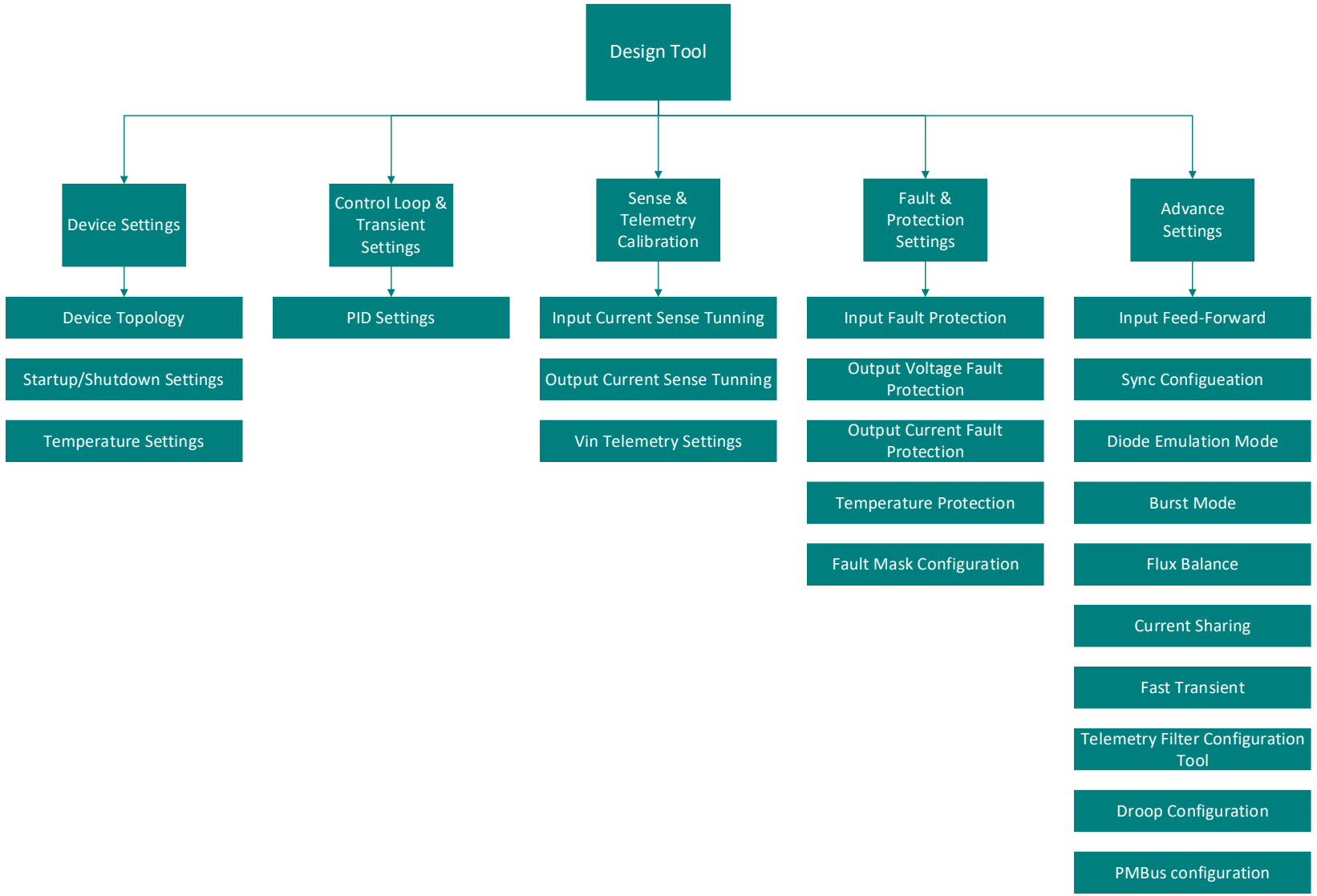
Design tool : Overview



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Design tool : Overview

- Design tool is a center point for any device configuration
- User can config a whole system and a device using this tool
- It allows user to everything starting from device address to topology, pid settings to all the I/O related protections
- This tool is organized to provide settings at one single place for advance modes
- Example : User can configure Burst mode, Diode emulation mode, current sharing, Input Feed-Forward from a single window that comprises settings for PMBus and registers
- Main page provides main 2 settings (i) Device Topology and (ii) PID settings for closed loop systems
- It can access through the main page bottom right corner button "***Next : Go to Design Tools***"

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Design tool : Overview

– Accessing main Design tool window

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Design tool : Overview



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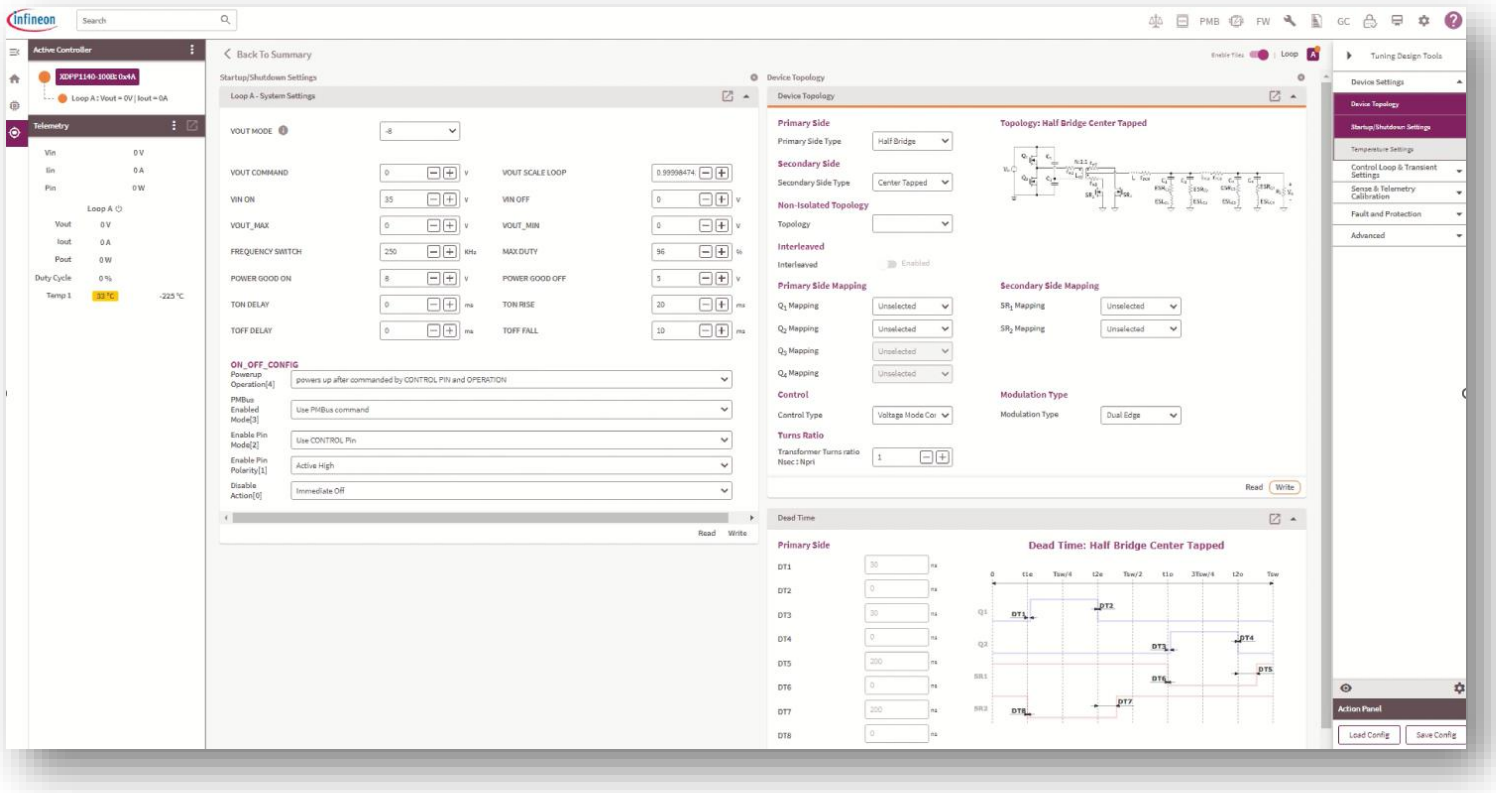
Design tool : Overview

- Panel window :
  - This region will display all the panels that are selected from the tools panel
  - User can select respective loop to configure
- From tools panel, user can select individual or multiple tools
  - Click on any panel to open it and click again to close it
- When multiple panels are selected, EN tiles help to organize it
- Action panel lets use load and save config (similar to one on main page)



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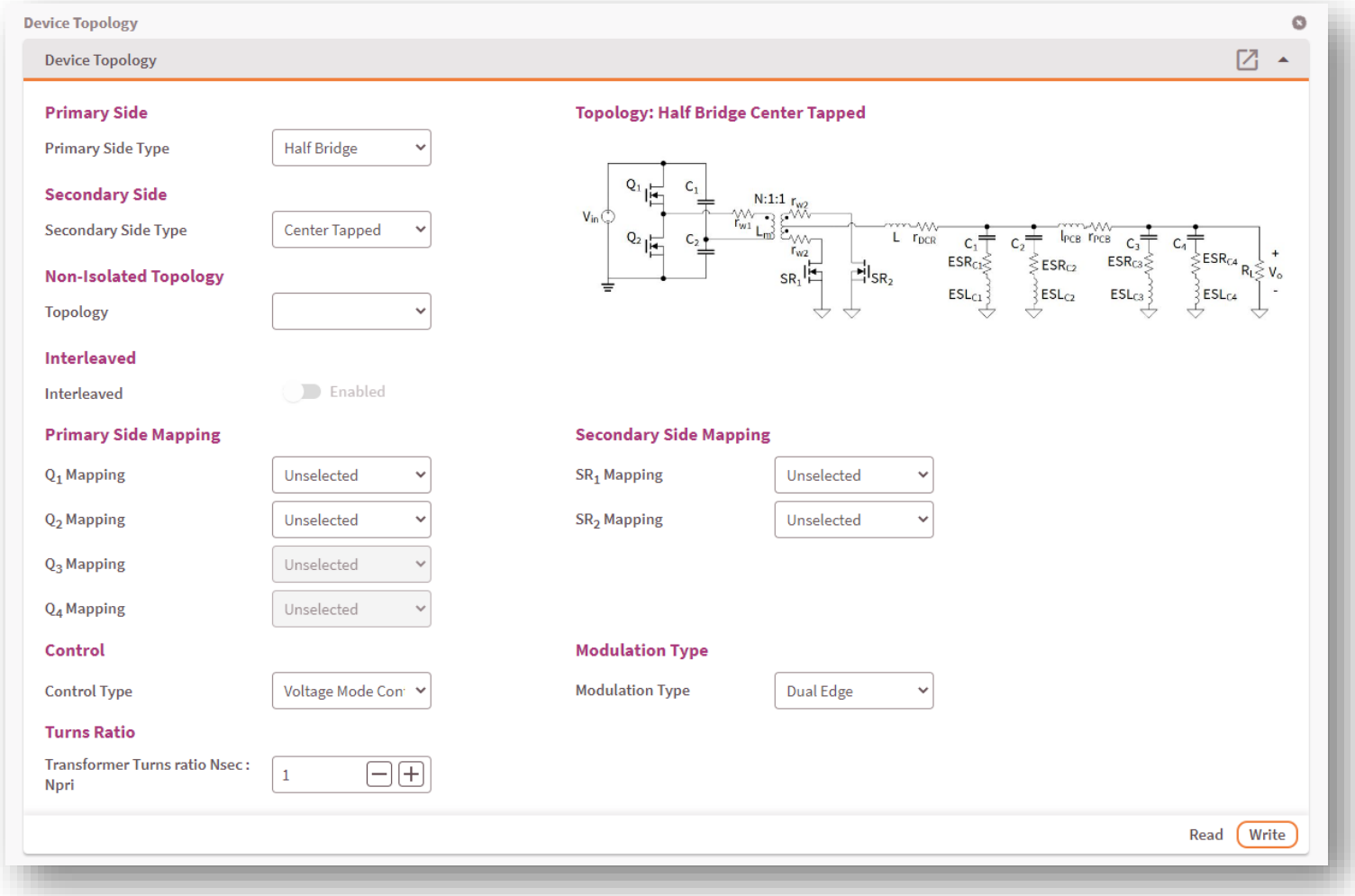
Design Tools : Device Settings : Device Topology

- This tab allows to configure device's topology and PWM related settings
- It will provide
  - Device topology
  - Startup/Shutdown Configuration
  - Temperature settings

- Device topology has 2 parts
  - Topology related settings such as
    - Primary & secondary side topology selection
      - Based on selected topology, reference diagram will be displayed for easy config
    - PWM mapping for both the side
    - Modulation type
    - Turns ratio
    - VMC or PCMC mode selection
  - Deadtime setting for each selected PWM



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Design Tools : Device Settings : Device Topology

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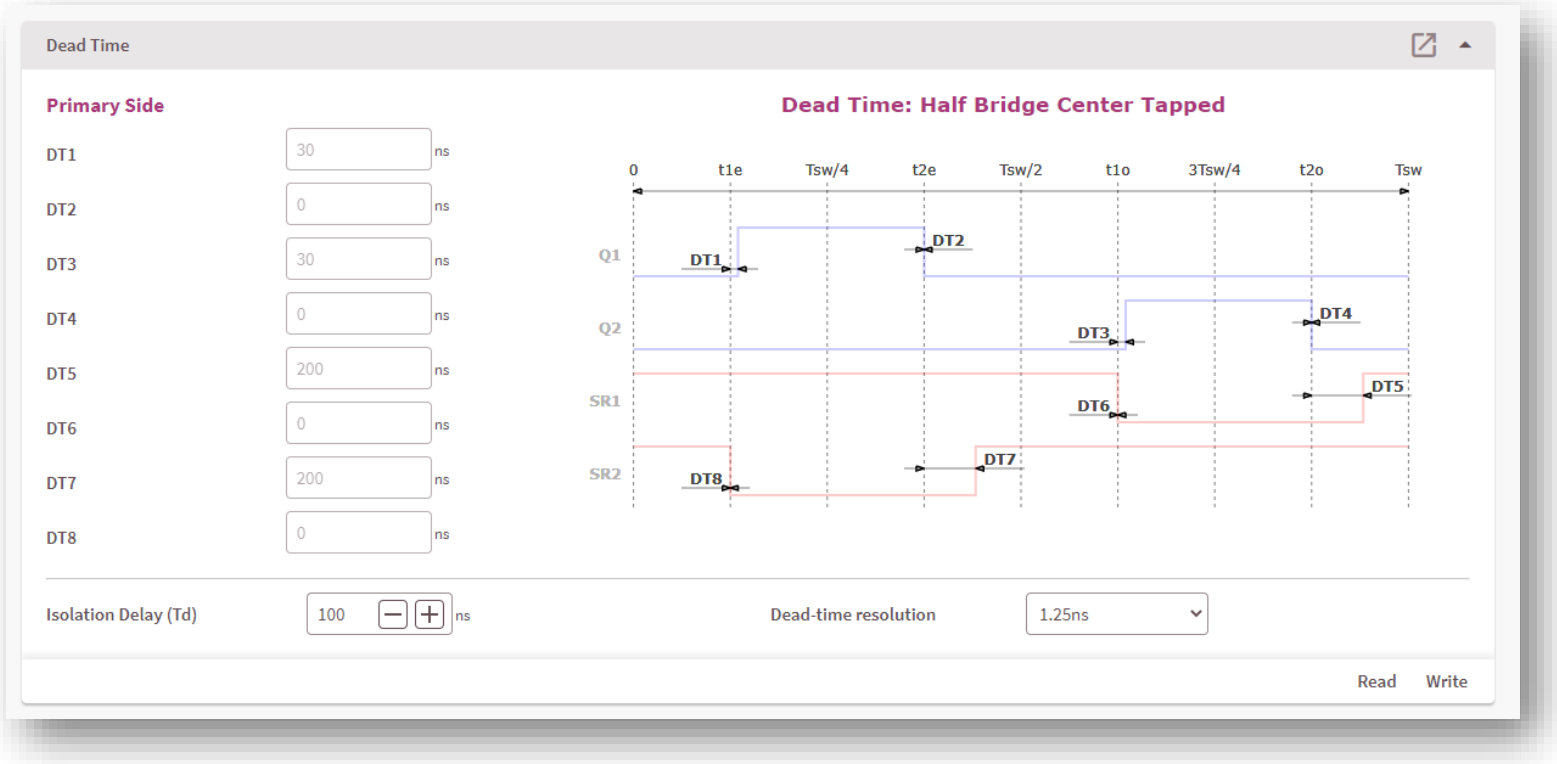

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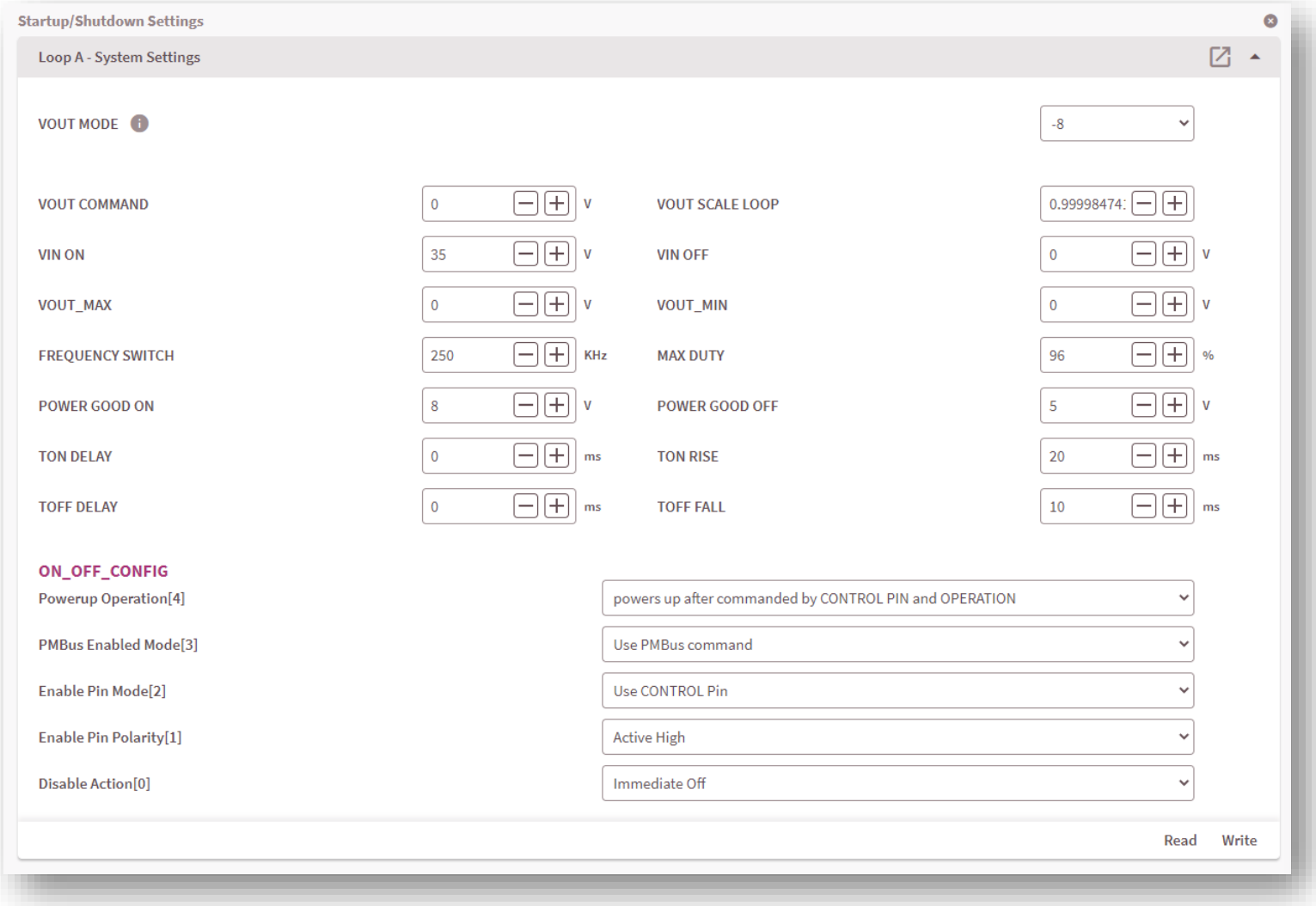
Design Tools : Device Settings : Startup/Shutdown

- User can configure Important aspects of configuration here such as
  - Target VOUT (Vout command)
  - Vout Scale factor
  - VIN_ON and VIN_OFF
  - Operating FSW, Max Duty percentage
  - Power Good ON and Power Good Off
  - TON & TOFF Delay
  - TON Rise time and TOFF Fall time

- Also, can configure PMBus command 0x02 : ON_OFF_CONFIG here



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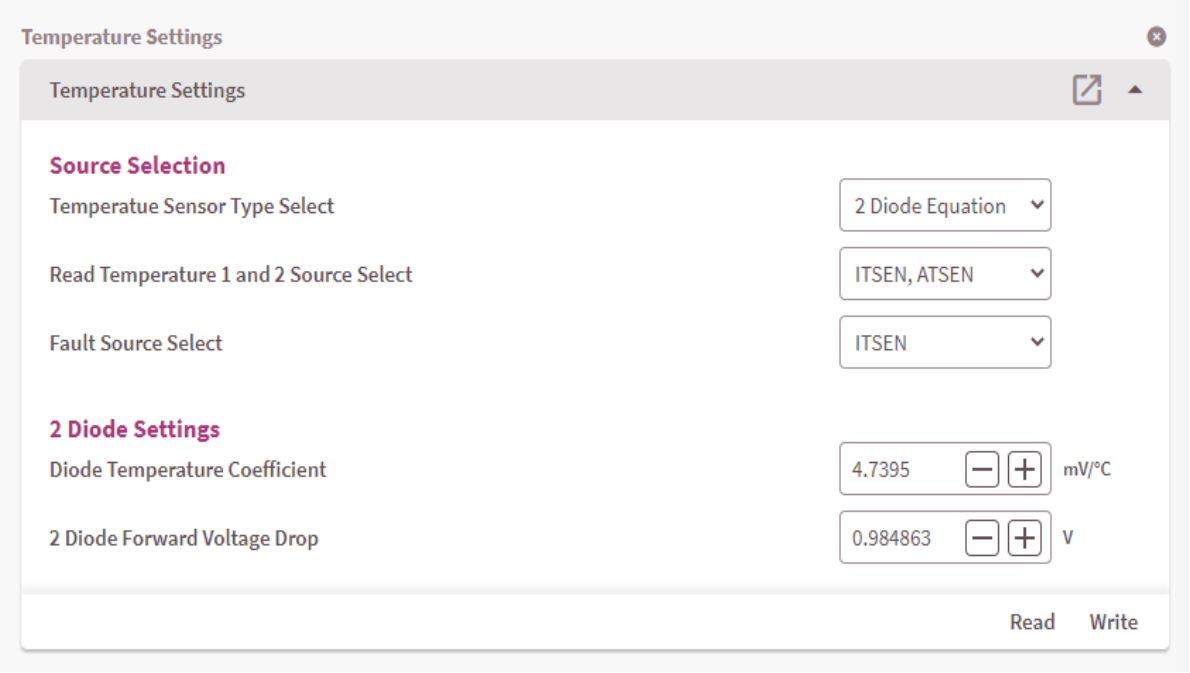
Design Tools : Device Settings : Temperature Settings

- Temperature related configuration can be set by this panel
- Langley support 2 temperature sensing
  - Each one can be mapped to any from following options
    - Internal temperature sensing
    - External temperature sensing from TSEN pin, it could be
      - 2 diode
      - NTC
      - PTC
    - For 2 diode, user will be able to configure Coefficient and Voltage drop



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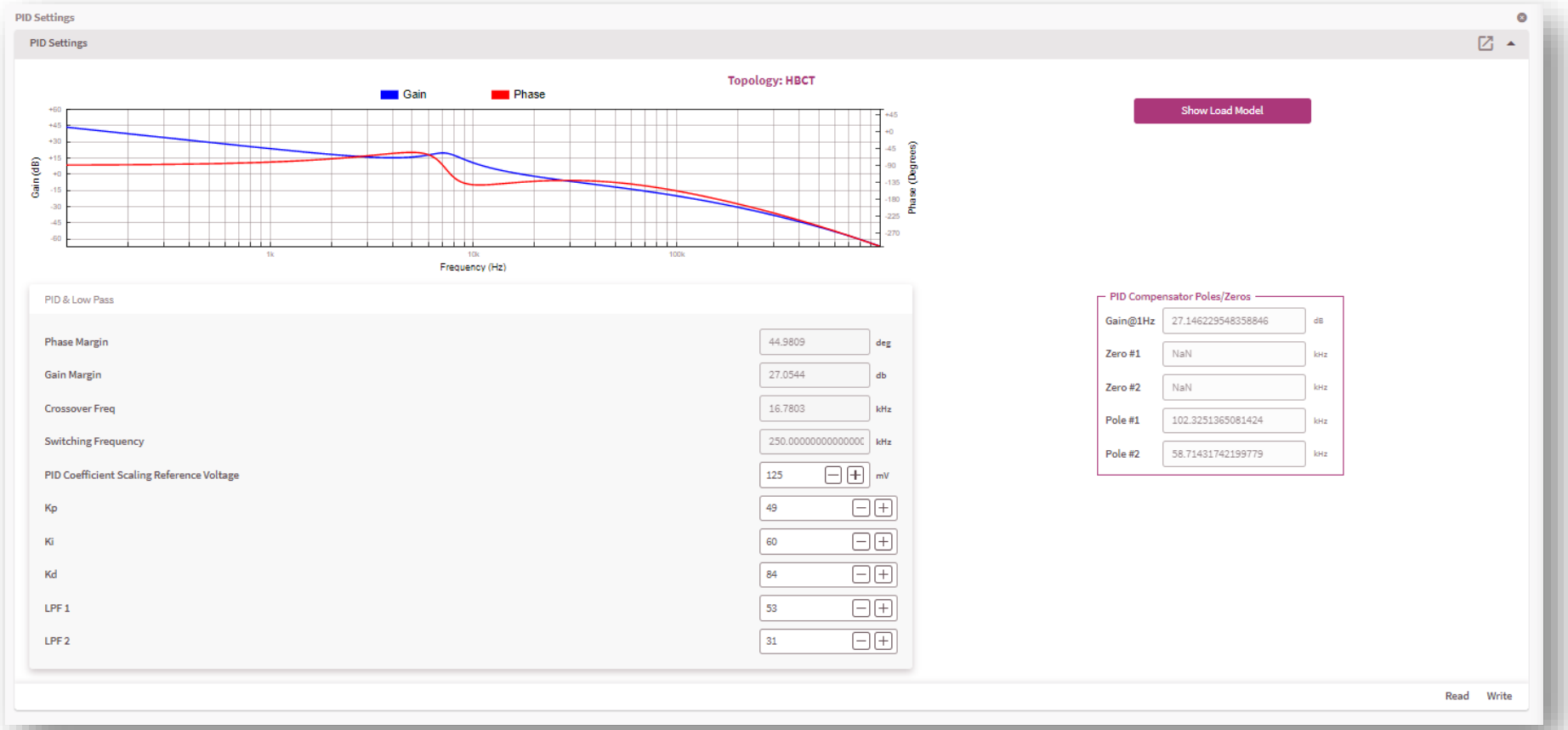
Design Tools : Control Loop & Transient Settings : PID

- For closed loop system configuration, PID can be configured from here
- User can configure Kp, Ki, Kd, PID pre filter co-efficient and Co-efficient scaling reference voltage
- Tool will calculate and show phase margin, gain margin, crossover frequency and values of Poles and Zeros based on values given



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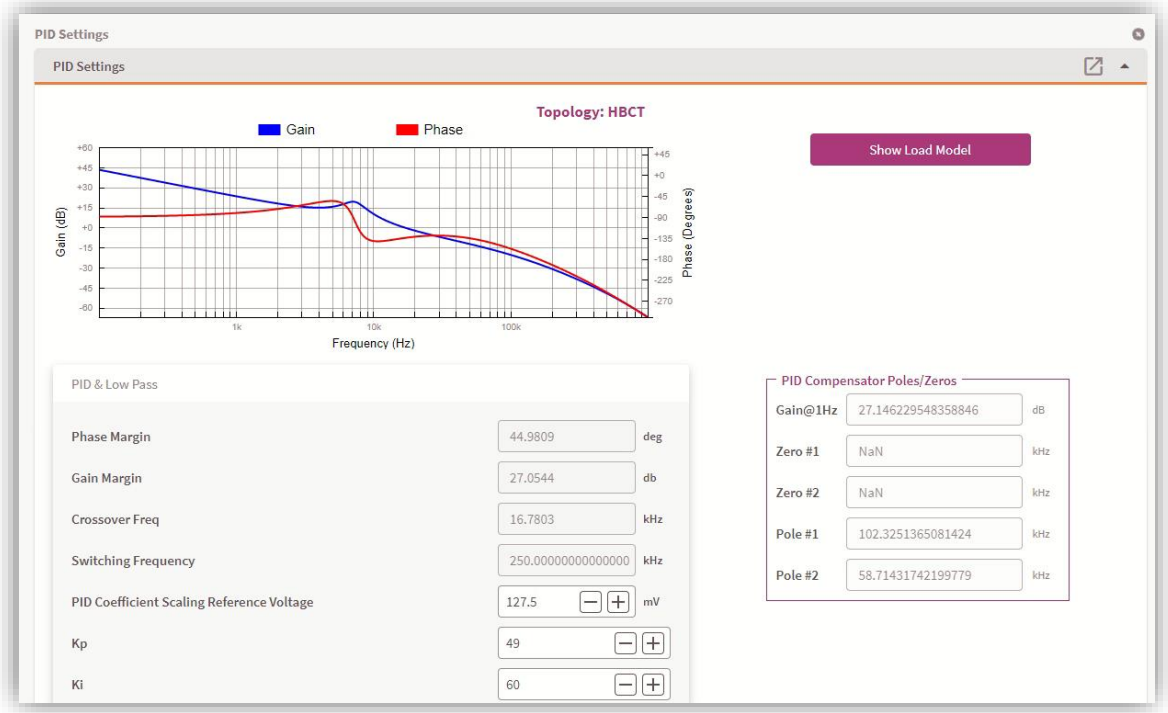
Design Tools : Control Loop & Transient Settings : PID

- Bode plot here is active window, so as soon as value user change values of Reference voltage or Kp, Ki, Kd or co-efficient, plot will change automatically
- User can interact with it, zoom in/out on any point (use mouse wheel for zoom in/out and use left click to move and drag the graph)
- Also, can read *Gain*, *Phase* and *Frequency* at any point in the graph by hovering mouse on a graph



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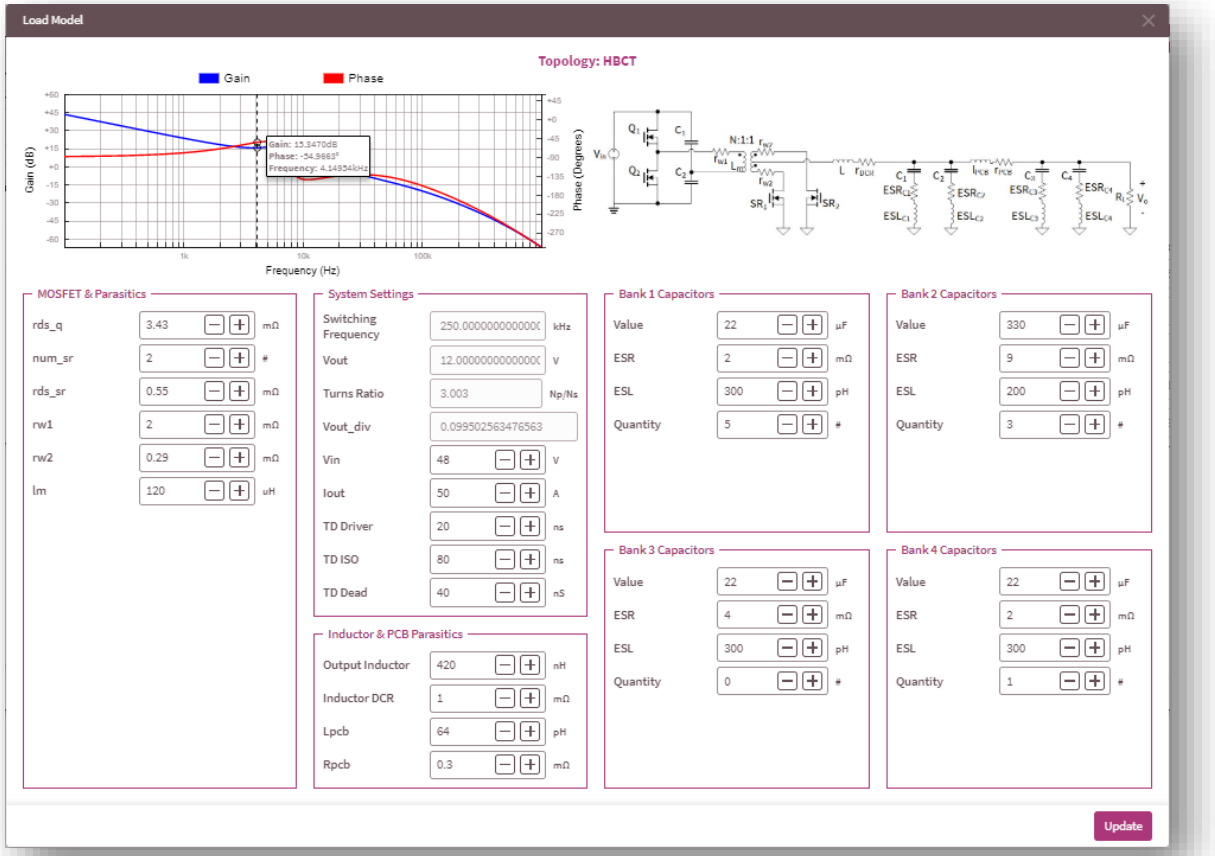
Design Tools : Control Loop & Transient Settings : PID

- This tool also features system settings & component parasitic for different topologies by clicking on ***Load Model***
- User will be able to set Mosfet & Parasitic, Inductor & PCB Parasitic, Capacitor bank values using which GUI will re-calculate PID values.



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Design Tools : Sense and Telemetry

- This design tool allow user to configure current and volage telemetry configuration
- XDPP1140 and 1148 has 2 different configuration, one with 2 VSEN and another with 2 ISESN, this tool allow to configure both
- It automatically detects the device and based on it shows only applicable # of current/voltage sense module
- User can configure source of telemetry, ADC, Scale for the ADC, Feedback of ADC, topology using this tool

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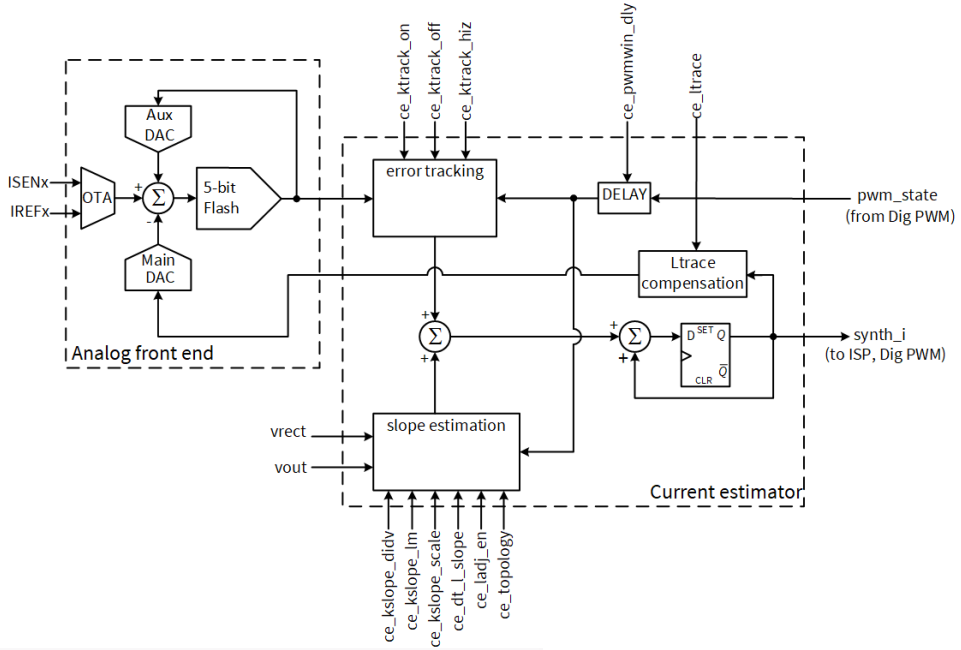
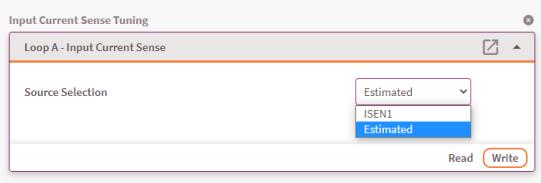
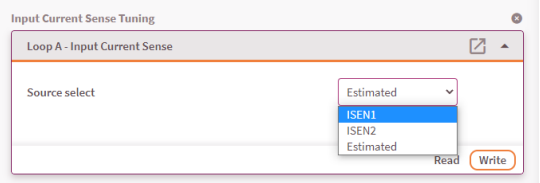
Design Tools : Sense and Telemetry : Current Sense

- XDPP1140 and XDPP1148 current sense can be categorized mainly in 2 part
  - Estimated current calculation (FW calculation based on VOUT, VIN & IOUT)
  - Sense using ADC

- ADC module comprises main 2 part
  - Analog front end (AFE)
  - Current estimator (CE)
  - User can configure both using this tool
- Source selection for AFE will be done in the first place
  - This will construct a digital waveform based on analog input with feedback on error tracking
    - If any of the current sense module is used, user can configure scale (apc) at MFR IOUT APC







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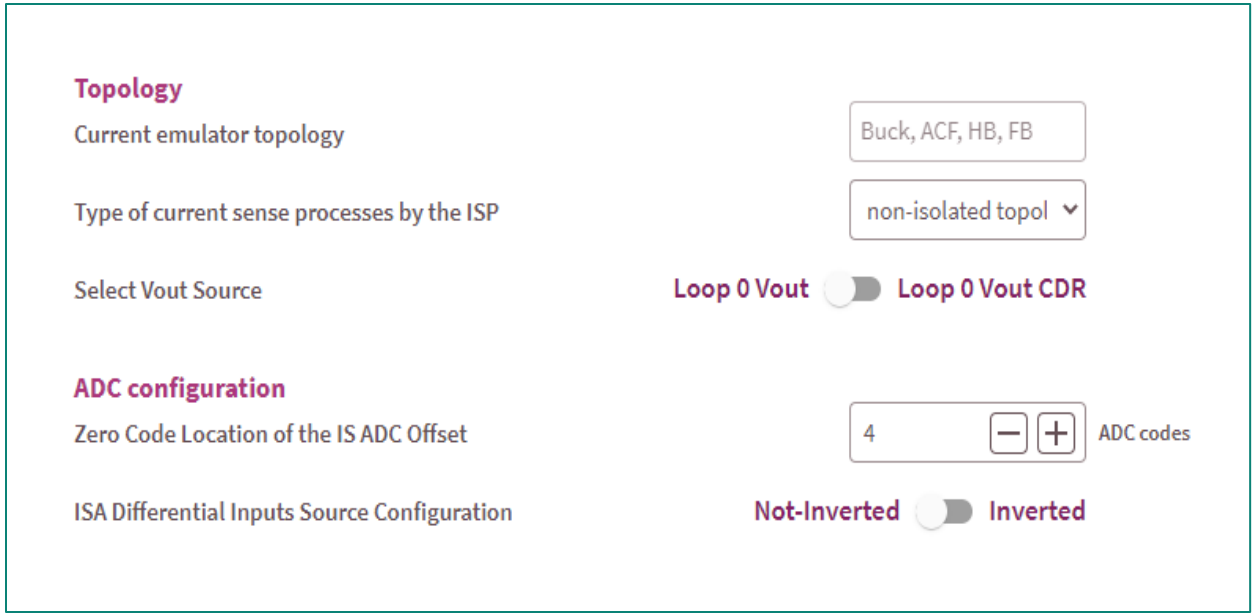
Design Tools : Sense and Telemetry : Current Sense

- After selecting source, use will get option to configure rest of the module
  - Topology and module configuration
    - Topology is configured from ***Device Topology***
    - User can decide type of current they're sensing
    - If polarity of current is inverted or not
      **Note : If it is inverted, current estimator will be disabled*
    - User can adjust the ADC code offset to get accurate current telemetry



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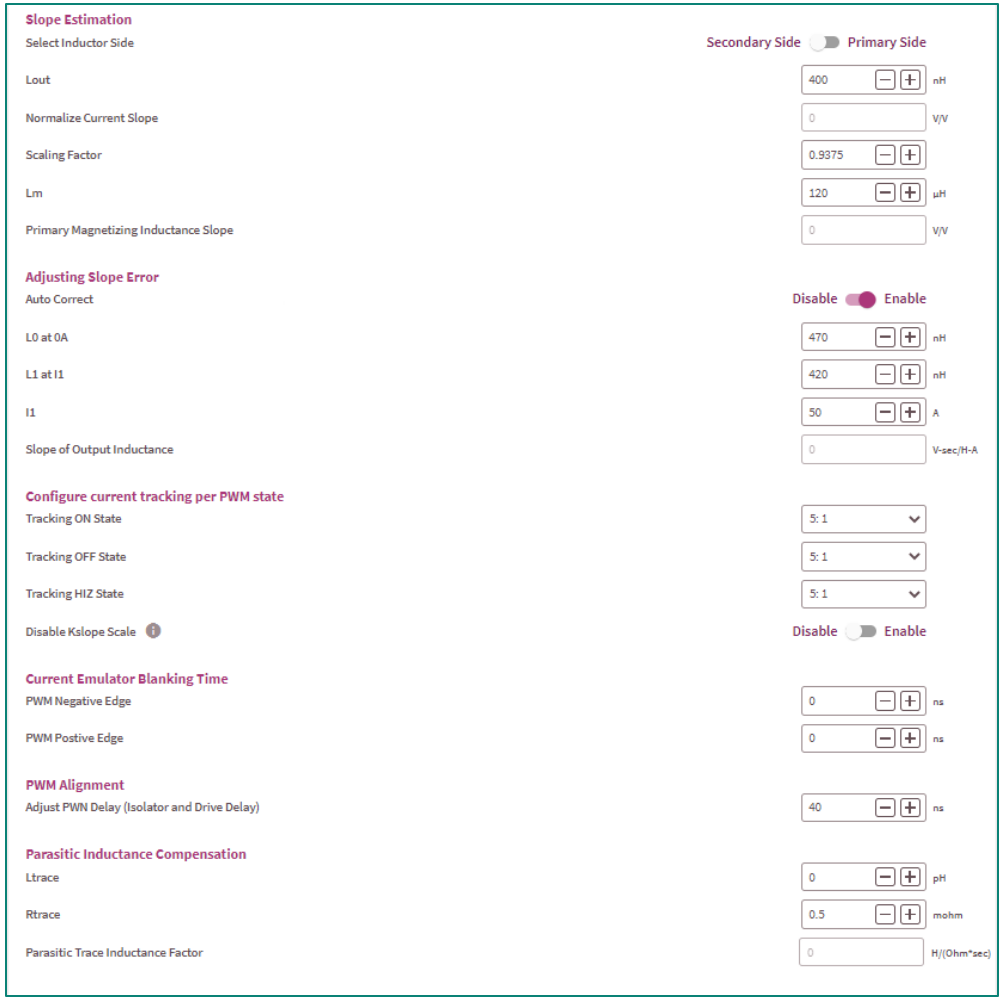
Design Tools : Sense and Telemetry : Current Sense

- One level down, slope estimator will be configured with
  - Adjusting slope error
  - Slope of output inductance
  - Current tracking on PWM adjustment
  - PWM alignment

- To further improve accuracy, controller provides configuration such as
  - Sense blanking on edge
  - Parasitic inductance compensation



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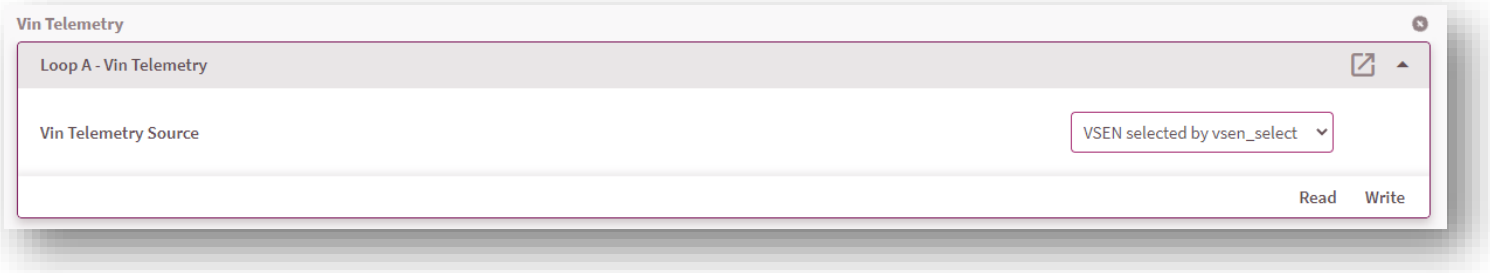
Design Tools : Sense and Telemetry : Voltage Sense

- Similar to current sense, xdpp1140 has 2 voltage sense, that can be configured using this panel
- We’ve 3 different ways to sense input voltage
  - Using VSEN
  - PRISEN
  - Forced VIN value



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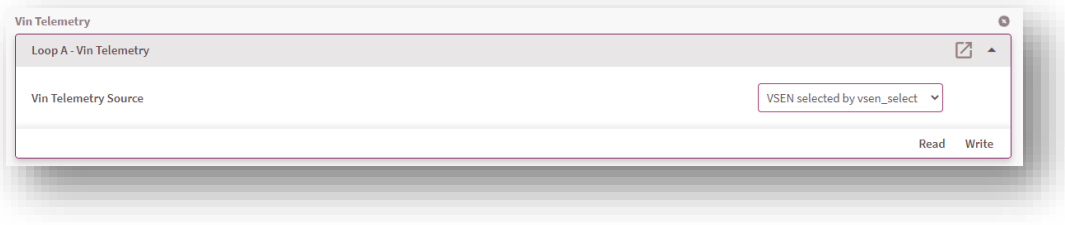
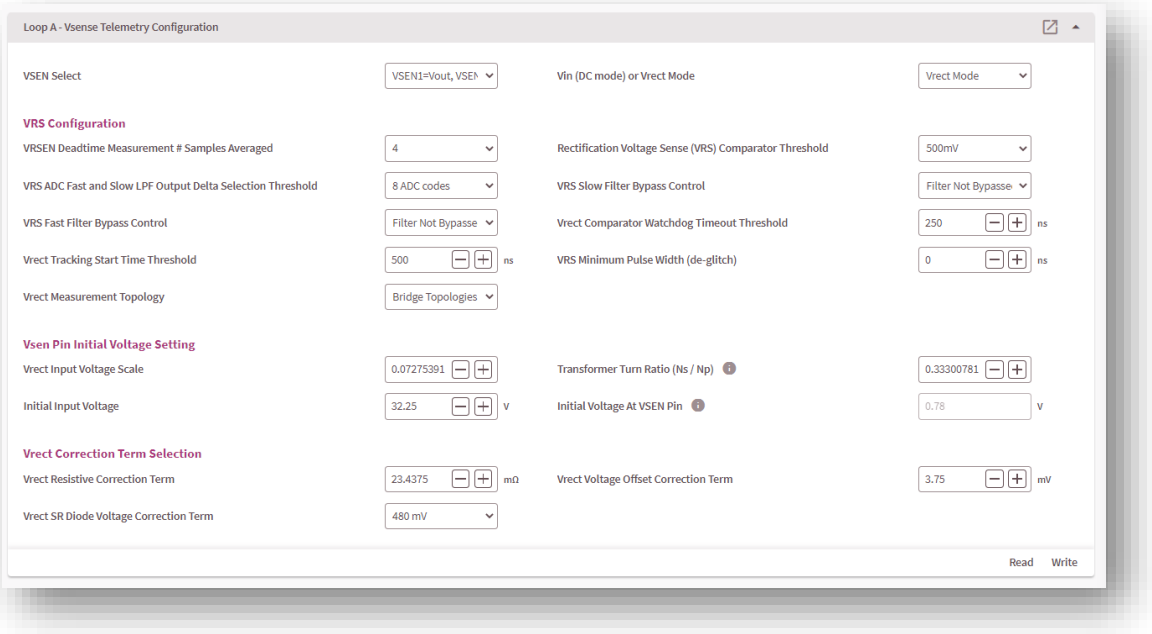
Design Tools : Sense and Telemetry : Voltage Sense

- Using VSEN :
  - Once user select “VSEN selected by vsen_select” & click on Write it will open all the settings for VSEN
  - First, using VSEN select, user can decide which VSEN belongs to input and output (for xdp1140 only) & mode
  - Following, all the VRS related configuration can be done such as
    - comparator threshold
    - Deadtime measurement samples average
    - Filter delta selection threshold and bypass control
    - Measurement topology
    - VRS minimum pulse width setting and
    - Tracking start time threshold
  - User can configure Initial voltage settings which includes settings for
    - Transformer turns ratio
    - Input voltage scale
    - Initial input voltage
  - User can configure correction term selection which includes voltage offset correction, SR diode voltage correction and resistive correction





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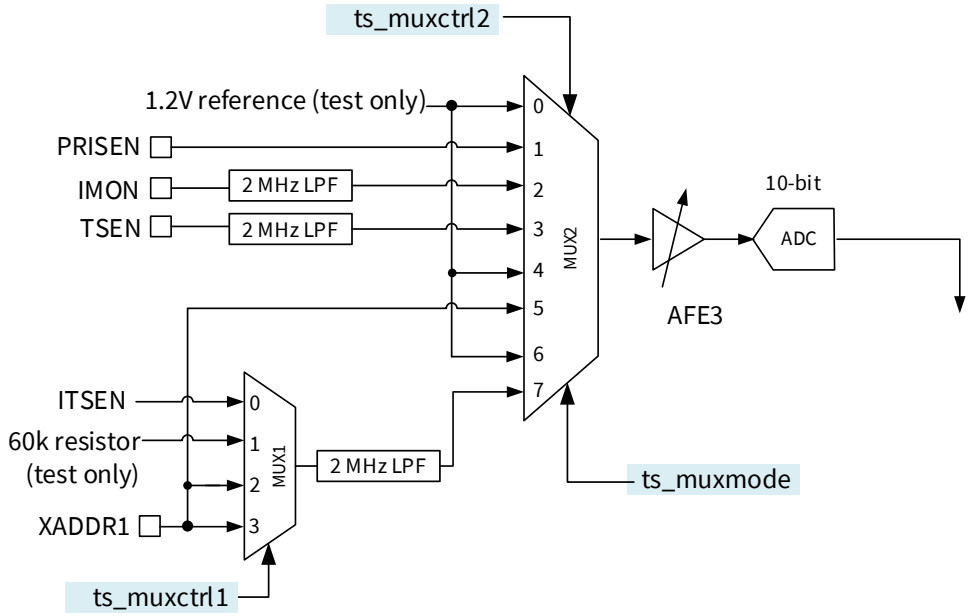
Design Tools : Sense and Telemetry : Voltage Sense

- We can use general purpose ADC for voltage sensing as well
- It’s 10-bit high speed ADC with 0.9MHz sample frequency

- User needs to configure PRISEN for MUX2 and Enable voltage sensing from PRISEN

- Also, it allows user to configure Vin Offset and adjust the slope of Vin detection



* No need to configure MUX1 and Sequencing for PRISENsing

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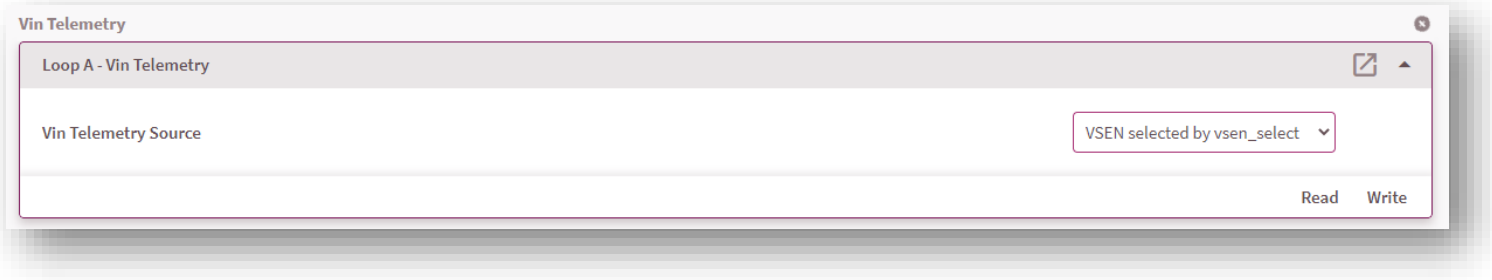
Design Tools : Sense and Telemetry : Voltage Sense

- This tool allows user to emulate the input voltage to the controller

- Change Vin source to tlm_vin_force and write desire voltage value.
- This will be reflected on regulation and telemetry both, so user will be able to run the operation with this value
- Very useful for debugging, testing and for early stages of config creation



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Design Tools : Fault & Protection : Overview

- This is the center for configuring all the protection of the controller and the system
- Controller offers following protections
  - VDD UVLO
  - VIN_UV/VIN_OV
  - IIN_OC
  - PIN_OP
  - VOUT_UV/VOUT_OV
  - IOUT_UC/IOUT_OC
  - POUT_OP
  - Pulse-by-pulse peak current limit protection (PCL)
  - Short circuit protection (SCP)
  - Internal/External temperature protection (OT/UT)
  - Flux imbalance fault
  - Sync Fault
  - Current Sharing Fault
  - SMBALERT#
  - Configuration (CRC) failure fault
  - I2C communication failure fault
  - User configurable external fault

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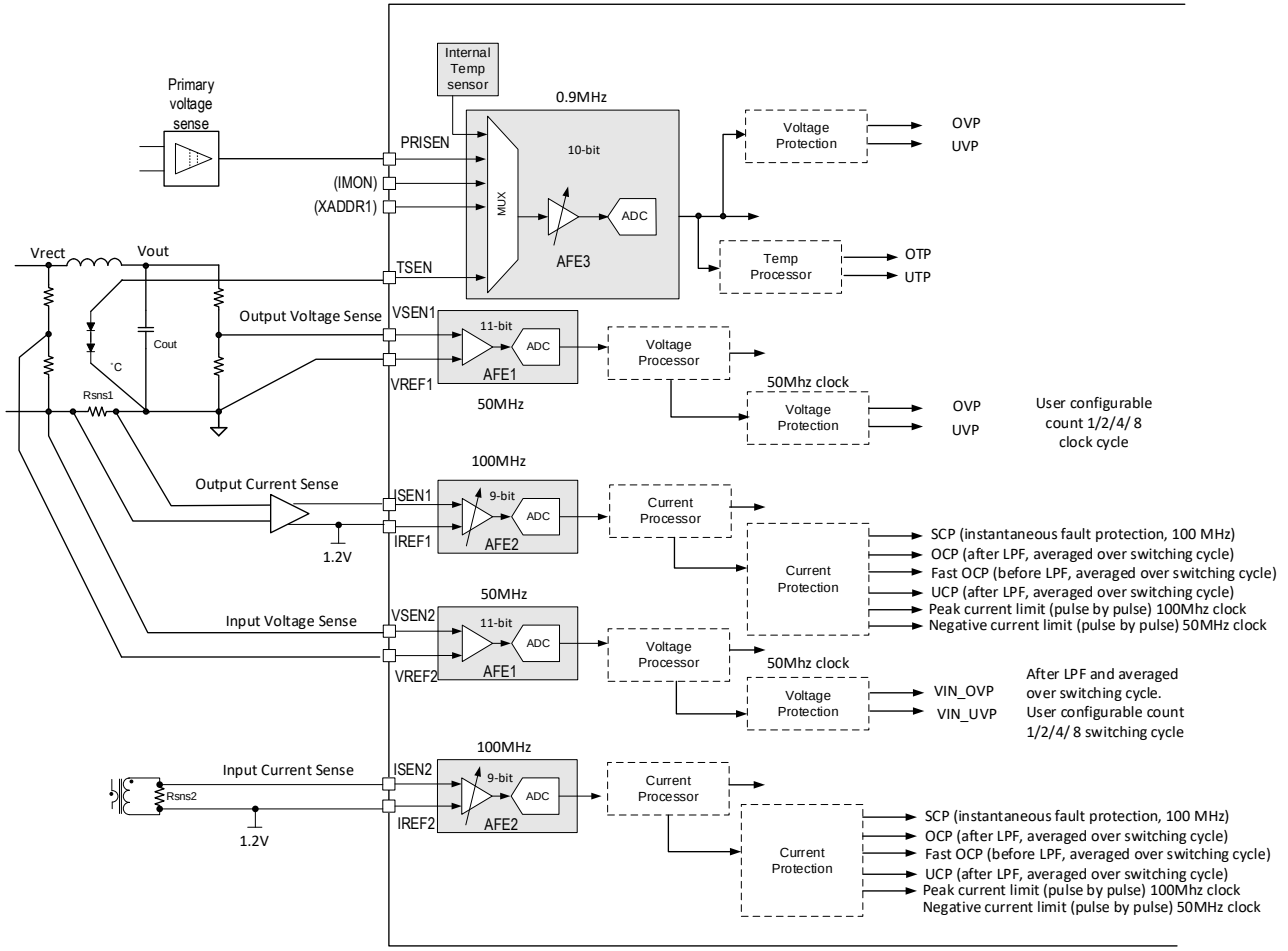
Design Tools : Fault & Protection : Overview

– Hardware protection block



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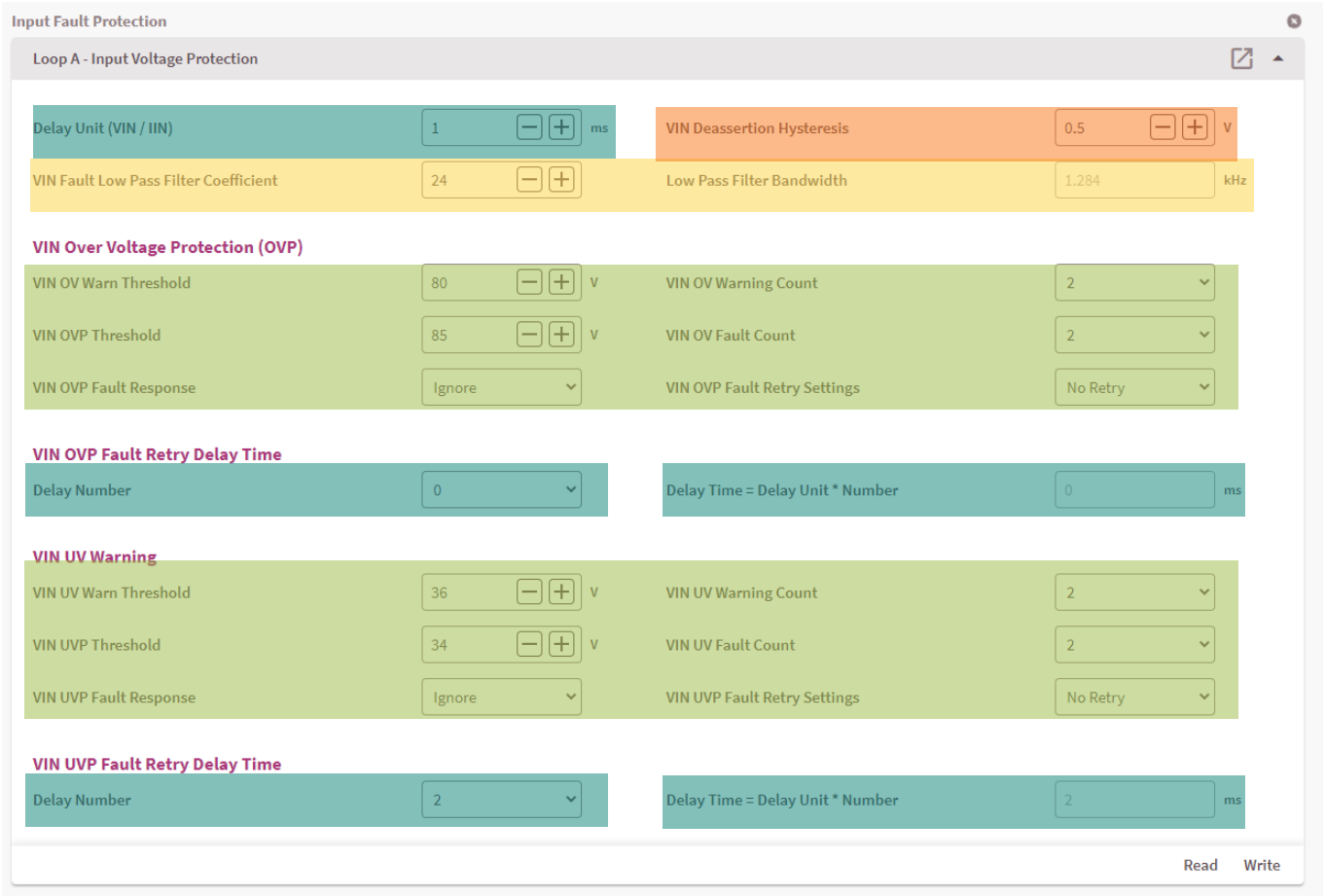
Design Tools : Fault & Protection : Input Fault Protection

– This panel allow user to configure VIN_OV and VIN_UV fault with the retry delay



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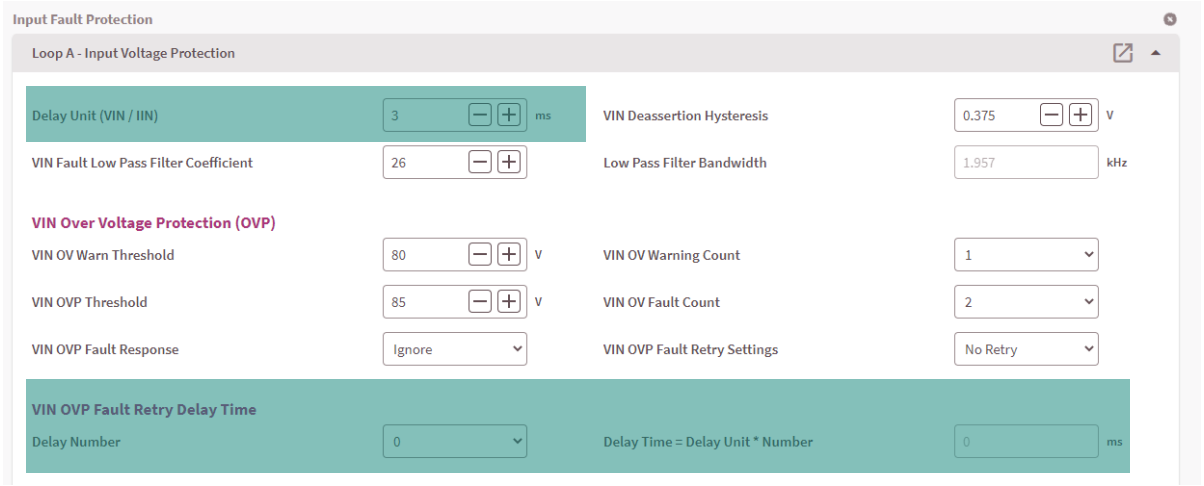
Design Tools : Fault & Protection : Input/Output Fault Protection

– Delay unit is the unit for retry response, so final delay time = Delay unit * Number of delay set by numbers



– User can also set low pass filter coefficient of the fault for telemetry
– If controller detects a condition where the problem is not severe, it will be consider as a warning and if it is severe that it could damage a board, controller or load it will be interpreted as a fault
– Response will be taken when fault will trigger.

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Design Tools : Fault & Protection : Input/Output Fault Protection

- ***VIN DE assertion Hysteresis*** will be the number used to de-assert the warn and fault interrupts
- Relation of Warn, Fault and Hysterisis is shown here

Fault	Asserted	Deasserted
VIN_OV_FAULT	Value > VIN_OV_FAULT_LIMIT	Value <= (VIN_OV_FAULT_LIMIT-VIN_DE_ASSERTION_HYESTERSIS)
VIN_OV_WARN	Value > VIN_OV_WARN_LIMIT	Value <= (VIN_OV_WARN_LIMIT-VIN_DE_ASSERTION_HYESTERSIS)
VIN_UV_WARN	Value < VIN_OV_WARN_LIMIT	Value >= (VIN_UV_WARN_LIMIT+VIN_DE_ASSERTION_HYESTERSIS)
VIN_UV_FAULT	Value < VIN_OV_FAULT_LIMIT	Value >= (VIN_UV_FAULT_LIMIT+VIN_DE_ASSERTION_HYESTERSIS)

- VIN OV Fault Count will define number of consecutive switching cycles the input voltage must exceed the fault threshold to asset it.

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Design Tools : Fault & Protection : Current Fault Protection

- This panel has settings for
  - Output over current protection
  - Output under current protection
  - Fast output current protection
  - Short circuit protection and
  - Output power warning configuration

- Output current protection is similar to input/output voltage protection method
- It has warning threshold and fault threshold to configure with response configuration with retry delay

- Additionally, it has configuration for Over current low voltage fault limit with response configuration
- Warning, hysteresis and fault was as explained earlier
- Delay time is also same as input/output voltage configuration

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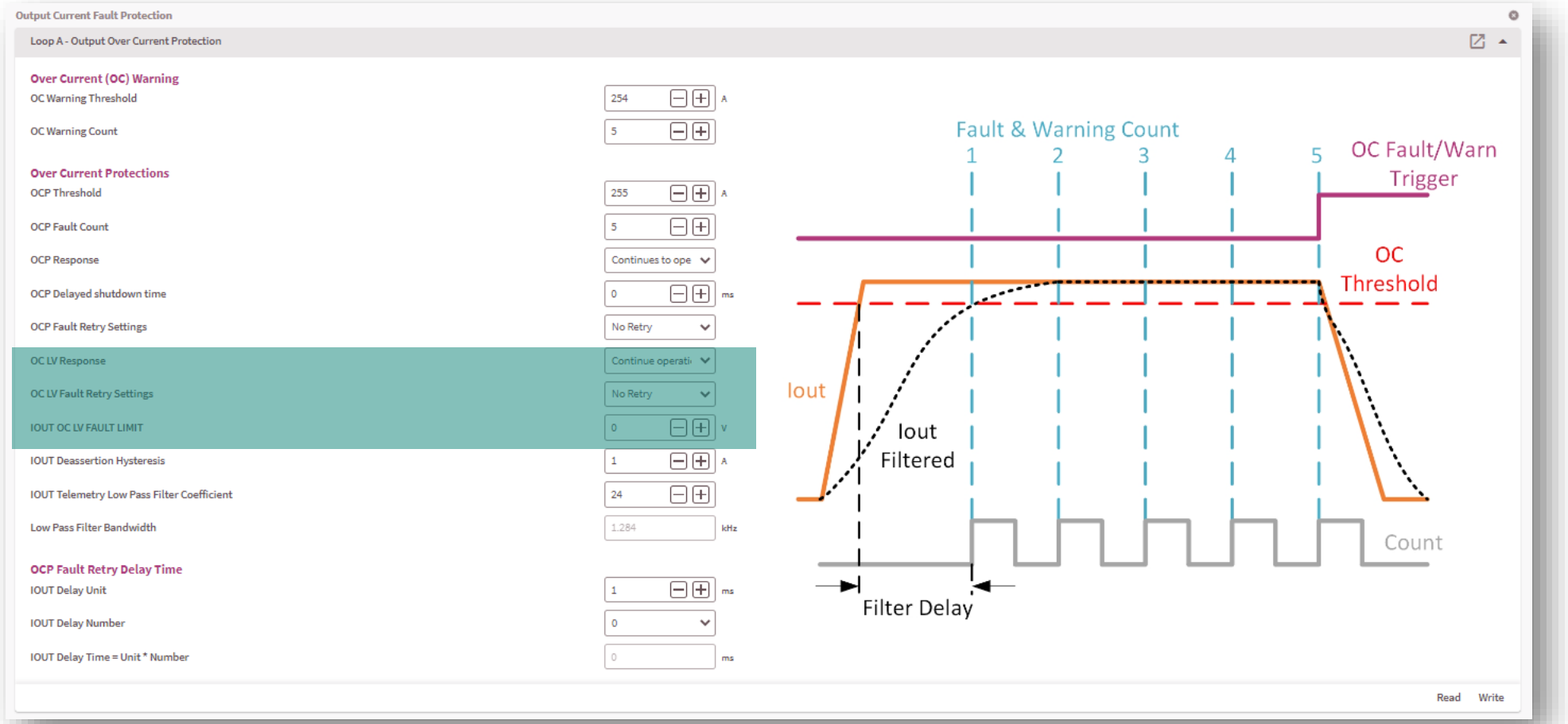
Design Tools : Fault & Protection : Current Fault Protection



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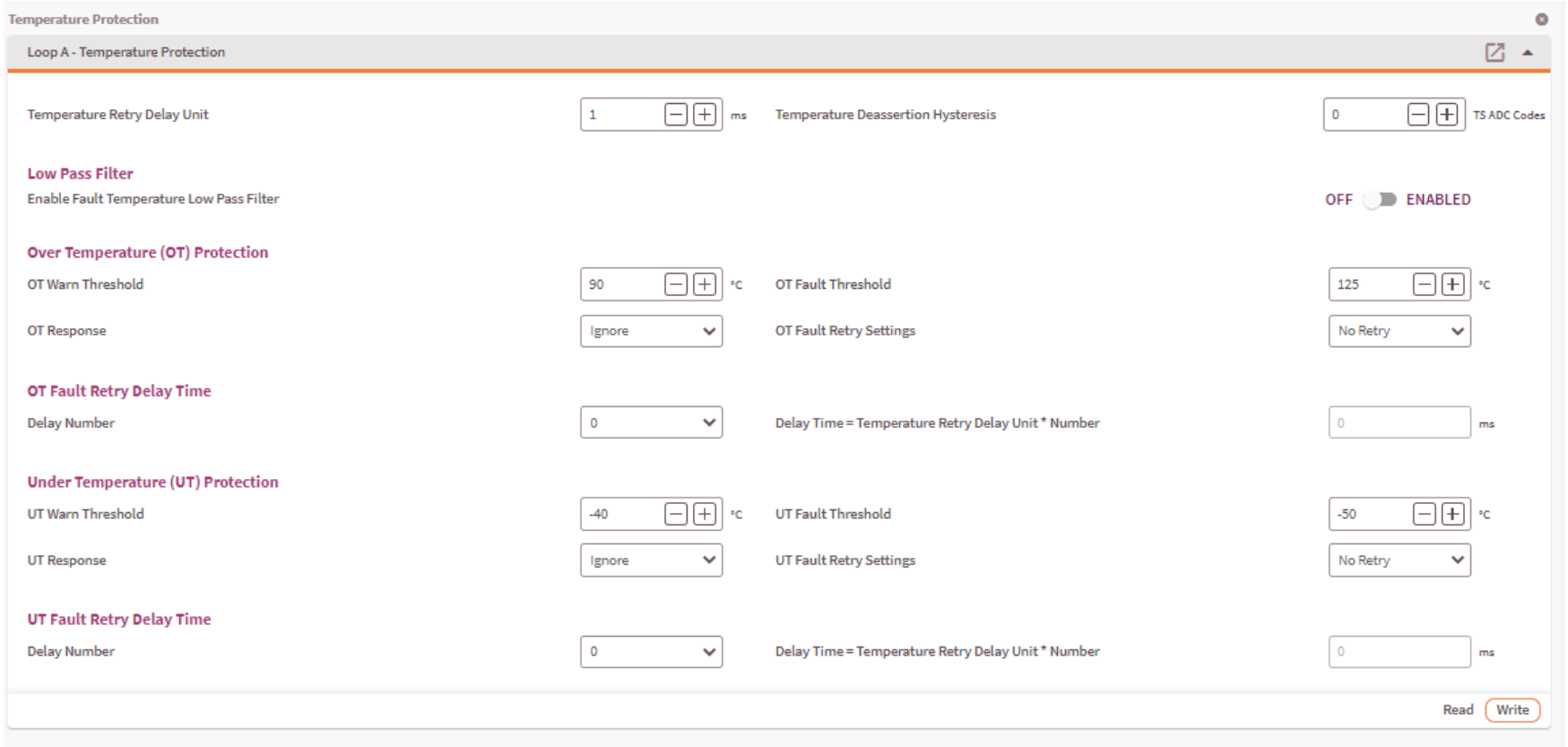
Design Tools : Fault & Protection : Temperature Protection

- Similar to input/output voltage and output current configuration temperature config panel is designed
- User can configure Under and Over temperature with warn and fault threshold limits and responses based on PMBus specification
- Low pass filter co-efficient can be configured for telemetry



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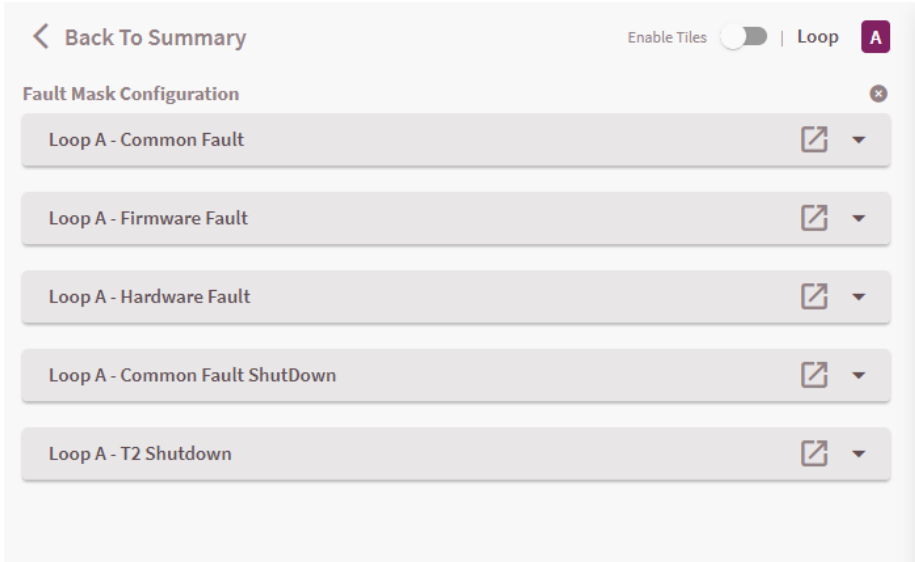
Design Tools : Fault & Protection : Fault Mask

- For more accurate control and complex system, this tool allow user to configure individual faults and shutdown on a particular fault
- Faults can be represented mainly in 3 categories for better understand of GUI approach
  - Hardware Faults
  - Firmware Faults
  - Common Faults



- Enabling fault meaning, it will be reported as a fault and action will be taken based on response set
- Disabling the fault will not report the fault even if there's an actual fault on Hardware or firmware side and no action will take place even if it's configured in PMBUS
- Shutdown can be configured via ***Common Fault Shutdown***
- Advance feature will allow user to configure all the regular Hardware fault on T2 using ***T2 Shutdown***

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Design Tools : Fault & Protection : Fault Mask : HW Fault

– Hardware faults can be categorized as follow :

Bit	Fault	Bit	Fault
0	Reserved	1	VOUT_OV_FAULT
2	VOUT_OV_WARN	3	VOUT_UV_FAULT
4	VOUT_UV_WARN	5	IOUT_OC_LV_FAULT
6	VIN_OV_FAULT	7	VIN_OV_WARN
8	VIN_UV_FAULT	9	VIN_UV_WARN
10	MFR_IOUT_OC_FAST	11	IOUT_OC_FAULT
12	IOUT_CONSTANT_CURRENT	13	IOUT_OC_WARN
14	IOUT_UC_FAULT	15	IIN_OC_FAULT
16	IIN_OC_WARN	17	OT_FAULT
18	OT_WARN	19	UT_FAULT
20	UT_WARN	21	Unused
22	VDD UVLO fault	23	SYSTEM_RESET_EVENT
24	EXT_FAULT	25	ISP0_SCP_FAULT
26	ISP1_SCP_FAULT	27	CURRENT_SHARE_FAULT
28	SYNC_FAULT	29	ANA_VOUT_OV_FAULT
30	VOUT_MAX_MIN_WARN	31	FW_FAULT_PIN_SET

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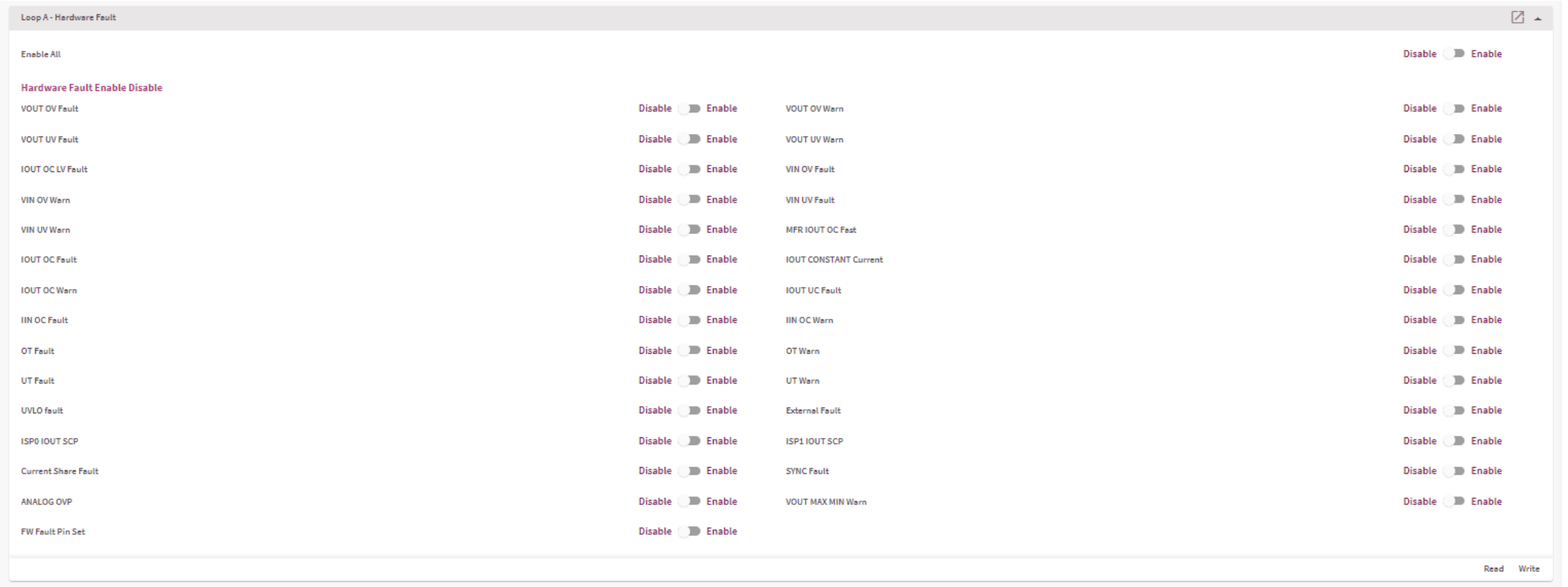
Design Tools : Fault & Protection : Fault Mask : HW Fault

- Hardware fault config using GUI :
  - EN/Disable switch will make fault enable and disable.
  - All the faults can be enabled or disabled directly using ***Enable All*** Toggle switch on the top



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Design Tools : Fault & Protection : Fault Mask : FW Fault

– Firmware faults can be categorized as follow :

Bit	Fault	Bit	Fault
0	RESERVED_FW_NO_FAULT	1	COMMON_SHUTDOWN
2	TON_MAX_FAULT	3	TOFF_MAX_WARN
4	VIN_INSUFFICIENT	5	PIN_OP_WARN
6	POUT_OP_WARN	7	ESTIMATED IIN OC FAULT
8	ESTIMATED IIN OC WARN	9	INVALIDATED_CORRUPTED_SNAPSHOT
10-31	Spares for user		

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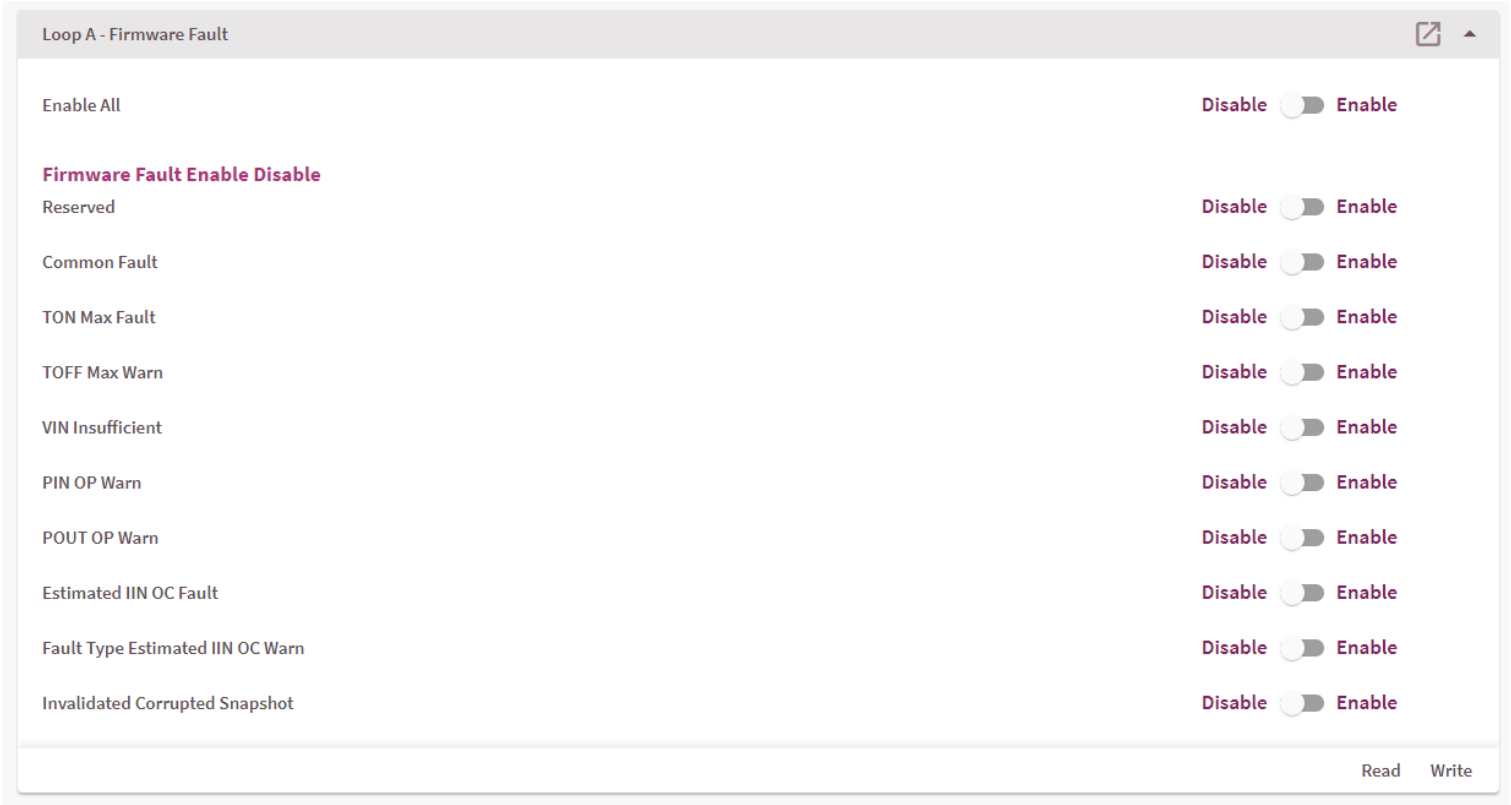
Design Tools : Fault & Protection : Fault Mask : FW Fault

- Firmware faults config using GUI :
  - EN/Disable switch will make fault enable and disable.
  - All the faults can be enabled or disabled directly using ***Enable All*** Toggle switch on the top



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Design Tools : Fault & Protection : Fault Mask : Common Fault

– Common faults can be categorized as follow :

Bit	Fault	Bit	Fault
0	unused	1	ISEN1 tracking fault
2	ISEN2 tracking fault	3	Flux balance fault
4	ISEN1 PCL fault	5	ISEN2 PCL fault
6	VSEN open fault (PID Duty detection)	7	LLC burst mode warning
8	LLC open loop warning	9	unused
10	POR VDDA fault	11-31	unused

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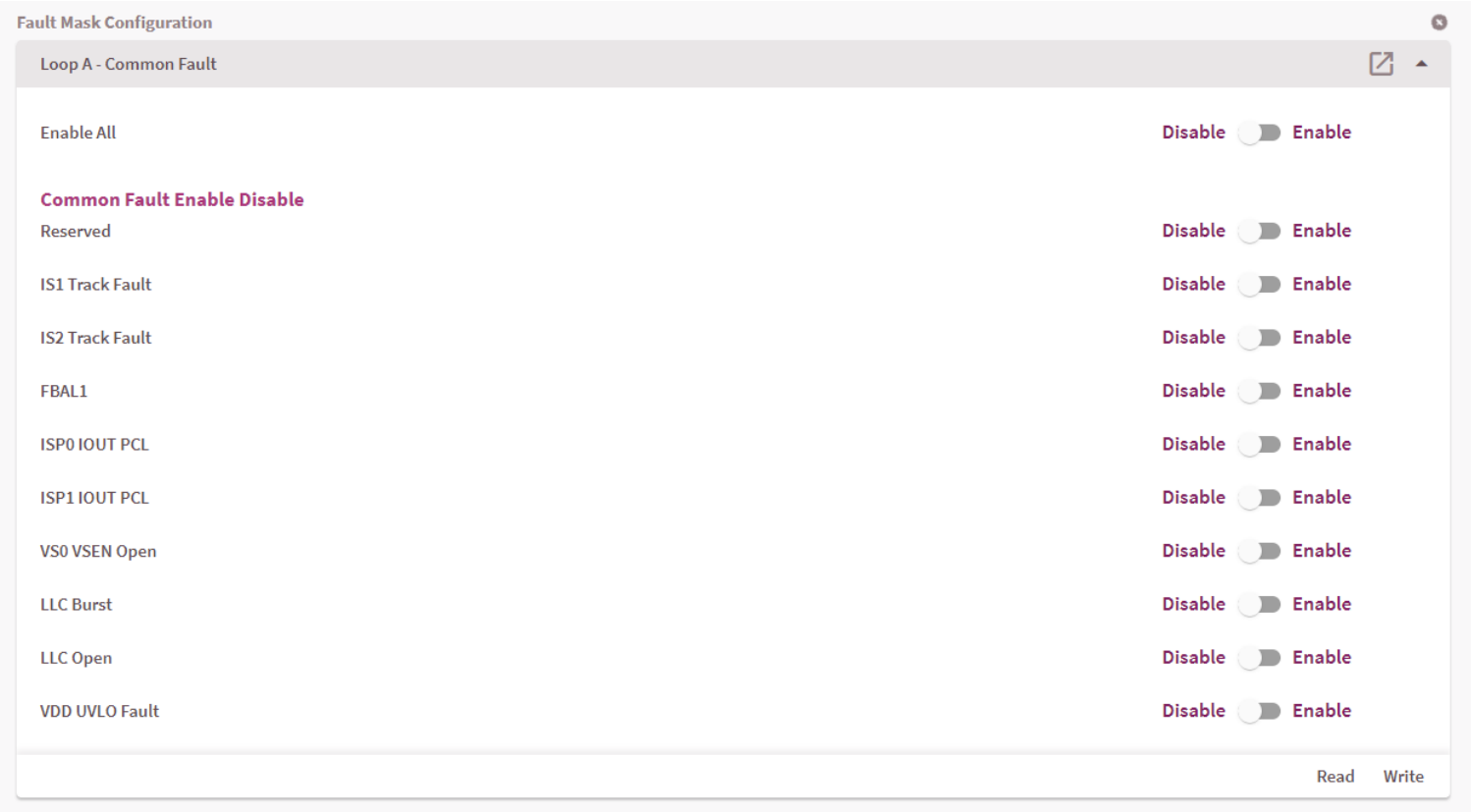
Design Tools : Fault & Protection : Fault Mask : Common Fault

- Common faults config using GUI :
  - EN/Disable switch will make fault enable and disable.
  - All the faults can be enabled or disabled directly using ***Enable All*** Toggle switch on the top



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Design Tools : Fault & Protection : Fault Mask : Fault Shutdown

- This panel will allow user to control shutdown on a particular fault trigger
- Majority of the critical faults are configured for shutdown on trigger, but this can configure to ignore shutdown
  - It is not recommended to it but can be useful for debugging
- When enabled, it will disable the regulation and assert the shutdown interrupt
- When disabled, it will ***not*** disable the regulation and assert shutdown but still reports the fault

- Enabling T2 shutdown for individual fault will disable the loop output at assert the shutdown interrupt aligned with the T2 ramp time which typically aligns with the falling edge of the primary side PWM pulse

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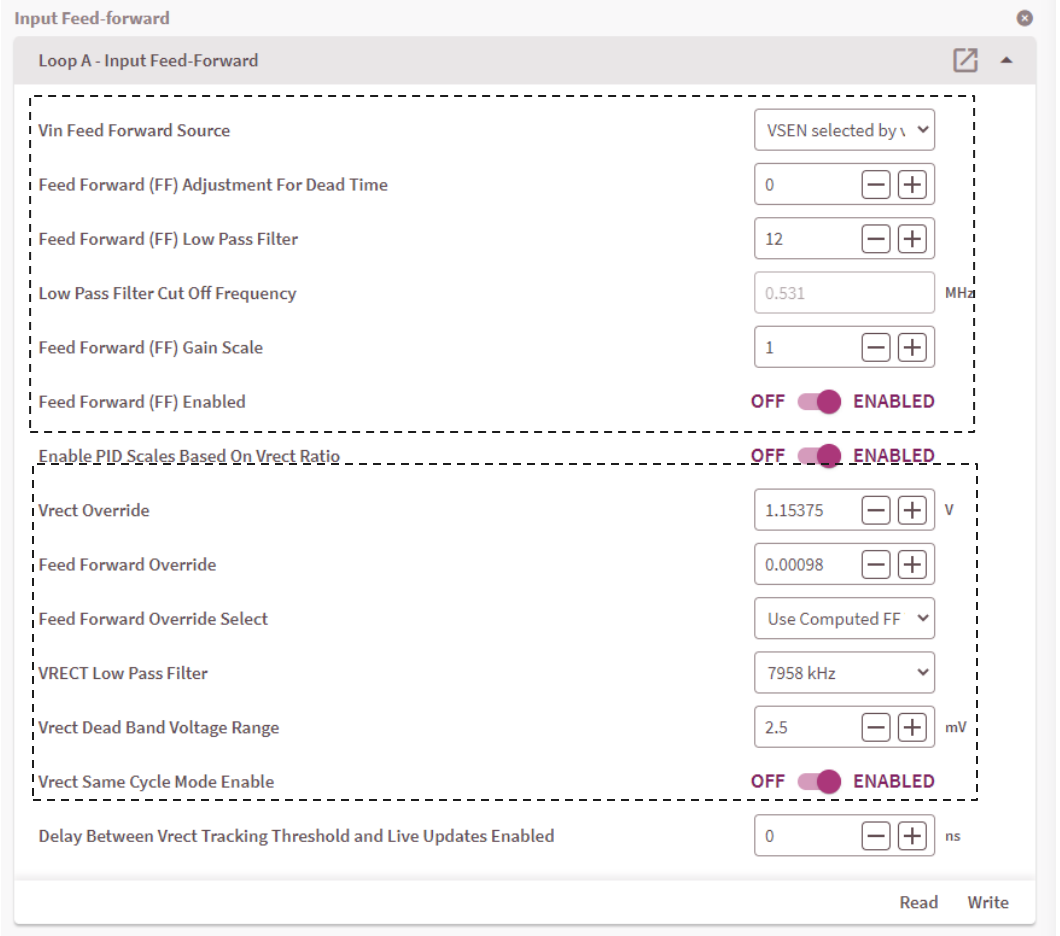
Design Tools : Advance : Input Feed-Forward

- Using input and output voltage value, controller can set nominal duty cycle for respective topology
- This tool allows user to configure feedforward feature with ease.
- User can configure input and output voltage settings separately in this tool
- User can enable or disable the using a toggle switch
- Source selection, deadtime adjustment, gain scale and low pass filter settings can be configure along the way

- Tool allows to configure Vrect setting such as low pass filter, dead band voltage range
- Feed forward override selection and its value can be configured by this as well



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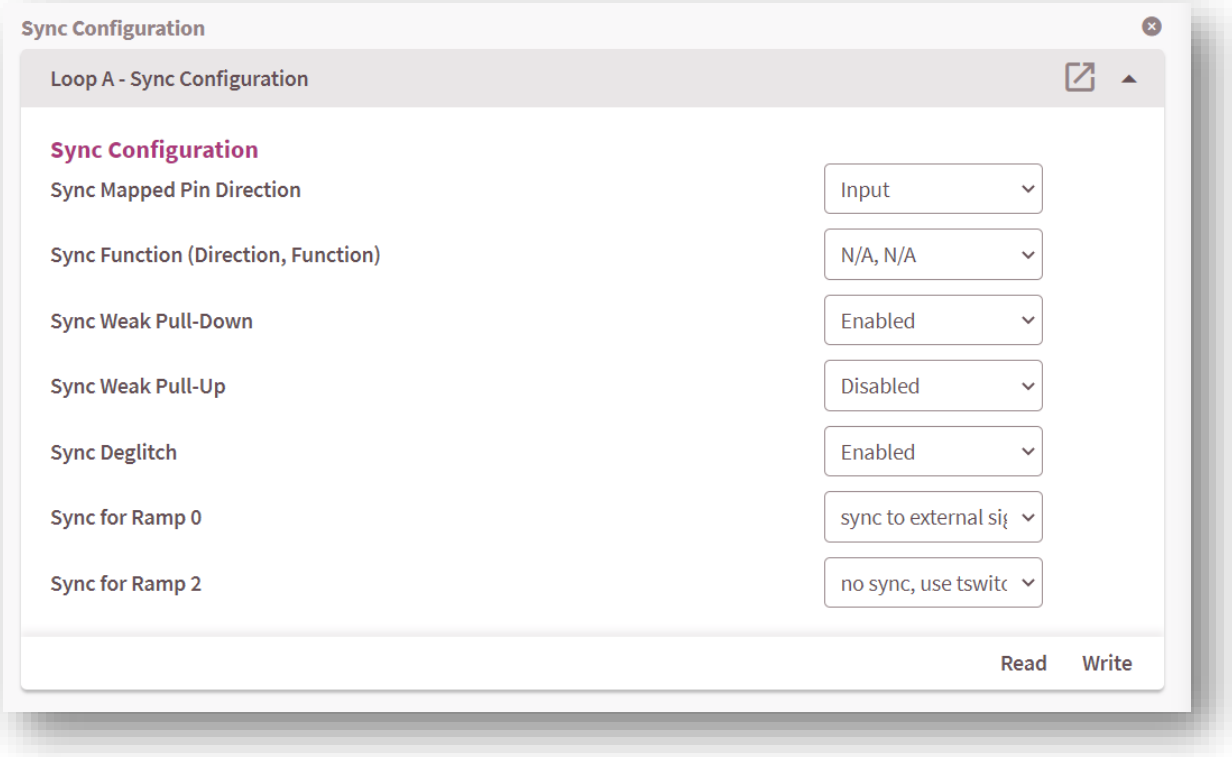
Design Tools : Advance : Sync Configuration

- Sync pin can be used to sync device out with another device or can sync internal ramp to external device
- Same sync signal can be used for both Ramp0 and Ramp 2.
- All the related settings are mentioned here



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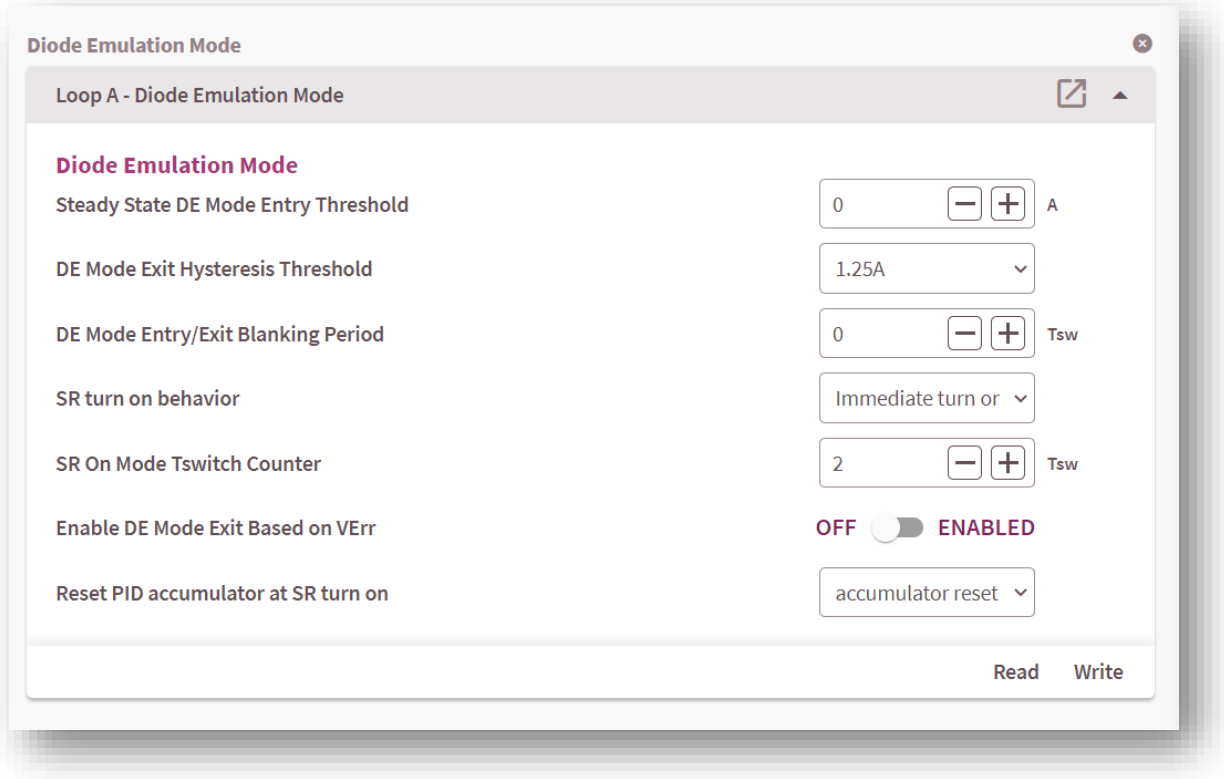
Design Tools : Advance : Diode emulation mode

- All the setting related to Diode emulation mode are configured by this tool
- Such as entry threshold, exit threshold and Hysteresis
- Allows user to configure SR turn on behavior with time to change from in-phase to normal SR timing
- Lastly, user can set DE mode exit based on Verr voltage



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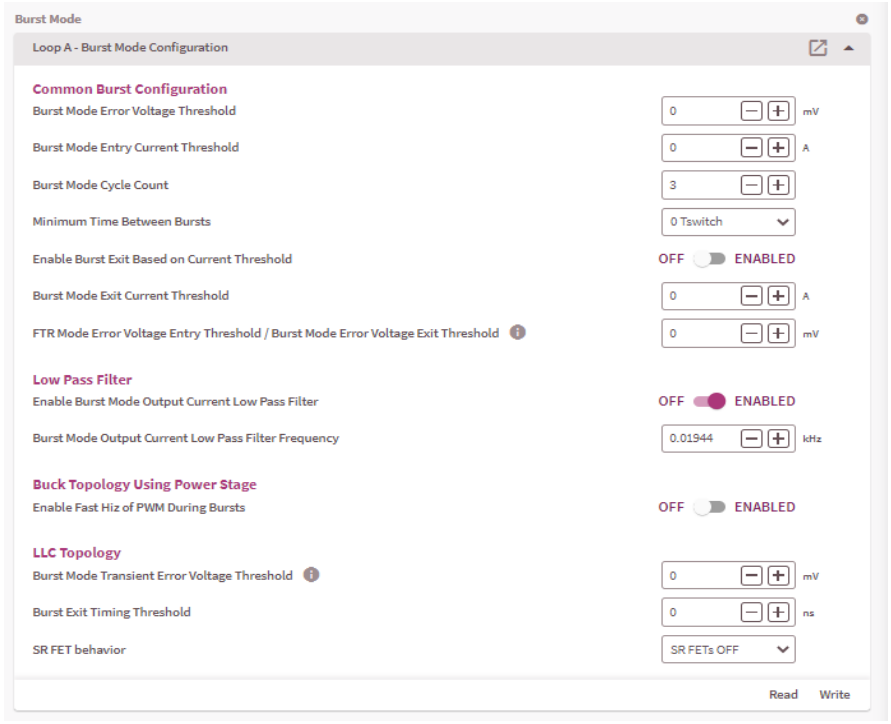
Design Tools : Advance : Burst mode

- Tool allows user to configure burst mode for different topology to the user, specially this tool incorporate new changes for LLC and Buck topology
- Common configuration such as entry and exit threshold, burst count and minimum time between individual burst can also be configure here
- FTR mode entry threshold and burst mode low pass filter settings are also included here



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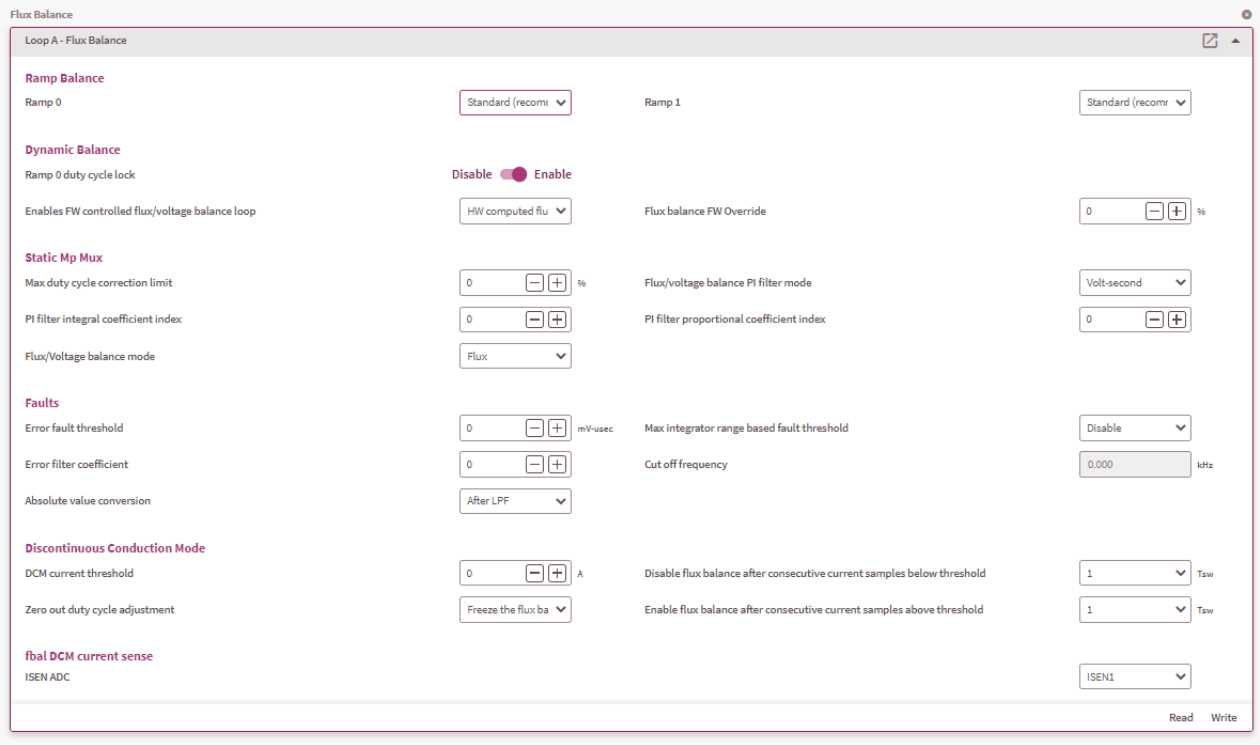
Design Tools : Advance : Flux Balance

- XDPP1140/48 address timing mismatching issue for full-bridge topologies and provides flux balance feature
- In which user can configure individual ramp for flux balance
- Setting related to Faults and dynamic balance can be configure with this tool.
- Settings for DCM mode are also included here in the tool
-



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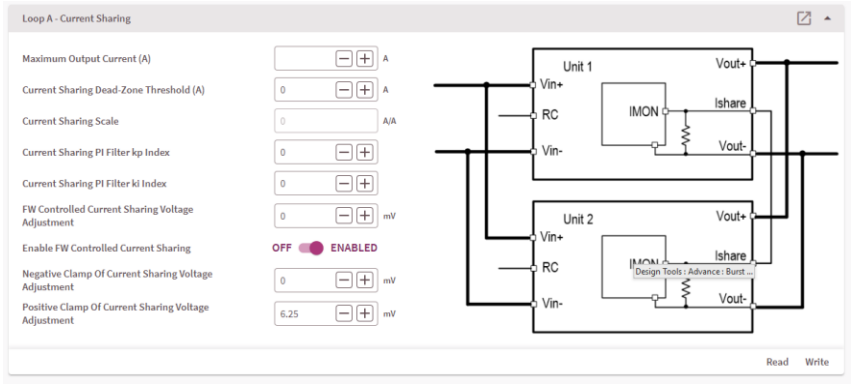
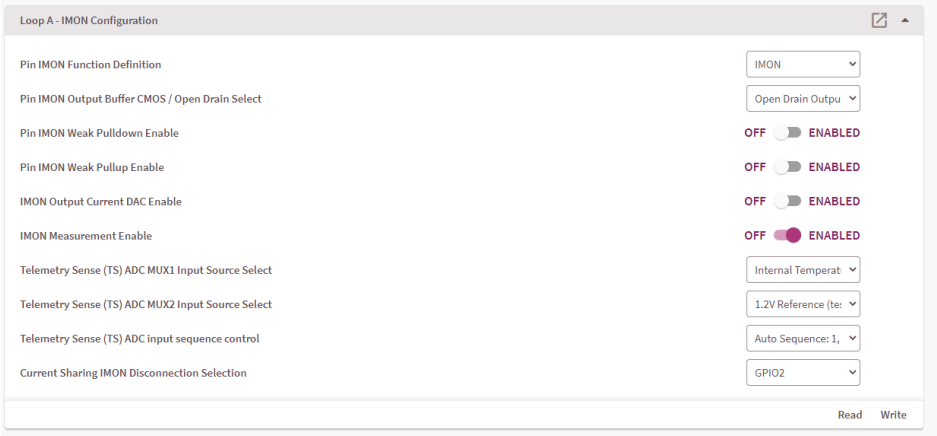
Design Tools : Advance : Current Sharing

- While using multiple XDPP1140/48 together to share load, current sharing feature becomes helpful
- This tool allows user to configure setting such as max current for limit, kp-ki index for current sharing, positive and negative current sharing voltage adjustment
- XDPP1140/48 offers hardware computed current sharing and firmware computed current sharing. User can decide either using a toggle switch from this tool
- Since IMON pin is used for current sharing, all the configuration related to IMON is also mentioned in the same page, such as it's functionality, pin mode selection (open drain or CMOS), weak pullup or pulldown
- XDPP1140/48 allows to use PWM as a ground for current sharing, which can also be configured by this tool with ***Disconnection Selection option***





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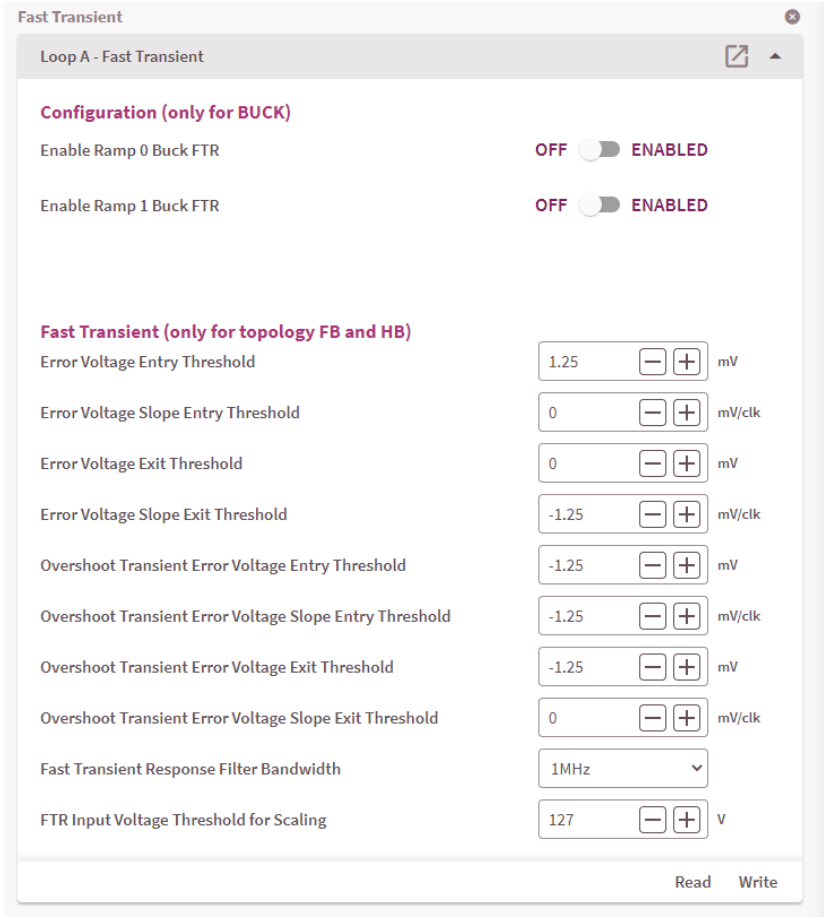
Design Tools : Advance : Fast transient

- This tool provides configuration of Fast transient mode
- For bridge topologies, entry threshold, exit threshold and slope of both are configurable
- User can configure overshoot transient error for entry-exit threshold and its slope
- Choose filter bandwidth and it will be applied to error voltage prior to use by fast transient
- FTR input voltage threshold for scaling will set threshold below which FTR pulse width is based on feed forward duty cycle from PID and Above the threshold, FTR pulse width is reduced in proportion to Vin



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Design Tools : Advance : PMBus Config

- This panels allows user to configure PMBus address of the controller
- Do not change I2C address or offset (Ask GUI team to move to admin mode)
- User can device if they want to use 8 x-valent address or 16 x-valent address

- Along with PMBus commands, it lets user configure following pins as a GPIO
  - Enable
  - Power Good Select
  - Fault select

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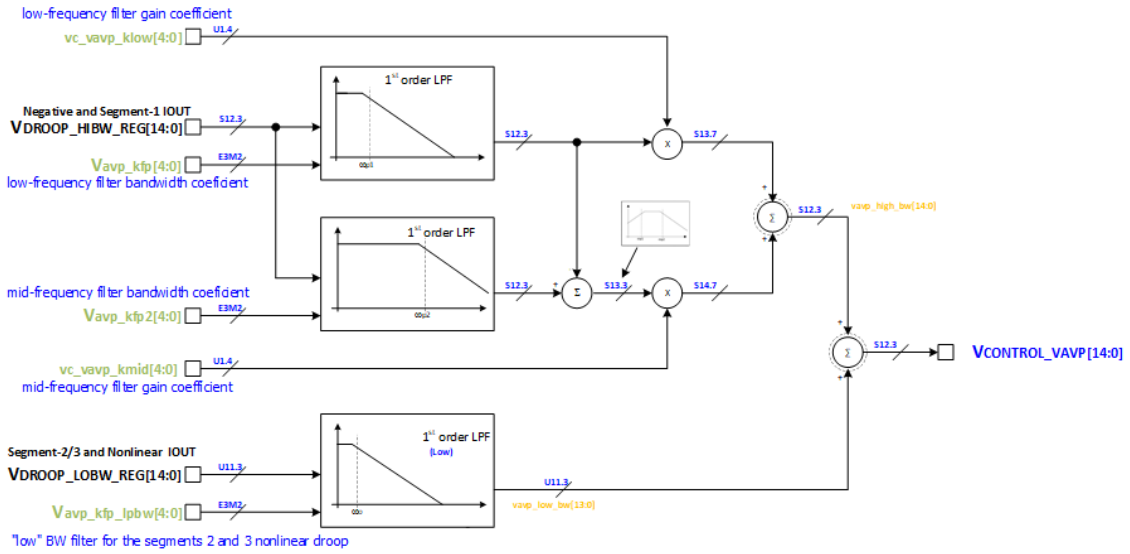
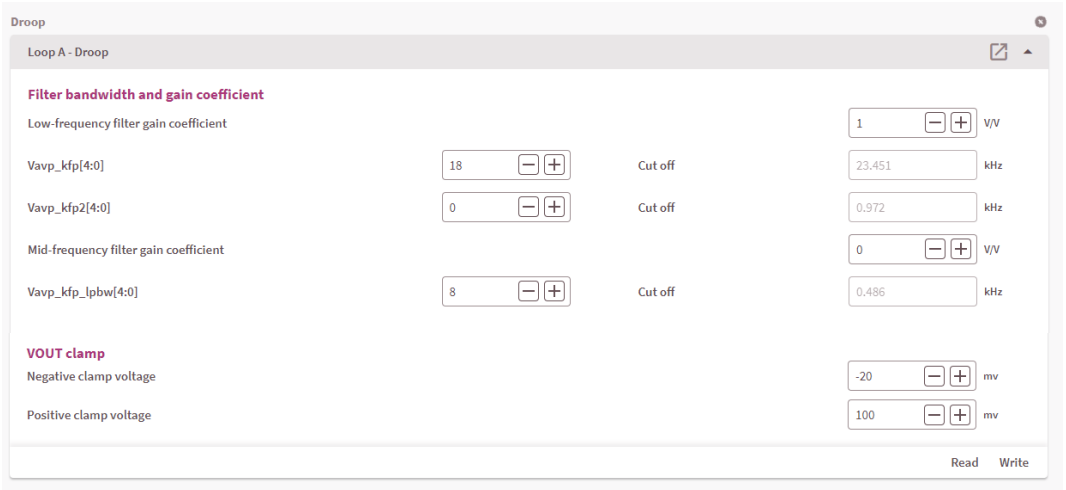
Design Tools : Advance : Droop

- This panel allows user to configure filter bandwidth and gain coefficient for droop
- User can set negative and positive clamp voltage as well
- Please refer the below mentioned diagram





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