

Wupatec Digital Pre-Distortion v1.0

1. DPD IP CORE

1.1. OVERVIEW

DPD (Digital pre-distortion) is used to compensate for the inherently nonlinear transfer function of the RF PA (Power Amplifier) in a transmitter. With DPD, the PA can be operated at its maximum output power and high efficiency while maintaining the transmitted signal distortions to compliant levels.

The DPD system is composed of a hardware core applying the linearity correction to the transmit signal as well as signal capture, and a software application for correction parameters computation and general control.

DPD is typically placed before the analog converters in a radio system, as depicted in the following figure:

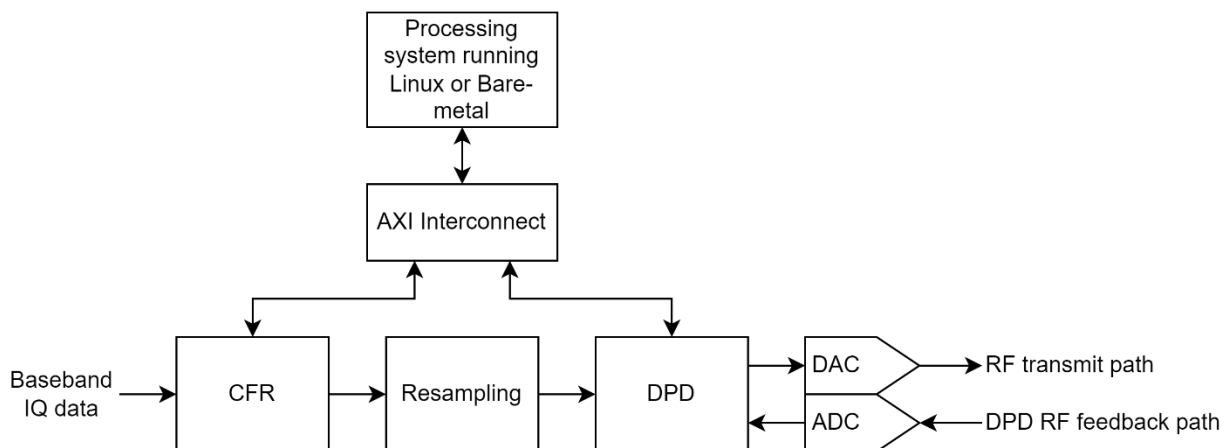


Figure 1: DPD integration in a typical DFE transmit path

The DPD can be coupled with a CFR (Crest Factor Reduction) algorithm used to reduce the PAPR (Peak to Average Power Ratio) to achieve maximum output power, efficiency and linearity on the PA.

Features summary:

- FDD (Frequency Division Duplex) and TDD (Time Division Duplex) support with automatic timeslot detection
- Signal capture and analysis
- Supported device family
 - AMD Zynq UltraScale+ RFSoc
 - AMD Zynq UltraScale+
 - AMD UltraScale/UltraScale+ FPGAs
- Software
 - C API with support for Linux or Bare-metal running on Zynq PS or MicroBlaze soft core processor
 - Configurable DPD model complexity at runtime for linearization performance / update speed trade-off
- Hardware core
 - Embedded in Vivado IP design flow
 - Multi-sample data interface for sampling rate / resources trade-off to support high sampling rates without increasing the processing clock
 - Customizable model complexity and capture depth for linearization performance / resources trade-off ranging from very small footprint targeted to low bandwidth/cost effective systems up to high linearization performance of very wide bandwidth or multi-carrier signals in large systems
 - Options to select implemented resources type to balance DSP/RAM usage depending on available resources

2. ADDITIONAL RESOURCES

2.1. LICENSING

For ordering information, pricing, lead times, and applicable Terms of Sale, please contact WUPATEC.

2.2. REVISION HISTORY

Section	Revision summary
02/06/2026 Version 1.0	
General updates	Initial release

2.3. CONTACT INFORMATION

For the latest specifications, additional product information, worldwide sales and distribution locations:

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