POE ADDDON SPECIFICATION

STM32H7 PoE Add-on

PoE Add-on for STM32H7 Series Display

Rev.1.2
2023-12-22

Note 1. RoHS3 compliant

Note 2. LCM weight tolerance: ± 5%.

1. REVISION RECORD

REV NO.	REV DATE	CONTENTS	REMARKS
1.0	2023-07-10	Initial Release	
1.1	2023-08-18	Clarification of compatible product lists	
1.2	2023-12-22	Update chapter 5.1 Precautions Before Using PoE Add-on Disconnect any other power source before using Poe Add-on	

2. CONTENTS

3. MODULE DESCRIPTION

Introducing the STM32H7 PoE Add-on board, specifically designed for Riverdi 7.0" and 10.1" STM32H7 modules. It enables one ethernet cable to provide both ethernet connection and power supply to 7.0” and 10.1” STM32H7 modules instead of having a separate cable for each.

Features:

- Plug-and-play compatibility with Riverdi 7.0” and 10.1” STM32H7 modules, which must be purchased separately.
- Ethernet speed up to 10Mb/s
- a high power standard PoE-PD interface compliant with third generation IEEE 802.3bt PoE standard.
- 36 V to 57 V DC input voltage

To ensure proper operation, please note that a Power Sourcing Equipment (e.g. a PoE injector, switch, or router) is required in addition to the STM32H7 PoE Add-on board.

4. PRODUCT COMPATIBILITY STATEMENT:

The STM32H7 PoE Add-on is **compatible** with specific PCB revisions of 7.0” and 10.1” STM32H7 series displays. Please take a note of the following compatibility information:

10.1” STM32H7 series display: Only PCB revision 101STM32H7_Rev1.4 or later is compatible. Any older revisions are not compatible with the STM32H7 PoE Add-on.

7.0” STM32H7 series display: Only PCB revision 70STM32H7_Rev1.1 or later is compatible. Any older revisions are not compatible with the STM32H7 PoE Add-on.

To ensure successful integration of the STM32H7 PoE Add-on, it is crucial to verify that your STM32H7 series display falls within the specified compatibility range.

5. POWER OVER ETHERNET

The STM32H7 PoE Add-on is built based on PM8805TR which features a high power standard PoE-PD interface adhering to the IEEE 802.3bt standard.

The STM32H7 PoE Add-on supports powering from 802.3af, 802.3at and 802.3bt PSEs. However, the maximum class will be limited to Class 4 (25.5 W) when connected to an 802.3at PSE and Class 3 (13 W) when connected to an 802.3af PSE. Please select proper type of PSE device according to the power level of the application.

It can identify the type of PSE connected with and indicate IEEE802.3 at/af/ bt / classification as a combination of the T0, T1 and T2 signals. By monitoring the Tx signals, the PD knows if the PSE is capable of providing all power it needs.

Table 1. LED descriptions

REF.	TYPE	FUNCTION	LOGIC
D11	Green LED	Monitor of T2 signal	LED on when T2 low
D12	Green LED	Monitor of T1 signal	LED on when T1 low
D13	Green LED	Monitor of T0 signal	LED on when T0 low

Table 2. T0,T1,T2 signals description table

IDENTIFICATION	T0	T1	T2	BRIDGES	CLASS EVENTS	NOTES
Type 1 (13W)	1	1	1	1	0 or 1	Legacy PD type
Type 2 (25.5W)	0	1	1	1	2, 3	Legacy PD type
Type 3 (51W)	1	0	0	2	4	New PD type
Type 4 (71W)	0	0	0	2	>=5	
Type 3 on 4-pair(13W), or Legacy 4-pair(Type 1 class)	1	1	0	2	0 or 1	
Type 3 on 4-pair(25.5W), or Legacy 4-pair(Type 2 class)	0	1	0	2	2, 3	
Rear AUX	0	1	0	any	NA	AUX present
Front AUX	0	0	1	0		

T2 output indicates the number of used bridges. If the value is 1, only one bridge is used (2-pair), if the value is zero, both the bridges are used (4-pairs).

For detail information, please refer to the PM8805 datasheets.

5.1 Recommended operating conditions

PARAMETER	MIN	MAX	UNIT	NOTE
Board supply voltage	36	57	V	Note 1
Operating temperature	-20	70	°C	
Storage temperature	-30	80		

Warning! Before connecting the PoE Add-on, disconnect any other power inputs from the 7.0” and 10.1” STM32H7 module. Failure to do so may result in device malfunction or damage.

Note 1. The limits of input voltage are the same as the PM8805 operating voltages, which are specified according to the IEEE PoE standard valid for all PD systems.

6. NETWORK CONNECTION

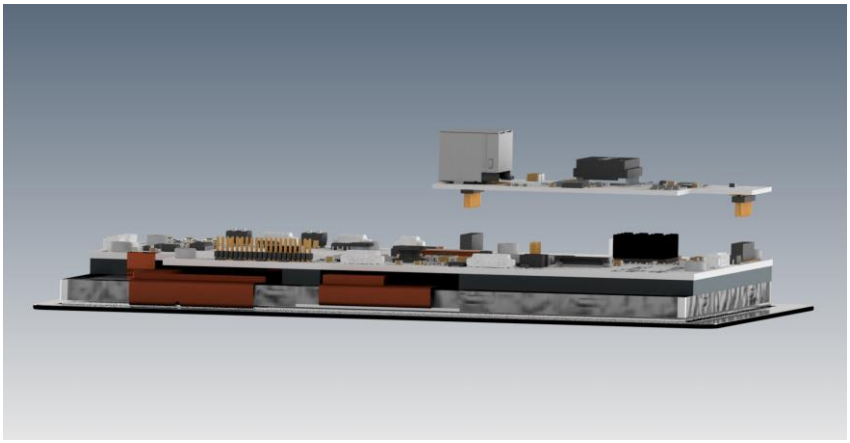
The Add-on board additionally integrates an ethernet connection based on the LAN8742AI chip offering a speed of 10Mb/s.

The Add-on board incorporates the RMII (Reduced Media Independent Interface) to establish the ethernet connectivity between ethernet MAC(Media Access Control) and Ethernet PHY (Physical Layer).

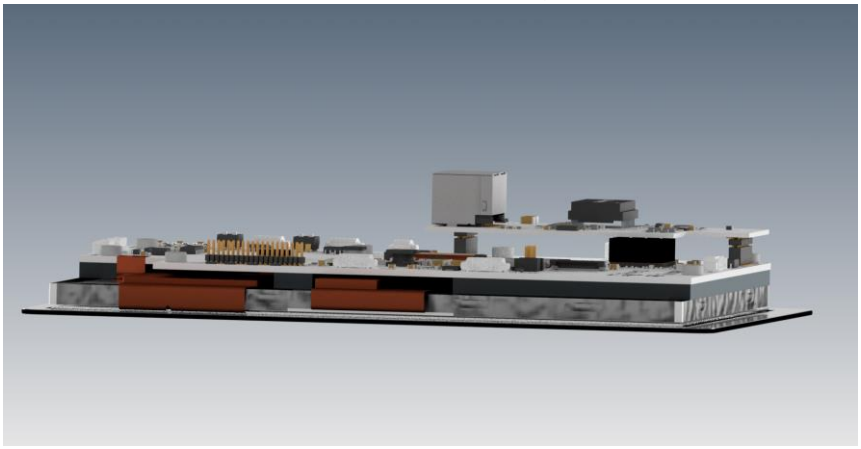
A simple example application is available on Riverdi's GitHub for how to connect an HTTP server.

7. HOW TO CONNECT

1. Identify the connectors on both the POE Add-on Board and STM32H7 module:
   - Locate two 1.27mm pitch pin headers under the POE Add-on Board.
   - Identify the corresponding pin sockets on the STM32H7 module named U9a and U9b.
2. Connect the POE Add-on Board to the STM32H7 module.
   - Align the POE Add-on Board with the STM32H7 module.



   - Press the POE Add-on Board down firmly to ensure a secure connection.



3. Verify the connection.
   Check and ensure that the pin headers are properly aligned and fully inserted into the corresponding pin headers on the STM32H7 module.

4. Use M3 screws to securely fasten the board.

8. LEGAL INFORMATION

CE marking is usually obligatory only for a complete end product. Riverdi display modules are semi-finished goods which are used as inputs to become part of the finished products.

Therefore, Riverdi display modules are not CE marked.

Riverdi grants the guarantee for the proper operation of the goods for a period of 12 months from the date of possession of the goods. If in a consequence of this guaranteed execution the customer has received the defects-free item as replacement for the defective item, the effectiveness period of this guarantee shall start anew from the moment the customer receives the defects-free item.

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