

# Improvements From UCD9090 and UCD90160

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# UCD9090A vs UCD9090

Features	UCD9090A	UCD9090
Fault pin(allow single to cascading multiple UCD9090A)*	Y	N
GPI Fault Response**	Y	N
GPI Debug	Y	N
Rail State	Y	N
Fault/Peak Logging Disable	Y	N
GPO Sequence On/Off Dependency	Y	N
NV Fault Log	26	30
Rail Sequence on/off timeout	140m	32s
Cold Boot Mode	Y	N

\*: one GPI can be used as fault pin  
 \*\*: One GPI can be configured to have fault response.

**Both Devices are Pin-to-Pin Compatible**

TI Information – Selective Disclosure

# UCD90160A vs UCD90160

Features	UCD90160A	UCD90160
Fault pin(allow single pin to cascading multiple UCD90160A)*	Y	N
GPI Fault Response**	Y	N
GPI Debug	Y	N
Rail State	Y	N
Fault/Peak Logging Disable	Y	N
GPO Sequence On/Off Dependency	Y	N
Rail Sequence on/off timeout	140m	32s
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# New Features

- **Special Cold boot mode for system deployed at extreme code environment(< -40C)**

Cold boot mode is to allow UCD to power up partial rails to heat up the whole system for a certain amount of time or wait the ASSERTED of thermal state GPI for extreme cold temperature.

- **Fault Pin allows multiple chip cascading with single pin**

Fault pin is a new feature to allow cascading among multiple UCD devices with Fault pin capability. Fault pin is a bi-direction signal, which is connected to Fault Bus. Fault bus is pulled up to 3.3V by a 10K resistors. . When there is no fault on the particular UCD device, the Fault Pin is a digital input pin and listens to the Fault Bus. When one or multiple UCD devices detect a rail fault, the corresponding Fault Pin is turned into active driven low state, pulling down the Fault Bus and informing all other UCD9 devices of the corresponding fault. This way, a coordinated action can be taken across multiple devices. After the fault is cleared, the state of the Fault Pin is turned back to an input pin.

- **GPI Fault Response allows devices to response GPI signal to sequence on/off rails**

This feature is to solve the issue of limited MON rails. For example, in the UCD9090, all 10 rails are assigned to voltage monitor, system still need to monitor one more external EVENT(e.g. OVER\_TEMP) or one more rail. The external event or PWER\_GOOD of the POL could be connected to the assigned GPI, when the signal is changed to de-asserted, UCD can help to shut down the rails, re-try, and re-sequence system based on how the GPI fault response is configured.

- **GPI Debug allow device to ignore all faults and corresponding responses when the assigned GPI is asserted, which is a useful feature for board/EVM debug**
- **Option to disable all log to avoid flash wear and corruption (during unexpected loss of power)**

In the UCD, Logs are written into the flash. When the 3.3V is power down, UCD need a hold-up capacitor to keep device logging into the Flash. When the unexpected loss of power is present, the flashing operation is interrupted resulting in extra wear and corruption on the flash when there is no hold-up capacitor. If logging could be disabling fully, this issue could be avoided.

- **LGPO Sequence On/Off Dependencies**

Logic GPO states can be used as rails' sequence on/off dependencies directly

- **Query Rail State**

Rail's state is queried to help customer to better debug the system.

- **Extend the "Sequence Time Out" limit from 32s to 2.5hours, to support long wait time(15m)**