101.3 Physical Coding Sublayer (PCS) for EPoC

This subclause will be modelled after 76.3 for 10G-EPON, with all the necessary changes for EPoC, e.g., changing FEC definition structure, presence of line coding and its type, scrambling / interleaving. The current structure is just first order approximation and will be modified as more contributions for PCS structure and functions arrive.

101.3.1 Overview

This subclause defines the Physical Coding Sublayer (PCS) for {EPoC_PMD_NAME}, supporting TDD and FDD mode operation over the point-to-multipoint coaxial medium architecture. The EPoC PCS is specified to support the operation of up to 10 Gbit/s in the downstream direction and up to 10 Gbit/s in the upstream direction, where the upstream and downstream data rates are configured independently, in the function of the assigned RF spectrum.

This subclause also specifies a forward error correction (FEC) mechanism to increase the available link budget and the Idle control character insertion and Idle control character deletion mechanisms - part of the data rate adaptation function combining the MAC and MAC Control Clients operating at 10 Gbit/s with EPoC PCS and PMD layers operating at the data rates below 10 Gbit/s.

{Figure 101-X} shows the relationship between the EPoC PCS sublayer and the ISO/IEC OSI reference model.

101.3.1.1 EPoc_PMD_Name PCS

The EPoC PCS extends the 10GBASE-PR PCS described in {Clause 76} to support TDD and FDD mode of operation over the point-to-multipoint coaxial medium architecture. Figure 101–1 illustrates the functional block diagram of the downstream path in EPoC PCS and Figure 101–2 shows the functional block diagram of the upstream path in EPoC PCS.

101.3.2 PCS transmit function

This subclause defines the transmit direction of the EPoC PCS.

In the CLT, the PCS transmit function operates in a continuous (TDD mode) or burst (FDD mode) fashion at the data rate of up to 10 Gbit/s, depending on the allocated RF spectrum and the configured operation mode. In the CNU, the PCS transmit function operates in a burst fashion (TDD and FDD modes) at the data rate of up to 10 Gbit/s, depending on the allocated RF spectrum and the configured operation mode. Figure 101–1 illustrates the transmit direction of CLT PCS and Figure 101–2 illustrates the transmit direction of the CNU PCS.

The EPoC PCS includes a mandatory FEC in the transmit direction, along with 64B/66B encoder as well as a Idle control character deletion function performing data rate adaptation and FEC overhead compensation functions.

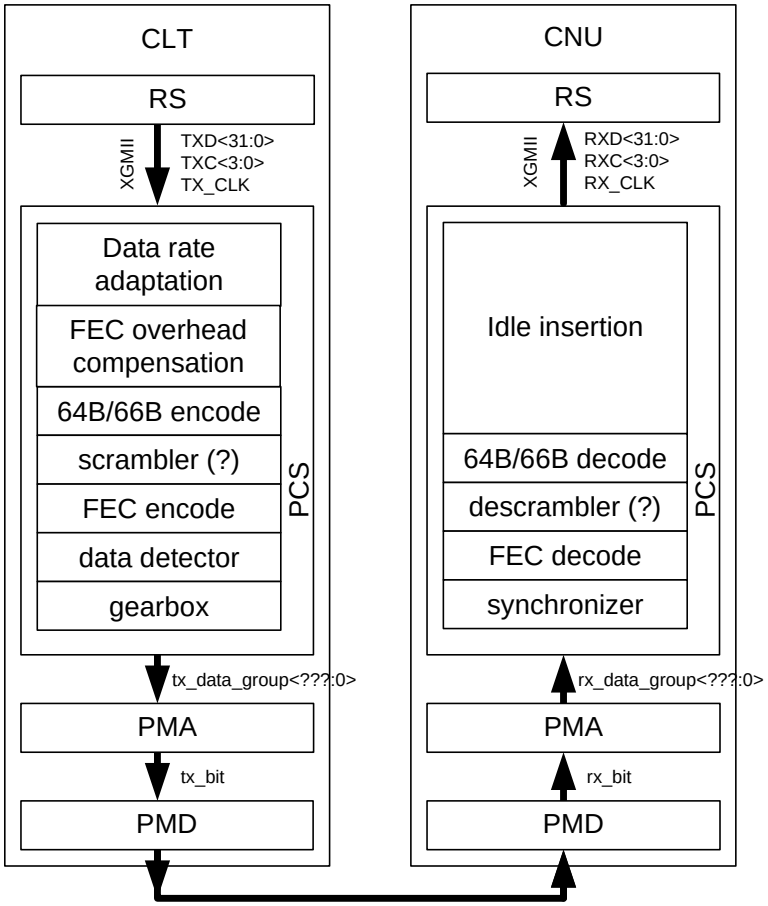

Figure 101–1—EPoC PCS functional block diagram, downstream path

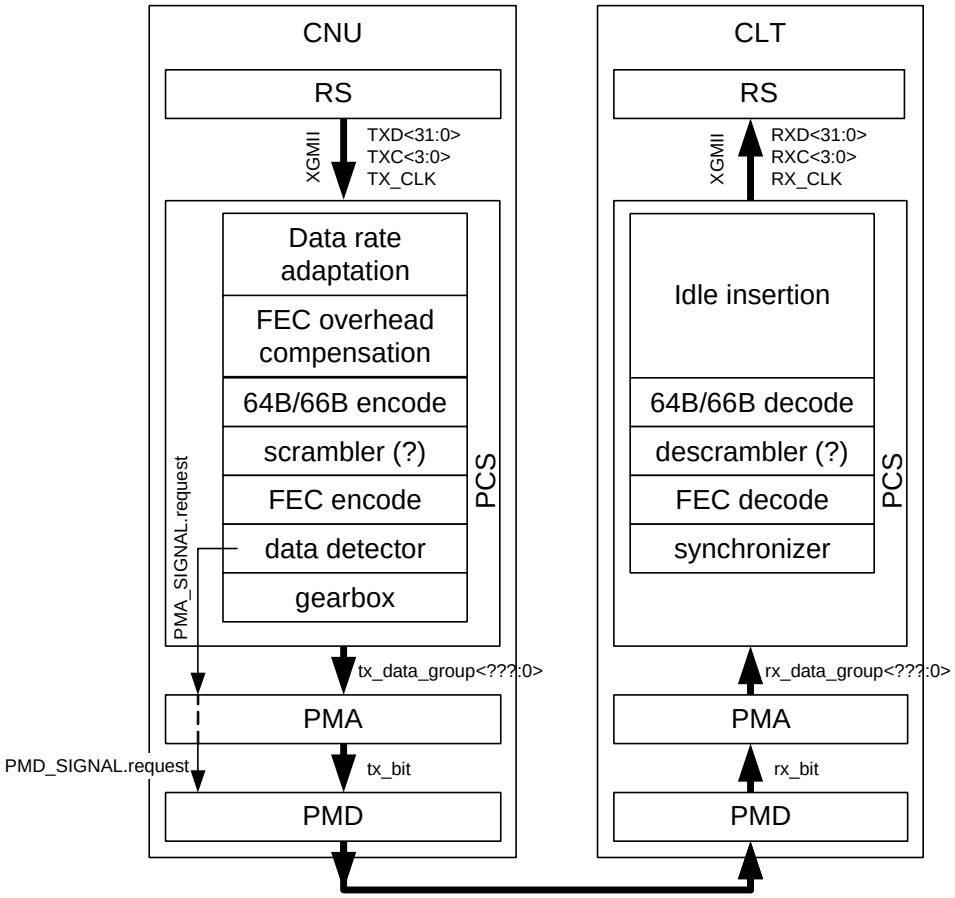

Figure 101–2—EPoC PCS functional block diagram, upstream path

101.3.3 PCS receive function

This subclause defines the receive direction of the EPoC PCS.

In the CLT, the PCS receive function operates in a burst fashion (for both FDD and TDD modes) at the data rate of up to 10 Gbit/s, depending on the allocated RF spectrum and the configured operation mode. In the CNU, the PCS transmit function operates in a continuous (FDD mode) or burst (TDD mode) fashion at the data rate of up to 10 Gbit/s, depending on the allocated RF spectrum and the configured operation mode. Figure 101–1 illustrates the receive direction of CNU PCS and Figure 101–2 illustrates the receive direction of the CLT PCS.

The EPoC PCS includes a mandatory FEC in the receive direction, along with 64B/66B decoder as well as a Idle control character insertion function performing data rate adaptation and FEC overhead compensation functions.