

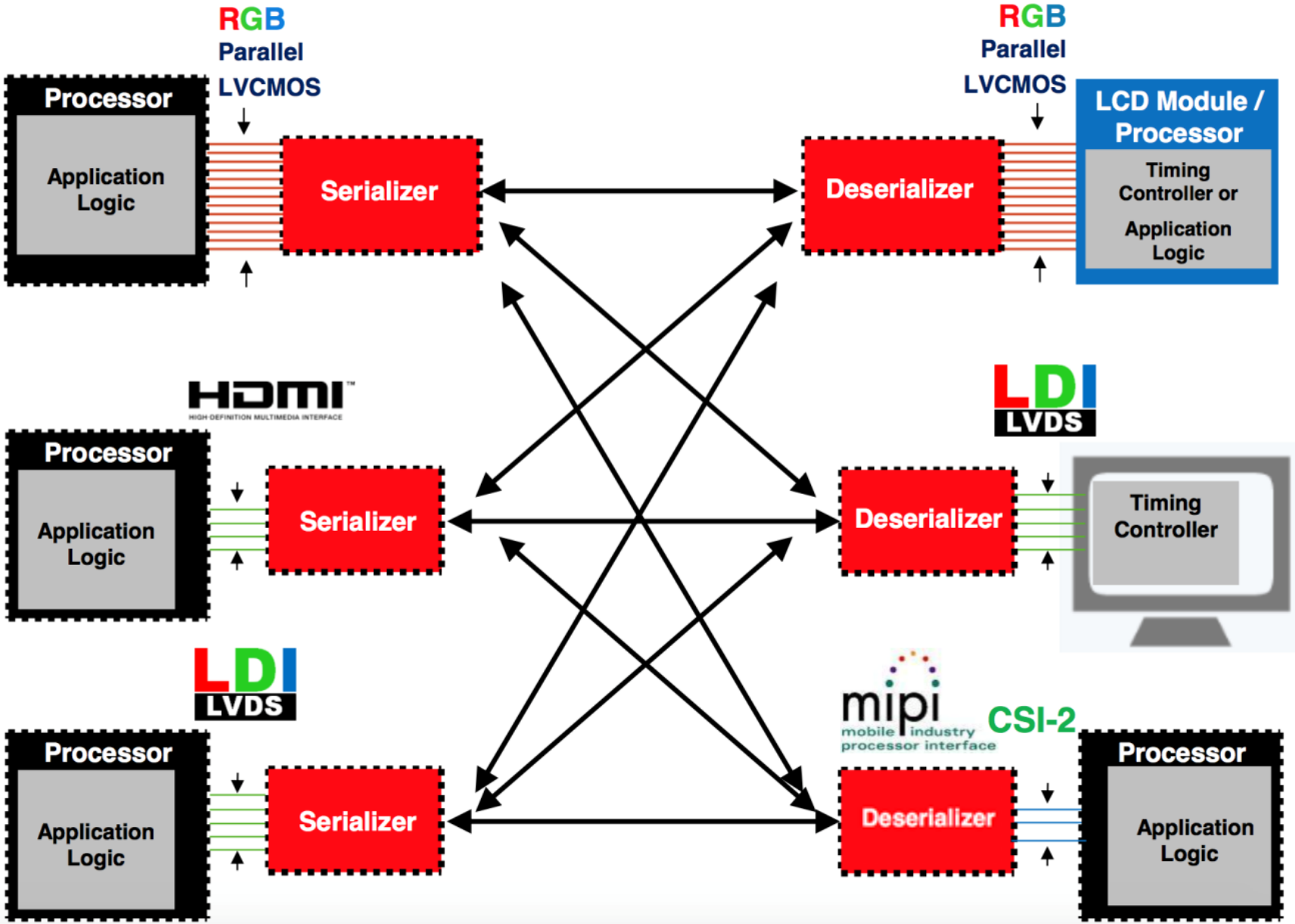
What is FPD-Link?

TI Precision Labs - FPD-Link

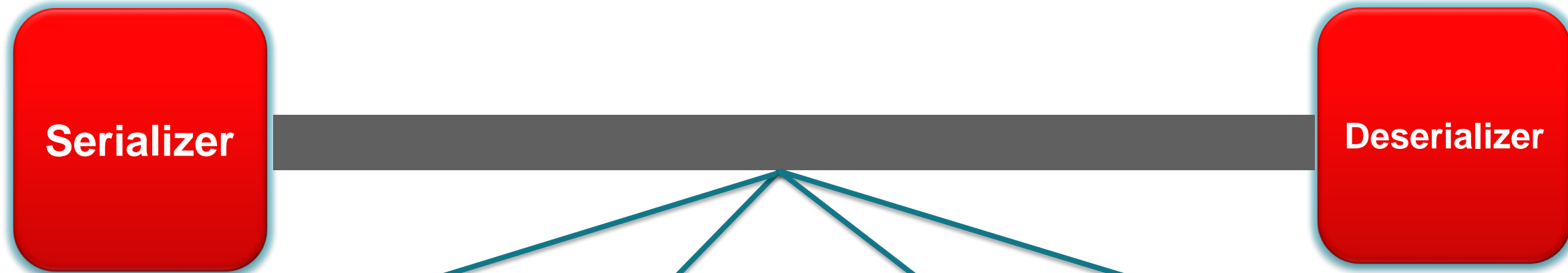
Prepared and presented by Casey McCrea

Data interface standards

- HDMI
- LVDS
- Parallel LVC MOS
- MIPI CSI-2
- MIPI DSI
- Etc.



Cable types



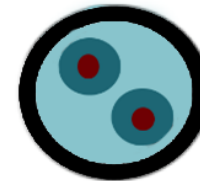
Coaxial cable

- Single-ended signal
- Lower insertion loss
- Lower cost



Shielded-twisted pair (STP)

- One differential pair
- Stronger immunity to EMI



Unshielded-twisted pair (UTP)

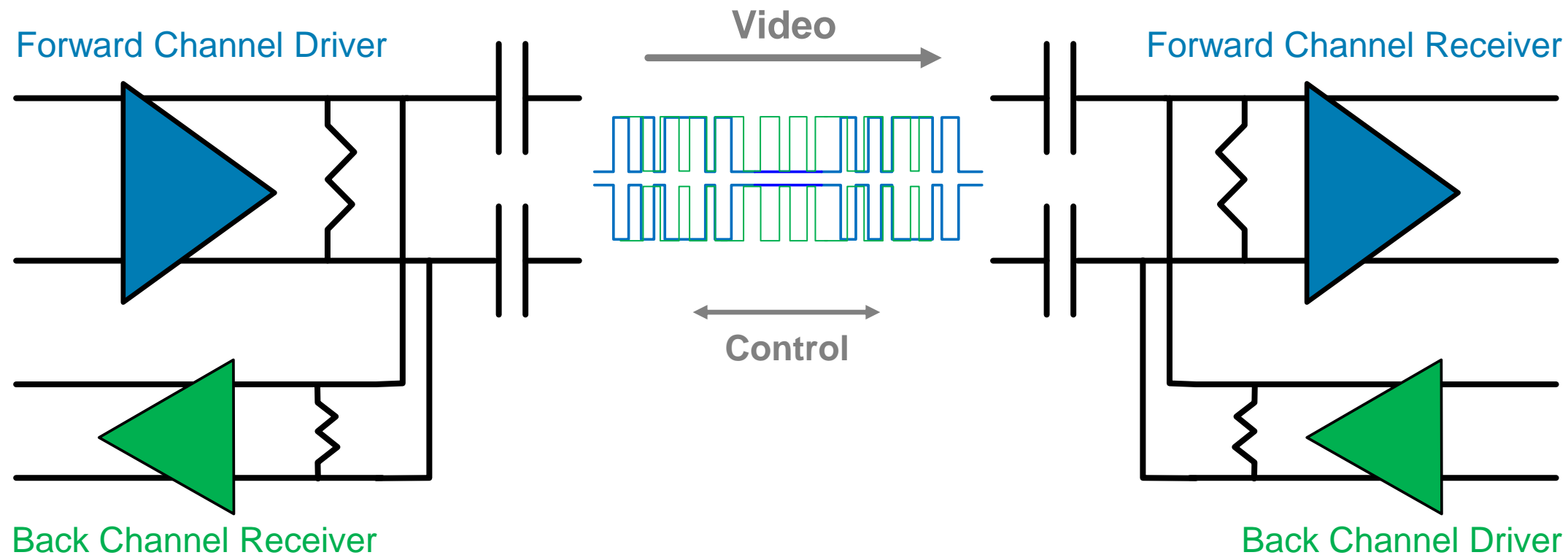
- One differential pair
- Lower cost



Star-quad cable (STQ)

- Two differential pairs
- Stronger immunity to EMI

Forward-and-back channels



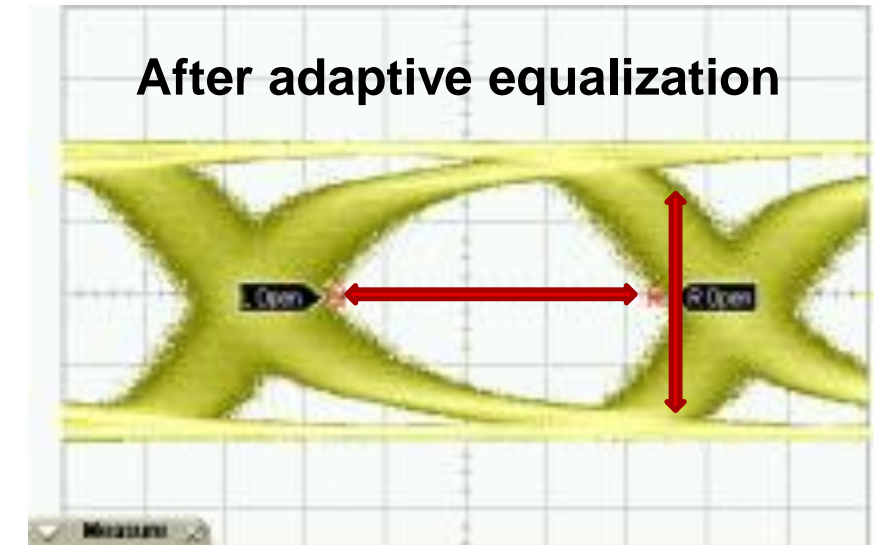
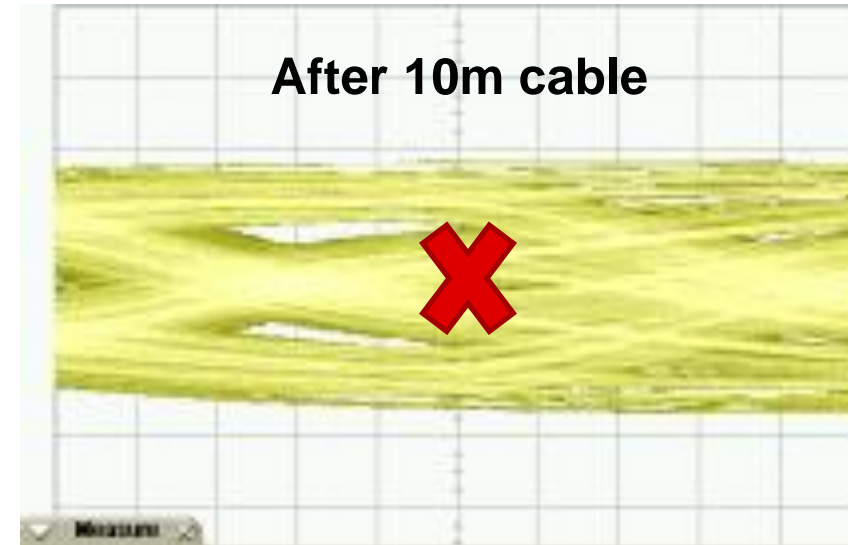
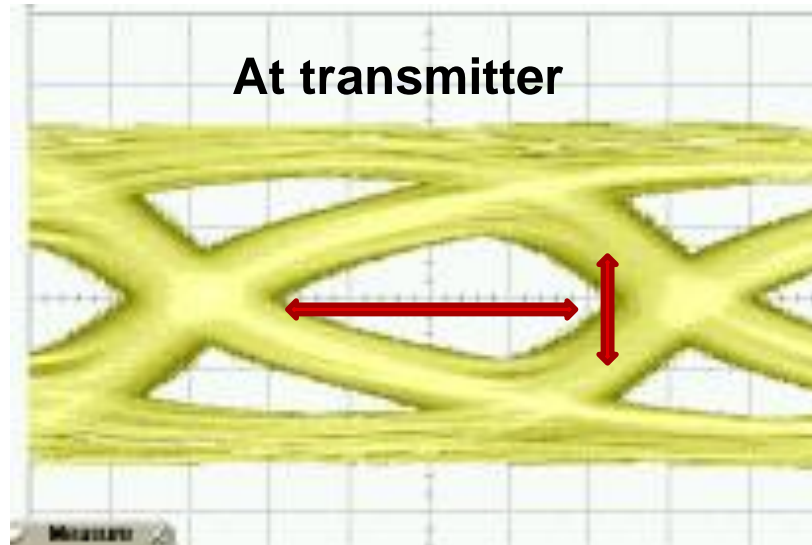
Forward channel:

- Serializer -> deserializer
- High-speed data transmission
- Provide video payload data, I²C/SPI/GPIO data, and info on link diagnostics to deserializer

Back channel:

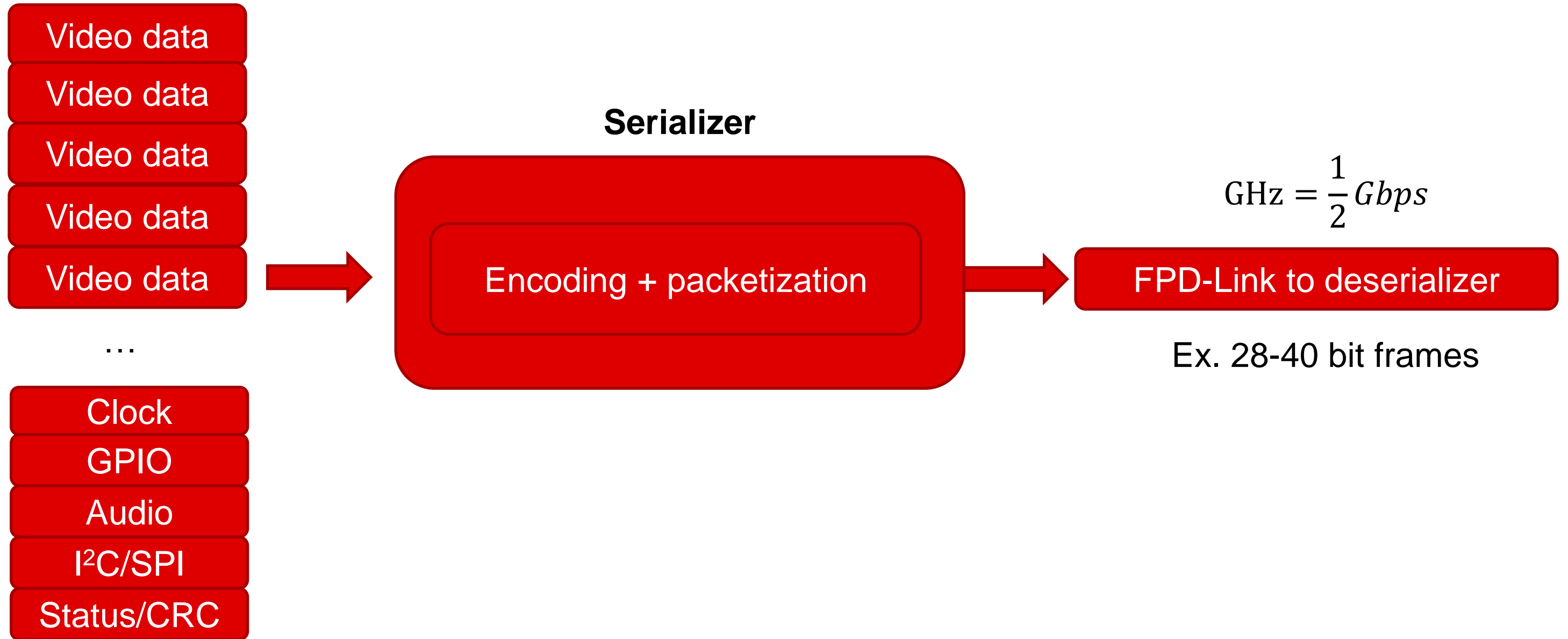
- Deserializer -> serializer
- Low-speed data transmission
- Provide CLK for forward-channel line rate
- Provide I²C, GPIO and SPI info to serializer

Adaptive equalization (AEQ)



- Compensates cable loss and signal degradation
 - Continuous Time Linear Equalizer (CTLE)
 - Clock domain recovery (CDR)
- Continuously and automatically adapts to cable aging, temperature effects, and changing electromagnetic environments

Forward-channel serialization



Back-channel communication

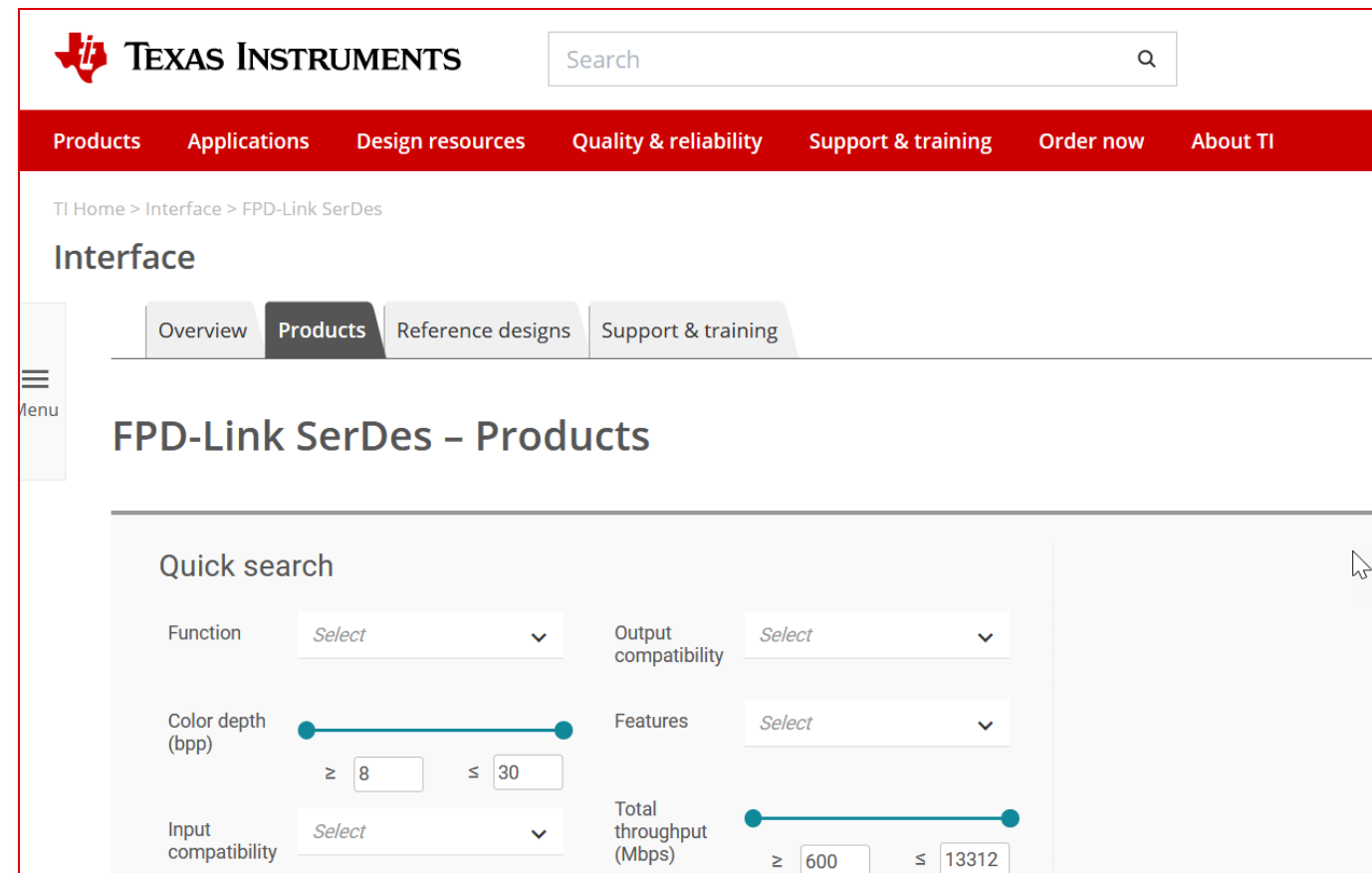


Quiz

1. For an FPD-Link III forward-channel frequency of 3.36Gbps per lane, what is the fundamental carrier frequency for the signal per lane?
 - a) 3.36GHz
 - b) 96MHz
 - ✓ c) 1.68GHz
 - d) 6.72GHz
2. For an FPD-Link III back-channel rate of 20Mbps, what is the fundamental carrier frequency for the signal?
 - a) 10MHz
 - ✓ b) 20MHz
 - c) 5MHz
 - d) 40MHz
3. True or false?
 - FPD-Link III is a bidirectional half-duplex protocol **FALSE**

Thank you

- FPD-Link technical resources
- TI FPD-Link products
- ti.com/interface/fpd-link-serdes/products.html



The screenshot displays the Texas Instruments website interface for FPD-Link SerDes products. At the top, the TI logo and "TEXAS INSTRUMENTS" are visible, along with a search bar. A red navigation bar contains links for Products, Applications, Design resources, Quality & reliability, Support & training, Order now, and About TI. Below this, a breadcrumb trail reads "TI Home > Interface > FPD-Link SerDes". The main heading is "Interface", with sub-tabs for Overview, Products (selected), Reference designs, and Support & training. The page title is "FPD-Link SerDes - Products". A "Quick search" section is present, featuring several filters: "Function" (dropdown), "Output compatibility" (dropdown), "Color depth (bpp)" (slider with input fields for ≥ 8 and ≤ 30), "Input compatibility" (dropdown), "Features" (dropdown), and "Total throughput (Mbps)" (slider with input fields for ≥ 600 and ≤ 13312).



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Slide 2 appendix

Abbreviation	Description
HUD	Head-up display
CID	Central information display
RSE	Rear-seat entertainment
CMS	Camera monitoring system
SRR	Short-range radar
MRR	Medium-range radar
LRR	Long-range radar
SVS	Surround view system
FC	Forward camera
DMS	Driver monitoring system
RVC	Rear-view camera
ToF	Time of flight

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