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# EMBRIONIX OEM

**PRODUCT PORTFOLIO**

# Who are we?

Embrionix provides a new approach in the signal interface market for professional video and audio equipment manufacturers.

We provide a powerful - yet cost effective - set of interfaces ranging from SD-SDI to 12G-SDI, SMPTE ST2022 and ST2110, composite video, and even MADI audio, supporting all formats up to UHD and beyond, with a range of interface options including coax, singlemode/multimode fiber, and HDMI.

Our technology is offered as SFP (Small Form-factor Pluggable) as well as System-on-Chip (SoC) modules, which are sold exclusively to original equipment manufacturers under OEM sales agreements.

## Why choose us?

Do your customers ask questions like, "can I get that configured with SDI for now, half coax and half fiber, and then upgrade some of the outputs to IP next year?"

Embrionix enables equipment manufacturers to answer yes to that question. They choose Embrionix to offer multi-format solutions to their customers, without having to design every interface option into their products individually. This allows them to:

- Concentrate on their core business
- Accelerate their time to market
- Make a more efficient use of in-house R&D resources
- Save on upfront and ongoing development costs as industry standard changes
- Add flexibility to their product
- Benefit from Embrionix multi-vendor interop testing
- Invest in a future-proof platform

OEM CUSTOMER BENEFITS

## Typical Products that our parts go into

Embrionix SFP and SoC modules are integrated today into a wide range of products, such as:

- High-end Professional Cameras
- High-end Displays and Projectors
- Video/Audio Routing Switchers
  - Audio and Video Test Equipment
  - IP Transport Products
  - Video/Audio Converters

## Product Portfolio Overview

Embrionix extensive portfolio is divided in the following key product categories:

- SDI-IP (ST2110) System-on-Chip (HD, 3G, 12G)
- SDI-IP (ST2110/ST2022) Gateway SFP (HD, 3G)
- Optical Video SFP (SD, HD, 3G, 6G, 12G)
- Coaxial Video SFP (SD, HD, 3G, 6G, 12G)
- Coaxial Audio SFP (MADI)
- Converter SFP (HDMI, Composite)
- Cables (Coax, HDMI)

# SOFTWARE-DEFINED SYSTEM-ON-CHIP (EB82)

To help you interface with surrounding source and destination media devices that are not yet IP native, Embrionix offers its System-on-Chip for converting HD, 3G and UHD SDI signals to IP. Our System on Chip (SoC) is designed to perform multi-channel AV processing between IP and SDI and easily integrates into broadcast equipment manufacturers' products. It offers the following key benefits:

- **Software defined:** SoC can host several APPs.
- **Versatile:** SoC can be used with any type of SFP28 or SFP+.
- **Standards Compliant:** Video, audio, IP transport, ancillary, synchronization and control.
- **Onboard mountable:** Compact, ruggedized, Onboard mountable form factor.
- **Green:** Low power with reduced size.

## ST2110 Encapsulator and De-Encapsulator App

- Supports Up to 8 SDI lanes that can be configured in a variety of ways (HD and UHD)
- NMOS or Ember+ control
- Low processing delay (less than 1 video line)
- Encapsulator Frame Sync
- De-Encapsulator Clean Switch
- Flexible audio mapping
- FEC support (25GE)
- AV delay control



## Standards compliance

Embrionix IP products pass through various multi-vendors interop testing. In particular, the System-On-Chip EB82 is compliant with the following standards and protocols:

- Video: ST2110-20, ST2110-23 (CDIS)
- Audio: ST2110-30 (PCM), ST2110-31 (AES3 compressed)
- Ancillary: ST2110-40
- Hitless redundancy (ST2022-7)
- Synchronization: ST2110-10 (PTP)
- Traffic shaping ST2110-21 (Narrow gapped sender, Wide receiver)
- Control
  - IS-04 (Discovery)
  - IS-05 (Routing)
  - IS-08 (Audio Mapping)
  - IS-09 (System)
  - BCP-002-01 (Essence Grouping)
  - TR-1001 (System Environment and device behaviors)
  - Ember+
  - Ember+ Bess Protocol

## Hardware Design Kit (HDK) and Software Design Kit (SDK)

We want to ensure that equipment manufacturers can go through a straightforward and painless System-On-Chip integration process. With that in mind, we provide the following to support manufacturers during their design phase:

- **Documents:** How to guide, Hardware Gerbers and schematics, User Guide, RESTful API and SPI API documentation
- Evaluation/Development Board
- **Code:** low-level code sample to connect, read from and write to SoC
- **Resources:** Assistance from Embrionix specialists to ensure successful product integration
- **Value:** Being part of the NMOS interop, you will benefit from Embrionix interop and knowledge



# IP GATEWAY SFP (EB22LC)

To help you interface with surrounding source and destination media devices that are not yet IP native, we offer its 10GBase SR multimode optical gateway SFP for converting SD, HD and 3G SDI signals to IP, which provides the following key benefits:

- **Software defined:** Can run either ST2022-6 or ST2110 APPs
- **Pluggable:** The module is hot pluggable and hot removable
- **Green:** Ultra low power with reduced size.
- **Standards compliant:** Video, audio, IP transport, ancillary, synchronization and control



## Encapsulator and De-Encapsulator Apps (ST2022-6 or ST2110)

The EB22 Encapsulator and De-Encapsulator Apps (ST2022-6 or ST2110) include advanced features such as:

- Supports Single or Dual Channels
- MSA and Non-MSA pinouts
- Encapsulator Frame Sync (ST2110 only option)
- De-Encapsulator Clean Switch (ST2110 only option)

## Standards compliance

Embrionix IP products pass through various multi-vendors interop testing. In particular, the EB22 is compliant with the following standards and protocols:

- Video: ST2110-20 or ST2022-6
- Audio: ST2110-30 (PCM) or ST2022-6
- Ancillary: ST2110-40 or ST2022-6
- Hitless redundancy (ST2022-7) over one physical interface
- Synchronization: ST2110-10 (PTP)
- Traffic shaping ST2110-21 (Narrow Gapped Sender, Wide Receiver)
- Control
  - IS-04 (Discovery)
  - IS-05 (Routing)
  - IS-08 (Audio Mapping)
  - IS-09 (System)
  - BCP-002-01 (Essence Grouping)
  - TR-1001 (System Environment and device behaviors)
  - Ember+
  - Ember+ Bess Protocol

## EB82 vs EB22 comparison

| Characteristic    | EB22   | EB82  |
|-------------------|--|---|
| Form factor       | SFP (multimode only)                                 | SoC   |
| 2022-7 Redundancy | Over single physical interface                       | Over distinct physical I/Os   |
| GbE               | 10GbE  | 10GbE & 25 GbE  |
| Add-on            | •Frame Sync (2110 only)<br>•Clean switch (2110 only) | Frame Sync (included)<br>UHD<br>Clean switch<br>Additional channels |
| 2022-6 support    | Yes  | No  |
| 2110 support      | Yes  | Yes   |
| I/Os              | 1T, 1R, 2T, 2R                                       | Up to 4Rx4T, 2Rx6T, or 6Rx2T  |
| Video             | Up to 3G-SDI   | Up to 12G-SDI   |
| Communication     | REST, I2C  | REST, SPI   |
| Encoding          | YCbCr 4:2:2  | YCbCr 4:2:2   |
| Video Format      | SD (2022-6 only), HD, 3G                             | HD, 3G and UHD  |

## Optical Video SFP

12G Video Optical SFP+ (EB12LC series)

The world's first video UHD 12G-SDI video optical SFP series supports 4K resolution at 60Hz and 120Hz (dual link 12G-SDI). This series of video SFP will minimize the number of cables and the footprint for 4K. Versions available include:

- 12G / 6G / 3G / HD / SD-SDI support over fiber at 1310 nm
- Offered in Single Tx, Single Rx, Dual Tx, Dual Rx and RT
- Medium Reach laser
- With or without Pathological test pattern support
- LC connector
- CWDM also available
  - 16 wavelengths: 1271 nm to 1611 nm
  - Medium reach laser
- MSA and Non-MSA pinouts

3G Video Optical SFP (EB60LC series)

The high sensitivity and feature-rich EB60LC family is designed around an inputs/outputs interchangeable SFP form factor. Installed inside an SFP cage hosted by other equipment manufacturers, the modules can be interchanged to provide a different mix of input and output connectivity. Versions available include:

- 3G / HD / SD-SDI support over fiber at 1310 nm
- Offered in Single Tx, Single Rx, Dual Tx, Dual Rx and RT
- Medium Reach laser
- With or without Pathological test pattern support
- LC connector
- CWDM also available
  - 16 wavelengths: 1271 nm to 1611 nm
  - Single Tx or RT
  - Long reach laser
- MSA and Non-MSA pinouts



## Coaxial Video SFP

12G Video Coaxial SFP (EB12BN and EB12HD series)

The world's first video UHD 12G-SDI video coaxial SFP series. It supports 4K resolution at 60Hz and 120Hz (dual link 12G-SDI). Versions available include:

- 12G / 6G / 3G / HD / SD-SDI support over coax
- Dual Tx, Dual Rx and RT (HD-BNC connector)
- Single Tx and Single Rx (Full BNC connector)
- Built-in reclocker
- 3-way Distribution Amplifier
- MSA and Non-MSA pinouts

3G Video Coaxial SFP (EB30HD series)

The most feature-rich HD-BNC coaxial video SFP EB30HD family contains a wide variety of Embrionix's coaxial video SFP (emSFP) modules with HD-BNC connectors. Versions Available include:

- 3G / HD / SD-SDI support over coax
- Dual Tx, Dual Rx, RT and 1R (HD-BNC connector)
- Built-in reclocker
- Relay Bypass
- Active Loopback
- 3-way distribution Amp
- Composite PAL/NTSC to SDI converters
- MSA and Non-MSA pinouts

#### HDMI Converter SFP

HDMI TO SDI CONVERTER SFP (EB34 and EB35 series)

The smallest HDMI to SDI video converter in a video SFP format. Versions available include:

- 12G / 3G / HD-SDI support
- HDMI Receiver (HDMI to SDI)
- HDMI Transmitter (SDI to HDMI)
- HDMI 1.4 / HDMI 2.0 support
- HDMI Type D connector
- Adapter cable with unique locking clip available



#### Composite (CVBS) to SDI Converter SFP (EB30HDxx-Ax2 Series)

The smallest dual channel Composite (NTSC/PAL) to SD-SDI converter in video SFP format. The video SFP EB30HDxx-Ax2 converter family leverage the Embrionix's CVBS (Composite) video SFP encoder and decoder with the support of NTSC and PAL.

#### Coaxial Audio SFP (EB06HD)

The audio SFP EB06HD family leverages the Embrionix's MADI emSFP via HD-BNC connectors. The interchangeable SFP form factor is ideal for usage inside other equipment manufacturers hosted with SFP cage, such as Audio Processor cards, Audio Console or Audio router. Versions Available with:

- Dual Tx, Dual Rx and RT (HD-BNC connector)
- AES10 MADI interface

#### SDI and HDMI cable adapters (EB00)

Embrionix offers a variety of coaxial SDI and HDMI cable adapters to connect with its SFP modules:

- Coaxial Cable Adaptor, 3G-SDI, DIN 1.0/2.3 Plug (M) to BNC Jack (F), Belden 1855A
- Coaxial Cable Adaptor, 3G-SDI, HD-BNC Plug (M) to BNC Jack (F), Belden 1855A
- Coaxial Cable Adaptor, 12G-SDI, HD-BNC Plug (M) to BNC Jack (F), Belden 1855A
- High Speed HDMI 2.0 Cable Assembly, Type D Plug (M) w/Lock to Type A Plug (M)



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Embrionix products are sold exclusively to equipment  
manufacturers under OEM sales agreements.

For Sales inquiries, please contact us at:  
[Embrionix\\_Sales@riedel.net](mailto:Embrionix_Sales@riedel.net)

Riedel Communications Canada Inc.  
4600, Louis-B.-Mayer | Laval, QC H7P 6E4 | Canada  
Phone: +1 (450) 688.8171 | [info@embrionix.com](mailto:info@embrionix.com)

[www.embrionix.com](http://www.embrionix.com)