IP-SDI gateway SFP+

(coaxial front end)

User guide

v0.4

Product: **EB22 family** April 7th, 2016



Table of contents

2. Overview	3
	3
3. Required tools	
4. Installing SFP+ modules	3
5. Removing SFP+ modules	4
 Connecting SDI signals to the SDI to IP gateway 	5
7. Configuring the SDI to IP gateway by the 10GE network	6
8. Updating the SDI to IP gateway (by the internal webpage)	9
9. Troubleshooting the modules	11

1. Introduction

This installation & configuration quick user guide provides the installations for the Embrionix SDI to IP coaxial gateway SFP+ (emSFP). These gateway modules are hot-swappable devices that plug into a 10GE MSA SFP slot; 10GE (2022-6) signal is received/transmitted on host interface.





2. Overview

The SFP+ (emSFP) modules are hot-pluggable I/O devices that plug into sockets (SFP/SFP+).

3. Required tools

ESD-preventive wrist strap

4. Installing SFP+ modules

Step 1 Attach an ESD-preventive wrist strap to your wrist and to the ESD ground connector or a bare metal surface on your chassis.

Step 2 Remove the SFP transceiver module from its protective packaging.

Step 3 Position the SDI to IP coaxial gateway SFP+ in front of the empty cage.

Step 4 Insert the SFP+ like the following pictures.



Figure 2. SDI to IP coaxial gateway insertion

Note Ensure the ejector is at rest position before inserting the SFP+ in the cage.

Step 5 Press the SFP+ until you feel the connector latch into place.

Step 6 Verify the SFP+ is seated and latched properly by grasping the SFP+ and try to remove it without releasing the latch.

5. Removing SFP+ modules

Note The SFP and SFP+ are static sensitive devices. It is recommended to use an ESD wrist strap or similar grounding device when handling the modules.

Step 1 Attach an ESD-preventive wrist strap to your wrist and to the ESD ground connector or a bare metal surface on your chassis.

Step 2 Release and remove the transceiver module from the socket connector, as shown in next figure (Step 2a) push the ejector gently in a slightly upward direction until the transceiver

Document version 0.4

disengages from the socket connector, and then pull the SFP transceiver module straight out (Step 2b).



Figure 3. SDI to IP coaxial gateway extraction

6. Connecting SDI signals to the SDI to IP gateway

Step 1 Ensure that the SFP+ is seated and latched properly.

Step 2 Connect the HD-BNC by pushing the HD-BNC inside the connector (Step 2a), and then turn (clockwise) the HD-BNC to lock the cable (Step 2b) as shown in the next figure.



Figure 4. Connecting SDI signals

Note Supported SDI format as of publication of this manual : 1080p50/59/60, 1080i50/59/60, 720p50/59/60, 525i59, 625i50. Other rates have not been tested yet.

7. Configuring the SDI to IP gateway by the 10GE network

Note Steps described below are an **example** of a possible connection and tool to use to configure the *Gateway SFP*. One may have other solution to connect an application to send JSON commands to the *Gateway SFP* on the 10GE link.

Step 1 Insert the *Gateway SFP* into the 10GE host.

At that point, there should be a link established for the Gateway SFP (status led on the 10GE host). **Note** Gateway SFP (encapsulator and decapsulator) can take up to **10sec** to establish the link on cold boot.

- **Step 2** Insert an 1GE RJ45 SFP into the 10GE/1GE equipment.
- **Step 3** Connect a 1GE-enabled PC to the 1GE RJ45 SFP.
 - At that point, there should be a link established between the PC and the RJ45 SFP (status led on the switch).
- Step 4 Configure the PC's Lan Adapter to be on the same subnet as the Gateway SFP

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es paramètres IP peuvent être dé éseau le permet. Sinon, vous deve ppropriés à votre administrateur r	terminés automatiquement si votre z demander les paramètres IP éseau.
Obtenir une adresse IP autom	atiquement
• Utiliser l'adresse IP suivante :	
Adresse IP :	192 . 168 . 39 22
Masque de sous-réseau :	255.255.255.0
Passerelle par défaut :	
Obtenir les adresses des servi- OUtiliser l'adresse de serveur D	eurs DNS automatiquement
Serveur DNS préféré :	
Serveur DNS auxiliaire :	
🗌 Valider les paramètres en qui	ttant Avancé

Step 5 Using Windows Command Prompt, ping your Gateway SFP.

- **Encap**: 192.168.39.215
- ✤ Decap: 192.168.39.216

Note Depending on the 10GE equipment configuration, it may have traffic contention between 10GE/2022-6 traffic and 1GE/management traffic (for API access). For first tests, we recommend to have only management traffic in the 10GE equipment.

Step 6 Start Firefox HTTP Requester (free Mozilla Firefox plugin – WINDOWS platform).

See emSFP Devices *IP gateway REST API Userguide.pdf* document for the complete description of readable/writeable information AND for HTTP requester use.

Document version 0.4

Step 7 Get 2022-6 configuration from the *Gateway SFP*

- 1. Specify your *Gateway SFP* address (or hostname: emsfp-a0-xx-xx, where the xx-xx are the last digits of the *SFP* MAC address found on the label).
- 2. Press GET button
 - > Command answer will be displayed on the right.

The HttpRequester		
REQUEST	Response	
URL (http://192.168.38.218:80/emsfp/node/v1/flows)	GET on http://192.168.38.218:80/emsfp/node/v1/flows	
Auth	Status: 200 OK	○ Browser ● Text ✓ Pretty format
Timeout 30 Google Login.	{ "service": "4"	
GET V Submit GET POST PUT	"label": "emsfp-2022",	
New request Paste Dequest Authentication	"id": "afd98e96-990d-11e5-8994-feff819cdc9f",	
Contents Cond to the Cond to t	"source_id : "atd98e90-990d-11e5-8994-teff819cdc9r",	
Content to Send Headers Parameters	"name": "emsfp",	
Content Type:	"network": {	
	"src_ip_addr": "192.168.0.1",	
Content Options: Base64 Parameter Body	"dst in addr": "239.0.0.2"	
Content O File Browse	"dst_udp_port": "20000".	
	"dst_mac": "01:00:5e:00:00:02",	
	"vid_clk_rate": "0",	
	"vlan_tag": "0",	
	"ssrc". "0",	
	"pkt_filter_src_ip": "0",	
	"pkt_litter_src_udp": "0",	
	"pkt_litter_src_mac." "0",	
	pkt_initer_odst_upin_4,	
	"pkt_filter_dct_mee": "0"	
	"off filter vlap" "0"	
	"nkt filter ssrr" "0"	
	"rx pkt cnt". "0"	
	"ry pkt good cpt"-"0"	
	HEADERS	
	Server 192.168.38.218	
	Content-Type text/json	
	Control with 040	

Step 8 Change 2022-6 configuration of the Gateway SFP

- 1. Specify your *Gateway SFP* address (or hostname: emsfp-a0-xx-xx, where the xx-xx are the last digits of the *SFP* MAC address found on the label).
- 2. Press GET button
 - > Command answer will be displayed on the right.
- 3. Copy the answer from the right side to the left side text box *Content to send*.
- 4. Edit the desired values.
- 5. Press PUT button

Note Shown below is information for decap; encap is a bit different – there is no *pkt_filter_xyz* parameter to manage (item 2 in image below).

Note Configuration showed below for 2022-6 traffic is used to build / retrieve the packets so both encap and decap should have the same content based on the decap's *pkt_filter_xyz* setting. Shown below is **destination IP address filtering**.

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	00	Quarterla					-1
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content t	o Send	Headers Para	meters				
21.2	-						
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8. Updating the SDI to IP gateway (by the internal webpage)

Note Communication with the SFP+ is only feasible if the network is properly configured and the computer used to communicate is in the same IP subnet (as shown in previous section).

The *Gateway SFP* possesses a webpage to ease update over the network. This intelligent SFP+ is DHCP ready, if a DHCP exist, the SFP+ will request an IP address and will request an HOSTNAME in the network. The HOSTNAME is composed like this:



As example an SFP+ gateway with a MAC finishing by 0a-01-dd will have an hostname: emSFP-0a-01-dd

Step 1 Ensure that the link is established between the PC and the *Gateway SFP* (see steps 1 to 7 in previous section).

Step 2 Using Google Chrome on Windows, access the *Gateway SFP* webpage

Type http://HOSTNAME (or IP address)/config.

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← → C [192.168.3	8.218/config						☆ 🖸 ≡
em	bri	nix						
Loaded Fi	irmware							
Version 2.2 ((Feb 8 2016	10:16:45)						
Tag 20FE18	92 (Element	0)						
Firmware	Configura	tion						
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Step 3 Upload and run a new code

Please refer to the image above.

To upload a new code:

- 1- Choose an empty element and click on "Choose File" (button naming is browser dependent).
- 2- Browse to and select the provided .img file.
- 3- Click on "Upload". The upload and verification process will take about 30 seconds.

If no empty element is available to upload a new code, you can free one by clicking on "Clear" and wait until the element is cleared (about 40 seconds).

If the upload process was successful, CRC value will be shown in green for that particular element. If not, it will be shown in red. In the unlikely later case, click on "Clear" and then repeat above steps.

To run a new or existing code:

- 1- Click on "Set As Default" to select this code as default when inserting or power cycling the SFP+.
- 2- Click on "Load Now" and wait until the page reloads.
- 3- Running image is the one marked in green (element number background, 0 on the above image).

Under some circumstances (slow switch port bring-up time, slow DHCP server response time), the loading will take more time and the page will not reload by itself. **Allow some more time and refresh the page manually, up to 1 minute.**

Note Do not remove the SFP+ while uploading a new code or clearing an element.

Note It is not possible to clear or upgrade the code located in element labeled "Golden". This ensures that the product will always have a working code to load.

9. Troubleshooting the modules

Step 1 If the SFP is accessible for configuration but the video path is not working :

- 1. Make sure the *flows* configuration matches between encap and decap.
- 2. Make sure to disable IGMP snooping.
- 3. For decap, make sure that the *packet filter* selected is well defined so data from only one encap is selected. For example, if filtering on destination IP, make sure that only one encap is sending to that specific destination IP.