

Design Tools

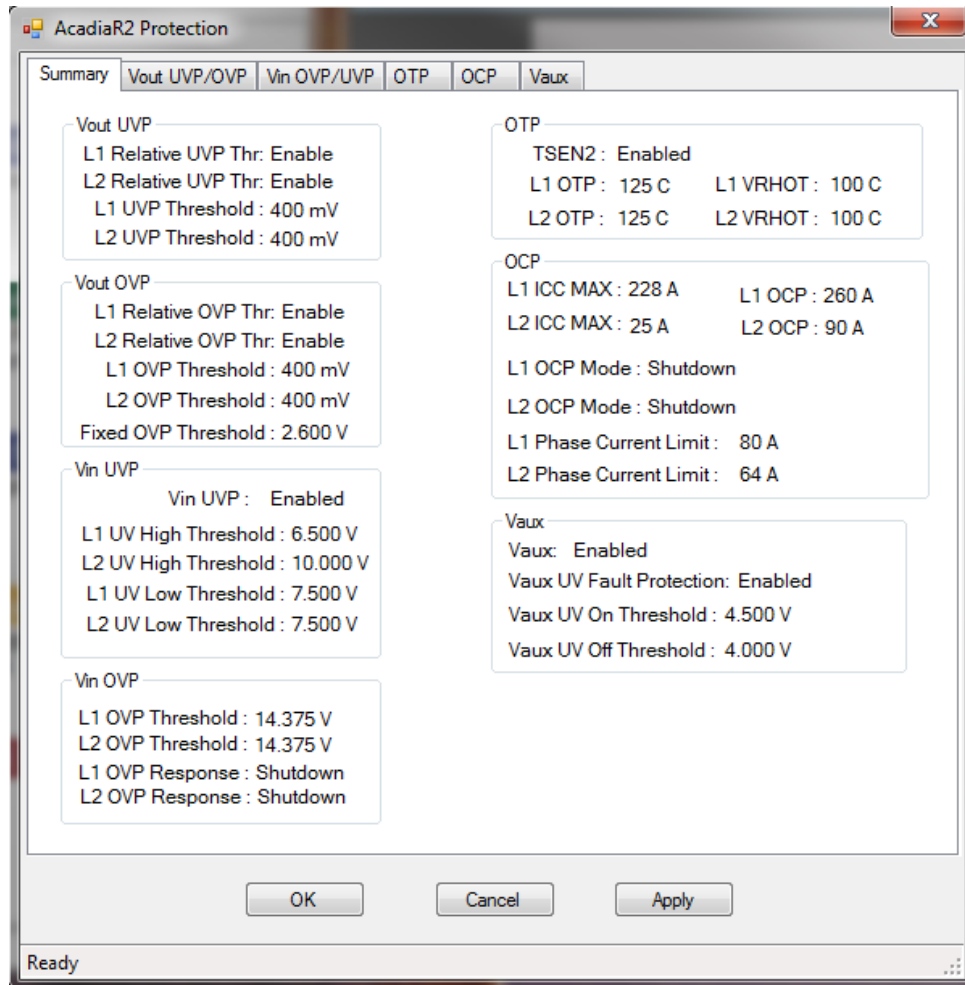
Faults & Protection



5. Faults & Protection

Level and Behavior of OTP, OCP, OVP, UVP and UVLO

Use this tool to set Vout UVP/OVP, Vin OVP/UVP, OTP, OCP, and Vaux UV faults threshold. Remember to press and **Apply** and **Ok** to program the settings.



The screenshot shows the 'AcadiaR2 Protection' window with the 'Summary' tab selected. The window is divided into several sections for configuring different protection features:

- Vout UVP:** L1 Relative UVP Thr: Enable, L2 Relative UVP Thr: Enable, L1 UVP Threshold: 400 mV, L2 UVP Threshold: 400 mV.
- Vout OVP:** L1 Relative OVP Thr: Enable, L2 Relative OVP Thr: Enable, L1 OVP Threshold: 400 mV, L2 OVP Threshold: 400 mV, Fixed OVP Threshold: 2.600 V.
- Vin UVP:** Vin UVP: Enabled, L1 UV High Threshold: 6.500 V, L2 UV High Threshold: 10.000 V, L1 UV Low Threshold: 7.500 V, L2 UV Low Threshold: 7.500 V.
- Vin OVP:** L1 OVP Threshold: 14.375 V, L2 OVP Threshold: 14.375 V, L1 OVP Response: Shutdown, L2 OVP Response: Shutdown.
- OTP:** TSEN2: Enabled, L1 OTP: 125 C, L1 VRHOT: 100 C, L2 OTP: 125 C, L2 VRHOT: 100 C.
- OCP:** L1 ICC MAX: 228 A, L1 OCP: 260 A, L2 ICC MAX: 25 A, L2 OCP: 90 A, L1 OCP Mode: Shutdown, L2 OCP Mode: Shutdown, L1 Phase Current Limit: 80 A, L2 Phase Current Limit: 64 A.
- Vaux:** Vaux: Enabled, Vaux UV Fault Protection: Enabled, Vaux UV On Threshold: 4.500 V, Vaux UV Off Threshold: 4.000 V.

At the bottom of the window are buttons for 'OK', 'Cancel', and 'Apply'. The status bar at the very bottom indicates 'Ready'.

The **Summary** page shows the faults settings and thresholds for both loops. These settings can be altered by going into the other tabs.

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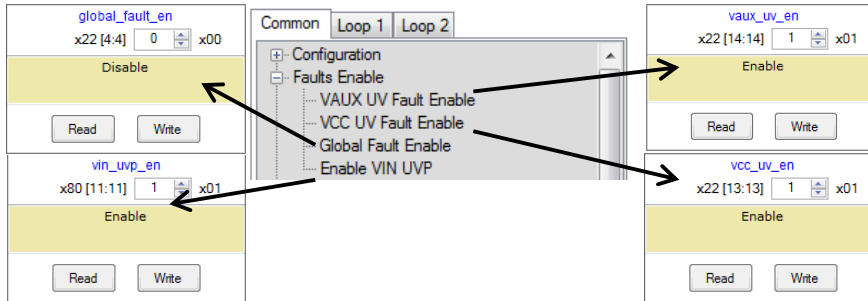
Faults & Protection



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Level and Behavior of OTP, OCP, OVP, UVP and UVLO

Some settings in this tool can also be programmed using the register map tree view commands or PMBus. Remember to click **Write** to program the settings.



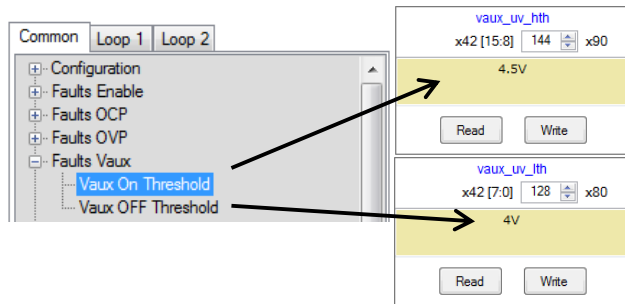
In Common section under **Faults Enable**

VAUX UV Fault Enable – enable(1) Vaux UV fault protection.

VCC UV Fault Enable – enable(1) VCC under voltage fault protection. Threshold is fixed at 2.64V.

Global Fault Enable – enable(1) option to shut down all other outputs, when a fault that causes one output to shutdown is set.

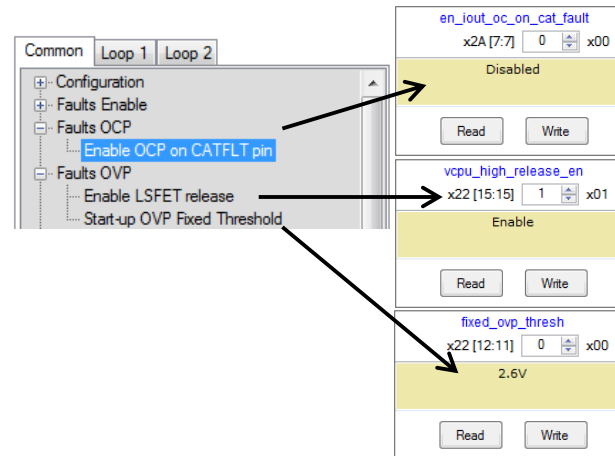
Enable VIN UVP – enable (1) Vin under voltage protection.



In Common section under **Faults Vaux**

VAUX On Threshold – set vaux high threshold. Voltage level which Vaux UV fault is removed

VCC Off Threshold – set vaux low threshold. Voltage level which trigger Vaux UV fault.



In Common section under **Faults OCP and OVP**

Enable OCP on CATFLT Pin – enable(1) IOUT OC fault to assert the CAT_FAULT pin

Enable LSFET release – enable(1) the release of the low-side FETs if the output voltage is below 0.5V after a VCPU high fault

Start-up OVP Fixed Threshold – Sets the fixed OVP threshold

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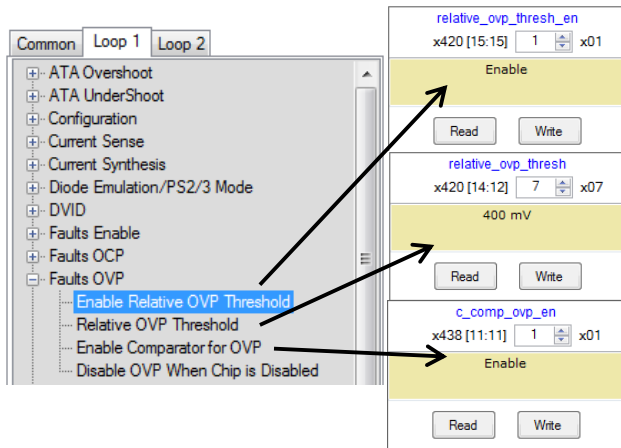
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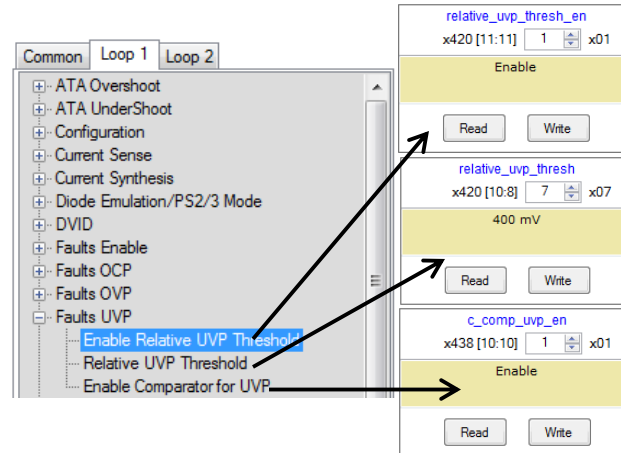


In Loop 1/Loop 2 section under **Faults OVP**

Enable Relative OVP Threshold – enable relative OVP threshold.

Relative OVP Threshold – Enter the specified OCP threshold

Enable Comparator for OVP – Use common comparator(1) for OVP or ADC(0).



In Loop 1/Loop 2 section under **Faults UVP**

Enable Relative UVP Threshold – enable relative UVP threshold.

Relative UVP Threshold – Enter the specified UCP threshold

Enable Comparator for UVP – Use common comparator(1) or ADC(0) for UVP.

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Level and Behavior of OTP, OCP,
OVP, UVP and UVLO

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35	VIN_ON	6.50 V
36	VIN_OFF	7.50 V
46	IOUT_OC_FAULT_LIMIT	260 A
47	IOUT_OC_FAULT_RESPONSE	Shutdown
4A	IOUT_OC_WARN_LIMIT	240 A
4F	OT_FAULT_LIMIT	125 °C
50	OT_FAULT_RESPONSE	Shutdown
51	OT_WARN_LIMIT	100 °C
55	VIN_OV_FAULT_LIMIT	14.3750 V
56	VIN_OV_FAULT_RESPONSE	Shutdown
58	VIN_UV_WARN_LIMIT	0.0625 V

Other faults threshold can be set and programmed in the PMBus window. Users can go into the PMBus and manually change these values for debugging or testing purposes.

Note:

35. VIN_ON – set input voltage which the device start power conversion. Also called UV High Threshold

36. VIN_OFF – set input voltage which the device stop power conversion, when it falls below this threshold. Also called UV Low Threshold.